

ABB INDUSTRIAL DRIVES

DCS880 drives

Firmware manual



DCS880 Drive Manuals

All the documents available for the drive system DCS880 are listed below:

List of manuals

				La	_		Language				
	Publication number	Е	D	ı	ES	F	CN	Rl			
General											
DCS880 Quick Guide	<i>3ADW000480</i>	Х						ļ			
Safety instructions all languages	<i>3ADW000481</i>	Х	Х	Х	Х	Х	Х	Х			
DCS880 Documentation pack	DCS880 CD download	х									
DCS880 Units											
DCS880 Flyer	3ADW000475	х	х			х					
DCS880 Technical Catalog	3ADW000465	Х									
DCS880 Hardware Manual	3ADW000462	х									
DCS880 Firmware Manual	3ADW000474	Х									
DCS880 Service Manual	3ADW000488	х									
ACS-AP-x assistant control panels user's manual	3AUA0000085685	х									
Functional safety											
Supplement for functional safety	3ADW000452	х									
Functional safety for cabinet											
+Q957 Prevention of unexpected Start Up	3ADW000504	х									
+Q951 Emergency stop, category 0 with MC opening	3ADW000505	Х									
+Q952 Emergency stop, category 1 with MC opening	3ADW000506	х									
+Q963 Emergency stop, category 0 without MC opening	3ADW000507	х									
+Q964 Emergency stop, category 1 without MC opening	3ADW000508	Х									
Enclosed converter											
Installation manual	3ADW000091	х	х								
Door mounting kits											
DPMP-01 mounting platform for ACS-AP control panel	3AUA0000100140	х									
DPMP-02 mounting platform for ACS-AP control panel	3AUA0000136205	х									
Serial communication											
FCAN-01 CANopen adapter module	3AFE68615500	х	х								
FDNA-01 DeviceNet™ adapter module	3AFE68573360	х									
FECA-01 EtherCAT adapter module	3AUA0000068940	х	х								
FENA-11/-21 Ethernet adapter module	3AUA0000093568	х									
FEPL-02 Ethernet POWERLINK adapter module	3AUA0000123527	х	х								
FPBA-01 PROFIBUS DP adapter module	3AFE68573271	х	х								
FSCA-01 RS-485 adapter module	3AUA0000109533	х									
FDCO-01/02 DDCS communication modules	3AUA0000114058										
Tool and maintenance manuals and guides											
Drive composer PC tool	3AUA0000094606	х									
Drive (IEC61131-3) application programming manual	3AUA0000127808	х									
Adaptive programming, Application guide	3AXD50000028574	х									
NETA-21 remote monitoring tool	3AUA0000096939	х									
NETA-21 remote monitoring tool guide	3AUA0000096881	х									
Extension modules											
FIO-11 Analog extension module	3AFE68784930	х									
FIO-01 Digital extension module	3AFE68784921	х									
FAIO-01 Analog extension module	3AUA0000124968	х									
FDIO-01 Digital extension module	3AUA0000124966	X									
FEN-01 TTL encoder interface	3AFE68784603	х									
FEN-31 HTL encoder interface	3AUA0000031044	х						\vdash			
	3AUA0000115811	x									
FEA-03 F series extension adapter											

Table of contents

DCS880 Drive Manuals	2
List of manuals	2
Safety instructions	(
What this chapter contains	e
To which products this chapter applies	
Usage of warnings and notes	
Installation and maintenance work	
Grounding	
Printed circuit boards and fiber optic cables	
Mechanical installation	
Operation	
Introduction to this manual	(
Chapter overview	Ç
Before You Start	
What this manual contains	
Related documents	
Terms and abbreviations	
Cybersecurity disclaimer	
Start-up	12
•	
Chapter overview	
General	
Start-up procedure	
Tools	
Checking with the power switched off	
Checking with the power switched on	
Connect DCS880 and DC with Drive compacer	
Connect DCS880 and PC with Drive composer	
Commissioning a DCS880 using custom parameter files	
Commissioning a DCS880 manually	
·	
Using the control panel	34
Firmware description	38
Chapter overview	
Identification of the firmware versions	
Field exciter mode	
General	35
DCS800-S0b large field exciter controlled by a DCS800 armature converter	
DCS800-S0b as stand-alone field exciter	
I/O configuration	40
General Communication	
Configuration of the master-follower link	
Example parameter settings	
Specifications of the master-follower link	
Settings and diagnostics	
External controller interface	
FEA-03 extension adapter	
Hardware	
Electrical installation	
Diagnostics	
Commissioning	
-	

Macros	49
Parameters	50
What this chapter contains	50
Terms and abbreviations	
Summary of parameter groups	
Parameter listing	
01 Actual Values	52
03 Input references	55
04 Warnings and faults	56
05 Diagnostics	
06 Control and status words	
07 System info	
10 Standard DI, RO	
11 Standard DIO, FI, FO	
12 Standard Al	
13 Standard AO	
14 I/O extension module 1	
15 I/O extension module 2	
16 I/O extension module 3	
19 Operation mode	
20 Start/Stop/Direction	
21 Start/Stop mode	
22 Speed reference selection	
23 Speed reference ramp	
24 Speed reference conditioning	
25 Speed control	
26 Torque reference chain	
28 EMF and field current control	
29 12-pulse/Hardparallel	205
30 Control limits	
31 Fault functions and fault levels	
32 Supervision	
33 Generic timer & counter	
35 Motor thermal protection	
36 Load analyzer	
37 User load curve	
40 Process PID	249
42 Shared motion (2nd motor)	249
44 Mechanical brake control	249
45 Energy efficiency	250
46 Monitoring/Scaling settings	
47 Data storage	
49 Panel port communication	
50 Fieldbus adapter (FBA)	
51 FBA A settings	
52 FBA A data in	
53 FBA A data out	
54 FBA B settings	
55 FBA B data in	
56 FBA B data out	
58 Embedded fieldbus	
60 DDCS Communication	
61 D2D and DDCS transmit data	
62 D2D and DDCS receive data	
70 DCSLink Communication	
90 Feedback selection	
JO 1 GENDAGN JEIEGNOTH	∠⊎ა

91 Encoder module settings	305
92 Encoder 1 configuration	308
93 Encoder 2 configuration	314
94 OnBoard speed feedback configuration	
95 HW configuration	
96 System	324
99 Motor data	
Fault tracing	338
What this chapter contains	338
Safety	
Indications	338
Warnings and faults	338
Events	338
Editable messages	338
Warning/fault history and analysis	338
Event logs	338
User data logger	339
Parameters that contain warning/fault information	340
QR Code generation for mobile service application	340
Warnings	340
Warning levels	340
Warning messages	340
Faults	366
Fault levels	366
Fault messages	367
Fieldbus control via embedded fieldbus (EFB)	393
Fieldbus control via fieldbus adapter	394
Firmware structure diagrams	396
Drive logic	396
Diagrams	300

Safety instructions

What this chapter contains

This chapter contains the safety instructions you must follow when installing, operating and servicing the drive. If ignored, physical injury or death may follow, or damage may occur to the drive, the motor or driven equipment. Read the safety instructions before you work on the unit.

To which products this chapter applies

The information is valid for the whole range of the product DCS880, the converter modules DCS880-S0x size H1 ... H8, field exciter units DCF80x, etc. like the Rebuild Kit DCS880-R00.

Usage of warnings and notes

There are two types of safety instructions throughout this manual: warnings and notes. Warnings caution you about conditions which can result in serious injury or death and/or damage to the equipment, and advice on how to avoid the danger. Notes draw attention to a particular condition or fact, or give information on a subject. The warning symbols are used as follows:



Dangerous voltage warning warns of high voltage which can cause physical injury or death and/or damage to the equipment.



General danger warning warns about conditions, other than those caused by electricity, which can result in physical injury or death and/or damage to the equipment.



Electrostatic sensitive devices warning warns of electrostatic discharge which can damage the equipment.

Installation and maintenance work

These warnings are intended for all who work on the drive, motor cable or motor. Ignoring the instructions can cause physical injury or death and/or damage to the equipment.



WARNING

- Only qualified electricians are allowed to install and maintain the drive!
- Never work on the drive, motor cable or motor when main power is applied.
- Always ensure by measuring with a multimeter (impedance at least 1 M Ω) that:
 - 1. Voltage between drive input phases U1, V1 and W1 and the frame is close to 0 V.
 - 2. Voltage between terminals C+ and D- and the frame is close to 0 V.
- Do not work on the control cables when power is applied to the drive or to the external
 control circuits. Externally supplied control circuits may cause dangerous voltages inside
 the drive even when the main power on the drive is switched off.
- Do not make any insulation resistance or voltage withstand tests on the drive or drive modules.
- Isolate the motor cables from the drive when testing the insulation resistance or voltage withstand of the cables or the motor.
- When reconnecting the motor cable, always check that the C+ and D- cables are connected with the proper terminal.

Note:

- The motor cable terminals on the drive are at a dangerously high voltage when the main power is on, regardless of whether the motor is running or not.
- Depending on the external wiring, dangerous voltages (115 V, 220 V or 230 V) may be present on the relay outputs of the drive system (e.g. XRO1 ... XRO3).
- DCS880 with enclosure extension: Before working on the drive, isolate the whole drive system from the supply.

Grounding

These instructions are intended for all who are responsible for the grounding of the drive. Incorrect grounding can cause physical injury, death and/or equipment malfunction and increase electromagnetic interference.



WARNING

- Ground the drive, motor and adjoining equipment to ensure personnel safety in all circumstances, and to reduce electromagnetic emission and pick-up.
- Make sure that grounding conductors are adequately sized and marked as required by safety regulations.
- In a multiple-drive installation, connect each drive separately to protective earth (PE ⁽¹⁾).
- Minimize EMC emission and make a 360° high frequency grounding (e.g. conductive sleeves) of screened cable entries at the cabinet lead-through plate.
- Do not install a drive equipped with an EMC filter to an ungrounded power system or a high resistance-grounded ($> 30 \Omega$) power system.

Note:

- Power cable shields are suitable as equipment grounding conductors only when adequately sized to meet safety regulations.
- As the normal leakage current of the drive is higher than 3.5 mA_{AC} or 10 mA_{DC} (stated by EN 50178, 5.2.11.1), a fixed protective earth connection is required.

Printed circuit boards and fiber optic cables

These instructions are intended for all who handle the circuit boards and fiber optic cables. Ignoring the following instructions can cause damage to the equipment.



WARNING

- The printed circuit boards contain components sensitive to electrostatic discharge. Wear a
 grounding wrist band when handling the boards. Do not touch the boards unnecessarily.
- Use grounding strip:

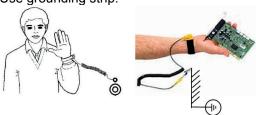


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WARNING

- Handle the fiber optic cables with care.
- When unplugging optic cables, always grab the connector, not the cable itself.
- Do not touch the ends of the fibers with bare hands as the fiber is extremely sensitive to dirt.
- The minimum allowed bend radius is 35 mm (1.38 in.).

Mechanical installation

These notes are intended for all who install the drive. Handle the unit carefully to avoid damage and injury.



WARNING

- DCS880 sizes H4 ... H8: The drive is heavy. Do not lift it alone. Do not lift the unit by the front cover. Place units H4 ... H6 only on its back.
- DCS880 sizes H6 ... H8: The drive is heavy. Lift the drive by the lifting lugs only. Do not tilt
 the unit. The unit will overturn from a tilt of about 6 degrees.
- Make sure that dust from drilling does not enter the drive when installing. Electrically conductive dust inside the unit may cause damage or lead to malfunction.
- Ensure sufficient cooling.
 - Do not fasten the drive by riveting or welding.

Operation

These warnings are intended for all who plan the operation of the drive or operate the drive. Ignoring the instructions can cause physical injury or death and/or damage to the equipment.



WARNING

- Before adjusting the drive and putting it into service, make sure that the motor and all driven equipment are suitable for operation throughout the speed range provided by the drive. The drive can be adjusted to operate the motor at speeds above and below the base speed.
- Do not control the motor with the disconnecting device (disconnecting mains); instead, use
 the control panel keys and ... or commands via the I/O board of the drive.
- Mains connection: You can use a disconnect switch (with fuses) to disconnect the electrical components of the drive from the mains for installation and maintenance work. The type of disconnect switch used must be as per EN 60947-3, Class B, so as to comply with EU regulations, or a circuit-breaker type which switches off the load circuit by means of an auxiliary contact causing the breaker's main contacts to open. The mains disconnect must be locked in its "OPEN" position during any installation and maintenance work.
- EMERGENCY STOP buttons must be installed at each control desk and at all other control
 panels requiring an emergency stop function. Pressing the STOP button on the control
 panel of the drive will neither cause an emergency stop of the motor, nor will the drive be
 disconnected from any dangerous potential.
- To avoid unintentional operating states, or to shut the unit down in case of any imminent danger according to the standards in the safety instructions it is not sufficient to merely shut down the drive via signals "RUN", "drive OFF" or "Emergency Stop" respectively "control panel" or "PC tool".
- Intended use:
- The operating instructions cannot take into consideration every possible case of configuration, operation or maintenance. Thus, they mainly give such advice only, which is required by qualified personnel for normal operation of the machines and devices in industrial installations.
- If in special cases the electrical machines and devices are intended for use in non-industrial installations which may require stricter safety regulations (e.g. protection against contact by children or similar) these additional safety measures for the installation must be provided by the customer during assembly.

Note:

When the control location is not set to Local (Local not shown in the status row of the display), the stop key on the control panel will not stop the drive. To stop the drive using the control panel, press the Loc/Rem key and then the stop key

Introduction to this manual

Chapter overview

This chapter describes the purpose, contents and the intended use of this manual.

Before You Start

The purpose of this manual is to provide you with the information necessary to control and program the drive. Study carefully the <u>Safety instructions</u> at the beginning of this manual before attempting any work on or with the drive. Read through this manual before starting-up the drive. The installation and commissioning instructions given in the DCS880 Hardware Manual and DCS880 Quick Guide must also be read before proceeding. This manual describes the **standard** DCS880 firmware.

What this manual contains

The <u>Safety instructions</u> can be found at the beginning of this manual.

<u>Introduction to this manual</u>, the chapter you are currently reading, introduces you to this manual.

Start-up, this chapter describes the basic start-up procedure of the drive.

Using the control panel, this chapter describes the handling of the control panel.

<u>Firmware description</u>, this chapter describes how to control the drive with standard firmware. Including the I/O configuration of digital and analog inputs and outputs with different hardware possibilities.

<u>Macros</u>, this chapter contains a short description of each macro together with a connection diagram. Macros are pre-defined applications which will save the user time when configuring the drive.

Parameters, this chapter contains all signals and parameters.

Fault Tracing, this chapter describes the protections and fault tracing of the drive.

<u>Fieldbus control via embedded fieldbus (EFB)</u>, this chapter describes the communication to and from a fieldbus network using the embedded fieldbus interface of the drive.

<u>Fieldbus control via fieldbus adapter</u>, this chapter describes the communication to and from a fieldbus network using an optional fieldbus adapter module.

Firmware structure diagram, this chapter shows the parameter structure within the firmware.

Related documents

A list of related manuals is shown on the inside of the front cover under DCS880 Drive Manuals.

Terms and abbreviations

Term/Abbreviation	Definition
AC 800M	Type of programmable controller manufactured by ABB.
ACS-AP-I	Types of control panel used with DCS880 drives.
ACS-AP-W	
Al	Analog input; interface for analog input signals.
AO	Analog output; interface for analog output signals.
D2D	Drive-to-drive; communication link between drives.
DCS800	A product family of ABB drives.
DDCS	Distributed drives communication system; a protocol used in communication
	between ABB drive equipment.
DI	Digital input; interface for digital input signals.
DIO	Digital input/output; interface that can be used as a digital input or output.
DO	Digital output; interface for digital output signals.
Drive	Converter to control DC motors.

Term/Abbreviation	Definition	
DriveBus	A communication link used by, for example, ABB controllers. DCS880 drives	
Dilvebus	can be connected to the DriveBus link of the controller.	
DriveAP	Adaptive Programming of the drive.	
Drive composer	PC tool for commissioning and maintenance of ABB drives.	
Drive composer Drive control unit	Contains the electronics of the drive. The power unit is connected to the	
Drive Control unit	drive control unit.	
EFB	Embedded fieldbus interface.	
FAIO-01	Optional analog I/O extension module.	
FBA	Fieldbus adapter.	
FCAN-01	Optional CANopen adapter.	
FCNA-01	Optional ControlNet adapter.	
FDCO-0x	Optional DDCS communication module.	
FDIO-01	Optional digital I/O extension module.	
FDNA-01	Optional DeviceNet adapter.	
FEA-03	Optional I/O extension adapter.	
FECA-01	Optional EtherCAT® adapter.	
FEN-01	Optional TTL encoder interface module.	
FEN-11	Optional absolute encoder interface module.	
FEN-21	Optional resolver interface module.	
FEN-31	Optional HTL encoder interface module.	
FENA-11	Optional Ethernet/IP, Modbus/TCP and PROFINET IO adapter.	
FENA-21	Optional dual-port Ethernet/IP, Modbus/TCP and PROFINET IO adapter.	
FEPL-02	Optional POWERLINK adapter.	
FIO-01	Optional digital I/O extension module.	
FIO-11	Optional analog I/O extension module.	
FPBA-01	Optional PROFIBUS DP adapter.	
FPTC-01	Optional thermistor protection module.	
FPTC-02	Optional ATEX-certified thermistor protection module for potentially explosive	
	atmospheres.	
FSCA-01	Optional Modbus/RTU adapter.	
FSO-xx	Optional safety functions module.	
HTL	High-threshold logic.	
I/O	Input/Output.	
ModuleBus	A communication link used by, for example, ABB controllers. ACS880 drives	
	can be connected to the optical ModuleBus link of the controller.	
Network control	With fieldbus protocols based on the Common Industrial Protocol (CIP™),	
	such as DeviceNet and Ethernet/IP, denotes the control of the drive using	
	the Net Ctrl and Net Ref objects of the ODVA AC/DC Drive Profile. For more	
	information, see <u>www.odva.org</u> , and the following manuals:	
	- FDNA-01 DeviceNet adapter module User's manual (3AFE68573360)	
	- FENA-01/-11 Ethernet adapter module User's manual	
	(3AUA0000093568).	
Parameter	User-adjustable operation instruction to the drive.	
PID controller	Proportional-integral-derivative controller. The speed control is based on a	
	PID algorithm.	
PLC	Programmable logic controller.	
Power unit	Contains the power electronics and power connections of the drive. The	
DT0	drive control unit is connected to the power unit.	
PTC	Positive temperature coefficient.	
PU	See power unit.	
RDCO-0x	DDCS communication module.	
RFG	Ramp function generator.	
RO	Relay output; interface for a digital output signal. Implemented with a relay.	
Signal	Value measured or calculated by the drive.	
SSI	Synchronous serial interface.	
STO	Safe torque off.	

Term/Abbreviation	Definition
TTL	Transistor-transistor logic.
UPS	Uninterruptible power supply; power supply equipment with battery to
	maintain output voltage during power failure.

Cybersecurity disclaimer

This product is designed to be connected to and to communicate information and data via a network interface. It is the customer's sole responsibility to provide and continuously ensure a secure connection between the product and the customer network or any other network (as the case may be). The customer shall establish and maintain any appropriate measures (such as but not limited to the installation of firewalls, application of authentication measures, encryption of data, installation of anti-virus programs, etc.) to protect the product, the network, its system and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information. ABB and its affiliates are not liable for damages and/or losses related to such security breaches, any unauthorized access, interference, intrusion, leakage and/or theft of data or information.

Start-up

Chapter overview

This chapter describes the basic start-up procedure of the drive. A more detailed description of the signals and parameters involved in the procedure can be found in section *Parameters*.

General

The drive can be operated:

- In local via the Drive composer entry, Drive composer pro or the control panel.
- In remote via local I/O or overriding control.

The following start-up procedure uses Drive composer pro (for further information about Drive composer pro, consult its online help). However, parameters can also be changed with Drive composer entry or the control panel.

The start-up procedure includes actions that need only be taken when powering up the drive for the first time in a new installation (e.g. entering the motor data). After the start-up, the drive can be powered up without using these start-up functions again. The start-up procedure can be repeated later if the start-up data needs to be altered.

Refer to section <u>Fault tracing</u> in case problems should arise. In case of a major problem, disconnect mains and wait for 5 minutes before attempting any work on the drive, the motor, or the motor cables.

Start-up procedure



- The <u>Safety instructions</u> at the beginning of this manual have to be observed with extreme care during the start-up procedure!
- The start-up procedure should only be carried out by a qualified electrician.
- Check the mechanical and electrical installation the drive according to the DCS880 Hardware manual.

Tools

For drive commissioning following software tools are mandatory:

— Drive composer pro including commissioning wizard and DriveAP and for fast drive signal monitoring.

For drive commissioning following tools are mandatory in addition to standard tools:

- An oscilloscope including memory function with either galvanically isolating transformer or isolating amplifier for safe measurements.
- A clamp on current probe. In case the scaling of the DC load current needs to be checked it must be a DC clamp on current probe.
- A voltmeter.

Make sure that all equipment in use is suitable for the voltage level applied to the power part!

Checking with the power switched off

Check the settings of:

- The main breaker (e.g. overcurrent = $1.6 * I_n$, short circuit current = $10 * I_n$, time for thermal tripping = $10 * I_n$).
- Time, overcurrent, thermal and voltage relays.
- The earth fault protection (e.g. Bender relay).

Check the insulation of the mains voltage cables or busbars between the secondary side of the dedicated transformer and the drive:

- Disconnect the dedicated transformer from its incoming voltage.
- Check that all circuits between the mains and the drive (e.g. control/auxiliary voltage) are disconnected.
- Measure the insulation resistance between L1 L2, L1 L3, L2 L3, L1 -PE, L2 PE, L3 PE. The result should be MΩs.

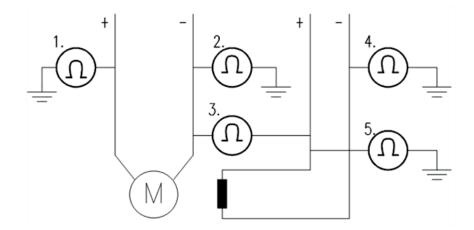
Check the installation:

- Crosscheck the wiring with the drawings.
- Check the mechanical mounting of the motor and pulse encoder and/or analog tacho.
- Make sure that the motor is connected in a correct way (armature, field, serial windings and cable shields).
- Check the connections of the motor fan, if existing.
- Make sure that the converter fan is connected correctly especially in modules size H7 and H8 were star or delta connection is possible.
- If a pulse encoder is used make sure that pulse encoder's auxiliary voltage connection corresponds to its
 voltage and that the channel connection corresponds to correct direction of rotation.

- Check that the shielding of the pulse encoder's cable is connected to the TE bar of the DCS880.
- If an analog tacho is used make sure that it is connected to the proper input at the SDCS-CON-H01 (AITAC:1 and 2).
- For all other cables make sure that both ends of the cables are connected and they do not cause any damage or danger when power is being switched on.

Measuring the insulation resistance of the motor cables and the motor:

 Isolate the motor cables from the drive before testing the insulation resistance or voltage withstand of the cables or the motor.



– Measure the insulation resistance between:

Armature + cables and PE.

Armature - cables and PE.

Armature cables and field cables.

Field - cable and PE.

Field + cable and PE.

The result should be MΩs

Setting of Jumpers:

- The boards of the DCS880 include jumpers to adapt the boards to different applications. The position of the jumpers must be checked before connecting voltage.
- For specific jumper settings consult the DCS880 Hardware manual.

Drive data, check following items for each drive and mark the differences in the delivery documents:

- Motor, analog tacho or pulse encoder and cooling fans rating plate data.
- Direction of motor rotation.
- Maximum and minimum speed and if fixed speeds are used.
- Speed scaling factors:
- E.g. gear ratio, roll diameter.
- Acceleration and deceleration times.
- Operating modes:
- E.g. stop mode, E-stop mode.
- The amount of motors connected.

Checking with the power switched on



- The <u>Safety instructions</u> at the beginning of this manual have to be observed with extreme care during the start-up procedure!
- The start-up procedure should only be carried out by a qualified electrician.

WARNING

There is dangerous voltage inside the cabinet!

Switching the power on:

- Prior to connecting the voltage proceed as follows:
 - 1. Ensure that all the cable connections are checked and that the connections cannot cause any danger.
 - 2. Close all doors of enclosed converter before switching power on.
 - 3. Be ready to trip the supply transformer if anything abnormal occurs.
 - 4. Switch the power on.

Measurements made with power on:

- Check the operation of the auxiliary equipment.
- Check the circuits for external interfaces on site:
 - Safety circuits, like Safe Torque Off (STO), Off2 (emergency off/electrical disconnect/fast current off) and Off3 (emergency stop).
 - 2. Remote control of the main breaker.
 - 3. Signals connected to the control system.
 - 4. Other signals which remain to be checked.

Connecting voltage to the drive:

- Check from the delivery diagrams the type of boards and converters which are used in the system.
- Check all time relay and breaker settings.
- Close the supply disconnecting device (check the connection from the delivery diagrams).
- Close all protection switches one at a time and measure for proper voltage.

Commissioning a DCS880

Nominal values of the converter can be found in group <u>07 System info</u>, check following signals:

- 07.60 Drive size, recognized converter type read from 07.03 Drive rating ID set or 95.25 Set: Type code.
- 07.61 Drive block bridge 2 set, recognized converter quadrant type read from 07.03 Drive rating ID set or 95.26 Set: Drive block bridge 2.
- 07.62 Drive DC current scaling set, nominal converter DC current in A read from 07.03 Drive rating ID set or 95.27 Set: Drive DC current scaling.
- 07.64 Drive AC voltage scaling set, nominal AC converter voltage in V read from 07.03 Drive rating ID set or 95.28 Set: Drive AC voltage scaling.
- 07.65 Drive max bridge temperature set, maximum bridge temperature in degree centigrade read from 07.03 Drive rating ID set or 95.29 Set: Drive max bridge temperature.
- If signals are not correct adapt them, see group <u>95 HW configuration</u> in this manual.

Connect DCS880 and PC with Drive composer

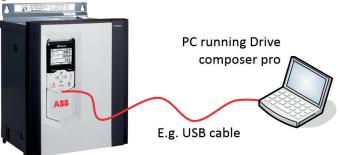
To establish a connection between Drive composer and drive, connect a USB type A (PC) type mini B (control panel) cable to the USB port of the PC and the USB port of the control panel. The maximum length of the USB cable should be 3 m.

<u>Drive composer Start-up and maintenance PC tool User's manual (3AUA0000094606).</u>



Commissioning a DCS880 using the DCS880 Assistant

The DCS880 Assistant works only in a single drive point-to-point connection.



Start Drive composer pro and choose System info and set date and time.





Then choose DCS880 Assistant.



For basic commissioning press the Start button or select a specific assistant and press Next.

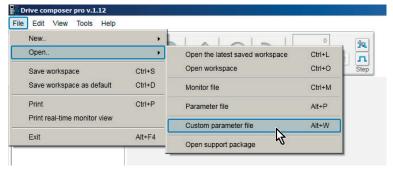


Commissioning a DCS880 using custom parameter files

Requirements

Before starting the commissioning, connect one drive (via control panel) with the Drive composer. Make sure, that you have the custom parameter files available. The custom parameter files are available from your local ABB agent.

How to open a custom parameter file in Drive composer pro:



01 Name plate data

Open the custom parameter set named:

- 01 Name plate data.dccustparams.
- Set all parameters to default by means of:
- 96.15 Parameter restore = Default.
- Check with 96.11 Macro active.

Enter the motor data, the mains (supply) data and the most important protections:

- 96.01 Language.
- 99.11 M1 nominal current.
- 99.12 M1 nominal voltage.
- 99.14 M1 nominal (base) speed.
- 30.11 M1 minimum speed.
- 30.12 M1 maximum speed.
- 99.13 M1 nominal field current.
- 31.30 M1 overspeed trip margin.
- 31.44 Armature overcurrent level.
- 99.10 Nominal mains voltage.

02 Standard I/O

Set the I/O according to need using parameters in groups 10 ... 13.

03 Field current controller

Open the custom parameter set named:

03 Field current controller.dccustparams.

Set the field exciter type by means of:

99.07 M1 used field exciter type.

Check with 7.41 M1 field exciter type.

Enter the field circuit data:

- 99.13 M1 nominal field current.
- 28.17 M1 EMF/field control mode.

Switch the drive to local mode (Drive composer or local I/O).

Start the autotuning by means of:

- 99.20 Tuning request = Field current autotuning.
- Set On within 20 s.

During the autotuning the mains or field contactor will be closed. The field circuit is measured by means of increasing the field current to nominal field current and the field current control parameters are set. The armature current is not released while the autotuning is active and thus the motor should not turn.

When the autotuning is finished successfully, check the parameters set by the autotuning:

- 28.44 M1 field control voltage limit, typical values around 4.
- 28.45 M1 field current proportional gain, typical values around 66 ms.
- 28.46 M1 field current integration time.

Remove Run and On.

If the autotuning fails, warning AF90 Autotuning is generated. For more details check the AUX code of AF90 Autotuning and repeat the autotuning.

04 Armature current controller

Open the custom parameter set named:

04 Armature current controller.dccustparams.

Enter the motor nominal current and the basic current limitations:

- 99.11 M1 nominal current.
- 30.19 Minimum torque 1.
- 30.20 Maximum torque 1.
- 30.34 M1 current limit bridge 2.
- 30.35 M1 current limit bridge 1.

Attention: Do not manually change the default values of 27.32 M1 armature resistance and 27.33 M1 armature inductance. Changing them will falsify the results of the autotuning.

Switch the drive to local mode (Drive composer or local I/O).

Start the autotuning by means of:

- 99.20 Tuning request = Armature current autotuning.
- Set On and Run within 20 s.

During the autotuning the mains contactor will be closed, the armature circuit is measured by means of armature current bursts and the armature current control parameters are set. The field current is not released while the autotuning is active and thus the motor should not turn, but due to remanence in the field circuit about 40 % of all motors will turn (create torque). These motors have to be locked.

When the autotuning is finished successfully, check the parameters set by the autotuning:

- 27.29 M1 current proportional gain, typical values around 0.2.
- 27.30 M1 current integration time, typical values 25 ... 50 ms.
- 27.31 M1 discontinuous current limit, typical values 20 ... 60 %.
- 27.32 M1 armature resistance.
- 27.33 M1 armature inductance.

Remove Run and On.

If the autotuning fails, warning AF90 Autotuning is generated. For more details check the AUX code of AF90 Autotuning and repeat the autotuning.

05 First time motor turning

Open the custom parameter set named:

- 05 First time motor turning.dccustparams.

Make sure, the speed feedback is set to EMF and check minimum- and maximum speed:

- 90.41 M1 feedback selection = EMF.
- 30.11 M1 minimum speed.
- 30.12 M1 maximum speed.

Switch the drive to local mode (Drive composer or local I/O). Set On, Run. Begin with a small speed reference from about 10 % of maximum speed. Then slowly increase to maximum speed.

The mains contactor and the field contactor, if existing, will be closed and the motor will run up to the requested speed reference.

Check following parameters if applicable:

- 01.21 Armature voltage in V.
- 01.29 M1 field current in A.
- 94.01 EMF speed.
- 94.03 Tacho speed.
- 94.04 OnBoard encoder speed.
- 25.02 Speed proportional gain 1.
- 25.03 Speed integration time 1.

To stop remove Run and On.

06 Speed feedback

Open the custom parameter set named:

06 Speed feedback.dccustparams.

Enter the EMF speed feedback parameters and, if applicable, the parameters for the OnBoard encoder or the analog tacho:

- 90.41 M1 feedback selection.
- 30.11 M1 minimum speed.
- 30.12 M1 maximum speed.
- 99.12 M1 nominal voltage.
- 99.14 M1 nominal (base) speed.
- 94.24 OnBoard encoder type.
- 94.25 OnBoard encoder speed calculation mode.
- 94.23 OnBoard encoder pulses/revolution.
- 94.08 M1 tacho voltage at 1000 rpm.

Switch the drive to local mode (Drive composer or local I/O).

Start the autotuning by means of:

- 99.20 Tuning request = Speed feedback assistant.
- Set On and Run within 20 s.

The speed feedback assistant detects the kind of speed feedback - EMF, OnBoard encoder or analog tacho - the drive is using.

During the autotuning the mains contactor and the field contactor, if existing, will be closed and the motor might run up to base speed. See 99.14 M1 nominal (base) speed. During the whole procedure the drive will be in EMF speed control despite the setting of 90.41 M1 feedback selection.

When the autotuning is finished successfully, check the parameter set by the autotuning:

90.41 M1 feedback selection.

Remove Run and On.

If the autotuning fails, warning AF90 Autotuning is generated. For more details check the AUX code of AF90 Autotuning and repeat the autotuning.

Analog tacho fine tune procedure

In case an analog tacho is detected, 90.41 M1 feedback selection = Tacho, it is recommended to fine tune the analog tacho.

Switch the drive to local mode (Drive composer or local I/O).

Start the autotuning by means of:

- 99.20 Tuning request = Tacho fine-tuning.
- Set On and Run within 20 s.

Measure the motor speed with a hand held tacho and write the value into:

94.11 M1 tacho fine-tuning adjust.

Check for proper speed feedback by means of:

- 94.03 Tacho speed.
- 24.01 Used speed reference.

To stop remove Run and On.

07 Speed controller

Open the custom parameter set named:

07 Speed controller.dccustparams.

Enter the basic speed parameters, ramp times, torque and current limits and the speed filter times:

- 99.14 M1 nominal (base) speed.
- 30.11 M1 minimum speed.
- 30.12 M1 maximum speed.

- 23.12 Acceleration time 1.
- 23.13 Deceleration time 1.
- 21.08 M1 zero speed level.
- 30.19 Minimum torque 1.
- 30.20 Maximum torque 1.
- 30.34 M1 current limit bridge 2.
- 30.35 M1 current limit bridge 1.
- 24.18 Speed error filter time 1.
- 24.19 Speed error filter time 2.
- 90.42 Motor speed filter time.

Attention: For better results set the filters, especially when using EMF speed feedback.

Switch the drive to local mode (Drive composer or local I/O).

Start the autotuning by means of:

- 99.20 Tuning request = Speed controller autotuning.
- Set On and Run within 20 s.

During the autotuning the mains contactor and the field contactor, if existing, will be closed, the ramp is bypassed and torque respectively current limits are valid. The speed controller is tuned by means of speed bursts up to base speed, see 99.14 M1 nominal (base) speed, and the speed controller parameters are set. **Attention:** During the autotuning the torque and/or current limits will be reached.

When the autotuning is finished successfully, check the parameter set by the autotuning:

- 25.02 Speed proportional gain 1.
- 25.03 Speed integration time 1.

Remove Run and On.

If the autotuning fails, warning AF90 Autotuning is generated. For more details check the AUX code of AF90 Autotuning and repeat the autotuning.

Attention: The assistant is using the setting of 90.41 M1 feedback selection. If using setting OnBoard encoder, Encoder 1, Encoder 2 or Tacho make sure the speed feedback is working properly!

08 Field weakening

Open the custom parameter set named:

08 Field weakening.dccustparams.

Enter the motor data and the field circuit data:

- 99.12 M1 nominal voltage.
- 99.14 M1 nominal (base) speed.
- 30.11 M1 minimum speed.
- 30.12 M1 maximum speed.
- 99.13 M1 nominal field current.
- 31.58 M1 field current low level.
- 28.17 M1 EMF/field control mode.

Switch the drive to local mode (Drive composer or local I/O).

Start the autotuning by means of:

- 99.20 Tuning request = Flux linearization autotuning.
- Set On and Run within 20 s.

During the autotuning the mains contactor and the field contactor, if existing, will be closed and the motor will run up to base speed. See 99.14 M1 nominal (base) speed. The flux linearization is tuned by means of a constant speed while decreasing the field current and the flux linearization parameters are set.

When the autotuning is finished successfully, check the parameter set by the autotuning:

- 28.31 Field current at 40 % flux.
- 28.32 Field current at 70 % flux.
- 28.33 Field current at 90 % flux.

Remove Run and On.

If the autotuning fails, warning AF90 Autotuning is generated. For more details check the AUX code of AF90 Autotuning and repeat the autotuning.

Commissioning a DCS880 manually

I/O configuration

To set the in- and outputs see chapter I/O configuration.

Field current controller

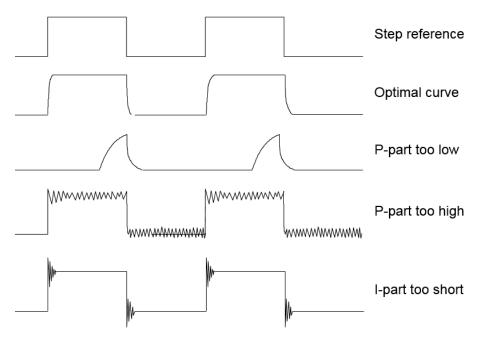
Drive composer information:

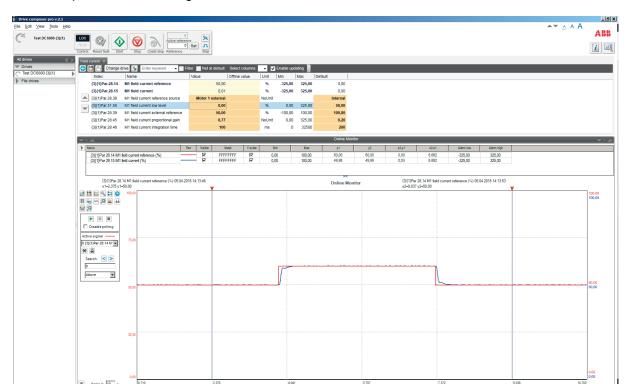


Manual tuning of the field current controller:

- Connect Drive composer to the drive and choose local mode.
- Monitor 28.14 M1 field current reference and 28.15 M1 field current.
- Set 28.38 M1 field current reference source = Motor 1 external.
- Set 31.58 M1 field current low level = 0.00 %.
- Start the drive via Drive composer.
- Use 28.39 M1 field current external reference to step the field current controller.
- Tune the field current controller by means of 28.45 M1 field current proportional gain and 28.46 M1 field current integration time.
 - Step size: about 2 % ... 5 % of nominal field current (do not hit any limits during stepping, e.g. maximum field current, α or supply voltage).
 - Step response time: 50 ms ... 60 ms (count only from 10 % ... 90 %).
 - Where to step: 30 %, 60 % and 80 % of nominal field current.

Field current controller step responses:





Drive composer manual tuning of the field current controller:

- Set 28.39 M1 field current external reference = 0.00 %.
- Stop the drive via Drive composer.
- Set 31.58 M1 field current low level and 28.38 M1 field current reference source back to their original settings.

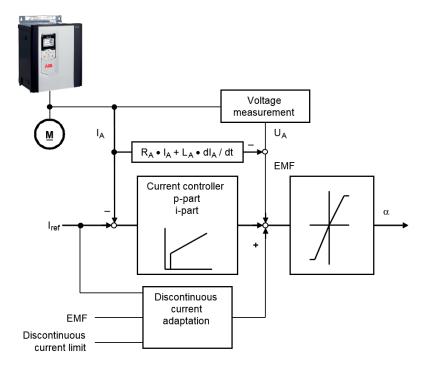
Armature current controller

To keep a PI-controller as fast as possible idealistically the integral part should stay at zero. The worst case is that the integral part is running into the limits and thus needs a long time to recover. To prevent this and to achieve an integral part as small as possible two feed forwards are used for the current controller:

- 1. During discontinuous current the signal from the current controller is boosted by means of the discontinuous current adaptation, depending on discontinuous current limit, current reference and EMF. The discontinuous current limit has to be determined during the commissioning.
- 2. Additionally the EMF itself is used as feed forward. Unfortunately it is not possible to measure the EMF directly. It has to be calculated by means of following formula:

$$EMF = U_A - R_A \times I_A - L_A \times \frac{dI_A}{dt}$$

The value for the resistance (R_A) of the motor has to be determined during the commissioning. The resistance is needed for the EMF controller and the speed calculated from the EMF. Control principle armature current controller:



Manual tuning:

Thus the manual tuning of the armature current controller has to be divided into three parts:

- 1. Determine the resistance of the motor.
- 2. Determine the discontinuous current limit of the motor.
- 3. Manual tuning of the armature current controller (p- and i-part).

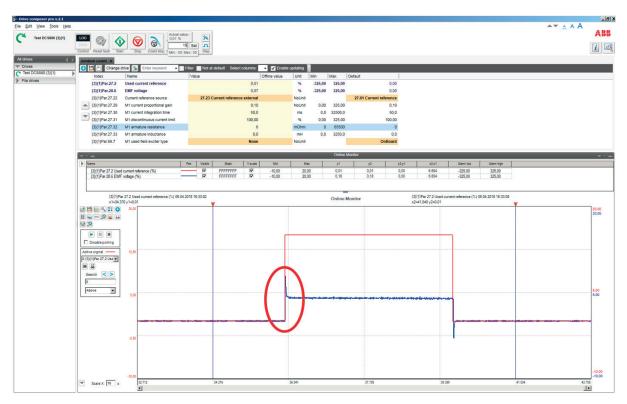
Drive composer information:



Part 1, determine the resistance of the motor:

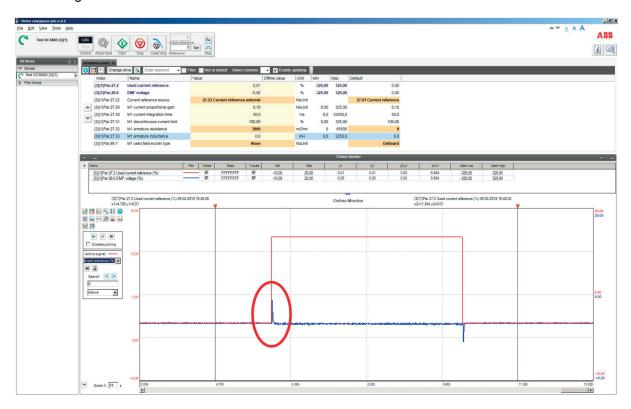
- Connect Drive composer to the drive and choose local mode.
- Monitor 27.02 Used current reference and 28.06 EMF voltage.
- Set 27.22 Current reference source = 27.23 Current reference external.
- Set 27.29 M1 current proportional gain, 27.30 M1 current integration time, 27.31 M1 discontinuous current limit, 27.32 M1 armature resistance and 27.33 M1 armature inductance to default.
- Set 99.07 M1 used field exciter type = None.
- Start the drive via Drive composer.
- Use Drive composer to set the current reference and step the armature current controller.
- Watch the EMF.
- Make sure the motor is not turning (Attention: let the drive run only for a short time).



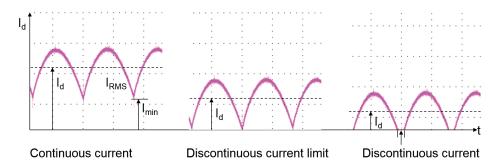


In this example 27.32 M1 armature resistance is too low. Tune 27.32 M1 armature resistance until the EMF is as close as possible to zero and does not change its value during the current step.

After tuning of 27.32 M1 armature resistance:

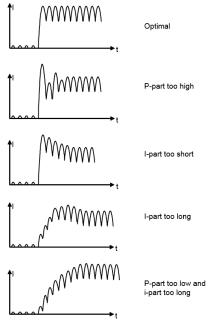


- It is not possible to tune 27.33 M1 armature inductance manually. Thus, leave 27.33 M1 armature inductance at default.
- Stop the drive via Drive composer.
- Set 27.22 Current reference source and 99.07 M1 used field exciter type back to their original settings.
 Part 2, determine discontinuous current limit of the motor:



- Connect an oscilloscope at the fixed AO named IACT (XAO:4/5 on the SDCS-CON-H01).
- Connect Drive composer to the drive and choose local mode.
- Set 27.22 Current reference source = 27.23 Current reference external.
- Set 27.31 M1 discontinuous current limit to default.
- Set 99.07 M1 used field exciter type = None.
- Start the drive via Drive composer.
- Use Drive composer to increase the armature current reference.
- Make sure the motor is not turning (Attention: let the drive run only for a short time).
- Watch the current bubbles and increase the current reference until the current is continuous. See recordings above.
- Stop the drive via Drive composer.
- Set 27.22 Current reference source and 99.07 M1 used field exciter type back to their original settings.
- Copy the current reference used in Drive composer and paste it into 27.31 M1 discontinuous current limit.
 Part 3, manual tuning of the armature current controller:
- Connect an oscilloscope at the fixed AO named IACT (XAO:4/5 on the SDCS-CON-H01).
- Connect Drive composer to the drive and choose local mode.
- Set 27.22 Current reference source = 27.23 Current reference external.
- Set 99.07 M1 used field exciter type = None.
- Start the drive via Drive composer.
- Use Drive composer to set the current reference (must be higher than 27.31 M1 discontinuous current limit) and step the armature current controller.
- Make sure the motor is not turning (Attention: let the drive run only for a short time).
- Tune the armature current controller by means of 27.29 M1 current proportional gain and 27.30 M1 current integration time.

Armature current controller step responses:



- Stop the drive via Drive composer.
- Set 27.22 Current reference source and 99.07 M1 used field exciter type back to their original settings.

Analog tacho

In case an analog tacho is used for speed feedback it has to be tuned.

Drive composer information:



Manual tuning of the analog tacho:

- Set speed and analog tacho parameters:
 - 30.11 M1 minimum speed.
 - 30.12 M1 maximum speed.
 - 31.30 M1 overspeed trip margin.
 - 94.08 M1 tacho voltage at 1000 rpm.
 - 99.14 M1 nominal (base) speed.
- The maximum tacho speed is calculated automatically and shown in 94.09 M1 tacho max displayable speed.

Analog tacho connections:

XTAC	Analog tach	10
1	AITACH+	±8 270 V _{DC}
2	AITACH-	

- Set 94.12 M1 tacho fine-tuning factor to default.
- Make sure that the drive is in EMF control, 90.41 M1 feedback selection = EMF.
- Start the drive via Drive composer.
- Use Drive composer to set a constant speed reference.
- Measure the speed feedback at the motor shaft using a hand held tacho.
- Rescale 94.12 M1 tacho fine-tuning factor in small steps, e.g. ± 0.01 until the measured speed feedback at the shaft and the measured speed feedback with the analog tacho match, see 94.03Tacho speed.
- Stop the drive via Drive composer.

Speed controller

When tuning the drive, change one parameter at a time, then monitor the effect on the step response and possible oscillations. The effect of each parameter change must be checked over a wide speed range and not just at one point. The set speed controller values mainly depend on:

- The relationship between the motor power and the attached masses.
- Backlashes and natural frequencies of the attached mechanics (filtering).

The step response tests must be carried out at different speeds, from minimum up to maximum speed, at several different points. The whole speed range must also be tested carefully, e.g. at 25 % ... 30 % of maximum speed (step has to be in base speed range) and 80 % of maximum speed (step has to be in field weakening area) in order to find any oscillation points.

A suitable speed step is about 2 % of maximum speed. A too large step reference or incorrect values of the speed controller might force the drives into torque/current limits, damage the mechanical parts (e.g. gear boxes) or cause tripping of the drive.

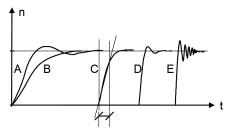
Drive composer information:



Manual tuning of the speed controller:

- Connect Drive composer to the drive and choose local mode.
- Monitor 24.01 Used speed reference and 24.02 Used speed feedback.
- Start the drive via Drive composer.
- Use Drive composer to set a constant speed reference.
- The step must bypass the ramp. Thus, use 24.11 Speed correction to step the speed controller.
- Tune the speed controller by means of 25.02 Speed proportional gain 1 and 25.03 Speed integration time 1.
 - Step size: 2 % of maximum speed (do not hit any torque or current limits during stepping).
 - Disable the i-part by setting 25.03 Speed integration time 1 = 0 ms.
 - Increase 25.02 Speed proportional gain 1 until the step response shows an overshoot.
 - Decrease 25.02 Speed proportional gain 1 by about 30 %.
 - Adjust 25.03 Speed integration time 1 in such a way, that there is no overshoot or only a slight overshoot, depending on the application (the function of the i-part is to reduce the difference between speed reference and speed feedback as quickly as possible).
 - Step response time: 100 ms (count only from 10 % ... 90 %) in cold mills and 60 ms in rod and bar mills
 - Where to step: 25 % ... 30 % of maximum speed (step has to be in base speed range) and 80 % of maximum speed (step has to be in field weakening area).
 - Filter time Δn: Above 30 ms. See 24.18 Speed error filter time 1 and 24.19 Speed error filter time 2.
 - Filter time speed feedback: E.g. 5 ms ... 10 ms. See 90.42 Motor speed filter time.

Speed controller step responses:



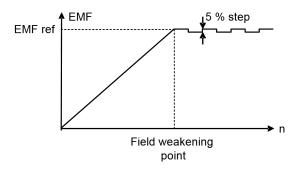
- A: Undercompensated, p-part too small and i-part too short
- B: Undercompensated, p-part too small
- C: Normal
- D: Normal, when a low impact speed drop is required
- E: Overcompensated, p-part too large and i-part too short
- Set 24.11 Speed correction = 0.00 rpm.
- Stop the drive via Drive composer.

EMF controller

The EMF controller has to be tuned in case the motor needs to be used in the field weakening area and the drive trips on F503 Armature overvoltage during acceleration. The EMF controller needs to have a quick response. Usually 2 ... 3 times slower than the field current controller.

The tuning has to be done in the field weakening area, because the EMF controller is blocked in the base speed range.

EMF reference for manual tuning EMF controller:



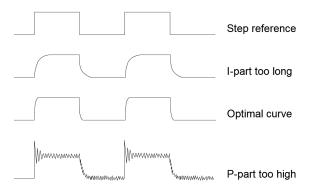
Drive composer information:

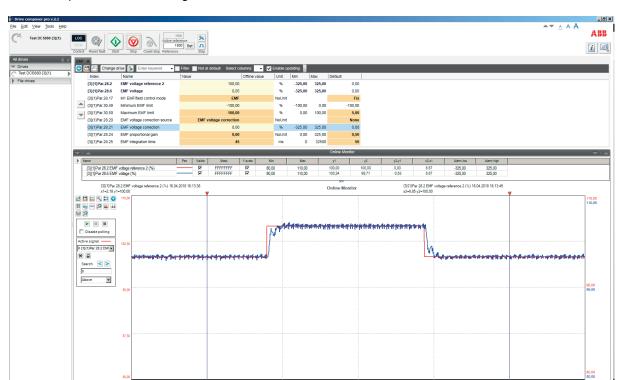


Manual tuning of the EMF controller:

- Connect Drive composer to the drive and choose local mode.
- Monitor 28.02 EMF voltage reference and 28.06 EMF voltage.
- Set 28.17 M1 EMF/field control mode = EMF.
- Set 28.20 EMF voltage correction source = EMF voltage correction.
- Set 30.49 Minimum EMF limit = -100.00 %.
- Set 30.50 Maximum EMF limit = 100.00 %.
- Start the drive via Drive composer.
- Use Drive composer to set a constant speed reference in the field weakening area.
- Use 28.21 EMF voltage correction to step the EMF controller.
- Tune the EMF controller by means of 28.24 EMF proportional gain and 28.25 EMF integration time.
 - Step size: 2 % ... 5 % (do not hit any limits during stepping).
 - Step response time: 2 ... 3 times slower than the field current controller.
 - Where to step: in the field weakening area.

EMF controller step responses:





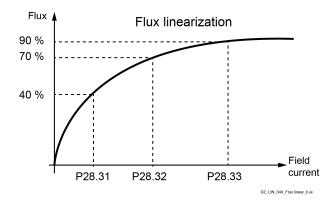
Drive composer manual tuning of the EMF controller:

- Set 28.20 EMF voltage correction source = Zero.
- Set 28.21 EMF voltage correction = 0.00 %,
- Stop the drive via Drive composer.
- Set 28.17 M1 EMF/field control mode, 30.49 Minimum EMF limit and 30.50 Maximum EMF limit back to their original settings.

Flux linearization

In case the motor needs to be used in the field weakening area the flux linearization has to be set. The flux linearization is needed because of the non-linear relation of flux and field current due to saturation effects of the field winding.

Flux of DC-motor versus field current:



The magnetization of the motor starts to saturate at a certain field current and thus the flux does not increase linearly. For this reason the field current cannot be directly used to calculate the flux inside the motor. In base speed area EMF and speed are directly proportional because the flux is kept constant:

$$n = \frac{k * EMF}{\Phi} \qquad k = constant \\ \Phi = Flux$$

Example: If the nominal armature voltage is 440 V_{DC} and the motor is running at half speed with full flux, then the armature voltage is about 220 V_{DC} . Now the flux is reduced to 50 % at constant speed, then the armature voltage drops to about 110 V_{DC} .

Since the EMF is directly proportional to the flux it is possible to define a relationship between the field current and the flux by means of measuring the armature voltage without load (= EMF).

Thus the main idea of the flux linearization is to find field currents which produces desired EMF-voltage at a certain speed. The flux linearization is done by means of a function block defined by 3 values:

- 28.31 Field current at 40 % flux.
- 28.32 Field current at 70 % flux.
- 28.33 Field current at 90 % flux.

The intermediate values are interpolated. During commissioning all 3 parameters must be set, if the flux linearization is needed.

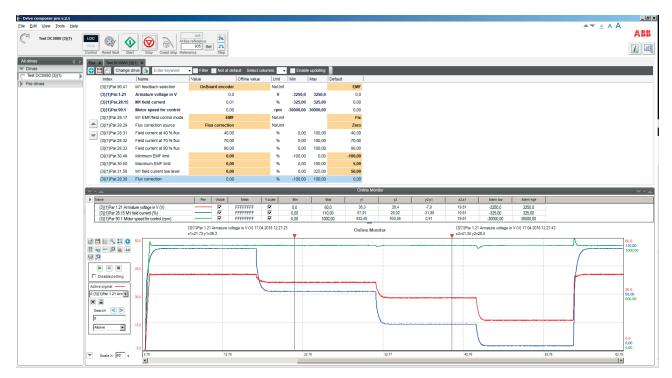
Drive composer information:



Manual tuning of the flux linearization:

- Connect Drive composer to the drive and choose local mode.
- Make sure the speed feedback is encoder or analog tacho, 90.41 M1 feedback selection = OnBoard encoder, Encoder 1, Encoder 2 or Tacho and not EMF or EMF voltage!
- Monitor 01.21 Armature voltage in V, 28.15 M1 field current and 90.01 Motor speed for control.
- Set 28.17 M1 EMF/field control mode = EMF.
- Set 28.29 Flux correction source = Flux correction.
- Set 28.31 Field current at 40 % flux, 28.32 Field current at 70 % flux and 28.33 Field current at 90 % flux to default.
- Set 30.49 Minimum EMF limit = 0.00 %.
- Set 30.50 Maximum EMF limit = 0.00 %.
- Set 31.58 M1 field current low level = 10.00 % or lower.
- Start the drive via Drive composer.
- Use Drive composer to run the motor at e.g. half base speed.
- Make sure, that the motor is running without load.
- Read 01.21 Armature voltage in V, e.g. the measured value is 220 V_{DC} (this is the 1st measurement).
- Reduce the flux with 28.30 Flux correction (negative value) until 01.21 Armature voltage in V reaches 90 % of the 1st measurement.
- Read the value of 28.15 M1 field current, keep it in mind and write it into 28.33 Field current at 90 % flux after this procedure is finished.
- Reduce the flux with 28.30 Flux correction (negative value) until 01.21 Armature voltage in V reaches 70 % of the 1st measurement.
- Read the value of 28.15 M1 field current, keep it in mind and write it into 28.32 Field current at 70 % flux after this procedure is finished.
- Reduce the flux with 28.30 Flux correction (negative value) until 01.21 Armature voltage in V reaches 40 % of the 1st measurement.
- Read the value of 28.15 M1 field current, keep it in mind and write it into 28.31 Field current at 40 % flux after this procedure is finished.





- Set 28.29 Flux correction source = Zero.
- Set 28.30 Flux correction = 0.00 %.
- Stop the drive via Drive composer.
- Set 28.31 Field current at 40 % flux, 28.32 Field current at 70 % flux and 28.33 Field current at 90 % flux to the determined values.
- Set 28.17 M1 EMF/field control mode, 30.49 Minimum EMF limit, 30.50 Maximum EMF limit and 31.58 M1 field current low level back to their original settings.

Thyristor test

Thyristor diagnosis basically provides two possibilities:

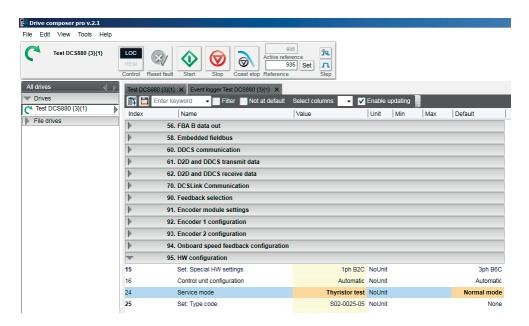
- Check all thyristors of the drive for proper function.
- Check individual firing pulses.

Drive composer information:



Check all thyristors of the drive for proper function:

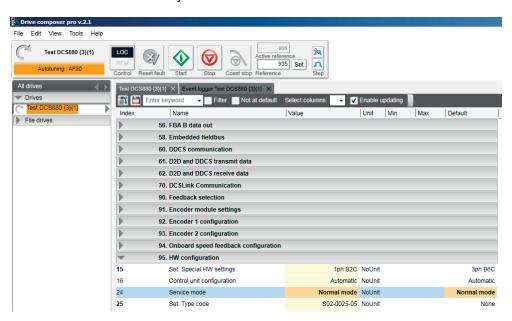
- Connect Drive composer to the drive and choose local mode.
- Set 95.24 Service mode = Thyristor test.
- Start the drive via Drive composer.



- The main contactor is closed and the thyristor test is started.
- The result is written into the AUX code of warning AF90 Autotuning after the thyristor test is finished.

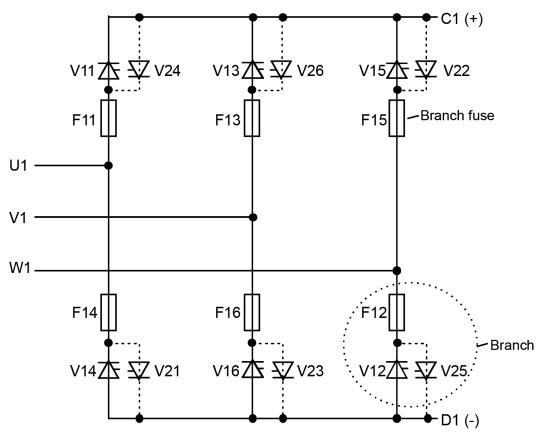


- The 95.24 Service mode is automatically set back to Normal mode.
- The drive is automatically switched off.



Check individual firing pulses:

- Make sure, that the main contactor cannot close (e.g. disconnect the digital output controlling the main contactor) or that the mains voltage is off (e.g. high voltage breaker is open).
- Connect a current clamp to one of the firing pulse cables.
- Connect Drive composer to the drive and choose local mode.
- Set 95.24 Service mode = Firing pulses V11 ... Firing pulses V26 depending individual firing pulse to be checked.



SF_DCS_003_principle_b.ai

- Make sure, that the mains voltage is zero.
- Check the firing pulse with the current clamp.
- Set 95.24 Service mode back to Normal mode.
- Cycle power, otherwise the drive will not start after checking individual firing pulses.

Using the control panel

Refer to the ACX-AP-x assistant control panel's user's manual (3AUA0000085685).

Firmware description

Chapter overview

This chapter describes how to control the drive with standard firmware.

Identification of the firmware versions

The DCS880 is controlled by a control unit (3ADT220166R0002). This control un it include the SCDS-CON-H01. The firmware version details of the armature converter can be checked from:

- 07.02 Power unit set.
- 07.05 Firmware version.
- 07.04 Firmware name.

The firmware version details of the field exciters can be checked from:

- 07.68 M1 field exciter type.
- 07.69 M1 field exciter firmware version.
- 07.72 M2 field exciter type.
- 07.73 M2 field exciter firmware version.

Field exciter mode

General

The standard DCS880-S0x module can be operated as large field exciter by simply setting parameters. It is either controlled by a DCS880 armature converter or can be configured as stand-alone field exciter.

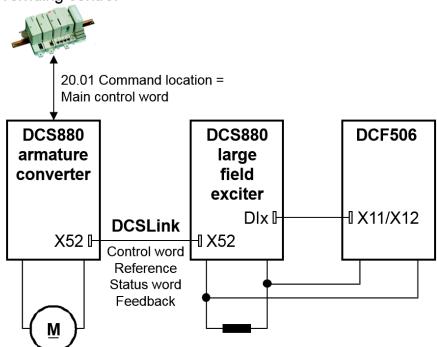
The field exciter mode uses the standard armature current controller as field current controller. Thus the current of the converter equals the field current of the motor. See 01.10 Motor current in A. For these configurations an overvoltage protection (DCF505 or DCF506) is mandatory.

Attention: Connector XSTO including the Save Torque Off function is not to be used. Using this feature will seriously damage the large field exciter.

DCS800-S0b large field exciter controlled by a DCS800 armature converter

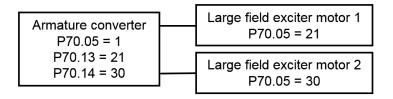
Communication in field exciter mode:

Overriding control



DCSLink

Armature converter with one or two large field exciters:



Parameter	Armature converter	Large field exciter	Comments
70.05 DCSLink node ID	1, default.	21	Large field exciter motor 1.
		30	Large field exciter motor 2.
70.13 M1 field exciter node ID	21, default.	-	Use the same node number
70.14 M2 field exciter node ID	30, default.	-	as in 70.05 DCSLink node
			ID of the large field exciter.
70.12 Field exciter timeout	100 ms, default.	-	Generates either F516 M1
			field exciter communication
			and/or F519 M2 field
			exciter communication.

Armature converter (DCS880)

Before starting with the commissioning set all parameters to default by means of 96.15 Parameter restore = Default. Check with 96.11 Macro active.

In the armature converter set:

Parameter	Armature converter	Comments
28.17 M1 EMF/field control mode	1: EMF.	EMF controller released, field weakening active, depending on the application.
31.57 Minimum field current trip delay	2000 ms, default.	Delays F541 M1 field exciter low current.
31.58 M1 field current low level	xxx %.	Sets level for F541 M1 field exciter low current.
99.13 M1 nominal field current	xxx A.	I _{FN} = xxx A, rated field current.
99.07 M1 used field exciter type	10: DCS880-S01. 11: DCS880-S02.	IFN - AAA A, Tated Held Culterit.

Large field exciter (DCS880-S0b)

Before starting with the commissioning set all parameters to default by means of 96.15 Parameter restore = Default. Check with 96.11 Macro active.

In the large field exciter set:

Parameter	Large field exciter	Comments
20.01 Command location	4: Field exciter link.	Control from the armature converter. Source for the control word (On/Off1, Run/Stop and Reset).
20.47 Overvoltage protection trigger source	3: DI1 8: DI6. 11: DIO1. 12: DIO2. 19: DIL.	Depending on the hardware connection to the DCF506.
27.22 Current reference source	30: FieldRef via DCSLink.	Field current reference from the armature converter.
27.31 M1 discontinuous current limit	0.00 %.	
27.38 Reversal delay	50.0 ms.	

27.40 Zero current timeout	500 ms.	To be set longer than 27.38 Reversal delay.
28.17 M1 EMF/field control mode	0: Fix, default.	
31.50 Armature overvoltage level	1000.0 %.	Inactivates the overvoltage supervision.
95.44 PLL deviation level	20.00°.	To suppress F514 Mains synchronization lost.
99.06 Operation mode	1: Large field exciter.	
99.07 M1 used field exciter type	0: None.	
99.10 Nominal mains voltage	xxx V.	U _{NetN} = xxx V; nominal supply voltage (AC).
99.11 M1 nominal current	xxx A.	I _{FN} = xxx A, rated field current.
99.12 M1 nominal voltage	xxx V.	U _{FN} = xxx V, rated field voltage.
		"11 1 20041070 1 1 1

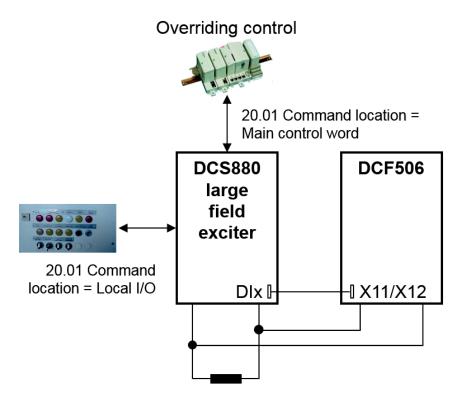
Use XSMC:1/2 to close the field contactor. Alternatively it is also possible to use 06.24.b07 Current controller status word 1 via a relay output (RO).

Field current autotuning **must** be started **directly** in the large field exciter:

Parameter	Large field exciter	Comments
99.20 Tuning request	1: Field current autotuning.	Give the On and Run commands within 20 s.
27.29 M1 current proportional gain	xxx	Is set by the field current autotuning. Typical p-part values are around 4.
27.30 M1 current integration time	xxx	Is set by the field current autotuning.
27.31 M1 discontinuous current limit	0.00 %.	Is set to zero by the field current autotuning.

DCS800-S0b as stand-alone field exciter

Communication in field exciter mode:



Large field exciter (DCS880-S0b)

Before starting with the commissioning set all parameters to default by means of 96.15 Parameter restore = Default. Check with 96.11 Macro active.

In the large field exciter set:

Parameter	Large field exciter	Comments
20.01 Command location	0: Local I/O, default. 1: Main control word.	Control from local I/O or overriding control system. Source for the control word (On/Off1, Run/Stop and Reset).
20.47 Overvoltage protection trigger source	3: DI1 8: DI6. 11: DIO1. 12: DIO2. 19: DIL.	Depending on the hardware connection to the DCF506.
27.22 Current reference source	2: 27.23 Current reference external. 4: Al1 scaled. 5: Al2 scaled. 6: Al3 scaled.	Field current reference from overriding control system or local I/O.
27.23 Current reference external	xxx %	E.g. written to by overriding control.
27.31 M1 discontinuous current limit	0.00 %.	
27.38 Reversal delay	50.0 ms.	
27.40 Zero current timeout	500 ms.	To be set longer than 27.38 Reversal delay.
28.17 M1 EMF/field control mode	0: Fix, default.	
31.50 Armature overvoltage level	1000.0 %.	Inactivates the overvoltage supervision.

20.00°.	To suppress F514 Mains synchronization lost.
1: Large field exciter.	
0: None.	
xxx V.	U_{NetN} = xxx V; nominal supply voltage (AC).
xxx A.	I _{FN} = xxx A, rated field current.
xxx V.	U _{FN} = xxx V, rated field voltage.
	1: Large field exciter. 0: None. xxx V.

Use XSMC:1/2 to close the field contactor. Alternatively it is also possible to use 06.24.b07 Current controller status word 1 via a relay output (RO).

Field current autotuning **must** be started **directly** in the large field exciter:

Parameter	Large field exciter	Comments
99.20 Tuning request	1: Field current autotuning.	Give the On and Run commands within
		20 s.
27.29 M1 current proportional gain	XXX	Is set by the field current autotuning.
		Typical p-part values are around 4.
27.30 M1 current integration time	xxx	Is set by the field current autotuning.
27.31 M1 discontinuous current	0.00 %.	Is set to zero by the field current
limit		autotuning.

		•		4 -	
I/O	COL	ntı	ดเม	ratio	ดท

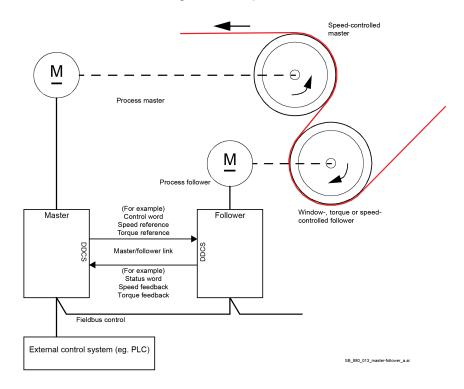
Not jet part of the manual.

Master-follower link

General

The master-follower link can be used to connect several drives, so that the load can be evenly distributed between the drives. This is ideal in applications where the motors are coupled to each other via gearing, chain, belt, etc.

The external control signals are typically connected to one drive only which acts as the master. The master controls up to 10 followers by sending broadcast messages over an electrical cable or fiber optic link. The master can read feedback signals from up to 3 selected followers.



The master is typically speed-controlled and the followers follow its torque or speed reference. In general, a follower should be:

- Window- or torque-controlled when the motor shafts of the master and the followers are rigidly coupled by gearing, chain etc. so that no speed difference between the drives is possible.
- Window- or speed-controlled when the motor shafts of the master and the follower are flexibly coupled so that a slight speed difference is possible.

Communication

A master-follower link can be built by connecting the drives together with fiber optic cables (requires a FDCO-0x DDCS communication module per drive) or by wiring together the XD2D connectors of the drives. The medium is selected by 60.01 M/F communication port.

60.03 M/F mode defines whether the drive is the master or a follower on the master-follower link. Typically, the speed-controlled process master drive is also configured as the master in the link.

The communication on the master-follower link is based on the DDCS protocol, which employs data sets (specifically, data set 41). One data set contains three 16-bit words. The contents of the data set are freely configurable using parameters 61.01 ... 61.03. The data set broadcast by the master typically contains its control word, speed reference and torque reference, while the followers typically return their status word (06.15 Main status word) for monitor purposes.

The default setting of 61.01 M/F data 1 selection is 06.06 Follower CW. With this setting in the master, 06.06 Follower control word, is broadcasted to all followers.

However, bit 3 (Run command) of the follower control word is modified so that it becomes zero when the master trips.

Three words of data can be read from followers with the node addresses 2, 3 and 4 (see 60.02 M/F node address). The followers from which data is read are selected by 60.14 M/F follower selection in the master. In each follower, the data to be sent are selected by parameters 61.01 ... 61.03. The data is transferred in integer

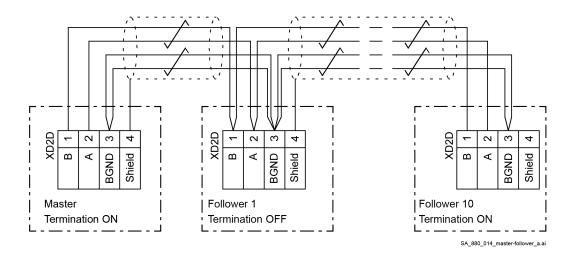
format over the link, and displayed by parameters 62.28 ... 62.36 in the master. The data can then be forwarded using parameters 62.04...62.12.

To indicate faults in the followers, each follower must be configured to transmit its status word (06.15 Main status word) in one of the above-mentioned data words. In the master, the corresponding target parameter must be set to Follower SW node x. The follower status words can be seen in parameters 06.122 ... 06.124. The action to be taken when a follower is faulted is selected by 60.17 Follower fault action. External events (see group 31 Fault functions and fault levels) can be used to indicate the status of other bits of any follower status word.

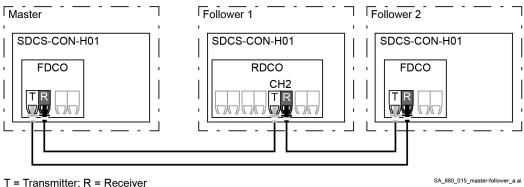
Configuration of the master-follower link

The master-follower link is formed by connecting the drives together using:

- Shielded twisted-pair cables between the XD2D terminals of the drives.
- Fiber optic cables. An additional FDCO-0x DDCS communication module per drive is needed. Connection examples are shown below.

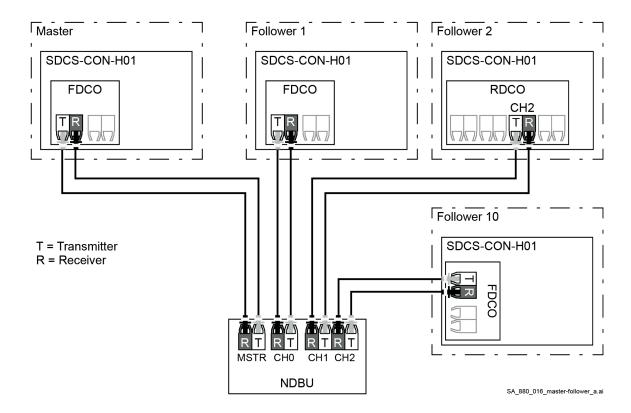


Master-follower wiring with electrical cables.



SA 880 015 master-follower a.a

Ring configuration with fiber optic cables. Note: A maximum of 2 followers is possible.



Star configuration with fiber optic cables.

Note: A star configuration using fiber optic cables requires an NDBU-95C DDCS branching unit.

Example parameter settings

The following is a checklist of parameters that need to be set when configuring the master-follower link. In this example, the master broadcasts the follower control word, a speed reference and a torque reference. The followers return their status words and two actual values (this is not compulsory but is shown for clarity).

Settings in the master

Master-follower link activation:

- 60.01 M/F communication port. The communication port setting depends on the used hardware and its location.
- 60.02 M/F node address = 1. The allowable address for the master is 1.
- 60.03 M/F mode = FDCO-XD2D Master. For both fiber optic and wire connection.
- 60.05 M/F HW connection = Ring or Star for fiber optic. Always Star for wire.

Data to be sent from the master to the followers:

- 61.01 M/F data 1 selection = 06.06 Follower control word.
- 61.02 M/F data 2 selection = 23.03 Speed reference 7.
- 61.03 M/F data 3 selection = 26.02 Torque reference used.

Data to be read by the master from followers with node addresses 2, 3 and 4 (optional):

60.14 M/F follower selection. The selection of followers that data is read from.
 60.17 Follower fault action = Fault. Selects how the master reacts to a faulty follower

60.17 Follower fault action = Fault. Selects how the master reacts to a faulty follower. To indicate faults in the followers, each follower must be configured to transmit its status word. In the master, the corresponding target parameter must be set to Follower SW node x. Example:

Follower		Master
61.01 M/F data 1 selection =	\Rightarrow	62.04 Follower node 2 data 1 sel =
06.15 Main status word		06.122 Follower status word node 2

 62.04 Follower node 2 data 1 sel ... 62.12 Follower node 4 data 3 sel are used for mapping of data received from the followers.

Follower settings

Master-follower link activation:

- 60.01 M/F communication port. The communication port setting depends on the used hardware and its location.
- 60.02 M/F node address = 2 ... 254. Only followers with node addresses 2, 3 or 4 can be supervised by the
 master.
- 60.03 M/F mode = FDCO-XD2D Master. For both fiber optic and wire connection.
- 60.05 M/F HW connection = Ring or Star for fiber optic. Always Star for wire.

Mapping of data received from the master

- 62.01 M/F data 1 selection = CW 16bit.
- 62.02 M/F data 2 selection = Ref1 16bit.
- 62.03 M/F data 3 selection = Ref2 16bit.

Scaling of the references:

- 60.10 M/F ref1 type = Speed.
- 60.11 M/F ref2 type = Torque.

Selection of reference sources:

- 06.08 Main control word source = Follower.
- 22.11 Speed reference 1 source = M/F or D2D ref 1.
- 26.11 Torque reference 1 source = M/F or D2D ref 2.

Selection of operating mode:

- 19.12 Ext1 control mode = Add, Torque or Speed.
- 20.01 Command location = Main control word.

Data to be sent from the followers with node addresses 2, 3 and 4 to the master (optional):

- 61.01 M/F data 1 selection = 06.15 Main SW.
- 61.02 M/F data 2 selection = Other, freely chosen.
- 61.03 M/F data 3 selection = Other, freely chosen.

Specifications of the master-follower link

Maximum cable length:

- FDCO-0x with POF (Plastic Optic Fiber): 30 m.
- FDCO-0x with HCS (Hard-clad Silica Fiber): 200 m.
- Maximum shielded twisted-pair cable length: 50 m.

Transmission rate: 4 Mbit/s.

Total performance of the link: < 5 ms to transfer references between master and followers.

Protocol: DDCS (Distributed Drives Communication System)

Settings and diagnostics

Parameter groups 60 DDCS communication, 61 D2D and DDCS transmit data and 62 D2D and DDCS receive data.

External controller interface

Not jet part of the manual.

FEA-03 extension adapter

Hardware

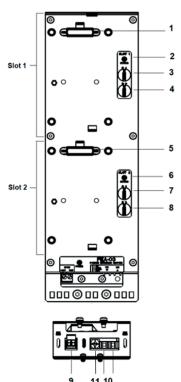
Following hardware is needed:

- FDCO-0x:



Item	Description
1	Connector for Ch A.
2	Connector for Ch B.
3	Selector for Ch A.
4	Selector for Ch B.
5	Lock.
6	Mounting screw.
7	LEDs.

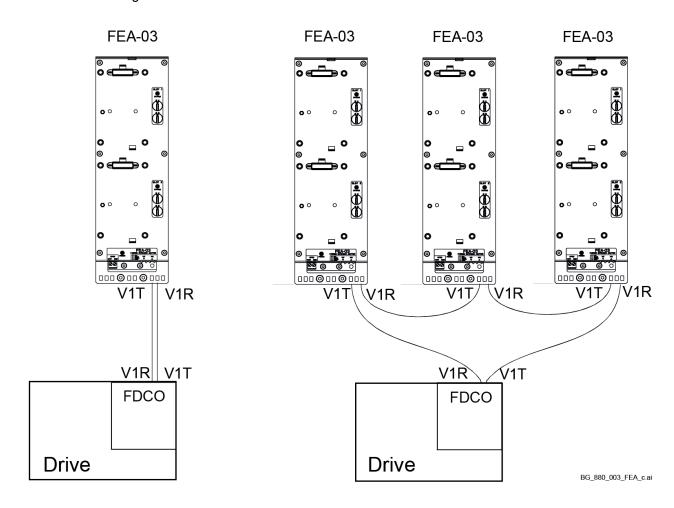
- A pair of fiber optic cables.
- FEA-03:



Item	Description
1	Module connector 1
2	Status LED for Slot 1
3	Node address switch A (digit 10)
4	Node address switch B (digit 0)
5	Module connector 2
6	Status LED for Slot 2
7	Node address switch C (digit 10)
8	Node address switch D(digit 0)
9	Power supply connector (XPOW:+24 V/GND)
10	Transmitter V1T and receiver V1R
11	Selector for V1T and V1R.

Electrical installation

This connection diagram shows how to connect the FEA-03 to the drive:



Attention: Do not mix 10 MBd and 5 MBd channels. Thus, allowed channels for interconnection of FDCO-0x and FEA-03 are:

Module type	Channel A (Ch A)	Channel B (Ch B)
FDCO-01	OK (10 MBd)	OK (10 MBd)
FDCO-02	Not allowed (5 MBd)	OK (10 MBd)

Diagnostics

FDCO -0x LEDs:

Label	Color	Description	
PWR OK	Green	Power/Internal 3.3 V OK.	
Ch A Rx/Tx	Green/Red	DDCS channel A data activity.	
Ch B Rx/Tx	Green/Red	DDCS channel B data activity.	

FEA-03 LEDs:

Label	Color	Description
PWR OK	Green	Power 24 V OK.
SLOT 1 STATUS	Green	Initialization of the option module connected to Slot 1 OK.
SLOT 2 STATUS	Green	Initialization of the option module connected to Slot 2 OK.

Commissioning

- Set the selectors of both modules according to the used fiber optic cable type and length:

Switch position	Cable length					
	POF, 1 mm HCS, 200 μ					
0 - OFF	Disabled					
1 - SHORT	0.1 20 m	0.1 50 m				
2 - MEDIUM	20 25 m	50 100 m				
3 - LONG	25 30 m	100 200 m				

- A node ID must be defined for each option module connected to the FEA-03. The node ID is a two-digit decimal number that must be unique for each option module connected to the drive. It is possible to set node ID numbers from 04 ... 99. Values 00, 01, 02, and 03 are reserved.
- The node IDs are defined using switches A (digit 10),B (digit 1) for slot 1 and C (digit 10), D (digit 1) for slot 2).
- Set the FDCO-0x channel that is used to connect the FEA-03 using 60.41 Extension adapter comport.
- Set the above node IDs according to the option module type.

For I/O extension modules:

- 14.02 Module 1 location.
- 15.02 Module 2 location.
- 16.02 Module 3 location.

For FEN-x1 encoder interface modules:

- 91.12 Module 1 location.
- 91.14 Module 2 location.
- Connect the 24 V_{DC} to XPOW at the base of the FEA-03.
- Check the diagnostics LEDs.
- For I/O extension modules check:
 - 14.03 Module 1 status.
 - 15.03 Module 2 status.
 - 16.03 Module 3 status.
- For FEN-x1 encoder interface modules check:
 - 91.02 Module 1 status.
 - 91.03 Module 2 status.

Macros

Not jet part of the manual.

Parameters

What this chapter contains
The chapter describes the parameters and signals of the firmware.

Terms and abbreviations

cinio una upproviationo							
Term	Definition						
Signal	Type of parameter that is the result of a measurement or calculation by the drive, or contains status information. Most signals are read-only, but some (especially counter-type signals) can be reset.						
Default (def.)	The default value of a parameter.						
Scale/Fbeq16	16-bit fieldbus equivalent: The scaling between the value shown on the panel and the integer used in communication when a 16-bit value is selected for transmission to an external system. A dash (-) indicates that the parameter is not accessible in 16-bit format.						
Other	The value is taken from another parameter. Choosing "Other" displays a parameter list in which the user can specify the source parameter.						
Other [bit]	The value is taken from a specific bit in another parameter. Choosing "Other" displays a parameter list in which the user can specify the source parameter and bit.						
Parameter	A user-adjustable operating instruction for the drive.						
p.u.	Per unit						

Summary of parameter groups

Group	Contents
01 Actual values	Basic signals for monitoring the drive.
03 Input references	Values of references received from various sources.
04 Warnings and faults	Information on warnings and faults that occurred last. For explanations of
	individual warning and fault codes.
05 Diagnostics	Various run-time-type counters and measurements related to drive
	maintenance.
06 Control and status words	Drive control, status and event words.
07 System info	The drive's hardware and firmware information.
10 Standard DI, RO	Configuration of digital inputs and relay outputs.
11 Standard DIO, FI, FO	Configuration of digital input/outputs and frequency inputs/outputs.
12 Standard AI	Configuration of standard analog inputs.
13 Standard AO	Configuration of standard analog outputs.
14 I/O extension module 1	Configuration of I/O extension module 1.
15 I/O extension module 2	Configuration of I/O extension module 2.
16 I/O extension module 3	Configuration of I/O extension module 3.
19 I/O Operation mode	Selection of local and external control locations and operating modes.
20 Start/Stop/Direction	Start/Stop/Direction and run/start/jog enable signal source selection.
	Positive/Negative reference enable source selection. Breaker and
	acknowledge source selection.
21 Start/Stop mode	Start and stop modes, emergency stop mode and zero speed.
22 Speed reference selection	Speed reference selection and motor potentiometer settings.
23 Speed reference ramp	Speed reference ramp settings (programming of the acceleration and
	deceleration rates for the drive).
24 Speed reference conditioning	Speed error calculation, speed error window control configuration and
	speed error (Δn) step.
25 Speed control	Speed controller settings.
26 Torque reference chain	Settings for the torque reference chain.
27 Armature current control	Settings for the armature current control chain.
28 EMF and field current control	Settings for the EMF and field current control chain.
29 12-pulse/Hardparallel	Settings for 12-pulse and hardparallel.
30 Control limits	Drive operation limits.

31 Fault functions and fault levels	Configuration of external events. Selection of the drive behavior in fault
	situations.
32 Supervision	Configuration of signal supervision functions 1 3. Three values can be
	monitored. A warning or fault is generated whenever predefined limits are
	exceeded.
33 Generic timer & counter	Configuration of maintenance timers/counters.
35 Motor thermal protection	Motor thermal protection settings such as temperature measurement
	configuration and load curve definition.
36 Load analyzer	Peak value and amplitude logger settings.
37 User load curve	Settings for user load curve.
40 Process PID	Parameter values for process PID controller.
42 Shared motion (2nd motor)	Configuration of 2 nd motor.
44 Mechanical brake control	Configuration of mechanical brake.
45 Energy efficiency	Settings for the energy saving calculators.
46 Monitoring/Scaling settings	Speed supervision settings, signal filtering and general scaling settings.
47 Data storage	Data storage parameters that can be written to and read from using other
	parameters' source and target settings.
49 Panel port communication	Communication settings for the control panel port on the drive.
50 Fieldbus adapter (FBA)I	Fieldbus communication configuration.
51 FBA A settings	Fieldbus adapter A configuration.
52 FBA A data in	Selection of data sent by fieldbus adapter A to the master (e.g. PLC).
53 FBA A data out	Selection of data sent by the master (e.g. PLC) to fieldbus adapter A.
54 FBA B settings	Description see group 51 FBA A settings.
55 FBA B data in	Description see group 52 FBA A data in.
56 FBA B data out	Description see group 53 FBA A data out.
58 Embedded fieldbus	Embedded fieldbus (EFB) configuration.
60 DDCS Communication	DDCS communication configuration.
61 D2D and DDCS transmit data	Defines the data sent from the drive to the DDCS/D2D link.
62 D2D and DDCS receive data	Defines the data sent from the DDCS/D2D link to the drive.
70 DCSLink Communication	Defines the DCSLink communication.
74 89 Application specific	Groups used for application programming.
groups	
90 Feedback selection	Motor and load feedback configuration.
91 Encoder module settings	Configuration of the encoder interface modules.
92 Encoder 1 configuration	Settings for encoder 1.
93 Encoder 2 configuration	Settings for encoder 2.
94 OnBoard speed feedback	Settings for analog tacho and OnBoard encoder.
<u>configuration</u>	
95 HW configuration	Various hardware-related settings.
96 System	Language selection; access levels; macro selection; parameter save and
	restore; control board reboot; user parameter sets; unit selection; data
	logger triggering; parameter checksum calculation; user lock.
99 Motor data	Motor configuration settings.

Parameter listing

01 Actual Values

Basic signals for monitoring the drive

Index	gnals for monitoring the drive. Name										
	Text										
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре				
01.01	Used motor speed filte	red		•		•	•				
	Measured or EMF motor Displays the measured of feedback selection. A filt -30000.00 30000.00	or EMF moto					90.41 M1 Signal				
01.02	EMF speed filtered	•	•	<u>.</u>		•					
	Motor speed calculated Displays the motor speet time motor speed30000.00 30000.00		from EMF	F in rpm. A filter time	e constant i	s defined by	y 46.11 Filter				
01.03	Tacho speed filtered	I			,						
	OnBoard tacho speed. Displays the motor spee 46.11 Filter time motor s -30000.00 30000.00		with OnBe	oard tacho in rpm. A	A filter time	constant is	defined by				
01.04	OnBoard encoder spec	nd filtered	μριιι	000 40.02	У		Olgital				
	OnBoard encoder speed Displays the motor speed by 46.11 Filter time motor	d measured				<u> </u>					
01.05	-30000.00 30000.00 Encoder 1 speed filtere		rpm	See 46.02	У	n	Signal				
	Encoder 1 speed. Displays the motor speed measured with encoder 1 in rpm. A filter time constant is defined by 46.11 Filter time motor speed. -30000.00 30000.00 - rpm See 46.02 y n Signal										
01.06	Encoder 2 speed filtere	ed	, ,		17		1 - 3 -				
	Encoder 2 speed. Displays the motor speed measured with encoder 2 in rpm. A filter time constant is defined by 46.11 Filter time motor speed.										
04.0=	-30000.00 30000.00	-	rpm	See 46.02	У	n	Signal				
01.07	Speed change rate Rate of speed change. Displays the rate of motor speed change. Positive values indicate acceleration. Negative values indicate deceleration. See 31.31 Emergency ramp supervision, 31.32 Emergency ramp supervision delay, 31.33 Ramp stop supervision and 31.34 Ramp stop supervision delay. -15000 15000 - rpm/s 1 = 1 rpm/s y n Signal										
01.10	Motor current in A										
İ	Motor current. Measured motor current -32500.0 32500.0	in amperes	A	1 = 1 A	у	n	Signal				
04.47	Motor torque filtered		1	1	J	1	1 2.3				
01 17	Filtered motor torque. Displays the filtered motor torque in percent of 99.02 M1 nominal torque. A filter time constant is defined by 46.13 Filter time motor torque. Is used for the EMF controller and the EMF feed forward.										
01.17	Filtered motor torque. Displays the filtered mot										

Index	Name										
	Text										
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре				
	Mains voltage.										
	Measured mains voltage i	n volt. Filte				1	1				
	0.0 3250.0	-	V	10 = 1 V	у	n	Signal				
01.21	Armature voltage in V										
	Armature voltage. Measured armature voltage This value is also influence	je in volt. F ed by 95.3	Filtered wi	th 10 ms. age measurement a	djust and 9	5.35 DC vo	Itage				
	measurement offset.		_				1				
	-3250.0 3250.0	-	V	10 = 1 V	y	n	Signal				
01.24	Output power in kW										
	Output power. Measured output power in defined by 46.14 Filter tim		utput.			1					
	-32500 32500	-	kW or hp	1 = 1 kW or hp	у	n	Signal				
01.25	Output power										
	Output power. Measured output power in	percent o		<u> </u>							
	-325.00 325.00	-	%	100 = 1 %	y	n	Signal				
01.26	Reactive power										
	Reactive power. Measured reactive power	in percent	of 99.03 l								
	-325.00 325.00	-	%	100 = 1 %	у	n	Signal				
01.29	M1 field current in A										
	Motor 1 field current Motor 1 measured field current in amps. Filtered with 500 ms.										
	-3250.0 3250.0	-	Α	10 = 1 A	у	n	Signal				
01.30	M2 field current in A	•	•			•	•				
	Motor 2 field current Motor 2 measured field current in amps. Filtered with 500 ms.										
	-3250.0 3250.0	-	Α	10 = 1 A	у	n	Signal				
01.40	Drive current										
	Drive current.										
	Measured drive current in	percent of	07.62 Dri	ve DC current scali	ng set.		_				
	-325.00 325.00	-	%	100 = 1 %	у	n	Signal				
01.41	Reactive current										
	Reactive motor current. Measured reactive motor current in percent of 99.11 M1 nominal current.										
	-325.00 325.00	-	%	100 = 1 %	y	n	Signal				
01.50	Current ripple										
	Armature current ripple ou Displays the armature cur		monitor o	utput in percent of 9	9.11 M1 nc	ominal curre	nt.				
	-325.00 325.00	-	%	100 = 1 %	у	n	Signal				
01.51	Current ripple filtered										
	Filtered armature current in Displays the filtered armated The filter time constant is	ture currer		onitor output in perc	ent of 99.1	1 M1 nomin	al current.				
	-325.00 325.00	-	%	100 = 1 %	у	n	Signal				
01.60	12-pulse serial armature	voltage s	um in V	·	•	•	-				
	Summed armature voltage										

Index	Name										
	Text										
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре				
	Summed measured armat serial/serial sequential slav		e of 12-pulse	e serial/serial sequ	uential mas	ster plus 12-	pulse				
	-3250.0 3250.0	-	V	10 = 1 V	у	n	Signal				
01.61	12-pulse parallel current	sum in A	1								
	Summed motor current in a Summed measured motor					parallel slave	e.				
	-32500.0 32500.0	-	Α	1 = 1 A	у	n	Signal				
01.62	12-pulse slave current in	Α	·I		1,7		, ,				
	12-pulse/serial sequential Measured 12-pulse/serial	slave curr			al sequentia	al master or	ıly).				
	-32500.0 32500.0	<u> </u>	Α	1 = 1 A	у	n	Signal				
01.70	99.01 Mains voltage fast	ı	1		1,7						
	Fast signal mirrored, 99.01										
	Measured mains voltage in	percent of			je.		_				
	0.00 325.00	-	%	100 = 1 %	у	n	Signal				
01.71	28.05 Armature voltage f										
	Fast signal mirrored, 28.05										
	Measured armature voltag	e in in per			age.	1					
	-325.00 325.00	-	%	100 = 1 %	у	n	Signal				
01.72	24.01 Used speed reference fast										
	Fast signal mirrored, 24.01 Used speed reference.										
	Speed reference for speed	error cal		Ta			Ta				
	-30000.00 30000.00	-	rpm	See 46.02	у	n	Signal				
01.73	24.02 Used speed feedback fast										
	Fast signal mirrored, 24.02 used speed feedback. Speed feedback for speed error calculation.										
	-30000.00 30000.00	error card		See 46.02	1	T.,	Cianal				
01.74		noo foot	rpm	See 46.02	у	n	Signal				
01.74	27.02 Used current reference fast										
	Fast signal mirrored, 27.02 Used current reference. Displays the armature current reference in percent of 99.11 M1 nominal current after current limitation.										
	-325.00 325.00	_	%	100 = 1 %	у	n	Signal				
01.75	27.05 Motor current fast		7.0	1.00 . //	17	1	10.3				
	Fast signal mirrored, 27.05	Motor cu	rrent.								
	Measured motor current in percent of 99.11 M1 nominal current.										
	-325.00 325.00	-	%	100 = 1 %	у	n	Signal				
01.76	27.18 Firing angle fast		•		1-	•					
	Fast signal mirrored, 27.18 Firing angle.										
	Displays the firing angel in	degrees.									
	0.00 180.00	-	0	100 = 1°	у	n	Signal				
01.77	28.14 M1 field current ref	erence fa	ıst								
	Fast signal mirrored, 28.14										
	Displays motor 1 field curr	ent referei		_	minal field	current.					
	-325.00 325.00	_	%	100 = 1 %	у	n	Signal				
01.78	28.15 M1 field current fas										
	Fast signal mirrored, 28.15										
	Motor 1 measured field cu	rrent in pe		_	d current.	1	1				
	-325.00 325.00	-	%	100 = 1 %	у	n	Signal				
01.79	42.45 M2 field current ref	ference fa	ıst								

Index	Name										
	Text										
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре				
	Fast signal mirrored, 42.45 M2 field current reference. Displays motor 2 field current reference in percent of 42.10 M2 nominal field current.										
	-325.00 325.00	-	%	100 = 1 %	у	n	Signal				
01.80	42.46 M2 field current fast										
	Fast signal mirrored,	Fast signal mirrored, 42.46 M2 field current.									
	Motor 2 measured fie	ld current in pe	rcent of 4	2.10 M2 nominal fie	ld current.						
	-325.00 325.00 - % 100 = 1 % y n Signal										

03 Input referencesValues of references received from various sources.

Text Range Panel reference 1 Panel reference 1. Displays the local reference	Default	Unit	Scale/Fbeq16	Volatile	Change	T			
Panel reference 1 Panel reference 1.	Default	Unit	Scale/Fbeq16	Volatilo	Chamas	T			
Panel reference 1.			-	Voiatile	Change running	Туре			
Displays the local reference									
	given from t	he contro		l					
-100000.00 100000.00	-	-	1 = 10	у	n	Signal			
FBA A reference 1									
Displays reference 1 received via fieldbus adapter A.									
-100000.00 100000.00	ı	-	1 = 10	у	n	Signal			
FBA A reference 2									
Fieldbus adapter A reference	e 2.								
Displays reference 2 receive	d via fieldbu	ıs adapte	r A.						
-100000.00 100000.00	-	-	1 = 10	у	n	Signal			
FBA B reference 1									
Fieldbus adapter B reference 1.									
Displays reference 1 receive	d via fieldbu	ıs adapte	r B.						
-100000.00 100000.00	-	-	1 = 10	у	n	Signal			
FBA B reference 2									
Fieldbus adapter B reference 2.									
Displays reference 2 receive	d via fieldbu	ıs adapte	r B.						
-100000.00 100000.00	-	-	1 = 10	у	n	Signal			
EFB reference 1									
Embedded fieldbus reference 1.									
Displays scaled reference 1 received via the embedded fieldbus interface. The scaling is defined by									
					_				
-30000.00 30000.00	-	-	1 = 10	у	n	Signal			
EFB reference 2									
Embedded fieldbus reference 2.									
	received via	the emb	edded fieldbus in	terface. Th	ne scaling is	defined by			
				1	1	.			
	-	-	1 = 10	у	n	Signal			
DDCS controller ref 1									
				option mod	lule (FDCO	-0x). The			
	DCS contro	lier ref1 t	*;	1	1	1			
	-	-	1 = 10	У	n	Signal			
	Fieldbus adapter A reference Displays reference 1 received -100000.00 100000.00 FBA A reference 2 Fieldbus adapter A reference 2 received -100000.00 100000.00 FBA B reference 1 Fieldbus adapter B reference 1 received -100000.00 100000.00 FBA B reference 1 received -100000.00 100000.00 FBA B reference 2 Fieldbus adapter B reference 2 received -100000.00 100000.00 EFB reference 1 Embedded fieldbus reference 1 58.26 EFB ref1 type. -30000.00 30000.00 EFB reference 2 Embedded fieldbus reference 1 58.27 EFB ref2 type. -30000.00 30000.00 DDCS controller ref 1 DDCS controller reference 1 Displays scaled reference 1	Fieldbus adapter A reference 1. Displays reference 1 received via fieldbut-100000.00 100000.00 FBA A reference 2 Fieldbus adapter A reference 2. Displays reference 2 received via fieldbut-100000.00 100000.00 FBA B reference 1 Fieldbus adapter B reference 1. Displays reference 1 received via fieldbut-100000.00 100000.00 FBA B reference 2 Fieldbus adapter B reference 2. Displays reference 2 received via fieldbut-100000.00 100000.00 EFB reference 1 Embedded fieldbus reference 1. Displays scaled reference 1 received via 58.26 EFB ref1 type. -30000.00 30000.00 EFB reference 2 Embedded fieldbus reference 2 received via 58.27 EFB ref2 type. -30000.00 30000.00 DDCS controller ref 1 DDCS controller reference 1 received via scaling is defined by 60.60 DDCS controller -30000.00 30000.00 -30000.00 30000.00	Fieldbus adapter A reference 1. Displays reference 1 received via fieldbus adapte -100000.00 100000.00 - - FBA A reference 2 Fieldbus adapter A reference 2. Displays reference 2 received via fieldbus adapte -100000.00 100000.00 - - FBA B reference 1 Fieldbus adapter B reference 1. Displays reference 1 received via fieldbus adapte -100000.00 100000.00 - - FBA B reference 2 Fieldbus adapter B reference 2. Displays reference 2 received via fieldbus adapte -100000.00 100000.00 - - EFB reference 1 Embedded fieldbus reference 1. Displays scaled reference 1 received via the emb 58.26 EFB ref1 type30000.00 30000.00 - - EFB reference 2 Embedded fieldbus reference 2 received via the emb 58.27 EFB ref2 type30000.00 30000.00 - - DDCS controller ref 1 DDCS controller reference 1 received via a DDCS scaling is defined by 60.60 DDCS controller ref1 to -30000.00 30000.00 - - -	Fieldbus adapter A reference 1. Displays reference 1 received via fieldbus adapter A. -10000.00 100000.00 - 1 = 10 FBA A reference 2 Fieldbus adapter A reference 2. Displays reference 2 received via fieldbus adapter A. -100000.00 100000.00 - 1 = 10 FBA B reference 1 Fieldbus adapter B reference 1. Displays reference 1 received via fieldbus adapter B. -100000.00 100000.00 - 1 = 10 FBA B reference 2 Fieldbus adapter B reference 2. Displays reference 2 received via fieldbus adapter B. -100000.00 100000.00 - 1 = 10 EFB reference 1 Embedded fieldbus reference 1. Displays scaled reference 1 received via the embedded fieldbus in 58.26 EFB ref1 type. -30000.00 30000.00 - 1 = 10 EFB reference 2 Embedded fieldbus reference 2 received via the embedded fieldbus in 58.27 EFB ref2 type. -30000.00 30000.00 - 1 = 10 DDCS controller ref 1 DDCS controller reference 1 received via a DDCS communication of scaling is defined by 60.60 DDCS controller ref1 type. -30000.00 30000.00 - 1 = 10	Fieldbus adapter A reference 1. Displays reference 1 received via fieldbus adapter A. -100000.00 100000.00 - - 1 = 10 y FBA A reference 2 Fieldbus adapter A reference 2. Displays reference 2 received via fieldbus adapter A. -100000.00 100000.00 - - 1 = 10 y FBA B reference 1 Fieldbus adapter B reference 1. Displays reference 1 received via fieldbus adapter B. -100000.00 100000.00 - - 1 = 10 y FBA B reference 2 Fieldbus adapter B reference 2. Displays reference 2 received via fieldbus adapter B. -100000.00 100000.00 - - 1 = 10 y EFB reference 1 Embedded fieldbus reference 1. Displays scaled reference 1 received via the embedded fieldbus interface. The Sa.26 EFB ref1 type. -30000.00 30000.00 - - 1 = 10 y EFB reference 2 Embedded fieldbus reference 2 received via the embedded fieldbus interface. The Sa.27 EFB ref2 type. -30000.00 30000.00 - - 1 = 10 y DDCS controller ref1 DDCS controller ref1 DDCS controller reference 1 received via a DDCS communication option mod scaling is defined by 60.60 DDCS controller ref1 type. -30000.00 30000.00 - - 1 = 10 y	Fieldbus adapter A reference 1. Displays reference 1 received via fieldbus adapter A. -100000.00 100000.00 - - 1 = 10 y n FBA A reference 2 Fieldbus adapter A reference 2. Displays reference 2 received via fieldbus adapter A100000.00 100000.00 - 1 = 10 y n FBA B reference 1 Fieldbus adapter B reference 1. Displays reference 1 received via fieldbus adapter B100000.00 100000.00 - 1 = 10 y n FBA B reference 2 Fieldbus adapter B reference 2. Displays reference 2 received via fieldbus adapter B100000.00 100000.00 - 1 = 10 y n EFB reference 2 Embedded fieldbus reference 1. Displays scaled reference 1 received via the embedded fieldbus interface. The scaling is 58.26 EFB ref1 type30000.00 30000.00 - 1 = 10 y n EFB reference 2 Embedded fieldbus reference 2 received via the embedded fieldbus interface. The scaling is 58.27 EFB ref2 type30000.00 30000.00 - 1 = 10 y n DDCS controller ref 1 DDCS controller ref 1 DDCS controller reference 1 received via a DDCS communication option module (FDCO-scaling is defined by 60.60 DDCS controller ref1 type30000.00 30000.00 - - 1 = 10 y n			

Index	Name											
	Text											
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре					
	DDCS controller reference 2											
	Displays scaled reference 2				option modu	ıle (FDCO-	0x). The					
	scaling is defined by 60.61 [DDCS control	ler ref2 ty	pe.								
	-30000.00 30000.00	-	-	1 = 10	у	n	Signal					
03.13	M/F or D2D ref1											
	Master-follower reference 1 Displays scaled master-follo 60.10 M/F ref1 type.			ed from the mas	ster. The sc	aling is defi	ined by					
	-30000.00 30000.00	-	-	1 = 10	у	n	Signal					
03.14	M/F or D2D ref2											
	Master reference 2 (followers only) Displays scaled master-follower reference 2 received from the master. The scaling is defined by 60.11 M/F ref2 type.											
	-30000.00 30000.00	-	-	1 = 10	У	n	Signal					

04 Warnings and faultsInformation on warnings and faults that occurred last. For explanations of individual warning and fault codes. See chapter Fault tracing.

Index	Name											
	Text											
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре					
04.01	Tripping fault											
	1st active fault.											
	Code of the 1st active faul	t (the fault tha	at caused	the current trip).								
	0000h FFFFh	-	-	1 = 1	у	n	Signal					
04.02	Active fault 2											
	2 nd active fault.											
	Code of the 2 nd active fau	lt.										
	0000h FFFFh	-	-	1 = 1	у	n	Signal					
04.03	Active fault 3											
	3 rd active fault.											
	Code of the 3 rd active fault.											
	0000h FFFFh	-	-	1 = 1	у	n	Signal					
04.04	Active fault 4											
	4 th active fault.											
	Code of the 4 th active fault.											
	0000h FFFFh	-	-	1 = 1	у	n	Signal					
04.05	Active fault 5											
	5 th active fault.											
	Code of the 5 th active fault.											
	0000h FFFFh	-	-	1 = 1	у	n	Signal					
04.06	Active warning 1											
	1st active warning.											
	Code of the 1st active war	ning.										
	0000h FFFFh	-	-	1 = 1	у	n	Signal					
04.07	Active warning 2											
	2 nd active warning.											
	Code of the 2 nd active wa	rning.				•						
	0000h FFFFh	-	-	1 = 1	у	n	Signal					

Index	Name										
	Text										
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре				
04.08	Active warning 3	'	ľ	•	•		•				
	3 rd active warning. Code of the 3 rd active wa	arning.									
	0000h FFFFh	-	-	1 = 1	у	n	Signal				
04.09	Active warning 4	· ·		'	1.*						
	4 th active warning. Code of the 4 th active wa	arnina									
	0000h FFFFh	- I-	1_	1 = 1	у	n	Signal				
04.10	Active warning 5)		O.gc.				
	1st active warning. Code of the 1st active wa	ırnina									
	0000h FFFFh			1 = 1	l _v	n	Signal				
04.11	Latest fault	1-		1 - 1	у	[11	Joignai				
V 7 .11	1st stored fault. Code of the 1st stored (no	on-active) fault									
	0000h FFFFh		-	1 = 1	у	n	Signal				
04.12	2nd latest fault	1			J	1''	Joignai				
04.12	2 nd stored fault.										
	Code of the 2 nd stored (non-active) fault.										
	0000h FFFFh	-	<u></u> -	1 = 1	у	n	Signal				
04.13	3rd latest fault			<u> </u>	9	1	Olgrica				
••	3rd stored fault.										
	Code of the 3 rd stored (n	on-active) fault	t.								
	0000h FFFFh	-	-	1 = 1	у	n	Signal				
04.14	4th latest fault	· ·		'	1.5						
	4 th stored fault.										
	Code of the 4 th stored (non-active) fault.										
	0000h FFFFh	-	-	1 = 1	у	n	Signal				
04.15	5th latest fault										
	5 th stored fault. Code of the 5 th stored (non-active) fault.										
	0000h FFFFh	-	-	1 = 1	у	n	Signal				
04.16	Latest warning		•			•					
	1st stored warning. Code of the 1st stored (non-active) warning.										
	0000h FFFFh	-	<u> </u>	1 = 1	у	n	Signal				
04.17	2nd latest warning		- U	'	1 -						
	2 nd stored warning. Code of the 2 nd stored (n	ion-active) war	ning.								
	0000h FFFFh	 -	<u> </u>	1 = 1	у	n	Signal				
04.18	3rd latest warning			<u> </u>	1 -		<u> </u>				
	3 rd stored warning. Code of the 3 rd stored (n	on-active) warı	ning.								
	0000h FFFFh	-	<u> </u>	1 = 1	у	n	Signal				
04.19	4th latest warning	I	1	L		1	<u>, </u>				
-	4 th stored warning.										
	Code of the 4 th stored (n	on-active) warı	ning.								
	0000h FFFFh	-	-	1 = 1	у	n	Signal				
04.20	5th latest warning	•	•	•	•		-				

Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	5 th stored warning. Code of the 5 th stored (non-active) warning.									
	0000h FFFFh	-	-	1 = 1	у	n	Signal			

04.21 Fault word 1

DCS800 compatible fault word 1.

The bit assignments of this word correspond to *FaultWord1* (9.01) in the DCS800. Each bit can indicate several DCS880 events as listed below. Bit assignment:

Bit	DCS880 events cor	rrespond to	following		DCS80	0 events			
0	F501 Auxiliary unde	rvoltage			F501 A	uxUnderVo	lt		
1	2310 Armature over	current			F502 A	rmOverCur			
2	F503 Armature over				F503 A	rmOverVolt			
3	4310 Bridge temper		red		F504 C	onvOverTe	mp		
4	2330 Residual curre	nt detected			F505 R	esCurDete	ct		
5	4981 Motor temperature 1 measured/estimated					10verTem	р		
6	4981 Motor temperature 1 measured/estimated					F507 M1OverLoad			
7	7082 I/O extension communication					F508 I/OBoardLoss			
8	4982 Motor temperature 2 measured/estimated					F509 M2OverTemp			
9	4982 Motor temperature 2 measured/estimated					F510 M2OverLoad			
10	-					F511 ConvFanCur			
11	3280 Mains low volt	age			F512 MainsLowVolt				
12	F513 Mains overvolt	tage			F513 MainsOvrVolt				
13	F514 Mains synchro				F514 MainsNotSync				
14	F515 M1 field excite	r overcurren	t		F515 M1FexOverCur				
15	F516 M1 field excite	r communica	ation		F516 M1FexCom				
			•	•			<u> </u>	_	
0000h	FFFFh	-	-	1 = 1		у	n	Signal	

04.22 | Fault word 2

DCS800 compatible fault word 2.

The bit assignments of this word correspond to *FaultWord2* (9.02) in the DCS800. Each bit can indicate several DCS880 events as listed below. Bit assignment:

Bit	DCS880 events correspond to following	DCS800 events
0	F517 Armature current ripple	F517 ArmCurRipple
1	F518 M2 field exciter overcurrent	F518 M2FexOverCur
2	F519 M2 field exciter communication	F519 M2FexCom
3	-	reserved
4	F521 Field acknowledge missing	F521 FieldAck
5	7301 Motor speed feedback,	F522 SpeedFb
	73A1 Load speed feedback	
6	71B1 Motor fan acknowledge	F523 ExtFanAck
7	F524 Main contactor acknowledge	F524 MainContAck
8	50FE Type code	F525 TypeCode
9	9081 External fault 1 9085 External fault 5	F526 ExternalDI
10	5080 Drive fan acknowledge	F527 ConvFanAck
11	6681 EFB communication,	F528 FieldBusCom
	7510 FBA A communication,	
	7520 FBA B communication	
12	F529 M1 field exciter not OK	F529 M1FexNotOK
13	F530 M2 field exciter not OK	F530 M2FexNotOK

Index	Name Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	14 7121 Motor stall			F531 Mot	orStalled					
	15 7310 Overspeed			F532 Mot	OverSpeed	d				
	0000h FFFFh	-	-	1 = 1	у	n	Signal			

04.23 Fault word 3

DCS800 compatible fault word 3.

The bit assignments of this word correspond to FaultWord3 (9.03) in the DCS800. Each bit can indicate several DCS880 events as listed below.

Bit assignment:

Bit	DCS880 events cor		following		DCS800) events		
0	F533 12-pulse reversal timeout					F533 12PRevTime		
1	F534 12-pulse curre	nt difference	!		F534 12	PCurDiff		
2	F535 12-pulse comr	munication			F535 12	PulseCom		
3	F536 12-pulse slave)			F536 12	PSlaveFail		
4	F537 M1 field excite	r ready lost			F537 M	1FexRdyLc	st	
5	F538 M2 field exciter ready lost					2FexRdyLc	st	
6	F539 Fast current rise					stCurRise		
7	-				F540 COM8Faulty			
8	F541 M1 field exciter low current					F541 M1FexLowCur		
9	F542 M2 field exciter low current					F542 M2FexLowCur		
10	7581 DDCS controll	er communic	ation,		F543 COM8Com			
	7582 Master-followe	er communica	ation					
11	F544 P2P and M/F	communication	on		F544 P2PandMFCom			
12	64A3 Application loa	ading			F545 ApplLoadFail			
13	7081 Control panel/	PC tool link o	communic	ation	F546 Lc	calCmdLos	ss	
14	F547 Drive hardwar	е			F547 HwFailure			
15	6000 Internal firmwa	are			F548 Fv	vFailure		
	<u> </u>							
0000h	FFFFh	-	-	1 = 1		у	n	Signal

04.24 Fault word 4

DCS800 compatible fault word 4.

The bit assignments of this word correspond to FaultWord4 (9.04) in the DCS800. Each bit can indicate several DCS880 events as listed below.

Bit	DCS880 events correspond to following	DCS800 events
0	-	F549 ParComp
1	64B2 User set fault	F550 ParMemRead
2	80A0 AI supervision	F551 AIRange
3	71A2 Mechanical brake not closed,	F552 MechBrake
	71A3 Mechanical brake not opened,	
	71A5 Mechanical brake opening not allowed	
4	7381 Speed feedback device	F553 TachPolarity
5	7381 Speed feedback device	F554 TachoRange
6	-	reserved
7	F556 Torque proving	F556 TorqProving
8	F557 Reversal time	F557 ReversalTime
9	-	reserved
10	-	reserved
11	-	F601 APFault1
12	-	F602 APFault2

Text									
Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
13 -			F603 APF	ault3					
14 -			F604 APF	ault4					
15 -			F605 APF	ault5					
0000h FFFFh	_		1 = 1	v	ln .	Signal			

User fault word

DCS800 compatible user fault word.

The bit assignments of this word correspond to *UserFaultWord* (9.05) in the DCS800. Each bit can indicate several DCS880 events as listed below.

Bit assignment:

Bit	DCS880 events correspond	to following	DCS800 events
0	-		F610 UserFault1
1	-		F611 UserFault2
2	-		F612 UserFault3
3	-		F613 UserFault4
4	-		F614 UserFault5
5	-		F615 UserFault6
6	-		F616 UserFault7
7	-		F617 UserFault8
8	-		F618 UserFault9
9	-		F619 UserFault10
10	-		F620 UserFault11
11	-		F621 UserFault12
12	-		F622 UserFault13
13	-		F623 UserFault14
14	-		F624 UserFault15
15	-		F625 UserFault16
-			
0000h	FFFFh -	-	1 = 1 y n Signal

04.26 M1 field exciter fault word

DCS800 compatible motor 1 field exciter fault word.

The bit assignments of this DCS880 word and the DCS800 word M1FexFaultWord (9.18) are the same.

Bit	DCC000/DCC000 foult name
DIL	DCS880/DCS800 fault name
0	DCSLink communication
1	Supply voltage synchronization
2	Overcurrent
3	Fast supply voltage rise
4	AC supply voltage < 30 V _{AC}
5	AC supply voltage > 650 V _{AC}
6	reserved
7	reserved
8	Temperature heatsink
9	Parameter flash read fault
10	Compatibility
11	Auxiliary voltage
12	reserved
13	General hardware
14	General firmware

Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	15 reserved						•			
	0000h FFFFh	-	-	1 = 1	у	n	Signal			
04.27	M2 field exciter fault v	vord			•					

DCS800 compatible motor 2 field exciter fault word.

The bit assignments of this DCS880 word and the DCS800 word *M2FexFaultWord* (9.20) are the same.

Bit assignment:

Bit	DCS880/DCS800 fault name
0	DCSLink communication
1	Supply voltage synchronization
2	Overcurrent
3	Fast supply voltage rise
4	AC supply voltage < 30 V _{AC}
5	AC supply voltage > 650 V _{AC}
6	reserved
7	reserved
8	Temperature heatsink
9	Parameter flash read fault
10	Compatibility
11	Auxiliary voltage
12	reserved
13	General hardware
14	General firmware
15	reserved
	·

0000h FFFFh	n l	Signal
-------------	-----	--------

04.31 Warning word 1

DCS800 compatible warning word 1.

The bit assignments of this word correspond to *AlarmWord1* (9.06) in the DCS800. Each bit can indicate several DCS880 events as listed below.

Bit	DCS880 events correspond to following	DCS800 events
0	AFE1 Off 2 (emergency off)	A101 Off2ViaDI
1	AFE2 Off 3 (emergency stop)	A102 Off3ViaDI
2	A103 DC-breaker acknowledge	A103 DC BreakAck
3	A4B0 Bridge temperature measured,	A104 ConvOverTemp
	A581 Drive fan acknowledge	
4	A105 Dynamic braking acknowledge	A105 DynBrakeAck
5	A491 Motor temperature 1 measured/estimated	A106 M1OverTemp
6	A491 Motor temperature 1 measured/estimated	A107 M1OverLoad
7	-	reserved
8	A492 Motor temperature 2 measured/estimated	A109 M2OverTemp
9	A492 Motor temperature 2 measured/estimated	A110 M2OverLoad
10	A111 Mains low voltage	A111 MainsLowVolt
11	A112 P2P and M/F communication	A112 P2PandMFCom
12	A7CA DDCS controller communication,	A113 COM8Com
	A7CB Master-follower communication	
13	A114 Armature current deviation	A114 ArmCurDev
14	A7E1 Speed feedback device	A115 TachoRange

Index	Name Text										
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре				
	15 A116 Brake long	g falling		A116 BrakeLongFalling							
	0000h FFFFh	-	-	1 = 1	у	n	Signal				
04.32	Warning word 2										

DCS800 compatible warning word 2.

The bit assignments of this word correspond to *AlarmWord2* (9.07) in the DCS800. Each bit can indicate several DCS880 events as listed below. Bit assignment:

Bit	DCS880 events correspond to fo	ollowing	l	DCS800 eve	ents			
0	A117 Armature current ripple			A117 ArmCı	ırRipple			
1	A118 Application			A118 Found	NewAppl			
2	A118 Application			A119 ApplD	iff			
3	A120 Overvoltage protection activ	е		A120 OverV	oltProt			
4	AF90 Autotuning			A121 Autotu	neFail			
5	A7A1 Mechanical brake not closed		A122 MechE	Brake				
	A7A2 Mechanical brake not opene							
	A7A5 Mechanical brake opening n	ot allow	ed					
6	-			A123 FaultS	uppres			
7	A124 Speed scaling			A124 SpeedScale				
8	A7B0 Motor speed feedback,			A125 SpeedFb				
	A7B1 Load speed feedback							
9	A981 External warning 1 Extern	nal Warn	ing 5 A985	A126 ExternalDI				
10	A8A0 AI supervision			A127 AIRange				
11	A7C1 FBA A communication,			A128 FieldBusCom				
	A7C2 FBA B communication,							
	A7CE EFB communication							
12	-			A129 ParRe	stored			
13	A7EE Control panel/PC tool link co	cation	A130 LocalC	CmdLoss				
14	-		A131 ParAdded					
15	A132 Parameter setting conflict			A132 ParConflict				
0000h	FFFFh	-	1 = 1	у	n	Signal		

04.33 Warning word 3

DCS800 compatible warning word 3.

The bit assignments of this word correspond to *AlarmWord3* (9.08) in the DCS800. Each bit can indicate several DCS880 events as listed below. Bit assignment:

Bit	DCS880 events correspond to following	DCS800 events
0	-	A133 RetainInv
1	-	A134 ParComp
2	-	A135 ParUpDwnLoad
3	-	A136 NoAPTaskTime
4	A137 Start condition conflict	A137 SpeedNotZero
5	AFE1 Off 2 (emergency off)	A138 Off2FieldBus
6	AFE2 Off 3 (emergency stop)	A139 Off3FieldBus
7	A6D1 FBA A parameter conflict,	A140 IllgFieldBus
	A6D2 FBA B parameter conflict	-
8	-	A141 COM8FwVer
9	FB11 Memory unit missing	A142 MemCardMiss
10	FB12 Memory unit incompatible,	A143 MemCardFail

Index	Name											
	Text											
	Range)	Default	Unit	S	cale/Fbeq16	Volatile	Change running	Type			
		FB13 Memory un			е,		•		•			
		FB14 Memory un	it, firmware lo	ad failed								
	11	-				A301 APWa						
	12	-				A302 APWa						
	13	-				A303 APWa						
	14	-				A304 APWa						
	15	-				A305 APWa	irning5					
	0000h	FFFFh	_	_	1	= 1	у	n	Signal			
4.34	Warni	ng word 4	l		<u> </u>		1 7		1 - 3 -			
	Warning word 4. DCS880 warning word. Each bit indicates a certain warning as listed below. Bit assignment:											
	Bit	DCS880 events	correspond	l to follow	ing	DCS800 e	vents					
	0	-	_			reserved						
	1	-				reserved						
	2	-				reserved						
	3	-				reserved						
	4	-				reserved						
	5	-				reserved						
	6	-				reserved						
	7	-				reserved						
	8	-	reserved									
	9	-				reserved						
	10	-				reserved						
	12	-				reserved						
	13	-				reserved reserved						
	14	-				reserved						
	15	_				reserved						
						reserved						
	0000h	FFFFh	-	-	1	= 1	у	n	Signal			
4.35	User v	warning word	•					•				
	DCS800 compatible user warning word. The bit assignments of this word correspond to <i>UserAlarmWord</i> (9.09) in the DCS800. Each bit ca indicate several DCS880 events as listed below. Bit assignment:											
	Bit	DCS880 events	correspond t	o followir	ng	DCS800 ev	ents					
	0	-				F310 UserW						
	1	-				F311 UserW	/arning2					
	2	-				F312 UserW		·				
	3	-				F313 UserW						
	4	-				F314 UserW						
	5	-				F315 UserW						
	6	-				F316 UserW						
	7	_				F317 UserW	/arning8					
	8	_				F318 UserW						

F319 UserWarning10 F320 UserWarning11 F321 UserWarning12

Index	Name										
	Text										
	Range)	Default	Unit	S	cale/Fbeq16	Volatile	Change running	Туре		
	12	-	•	•	•	F322 UserV	arning13		•		
	13	-				F323 UserV	/arning14				
	14	-				F324 UserV					
	15	-				F325 UserV	/arning16				
	0000h	FFFFh	-	-	1	= 1	у	n	Signal		
1.36	M1 fie	ld exciter warnin	g word	u .	- U		1.				
	The bi same.	00 compatible mot tassignments of the signment:					11FexAlarr	mWord (9.1	7) are the		
	Bit	DCS880/DCS80	0 warning nar	me							
	0	Phase missing	o warning nai	110							
	1	Temperature hea	atsink								
	2	reserved	исли								
	3	reserved									
	4	reserved									
	5	Parameters add									
	6	Parameter up- o		ed							
	7	Compatibility	i dowinoad ian	cu							
	8	Parameters rest	ored								
	9	reserved	oi eu								
	10	reserved									
	11	reserved									
	12	reserved									
	13	reserved									
	14	reserved									
	15	reserved									
	10	reserved									
	0000h	FFFFh		1_	1	= 1	у	n	Signal		
1.37			a word			<u>'</u>	l A		Joigiliai		
.31		Ild exciter warnin OO compatible mot		or wornin	a wa	. d					
		t assignments of t					12Eax Mar	mM/ord (0.1	(1) are the		
	same.	-	118 DC3000 WC	Jiu aliu t	ie DC	,3600 Word //	12FEXAIAII	1100010 (9.1	<i>9)</i> are the		
		signment:									
	Bit	DCS880/DCS80	0 warning nar	me							
	0	Phase missing									
	1	Temperature hea	atsink								
	2	reserved									
	3	reserved									
	4	reserved									
	5	Parameters add	ed								
	6	Parameter up- o		ed							
	7	Compatibility									
	8	Parameters rest	ored								
	9	reserved									
	10	rocorvod									

10

11

12

reserved

reserved

reserved reserved

Index	Name											
	Text											
	Range		Defa	Default Unit		Scale/Fbeq16	Volatile	Change running	Туре			
	14 15	reserved										
	15	Reserved										
	0000h	FFFFh	-	-		1 = 1	У	n	Signal			

05 DiagnosticsVarious run-time-type counters and measurements related to drive maintenance.

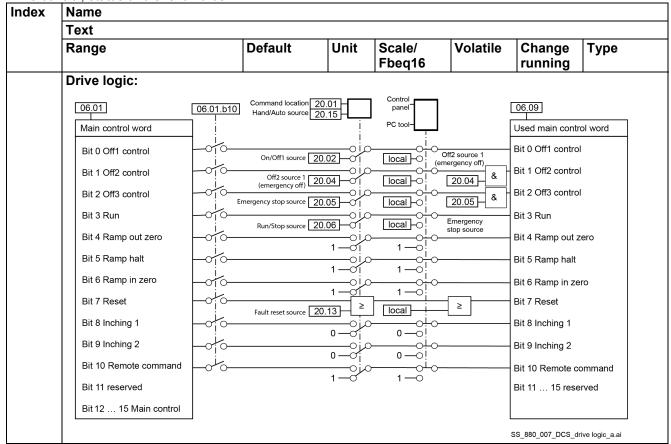
ndex	Name													
	Text													
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре							
05.01	On-time counter													
	On-time counter.													
	The counter runs when	the drive is p	owered.				•							
	0 65535	_	days	1 = 1 day	у	n	Signal							
05.02	Run-time counter													
	Motor run-time counter.													
	The counter runs when	the drive is i		•,	ee 06.15.b0	2 Main Stat								
	0 65535	-	days	1 = 1 day	у	n	Signal							
05.04	Fan on-time counter													
	Drive fan cooling run-tii													
	Displays the running tir				fan awan 0 a									
	Can be reset from the of 0 65535		, , , , , , , , , , , , , , , , , , , 	1 = 1 day			Cianal							
05.10		- -	days	I = I day	у	n	Signal							
J5.1U	Control board temper													
	I Measured temperature	of the contro	ii board.		Control board temperature. Measured temperature of the control board.									
	Warning A4A0 Control	board tempe	rature meas		, if the mea	sured contr	ol board							
		board tempe	rature meas		, if the mea	sured contr	ol board							
	Warning A4A0 Control	board tempe 5°C or 167°F	rature meas The used		, if the mea	sured contr	ol board							
	Warning A4A0 Control temperature exceeds 7	board tempe 5°C or 167°F	rature meas The used		, if the mea	sured control	ol board Signal							
05.11	Warning A4A0 Control temperature exceeds 7 The unit is selected by	board tempe 5°C or 167°F 96.02 Unit se	rature meas . The used election.	hysteresis is 1°.		1								
05.11	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0	board tempe '5°C or 167°F 96.02 Unit se - -	rature meas The used election. Cor F	hysteresis is 1°.		1								
05.11	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature	board tempe '5°C or 167°F 96.02 Unit se - - Ire channel 1 brid	rature mease. The used election. C or F	hysteresis is 1°. 1 = 1°C or °F ature.	у	n	Signal							
05.11	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature or of Measured bridge temperature.	board tempe 5°C or 167°F 96.02 Unit se - Ire channel 1 brid erature or me	rature meas The used election. Cor F dge temperates	hysteresis is 1°. 1 = 1°C or °F ature. ge temperature of	y the power	n unit connec	Signal ted to							
05.11	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature or of the selected by the selected by -80.0 sele	board tempe 5°C or 167°F 96.02 Unit se - Ire channel 1 brid erature or me -DSL-H1x. TI	rature mease. The used election. C or F dge temperates assured brid he unit of the	hysteresis is 1°. 1 = 1°C or °F ature. ge temperature of e temperature is s	the power elected by	n unit connec 96.02 Unit s	Signal ted to selection.							
)5.11	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature or of Measured bridge temperature channel 1 of the SDCS	board tempe 5°C or 167°F 96.02 Unit se - Ire channel 1 brid erature or me -DSL-H1x. TI	rature mease. The used election. C or F dge temperates assured brid he unit of the	hysteresis is 1°. 1 = 1°C or °F ature. ge temperature of e temperature is s	the power elected by	n unit connec 96.02 Unit s	Signal ted to selection.							
	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature or of Measured bridge temperature channel 1 of the SDCS See also warning A4B0	board tempe 5°C or 167°F 96.02 Unit se - Ire channel 1 bricerature or me -DSL-H1x. TI 0 Bridge temp	rature mease. The used election. © C or °F dge temperates assured brid the unit of the perature me	hysteresis is 1°. 1 = 1°C or °F ature. ge temperature of e temperature is s asured and fault 4	the power elected by 9	n unit connec 96.02 Unit s temperatur	Signal ted to selection.							
	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature or Measured bridge temperature or channel 1 of the SDCS See also warning A4B0 -80.0 1000.0	board tempe 5°C or 167°F 96.02 Unit se - Ire channel 1 bride erature or me -DSL-H1x. TI 0 Bridge temper -	rature mease. The used election. © C or °F dge temperates assured brid the unit of the perature me	hysteresis is 1°. 1 = 1°C or °F ature. ge temperature of e temperature is s asured and fault 4	the power elected by 9	n unit connec 96.02 Unit s temperatur	Signal ted to selection. e measured							
	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature or of Measured bridge temperature or channel 1 of the SDCS See also warning A4B0 -80.0 1000.0 Ch2 bridge temperature	board tempe 5°C or 167°F 96.02 Unit se - Ire channel 1 brid erature or me -DSL-H1x. TI D Bridge temp - Ire erature.	rature mease. The used election. © C or °F dge temperates assured brid the unit of the perature me © C or °F	hysteresis is 1°. 1 = 1°C or °F ature. ge temperature of e temperature is s asured and fault 4 1 = 1°C or °F	the power elected by 310 Bridge	n unit connec 96.02 Unit s temperature n	Signal ted to selection. e measured Signal							
	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature or of Measured bridge temperature channel 1 of the SDCS See also warning A4B0 -80.0 1000.0 Ch2 bridge temperature Channel 2 bridge temperature Channel C	board temper 5°C or 167°F 96.02 Unit set of the control of the con	rature mease. The used election. © C or °F dge temperates assured brid the unit of the perature me © C or °F wer unit con	hysteresis is 1°. 1 = 1°C or °F ature. ge temperature of e temperature is s asured and fault 4 1 = 1°C or °F nected to channel	the power elected by 9310 Bridge y	unit connec 96.02 Unit s temperature n	Signal ted to selection. e measured Signal 1x. The uni							
05.11 05.12	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature or of Measured bridge temperature or channel 1 of the SDCS See also warning A4B0 -80.0 1000.0 Ch2 bridge temperature Channel 2 bridge temperature Channel	board temper 5°C or 167°F 96.02 Unit service channel 1 bridge temper 1 bridge	rature mease. The used election. C or F dge temperates assured bridge temperates assured bridge temperature measured bridge con F wer unit con .02 Unit sel	hysteresis is 1°. 1 = 1°C or °F ature. ge temperature of e temperature is s asured and fault 4 1 = 1°C or °F nected to channel ection. See also w	the power elected by 9310 Bridge y	unit connec 96.02 Unit s temperature n	Signal ted to selection. e measured Signal 1x. The uni							
	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature or of Measured bridge temperature channel 1 of the SDCS See also warning A4B0 -80.0 1000.0 Ch2 bridge temperature Channel 2 bridge temperature of the temperature is see also warning temperature of the temperature is see also warning temp	board temper 5°C or 167°F 96.02 Unit service channel 1 bridge temper 1 bridge	rature mease. The used election. C or F dge temperates assured bridge temperates assured bridge temperature measured bridge con F wer unit con .02 Unit sel	hysteresis is 1°. 1 = 1°C or °F ature. ge temperature of e temperature is s asured and fault 4 1 = 1°C or °F nected to channel ection. See also w	the power elected by 9310 Bridge y	unit connec 96.02 Unit s temperature n	Signal ted to selection. e measured Signal 1x. The uni							
05.12	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature or of Measured bridge temperature or of Measured bridge temperature of the SDCS See also warning A4B0 -80.0 1000.0 Ch2 bridge temperature Channel 2 bridge temperature of the temperature is see measured and fault 43°	board tempe 5°C or 167°F 96.02 Unit se - Ire	rature mease. The used election. C or F dge temperates bride the unit of the perature measured bride or F wer unit con the control of the perature measured bride or The control of the perature measured bride or The control of the control of the perature measured by the control of the con	hysteresis is 1°. 1 = 1°C or °F ature. ge temperature of e temperature is s asured and fault 4 1 = 1°C or °F nected to channel ection. See also we asured.	the power elected by 9310 Bridge y 2 of the SE arning A4B	unit connec 96.02 Unit s temperature n	Signal ted to selection. e measured Signal 1x. The unimperature							
05.12	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature or of Measured bridge temperature of channel 1 of the SDCS See also warning A4B0 -80.0 1000.0 Ch2 bridge temperature Channel 2 bridge temperature of the temperature is see measured and fault 43 -80.0 1000.0	board temper 5°C or 167°F 96.02 Unit service channel 1 bridge temper 1 bridge	rature mease. The used election. C or F dge temperates bride the unit of the perature measured bride or F wer unit con the control of the perature measured bride or The control of the perature measured bride or The control of the control of the perature measured by the control of the con	hysteresis is 1°. 1 = 1°C or °F ature. ge temperature of e temperature is s asured and fault 4 1 = 1°C or °F nected to channel ection. See also we asured.	the power elected by 9310 Bridge y 2 of the SE arning A4B	unit connec 96.02 Unit s temperature n	Signal ted to selection. e measured Signal 1x. The unimperature							
05.12	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature or of Measured bridge temperature or of Measured bridge temperature of the SDCS See also warning A4B0 -80.0 1000.0 Ch2 bridge temperature Channel 2 bridge temperature of the temperature is seem assured and fault 43′ -80.0 1000.0 Ch3 bridge temperature Channel 3 bridge temperature of the temperature is seem assured and fault 43′ -80.0 1000.0	board temper 5°C or 167°F 96.02 Unit service channel 1 bridge temperature or mereture. State of power service tender of the service tender of the service of	rature mease. The used election. C or F dge temperate assured bridge temperature measured bridge temperature measured bridge assured bridge	hysteresis is 1°. 1 = 1°C or °F ature. ge temperature of e temperature is sasured and fault 4 1 = 1°C or °F nected to channel ection. See also we easured. 1 = 1°C or °F connected to char	the power elected by 9310 Bridge y 2 of the SE arning A4B	nunit connece 96.02 Unit stemperature n OCS-DSL-H 0 Bridge ter	Signal ted to selection. e measured Signal 1x. The unimperature Signal L-H1x. The							
05.12	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature or of Measured bridge temperature or of Measured bridge temperature or of Measured bridge temperature of Measured bridge temperature of Measured bridge temperature of the temperature is semeasured and fault 43 -80.0 1000.0 Ch3 bridge temperature of the temperature of the temperature is semeasured and fault 43 -80.0 1000.0 Ch3 bridge temperature of the temperature	board tempe 5°C or 167°F 96.02 Unit se -	rature mease. The used election. C or F dge temperates assured bridge temperature measured bridge temperature measured bridge assured bridge as a supplication bridge assured bridge assured bridge as a supplication bridge assured bridge as a supplication bridge as	hysteresis is 1°. 1 = 1°C or °F ature. ge temperature of e temperature is sasured and fault 4 1 = 1°C or °F nected to channel ection. See also we easured. 1 = 1°C or °F connected to chart selection. See also we have	the power elected by 9310 Bridge y 2 of the SE arning A4B y	nunit connece 96.02 Unit stemperature n OCS-DSL-H 0 Bridge ter	Signal ted to selection. e measured Signal 1x. The unimperature Signal L-H1x. The							
	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature or of Measured bridge temperature or of Measured bridge temperature or of Measured bridge temperature of Measured bridge temperature of Measured bridge temperature of the temperature is semeasured and fault 43 -80.0 1000.0 Ch3 bridge temperature of the temperature is semeasured and fault 43 -80.0 1000.0 Ch3 bridge temperature of the temperature temperature measured	board tempe 5°C or 167°F 96.02 Unit se -	rature mease. The used election. °C or °F dge temperates assured bridge temperature me °C or °F wer unit conduction. 02 Unit seleptorature mease. °C or °F expower unit y 96.02 Unit of the price	hysteresis is 1°. 1 = 1°C or °F ature. ge temperature of e temperature is s asured and fault 4 1 = 1°C or °F nected to channel ection. See also we asured. 1 = 1°C or °F connected to char t selection. See also mperature measured.	the power elected by 9310 Bridge y 2 of the SE arning A4B y	nunit connece 96.02 Unit stemperature n OCS-DSL-H 0 Bridge ter	Signal ted to selection. e measured Signal 1x. The unimperature Signal L-H1x. The							
05.12	Warning A4A0 Control temperature exceeds 7 The unit is selected by -80.0 1000.0 Ch1 bridge temperature or of Measured bridge temperature or of Measured bridge temperature or of Measured bridge temperature of Measured bridge temperature of Measured bridge temperature of the temperature is semeasured and fault 43 -80.0 1000.0 Ch3 bridge temperature of the temperature of the temperature is semeasured and fault 43 -80.0 1000.0 Ch3 bridge temperature of the temperature	board tempe 5°C or 167°F 96.02 Unit se -	rature mease. The used election. C or F dge temperates assured bridge temperature measured bridge temperature measured bridge assured bridge as a supplication bridge assured bridge assured bridge as a supplication bridge assured bridge as a supplication bridge as	hysteresis is 1°. 1 = 1°C or °F ature. ge temperature of e temperature is sasured and fault 4 1 = 1°C or °F nected to channel ection. See also we easured. 1 = 1°C or °F connected to chart selection. See also we have	the power elected by 9310 Bridge y 2 of the SE arning A4B y	nunit connece 96.02 Unit stemperature n OCS-DSL-H 0 Bridge ter	Signal ted to selection. e measured Signal 1x. The unimperature Signal L-H1x. The							

dex	Name										
	Text										
	Range		Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	Channel 4 b	ridge temperat	ture.	11	- I	J					
				power unit	connected to char	nel 4 of the	e SDCS-DS	L-H1x. Th			
	unit of the te	mperature is s	selected b	y 96.02 Unit	selection. See als	so warning	A4B0 Bridg	е			
			d fault 431		mperature measur	ed.					
	-80.0 100	0.0	-	°C or °F	1 = 1°C or °F	у	n	Signal			
.22	Diagnostic Attention 05 00 Diagnostic is set to see the many fractions of Boost										
	Attention: 05.22 Diagnostic is set to zero by means of Reset.										
	Displays the diagnostics messages:										
	Thyristor test 70002 - The drive was stopped before the autotuning finished.										
	70002										
				d (06.09.b03	3 Used main contr	ol word) wa	as prematur	ely			
		removed									
				d by a fault.							
	70000	Repeat auto				l					
	70003			un comman	d (06.09.b03 Used	main con	roi wora) wa	as not set			
	70004	in time or is									
	70004	Armature cu									
	70006				dication						
	70007	Motor is turning. No speed zero indication. Thyristor block test failed.									
	70008		Motor connected to ground (near terminal C).								
	70009	Motor conne									
	70010				d (terminals C and	D are ope	n).				
	70011	V11 short ci			,		,				
	70012	V12 short ci	rcuit.								
	70013	V13 short ci	rcuit.								
	70014	V14 short ci									
	70015	V15 short ci									
	70016	V16 short ci									
	70C11	V11 not con									
	70C12	V12 not con									
	70C13	V13 not con									
	70C14	V14 not con									
	70C15 70C16	V15 not con									
	70C10	V16 not con V21 not con									
	70C21	V21 not con									
	70C23	V22 not con									
	70C24	V24 not con									
	70C25	V25 not con									
	70C26	V26 not con									
	71124	V11 or V24		ıit							
	71225	V12 or V25									
	71326	V13 or V26									
	71421	V14 or V21									
	71522	V15 or V22					-				
	71623	V16 or V23									
	72000				d (short circuit bet	ween termi	nals C and	D).			
	7FFFF	Thyristor tes	t finishes	successful,	stack okay.						
								_			
	0 65535		-	-	1 = 1	у	n	Signal			

Index	Name										
	Text										
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре				
05.41	Main fan service counter										
	Main cooling fan age.										
	Displays the age of the main cooling fan as a percentage of its estimated lifetime. The estimate is										
	based on the duty, operating conditions and other operating parameters of the fan. When the counter										
	reaches 100 %, warning	reaches 100 %, warning A8C0 Fan service counter is generated.									
	Can be reset from the co	Can be reset from the control panel by keeping Reset depressed for over 3 seconds.									
	0 150										

06 Control and status words

Drive control, status and event words.



06.01 Main control word

Main control word.

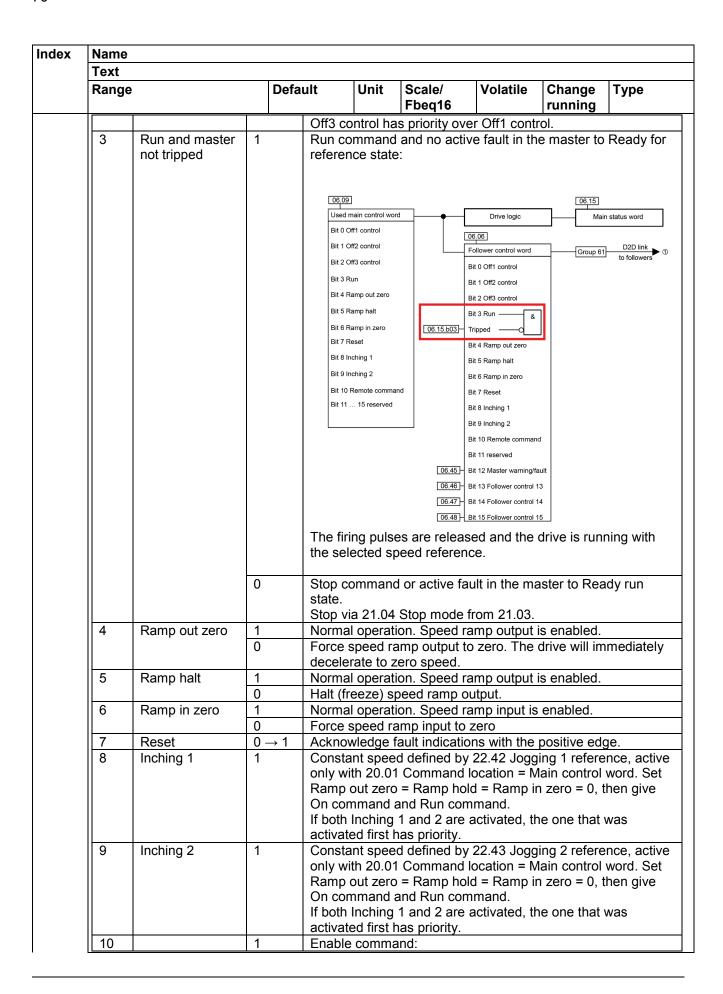
Displays the main control word of the drive. This signal shows the control signals as received from the selected sources, such as digital inputs, the fieldbus interfaces and the application program. See 06.08 Main control word source.

Attention: Do not write on this signal.

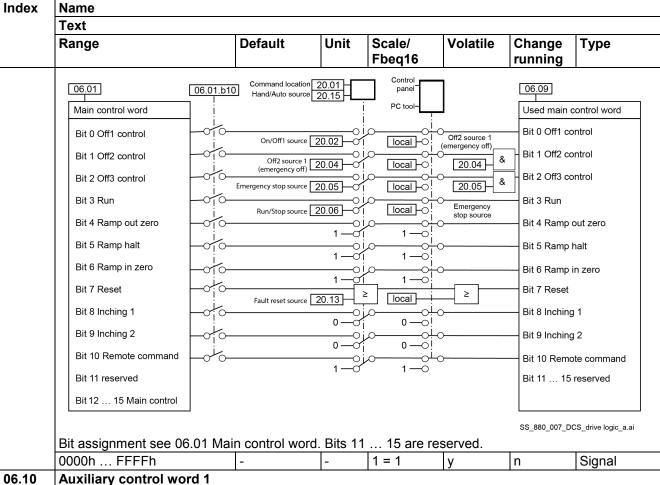
Bit	Name	Value	Remarks
0	Off1 control	1	On command to Ready run state.
			With 20.33 Mains contactor control mode = On:
			Contactors are closed, field exciter and fans are started.
			With 20.33 Mains contactor control mode = On and run:
			Ready run flag in 06.15 Main Status Word is forced to 1.

dex	Name	•									
	Text										
	Range	е		Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
			0	Off3) are a	ctive.	eady on stat	e, unless of		ks (Off2,		
	1	Off2 control	1		Normal operation (Off2 inactive).						
		One control	0	Off2 (emer command Stop by co Maximum t armature c contactors	gency of to Switch asting. T firing and urrent is are oper	f/electrical di i-on inhibited he firing ang ile to decreas zero the firin ned, field exc ority over Off	sconnect/fa state. le is forced se the arma g pulses ar iter and fan	to the value sture curren e blocked, t s are stopp	of 30.45 t. When the he ed.		
	2	Off3 control	1			Off3 inactive)					
			0	Off3 (emer Stopping v Off3 contro	gency st ia 21.03 ol has pri	op) comman Emergency s ority over Off	d to Switch- stop mode. 1 control.		l state.		
	3	Run	1	Run command to Ready for reference state. The firing pulses are released and the drive is running w selected speed reference. Stop command to Ready run state.							
			0	Stop via 21	1.04 Stop	mode from	21.03.				
	4	Ramp out	1			Speed ramp					
		zero	Force speed ramp output to zero. The drive will i decelerate to zero speed.						iately		
	5	Ramp halt	1		Normal operation. Speed ramp output is enabled.						
		·	0	Halt (freeze) speed ramp output.							
	6	Ramp in	1	Normal operation. Speed ramp input is enabled.							
		zero	0	Force speed ramp input to zero							
	7	Reset	0 → 1			ndications w	ith the posi	tive edae.			
	8	Inching 1	1	Constant s with 20.01 zero = Ran and Run co If both Inch	peed de Commainp hold = command ning 1 an	fined by 22.4 nd location = Ramp in ze	2 Jogging 1 Main contro ro = 0, then	reference, ol word. Set give On co	Ramp out		
	9	Inching 2	1	If both Inching 1 and 2 are activated, the one that was a first has priority. Constant speed defined by 22.43 Jogging 2 reference, a with 20.01 Command location = Main control word. Set zero = Ramp hold = Ramp in zero = 0, then give On cor and Run command. If both Inching 1 and 2 are activated, the one that was a first has priority.							
	10	Remote command	1	Enable cor Overriding 1).	nmand: control e	enabled (ove	rriding conti	rol has to se	et this bit to		
			0		ol word a	and reference and the main o					
	11	reserved									
	12	Main	1	Used by Adaptive Program, application program or overriding							
		control 12	0 control as signal source for binary-source selector parar								
	13	Main	1		-		-	•			
		control 13	0								
	14		1	7							

Index	Name											
	Text											
	Range			Defa	ult	Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
	15	Main control 14 Main control 15	0			1	•					
		2 15 can be or parameters						as signal sou	urce for bina	ary-source		
		FFFFh		-		-	1 = 1	у	n	Signal		
06.02	Application control word											
	Application program control word. The drive control word received from the application program.											
		FFFFh		0000	h	-	1 = 1	у	у	Parameter		
06.03		transparent										
	Displays the unaltered control word received from the PLC via fieldbus adapter A when a transparer communication profile is selected. See group 51 FBA A settings.											
		FFFFh		-		-	1 = 1	у	n	Signal		
06.04		3 transparent										
	Displays the unaltered control word received from the PLC via fieldbus adapter A when a transpare communication profile is selected. See group 54 FBA B settings.											
		FFFFh		<u> -</u>		-	1 = 1	у	n	Signal		
06.05	EFB transparent control word											
	Displays the unaltered control word received from the PLC via the embedded fieldbus interface who a transparent communication profile is selected in 58.25 Control profile. O000h FFFFh											
06.06		FFFFN ver control w		-		-	1 = 1	у	n	Signal		
	Follower control word to followers (master only). Displays 06.06 Follower control word send by the master, using D2D link, to 06.07 Follower control word received in all followers. Bit Name Value Remarks											
	0	Name Off1 control	1	aiue			and no activ	e fault in the	macter to	Peady run		
		On resolution	0		On command and no active fault in the master to Ready run state. With 20.33 Mains contactor control mode = On: Contactors are closed, field exciter and fans are started. With 20.33 Mains contactor control mode= On and run: Ready run flag in 06.15 Main Status Word is forced to 1.							
			Off1 command or active fault in the master to Ready on state, unless other interlocks (Off2, Off3) are active. Stopping via 21.02 Off1 mode.									
	1	Off2 control	1		Normal operation (Off2 inactive).							
	0 Off2 (emergency off/fast current off) inhibited state.						urrent off) co					
	Stop by coasting. The firing angle is forced to the val 30.45 Maximum firing angle to decrease the armatur current. When the armature current is zero the firing are blocked, the contactors are opened, field exciter are stopped. Off2 control has priority over Off3 control and Off1 control and Off1 control and Off1 control are stopped.											
					currer are blo are sto	Maximunt. When ocked, the opped.	im firing ang i the armatu ne contactor	re current is s are opene	zero the firi d, field excit	ng pulses er and fans		
	2	Off3 control	1		currer are ble are ste Off2 o	Maximunt. When ocked, the opped.	im firing ang i the armatu ne contactor	re current is s are opene	zero the firi d, field excit	ng pulses er and fans		



Index	Name											
	Text											
	Range			Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
		Remote command 0		Overriding control enabled (overriding control has to set this bit to 1).								
				Disable command:								
				the driv	Main control word and references are not getting through the drive. Bits 0 2 and the follower control bits 12 1 not affected.							
	11	reserved										
	12	Master warning/fault	1		See 06.45 Follower CW user bit 0 selection. Warning/Fault active in the master.							
			0		Warning/Fault inactive in the master.							
	13	Follower control 13	0	See 06	.46 Foll	ower CW use	er bit 1 sele	ction.				
	14	Follower control 14	1	See 06	.47 Foll	ower CW use	er bit 0 sele	ction.				
	15	Follower control	1	See 06	.48 Foll	ower CW use	er bit 0 sele	ction.				
	0000h	FFFFh	1_		_	1 = 1	у	n	Signal			
06.07	_	ver control word re	ceive	ed		1	J	1::	Oigilia			
	Follower control word received from master (followers only). Displays 06.06 Follower control word send by the master, using D2D link, to 06.07 Follower control word received in all followers. Bit assignment see 06.06 Follower control word. 0000h FFFFh											
06.08		control word source	<u> </u>	'	_	1 - 1	У		Signal			
	Selects the source for 06.01 Main control word. Other; source selection. 0: None; inactive. All bits are forced to zero. 1: FBA A; 06.03 FBA A transparent control word. 2: FBA B; 06.04 FBA B transparent control word. 3: EFB; 06.05 EFB transparent control word. 4: Application; 06.02 Application control word. 5: Follower; 06.07 Follower control word received (follower only). 6: User 1; 06.100 User control word 1. 7: User 2; 06.101 User control word 2. 8: DDCS control word; 06.110 DDCS control word.											
	08	· · · · · · · · · · · · · · · · · · ·	None	I_	1 = 1	n	у	Parameter				
06.09		main control word		10110		1''	1.,	1	, didifictel			
	Used main control word. Used main control word. Displays the main control word used by the internal drive logic. The selection is depending on the drives local/remote control setting, 20.01 Command location and 20.15 Hand/Auto source.											



Auxiliary control word 1.

The auxiliary control word 1 can be written to by Adaptive Program, application program or overriding control.

Bit	Name	Value	Remarks				
0	Direct speed	1	The speed ramp output is overwritten and forced to				
	reference		23.32 Direct speed reference.				
		0	Speed ramp is active.				
1	Drive direction	1	Drive direction reverse (see note 1), changes the signs				
			of 24.02 Used speed feedback and 27.01 Current				
			reference.				
		0	Drive direction forward (see note 1).				
2	Limit used	1	24.01 Used speed reference is limited by 30.11 M1				
	speed reference		minimum speed, 30.12 M1 maximum speed or by 42.19				
			M2 minimum speed, 42.20 M2 maximum speed.				
		0	24.01 Used speed reference is not limited.				
3	reserved						
4	Bypass speed	1	Bypass speed ramp (speed ramp output is forced to				
	ramp		value of speed ramp input).				
5	reserved						
6	Halt speed	1	Halt (freeze) the speed controller integration time.				
	controller						
7	Reset speed	1	Reset the speed controller integration time.				
	controller						
8	Limit speed	1	No back calculation of the speed controller torque				
	controller		limitation. The speed controller output can run to the				

ıdex	Name											
	Text											
	Range		Default		Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
			0	settings of 30.13 Speed control min torque or 30.14 Speed control max torque. This is typically used for winders. Back calculation of the speed controller torque limitation. The speed controller integration time is limited by torque or current limits. See 30.02 Torque limit status.								
	9	reserved										
	10	Force max firing angle	1			le firing pulse e firing angle						
			0	No	rmal firi	ng pulses rel	eased.					
	11	reserved										
	12	Aux. control 12	0			daptive Prog control as si						
	13	Aux. control 13	1	sel	ector pa	arameters.		·				
	14	Aux. control 14	1									
	15	Aux. control 15	1 0									

Note 1: Changes of Drive direction become active only in drive state Ready run. Changing the speed direction of a running drive (Ready for reference state) by means of Drive direction is not possible. **Note 2:** Bits 12 ... 15 can be used to carry additional control data. E.g. as signal source for binary-source selector parameters (see: Other [bit], source selection).

0000h ... FFFFh 0000h - 1 = 1 y y Parameter

06.11 Auxiliary control word 2

Auxiliary control word 2.

The auxiliary control word 2 can be written to by Adaptive Program, application program or overriding control.

Bit assignment:

Bit	Name	Value	Remarks
0	Dynamic braking on	1	Force dynamic braking regardless from settings of 19.20 Follower force ramp stop, 21.02 Off1 mode, 21.03 Emergency stop mode or 21.04 Stop mode.
1	reserved		
2	Synchronizing command	1	Positioning: Synchronizing command from overriding control for OnBoard encoder, encoder 1 or encoder 2. See 90.86 Pos counter init cmd source (trigger) and 90.51 Load feedback selection.
3	reserved		
4	Torque proving OK	1	Selected motor torque proving is OK. This bit to be set by Adaptive Program, application program or overriding control. See 44.19 M1 brake torque proving time.
		0	Selected motor torque proving is inactive. This bit is to be set by Adaptive Program, application program or overriding control.
5	Reset torque memory	1	Reset torque memory. Valid only if 44.09 M1 brake open torque source = Brake torque memory.
6	reserved		

dex	Name												
	Text												
	Range	9		Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
	7	Suppres current of	s armatur leviation	e 1	1 A114 Armature current deviation is blocked. S 04.31.12 Warning word 1. Usually used for no								
				0	applicat A114 Aı	ions. mature curr	ent deviation	n is release	d. See				
	8	15 reserved			04.31.12 Warning word 1								
		FFFFh		0000h		1 = 1	1.,	1.,	Devement				
6.15	_	status word		000011	-	1 - 1	У	у	Paramete				
	Displa	status word. lys the main st signment:	atus word	I of the drive	е.								
	Bit	Name	Value	Remarks	S								
	0	Ready on	0		be switch								
	1	Ready run	1 0	Ready to	operate.	e e.g. Off1	activo						
	2	Ready	1	Operatio	n enabled	(drive is run							
		reference	0		Operation inhibited. Fault.								
	3	Tripped	0	No fault.									
	4	Off2 status	0	Off2 activ	Off2 inactive. Off2 active (emergency off/fast current off), Switch-on inhibited								
	5	Off3 status	1	state. Off3 inac	ctive.								
			0	Off3 activ	ve (emerg	ency stop), S	Switch-on inl	hibited state) .				
	6	Switch-on inhibited	0	Switch-o - Fault - Off2 - Off3 - Switch (eme	n inhibited :. (emergend (emergend ch-on inhibergency off rgency sto	state is actively off/fast curvey stop) actively ited via digital, 20.08 Off2	ve after: rrent off) act /e. al input 20.0 Source 2 (e	tive. 04 Off2 sour	ce 1				
	7	Warning	0	Warning.									
	8	At setpoint	1	Setpoint: within the	No warning. Setpoint: The feedback value equals the reference. Means it is within the tolerance limits. See 46.21 At speed hysteresis and 46.23 At torque hysteresis feedback.								
			0	Setpoint:	The feedle the tolera	oack value d ance limits. S	iffers from the						
	9	Remote	1 0	Drive cor	46.23 At torque hysteresis feedback. Drive control location: Remote. Drive control location: Local.								
	10	Above level		See 06.2 Speed of 46.31 Ab both rota	29 MSW bir torque featons speed to the speed	t 10 sel. edback equa I level or 46.							
	11	Status control 11	1 0		30 MSW bi								
	12	00111101 11	1	0 00 0	31 MSW bi								

ndex	Name												
	Text												
	Range)		Defa	ult	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
		Status	0		1 1 23 1 1 2 2 2 2								
		control 12											
	13		1	See	e 06.32 ľ	MSW bi	t 13 sel.						
			00										
	14		1	_ See	See 06.33 MSW bit 14 sel.								
	l		0										
	15	reserved											
				ı			Τ			Ta: .			
		FFFFh		-		-	1 = 1	у	n	Signal			
5.16		status word 1											
	Displa	status word 1. ys the drive statu signment:	is word	i 1.									
	Bit	Name	Vá	alue	Remai	rks							
	0	Tripped	1				d. A fault is a						
	1	Inhibited	1			Run inh	See 06.19 bit status w						
	2	Enabled	1				ırce 2 (emei	raency off) is	e set to 1 = (Off?			
		Lilabled	'		inactive	e.	affected by t	,		J112			
	3	Ready on	1				to receive a						
	4	Ready run	1		Drive is	s ready	to receive a	Run comma	and.				
	5	Ready reference	ce 1		Drive is	s ready	to receive a	reference (drive is runn	ing).			
	6	Stopping	1		Drive is	s stoppi	ng.						
	7	Off	1		Drive is	s off.							
	8	Off2	1		inhibite	ed state.			,				
	9	Off3	1				nergency st		on inhibited	state.			
	10	On requested	1				nd was give						
	11	Run requested					nd was give						
	12	Limiting	1		Limit w	ord 1 a	limit (speed nd 30.02 To	rque limit st		See 30.01			
	13	Field current	1				ating field cu	ırrent.					
	14	Local control	1				l control.	AADD 6					
	15	Network contro	bl 1		the Co and Et Net Cti Profile	mmon I hernet/I rl and N	vork control ndustrial Pro P, denotes t et Ref objec ore informati uals:	otocol (CIPT he control o ts of the OD	M), such as of the drive u OVA AC/DC	DeviceNet sing the Drive			
					- FD (3 <i>F</i> - FE	NA-01 AFE685 NA-01/-	DeviceNet a 73360 [Engl ·11 Ethernet 0093568 [E	ish]). :adapter mo					
	0000h	FFFFh		T-	, (57	-	1 = 1	у	n	Signal			
5.17	_	status word 2		<u> </u>		1	1	J	1	1 5.3.10.			
	Drive s Displa	status word 2. ys the drive statusignment:	is word	12.									

Index											
	Text										
	Range	e	Default		Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
	Bit	Name	Value	Ren	narks		·				
	0	Autotuning	1	The requested autotuning has been finished.							
	1	reserved									
	2	Torque control	1	Torc	ue con	rol mode ac	tive.				
	3	Speed control	1	Speed control mode active.							
	4	reserved									
	5	Safe reference	1	49.0		d reference nunication lo					
	6	Last speed	1		such as BA A comm						
	7	Loss of reference	1	Refe	erence s	ignal lost.					
	8	Emergency stop failed	1	Emergency stop failed. See 31.31 Emergency ramp supervision and 31.32 Emergency ramp supervision delay.							
	9	Jogging	1			nabled. See					
	10	Above level	1	Speed or torque feedback equals or exceeds leve defined by 46.31 Above speed level or 46.33 Abotorque level. Valid in both rotation directions. An emergency stop command signal is active or the is stopping after receiving an emergency stop command signal is active or the interval of t							
	11	Emergency stop	1								
	12	Reduced run	1			n active. See					
	13	reserved									
	14	Ramp stop failed	1			failed. See 3 stop super			vision and		
	15	reserved									
	0000h	FFFFh	-		-	1 = 1	у	n	Signal		
06.18	Drive	status word 3	l.				1,5	1	<u>. </u>		
	Displa	status word 3. ys the drive status wordsignment: Name	rd 3.	Dom	narks						
	0	M1 field exciter	1			d exciter ack	nowledged				
	1	M2 field exciter	1			d exciter ack					
	2	M1 field heating	1		or 1 field	heating is a			heating		
	3	M2 field heating	1		or 2 field	d heating is a	active. See	28.34 Field	heating		
	4	M1 (motor 1)	1			field exciter	1 are activ	е.			
	5	M2 (motor 2)	1	Moto	or 2 and	field exciter	2 are activ	e.			
	6	User set 1	1	Use	r param e/load.	eter set 1 ac	ctive. See 96	6.22 User s			
	7	User set 2	1	save	e/load.	eter set 2 ac					
	8	User set 3	1	save	e/load.	eter set 3 ac					
	9	User set 4	1	save	e/load.	eter set 4 ac					
	10	Auto-reclosing	1	Auto	-reclosi	ng logic is a	ctive. See 3	1.51 Mains	loss mode.		

Index	Name												
	Text												
	Range	•	Default		Unit	Scale/ Fbeq16	Volatile	Change running	Type				
	11	Drive direction negative	ection 1			Negative drive direction active. Controlled by 06.10.b0 Auxiliary control word 1.							
	12	Tripped or warning	1	Fault or warning active.									
	13	reserved				-							
	14	reserved											
	15	reserved											
			•										
	0000h	0000h FFFFh			-	1 = 1	у	n	Signal				
00.40	_	FFFFh	-		-	1 = 1	у	n					

06.19 Drive inhibit status word 2

Drive inhibit status word 2.

The drive inhibit status word 2 specifies the source of the inhibiting signal that is preventing the drive from starting. See 06.16.b01 Drive status word 1 and 06.20 Run inhibit status word. Bit assignment:

Bit	Name	Value	Remarks
0	Follower	1	A follower is preventing the master from starting (master
			only).
1	Application	1	The application program is preventing the drive from
			starting.
2	Auxiliary power	1	Auxiliary power failure is preventing the drive from
	failure		starting.
3	Encoder feedback	1	The encoder feedback configuration is preventing the
			drive from starting.
4	Reference source	1	A reference source parametrization conflict is preventing
	parametrization		the drive from starting. See warning A6DA Reference
			source parametrization.
5	Speed not zero	1	Re-start of the drive is not possible, see also A137 Start
			condition conflict.
			Speed zero has not been reached. See 21.08 M1 zero
			speed level.
			Set On = Run = 0 (this includes jogging and inching) and
			check if the actual speed is within the zero speed limit.
			This warning is valid:
			 For a normal stop. Off1 command in case of
			21.01 Start mode = Start from zero.
			 For a coast stop. Off2 (emergency off/fast
			current off) command.
			 For an emergency stop. Off3 (emergency stop) command.
			Even if the drive power is cycled.
			Check:
			The settings of 21.08 M1 zero speed level,
			21.01 Start mode and 90.41 M1 feedback
			selection.
			The function of the used speed feedback
			devices (tacho / encoder).
6	Re-start not	1	Re-start of the drive is not possible, see also A137 Start
J	possible	'	condition conflict.
	Possible		Either On and/or Run (this includes jogging and inching)
			command has been set wrong. See 06.09 Used main
			control word.
			In case of a wrong setting of either the On and/or the
			Run command, make sure, On = Run (this includes

dex	Name									
	Text							•		
	Range		Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
				jogging and inching) = 0. Additionally the timing of the commands must be checked. E.g.: - After a fault reset and On and/or Run comma is still high.						
	7	15 reserved								
	0000h	FFFFh	1		1 - 1	1.,	T _n	Cianal		
.20		rrrii hibit status word	<u> -</u>	-	1 = 1	У	n	Signal		
.20		hibit status word.								
	other i	tarting. The conditions nstances, the inhibiting 3.16.b01 Drive status w signment:	condition	must be ren	noved first.		command i	is cycled. Ir		
	Bit	Name	Value	Remarks						
	0	Not ready run	1		ot been para in groups 9					
	1	Control location changed	*1		ation has ch	anged.				
	2	Firmware inhibit	1		gram is kee nal firmware.		inhibited sta	ate. See		
	3	Fault reset	*1		been reset.					
	4	Off2 from source 2	1		source 2 (er emergency			= Off2		
	5	reserved FSO inhibit	1	Operation	arayantad by	, FCO xxx 000	fatu function	no modulo		
	7	STO	1	Safe torque	orevented by	/ FSO-xx sa	iety iurictior	is module.		
	8	reserved	'	Sale torque	on active					
	9	Autotuning finished	1	The reques	ted autotuni	ng has beer	n finished.			
	10	Off3 stop mode 0	1	Off3 active	(emergency stop mode.	stop) using		See 21.03		
	11	Off3 stop mode 1	1	Off3 active	(emergency stop mode.	stop) using	ramp stop.	See 21.03		
	12	Off3 stop mode 2	1	See 21.03	(emergency Emergency	stop mode.				
	13	Off3 stop mode 3	1	Emergency	(emergency stop mode.	., 0	•			
	14	Off3 stop mode 4	1	21.03 Eme	(emergency rgency stop	modé.	•			
	15	Jogging active	1		g enable sigi ing enable.	nai is inniditi	ng the oper	ation. See		
	0000h	FFFFh	1_		1 = 1	у	n	Signal		
			1	1	1	/				
.21	-	control status word								

Parameters

Bit

Name

Remarks

Value

Name												
Text Range	[Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре					
0	Zero speed	1	absol remai M2 ze speed Notes - T co ei di W - D fo - D re	his bit is not ontrol is enable, 42.76 rive is runnin/ord. uring a ramporward, the delation of 42.21 uring a ramporeverse, the delation of the	90.01 Moto 1.08 M1 ze vel for longe 2 M2 zero s updated wholed by 44.0 M2 brake og. See 06.1 stop when elay count i	r speed for ro speed leer than 21.0 speed delay nen mechar 06 M1 brake control enables. The drive is runs whene the drive is runs whene	control has vel, 42.21 19 M1 zero /. nical brake e control ble and the n Status s running ver 90.01 < s running					
1	Forward	1	(-1) • 21.08 or (-1) • 42.21. 1 90.01 > 21.06 or 42.23, thus the drive is forward above zero speed level.									
2	Reverse	1	90.01	< (-1) • 21.0	6 or (-1) • 4	12.23, thus						
3	Out of window	1	Spee	d error windous is out of the sout of the sout of the sout of the sout control en	ow control is window. Se	s active and	the speed					
4	EMF speed feedba	ack 1	feedb 90.46 fault i has fa	speed feedb ack selection Force open n case the so aulted. ard tacho/Er ack.	n, 42.20 M2 loop or 31. elected Onl	2 feedback : 35 Motor fe Board tacho	selection, eedback o/encoder					
5	OnBoard tacho speed feedback	0	OnBo M1 fe selec OnBo speed	ard tacho sp edback sele	ction, 42.20 ulted or not See 90.41 N	M2 feedbases selected as M1 feedbac	s source of k selection,					
6	OnBoard encoder speed feedback	1	OnBo 90.41 selec		k selection	, 42.20 M2	feedback					
		0	of spe	erd encoder eed feedback tion, 42.20 M open loop.	c. See 90.4	1 M1 feedb	ack					
7	Encoder 1 speed feedback	0	Encode feedb Encode speed	der 1 speed ack selection der 1 faulted d feedback. S M2 feedbac	n, 42.20 M2 or not sele See 90.41 M	2 feedback : cted as sou M1 feedbac	selection. Irce of k selection,					
8	Encoder 2 speed feedback	1	Enco	der 2 speed ack selection								

Index	Name												
	Text												
	Range		Defa	ult	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
				0	Encoder 2 faulted or not selected as source speed feedback. See 90.41 M1 feedback se 42.20 M2 feedback selection or 90.46 Force loop.								
	9	Any constant sper	eed	1		onstant speed has been selected. See 06.22 istant speed status word.							
	10	Follower speed correction min le	evel	1	contr	num limit of solled follower neters 23.39	r has been						
	11	11 Follower speed correction max level				num limit of olled followeneters 23.39	r has been						
	12 15	reserved											
	0000h F	FFFh	-		-	1 = 1	у	n	Signal				
06.22	Constant s	peed status word	d										
	0 1 1												

Constant speed status word.

Indicates which constant speed is active, if any. See 06.21.b09 Speed control status word. Bit assignment:

Bit	Name	Value	Remarks
0	Constant speed 1	1	Constant speed 1 active.
1	Constant speed 2	1	Constant speed 2 active.
2	Constant speed 3	1	Constant speed 3 active.
3	Constant speed 4	1	Constant speed 4 active.
4	Constant speed 5	1	Constant speed 5 active.
5	Constant speed 6	1	Constant speed 6 active.
6	Constant speed 7	1	Constant speed 7 active.
7 15	reserved		

1 = 1

Signal

n

06.24 Current controller status word 1

Current controller status word 1.

Displays the current controller status word 1 of the drive.

Bit assignment:

0000h ... FFFFh

Bit	Name	Value	Remarks
0	Fans	1	Fans On command for drive and motor fans.
		0	Fans Off command for drive and motor fans.
1	reserved		
2	reserved		
3	Field heating	1	Active.
		0	Inactive.
4	Field current	1	Reverse (negative field current).
	direction	0	Forward (positive field current).
5	Field exciter	1	Field exciter On command.
		0	Field exciter Off command.
6	Dynamic braking	1	Dynamic braking active/started.
		0	Dynamic braking inactive.
7	Mains contactor	1	Mains contactor Close command (see note 1).
		0	Mains contactor Open command (see note 1).

	ame ext									
	ange	r.	Defau	ult	Unit	Scale/ Fbeq16	Volatile	Change running	Туре	
8	3	Dynamic braking contactor	1	conta	Dynamic braking contactor close command. Close the contactor for the dynamic braking resistor. Armature current must be zero.					
			0				tor open con c braking res		en the	
9	9	Energy flow	1 0		is gene					
1	10	US style DC contactor	1	US st	yle char	ngeover DC	contactor c			
			0	the D	C conta 7 Current col		contactor open the resis		or.	
1	11	Firing pulses	1			active (on).				
1	12	Discontinuous current	1 0	Conti	nuous a	rmature cui s armature	rrent.			
1	13	Zero current	1 0	Zero	armatur	e current de rent not zer	etected.			
	14	DC-breaker (continuous)	1				nd (continuo	us signal).		
1	15	DC-breaker (pulse)	1	DC-b	reaker t	rip comman	nd (1 s pulse).		

06.25 Current controller status word 2

Current controller status word 2.

Displays the current controller status word 2 of the drive. Value of zero means, that the status is OK. The firing angle is forced to the value of 30.45 Maximum firing angle if any of the bits is set. Bit assignment:

Bit	Name	Value	Remarks
0	Armature overcurrent	1	2310 Armature overcurrent. See 04.21.b01 Fault word 1.
1	Mains overvoltage	1	F513 Mains overvoltage. See 04.21.b12 Fault word 1.
2	Mains undervoltage	1	A111 Mains low voltage. See 04.31.b10 Warning word 1 or 3280 Mains low voltage. See 04.21.b11 Fault word 1.
3	EMF reduction	1	A104 Reversal volt function or F504 Reversal volt function. See 31.60 Reversal volt function. Waiting for the reduction of the EMF to match the mains voltage. See 27.42 Reversal volt margin.
4	Bridge reversal	1	F533 12-pulse reversal timeout. See 04.23.b00 Fault word 3. F534 12-pulse current difference. See 04.23.b01 Fault word 3. F557 Reversal time. See 04.24.b08 Fault word 4.
5	Operation mode	1	99.06 Operation mode = 12-pulse parallel master. 12-pulse parallel slave. 12-pulse serial master. 12-pulse serial slave. 6-pulse serial master. 6-pulse serial slave.

Rang	ge	Defaul	lt	Unit	Scale/	Volatile	Change	Type		
					Fbeq16		running			
			Serial sequential mas Serial sequential slav							
			1 – D	artner b	locked	Seriai sequ	entiai siave	•		
			1			Large field	exciter			
						n active (fre				
6	M1 field exciter	1				OK. See 04				
	self-test	0			exciter self-t		<u></u>			
7	M1 field exciter	1				dy lost. See	04.23.b04	Fault wor		
	ready		3.			,				
		0			exciter read					
8	M2 field exciter	1				OK. See 04	.22.b13 Fa	ult word 2		
	self-test	0			exciter self-t					
9	M2 field exciter	1		M2 field	l exciter rea	dy lost. See	04.23.b05	Fault wor		
	ready		3.							
		0			exciter read					
10	Zero current	1				current, if 2				
						t 10 is set b				
11	Field reversal	1			active.	04.24.b08 F	-auit word 4	٠.		
11	Fleid reversal	0			inactive.					
12	reserved	U	Field	eversa	mactive.					
13	PLL deviation	1	Δ131	DII da	viation PLI	deviation le	val is avcas	dad Sac		
	level	'			viation level		VEI IS EXCEC	ueu. occ		
	IC VOI	0				I. See 95.44	PLL deviat	tion level		
14	Mains	1				ion lost. See				
	synchronization		1.		J					
		0		synchr	onized.					
15	Current controller	1				troller is disa	abled and 2	7.02 Use		
					nce is force	d to zero.				
		0	Enabl	ed.						

06.26 M1 field exciter status word

Motor 1 field exciter status word.

Displays motor 1 field exciter status word of the drive.

Bit assignment:

Bit	Name	Value	Remarks
0	None	1	No field exciter connected.
1	OK	1	Field exciter and communication to armature drive OK.
2	Communication	1	F516 M1 field exciter communication. See 04.21.b15
	failed		Fault word 1.
		0	Communication to armature drive OK.
3	Field exciter self-	1	F529 M1 field exciter not OK. See 04.22.b12 Fault
	test failed		word 2.
		0	Field exciter self-test OK.
4	Field exciter ready	1	F537 M1 field exciter ready lost. See 04.23.b04 Fault
	lost		word 3.
		0	Motor 1 field exciter ready.
5	Field exciter	1	F541 M1 field exciter low current. See 04.23.b08 Fault
	undercurrent		word 3.
6	Field exciter	1	F515 M1 field exciter overcurrent. See 04.21.b14 Fault
	overcurrent		word 1.

Index	Name								
	Text								
	Range		Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре	
	7	Wrong setting	1		etting of 99	of 99.07 M1 used field exciter type and dield exciter type.			
	8 15	reserved		12.101	L dood noid	Oxonor typo	•		
		1							
	0000h	FFFFh	_	-	1 = 1	у	n	Signal	
6.27	M2 field e	exciter status word	I	I					
	Motor 2 fi	eld exciter status wo motor 1 field exciter	rd.	of the driv	e.				
	Bit	Name	Value	Remark	S				
	0	None	1	No field	exciter coni	nected.			
	1	OK	1	Field ex	citer and co	mmunication	to armatur	e drive OK.	
	2	Communication failed	1	F519 M		er communic	ation. See ()4.22.b02	
			0	Commu	nication to a	armature driv	e OK.		
	3	Field exciter self-	1	F530 M	2 field excite	er not OK. Se	ee 04.22.b1	3 Fault	
		test failed		word 2.					
			0		citer self-tes				
-	4	Field exciter ready lost	1	F538 M2 field exciter ready lost. See 04.23.b05 Faultword 3. Motor 2 field exciter ready.					
			0						
	5	Field exciter undercurrent	1						
	6				F518 M2 field exciter overcurrent. See 04.22.b01 Fault word 2.				
	7	Wrong setting 1		1 Check setting of 99.07 M1 used field exciter type 42.49 M2 used field exciter type.					
	8 15	reserved							
	0000h	FFFFh	-	-	1 = 1	у	n	Signal	
6.29	MSW bit	10 sel							
	Selects a Other [bit 0: False; 1: True;	urce for main status binary source whos t]; source selection. level; see 06.17.b1	e status is tr	ansmitted	as 06.15.b	10 Main statu	us word.	Parameter	
6.30	MSW bit	11 00	Above leve	71 -	-		у	i arameter	
·U.JU	Binary sor Selects a Other [bit 0: False; 1: True;	urce for main status binary source whos t]; source selection.	e status is tr		as 06.15.b				
	0 1		False	-	1 = 1	n	у	Parameter	
6.31	MSW bit	12 sel							
	Selects a	urce for main status binary source whos t]; source selection.				12 Main statu	us word.		

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	Lost run enable	-			•		-
	0 1	False	-	1 = 1	n	у	Parameter
06.32	MSW bit 13 sel	<u>.</u>					
	Binary source for mai Selects a binary sour Other [bit]; source so 0: False; 1: True;	ce whose status is tra			13 Main stat	us word.	
	0 1	False	-	1 = 1	n	у	Parameter
6.33	MSW bit 14 sel						
	Selects a binary sour Other [bit]; source so 0: False; 1: True; 0 1		-	1 = 1	n	у	Parameter
6.45	Follower CW user b	it 0 selection	•		•		1
	Other [bit]; source so 0: False; 1: True; 2: Main control 12; s 3: Main control 13; s 4: Main control 14; s 5: Main control 15; s 6: Master warning/fa	see 06.01.b12 Main c see 06.01.b13 Main c see 06.01.b14 Main c see 06.01.b15 Main c	ontrol wo ontrol wo ontrol wo	rd. rd. rd.			
	0 6	Master warning/fau	-	1 = 1	n	у	Parameter
06.46	Follower CW user b						
	Binary source for follo Selects a binary sour followers. Other [bit]; source so 0: False; 1: True; 2: Main control 12; s 3: Main control 14; s 5: Main control 15; s	ce whose status is tracelection. see 06.01.b12 Main come of the common	ontrol wo ontrol wo ontrol wo	rd. rd. rd.			d to all
	0 5	Main contro		1 = 1	n	у	Parameter
	F II	13					
06.47	Binary source for folks Selects a binary sour followers. Other [bit]; source so 0: False; 1: True; 2: Main control 12; so	ower control word bit ce whose status is tra election.	ansmitted	l as 06.06.b			d to all

Index	Name								
	Text								
	Range)	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре	
		n control 14; see 06.0 n control 15; see 06.0			d.	1	<u>, </u>		
	0 5	,	Main control	-	1 = 1	n	у	Parameter	
06.48	Follov	ver CW user bit 4 sele	ection	1	l	L	_ L		
	Selectifollower Other 0: Fals 1: Truc 2: Mai 3: Mai 4: Mai	[bit]; source selection. se; e; n control 12; see 06.0 n control 13; see 06.0 n control 14; see 06.0	se status is tran 1.b12 Main cor 1.b13 Main cor 1.b14 Main cor	esmitted Introl worn Introl worn Introl worn Introl worn Introl worn	as 06.06.b [^] d. d. d.			I to all	
	5: Mai 0 5	n control 15; see 06.0	Main control	ntrol wor -	d. 1 = 1	n	у	Parameter	
06.50	Heer	status word 1	15						
	Bit 0 1 2 3 4 5 6 7 8 9 10 11 12 13	Vame User status bit 0 User status bit 1 User status bit 2 User status bit 3 User status bit 4 User status bit 5 User status bit 6 User status bit 7 User status bit 8 User status bit 9 User status bit 10 User status bit 11 User status bit 12 User status bit 13	Status of son	Remarks Status of source selected by 06.60 User status word 1 bit 0 sel. Status of source selected by 06.61 User status word 1 bit 1 sel. Status of source selected by 06.62 User status word 1 bit 2 sel. Status of source selected by 06.63 User status word 1 bit 3 sel. Status of source selected by 06.64 User status word 1 bit 3 sel. Status of source selected by 06.65 User status word 1 bit 4 sel. Status of source selected by 06.65 User status word 1 bit 5 sel. Status of source selected by 06.66 User status word 1 bit 6 sel. Status of source selected by 06.67 User status word 1 bit 7 sel. Status of source selected by 06.69 User status word 1 bit 8 sel. Status of source selected by 06.69 User status word 1 bit 9 sel. Status of source selected by 06.70 User status word 1 bit 10 sel. Status of source selected by 06.71 User status word 1 bit 11 sel. Status of source selected by 06.72 User status word 1 bit 11 sel.					
	14	User status bit 14	Status of so	urce sel	ected by 06	.74 User sta	tus word 1 l	oit 14 sel.	
	15	User status bit 15	Status of so	urce sei	ected by U6	.75 User sta	tus word 1 i	oit 15 sei.	
	0000h	FFFFh			1 = 1	у	n	Signal	
06.60	Binary Select	•	se status is sho	wn as 0	6.50.b00 Us	ser Status W	ord 1.		
	0 1		False		1 = 1	n	у	Parameter	
)6.61	Binary	status word 1 bit 1 se source for bit 1. s a binary source whos		wn as 0	3 50 b01 Us	eer Status W	Vord 1		

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	0: False; 1: True;						
	0 1	False	-	1 = 1	n	у	Parameter
6.62	User status word 1 bit	t 2 sel	•	•			
	Binary source for bit 2. Selects a binary source Other [bit]; source sele 0: False; 1: True;		nown as (06.50.b02 Us	ser Status W	ord 1.	
	0 1	False	-	1 = 1	n	у	Parameter
06.63	User status word 1 bit	t 3 sel					
	Binary source for bit 3. Selects a binary source Other [bit]; source sele 0: False; 1: True; 0 1		nown as (06.50.b03 Us	ser Status W	_	Parameter
06.64	User status word 1 bit			1 - 1	[1]	у	Parameter
	Selects a binary source Other [bit]; source sele 0: False; 1: True; 0 1		nown as (06.50.b04 Us	ser Status W	/ord 1.	Parameter
06.65	User status word 1 bit		L			1,5	
	Binary source for bit 5. Selects a binary source Other [bit]; source sele 0: False; 1: True; 0 1		nown as (06.50.b05 Us	ser Status W	ord 1.	Parameter
06.66	User status word 1 bit			1	1	13	i aramoto.
	Binary source for bit 6. Selects a binary source Other [bit]; source sele 0: False; 1: True; 0 1	whose status is shection.	nown as (06.50.b06 Us	ser Status W	ord 1.	Parameter
06.67	User status word 1 bit	t 7 sel					
	Binary source for bit 7. Selects a binary source Other [bit]; source sele 0: False; 1: True; 0 1		nown as (06.50.b07 Us		_	Parameter
06.68	User status word 1 bit		-	-	n	у	raiameter
JO.OÖ	Binary source for bit 8. Selects a binary source Other [bit]; source sele 0: False; 1: True;	whose status is sh	nown as (06.50.b08 Us	ser Status W	ord 1.	

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	0 1	False	-	1 = 1	n	у	Parameter
06.69	User status word 1 b	oit 9 sel	•			•	
	Binary source for bit 9 Selects a binary source Other [bit]; source se 0: False; 1: True;	ce whose status is sl	nown as (06.50.b09 Us	ser Status W	ord 1.	
	0 1	False	-	1 = 1	n	у	Parameter
06.70	User status word 1 b	oit 10 sel	•			•	
	Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True;	ce whose status is silection.					Description
06.71	0 1 User status word 1 b	False	-	1 = 1	n	у	Parameter
	Selects a binary source Select		nown as (06.50.b11 Us	ser Status W	/ord 1.	Parameter
			-	1 - 1	11	у	Farameter
06.72	User status word 1 b						
06.72	Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True;	2. ce whose status is sielection.	nown as (T	Parameter
	Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True; 0 1	2. ce whose status is si election. False	hown as (06.50.b12 Us	ser Status W	ord 1.	Parameter
	Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True;	2. ce whose status is significant. False it 13 sel 3. ce whose status is significant.	-	1 = 1	n	y 'ord 1.	Parameter
06.72 06.73	Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True; 0 1 User status word 1 b Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True;	2. De whose status is sielection. False Dit 13 sel 3. De whose status is sielection. False	-	1 = 1 06.50.b13 Us	n ser Status W	у	
06.73	Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True; 0 1 User status word 1 b Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True; 0 1 User status word 1 b Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True;	2. De whose status is sielection. False Dit 13 sel 3. De whose status is sielection. False Dit 14 sel 4. De whose status is sielection.	- nown as (1 = 1 06.50.b13 Us	n ser Status W n ser Status W	y ord 1. y ord 1.	
06.73	Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True; 0 1 User status word 1 b Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True; 0 1 User status word 1 b Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True; 0 1	Example 2. The second of the s	nown as (1 = 1 06.50.b13 Us 1 = 1 06.50.b14 Us	n ser Status W	y ord 1.	Parameter
06.73	Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True; 0 1 User status word 1 b Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True; 0 1 User status word 1 b Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True;	Example 2.	- nown as (1 = 1 06.50.b13 Us 1 = 1 06.50.b14 Us	n ser Status W n ser Status W	y /ord 1. /ord 1.	Parameter
06.73	Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True; 0 1 User status word 1 b Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True; 0 1 User status word 1 b Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True; 0 1 User status word 1 b Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False; 1: True; 0 1 User status word 1 b Binary source for bit 1 Selects a binary source Other [bit]; source se 0: False;	Example 2.	- nown as (1 = 1 06.50.b13 Us 1 = 1 06.50.b14 Us	n ser Status W n ser Status W	y /ord 1. /ord 1.	Parameter

Index	Name							
	Text							
	Range	•	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	????			U.	•			•
	0000h	FFFFh	-	-	1 = 1	у	n	Signal
06.87	FBA E	generic control wo	rd	l .	•	1-2		<u> </u>
	????							
	0000h	FFFFh	-	_	1 = 1	у	n	Signal
06.88		profile status word		l				1 3
	????	•						
	0000h	FFFFh	-	_	1 = 1	у	n	Signal
06.89		profile status word				1 9		
	????	promo otatao nora						
		FFFFh		_	1 = 1	у	n	Signal
06.100		control word 1				l y	111	Olgital
00.100		efined control word 1						
		ignment:	•					
	B.(000	ngon						
	Bit	Name		Remarks				
	0	User control word 1	bit 0	User defir	ed bits.			
	1	User control word 1	bit 1					
	2	User control word 1	bit 2					
	3	User control word 1						
	4	User control word 1						
	5	User control word 1						
	6	User control word 1						
	7	User control word 1						
	8	User control word 1						
	9	User control word 1						
	10	User control word 1 User control word 1						
	12	User control word 1						
	13	User control word 1						
	14	User control word 1						
	15	User control word 1						
	10	2001 CONTROL WOLG	DIC 10	<u> </u>				
	0000h	FFFFh	0000h	_	1 = 1	n	У	Parameter
06.101		control word 2	1				17	1
		efined control word 2						
		ignment:	•					
	ļ							
	Bit	Name		Remarks				
	0	User control word 2		User defir	ied bits.			
	1	User control word 2						
	2	User control word 2						
	3	User control word 2						
	5	User control word 2						
	6	User control word 2 User control word 2		-				
	7	User control word 2		-				
	8	User control word 2		1				
	9	User control word 2						
	10	User control word 2						
	11	User control word 2		1				

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	12 User control wor	d 2 bit 12					
	13 User control wor	d 2 bit 13					
	14 User control wor	d 2 bit 14					
	15 User control wor	d 2 bit 15					
	0000h FFFFh	0000h		14 - 4	T	T.,	Doromotor
06.110	DDCS control word	0000h	-	1 = 1	n	у	Parameter
06.110	Displays the unaltered co	ntrol word rossiv	od from o	n DDCC oor	atrollor vio o	DDCC com	munication
	option module (FDCO-0x		eu irom a	ווו סטכט נטו	ilionei via a	DDC2 COIL	imunication
	0000h FFFFh	-	-	1 = 1	у	n	Signal
06.122	Follower status word no	ode 2					
	Master-follower link, 06.1	5 Main status wor	d from fo	llower node	2 via maste	r-follower li	nk to the
	master (master only).						
	06.15 Main status word o			ower node 2	to the mast	er. See gro	up 62.
	Bit assignment see 06.15	Main status word	<u>1</u>	.	1	1	•
	0000h FFFFh	-	-	1 = 1	у	n	Signal
06.123	Follower status word ne	ode 3					
	Master-follower link, 06.1	5 Main status wor	d from fo	ollower node	3 via maste	r-follower li	nk to the
	master (master only).						
	06.15 Main status word o			ower node 3	to the mast	er. See gro	up 62.
	Bit assignment see 06.15	Main status word	1.	1	ı	1	1
	0000h FFFFh	-	-	1 = 1	у	n	Signal
06.124	Follower status word no						
	Master-follower link, 06.1	5 Main status wor	d from fo	ollower node	4 via maste	r-follower li	nk to the
	master (master only).					_	
	06.15 Main status word o			ower node 4	to the mast	er. See gro	up 62.
	Bit assignment see 06.15	Nain status word	1.	T	1	1	Ta
	0000h FFFFh	-	-	1 = 1	У	n	Signal

07 System infoThe drive's hardware and firmware information.

Index	Name										
	Text										
07.02	Range Default Unit Scale/Fbeq16 Volatile Change running										
	Power unit set										
	Type of power unit. The value is read from 95.1 0: DCS converter; the unit 20: DCT controller; the un 40: TSU supply unit; the unit	is a DCS8 it is a DCT nit is a TS	880. 880. U880.			,	om SDCS-				
	100: Unsupported power CON-H01 and 95.14 Set: F fault 50FE Type code and s Either adapt the SDCS-CO memory unit with an appro	ower unit shows 95. N-H01 usi	read fror 14 Set: P ng 95.14	n the plugged in m ower unit.	emory unit.		generates				
	CON-H01 and 95.14 Set: F fault 50FE Type code and s Either adapt the SDCS-CO	ower unit shows 95. N-H01 usi	read fror 14 Set: P ng 95.14	n the plugged in m ower unit.	emory unit.		generates				
07.03	CON-H01 and 95.14 Set: F fault 50FE Type code and s Either adapt the SDCS-CO memory unit with an appropriate the specific control of the specific cont	ower unit shows 95. N-H01 usi	read fror 14 Set: P ng 95.14	n the plugged in m ower unit. Set: Power unit ar	emory unit. nd 95.25 Se	et: Type cod	generates le or use a				

Index	Name										
	Text										
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре				
	0 520 - 1 = 1 y n Signal										
07.04	Firmware name										
	Firmware identification.										
	Example: DCSF1 = DCS	880 Firmwa	re.			_					
		-	-	-	y	n	Signal				
07.05	Firmware version										
	Version number of the fire										
	Example: 1.05.0.0 = Firmware version 1.05.										
	0.000.0.0	-	-	1 = 1	у	n	Signal				
	255.255.255.255										
07.08	Bootloader version										
	Version number of the fire Example: 2.12.0.0 = Boo										
	0.000.0.0	-	-	1 = 1	у	n	Signal				
	255.255.255.255										
07.11	Cpu usage										
	Microprocessor load in pe	ercent.	_			_					
	0 100	-	%	1 = 1 %	у	n	Signal				
07.13	Control unit logic version	on									
	Version number of the control unit logic in the FPGA on the SDCS-CON-H01. Example: 10.10.0.0 = Firmware version 10.10.										
	0.000.0.0	-	-	1 = 1	у	n	Signal				
	255.255.255.255										
07.14	Ch1 power unit logic ve	rsion									
	Version number of the poof the SDCS-DSL-H1x. Example: 10.10.0.0 = Find the poof the SDCS-DSL-H1x.				S-OPL-H01	l connected	to channel 1				
	0.000.0.0	Tilwale vels	1011 10.10	7. 1 = 1	у	n	Signal				
	255.255.255.255	-	-	- '	y	''	Signal				
07.15	Ch2 power unit logic ve	rsion									
••••			ic in the	FPGA on the SDC	S-OPL-H01	connected	to channel 2				
	Version number of the power unit logic in the FPGA on the SDCS-OPL-H01 connected to channel 2 of the SDCS-DSL-H1x.										
	Example: 10.10.0.0 = Fire	mware vers	ion 10.10).							
	0.000.0.0 255.255.255	-	-	1 = 1	У	n	Signal				
07.16		reion									
07.10	Ch3 power unit logic version Version number of the power unit logic in the FPGA on the SDCS-OPL-H01 connected to channel 3										
	of the SDCS-DSL-H1x.	wei unit logi	ic iii tiile	I F GA OII tile 3DC	3-01 L-110	Connected	to charmer 5				
	Example: 10.10.0.0 = Fire	mware vers	ion 10.10).							
	0.000.0.0	-	1-	1 = 1	у	ln	Signal				
	255.255.255.255				,		0.9				
07.17	Ch4 power unit logic ve	rsion	1			1					
	Version number of the poof the SDCS-DSL-H1x.		ic in the	FPGA on the SDC	S-OPL-H01	connected	to channel 4				
	Example: 10.10.0.0 = Fire	mware vers	ion 10.10).							
	0.000.0.0	-	-	1 = 1	у	n	Signal				
	255.255.255.255										
07.19	Control Builder system	library vers	sion								
	Version number of the Co			library.							
				ibrary version 1.01							

Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	0.000.0.0 255.255.255.255	-	-	1 = 1	У	n	Signal			

07.20 Control Builder application

Control Builder application information.

Information about the Control Builder application.

- 0: **No license**; the memory unit contains no license. No Control Builder application programming possible.
- 1: No application; the memory unit contains a license. No Control Builder application loaded.
- 3: **Application: see 07.23 Application name**; the memory unit contains a license. A Control Builder application is loaded. The name can be found in 07.23 Application name.

0 ... 3 |- |- |1 = 1 |y |n |Signal

07.21 Application environment status 1

Application program task status.

Shows, which tasks of the application program are running. See Drive (IEC 61131-3) application programming manual 3AUA0000127808.

Bit assignment:

Bit	Name	Value	Remarks
0	Pre task	1	Pre-task running.
1	Application task 1	1	Task 1 running.
2	Application task 2	1	Task 2 running.
3	Application task 3	1	Task 3 running.
4	reserved		
5	reserved		
6	reserved		
7	reserved		
8	reserved		
9	reserved		
10	reserved		
11	reserved		
12	reserved		
13	reserved		
14	reserved		
15	Task monitoring	1	Task monitoring enabled.

0000h ... FFFFh 0000h - 1 = 1 y n Signal

07.22 Application environment status 2

Application program opening status.

Shows, which tasks of the openings in the application program. See Drive (IEC 61131-3) application programming manual 3AUA0000127808.

Bit assignment:

Bit	Name	Value	Remarks
0	Opening 1	1	Status of opening 1 in the application program.
1	Opening 2	1	Status of opening 2 in the application program.
2	Opening 3	1	Status of opening 3 in the application program.
3	Opening 4	1	Status of opening 4 in the application program.
4	Opening 5	1	Status of opening 5 in the application program.
5	Opening 6	1	Status of opening 6 in the application program.
6	Opening 7	1	Status of opening 7 in the application program.
7	Opening 8	1	Status of opening 8 in the application program.
8	Opening 9	1	Status of opening 9 in the application program.

ndex	Name									
	Text									
	Range	e	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре		
	9	Opening 10	1	Sta	tus of opening 10 in	n the applic	ation progra	am.		
	10	Opening 11	1	Sta	tus of opening 11 in	n the applic	ation progra	am.		
	11	Opening 12	1	Sta	tus of opening 12 in	n the applic	ation progra	am.		
	12	Opening 13	1	Sta	tus of opening 13 in	n the applic	ation progra	am.		
	13	Opening 14	1	Sta	tus of opening 14 in	n the applic	ation progra	am.		
	14	Opening 15	1	Sta	tus of opening 15 in	n the applic	ation progra	am.		
	15	Opening 16	1	Sta	tus of opening 16 in	n the applic	ation progra	am.		
	0000h	ı FFFFh	0000h	-	1 = 1	у	n	Signal		
7.23	Appli	cation name								
	Contro	ol Builder application	program	name.						
		rys the first five ASC				cation progr	am. The ful	I name is		
		e under System info o : No name ;	on the con	irol pane	I or in the PC tool.					
		<u> </u>	-	-	-	у	n	Signal		
7.24	Appli	cation version								
		ol Builder application								
		ays the version numb		the app	lication program. A	lso visible ι	ınder Syste	m info on the		
		ol panel or in the PC								
	Evam	-1a, $10100 - 1000$			-: 1					
	LXaiii	ple : 1.04.0.0 = Appli	ication pro	gram ver	Sion 4.					
		.0.0	-	gram ver -	1 = 1	у	n	Signal		
	0.000		-	gram ver		у	n	Signal		
7.30	0.000 255.2	.0.0	-	-		у	n	Signal		
7.30	0.000. 255.25 Adapt	.0.0 55.255.255	-	gram ver		У	n	Signal		
7.30	0.000. 255.29 Adapt Adapt Displa	.0.0 55.255.255 tive program status	-	-		У	n	Signal		
7.30	0.000. 255.29 Adapt Adapt Displa Bit ass	.0.0 55.255.255 tive program status ive program status. ays the status of the signment:	adaptive p	rogram.	1 = 1	У	n	Signal		
7.30	0.000. 255.29 Adapt Adapt Displa Bit ass	.0.0 55.255.255 tive program status ive program status. ays the status of the signment:	adaptive p	rogram.	1 = 1		n	Signal		
7.30	0.000 255.23 Adapt Adapt Displa Bit ass	.0.0 55.255.255 tive program status ive program status. ays the status of the signment: Name Initialized	adaptive p	rogram.	1 = 1 marks aptive program initia	alized.		Signal		
7.30	0.000 255.23 Adapt Adapt Displa Bit ass Bit 0	.0.0 55.255.255 tive program status. ive program status. ays the status of the signment: Name Initialized Editing	adaptive p	rogram.	1 = 1 marks aptive program initia	alized.		Signal		
7.30	0.000 255.29 Adapt Adapt Displa Bit ass Bit 0 1	.0.0 55.255.255 tive program status. ive program status. ays the status of the signment: Name Initialized Editing Edit done	adaptive p	rogram. Re Re Ada Ada Edi	marks aptive program initiation in the program is butting of adaptive program is butting of adaptive program in the program is butting of adaptive program in the program in the program is butting of adaptive program in the program	alized. eing edited. gram finish		Signal		
7.30	0.000 255.29 Adapt Adapt Displa Bit ass Bit 0 1 2 3	.0.0 55.255.255 tive program status. ays the status of the signment: Name Initialized Editing Edit done Running	adaptive p	rogram. Re Re Ada Ada Edi	1 = 1 marks aptive program initia	alized. eing edited. gram finish		Signal		
7.30	0.000 255.29 Adapt Adapt Displa Bit ass Bit 0 1 2 3 4	.0.0 55.255.255 tive program status ive program status. ays the status of the signment: Name Initialized Editing Edit done Running reserved	adaptive p	rogram. Re Re Ada Ada Edi	marks aptive program initiation in the program is butting of adaptive program is butting of adaptive program in the program is butting of adaptive program in the program in the program is butting of adaptive program in the program	alized. eing edited. gram finish		Signal		
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7.30	0.000 255.23 Adapt Adapt Displa Bit ass Bit 0 1 2 3 4 5 6 7	.0.0 55.255.255 tive program status ive program status. ays the status of the signment: Name Initialized Editing Edit done Running reserved reserved reserved reserved	adaptive p	rogram. Re Re Ada Ada Edi	marks aptive program initiation in the program is butting of adaptive program is butting of adaptive program in the program is butting of adaptive program in the program in the program is butting of adaptive program in the program	alized. eing edited. gram finish		Signal		
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7.30	0.000. 255.29 Adapt Adapt Displa Bit ass Bit 0 1 2 3 4 5 6 7 8 9	.0.0 55.255.255 tive program status ive program status. ive program status ive pr	adaptive p	rogram. Re Re Ada Ada Edi	marks aptive program initiation in the program is butting of adaptive program is butting of adaptive program in the program is butting of adaptive program in the program in the program is butting of adaptive program in the program	alized. eing edited. gram finish		Signal		
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7.30	0.000 255.29 Adapt Adapt Displa Bit ass Bit 0 1 2 3 4 5 6 7 8 9 10 11	.0.0 55.255.255 tive program status ive program status. ive program status ive	adaptive p	rogram. Re Re Ada Ada Edi	marks aptive program initiation in the program is butting of adaptive program is butting of adaptive program in the program is butting of adaptive program in the program in the program is butting of adaptive program in the program	alized. eing edited. gram finish		Signal		
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7.30	0.000 255.29 Adapt Adapt Displa Bit ass Bit 0 1 2 3 4 5 6 7 8 9 10 11 12 13	.0.0 55.255.255 tive program status ive program status. ays the status of the signment: Name Initialized Editing Edit done Running reserved	adaptive p	rogram. Re Re Ada Ada Ada	marks aptive program initiation in the program is be ting of adaptive program runicaptive program runicapt	alized. eing edited. gram finish ning.	ed.			
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7.30	0.000 255.29 Adapt Adapt Displa Bit ass Bit 0 1 2 3 4 5 6 7 8 9 10 11 12 13	.0.0 55.255.255 tive program status ive program status. ays the status of the signment: Name Initialized Editing Edit done Running reserved	adaptive p	rogram. Re Re Ada Ada Ada Sta Ada Ada Ada Ada Ada Ada Ada Ada Ada Ad	marks aptive program initiation in the program is be ting of adaptive program runicaptive program runicapt	alized. eing edited. gram finish ning. ess in adap	ed.			
7.30	0.000 255.23 Adapt Adapt Displa Bit ass Bit 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	ive program status ive program s	adaptive p	rogram. Re Re Ada Ada Ada Sta Ada Ada Ada Ada Ada Ada Ada Ada Ada Ad	marks aptive program initial aptive program is buting of adaptive program runing aptive program runing te change in program in adaptive program in	alized. eing edited. gram finish ning. ess in adap	ed.	nming		
	0.000 255.23 Adapt Adapt Displa Bit ass Bit 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 0000h	ive program status ive program status ive program status ive program status ays the status of the signment: Name Initialized Editing Edit done Running reserved	Value 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	rogram. Re Re Ada Ada Ada Sta Ada Ada Ada Ada Ada Ada Ada Ada Ada Ad	marks aptive program initiate program is betting of adaptive program rung aptive program rung aptive program rung te change in programine.	alized. eing edited. gram finish ning. ess in adap	ed.			
	0.000 255.23 Adapt Adapt Displa Bit ass Bit 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 0000h IEC a	ive program status ive program s	adaptive p Value 1 1 1 1 1 1 1 1 ge peak	rogram. Re Re Ada	marks aptive program initia aptive program is be ting of adaptive program runn aptive program runn te change in progra jine. or in adaptive program 1 = 1	alized. eing edited. gram finish ning. ess in adap	ed.	nming		
	0.000 255.23 Adapt Adapt Displa Bit ass Bit 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 0000h IEC a	ive program status ive program s	adaptive p Value 1 1 1 1 1 1 1 1 1 1 caused by	rogram. Re Re Ada	marks aptive program initia aptive program is be ting of adaptive program runn aptive program runn te change in progre gine. or in adaptive program.	alized. eing edited. gram finish ning. ess in adap	ed.	nming		
7.30	0.000. 255.23 Adapt Adapt Displa Bit ass Bit 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 0000h IEC al	ive program status ive program s	adaptive p Value 1 1 1 1 1 1 1 1 1 caused by the microp	rogram. Re Re Ada Ada Edi Ada Ada Edi Ada Ada Edi Ada Ada Enr	marks aptive program initia aptive program is be ting of adaptive program runn aptive program runn te change in progre gine. or in adaptive program. I = 1	alized. eing edited. eing ining. ess in adapteram.	ed. tive program	nming Signal		

Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	The value is in percent of an internal microprocessor quota.									
	Can be reset from the control panel by keeping Reset depressed for over 3 seconds.									
	0.0 100.0 - % 10 = 1 % y n Signal									
07.41	IEC application Cpu load	average								
	Average microprocessor load caused by the application program. Displays the average load of the microprocessor caused by the application program.									
					application	program.				
	The value is in percent of an internal microprocessor quota.									
	0.0 100.0	-	%	10 = 1 %	y	n	Signal			
07.51	Slot 1 option module									
	Slot 1 option module.									
	Displays the option module									
	0: No option ; no option mo					-1.4				
	1: No communication; no									
	2: Unknown ; option module 8: FPBA-01 ;	- piugged	1110 8101	i is ulikliowli, wrol	ing type of I	ioi valid.				
	10: FCAN-01 ;									
	11: FDNA-01 ;									
	13: FENA-11 ;									
	19: FB COMMON ;									
	22: FSCA-01 ;									
	23: FSEA-21 ;									
	25: FECA-01 ;									
	26: FENA-21 ;									
	28: FMAC-01 ;									
	29: FCNA-01 ;									
	27: FEPL-02 ;									
	33: FPTC-01/02; 34: FDCO-01/02;									
	1015: FIO-01 ;									
	1016: FEN-01 ;									
	1017: FEN-11 ;									
	1017: FEN-11 ; 1018: FEN-21 ;									
	1020: FIO-11 ;									
	1021: FEN-31 ;									
	1024: FAIO-01 ;									
	1025: FDIO-01 ;									
	1026: FSE-31 ;	T	1				To: 1			
	0 65535	-	-	1 = 1	У	n	Signal			
07.52	Slot 2 option module									
	Slot 2 option module. Displays the option module plugged into slot 2.									
	For values, see 07.51 Slot	i option m	iodule.	4 4		1	0:			
	0 65535	<u> </u> -	-	1 = 1	У	n	Signal			
07.53	Slot 3 option module									
	Slot 3 option module.									
	Displays the option module									
	For values, see 07.51 Slot	option m	oaule.	Ta a			To: .			
	0 65535]-	-	1 = 1	у	n	Signal			
07.60	Drive size									
	Recognized drive size.	_								
	Read from 95.25 Set: Type									
	0: None ; when 95.25 Set: T	ype code	= None.							

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	1: H1 ; drive size H1.						
	2: H2 ; drive size H2.						
	3: H3 ; drive size H3.						
	4: H4 ; drive size H4.						
	5: H5 ; drive size H5.						
	6: H6 ; drive size H6.						
	7: H7 ; drive size H7.						
	8: H8 ; drive size H8. 9: Manual set ; set by user	05 27 Sat	· Drivo D	C current scaling	and/or 05 2	9 Sot: Drive	AC voltago
	scaling have been changed				anu/01 95.2	.o Set. Dilve	AC voltage
	0 9	1 101 E.g. 16	T TOUR	1 = 1	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	In	Signal
07.04			-	1-1	У	n	Signal
07.61	Drive block bridge 2 set						
	Recognized drive quadrant		(4 0		05.05.0		
	Displays the quadrant type		e (1 or 2	bridges). Read fro	m 95.25 S	et: Type cod	de or set with
	95.26 Set: Drive block brid		:f 0E 0C	Cate Duive block by	:daa 0- 0		
	- Read from 95.25 Set: 1					J 0 ≠ 0	
	- Read from 95.26 Set: [e block brid	ige 2 ≠ 0.	
	1: Block bridge 2; (reverse 2: Release bridge 2; (reve				n		
		TSe) bridge	Teleas		1	1_	Ciara al
	0 2	-	-	1 = 1	У	n	Signal
07.62	Drive DC current scaling						
	Recognized drive nominal						
	Displays the drive nominal						
	channels (SDCS-PIN-H01		PIN-H51)	. Read from 95.25	Set: Type	code or set	with 95.27
	Set: Drive DC current scali	•	05 07	0 (D : D0		•	
	- Read from 95.25 Set: 7						4.0
	Read from 95.27 Set: Drive	DC curre					
	0 32500	-	Α	1 = 1 A	у	n	Signal
07.63	Drive DC overcurrent lev						
	Drive DC overcurrent level						
	Displays the drive current t		el. This s	signal is set during	initializatio	n of the driv	e. New values
	are shown after the next po	•					
	Drive DC overcurrent scaling			DO 1 1	•		
	2.3 • 95.25 Set: Type code					olina 4 O	
	2.3 • 95.27 Set: Drive DC o	urrent sca	T		Current Sca	1	To: 1
	0 32500	-	Α	1 = 1 A	У	n	Signal
07.64	Drive AC voltage scaling						
	Recognized drive nominal						
	Displays the drive nominal						
	channels (SDCS-PIN-H01		PIN-H51)	. Read from 95.25	Set: Type	code or set	with 95.28
	Set: Drive AC voltage scali	•				_	
	 Read from 95.25 Set: 1 						
	Read from 95.28 Set: Drive	AC voltag		-	1		
	0.0 3250.0	-	V	10 = 1 V	у	n	Signal
07.65	Drive max bridge temper						
07.03	Recognized drive maximur	n bridge te	mperatu	re.			
07.03		m hridan ta	mneratu	re Read from 95.2	25 Set: Tvp	e code or s	et with 95 29
07.03	Displays the drive maximum		mporata		71		00.20
07.03	Displays the drive maximum Set: Drive max bridge temp	perature:					ot mar 00.20
07.03	Displays the drive maximum Set: Drive max bridge temperature — Read from 95.25 Set: 7	perature: Type code,	if 95.29	Set: Drive max brid	dge temper	ature = 0.	
07.03	Displays the drive maximum Set: Drive max bridge temp	perature: Type code,	if 95.29	Set: Drive max brid	dge temper	ature = 0.	

Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	The event generates fault 43	310 Bridg	e tempera	ture measured w	hen 07.65 [_	ridge			
	temperature set is reached.	The even	t generate	es warning A4B0 I	Bridge tem	perature me	easured is set,			
	when the measured bridge temperature is approximately 5° below 07.65 Drive max bridge									
	temperature.									
	The unit is selected by 96.02	2 Unit sele		T	1	_	T			
	-80.0 1000.0	-	°C or °F	1 = 1°C or °F	у	n	Signal			
07.68	M1 field exciter type									
	Motor 1 field exciter type.									
	Read from 99.07 M1 used fi									
	0: None ; no or third party fie									
	1: OnBoard; integrated 1-Q					0 2 4 40 46	^			
	2: DCF803-0016 ; external 1 3: FEX-425-Int ; internal 1-Q									
	0.3 A to 25 A.	23 A Held	i exciter (i	OI SIZE ITO AITO ITO	o offig) used	a for field Ct	inents nom			
	4: DCF803-0035 ; external 1	-O 35 A fi	eld excite	r used for field cu	rrents from	0.3 A to 35	Δ			
	5: DCF803 terminal 5 A ; ex									
	exciter (FEX-425-Int) or exte									
	0.3 A to 5 A.			•	,					
	Note: Use 5 A terminals.									
	6: DCF803-0050 ; external 1									
	7: DCF804-0050 ; external 4									
	8: DCF803-0060 ; external 1									
	9: DCF804-0060 ; external 4									
	10: DCS880-S01 ; external 2 11: DCS880-S02 ; external 4									
	16: External field exciter v				wledge via	ΔΙ1				
	17: External field exciter v									
	18: External field exciter v									
	19: Multiple field exciters;	see DCS	880 Multip	le field exciters m	otor contro	I (3ADW00	0xxx).			
	0 19	-	-	1 = 1	у	n	Signal			
07.69	M1 field exciter firmware v	ersion				•				
	Version number of Motor 1 f	field excite	er firmwar	e.						
	Example : 1.02.0.0 = Firmwa	are versio	n 2.							
	0.000.0.0	_	_	1 = 1	у	n	Signal			
	255.255.255.255									
07.72	M2 field exciter type			•	II.		1			
	Motor 2 field exciter type.									
	Read from 42.49 M2 used fi	eld excite	r type.							
	0: None; no or third party fie	eld exciter	connecte	d.						
	1: OnBoard; integrated 1-Q									
	2: DCF803-0016 ; external 1									
	3: FEX-425-Int; internal 1-Q	25 A field	d exciter (1	or size H5 and H6	only) use	d for field cu	urrents from			
	0.3 A to 25 A.	O 05 A 5	-1-1!4-			0 0 0 1 0 0 5	Δ.			
	4: DCF803-0035; external 1									
	5: DCF803 terminal 5 A ; exerciter (FEX-425-Int) or exte									
	0.3 A to 5 A.	ziliai I-W		evoller (DCL009-	oooo) used	i ioi ii c iu cu	nento nom			
	Note: Use 5 A terminals.									
	6: DCF803-0050 ; external 1	-Q 50 A fi	eld excite	r.						
	7: DCF804-0050 ; external 4									
	8: DCF803-0060 ; external 1									
	9: DCF804-0060 ; external 4									
	10: DCS880-S01; external 2									

Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	11: DCS880-S02; exter	nal 4-Q standa	ard DCS8	880 module.	•	•	•			
	16: External field exciter via Al1 ; third party field exciter, acknowledge via Al1.									
	17: External field exciter via Al2; third party field exciter, acknowledge via Al2.									
	18: External field exciter via Al3; third party field exciter, acknowledge via Al3.									
	19: Multiple field exciters; see DCS880 Multiple field exciters motor control (3ADW000xxx).									
	019 - 1 = 1				У	n	Signal			
7.73										
	Version number of Motor 2 field exciter firmware.									
	Example : 1.01.0.0 = Firmware version 1.									
	0.000.0.0	_	-	1 = 1	у	n	Signal			
	255.255.255.255									

10 Standard DI, ROConfiguration of digital inputs and relay outputs.

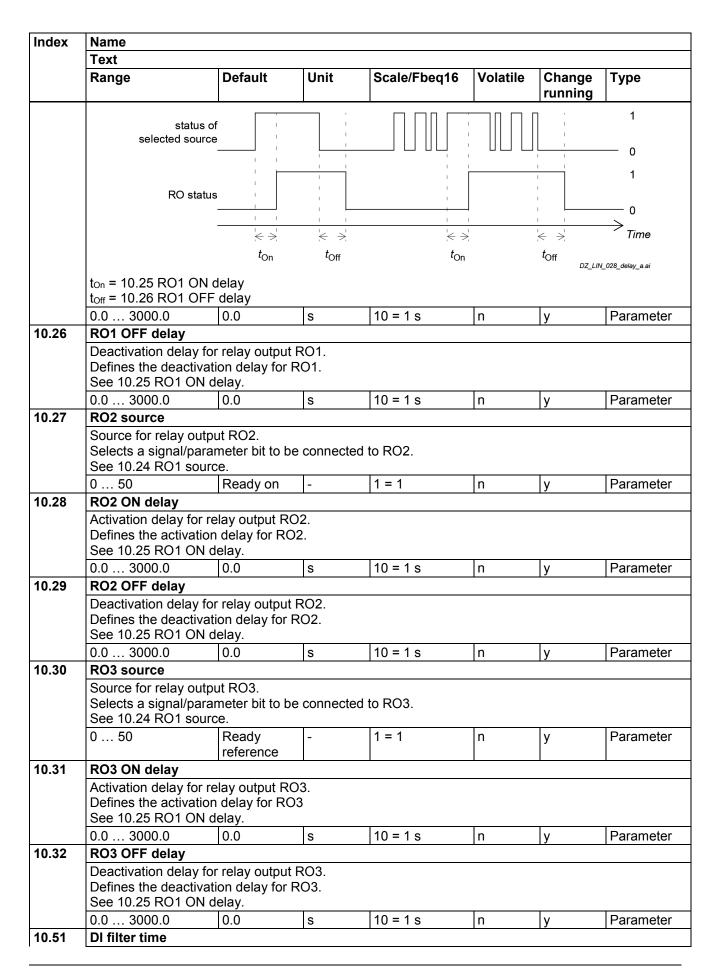
ndex	Name)										
	Text											
	Range		Defau	Default		Scale/Fbeq16	Volatile	Change running	Туре			
0.01	DI status											
	Status of digital inputs. Displays the electrical status of DI1 DI6 and DIL. The activation/deactivation delays of the inputs (if any are specified) are ignored. A filtering time is defined by 10.51 DI filter time. Bits 0 5 reflect the status of DI1 DI6. Bit 15 reflects the status of the DIL input. Example: 100000000010011b = DIL, DI5, DI2 and DI1 are on, DI3, DI4 and DI6 are off. Bit assignment:											
	Bit	Name	Value	Rema	rks							
	0	DI1	1	On.								
	1	DI2	1	On.								
	2	DI3	1	On.								
	3	DI4	1	On.								
	4	DI5	1	On.								
	5	DI6	1	On.								
	6	reserved										
	7	reserved										
	8	reserved										
	9	reserved										
	10	reserved										
	11	reserved										
	12	reserved										
	13	reserved										
	14	reserved										
	15	DIL	1	On.								
	00001	າ FFFFh	-		-	1 = 1	у	n	Signal			
.02	DI de	layed status										
	Delayed status of digital inputs. Displays the delayed status of DI1 DI6 and DIL. This word is updated only after activation/deactivation delays (if any are specified). Bits 0 5 reflect the delayed status of DI1 DI6. Bit 15 reflects the delayed status of the DIL input											

Index	Name)							
	Text								
	Rang	е	Defau	lt	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	Exam	ple: 1000000	0000100	11b = D	IL, DI5, DI2	and DI1 are on,	DI3, DI4 ar	d DI6 are c	off.
	Bit as	signment:							
	Bit	Name	Value	Rema	rks				
	0	DI1	1	On.					
	1	DI2	1	On.					
	2	DI3	1	On.					
	3	DI4	1	On.					
	4	DI5	1	On.					
	5	DI6	1	On.					
	6	reserved							
	7	reserved							
	8	reserved							
	9	reserved							
	10	reserved							
	11	reserved							
	12	reserved							
	13	reserved							
	14	reserved		1					
	15	DIL	1	On.					
						T	1	1	T = .
	1	ı FFFFh	-		-	1 = 1	у	n	Signal
10.03		ce selection							
	The	ide selection f	or digital	Inputs.	nd DII can	be overridden for	e a testina	nurnoese	Λ hit in 10.04
	DI for	ce data is pro	vided for	each di	gital input a	nd its value is app	olied whene	ever the cor	responding bit
		03 DI force se			J. 12.1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
	Bit as	signment:							
	Bit	Name	Value	Rema	rke				
	0	DI1	1			e of bit 0 of 10.04	DI force da	ata .	
	1	DI2	1			e of bit 1 of 10.04			
	2	DI3	1			e of bit 2 of 10.04			
	3	DI4	1			e of bit 3 of 10.04			
	4	DI5	1			e of bit 4 of 10.04			
	5	DI6	1			e of bit 5 of 10.04			
	6	reserved							
	7	reserved							
	8	reserved							
	9	reserved							
	10	reserved							
	11	reserved							
	12	reserved							
	13	reserved							
	14	reserved							
	15	DIL	1	Force	DIL to valu	e of bit 15 of 10.0	4 DI force	data.	
		1	1						
	00001	ı FFFFh	0000h]	-	1 = 1	у	у	Parameter
	1		1		1	1	1.7	1.0	1

ex	Name										
	Text										
	Rang	е	Defau	lt	Unit	Scale/Fbeq16	Volatile	Change running	Туре		
04	DI force data										
	Forced values of digital inputs. Allows the data value of a forced DI1 DI6 and DIL to be changed from 0 to 1. It is only possible t force an input that has been selected in 10.03 DI force selection. Bits 0 5 are the forced values for DI1 DI6. Bit 15 is the forced value for the DIL input.										
		signment:						,			
	Bit	Name	Value	Rema	arks						
	0	DI1	1	Force	DI1 to on.						
	1	DI2	1	Force	DI2 to on.						
	2	DI3	1		DI3 to on.						
	3	DI4	1		DI4 to on.						
	4	DI5	1		DIF to on.						
	5	DI6	1		DIS to on.						
			'	1 0100	, טוט נט טוו.						
	6	reserved									
	7	reserved									
	8	reserved									
	9	reserved									
	10	reserved									
	11	reserved									
	12	reserved									
	13	reserved									
	14	reserved									
	15	DIL	1	Force	DIL to on.						
					1	1		T	1		
		າ FFFFh	0000h	1	-	1 = 1	y	y	Paramete		
5		N delay									
	Activation delay for digital input DI1. Defines the activation delay for DI1.										
	Define	es the activati	on delay	for DI1.							
		*DI stat	hus [1				1		
		ם פום		1	1 .		<u>: </u>	1			
				l I	1 1				o		
			i		1 1	1	1		1		
	*	*Delayed DI stat	TIIS !			1		1	÷		
		Dolayed Di Sidi							— о		
			- 1		1 1	1	1	1 1	\rightarrow		
				$\Leftrightarrow \Rightarrow$	$\langle \leftarrow \rangle$	< >		$\stackrel{\cdot}{\leqslant}$	⁷ Time		
				t_{On}	$t_{ m Off}$	t_{On}		t _{Off}	1 000 dolo::		
	to -	10 05 DI1 ON	dolay					DZ_LIN	l_028_delay_a.ai		
		10.05 DI1 ON 10.06 DI1 OFI									
				out Ind	licated by 1	0.01 DI status.					
		cated by 10.0				c.c. Di dialas.					
		. 3000.0	0.0	,	s	10 = 1 s	n	V	Paramete		
	100		0.0			1.5 .5	1	J			
6	_	FF delay	•								
)6	DI1 O	FF delay	for digital	innut F) 1						
)6	DI1 O	tivation delay									
6	DI1 O		ation dela								

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
10.07	DI2 ON delay						•
	Activation delay for Defines the activa See 10.05 DI1 ON	tion delay for D					
	0.0 3000.0	0.0	s	10 = 1 s	n	у	Parameter
10.08	DI2 OFF delay						
	Deactivation delay Defines the deacti See 10.05 DI1 ON	vation delay for I delay.			1		
	0.0 3000.0	0.0	S	10 = 1 s	n	у	Parameter
10.09	DI3 ON delay						
	Activation delay for Defines the activation See 10.05 DI1 ON	tion delay for D I delay.	13.			1	
	0.0 3000.0	0.0	S	10 = 1 s	n	у	Parameter
10.10	DI3 OFF delay						
	Deactivation delay Defines the deacti See 10.05 DI1 ON	vation delay for					_
	0.0 3000.0	0.0	S	10 = 1 s	n	у	Parameter
10.11	DI4 ON delay						
	Activation delay for Defines the activa See 10.05 DI1 ON	tion delay for D I delay.	l4.				
	0.0 3000.0	0.0	S	10 = 1 s	n	У	Parameter
10.12	DI4 OFF delay						
	Deactivation delay Defines the deacti See 10.05 DI1 ON	vation delay for					
	0.0 3000.0	0.0	s	10 = 1 s	n	у	Parameter
10.13	DI5 ON delay						
	Activation delay for Defines the activation See 10.05 DI1 ON	tion delay for D					
	0.0 3000.0	0.0	S	10 = 1 s	n	у	Parameter
10.14	DI5 OFF delay						
	Deactivation delay Defines the deacti See 10.05 DI1 ON	vation delay for					
	0.0 3000.0	0.0	s	10 = 1 s	n	у	Parameter
10.15	DI6 ON delay						
	Activation delay for Defines the activa See 10.05 DI1 ON	tion delay for D I delay.	16.				
	0.0 3000.0	0.0	S	10 = 1 s	n	У	Parameter
10.16	DI6 OFF delay		· DIG				
	Deactivation delay						
	Defines the deacti See 10.05 DI1 ON		DIO.				

lex	Name			·		·					
	Text										
	Range		Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
21	RO status)	•	U	'	· ·		•			
	Status of relay outputs. Displays the status of RO1 RO3 and the output for the mains contactor (XSMC:1/2). Example : 0000000000000001b = RO1 is energized, RO2 RO3 are de-energized and XSMC:1/										
	is off. Bit assigni		- 00000000		sigized, 1002 100	oo are de-e	nergized an	d Adivid. 172			
	Bit	Name	Value	Remarks	i						
	0	RO1	1	Energized	d.						
	1	RO2	1	Energized							
	2	RO3	1	Energized							
	3 14	reserved									
	15	XSMC:1/		On.							
		17.01VIO. 17	_ '	1011.							
	0000h I	FFFFh			1 = 1	у	n	Signal			
24	RO1 sour				1 1	Y	1''	Joignai			
			sut DO1								
	Source for				11 504						
			ameter bit to I	oe connecte	d to RO1.						
	Other [bit										
			utput is not ei								
			t is energized								
			.b01 Main sta								
			b00 Main sta								
			02 Drive statı								
			; 06.15.b02 N		vord.						
			5.b08 Main st								
	10: Rever	se ; 06.21.l	b02 Speed co	ontrol status	word.						
	11: Zero s	peed; 06.	21.b00 Spee	d control sta	tus word.						
			17.b10 Drive								
			b07 Main sta		. —-						
			003 Main stat								
			15.b03 Main		inverted						
		` '			control status (me	chanical br	ake)				
			009 Main stat		ooninoi otatao (iiio	oriariioar br	arto).				
			ning; 06.18.b		tus word 3						
			b00 Current o								
					roller status word 1						
					4.b08 Current cont		s word 1				
					Current controller						
					ent controller statu		ω I.				
					O/DIO control word						
					O/DIO control word						
					O/DIO control word						
					O/DIO control word						
					O/DIO control word						
					eset Indication. Res		/ relav perm	itted.			
	0 50		STO reset indication	-	1 = 1	n	y y	Parameter			
	+		Indication		1	1	1				
) 5		lolav	•		•	•	1				
25	RO1 ON d			101		•	1	<u> </u>			
25	Activation	delay for r	elay output F				1				



Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	Filter time constant						
	Defines a filter time		0.01 DI sta				
	0.3 100.0	10.0	ms	10 = 1 ms	n	у	Parameter
10.61	DI1 inversion						
	Inverts digital input		4 DI4				
	Inversion selection	for digital inpu	נטוז.				
	XDI			Delay			
	DI1	10.61.0	I1 inversion	10.05	$\overline{}$		
	DI2		12 inversion	10.03	DI delayed status		
					sta		
		stat			pe/		
		<u> </u>			e a		
	DI6 —	10.01 DI status	16 inversion	\dashv	PIC		
	XD24	1 9			22 [
		10.67.5	IL inversion		10.02		
	DIL —	10.67 L	il inversion	10.16			
	0: Direct ; digital in	out DI1 is not in	worted				
	1: Inverted ; digital						
	0 1	Direct	-	1 = 1	n	у	Parameter
10.62	DI2 inversion	13000			1	J	- Gramotor
	Inverts digital input	DI2.					
	Inversion selection		t DI2.				
	See 10.61 DI1 inve						
	0 1	Direct	-	1 = 1	n	у	Parameter
10.63	DI3 inversion						
	Inverts digital input	DI3.					
	Inversion selection		t DI3.				
	See 10.61 DI1 inve		<u> </u>	4 – 4	1_	1	Danamatan
10.64	DI4 inversion	Direct	-	1 = 1	n	У	Parameter
10.04	Inverts digital input	DIA					
	Inversion selection		t DI4				
	See 10.61 DI1 inve		() ()				
	0 1	Direct	-	1 = 1	n	у	Parameter
10.65	DI5 inversion	l				1,	
	Inverts digital input	DI5.					
	Inversion selection		t DI5.				
	See 10.61 DI1 inve			1	1		1
	0 1	Direct	-	1 = 1	n	у	Parameter
10.66	DI6 inversion						
	Inverts digital input		4 DIO				
	Inversion selection See 10.61 DI1 inve		t DI6.				
	0 1	Direct	_	1 = 1	n	V	Parameter
10.67	DIL inversion	חוופנו		11-1	111	У	r arailielei
10.07	Inverts digital input	DII					
	Inversion selection		t DII				
		TOT GIGHTER HIDLE					

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16		Change running	Туре
	0 1	Direct	-	1 = 1	n	у	Parameter

10.99 RO/DIO control word

Control word for relay outputs (RO) and digital inputs/outputs (DIO).

Storage parameter to control relay outputs and digital inputs/outputs via e.g. a fieldbus.

To control the relay outputs and the digital inputs/outputs of the drive, send a control word with the bit assignments shown below e.g. as Modbus I/O data (see 58.101 Data I/O 1 ... 58.124 Data I/O 24). Example for relay output RO1:

58.101 Data I/O 1 = RO/DIO control word and 10.24 RO1 source = RO/DIO control word bit 0. Bit assignment:

Bit	Name	Value	Remarks
0	RO1	1	Energized. Bit for relay output RO1. See 10.24 RO1 source.
1	RO2	1	Energized. Bit for relay output RO2. See 10.27 RO2 source.
2	RO3	1	Energized. Bit for relay output RO3. See 10.30 RO3 source.
3	reserved		
4	reserved		
5	reserved		
6	reserved		
7	reserved		
8	DIO1	1	Energized. Bit for digital input/output DIO1. See 11.06 DIO1 output source.
9	DIO2	1	Energized. Bit for digital input/output DIO2. See 11.10 DIO2 output source.
10 15	reserved		
<u>, </u>	•	•	
0000h F	FFFh 0	000h	- 1 = 1 n y Parameter

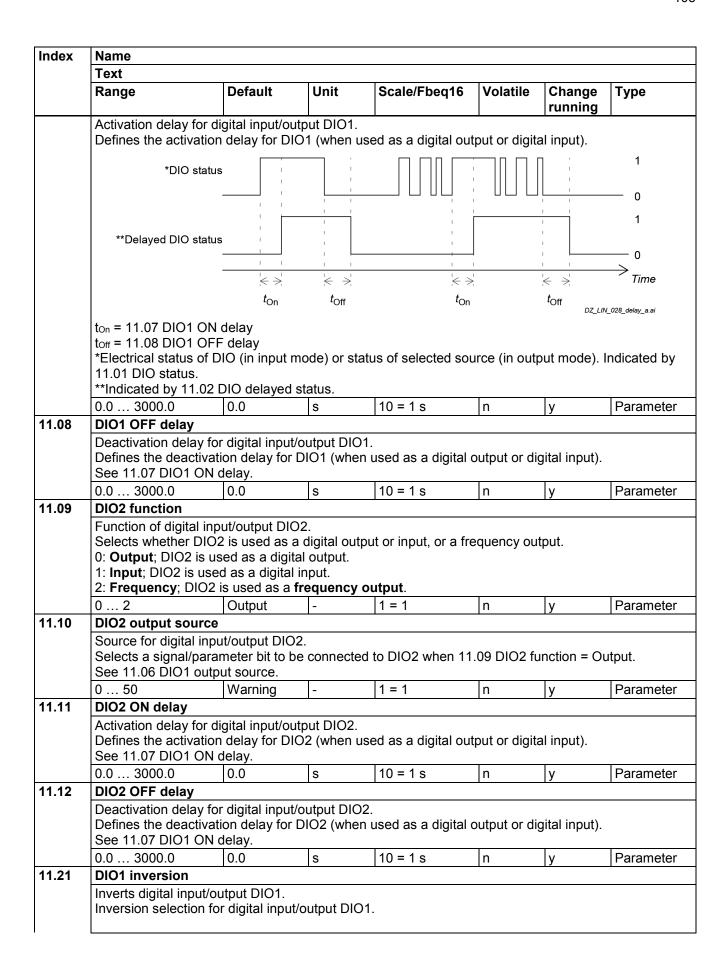
11 Standard DIO, FI, FO

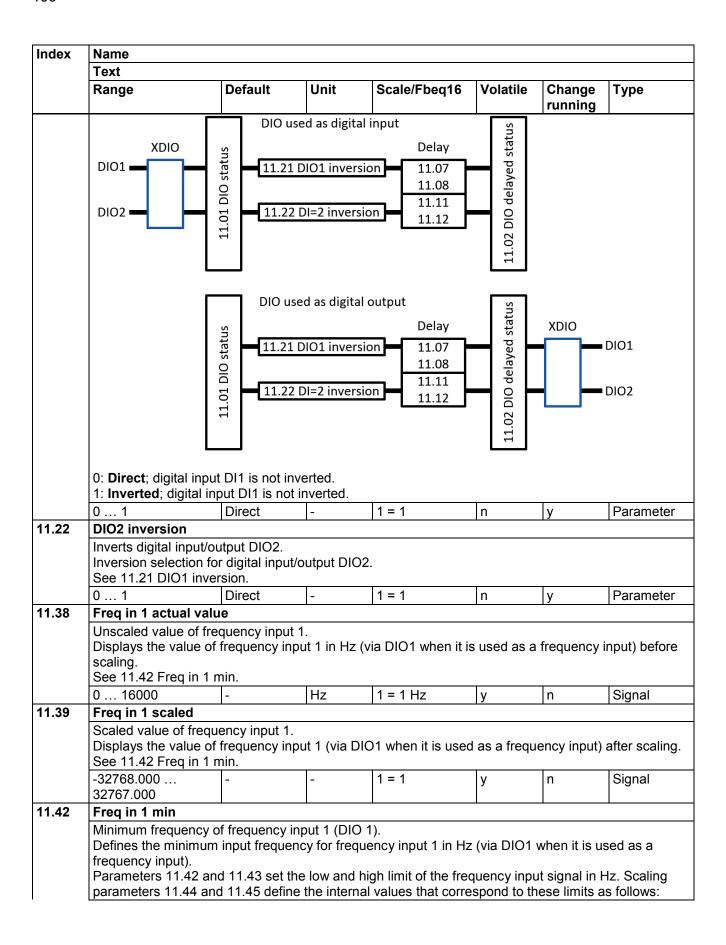
Configuration of digital input/outputs and frequency inputs/outputs.

Index	Name							
	Text Range							
	Range	I	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
11.01	DIO statu	S						
					fined by 11.81 DIO	tilter time.		
		reflect the si 0000000000000ment:						
	Example:	000000000						
	Example: Bit assigni	00000000000 ment:	000010b = 1	DIO2 is on,				
	Example: Bit assigni	000000000000ment:	000010b = 1	DIO2 is on,				
	Example: Bit assigni	00000000000000000000000000000000000000	Value	Remarks On.				
	Example: Bit assigni Bit 0 1	Name DIO1 DIO2 reserved	Value	Remarks On.		у	n	Signal
11.02	Bit 0 1 2 15 0000h I	Name DIO1 DIO2 reserved	Value	Remarks On.	DIO1 is off.	у	n	Signal

dex	Name							
	Text							
	Range		Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	delays (if a Bits 0 1 Example: (Bit assignn	ny are spec reflect the s 000000000 nent:	ified). status of DIC 000010b = [01 DIO2. DIO2 is on, I	This word is updat	ted only afte	er activatior	n/deactivatior
	Bit	Name	Value	Remarks				
	0	DIO1	1	On.				
	1	DIO2	1	On.				
	2 15	reserved						
					1 .			T = .
	0000h F		-	-	1 = 1	У	n	Signal
.05	DIO1 func		t/output DIC					
. 00	0 2		output	frequency i	nput. 1 = 1	n	у	Parameter
1.06	Source for Selects a s Output.	ignal/paran			d to DIO1 when pa	rameter 11.	.05 DIO1 fu	nction =
1.06	Source for Selects a soutput. Other [bit] 0: Not ene 1: Energize 2: Ready r 3: Ready r 4: Enabled 8: Ready r 9: At setpo 10: Revers 11: Zero s 12: Above 13: Warnir 14: Trippe 15: Trippe 16: Royol 16: Royol 17: Royol 18: Royol 19:	digital input ignal/param; source sel rgized; output ign; 06.15.b0; 06.15.b0; 06.16.b02; 06.21.b0; 06.15.b0; 06.15.b	ection. but is not en s energized 01 Main stat 0 Main stat 0 Main stat 2 Speed co .b00 Speed 7 Main stat 3 Main stat 5 bo3 Main stat 5 bo3 Main stat 6 Main stat 6 Contactor pulse); 06.2 ord bit 0; 1 ord bit 2; 1 ord bit 8; 1	re connected tus word. s word 1. ain status watus word. ntrol status l control status word. status word. status word. status word. status word. boo Brake sword. 2 Drive status word. 2 Drive status word. 2 Drive status word. 5 Word. 2 Drive status word. 6 Drive status word. 7 O6.24.b10 6 D99.b00 R0 6 D99.b01 R0 6 D99.b02 R0 6 D99.b08 R0 6 D99.b08 R0	ord. word. tus word. 2. inverted. control status (medus word 3. tus word 1. oller status word 1. current controller status O/DIO control word O/DIO control word O/DIO control word	chanical bra roller status status word s word 1. l.	ake).	nction =
1.06	Source for Selects a soutput. Other [bit] 0: Not ene 1: Energize 2: Ready r 3: Ready r 9: At setpo 10: Revers 11: Zero s 12: Above 13: Warnir 14: Trippe 15: Trippe 15: Trippe 15: Trippe 15: Trippe 15: Trippe 15: Trippe 16: Remot 17: Trippe 18: Remot 19: At setpo 19: At setpo 10: Revers 11: Zero s 11: Zero s 11: Zero s 11: Zero s 12: Above 13: Warnir 14: Trippe 15: Trippe 15: Trippe 16: Trippe 17: Trippe 18: Trippe	digital input ignal/param; source sel rgized; output ign; 06.15.b0 in;	ection. but is not en s energized 01 Main stat 0 Main stat 0 Main stat 2 Speed co .b00 Speed 7.b10 Drive 17 Main stat 3 Main stat 5.b03 Main stat 5.b03 Main stat 6.2 Speed co .b00 Speed 7.b10 Drive 17 Main stat 18 Main stat 19 Main stat 19 Main stat 10 Current co 10	re connected tus word. The status word turnent controller status word. The status word tus word tus word tus word. The status word tus word. The status word tus word	ord. word. tus word. 2. inverted. control status (means word 3. tus word 1. oller status word 1. 4.b08 Current controller current controller status D/DIO control word D/DIO control word	chanical bra	ake). s word 1.	

Parameters





Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	11.39			•			
	11.45						
		į					
	11.44	į					
	11.42	11.43					
	0 16000	0	Hz	1 = 1 Hz	n	у	Parameter
11.43	Freq in 1 max	•	.	1	.		1
	Maximum frequen						
		num input freque	ncy for fre	quency input 1 in H	z (via DIO1	when it is u	used as a
	frequency input). See 11.42 Freq in	1 min					
	0 16000	16000	Hz	1 = 1 Hz	n	v	Parameter
11.44	Freq in 1 at scale				1	13	, aramotor
	<u> </u>		minimum	value of frequency	input 1 (DI	O 1).	
	Defines the value	that corresponds	internally	to the minimum inp			y 11.42 Freq
	in 1 min (via DIO1		as a frequ	ency input).			
	See 11.42 Freq in -32768.000			1 – 1	T.,	1.,	Daramatar
	32767.000	0.000	-	1 = 1	n	У	Parameter
11.45	Freq in 1 at scale	ed max					
	Internal value corr	esponding to the	maximun	n value of frequency	/ input 1 (D	IO 1).	
				to the maximum in	put frequen	cy defined l	by 11.43 Freq
	in 1 max (via DIO See 11.42 Freq in		as a frequ	uency input).			
	-32768.000	1500.000	1_	1 = 1	n	у	Parameter
	32767.000	1300.000		- '	"	y	arameter
11.54	Freq out 1 actual	value					1
	Value of frequenc	, ,	,				
		of frequency ou	tput 1 afte	er scaling in Hz (via	DIO2 when	it is used a	s a frequency
	output). See 11.58 Freq or	ut 1 erc min					
	0 16000	-	Hz	1 = 1 Hz	У	n	Signal
11.55	Freq out 1 source	<u> </u>					Tolgila.
	Source for frequen) 2).				
	Selects a signal/p	arameter to be c		to frequency output	1 (via DIO2	2 when it is	used as a
	frequency output)						
	Other; source selection or Zero; not in use						
	1: Used motor sp		d motor sp	eed filtered.			
	4: Motor current;	01.10 Motor cur	rent in A.				
	6: Motor torque;						
	8: Output power;			'. eed reference ramp	innut		
				peed reference ram			
	12: Used speed r	reference; 24.01	Used spe	ed reference.	1		
	13: Torque refere				-1		
	16: Process PID	output actual; 4	U.U1 Proce	ess PID output actua	aı.		

Index	Name								
	Text								
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре		
	17: Process PID fe						•		
	18: Process PID se								
	0 19	Zero		1 = 1	n	у	Parameter		
1.58	Freq out 1 src min			11-1	''	y	i arameter		
	Internal value correduction Defines the internal DIO2 when it is used Scaling parameters frequency output value (11.54)	value that corred as a frequence 11.58 and 11.58 alues in Hz defined as a frequence 11.59 Internal	esponds to cy output). 59 set the land by para	o the minimum frequence ow and high internal ameters 11.60 and	uency of fre	equency out	,		
	Setting parameter output:	I1.58 as maxim	um value a	and parameter 11.5	9 as minim	um value in	verts the		
	output:	11.58 Interna	- Il signal / paramet Id by par. 11.55		9 as minim	um value in	verts the		
	output: f _{out} (11.54) 11.60	11.58 Interna selecte	- Il signal / paramet Id by par. 11.55		9 as minim	um value in	Parameter		
1.59	output: f _{out} (11.54) 11.60 -32768.000	11.58 Interna selecte DZ_LIN_019_f	- Il signal / paramet Id by par. 11.55	er					
1.59	output: f _{out} (11.54) 11.60 -32768.000 32767.000 Freq out 1 src max Internal value corre Defines the internal DIO2 when it is use See 11.58 Freq out -32768.000	0.000 Sponding to may a value that correct as a frequence.	i signal / paramet d by par. 11.55 requercy_bal - uximum vali esponds to	er 1 = 1 ue of frequency out	n tput 1 (DIO	y 2).	Parameter		
	output: f _{out} (11.54) 11.60 -32768.000 32767.000 Freq out 1 src max Internal value corre Defines the internal DIO2 when it is use See 11.58 Freq out -32768.000 32767.000	0.000 sponding to may value that corred as a frequence of a src min. 1500.000	i signal / paramet d by par. 11.55 requercy_bal - uximum vali esponds to	1 = 1 ue of frequency out the maximum freq	n tput 1 (DIO juency of fre	y 2). equency ou	Parameter tput 1 (via		
	output: fout (11.54) 11.60 -32768.000 32767.000 Freq out 1 src max Internal value corre Defines the internal DIO2 when it is use See 11.58 Freq out -32768.000 32767.000 Freq out 1 at src m Minimum value of fi Defines the minimum output).	11.58 Internal selecte DZ_LIN_010_f	a signal / parametrid by par. 11.55 requency_bal - aximum valicesponds to by output).	er 1 = 1 ue of frequency out the maximum frequency of the maximum frequency of the maximum frequency out the maximum frequency out the maximum frequency out the maximum fre	n tput 1 (DIO juency of fre	y 2). equency out	Parameter tput 1 (via Parameter		
1.59	output: fout (11.54) 11.60 -32768.000 32767.000 Freq out 1 src max Internal value corre Defines the internal DIO2 when it is use See 11.58 Freq out -32768.000 32767.000 Freq out 1 at src m Minimum value of fi Defines the minimum	11.58 Internal selecte DZ_LIN_010_f	a signal / parametrid by par. 11.55 requency_bal - aximum valicesponds to by output).	er 1 = 1 ue of frequency out the maximum frequency of the maximum frequency of the maximum frequency out the maximum frequency out the maximum frequency out the maximum fre	n tput 1 (DIO juency of fre	y 2). equency out	Parameter tput 1 (via Parameter		

Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	Defines the max frequency output See 11.58 Frequency	t).	of frequenc	y output 1 in Hz (via	a DIO2 whe	n it is used	as a			
	0 16000	16000	Hz	1 = 1 Hz	n	У	Parameter			
11.81	DIO filter time	l .		J						
		ant for 11.01 DIO me constant for 1		tatus.						
	0.3 100.0	10.0	ms	10 = 1 ms	n	у	Parameter			

12 Standard Al

Configuration of standard analog inputs.

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
12.03	Al supervision function	n					
	Supervision function ar Selects how the drive relimits specified for the in The inputs and the limit. The analog input signareference 1 = Al1 scale 0: No action; none, dis 1: Fault; the event gene 2: Warning; the event gene 2: Warning; the event gene 3: Last speed; the event drive was operating ms low-pass filter. WARNING! Make sure that it is safe 4: Speed reference sathe value defined in 22: WARNING!	eacts when Anput. is to be obset supervision and, Al2 scaled able Al superates fault 8 generates was at. The last eto continue to continue	rved are se is activated or Al3 sca rvision fund 60A0 Al sup arning A8A0 operation i varning A8A0 speed is de operation i generates	lected by 12.04 A I when the analog led. etion. ervision. O AI supervision. In case of a comma AO AI supervision etermined based of a comma case of a comma warning A8AO AI	I supervision input is used unication be and freezes on the speed unication be	on selection ed. E.g. set reak. s the speed d feedback reak.	to the level using an 850
	Make sure that it is safe	1	operation i	1	unication b	reak.	
	0 4	No action	-	1 = 1	n	у	Parameter
12.04	Al supervision selecti	on					

Activation of analog input supervision.

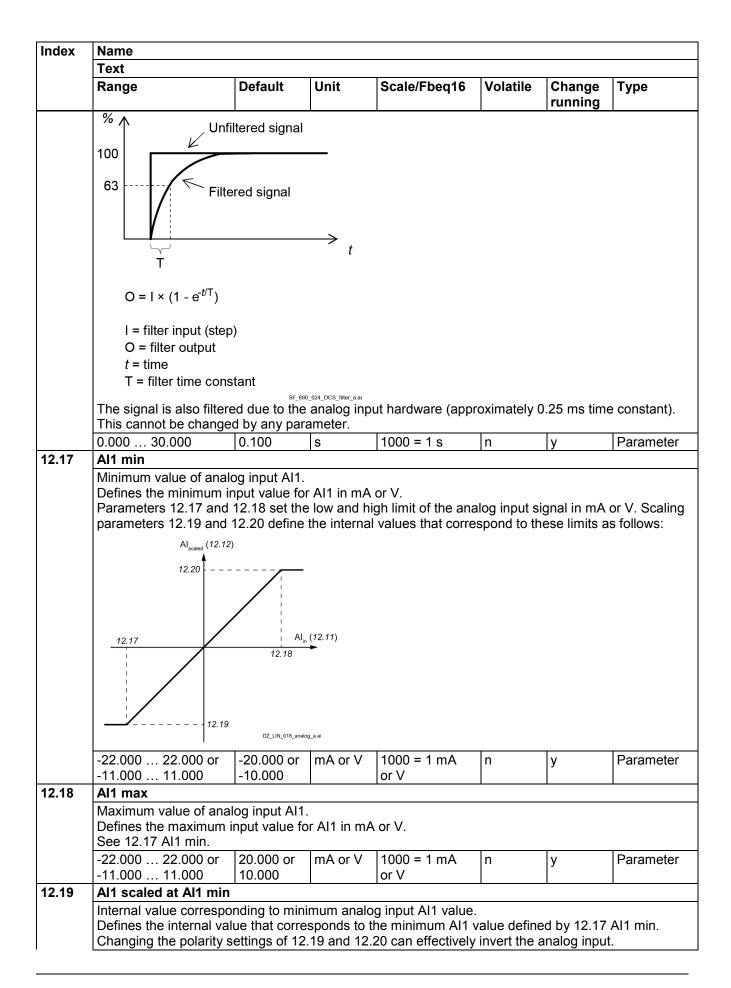
Specifies which limits of AI1 ... AI3 are supervised by12.03 AI supervision function.

Bit assignment:

Bit	Name	Value	Remarks
0	Al1 < MIN	1	Minimum limit supervision of Al1 active. See12.17 Al1 min.
1	Al1 > MAX	1	Maximum limit supervision of Al1 active. See 12.18 Al1 max.
2	Al2 < MIN	1	Minimum limit supervision of Al2 active. See12.27 Al2 min.
3	Al2 > MAX	1	Maximum limit supervision of Al2 active. See 12.28 Al2 max.
4	AI3 < MIN	1	Minimum limit supervision of Al3 active. See12.37 Al3 min.
5	AI3 > MAX	1	Maximum limit supervision of Al3 active. See 12.38 Al3 max.
6 15	reserved		

The supervision applies a margin of 0.5 V or 1.0 mA, see12.15 Al1 unit selection, to the limits.

ndex	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
2.11	The limit superv - 12.18 Al1 max v V. The limit sup - 12.17 Al1 min = mA. The limit su - 12.18 Al1 max v 8.000 mA. The ooooh FFFFh Al1 actual value Value of analog inp	vision clears at = 7.000 V. The ervision clears = 4.000 mA. The upervision clear = 7.000 mA. The limit supervisio 0000h ut Al1.	values great maximum li at values lo e minimum l rs at values ne maximum n clears at v	nit supervision activer than 4.000 V. mit supervision activer than 7.000 V. imit supervision active than 4.000 Ilimit supervision active than 4.000 Ilimit supervision actives lower than 1 = 1	ctivates at vo ctivates at vo 0 mA. activates at 7.000 mA. n	alues greate values lower values grea	er than 7.500 r than 3.000 ater than Parameter
	Displays the value of and switches of this -22.000 22.000 of -11.000 11.000	of AI1 in mA or s manual).	V correspor	1000 = 1 mA	y of jumper	J1 (see cha	Signal
2.12	Al1 scaled value	I	II.				-
	Scaled value of and Displays the value of See 12.19 Al1 scale -32768.000 32767.000	of Al1 after sca		1 scaled at AI1 ma	ax.	n	Signal
2.14	Al1 offset	l .				I	
	Offset for analog in Adds an offset to 12		value.				
	-0.100 0.100	0.000	mA or V	1000 = 1 mA or V	n	у	Parameter
2.15	Al1 unit selection						
	Unit selection of an Selects the unit for setting of jumper J1 2: V; volts. 10: mA; milli amper	readings and s (see chapter <u>s</u> es.		<u>I switches</u> of this r			
	2 10	V	-	1 = 1	n	у	Parameter
2.16	Al1 filter time Filter time constant Defines the filter time						



Index	Name		-							
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	See 12.17 Al1 min.									
	-32768.000 32767.000	-1500.000	-	1 = 1	n	у	Parameter			
12.20	Al1 scaled at Al1 ma	ах								
	Internal value corresponding the internal value corresponding to t					ed by 12.18	3 Al1 max.			
	-32768.000 32767.000	1500.000	-	1 = 1	n	у	Parameter			
12.21	Al2 actual value									
	Value of analog input Displays the value of and switches of this r	Al2 in mA or \manual).	·			J2 (see cha				
	-22.000 22.000 or -11,000 11,000	-	mA or V	1000 = 1 mA or V	у	n	Signal			
12.22	Al2 scaled value									
	Scaled value of analog input Al2. Displays the value of analog input Al2 after scaling. See 12.29 Al2 scaled at Al2 min and 12.30 Al2 scaled at Al2 max.									
	-32768.000 32767.000	-	-	1 = 1	у	n	Signal			
12.24	Al2 offset									
	Offset for analog input Adds an offset to 12.		alue.							
	-0.100 0.100	0.000	mA or V	1000 = 1 mA or V	n	у	Parameter			
12.25	Al2 unit selection									
	Unit selection of anal Selects the unit for re setting of jumper J2 (2: V; volts. 10: mA; milli amperes	eadings and se see chapter <u>Ju</u>				V correspo	_			
	2 10	V	-	1 = 1	n	у	Parameter			
12.26	Al2 filter time									
	Filter time constant on Defines the filter time See 12.16 Al1 filter time	constant for A								
	0.000 30.000	0.100	s	1000 = 1 s	n	у	Parameter			
12.27	Al2 min									
	Minimum value of an Defines the minimum Parameters 12.27 an parameters 12.29 an	input value fo d 12.28 set the	r analog in _l e low and h	igh limit of the ana	alog input s					

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	Al _{scaled} (12.2)	Al _{in} (12.21)			rummig	
	-22.000 22.000 or -11,000 11,000	DZ_LIN_018_analog_		1000 = 1 mA or V	n	у	Parameter
12.28	Al2 max		L.	•		•	•
	Maximum value of ar Defines the maximun See 12.27 Al2 min.	n input value	for Al2 in m				,
	-22.000 22.000 or -11,000 11,000	10.000	mA or V	1000 = 1 mA or V	n	у	Parameter
12.29	Al2 scaled at Al2 mi						
	Internal value corresponding the internal value Changing the polarity See 12.27 Al2 min. -32768.000 32767.000	alue that corr	esponds to	the minimum AI2	value defin		
12.30	Al2 scaled at Al2 ma						
12.00	Internal value correspondences the internal value See 12.27 Al2 min.	onding to ma				ned by 12.28	3 Al2 max.
	-32768.000 32767.000	100.000	-	1 = 1	n	у	Parameter
12.31	Al3 actual value						
	Value of analog input Displays the value of						
	-11.000 11.000	-	V	1000 = 1 V	у	n	Signal
12.32	Al3 scaled value Scaled value of analo Displays the value of See 12.39 Al3 scaled -32768.000	Al3 after sca		3 scaled at Al3 ma	эх.	n	Signal
10.5:	32767.000						
12.34	Al3 offset Offset for analog inpu Adds an offset to 12.	31 Al3 actual					
	1	0.000	V	1000 = 1 V	n	- N	Parameter
	-0.100 0.100	0.000	V	1000 – 1 V	11	у	raiailletei
12.36	-0.100 0.100 Al3 filter time Filter time constant o			1000 = 1 V	11	ју	raiametei

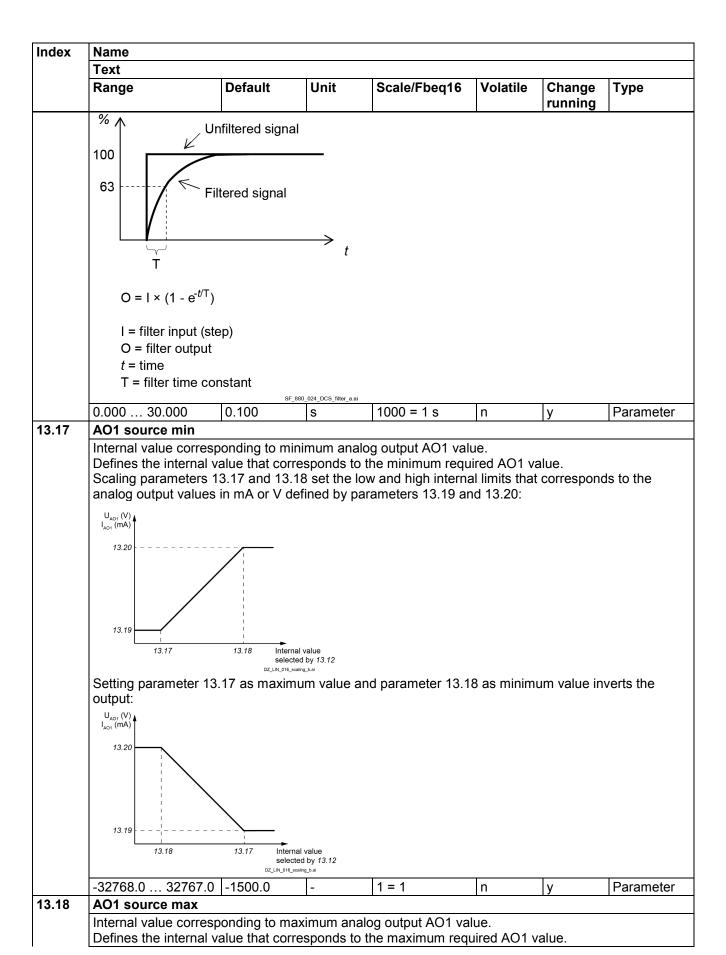
Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	Defines the filter time See 12.16 Al1 filter ti		analog inp	ut Al3.						
	0.000 30.000	0.100	s	1000 = 1 s	n	у	Parameter			
12.37	Al3 min Minimum value of an Defines the minimum Parameters 12.37 an parameters 12.39 an Al _{scaled} (n input value fo nd 12.38 set th nd 12.40 define	or Al3 in V e low and e the interr	high limit of the ana		ignal in V. S	Scaling			
			8_analog_a.ai							
	-11.000 11.000	-10.000	V	1000 = 1 V	n	у	Parameter			
12.38	Al3 max Maximum value of ar Defines the maximur See 12.37 Al3 min. -11.000 11.000			/. 1000 = 1 V	n	ly	Parameter			
12.39	Al3 scaled at Al3 m		_	1.000	1		1 0.0			
	Internal value corres	Internal value corresponding to minimum analog input Al3 value. Defines the internal value that corresponds to the minimum Al3 value defined by 12.37 Al3 min. Changing the polarity settings of 12.39 and 12.40 can effectively invert the analog input. See 12.37 Al3 min.								
	32767.000									
12.40	Al3 scaled at Al3 m Internal value corres Defines the internal v See 12.37 Al3 min. -32768.000	ponding to ma				ed by 12.38	3 Al3 max.			

13 Standard AO

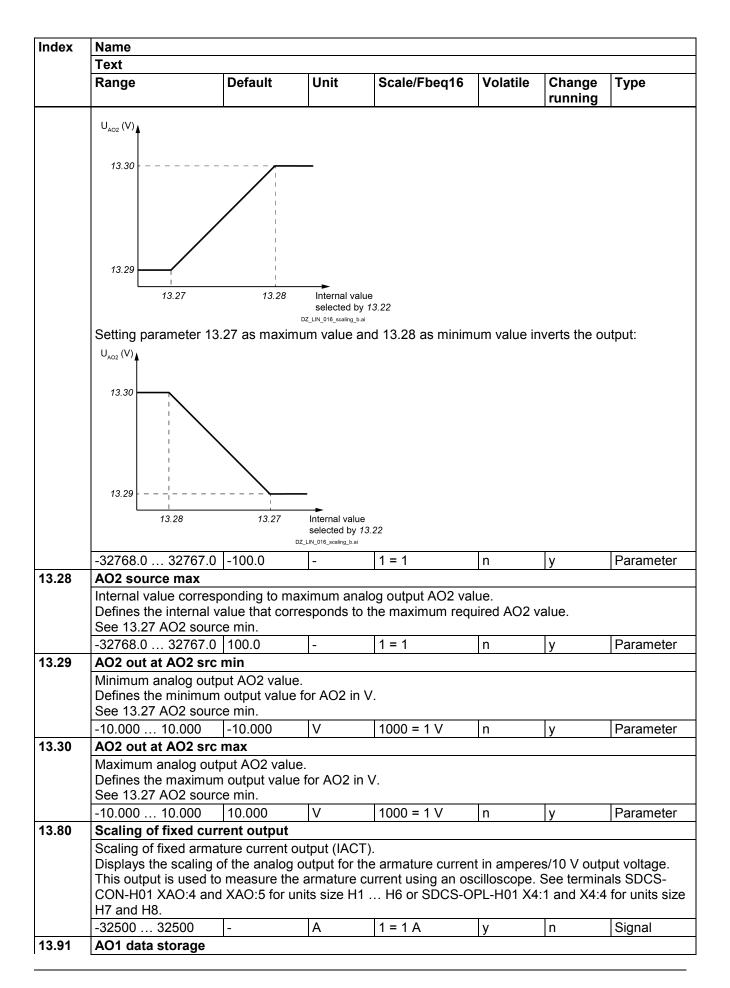
Configuration of standard analog outputs.

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
13.11	AO1 actual va	lue	•	•	•	•	•
	Value of analog	g output AO1.					

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	Displays the value Jumpers and switch			onding to the settir	ng of jumper	r J5 (see ch	apter
	0.000 22.000 or -10,000 10,000		mA or V	1000 = 1 mA or V	у	n	Signal
13.12	AO1 source						
12.15	Source for analog Selects a signal/pato feed a constant Other; source selection of the source selectio	current to a tenderation. eed; 01.01 Use 01.10 Motor curon and protection are protection actual protection; AO1 and protection; AO1 and protection; AO1 and protection; AO1 are protection; AO2 are protection; AO2 are protection; AO3 are protection; AO3 are protection; AO2 are protection; AO3 are protectio	d motor sperrent in A. que filtered. ture voltage ower in kW. ; 23.01 Spec out; 23.02 Sp Used spee 2 Torque re 10.01 Proces 1; 40.02 Proces 1; 40.03 Proces 1; 40.04 Proces 1; 40.04 Proces 1; 40.04 Proces 1; 40.05 Proces 1; 40.06 Proces 1; 40.06 Proces 2 Torque re 2 Torque re 3 Torque re 4 Torque re 4 Torque re 5 Torque re 5 Torque re 5 Torque re 6 Torque re 7 Torque re 8 T	ensor. ed filtered. ed reference ramp eed reference ram d reference. ference used. es PID output actua cess PID feedback ess PID setpoint a cess PID deviation feed an excitation of al. feed an excitation cur	input. p output. al. c actual. ctual. current to 1 current to a	3 PT100 KTY84 ser . 3 PTC ser) sensors. See nsor. See nsors. See
13.15	AO1 unit selection Unit selection of ar Selects the unit for setting of jumper J 2: V; volts. 10: mA; milli ampe	nalog output AC readings and s 5 (see chapter i	ettings relat	<u>d switches</u> of this r			_
	2 10	V	-	1 = 1	n	у	Parameter
13.16	AO1 filter time						
	Filter time constant Defines the filter time						



Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	See 13.17 AO1	source min.	·				
	-32768.0 327	767.0 1500.0	-	1 = 1	n	у	Parameter
13.19	AO1 out at AO	1 src min					
		g output AO1 value imum output value source min.		mA or V.			
	0.000 22.000 -10,000 10,0		mA or V	1000 = 1 mA or V	n	у	Parameter
13.20	AO1 out at AO	1 src max					
				mA or V.	n	у	Parameter
	-10,000 10,0	00 10.000		or V			
13.21	AO2 actual val						
		lue of AO2 in V.					
	-10.000 10.0	00 -	V	1000 = 1 V	у	n	Signal
13.22	AO2 source						
	7: Armature vo 8: Output powe 10: Speed refe 11: Speed refe 12: Used speed 13: Torque refe 16: Process PI 17: Process PI 18: Process PI 19: Process PI 37: AO1 data s	e; 01.17 Motor torq oltage; 28.05 Armat er; 01.24 Output pot rence ramp output d reference; 24.01 erence used; 26.02 D output actual; 4 D feedback actual D setpoint actual; D deviation actual torage; see 13.91	ture voltage. 23.01 Spee t; 23.02 Spe Used speed Torque ref 0.01 Proces ; 40.02 Proce 40.03 Proce l; 40.04 Proce AO1 data st	ed reference ramp eed reference ram d reference. erence used. es PID output actu cess PID feedback ess PID setpoint a cess PID deviation orage.	al. k actual. ctual. actual.	T.	Doromotor
		Armature voltage	-	1 = 1	n	У	Parameter
13.26	AO2 filter time		1.4.05				
	Defines the filte See 13.16 AO1		AO2.	14000 - 4 -	T	Т.,	Davasasta
13.27	0.000 30.000		S	1000 = 1 s	n	у	Parameter
19.21	Internal value of Defines the internal Scaling parame	orresponding to min rnal value that corr ters 13.27 and 13.2 alues in V defined l	esponds to 28 set the lo	the minimum requ w and high interna	uired AO2 v al limits that		ds to the



Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	Storage parameter Storage parameter To set analog output Data I/O 24). Example: Set 58.10	to set analog ou it AO1 send a va	tput AO1 vi alue e.g. via	embedded fieldb	`		
	-327.68 327.67	0.00	-	100 = 1	n	у	Parameter
13.92	AO2 data storage						
	Storage parameter Storage parameter To set analog outpu Data I/O 24). Example: Set 58.10	to set analog ou It AO2 send a va	tput AO2 vi alue e.g. via	embedded fieldb	`		
	-327.68 327.67	0.00	-	100 = 1	n	у	Parameter

14 I/O extension module 1

Configuration of I/O extension module 1.

The contents of the parameter group varies according to the selected I/O extension module type.

	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
14.01	Module 1 type						
	First I/O extension Activates (and sp 0: None; inactive 1: FIO-01; adds 4 2: FIO-11; adds 2 3: FDIO-01; adds 4: FAIO-01; adds	ecifies the type of the control of t	,	nsion module 1.			
	0 4	None	-	1 = 1	n	n	Parameter
14.02	Module 1 location	on	I		I		
			, specifies	the node ID of the s		ch the I/O e A-03 exten	
	1: Slot 1; I/O external 2: Slot 2; I/O external 3: Slot 3; I/O external 4 254: Node Note: The node I with Drive compo	ension module 1 ension module 1 ension module 1 ID of the slot on to D of the slot on to ser.	r, specifies is located i is located i is located i is located i the FEA-03	the node ID of the s n slot 1. n slot 2.	slot on a FE	:A-03 exten	sion module.
44.00	1: Slot 1; I/O exters 2: Slot 2; I/O exters 3: Slot 3; I/O exters 04 254: Node Note: The node I with Drive compo	ension module 1 ension module 1 ension module 1 ID of the slot on to D of the slot on to ser. Slot 1	r, specifies is located i is located i is located i is located i the FEA-03	the node ID of the s n slot 1. n slot 2. n slot 3. 3 extension module.	slot on a FE	:A-03 exten	sion module.
14.03	1: Slot 1; I/O extermine 2: Slot 2; I/O extermine 3: Slot 3; I/O extermine 4 254: Node Note: The node I with Drive compor 1 254 Module 1 status First I/O extension 0: No option; no	ension module 1 ension module 1 ension module 1 ID of the slot on to ser. Slot 1 n module status. module detected eation; a module type is u 0-01 has been de DIO-01 has been	r, specifies is located i is located i is located i the FEA-03 he FEA-03. I in the spe has been conknown. tected and detected and dete	the node ID of the son slot 1. In slot 2. In slot 3. Is extension module. If extension module of the slot. If extension module of the slot. If extension module of the slot. It is active.	can be type	d in. This is	only possible Parameter
14.03	1: Slot 1; I/O extermine 2: Slot 2; I/O extermine 3: Slot 3; I/O extermine 4 254: Node Note: The node I with Drive comporation 2: Volume 1 status First I/O extension 0: No option; no 1: No communic 2: Unknown; the 15: FIO-01; a FIO 20: FIO-11; a FIO 23: FDIO-01; a FIO 25: FIO-01; a FIO 25: FIO-01; a FIO 25: FDIO-01; a FIO 25: FDI	ension module 1 ension module 1 ension module 1 ID of the slot on to ser. Slot 1 n module status. module detected eation; a module type is u 0-01 has been de DIO-01 has been	r, specifies is located i is located i is located i the FEA-03 he FEA-03. I in the spe has been conknown. tected and detected and dete	the node ID of the son slot 1. In slot 2. In slot 3. Is extension module. If extension module of the slot. If extension module of the slot. If extension module of the slot. It is active.	can be type	d in. This is	only possible Parameter

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change	Туре
						running	

Status of digital inputs.

(Visible when 14.01 Module 1 type = FDIO-01)

Displays the electrical status of DI1 ... DI3. The activation/deactivation delays of the inputs (if any are specified) are ignored. A filtering time is defined by 14.08 DI filter time.

Bits 0 ... 2 reflect the status of DI1 ... DI3.

Example: 000000000000011b = DI2 and DI1 are on, DI3 is off.

Bit assignment:

Bit	Name	Value	Remarks				
0	DI1	1	On.				
1	DI2	1	On.				
2	DI3	1	On.				
3 15	reserved						
0000h	FFFFh	-	-	1 = 1	у	n	Signal

14.05 DIO status

Status of digital input/outputs.

(Visible when 14.01 Module 1 type = FIO-01 or FIO-11)

Displays the status of DIO1 ... DIO2/DIO4 on the extension module. The activation/deactivation delays (if any are specified) are ignored. A filtering time (for input mode) is defined by 14.08 DIO filter time.

Bit 0 ... 3 reflect the status of DIO1 ... DIO4.

The number of active bits in this parameter depends on the number of digital input/outputs on the extension module.

Example: 000000000001001b = DIO1 and DIO4 are on, remainder are off.

Bit assignment:

Bit	Name	Value	Remarks
0	DIO1	1	On.
1	DIO2	1	On.
2	DIO3	1	On.
3	DIO4	1	On.
4 15	reserved		

|--|

14.06 DI delayed status

Delayed status of digital inputs.

(Visible when 14.01 Module 1 type = FDIO-01)

Displays the delayed status of DI1 ... DI3. This word is updated only after activation/deactivation delays (if any are specified).

Bits 0 ... 2 reflect the status of DI1 ... DI3.

Example: 000000000000011b = DI2 and DI1 are on, DI3 is off.

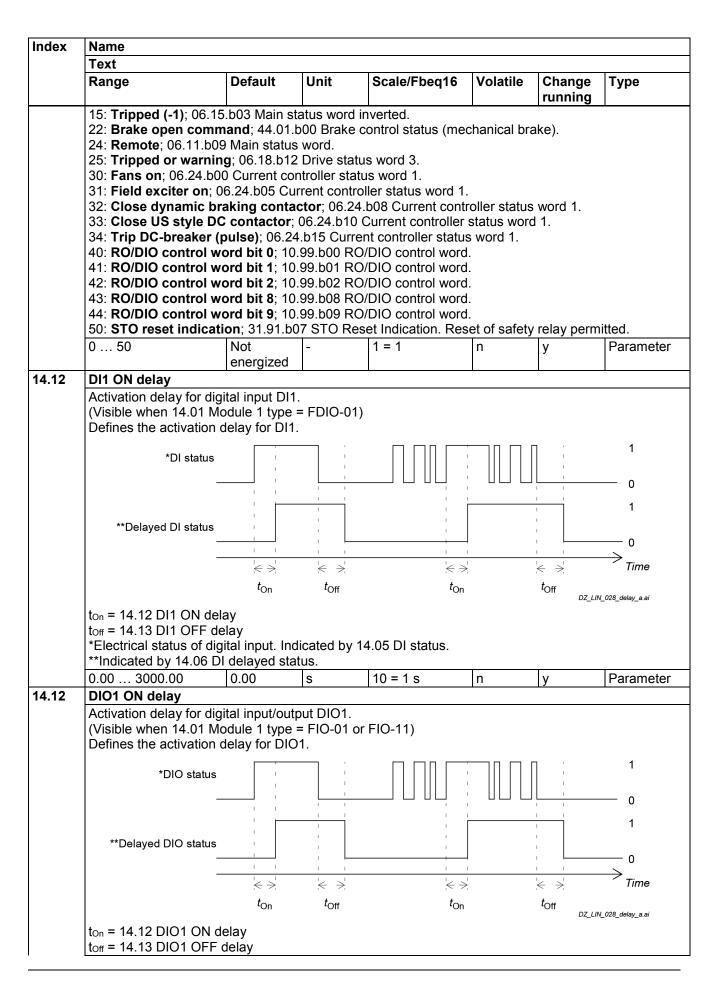
Bit assignment:

Bit	Name	Value	Remarks
0	DI1	1	On.
1	DI2	1	On.
2	DI3	1	On.
3 15	reserved		

_	000011111111	000011	 1-1	у	11	Signal
	0000h FFFFh	0000h	1 – 1	M	n	Cianal

14.06 DIO delayed status

Index	Name							
	Text							
	Range		Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	(Visible wh Displays th only after a Bit 0 3 r The number extension r	activation/dea eflect the sta er of active bi module. 000000000000000000000000000000000000	dule 1 type atus of DIC activation d tus of DIO ts in this p	e = FIO-01 o 01 DIO2/ elays (if any 1 DIO4. arameter de	or FIO-11) DIO4 on the extensy are specified). epends on the num d DIO4 are on, ren	ber of digita	al input/outp	·
	Bit	Name	Value	Remarks				
	0	DIO1	1	On.				
	1	DIO2	1	On.				
	2	DIO3	1	On.				
	3	DIO4	1	On.				
	4 15	reserved						
	0000h F	FFFh	-	_	1 = 1	у	n	Signal
14.08	DI filter tin				<u> </u>	1 3	1	10.9
14.08	Defines a f 0.8 100. DIO filter t Filter time o (Visible wh		stant for 1 10.0 14.05 DIO dule 1 type	4.05 DI stat ms status. e = FIO-01 d	us. 10 = 1 ms or FIO-11)	n	у	Parameter
	0.8 100.		10.0	ms	10 = 1 ms	n	у	Parameter
14.09	DIO1 func		10.0	1110	10 - 11113	11	l y	i arameter
	(Visible wh Selects wh 0: Output; I	DIO1 is used O1 is used a	dule 1 type of the exter as a digita	e = FIO-01 onsion modul al output.	or FIO-11) e is used as a digit	al input or c	output.	Parameter
14.11	DIO1 outp	ut source	•	•	-	•	1-	-
	(Visible wh Selects a s 14.09 DIO Other [bit] 0: Not ene 1: Energize 2: Ready r 3: Ready r 9: At setpo 10: Revers 11: Zero s 12: Above 13: Warnin	digital input/o en 14.01 Mo ignal/parame 1 function = 0 ; source sele rgized; output ed; output is un; 06.15.b0 on; 06.15.b0 l; 06.16.b02 l eference; 06 oint; 06.15.b0 peed; 06.21.l limit; 06.17. ng; 06.15.b03 d; 06.15.b03	dule 1 type eter bit to b Dutput. ection. ut is not en energized 1 Main stat Drive statu 5.15.b02 M 08 Main stat 2 Speed co b00 Speed b10 Drive 7 Main stat	e = FIO-01 of the connected of the control	d to DIO1 of the ex vord. word. tus word.	tension mo	dule when	parameter



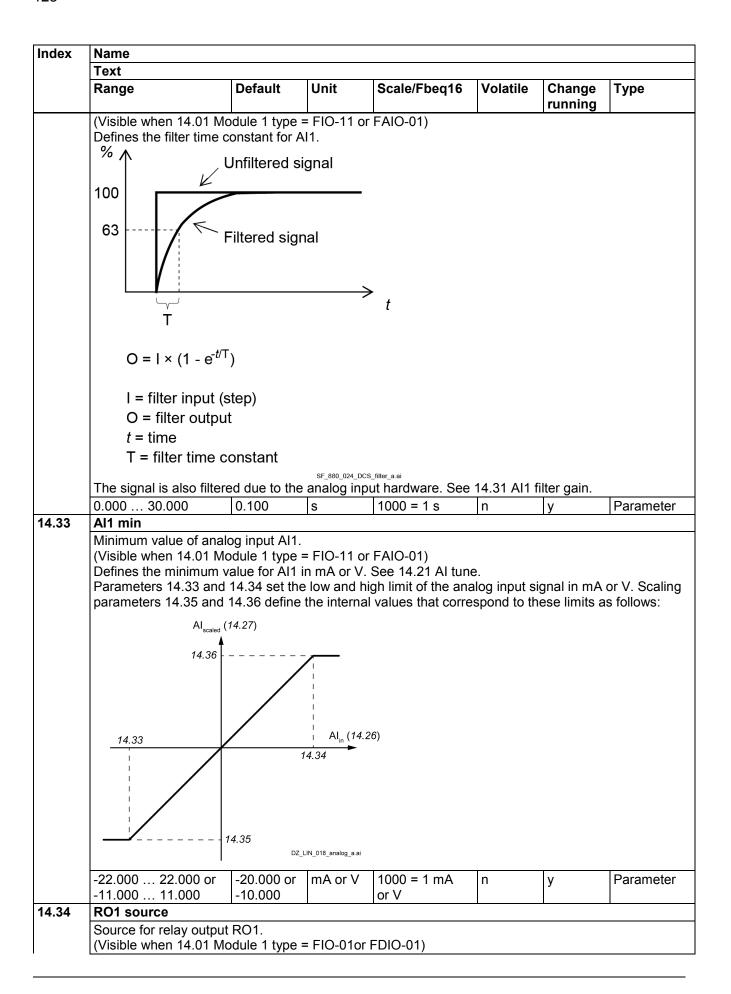
Index	Name						
	Text		_				
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	*Electrical status of DIO 14.05 DIO status. **Indicated by 14.06 DIO	O delayed st	,	_	urce (in out	out mode).	Indicated by
	0.00 3000.00	0.00	S	10 = 1 s	n	y	Parameter
14.13	Deactivation delay for a (Visible when 14.01 Ma Defines the deactivation See 14.12 DI1 ON delay the control of	odule 1 type : n delay for D y.	= FDIO-01) l11.				
	0.00 3000.00	0.00	S	10 = 1 s	n	у	Parameter
14.13	DIO1 OFF delay Deactivation delay for of (Visible when 14.01 Modern Defines the deactivation See 14.12 DIO1 ON decay and the control of the	odule 1 type : n delay for D lay.	= FIO-01 or IO1 (when	FIO-11) used as a digital			Doromotor
14.14	0.00 3000.00 DIO2 function	0.00	S	10 = 1 s	n	у	Parameter
	Function of digital input (Visible when 14.01 Mo Selects whether DIO2 or Output; DIO2 is used 1: Input; DIO2 is used	odule 1 type : of the extens d as a digital	= FIO-01 or ion module l output.		al input or o	output.	
	0 1	Input	İ-	1 = 1	n	У	Parameter
	Source for digital input (Visible when 14.01 Mo Selects a signal/param Output. See 14.11 DIO1 output 0 50	eter bit to be	= FIO-01 or		rameter 14	.14 DIO2 fu	nction = Parameter
14.17	DI2 ON delay	eriergized					
14.17	Activation delay for dig (Visible when 14.01 Mo Defines the activation of See 14.12 DI1 ON delay	odule 1 type : lelay for DI2. ly.	= FDIO-01)		T.	T.	IP
4447	0.00 3000.00	0.00	S	10 = 1 s	n	у	Parameter
14.17	Activation delay for dig (Visible when 14.01 Mo Defines the activation of See 14.12 DIO1 ON de 0.00 3000.00	odule 1 type : lelay for DIO	= FIO-01 or	FIO-11)	n	у	Parameter
14.18	DI2 OFF delay Deactivation delay for (Visible when 14.01 Modern Defines the deactivation See 14.12 DI1 ON delay	digital input Dodule 1 type : n delay for D) 2. = FDIO-01)			,,	•
	0.00 3000.00	0.00	s	10 = 1 s	n	у	Parameter
14.18	DIO2 OFF delay		•	•	•		•
	Deactivation delay for o	digital input/o	utput DIO2				

	Name											
	Text											
	Range		Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре				
	(Visible wh	en 14.01 Mo	dule 1 type	= FIO-01 o	r FIO-11)							
		e deactivation		DIO2.								
		DIO1 ON del	•	1		1	_	_				
	0.00 300		0.00	S	10 = 1 s	n	у	Parameter				
4.19	DIO3 func	tion										
		digital input/										
		en 14.01 Mo										
					e is used as a digit	al input or o	output.					
		DIO3 is used										
		IO3 is used a		nput.	T		1	T				
	0 1		Input	-	1 = 1	n	у	Parameter				
4.19		sion functio										
		n function and										
		en 14.01 Mo					,					
				.I1 AI2/A	d3 signals move o	ut of the mi	nimum and/	or maxımum				
		fied for the in		aruad ara a	elected by parame	tor 14 20 A	Launamiaia	n coloction				
					elected by parame ed when the analog							
						j iliput is us	eu. ∟.y. sei	22.11 Spee				
		n ; none, disa										
		1: Fault ; the event generates fault 80A0 Al supervision.										
			2: Warning; the event generates warning A8A0 AI supervision.									
	WARNING! Make sure that it is safe to continue operation in case of a communication break.											
	Make sure	that it is safe	to continue	operation	in case of a comm	nunication b	oreak.					
					in case of a comn			d to the leve				
	3: Last spe	ed; the ever	t generates	warning A		n and freez	es the spee					
	3: Last spe the drive w ms low-pas	eed; the ever as operating as filter.	t generates	warning A	8A0 Al supervisio	n and freez	es the spee					
	3: Last spe the drive w ms low-pas WARNING	eed; the ever as operating as filter. !	t generates at. The last	s warning A speed is d	8A0 AI supervisio letermined based	n and freez on the spee	es the spee d feedback					
	3: Last spe the drive w ms low-pas WARNING Make sure	eed; the ever as operating as filter. ! that it is safe	t generates at. The last to continue	s warning A speed is d	ASAO AI supervision letermined based of a committee	n and freez on the spee nunication b	es the spee ed feedback oreak.	using an 85				
	3: Last spetthe drive we ms low-past WARNING Make sure 4: Speed re	eed; the ever as operating as filter. ! that it is safe eference saf	t generates at. The last to continue e; the even	s warning A speed is d e operation t generates	ASAO AI supervision letermined based of a community warning ASAO AI	n and freez on the spee nunication b	es the spee ed feedback oreak.	using an 85				
	3: Last spe the drive w ms low-pas WARNING Make sure 4: Speed r the value d	eed; the ever as operating as filter. ! that it is safe eference saf efined in 22.4	t generates at. The last to continue e; the even	s warning A speed is d e operation t generates	ASAO AI supervision letermined based of a community warning ASAO AI	n and freez on the spee nunication b	es the spee ed feedback oreak.	using an 85				
	3: Last spetthe drive we mis low-past WARNING Make sure 4: Speed rethe value de WARNING	eed; the ever as operating as filter. ! that it is safe eference saf efined in 22.4!	t generates at. The last to continue e; the even	s warning A speed is d e operation t generates eference sa	ASAO AI supervision letermined based of a community warning ASAO AI afe.	n and freez on the spec nunication b supervision	es the spee ed feedback break. In and sets the	using an 85				
	3: Last spetthe drive with ms low-past WARNING Make sure 4: Speed rethe value di WARNING Make sure	eed; the ever as operating as filter. ! that it is safe eference saf efined in 22.4! that it is safe	t generates at. The last to continue e; the even to continue to continue to continue	s warning A speed is d e operation t generates eference sa e operation	in case of a comnute. in case of a comnute. in case of a comnute. in case of a comnute.	n and freez on the spec nunication be supervision	es the spee of feedback break. In and sets the	using an 85				
	3: Last spetthe drive with ms low-past WARNING Make sure 4: Speed rethe value di WARNING Make sure 0 4	eed; the ever as operating as filter. ! that it is safe eference saf efined in 22.4! that it is safe	t generates at. The last to continue e; the even to continue to continue No action	s warning A speed is d e operation t generates eference sa	ASAO AI supervision letermined based of a community warning ASAO AI afe.	n and freez on the spec nunication b supervision	es the spee ed feedback break. In and sets the	using an 85				
14.20	3: Last spetthe drive we mis low-past WARNING Make sure 4: Speed rethe value of WARNING Make sure 0 4 Al supervi	eed; the ever as operating as filter. ! that it is safe eference saf efined in 22.4! that it is safe	t generates at. The last to continue e; the even to continue to continue to continue No action	s warning A speed is d e operation t generates ference sa e operation	in case of a comnute. in case of a comnute. in case of a comnute. in case of a comnute.	n and freez on the spec nunication be supervision	es the spee of feedback break. In and sets the	using an 85				
14.20	3: Last spetthe drive we mis low-past WARNING Make sure 4: Speed rethe value of WARNING Make sure 0 4 Al superviolation of Activation of the drive was a specific product	eed; the ever as operating as filter. ! that it is safe eference saf efined in 22.4 ! that it is safe sion selection	to continue to continue to continue to Speed re to continue to continue to continue to continue no action ut supervisie	e operation t generates e operation t generates eference sa e operation -	in case of a comn warning A8A0 Al supervision letermined based of a comn as warning A8A0 Al sife. in case of a comn a comn a comn a case of a case of a	n and freez on the spec nunication be supervision	es the spee of feedback break. In and sets the	using an 85				
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14.20	3: Last spetthe drive we mis low-past WARNING Make sure 4: Speed rethe value of WARNING Make sure 0 4 Al superviolation of (Visible who Specifies we missing the sure of the superviolation of th	eed; the ever as operating as filter. ! that it is safe eference safe efined in 22.4! that it is safe sion selection of analog input en 14.01 Moodyhich limits of	to continue to continue to speed re to continue to continue to continue No action on ut supervisie dule 1 type	e operation t generates eference sa e operation -	in case of a comn warning A8A0 Al supervision letermined based of a comn as warning A8A0 Al sife. in case of a comn a comn a comn a case of a case of a	n and freez on the spec nunication be supervision nunication be n	es the spee ed feedback oreak. In and sets the oreak.	ne speed to Parameter				
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14.20	3: Last spetthe drive we mis low-pass WARNING Make sure 4: Speed rethe value of WARNING Make sure 0 4 Al supervice Activation of (Visible who Specifies we Bit assignment) Bit 0 1	eed; the ever as operating as filter. ! that it is safe eference safefined in 22.4! that it is safe sion selection analog input on 14.01 Moorhich limits of ment: Name Al1 < MIN Al1 > MAX	to continue to continue to continue to speed re to continue No action on ut supervisic dule 1 type Al1 Al2 Value 1 1	e operation t generates e operation t generates e operation - on. = FIO-11 o /AI3 are su Minimum Maximum	in case of a common swarning A8A0 Al side. in case of a common swarning A8A0 Al side. in case of a common system in case of a c	n and freezon the special nunication be supervision and in the special nunication be a supervision and in the supervision of All active of All	es the spee ed feedback oreak. n and sets to oreak. y sion function e. See 14.33 e. See 14.33	ne speed to Parameter All min. All max.				
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14.20	3: Last spetthe drive we mis low-pass WARNING Make sure 4: Speed rethe value of WARNING Make sure 0 4 Al supervite Activation of (Visible who Specifies we bit assignment) Bit 0 1 2 3	eed; the ever as operating so filter. ! that it is safe eference safefined in 22.4! that it is safe sion selection analog inpute 14.01 Moothich limits of ment: Name Al1 < MIN Al2 < MIN Al2 > MAX	to continue to continue to to continue to speed re to continue No action on ut supervisie dule 1 type Al1 Al2 Value 1 1 1 1	e operation t generates e operation t generates e operation - on. = FIO-11 o /AI3 are su Minimum Maximum Minimum Maximum Maximum Maximum	in case of a common swarning A8A0 Al afe. in case of a common swarning A8A0 Al afe. in case of a common state in case of a common swarning A8A0 Al afe. in case of a common swarning A8A0 Al afe.	n and freezon the speed nunication be supervision nunication be nunication be nunication be nunication be nunication be nunication be nunication be nunication be nunication be nunication be nunication be nunication be nunication be nunication be nunication be nunication by nunication be nunication by nunication be nunication by nunication be nunication by nunication be nunication by nunication by nunication be nunication by nunicati	es the spee ed feedback oreak. In and sets the spee ed. In an and sets the spee ed. In an and sets the spee ed. In an	Parameter All min. All max. All min. All max. All min.				
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14.20	3: Last spetthe drive we mis low-past WARNING Make sure 4: Speed rethe value of WARNING Make sure 0 4 Al supervite Activation of (Visible who Specifies we Bit assignment of the control of the cont	eed; the ever as operating as filter. ! that it is safe eference safefined in 22.4! that it is safe sion selection analog inpute 14.01 Modulated limits of the ment: Name Al1 < MIN Al1 > MAX Al2 < MIN Al2 > MAX Al3 < MIN Al3 > MAX	to continue to continue to to continue to speed re to continue No action on ut supervisie dule 1 type Al1 Al2 Value 1 1 1 1	e operation t generates e operation t generates e operation - on. = FIO-11 o /AI3 are su Minimum Maximum Maximum Minimum Minimum Minimum Minimum	in case of a common swarning A8A0 Al afe. in case of a common swarning A8A0 Al afe. in case of a common state in case of a common swarning A8A0 Al afe. in case of a common swarning A8A0 Al afe.	n and freezon the special nunication to supervision nunication to nunica	es the spee ed feedback oreak. oreak. oreak. y sion function c. See 14.33 c. See 14.48 c. See 14.48 c. See 14.48	Parameter All min. All max. All min. All max. All min. All max. All min.				
14.20	3: Last spetthe drive we mis low-pass WARNING Make sure 4: Speed rethe value of WARNING Make sure 0 4 Al supervite Activation of (Visible who Specifies we bit assignment) Bit 0 1 2 3 4	eed; the ever as operating as filter. ! that it is safe eference safefined in 22.4! that it is safe sion selection analog inpute 14.01 Modulich limits of the nent: Name Al1 < MIN Al2 < MIN Al2 > MAX Al3 < MIN	to continue e; the even to continue No action on ut supervisidule 1 type Al1 Al2 Value 1 1 1 1	e operation t generates e operation t generates e operation - on. = FIO-11 o /AI3 are su Minimum Maximum Maximum Minimum Minimum Minimum Minimum	in case of a common swarning A8A0 All side. in case of a common swarning A8A0 All side. in case of a common state in cas	n and freezon the special nunication to supervision nunication to nunica	es the spee ed feedback oreak. oreak. oreak. y sion function c. See 14.33 c. See 14.48 c. See 14.48 c. See 14.48	Parameter Al1 min. Al1 max. Al2 min. Al2 min. Al2 min. Al3 min.				
14.20	3: Last spetthe drive we mis low-pass WARNING Make sure 4: Speed rethe value of WARNING Make sure 0 4 Al supervite Activation of (Visible who Specifies were bit assignment) Bit 0 1 2 3 4 5 6 15	eed; the ever as operating is filter. ! that it is safe eference safefined in 22.4! that it is safe sion selection analog input of analog input on 14.01 Moor which limits of the nent: Name Al1 < MIN Al1 > MAX Al2 < MIN Al2 > MAX Al3 < MIN Al3 > MAX reserved	to continue to continue to continue to speed re to continue No action on ut supervisic dule 1 type Al1 Al2 Value 1 1 1 1 1	e operation t generates e operation t generates e operation - on. = FIO-11 o /AI3 are su Minimum Maximum Minimum Maximum Minimum Maximum Minimum Maximum Minimum Maximum Minimum Maximum Minimum Maximum	in case of a common swarning A8A0 Al afe. in case of a common swarning A8A0 Al afe. in case of a common system in case of a com	n and freezon the special nunication be supervision nunication be nunica	es the spee ed feedback oreak. In and sets the spee ed. In an	Parameter Al1 min. Al2 min. Al2 min. Al2 min. Al3 max. Al3 min. Al3 max.				
	3: Last spetthe drive we mis low-pass WARNING Make sure 4: Speed rethe value of WARNING Make sure 0 4 Al supervite Activation of (Visible who Specifies were bit assignment) Bit 0 1 2 3 4 5 6 15	eed; the ever as operating is filter. ! that it is safe eference safefined in 22.4! that it is safe sion selection analog inpute 14.01 Modulich limits of ment: Name Al1 < MIN Al1 > MAX Al2 < MIN Al2 > MAX Al3 < MIN Al3 > MAX reserved	to continue e; the even to continue No action on ut supervisidule 1 type Al1 Al2 Value 1 1 1 1	e operation t generates e operation t generates e operation - on. = FIO-11 o /AI3 are su Minimum Maximum Maximum Minimum Minimum Minimum Minimum	in case of a common swarning A8A0 All side. in case of a common swarning A8A0 All side. in case of a common state in cas	n and freezon the special nunication to supervision nunication to nunica	es the spee ed feedback oreak. oreak. oreak. y sion function c. See 14.33 c. See 14.48 c. See 14.48 c. See 14.48	Parameter All min. All max. All min. All max. All max. All min.				
14.20	3: Last spetthe drive we mis low-past WARNING Make sure 4: Speed rethe value of WARNING Make sure 0 4 Al supervite Activation of (Visible who Specifies we Bit assignman) Bit 0 1 2 3 4 5 6 15 0000h F	eed; the ever as operating is filter. ! that it is safe eference safefined in 22.4! that it is safe sion selection analog inpute 14.01 Modulich limits of ment: Name Al1 < MIN Al1 > MAX Al2 < MIN Al2 > MAX Al3 < MIN Al3 > MAX reserved	to continue to continue to to continue to to continue to speed re to continue No action on ut supervisie dule 1 type Al1 Al2 Value 1 1 1 1 1 1 0000h	e operation t generates e operation t generates e operation - on. = FIO-11 o /AI3 are su Minimum Maximum Maximum Minimum Maximum Maximum Maximum Maximum Maximum Maximum Maximum Maximum	in case of a common swarning A8A0 Al afe. in case of a common swarning A8A0 Al afe. in case of a common system in case of a com	n and freezon the special nunication be supervision nunication be nunica	es the spee ed feedback oreak. In and sets the spee ed. In an	Parameter Al1 min. Al2 min. Al2 min. Al2 min. Al3 min. Al3 min. Al3 min.				

Index	Name							
	Text							
	Range		Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	Selects a si See 14.11 [connecte	d to DIO3 when 14	.19 DIO3 fu	ınction = Oı	utput.
	0 50		Not energized	-	1 = 1	n	у	Parameter
14.21	Al tune			-1	'	- I		1
	(Visible who Triggers the maximum in Apply the m See drawing 0: No action reverts to the 1: Al1 min to 2: Al1 max 3: Al2 min to 4: Al2 max 5: Al3 min to (Visible who 6: Al3 max	en 14.01 Mose analog input values inimum or ing at 14.33 for; tuning actions tune; the matune; the mat	instead of pomaximum signal min. It ion completer any tuning easured value asured v	= FIO-11 of the steel or no a graction. The steel or no a graction. The steel of th	or FAIO-01) ch uses the actual naccurate estimate analog input and section has been requisive written as minimulais written as maximus written as maximus written as minimus written as maxim	d values. elect the apure of the value of th	opropriate to e paramete Al1 into 14. f Al1 into 14. Al2 into 14. f Al3 into 14.	uning function. r automatically 33 Al1 min. 1.34 Al1 max. 48 Al2 min. 1.49 Al2 max. 63 Al3 min.
		en 14.01 Mo	dule 1 type	= FIO-11)		T	1	
14.22	0 6 DI3 ON del		No action	-	1 = 1	у	у	Parameter
	Defines the See 14.12 [activation of OI1 ON dela	-		, 		T	<u></u>
1100	0.00 300		0.00	S	10 = 1 s	n	у	Parameter
14.22	(Visible whe	elay for digen 14.01 Mo activation of ON de	ital input/out odule 1 type delay for DIC elay.	= FIO-01)		n	у	Parameter
14.22	Al force se			1		I	17	
	(Visible whe The true rea parameter (en 14.01 Mo adings of Al see table b ing bit in 14		= FIO-11 (can be ovided for e	verridden for e.g. te ach analog input ar			
	Bit	Name	Value	Remark	(S			
	0	Al1	1		ode: Force Al1 to v			
	1	AI2	1		ode: Force Al2 to v			
	3 15	Al3 reserved	1	Force m 11 only)	node: Force Al3 to v	alue of 14.	58 AI3 force	e data (FIO-
	J 10	1 10001 100		1				
	0000h FI	FFh	0000h	-	1 = 1	у	у	Parameter
14.23	DI3 OFF de		1	1	l	1.		
	Dogetivation	delay for	digital input [าเว				

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	(Visible when 14.01 M)	•		
	Defines the deactivati		DI3.				
	See 14.12 DI1 ON de 0.00 3000.00	0.00	T ₀	10 = 1 s	In	T _V	Darameter
14.23	DIO3 OFF delay	0.00	S	10 - 18	n	у	Parameter
14.23	Deactivation delay for	digital input/	outout DIO	3			
	(Visible when 14.01 M			J.			
	Defines the deactivati						
	See 14.12 DIO1 ON c						
	0.00 3000.00	0.00	S	10 = 1 s	n	У	Parameter
14.24	DIO4 function						
	Function of digital inpu						
	(Visible when 14.01 M Selects whether DIO4			o is used as a digit	tal input or a	outout	
	0: Output ; DIO4 is us			s is useu as a uigii	iai iriput 01 (σαιραί.	
	1: Input; DIO4 is used						
	0 1	Input	Ī-	1 = 1	n	у	Parameter
14.26	DIO4 output source	-	·	•			-1
	Source for digital inpu	t/output DIO4	4.				
	(Visible when 14.01 M						
	Selects a signal/parar		e connected	d to DIO4 when 14	.24 DIO4 ft	unction = O	utput.
	See 14.11 DIO1 output	_		14 - 4	T.,	1.,	Doromotor
	0 50	Not energized	-	1 = 1	n	У	Parameter
14.26	Al1 actual value	0.1019120a					
	Value of analog input	AI1.					
	(Visible when 14.01 M	lodule 1 type					
	Displays the value of	AI1 in mA or		<u> </u>	input is set	to current of	
	-22.000 22.000 or	-	mA or V	1000 = 1 mA	У	n	Signal
44.07	-11.000 11.000			or V			
14.27	DIO4 ON delay	-:4-1:4/	to at DIO4				
	Activation delay for dig (Visible when 14.01 M	gitai input/ou Iodule 1 type	tput DIO4. = FIO₋01\				
	Defines the activation						
	See 14.12 DIO1 ON c						
	0.00 3000.00	0.00	S	10 = 1 s	n	у	Parameter
14.27	Al1 scaled value	-	•	•	•	<u>'-</u>	
	Scaled value of analo	g input AI1.					
	(Visible when 14.01 M			r FAIO-01)			
	Displays the value of			4 1 1 1 1 1 1 1 1 1			
	See 14.35 Al1 scaled	at Al1 min ai	nd 14.36 AI			1	0:
	-32768.000 32767.000	-	=	1 = 1	У	n	Signal
14.28	DIO4 OFF delay						
14.20	Deactivation delay for	digital input/	output DIO	 1			
	(Visible when 14.01 M			т.			
	Defines the deactivati						
	See 14.12 DIO1 ON c						
	0.00 3000.00	0.00	S	10 = 1 s	n	у	Parameter
14.28	Al1 force data						
	Forced value of analo	a. :.a.a		·	· · · · · · · · · · · · · · · · · · ·		·

	Name							
	Text			•				
	Range		Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
		en 14.01 Mo						
		ie that can b Al force sele		ead of the tr	ue input value.			
	-22.000 2		0.000	mA or V	1000 = 1 mA	у	у	Parameter
	-11.000 1		0.000	1117 (01 V	or V	y	,	T dramotor
4.29		itch positio		•		•		•
		on switch of						
		en 14.01 Mo				46 - 1/0		11 -
					oltage selector or t match the unit se			
	selection.	or the curren	ii/voitage s	elector mus	t mater the unit s	election ma	ue III 14.30	All ullit
	2: V; volts.							
	10: mA; mill	i amperes.						
	2 10		-	-	1 = 1	у	n	Signal
4.30	Al1 unit se	lection			1	1,4	N.	
	Unit selection	on of analog	input AI1.					
		en 14.01 Mo						
					ed to Al1. Set to e			
					al of the I/O exten	sion modul	e). The hard	dware setting
	2: V; volts.	vn in 14.29 <i>A</i>	AI1 HVV SWI	cn position.				
	Z. V. VOIIS.							
		i amneres						
	10: mA; mill		mΛ	<u> </u>	1 – 1	In	lv.	Parameter
4 31	10: mA; mill 2 10		mA	-	1 = 1	n	у	Parameter
4.31	10: mA; mill 2 10 RO status		mA	-	1 = 1	n	у	Parameter
4.31	10: mA; mill 2 10 RO status Status of re	lay outputs.				n	у	Parameter
4.31	10: mA; mill 2 10 RO status Status of re (Visible whe	lay outputs.	dule 1 type	= FIO-01or	FDIO-01)		у	Parameter
4.31	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the	lay outputs. en 14.01 Moe e status of R	dule 1 type O1 RO2	= FIO-01or on the I/O			у	Parameter
4.31	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the	lay outputs. en 14.01 Moe e status of R	dule 1 type O1 RO2	= FIO-01or on the I/O	FDIO-01) extension module		у	Parameter
4.31	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm	lay outputs. en 14.01 Mode status of R 1000000000000000000000000000000000000	dule 1 type O1 RO2 000001b =	= FIO-01or on the I/O (RO1 is ener	FDIO-01) extension module gized, RO2 is de-		у	Parameter
4.31	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm	lay outputs. en 14.01 Mode status of R 000000000000000000000000000000000000	dule 1 type O1 RO2 000001b = Value	= FIO-01or on the I/O o RO1 is ener	FDIO-01) extension module gized, RO2 is de-		у	Parameter
4.31	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0	lay outputs.en 14.01 Mode status of Rigoroup on the Name	dule 1 type O1 RO2 000001b = Value	= FIO-01or on the I/O or RO1 is ener	FDIO-01) extension module gized, RO2 is de-		у	Parameter
4.31	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1	lay outputs. en 14.01 Mode status of R 00000000000000 ent: Name RO1	dule 1 type O1 RO2 000001b = Value	= FIO-01or on the I/O o RO1 is ener	FDIO-01) extension module gized, RO2 is de-		у	Parameter
4.31	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0	lay outputs.en 14.01 Mode status of Rigoroup on the Name	dule 1 type O1 RO2 000001b = Value 1	= FIO-01or on the I/O or RO1 is ener	FDIO-01) extension module gized, RO2 is de-		у	Parameter
4.31	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1 2 15	lay outputs. en 14.01 More e status of R 10000000000 ent: Name RO1 RO2 reserved	dule 1 type O1 RO2 000001b = Value 1	= FIO-01or on the I/O or RO1 is ener Remarks Energized Energized	FDIO-01) extension module gized, RO2 is de-	energized.		
	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1 2 15	lay outputs.en 14.01 More status of R 000000000000000000000000000000000000	dule 1 type O1 RO2 000001b = Value 1	= FIO-01or on the I/O or RO1 is ener	FDIO-01) extension module gized, RO2 is de-		y n	Parameter
	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1 2 15 0000h FF Al1 filter ga	lay outputs.en 14.01 More status of R 0000000000000000000000000000000000	dule 1 type O1 RO2 000001b = Value 1 1	= FIO-01or on the I/O	FDIO-01) extension module gized, RO2 is de-	energized.		
	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1 2 15 0000h FF Al1 filter ga Hardware fi	lay outputs. en 14.01 Mode status of R 00000000000 ent: Name RO1 RO2 reserved FFFh ain	dule 1 type O1 RO2 000001b = Value	= FIO-01or on the I/O	FDIO-01) extension module gized, RO2 is de-	energized.		
	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1 2 15 0000h Ff Al1 filter gat Hardware fi (Visible whe	lay outputs.en 14.01 More status of R 0000000000000000000000000000000000	dule 1 type O1 RO2 000001b = Value	= FIO-01or on the I/O	FDIO-01) extension module gized, RO2 is de- d. d. 1 = 1	energized.		
	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1 2 15 0000h FF Al1 filter ga Hardware fi (Visible whe Selects a ha	lay outputs. en 14.01 Mode status of R 00000000000 ent: Name RO1 RO2 reserved FFFh ain Iter time conen 14.01 Mode	dule 1 type O1 RO2 000001b = Value	= FIO-01or on the I/O	FDIO-01) extension module gized, RO2 is de- d. d. 1 = 1	energized.		
	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1 2 15 0000h FF Al1 filter ga Hardware fi (Visible whe Selects a ha See 14.32 A 0: No filteri	lay outputs. en 14.01 Mode status of R 00000000000 ent: Name RO1 RO2 reserved FFFh ain Iter time content 14.01 Moder 14.01 Moder 14.01 Moder 14.01 Moder 14.01 Moder 14.01 Moder 14.01 Moder 14.01 Moder 14.01 Moder 14.01 Moder 19.00 Moder 14.01 Moder 19.00	dule 1 type O1 RO2 000001b = Value 1 1 1 stant of ana dule 1 type r time consistence. ng.	= FIO-01or on the I/O	FDIO-01) extension module gized, RO2 is de- d. d. 1 = 1	energized.		
	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1 2 15 0000h Fi Al1 filter ga Hardware fi (Visible whe Selects a ha See 14.32 A 0: No filteri 1: 125 µs; 1	lay outputs. en 14.01 Mode status of R 000000000000000000000000000000000000	dule 1 type O1 RO2 000001b = Value 1 1 1	= FIO-01or on the I/O	FDIO-01) extension module gized, RO2 is de- d. d. 1 = 1	energized.		
	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1 2 15 0000h Fi Al1 filter ga Hardware fi (Visible whe Selects a ha See 14.32 A 0: No filteri 1: 125 µs; 1 2: 250 µs; 2	lay outputs. en 14.01 Mode status of R 000000000000 ent: Name RO1 RO2 reserved FFFh ain Iter time conten 14.01 Moderdware filter Al1 filter time (ng; no filteril 25 microsed)	dule 1 type O1 RO2 000001b = Value	= FIO-01or on the I/O	FDIO-01) extension module gized, RO2 is de- d. d. 1 = 1	energized.		
	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1 2 15 0000h Ff Al1 filter ga Hardware fi (Visible whe Selects a ha See 14.32 A 0: No filteri 1: 125 µs; 1 2: 250 µs; 2 3: 500 µs; 5	lay outputs. en 14.01 Mode status of R 000000000000000000000000000000000000	dule 1 type O1 RO2 000001b = Value	= FIO-01or on the I/O	FDIO-01) extension module gized, RO2 is de- d. d. 1 = 1	energized.		
4.31	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1 2 15 0000h FF Al1 filter gather Hardware fi (Visible whe Selects a has See 14.32 At 0: No filteri 1: 125 µs; 1 2: 250 µs; 2 3: 500 µs; 5 4: 1 ms; 1 ms	lay outputs. en 14.01 Mode status of R 000000000000000000000000000000000000	dule 1 type O1 RO2 000001b = Value 1 1 1 stant of ana dule 1 type r time cons e. ng. conds. conds. conds.	= FIO-01or on the I/O	FDIO-01) extension module gized, RO2 is de- d. d. 1 = 1	energized.		
	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1 2 15 0000h FF Al1 filter ga Hardware fi (Visible whe Selects a ha See 14.32 fo: No filteri 1: 125 µs; 1 2: 250 µs; 2 3: 500 µs; 5 4: 1 ms; 1 n 5: 2 ms; 2 n	lay outputs. en 14.01 Mode status of Reconstruction of Reconstruct	dule 1 type O1 RO2 000001b = Value 1 1	= FIO-01or on the I/O	FDIO-01) extension module gized, RO2 is de- d. d. 1 = 1	energized.		
	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1 2 15 0000h FF Al1 filter ga Hardware fi (Visible whe Selects a ha See 14.32 A 0: No filteri 1: 125 µs; 1 2: 250 µs; 2 3: 500 µs; 5 4: 1 ms; 1 n 5: 2 ms; 2 n 6: 4 ms; 4 n	lay outputs. en 14.01 Mode status of R 00000000000 ent: Name RO1 RO2 reserved FFFh ain Iter time conten 14.01 Moderdware filter Al1 filter time (ng; no filteri (125 microsed) (250 microsed) (300 microsed) (301 milliseconds. (301 milliseconds. (301 milliseconds. (301 milliseconds. (301 milliseconds.	dule 1 type O1 RO2 000001b = Value 1 1 1 stant of ana dule 1 type r time consists eng. conds. conds. conds.	= FIO-01or on the I/O	FDIO-01) extension module gized, RO2 is de- d. d. 1 = 1	energized.		
	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1 2 15 0000h FF Al1 filter ga Hardware fi (Visible whe Selects a has See 14.32 fo: No filteri 1: 125 µs; 1 2: 250 µs; 2 3: 500 µs; 5 4: 1 ms; 1 ms; 1 ms; 1 ms; 2 ms;	lay outputs. en 14.01 Mode status of Reconstruction of Reconstruct	dule 1 type O1 RO2 000001b = Value	= FIO-01or on the I/O	FDIO-01) extension module gized, RO2 is de- d. d. d. 1 = 1 I1. FAIO-01)	energized.	n	Signal
	10: mA; mill 2 10 RO status Status of re (Visible whe Displays the Example: 0 Bit assignm Bit 0 1 2 15 0000h FF Al1 filter ga Hardware fi (Visible whe Selects a ha See 14.32 A 0: No filteri 1: 125 µs; 1 2: 250 µs; 2 3: 500 µs; 5 4: 1 ms; 1 n 5: 2 ms; 2 n 6: 4 ms; 4 n	lay outputs. en 14.01 Mode status of R 00000000000 ent: Name RO1 RO2 reserved FFh ain Iter time conten 14.01 Moderdware filter Al1 filter time (25 microsed (250 microsed (250 microsed (300 microsed (301) milliseconds. milliseconds. milliseconds. milliseconds. milliseconds.	dule 1 type O1 RO2 000001b = Value 1 1 1 stant of ana dule 1 type r time consists eng. conds. conds. conds.	= FIO-01or on the I/O	FDIO-01) extension module gized, RO2 is de- d. d. 1 = 1	energized.		



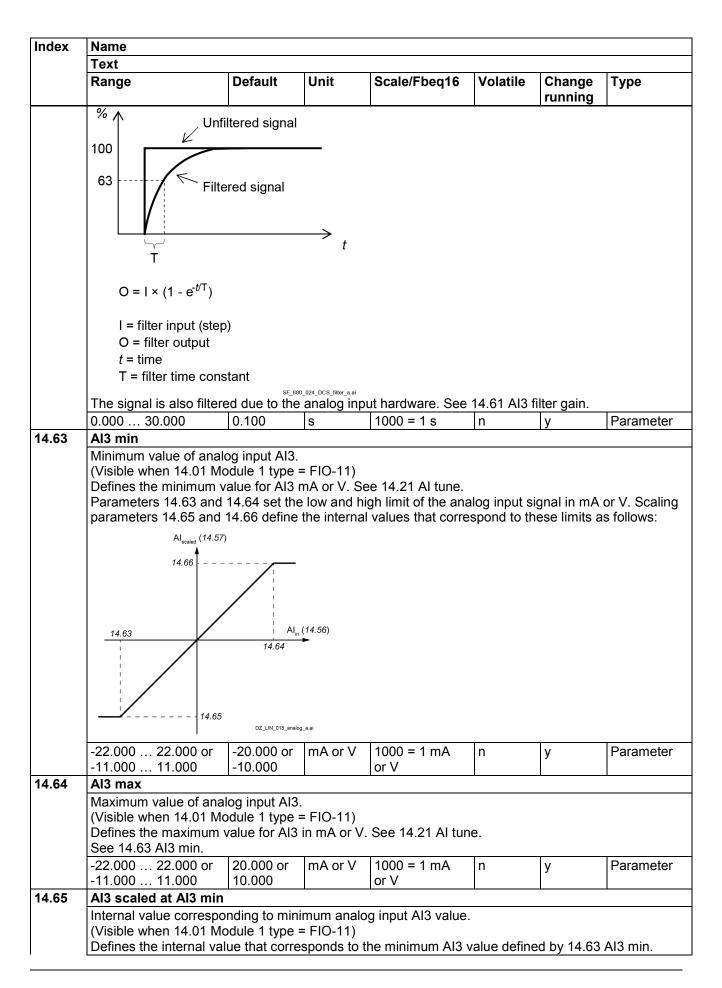
ndex	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	Selects a signal/param See 14.11 DIO1 output		connected	to RO1.	•		
	0 50	Not energized	-	1 = 1	n	У	Parameter
4.34	Al1 max						
	Maximum value of ana (Visible when 14.01 Mo Defines the maximum See 14.33 Al1 min.	dule 1 type :	= FIO-11 or		e.		
	-22.000 22.000 or -11.000 11.000	20.000 or 10.000	mA or V	1000 = 1 mA or V	n	У	Parameter
4.35	RO1 ON delay		•		•	•	
	Activation delay for rela (Visible when 14.01 Mo Defines the activation of	dule 1 type :	= FIO-01or	FDIO-01)			4
	status of selected source —	1	1				1 0
	RO status		1 1			1 1	1
	_	1					o
	_				<u> </u>	<u> </u>	\longrightarrow Time
							TITILE
		t_{On}	t_{Off}	t_{On}		<i>t</i> Off □Z_LIN	I_028_delay_a.ai
	ton = 14.35 RO1 ON de toff = 14.36 RO1 OFF of						
	0.00 3000.00	0.00	S	10 = 1 s	n	у	Parameter
4.35	Al1 scaled at Al1 min		•		•	1-	•
	Internal value correspond (Visible when 14.01 Mod Defines the internal value See 14.33 Al1 min.	odule 1 type : ue that corre	= FIO-11 or	FAIO-01) he minimum AI1 v		ed by 14.33	Al1 min.
	-32768.000 32767.000	-100.000	-	1 = 1	n	У	Parameter
4.36	RO1 OFF delay						
	Deactivation delay for r (Visible when 14.01 Mo Defines the deactivatio See 14.35 RO1 ON de	odule 1 type : n delay for R	= FIO-01or	FDIO-01)			
	0.00 3000.00	0.00	s	10 = 1 s	n	у	Parameter
4.36	Al1 scaled at Al1 max		13	10 13	1''	J	Ti didilibile
	Internal value correspo (Visible when 14.01 Mo Defines the internal val See 14.33 Al1 min.	nding to max	= FIO-11 or	FAIO-01)		ed by 14.34	Al1 max.
	-32768.000 32767.000	100.000	-	1 = 1	n	У	Parameter
4.37	RO2 source	1		1	1	1	1
	Source for relay output	RO2.					
	(Visible when 14.01 Mo		= FIO-01or	FDIO-01)			

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	Selects a signal/para See 14.11 DIO1 outp		connected	to RO2.			
	0 50	Not energized	-	1 = 1	n	у	Parameter
14.38	RO2 ON delay						
	Activation delay for re (Visible when 14.01 M Defines the activation See 14.35 RO1 ON d	Nodule 1 type : delay for RO2	= FIO-01or	FDIO-01)			
	0.00 3000.00	0.00	s	10 = 1 s	n	y	Parameter
14.39	RO2 OFF delay						
	Deactivation delay for (Visible when 14.01 M Defines the deactivat See 14.35 RO1 ON d	/lodule 1 type : ion delay for R	= FIO-01or	FDIO-01)	ln .	ly	Parameter
14.41	Al2 actual value	10.00	٦	10 - 13	111	y	Tr arameter
	Value of analog input (Visible when 14.01 M Displays the value of -22.000 22.000 or -11.000 11.000	/lodule 1 type :			input is set	to current o	or voltage. Signal
14.42	Al2 scaled value			OI V			
	(Visible when 14.01 M Displays the value of See 14.50 Al2 scaled -32768.000 32767.000	Al2 after scali	ng.	,	ax.	n	Signal
14.43	Al2 force data						- 1
	Forced value of analo (Visible when 14.01 M Forced value that car See 14.22 Al force see -22.000 22.000 or -11.000 11.000	Nodule 1 type : to be used inste			у	у	Parameter
14.44	Al2 HW switch posit	tion					l
	Unit selection switch (Visible when 14.01 M Displays the position The setting of the cur selection. 2: V; volts. 10: mA; milli amperes	of analog input Module 1 type : of the hardwar rent/voltage se	= FIO-11 or e current/v	oltage selector or t match the unit s			
	2 10	-	-	1 = 1	у	n	Signal
14.45	Al2 unit selection Unit selection of analo (Visible when 14.01 M Selects the unit for re setting of the I/O exte setting is also shown 2: V; volts.	Module 1 type : adings and se ension module	ttings relate (see the m	ed to AI2. Set to e anual of the I/O e			

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	10: mA; milli ampere	es.					
	2 10	mA	-	1 = 1	n	у	Parameter
4.46	Al2 filter gain						
	Hardware filter time (Visible when 14.01 Selects a hardware See 14.47 Al2 filter 0: No filtering; no fi 1: 125 µs; 125 micro 2: 250 µs; 250 micro 3: 500 µs; 500 micro 4: 1 ms; 1 millisecor 5: 2 ms; 2 millisecor 6: 4 ms; 4 millisecor	Module 1 type filter time constime. Itering. oseconds. oseconds. oseconds. ond.	e = FIO-11	or FAIO-01)			
	7: 7.9375 ms ; 7.937		•				
	0 7	1 ms	·-	1 = 1	n	у	Parameter
14.47	Al2 filter time	1 1115		1-1		l y	Farameter
	100	tep)	t				
	The signal is also file		_880_024_DCS_filter_a.e le analog il		14.46 AI2	filter gain.	
	0.000 30.000	0.100	s	1000 = 1 s	n	у	Parameter
14.48	Al2 min	1	1		1	1.0	
	Minimum value of ar (Visible when 14.01 Defines the minimur Parameters 14.48 a	Module 1 type n value for Al2 nd 14.49 set the	e = FIO-11 2 in mA or ' ne low and	V. See 14.21 Al tun	alog input s		

Index	Name										
	Text										
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре				
	Al _{scaled}	(14.42)									
	14.51										
	14.48	14.4	Al _{in} (14.41)								
		14.50	18_analog_a.ai								
	-22.000 22.000 c	-20.000 or -10.000	mA or V	1000 = 1 mA or V	n	у	Parameter				
14.49	Al2 max	•	•	•	•	•	•				
	Maximum value of a (Visible when 14.01 Defines the maximum See 14.48 Al2 min22.000 22.000 defines the maximum see 14.48 Al2 min22.000 22.000 defines the maximum see 14.48 Al2 min.	Module 1 type um value for Al2	= FIO-11 o		ne.	у	Parameter				
	-11.000 11.000	10.000	IIIA OI V	or V	'	У	lalameter				
14.50	Al2 scaled at Al2 min Internal value corresponding to minimum analog input Al2 value. (Visible when 14.01 Module 1 type = FIO-11 or FAIO-01)										
	Defines the internal See 14.48 Al2 min.	value that corre	esponds to	the minimum Al2	value defin	ed by 14.48	AI2 min.				
	-32768.000 32767.000	-100.000	-	1 = 1	n	У	Parameter				
14.51	Al2 scaled at Al2 n										
	Internal value corres (Visible when 14.01 Defines the internal See 14.48 Al2 min.	Module 1 type	= FIO-11 o	r FAIO-01)		ed by 14.49	9 Al2 max.				
	-32768.000 32767.000	100.000	-	1 = 1	n	у	Parameter				
14.56	Al3 actual value	II.	I	1			1				
	Value of analog inpo (Visible when 14.01	Module 1 type	,								
	Displays the value of -22.000 22.000 c		mA or V	1000 = 1 mA	y y	n to current o	Signal				
14.57	-11.000 11.000			or V							
14.57	Al3 scaled value Scaled value of ana (Visible when 14.01 Displays the value of Scaled 14.65 Al2 scaled	Module 1 type of Al3 after scal	ing. ´	Regular Al 2							
	- 00 1/1 bb /1/2 000/0	-u at Al3 min ar	10 14.06 Al	3 scaled at AI3 ma	dΧ.						
		1			V	n	Signal				
14.58	-32768.000 32767.000 Al3 force data	-	-	1 = 1	У	n	Signal				

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	Forced value of ana (Visible when 14.01 Forced value that ca See 14.22 Al force s	Module 1 type an be used ins		rue input value.			
	-22.000 22.000 o -11.000 11.000	r 0.000	mA or V	1000 = 1 mA or V	у	у	Parameter
14.59	Al3 HW switch pos	ition			•		
	Unit selection switch (Visible when 14.01 Displays the position The setting of the cuselection. 2: V; volts. 10: mA; milli ampere	Module 1 type n of the hardwarrent/voltage	e = FIO-11) are current/\				
	2 10	-	_	1 = 1	у	n	Signal
14.60	Al3 unit selection	'				l .	<u>, , , , , , , , , , , , , , , , , , , </u>
	setting of the I/O exis also shown in 14. 2: V; volts. 10: mA; milli ampere	59 AI3 HW sw			ision modul	e). The hard	dware setting
	2 10	mA	-	1 = 1	n	у	Parameter
14.61	Al3 filter gain Hardware filter time (Visible when 14.01 Selects a hardware See 14.62 Al3 filter 0: No filtering; no fi 1: 125 µs; 125 micro 2: 250 µs; 250 micro 3: 500 µs; 500 micro 4: 1 ms; 1 millisecous 5: 2 ms; 2 millisecous 6: 4 ms; 4 millisecous 7: 7.9375 ms; 7.937	Module 1 type filter time constime. Itering. oseconds. oseconds. oseconds. od. ods. ods.	e = FIO-11) stant for AI3.				
	0 7	1 ms	-	1 = 1	n	у	Parameter
14.62	Al3 filter time						
	Filter time constant (Visible when 14.01 Defines the filter tim	Module 1 type	e = FIO-11)				



Index	Name										
	Text										
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре				
	See 14.63 Al3 min.										
	-32768.000 32767.000	-100.000	-	1 = 1	n	у	Parameter				
14.66	Al3 scaled at Al3 max										
	Internal value corresponding (Visible when 14.01 M Defines the internal value See 14.63 Al3 min.	odule 1 type	= FIO-11)	•		ed by 14.64	4 AI3 max.				
	-32768.000 32767.000	100.000	-	1 = 1	n	у	Parameter				
14.71	AO force selection										
	Forced values selector for analog outputs. (Visible when 14.01 Module 1 type = FIO-11 or FAIO-01) The value of AO1 AO1/AO2 can be overridden for e.g. testing purposes. A forced value paramete										

The value of AO1 ... AO1/AO2 can be overridden for e.g. testing purposes. A forced value parameter (see table below) is provided for each analog output and its value is applied whenever the corresponding bit in 14.71 AO fore selection is 1.

Bit assignment:

Bit	Name	Value	Remarks
0	AO1	1	Force mode: Force AO1 to value of 14.78 AO1 force data.
1	AO2	1	Force mode: Force AO2 to value of 14.88 AO2 force data (FAIO-01 only).
2 15	reserved		

0000h FFFFh	0000h	_	1 = 1	у	у	Parameter

14.76 AO1 actual value

Value of analog output AO1.

(Visible when 14.01 Module 1 type = FIO-11 or FAIO-01)

Displays the value of AO1 in mA.

0.000 ... 22.000 - mA 1000 = 1 mA y n Signal

14.77 AO1 source

Source for analog output AO1.

(Visible when 14.01 Module 1 type = FIO-11 or FAIO-01)

Selects a signal/parameter to be connected to AO1. Alternatively, sets the output to excitation mode to feed a constant current to a temperature sensor.

Other; source selection.

- 0: Zero; not in use.
- 1: **Used motor speed**; 01.01 Used motor speed filtered.
- 4: Motor current; 01.10 Motor current in A.
- 6: Motor torque; 01.17 Motor torque filtered.
- 7: Armature voltage; 28.05 Armature voltage.
- 8: Output power; 01.24 Output power in kW.
- 10: Speed reference ramp input; 23.01 Speed reference ramp input.
- 11: Speed reference ramp output; 23.02 Speed reference ramp output.
- 12: **Used speed reference**; 24.01 Used speed reference.
- 13: **Torque reference used**; 26.02 Torque reference used.
- 16: Process PID output actual: 40.01 Process PID output actual.
- 17: Process PID feedback actual; 40.02 Process PID feedback actual.
- 18: Process PID setpoint actual; 40.03 Process PID setpoint actual.
- 19: Process PID deviation actual; 40.04 Process PID deviation actual.
- 20: **Force PT100 excitation**; AO1 is used to feed an excitation current to 1 ... 3 PT100 sensors. See chapter <u>Motor thermal protection</u> of this manual.

ndex	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
4.78	chapter <u>Motor the</u> 22: Force PTC ex chapter <u>Motor the</u>	rmal protection of citation; AO1 is rmal protection of excitation; AO excitation; AO or thermal protect rage; see 13.91.	If this manuused to fee of this manual is used to find of this random of this ran	ed an excitation cu lal. o feed an excitation manual. storage.	rrent to 1	. 3 PTC ser	nsors. See
0	Forced value of a (Visible when 14.0	01 Module 1 type can be used inst	= FIO-11 (or FAIO-01) selected output sig	nal.	у	Parameter
4.79	AO1 filter time	0.000	IIIA	1000 = 1 IIIA	у	y	raiailletei
	T O = I × (1 - e I = filter input O = filter output t = time T = filter time	**Filtered signal **t/T**) (step) out constant	t 880 024 DCS filter a.ai				
	0.000 30.000	0.100	S	1000 = 1 s	n	у	Parameter
4.80	AO1 source min	•					
	(Visible when 14.0 Defines the intern Scaling paramete	01 Module 1 type al value that corr rs 14.80 and 14.8	e = FIO-11 or esponds to B1 set the lo	log output AO1 val or FAIO-01) the minimum requow and high internated eters 14.82 and 14	ired AO1 valid		ds to the

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	I _{A01} (mA) ▲	•	•		•		
	14.83		_				
	14.82	į					
	i	11.01	→				
	14.80	14.81	Internal value selected by 14	1.77			
	Setting parameter		Z_LIN_016_scaling_b.ai num value a	and 14.83 as minim	um value ir	overts the o	ntont.
	I _{AO1} (mA) ▲	404					
	Ţ						
	14.83						
	14.82		_				
	14.81	14.80	——► Internal valu	ue			
			selected by DZ_LIN_016_scaling_b.a				
	-32768.0 32767	.0 0.0	-	1 = 1	n	V	Parameter
14.81	AO1 source max		I	l	<u>l</u>		1
				alog output AO1 va	lue.		
	(Visible when 14.0			or FAIO-01) o the maximum req	uired AO1 v	value.	
	See 14.80 AO1 sou		esponds to	o the maximum requ		raiue.	
	-32768.0 32767		-	1 = 1	n	у	Parameter
14.82	AO1 out at AO1 s						
	Minimum analog ou (Visible when 14.0			or EAIO 01)			
	Defines the minimu						
	See 14.80 AO1 sou	urce min.					_
44.5-	0.000 22.000	0.000	mA	1000 = 1 mA	n	у	Parameter
14.83	AO1 out at AO1 s						
	Maximum analog o (Visible when 14.0)			or FAIO-01)			
	Defines the maxim	um output value					
	See 14.80 AO1 sou			1,000			<u> </u>
14.86	0.000 22.000	20.000	mA	1000 = 1 mA	n	у	Parameter
14.00	AO2 actual Value of analog ou	tnut A∩2					
	(Visible when 14.0		e = FAIO-0	1)			
	Displays the value			, 	Т	1	1
44.05	0.000 22.000	-	mA	1000 = 1 mA	у	n	Signal
14.87	AO2 source						

ndex	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	Source for analog out (Visible when 14.01 M Selects a signal/parar to feed a constant cur See 14.77 AO1 source	Nodule 1 type meter to be c rent to a tem	onnected to	AO2. Alternatively	y, sets the o	output to ex	citation mode
	0 38	Zero	-	1 = 1	n	у	Parameter
1.88	AO2 force data		l	1	·		-
	Forced value of analo (Visible when 14.01 M Forced value that can See 14.71 AO force s	fodule 1 type be used inst election.	e = FAIO-01) tead of the s	elected output sig			
l.89	0.000 22.000 AO2 filter time	0.000	mA	1000 = 1 mA	у	У	Parameter
	100	ep)					
	0.000 30.000	0.100	S	1000 = 1 s	n	у	Parameter
1.90	AO2 source min						
	Internal signal value of (Visible when 14.01 M Defines the internal values) Scaling parameters 1 analog output values	Module 1 type alue that corr 4.90 and 14.9	e = FAIO-01) responds to 91 set the lo	the minimum requive and high interna	iired AO2 v al limits tha		ds to the

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	14.92 14.92 14.90 Setting parameter I _{AO1} (mA)		Internal value selected by 14. Lulv_016_scaling_b.ai	87 and 14.93 as minim	um value ir		utput:
	14.92 14.91	14.90	Internal value selected by 1 DZ_LIN_016_scaling_b.ai				
		ı	selected by 1		n	у	Parameter
14.91	14.91	7.0 0.0	selected by 1	4.87	n	у	Parameter
14.91	-32768.0 3276 AO2 source max Internal value corr (Visible when 14.0	7.0 0.0 responding to ma 01 Module 1 type al value that corr	selected by 1 DZ_LIN_016_scaling_b.ai - aximum ana e = FAIO-01	1 = 1 alog output AO2 va	lue.		Parameter Parameter
14.91	-32768.0 3276 AO2 source max Internal value corr (Visible when 14.0 Defines the intern See 14.90 AO2 so	7.0 0.0 responding to ma 01 Module 1 type al value that corr burce min. 7.0 100.0	selected by 1 DZ_LIN_016_scaling_b.ai - aximum ana e = FAIO-01	1 = 1 alog output AO2 va the maximum requ	lue. uired AO2 v	value.	
	-32768.0 3276 AO2 source max Internal value corr (Visible when 14.0 Defines the intern See 14.90 AO2 so -32768.0 3276	7.0 0.0 responding to ma 01 Module 1 type al value that corr purce min. 7.0 100.0 src min output AO2 value 01 Module 1 type num output value ource min.	selected by 1 DZ_LIN_016_scaling_b.al - aximum ana e = FAIO-01 responds to - e = FAIO-01 for AO2.	1 = 1 alog output AO2 va the maximum required a 1 = 1	lue. uired AO2 v	value.	Parameter
14.92	-32768.0 3276 AO2 source max Internal value corr (Visible when 14.0 Defines the intern See 14.90 AO2 so -32768.0 3276 AO2 out at AO2 so Minimum analog of (Visible when 14.0 Defines the minim See 14.90 AO2 so	responding to ma 21 Module 1 type al value that corr burce min. 7.0 100.0 src min butput AO2 value 01 Module 1 type num output value burce min. 0.000	selected by 1 DZ_LIN_016_scaling_b.al - aximum ana e = FAIO-01 responds to - e = FAIO-01	1 = 1 alog output AO2 va the maximum request 1 = 1	lue. uired AO2 v	value.	
	-32768.0 3276 AO2 source max Internal value corr (Visible when 14.0 Defines the intern See 14.90 AO2 so -32768.0 3276 AO2 out at AO2 so Minimum analog of (Visible when 14.0 Defines the minim See 14.90 AO2 so 0.000 22.000	responding to ma of Module 1 type al value that corr ource min. 7.0 100.0 src min output AO2 value output AO2 value output AO2 value output AO2 value output AO2 value output AO2 value output AO2 value output AO2 value output AO2 value output AO2 value output AO2 value output AO2 value output AO2 value output AO2 value output AO2 value output AO2 value output AO2 value output AO2 value output AO2 value	selected by 1 DZ_LIN_016_scaling_b.al - aximum ana e = FAIO-01 responds to - e = FAIO-01 for AO2. mA e = FAIO-01	1 = 1 alog output AO2 va the maximum requ 1 = 1 1000 = 1 mA	lue. uired AO2 v	value.	Parameter

15 I/O extension module 2

Description see group 14 I/O extension module 1.

Configuration of I/O extension module 2.

The contents of the parameter group varies according to the selected I/O extension module type.

16 I/O extension module 3

Description see group 14 I/O extension module 1.

Configuration of I/O extension module 3.

The contents of the parameter group varies according to the selected I/O extension module type.

19 Operation mode

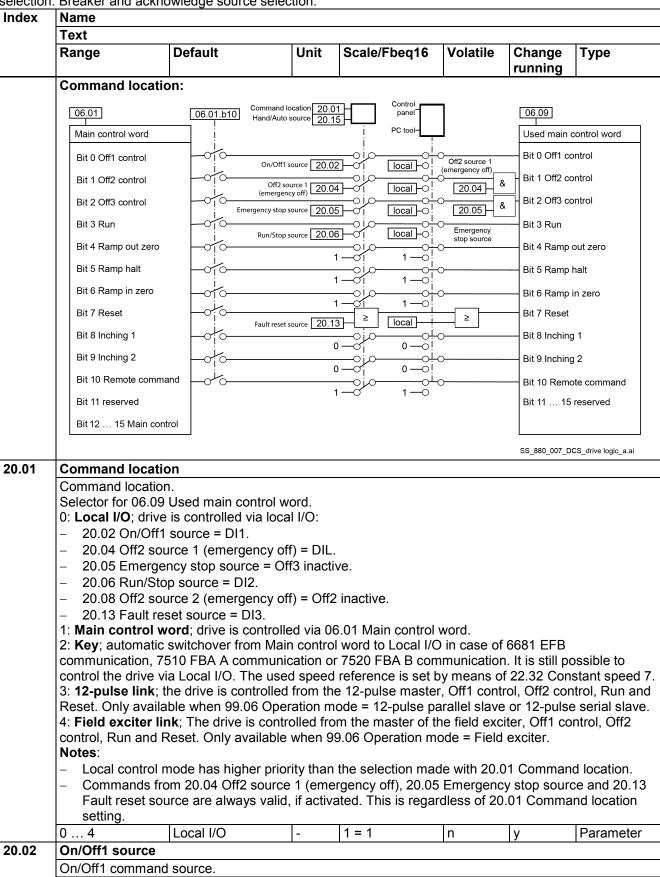
Selection of local and external control locations and operating modes.

Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
19.01	Actual ope	eration mode								
	Currently used operating mode.									
	Displays the operating mode currently used.									
	See parameters 19.11 19.14.									
		tput of the torque se			,					
		speed control, torque								
		torque control, torqu								
		nimum of 25.01 Torquer of the two is used.	ue reference s	peed control and 2	6.74 Torqu	e reference	ramp output.			
			nue reference	speed control and	26 74 Tora	ue referenc	e ramn outnu			
	5: Max ; maximum of 25.01 Torque reference speed control and 26.74 Torque reference ramp output The greater of the two is used.									
	6: Add ; sum of 25.01 Torque reference speed control and 26.74 Torque reference ramp output is									
	used.						p conpanie			
		7: Limitation ; limitation control, 26.74 Torque reference ramp output is limited by 25.01 Torque								
	reference speed control.									
	Example : If 26.74 Torque reference ramp output = 50 %, then 25.01 Torque reference speed control									
	is limited to ±50 %.									
		current control, curr	ent reference	taken from 27.22 C	Current refe	rence source	e.			
	1 8	-	-	1 = 1	y	n	Signal			
9.11	Ext1/Ext2	selection								
	Selection of control location.									
	Selects the source for the control location. Thus, a change of the operating mode is possible.									
	0 = EXT1.									
	1 = EXT2.									
	Other [bit]; source selection.									
	0: EXT1 ; 0, select EXT1. Normal operation. 1: EXT2 ; 1, select EXT2.									
			atus							
	3: DI1 ; 10.02.b00 DI delayed status. 4: DI2 ; 10.02.b01 DI delayed status.									
	5: DI3 ; 10.02.b02 DI delayed status.									
	6: DI4 ; 10.02.b03 DI delayed status.									
	7: DI5 ; 10.02.b04 DI delayed status.									
	8: DI6 ; 10.0	02.b05 DI delayed st	atus.							
		11.02.b00 DIO delay								
		l1.02.b01 DIO delay								
	19: DIL ; 10	.02.b15 DI delayed s	status.							
	0 19	EXT1	-	1 = 1	n	у	Parameter			
9.12	Ext1 contr	ol mode								
		mode of control locat								
		operating mode for								
		t the output of the to								
	2: Speed ; s	speed control, set to	rque reference	to 25.01 Torque re	eference sp	peed control				

	Name								
	Text								
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре		
	 3: Torque; torque control, set torque reference to 26.74 Torque reference ramp output. 4: Min; combination of selections Speed and Torque. Use the minimum of 25.01 Torque reference speed control and 26.74 Torque reference ramp output. If speed error becomes negative, the drive follows the speed controller output until the speed error becomes positive again. This prevents the drive from accelerating uncontrollably if the load is lost in torque control. 5: Max; combination of selections Speed and Torque. Use the maximum of 25.01 Torque reference speed control and 26.74 Torque reference ramp output. If speed error becomes positive, the drive follows the speed controller output until speed error becomes negative again. This prevents the drive from accelerating uncontrollably if the load is lost in torque control. 6: Add; combination of selections Speed and Torque. Use the sum of 25.01 Torque reference speed control and 26.74 Torque reference ramp output. 7: Limitation; limitation control, 26.74 Torque reference ramp output limits 25.01 Torque reference speed control. 								
	is limited to:	±50 %.	erence ramp out	out = 50 %, then 2			·		
19.14	1 7 Ext2 contro	Speed	-	11 = 1	n	у	Parameter		
	Selects the c See 19.12 E 1 7	ode of control loc operating mode fo xt1 control mode. Speed	or control location	1 = 1	n	у	Parameter		
19.16	Local contr	ol mode							
	Operating mode of local control. Selects the operating mode for local control. 0: Speed ; speed control, set torque reference to 25.01 Torque reference speed control. 1: Torque ; torque control, set torque reference to 26.74 Torque reference ramp output.								
					ln	V			
19.20	0 1	Speed	-	1 = 1		у	Parameter		
19.20	Follower fo Force follow Forces or se upon a ramp independent 0 = Keep co 1 = Force sp Other [bit]; 0: Keep cor 1: Force sp 3: DI1; 10.02 4: DI2; 10.02 5: DI3; 10.02 6: DI4; 10.02 7: DI5; 10.02 11: DIO1; 11 12: DIO2; 11	er to speed controllects a source that stop by an Off1-ramp stop of the introl mode. Seed controllessource selection.	at forces a torque or Off3 (emerge follower. ep the current comp stop forces status. status. status. status. status. status. status. status. status. status. status. status. status. yed status. yed status.	e-controlled followency stop) comman	er drive to s	witch to spe	eed control		

20 Start/Stop/Direction

Start/Stop/Direction and run/start/jog enable signal source selection. Positive/Negative reference enable source selection. Breaker and acknowledge source selection.



Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
		for Off1 control. See	06.09.b00 L	Jsed main control	word. The		on is edge-			
	triggered.									
	0 = Off1 comr									
	$0 \rightarrow 1 = On c$	ommand, edge-trigge	ered.							
		On- and Run comm	and at the s	ame time set 20.03	2 On/Off1 s	ource = 20.	06 Run/Stop			
	source.									
	0: Off1 comm	ource selection.								
	1: On comma									
		tive. Off1 command i	is forced							
		b00 DI delayed statu								
		b01 DI delayed statu								
		b02 DI delayed statu								
		b03 DI delayed statu								
	7: DI5 ; 10.02.	7: DI5 ; 10.02.b04 DI delayed status.								
		8: DI6 ; 10.02.b05 DI delayed status.								
		02.b00 DIO delayed								
	12: DIO2 ; 11.02.b01 DIO delayed status.									
	19: DIL ; 10.02.b15 DI delayed status.									
	20: DI1 and DI2 ; 3 wire control.									
	 On- and Run command by rising edge (0 → 1) of DI1. DI2 must be high. 									
		 Stop- and Off1 command by falling edge (1 → 0) of DI2. Setting of DI1 does not matter. 								
		- Following settings apply: 20.02 On/Off1 source = 20.06 Run/Stop source = DI1 and DI2.								
		 See 20.28 3 wire jogging off delay time. Note: DI2 = 0 stops the drive. Additionally it overrides the On- and Run command of DI1. 								
		·	illionally it o							
00.04	0 20	DI1		1 = 1	n	n	Parameter			
20.04		1 (emergency off)								
		1st Off2 command source.								
		1st binary signal for Off2 control (emergency off/fast current off). See 06.09.b01 Used main control								
	word. Via an AND with 20.08 Off2 source 2 (emergency off). 0 = Off2 command.									
	0 = Off2 command. 1 = Off2 inactive.									
	Other [bit]; source selection.									
	0: Off2 command ; 0, emergency off/fast current off.									
	1: Off2 inactive ; 1, normal operation.									
	3: DI1 ; 10.02.b00 DI delayed status.									
	4: DI2 ; 10.02.b01 DI delayed status.									
	5: DI3 ; 10.02.b02 DI delayed status.									
	6: DI4 ; 10.02.b03 DI delayed status.									
	7: DI5 ; 10.02.b04 DI delayed status.									
	8: DI6 ; 10.02.b05 DI delayed status.									
	11: DIO1 ; 11.02.b00 DIO delayed status.									
	12: DIO2 ; 11.02.b01 DIO delayed status. 19: DIL ; 10.02.b15 DI delayed status.									
			เนร.		1					
				1 _ 1		-	Devenuetes			
20.05	0 19	DIL	-	1 = 1	n	n	Parameter			
20.05	0 19 Emergency s	DIL stop source	-	1 = 1	n	n	Parameter			
20.05	0 19 Emergency s Off3 (emergen	DIL stop source ncy stop) command s	source.							
20.05	0 19 Emergency s Off3 (emerger Binary signal	DIL stop source ncy stop) command s for Off3 control (eme	source.). See 06.09.b02 l						
20.05	0 19 Emergency s Off3 (emerger Binary signal mode is select	DIL stop source ncy stop) command s for Off3 control (eme sted by 21.03 Emerge	source.). See 06.09.b02 l						
20.05	0 19 Emergency s Off3 (emerger Binary signal mode is select 0 = Off3 comm	DIL stop source ncy stop) command s for Off3 control (eme sted by 21.03 Emerge mand.	source.). See 06.09.b02 l						
20.05	0 19 Emergency s Off3 (emerger Binary signal mode is select 0 = Off3 comm 1 = Off3 inact	DIL stop source ncy stop) command s for Off3 control (eme sted by 21.03 Emerge mand. ive.	source.). See 06.09.b02 l						
20.05	0 19 Emergency s Off3 (emergency signal mode is selected to a communication of the communication) 0 19 Emergency s Off3 (emergency signal mode is selected to a communication) 1 = Off3 inacted to a communication of the communication)	DIL stop source ncy stop) command s for Off3 control (eme sted by 21.03 Emerge mand. ive. ource selection.	source. ergency stop ency stop m). See 06.09.b02 l						
20.05	0 19 Emergency s Off3 (emerger Binary signal mode is select 0 = Off3 comm 1 = Off3 inact Other [bit]; so 0: Off3 comm	DIL stop source ncy stop) command s for Off3 control (eme sted by 21.03 Emerge mand. ive.	source. ergency stop ency stop ma). See 06.09.b02 l						

Index	Name							
	Text							
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре	
20.06	4: DI2; 10.02.b 5: DI3; 10.02.b 6: DI4; 10.02.b 7: DI5; 10.02.b 8: DI6; 10.02.b 11: DIO1; 11.0 12: DIO2; 11.0 19: DIL; 10.02 0 19		atus. atus.	1 = 1	n	n	Parameter	
	Run/Stop source Run/Stop command source. Binary signal for Run. See 06.09.b03 Used main control word. The state transition is edge-triggered. 0 = Stop command. 0 → 1 = Run command, edge-triggered. Note: To give On- and Run command at the same time set 20.02 On/Off1 source = 20.06 Run/Stop source. Other [bit]; source selection. 0: Stop command; 0. 1: Run command; 1. 2: None; inactive. Stop command is forced. 3: DI1; 10.02.b00 DI delayed status. 4: DI2; 10.02.b01 DI delayed status. 5: DI3; 10.02.b02 DI delayed status. 6: DI4; 10.02.b03 DI delayed status. 7: DI5; 10.02.b04 DI delayed status. 8: DI6; 10.02.b05 DI delayed status. 11: DIO1; 11.02.b00 DIO delayed status. 12: DIO2; 11.02.b01 DIO delayed status. 19: DIL; 10.02.b15 DI delayed status. 20: DI1 and DI2; 3 wire control. On- and Run command by rising edge (0 → 1) of DI1. DI2 must be high. Stop- and Off1 command by falling edge (1 → 0) of DI2. Setting of DI1 does not matter. Following settings apply: 20.02 On/Off1 source = 20.06 Run/Stop source = DI1 and DI2.							
	0 20	stops the drive. Addition	onally it ov	verrides the On- ai	na Run con n	nmand of Di	Parameter	
20.08		(emergency off)		1 - 1		1''	i didilictei	
	2nd Off2 command source. 2nd binary signal for Off2 control (emergency off/fast current off). See 06.09.b01 Used main control word. Via an AND with 20.04 Off2 source 1 (emergency off). 0 = Off2 command. 1 = Off2 inactive. Other [bit]; source selection. 0: Off2 command; 0, emergency off/fast current off. 1: Off2 inactive; 1, normal operation. 3: DI1; 10.02.b00 DI delayed status. 4: DI2; 10.02.b01 DI delayed status. 5: DI3; 10.02.b02 DI delayed status. 6: DI4; 10.02.b03 DI delayed status. 7: DI5; 10.02.b04 DI delayed status. 8: DI6; 10.02.b05 DI delayed status. 11: DIO1; 11.02.b00 DIO delayed status. 12: DIO2; 11.02.b01 DIO delayed status.							

Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	19: DIL ; 10.02.b15 DI delayed status.									
	0 19	Off2 inactive	-	1 = 1	n	n	Parameter			
20.42	Foult roads	OTIKOO		-		•	-			

Fault reset source 20.13

Reset source.

Binary signal for Reset. See 06.09.b07 Used main control word. The signal resets the drive after a fault trip if the cause of the fault no longer exists. The state transition is edge-triggered.

0 = Not selected.

 $0 \rightarrow 1 = \text{Reset}$.

Other [bit]; source selection.

- 0: No Reset; 0.
- 1: Reset: 1.
- 2: None; inactive. No Reset is forced.
- 3: **DI1**; 10.02.b00 DI delayed status.
- 4: DI2; 10.02.b01 DI delayed status.
- 5: DI3; 10.02.b02 DI delayed status.
- 6: **DI4**; 10.02.b03 DI delayed status.
- 7: **DI5**; 10.02.b04 DI delayed status. 8: DI6; 10.02.b05 DI delayed status.
- 11: **DIO1**; 11.02.b00 DIO delayed status.
- 12: **DIO2**; 11.02.b01 DIO delayed status.
- 19: DIL; 10.02.b15 DI delayed status. 30: FBA A MCW bit 7; 06.03.b07 FBA A transparent control word.
- 31: **FBA B MCW bit 7**; 06.04.b07 FBA B transparent control word.
- 32: **EFB MCW bit 7**; 06.05.b07 EFB transparent control word.
- 0 ... 32 DI3 1 = 1 Parameter n

20.14 **Direction of rotation source**

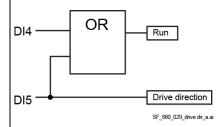
Direction source.

Binary signal for Direction. 20.14 Direction of rotation source allows changing the direction of rotation by negating the speed reference in remote operation.

Example 1: Typically used for a standard interface. 20.06 Run/Stop source = DI4 and 20.14 Direction of rotation source = DI5:

DI4	DI5	06.09.b03 Used main control word = Run	Direction of rotation
0	0	0 = Stop command	-
0	1	0 = Stop command	-
1	0	1 = Run command	Forward
1	1	1 = Run command	Reverse

Example 2: Typically used for a joystick interface. 20.06 Run/Stop source = DI4 and 20.14 Direction of rotation source = DI5 set Run:



DI4	DI5	06.09.b03 Used main control word = Run	Direction of rotation
0	0	0 = Stop command	-
0	1	1 = Run command	Reverse
1	0	1 = Run command	Forward

Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	1 1	Not used by joystick (1 = Run	command)	Not used by		verse)			
	0 = Forward.									
	1 = Reverse.									
		ource selection. , normal operation.								
	1: Reverse; 1.									
		000 DI delayed status.								
	4: DI2 ; 10.02.b01 DI delayed status.									
		002 DI delayed status.								
		003 DI delayed status.								
	7: DI5 ; 10.02.b04 DI delayed status. 8: DI6 ; 10.02.b05 DI delayed status.									
	11: DIO1 ; 11.0	02.b00 DIO delayed statu								
		02.b01 DIO delayed statu	JS.							
		.b15 DI delayed status.	d a4a4a	DI4 - 4. Directio		ad a at Duna	namend DIA			
		un; 10.02.b00 DI delayed peration, see 20.06 Run/			n reverse ar	ia set Run (command. Di i			
					n reverse ar	nd set Run o	command. DI2			
	41: DI2 set Run ; 10.02.b01 DI delayed status. DI2 = 1: Direction reverse and set Run command. DI2 = 0: normal operation, see 20.06 Run/Stop source.									
	42: DI3 set Run ; 10.02.b02 DI delayed status. DI3 = 1: Direction reverse and set Run command. DI3									
	= 0: normal operation, see 20.06 Run/Stop source. 43: DI4 set Run ; 10.02.b03 DI delayed status. DI4 = 1: Direction reverse and set Run command. DI4									
	43: DI4 set Run ; 10.02.003 DI delayed status. DI4 = 1: Direction reverse and set Run command. DI4 = 0: normal operation, see 20.06 Run/Stop source.									
	44: DI5 set Run ; 10.02.b04 DI delayed status. DI5 = 1: Direction reverse and set Run command. DI5									
	= 0: normal operation, see 20.06 Run/Stop source.									
	45: DI6 set Run ; 10.02.b05 DI delayed status. DI6 = 1: Direction reverse and set Run command. DI6									
	= 0: normal operation, see 20.06 Run/Stop source. 46: DIO1 set Run ; 11.02.b00 DIO delayed status. DIO1 = 1: Direction reverse and set Run									
	command. DIO1 = 0: normal operation, see 20.06 Run/Stop source.									
	47: DIO2 set Run; 11.02.b01 DIO delayed status. DIO2 = 1: Direction reverse and set Run									
		D2 = 0: normal operation								
		un; 10.02.b15 DI delayed			n reverse ar	nd set Run	command. DIL			
		peration, see 20.06 Run/	Stop so	1 = 1	l n	1,,	Parameter			
20.15	0 48 Hand/Auto so	Forward	1-	-	n	У	Parameter			
20.10	Hand/Auto sou									
		o switch between Hand	(Local I	O) and Auto (Ma	in control wo	ord) control.	The selection			
	made by 20.01	1 Command location is o				,				
	0 = Hand.									
	1 = Auto.	ource selection.								
	0: Hand ; 0.	ource selection.								
	1: Auto ; 1.									
		ive. 20.01 Command loc	ation is	valid.						
		000 DI delayed status.								
		001 DI delayed status. 002 DI delayed status.								
		003 DI delayed status.								
		004 DI delayed status.								
	8: DI6 ; 10.02.b	005 DI delayed status.								
		02.b00 DIO delayed statu								
		02.b01 DIO delayed status	JS.							
	19. DIL , 10.02	.b15 DI delayed status.								

Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	0 19	None	-	1 = 1	n	у	Parameter			

20.23 Positive speed enable

Enable positive speed source.

Binary signal to enable positive speed.

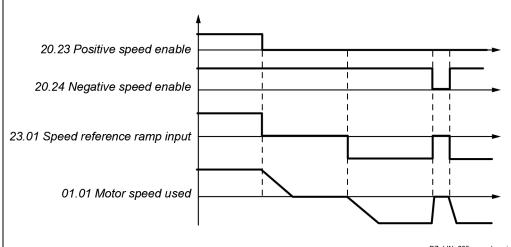
0 = Disable positive speed.

1 = Enable positive speed.

In the figure below, positive speed reference is set to zero after the positive speed enable signal has been cleared. Actions:

If in speed control, the speed reference is set to zero and the motor is stopped along the currently active deceleration ramp.

If in torque control, the rotation direction of the motor is monitored.



DZ_LIN_035_speed_a.ai

Example: The motor is rotating in the forward direction. To stop the motor, the positive speed enable signal is cleared by a hardware limit switch (e.g. via digital input).

If the positive speed enable signal remains deactivated and the negative speed enable signal is active, only reverse rotation of the motor is allowed.

Other [bit]; source selection.

- 0: **Disable positive speed**; 0; positive speed reference is set to zero.
- 1: **Enable positive speed**; 1; normal operation.
- 3: **DI1**; 10.02.b00 DI delayed status.
- 4: **DI2**; 10.02.b01 DI delayed status.
- 5: **DI3**; 10.02.b02 DI delayed status.
- 6: **DI4**; 10.02.b03 DI delayed status.
- 7: **DI5**; 10.02.b04 DI delayed status.
- 8: **DI6**; 10.02.b05 DI delayed status.
- 11: **DIO1**; 11.02.b00 DIO delayed status.
- 12: **DIO2**; 11.02.b01 DIO delayed status.
- 19: DIL; 10.02.b15 DI delayed status.

0 19	Enable positive	-	1 = 1	n	у	Parameter
	speed					

20.24 Negative speed enable

Enable negative speed source.

Binary signal to enable negative speed.

- 0 = Disable negative speed.
- 1 = Enable negative speed.

See 20.23 Positive speed enable.

OCC 20.20 1 OSILIVO	speca chabie.					
0 19	Enable negative	-	1 = 1	n	у	Parameter
	speed					

Index	Name	Name										
	Text											
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре					
20.25	Jog function enable											
	Binary signal Jogging 2 sta 0 = Disable jo 1 = Enable jo Note: As long function enable 06.02.b08/b0 Other [bit]; s 0: Disable jo 1: Enable jo 2: Enable by See 20.26 Jo 3: DI1; 10.02. 4: DI2; 10.02. 5: DI3; 10.02. 6: DI4; 10.02. 7: DI5; 10.02. 8: DI6; 10.02.	g function.	I is on, 20.28 imands are in all operation. function is contact and 20.27 Journal is. is. is. is. is. is.	5 Jog function ena gnored, apart from directly enabled by	ble is ignorent jogging ar	ed. As long nd inching. S	as 20.25 Jog See					
	12: DIO2 ; 11.	02.b00 DIO delayed 02.b01 DIO delayed 2.b15 DI delayed sta	status.									

20.26 Jogging 1 start source

Enable jogging 1 start source.

Binary signal for jogging 1 start. If enabled by 20.25 Jog function enable, selects the source for the activation of jogging 1.

0 = Disable jogging 1.

1 = Enable jogging 1.

Notes:

20.01 Command location = Local I/O:

function

The drive has to be in state Ready run. Mark, that only the On command has been given. When jogging 1 start is given the drives sets automatically the Run command and Ramp out zero = Ramp halt = Ramp in zero = 0. The motor accelerates to the speed set in 22.42 Jogging 1 reference.

- Acceleration and deceleration time for jogging is selected by 23.20 Acceleration time jogging and 23.21 Deceleration time jogging.
- If both jogging 1 and 2 are activated, the one that was activated first has priority.
- Inching is not possible.
- 20.01 Command location = Main control word:
 - Use Inching 1. See 06.02.b08 Main control word.
 - Acceleration and deceleration time for jogging is selected by 23.20 Acceleration time jogging and 23.21 Deceleration time jogging.
 - If both inching 1 and 2 are activated, the one that was activated first has priority.
 - Jogging is not possible.

Other [bit]; source selection.

- 0: **Disable jogging 1**; 0, normal operation.
- 1: Enable jogging 1; 1.
- 3: DI1; 10.02.b00 DI delayed status.
- 4: **DI2**; 10.02.b01 DI delayed status.
- 5: **DI3**; 10.02.b02 DI delayed status.
- 6: DI4; 10.02.b03 DI delayed status.

Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change	Туре			
						running				
		DI delayed status.								
	8: DI6 ; 10.02.b05 DI delayed status.									
	11: DIO1 ; 11.02.b00 DIO delayed status.									
	12: DIO2 ; 11.02.b01 DIO delayed status.									
		5 DI delayed status.								
	40: DI1 plus dire	ction; 10.02.b00 DI de	elayed s	tatus. 20.14 Direc	ction of rota	tion source	is taken into			
	account.	account.								
	41: DI2 plus direction ; 10.02.b01 DI delayed status. 20.14 Direction of rotation source is taken into account.									
	42: DI3 plus dire	ction; 10.02.b02 DI de	elayed s	tatus. 20.14 Direc	tion of rota	tion source	is taken into			
	account.									
	43: DI4 plus dire	ction; 10.02.b03 DI de	elayed s	tatus. 20.14 Direc	ction of rota	tion source	is taken into			
	account.									
	44: DI5 plus dire	ction; 10.02.b04 DI de	elayed s	tatus. 20.14 Direc	tion of rota	tion source	is taken into			
	account.									
	45: DI6 plus dire	ction; 10.02.b05 DI de	elayed s	tatus. 20.14 Direc	tion of rota	tion source	is taken into			
	account.									
	46: DIO1 plus di	rection; 11.02.b00 DI	O delaye	ed status. 20.14 D	irection of	rotation soເ	ırce is taken			
	into account.									
	47: DIO2 plus di	rection; 11.02.b01 DI	O delaye	ed status. 20.14 D	irection of	rotation sou	ırce is taken			
	into account.									
	48: DIL plus dire	ction; 10.02.b15 DI d	elayed s	tatus. 20.14 Direc	ction of rota	ition source	is taken into			
	account.		-							
	0 48	Disable jogging 1	-	1 = 1	n	у	Parameter			
20.27	Jogging 2 start s	, , , ,	•	•		• -	•			

Enable jogging 2 start source.

Binary signal for jogging 2 start. If enabled by 20.25 Jog function enable, selects the source for the activation of jogging 2.

0 = Disable jogging 2.

1 = Enable jogging 2.

Notes:

- 20.01 Command location = Local I/O:
- The drive has to be in state Ready run. Mark, that only the On command has been given. When jogging 1 start is given the drives sets automatically the Run command and Ramp out zero = Ramp halt = Ramp in zero = 0. The motor accelerates to the speed set in 22.43 Jogging 2 reference.
- Acceleration and deceleration time for jogging is selected by 23.20 Acceleration time jogging and 23.21 Deceleration time jogging.
- If both jogging 1 and 2 are activated, the one that was activated first has priority.
- Inching is not possible.
- 20.01 Command location = Main control word:
- Use Inching 2. See 06.02.b09 Main control word.
- Acceleration and deceleration time for jogging is selected by 23.20 Acceleration time jogging and 23.21 Deceleration time jogging.
- If both inching 1 and 2 are activated, the one that was activated first has priority.
- Jogging is not possible.

Other [bit]; source selection.

- 0: **Disable jogging 2**; 0, normal operation.
- 1: Enable jogging 2; 1.
- 3: **DI1**; 10.02.b00 DI delayed status.
- 4: **DI2**; 10.02.b01 DI delayed status.
- 5: **DI3**: 10.02.b02 DI delayed status.
- 6: **DI4**; 10.02.b03 DI delayed status.
- 7: DI5; 10.02.b04 DI delayed status.

Index										
	Text						_			
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	8: DI6; 10.02.b05 DI delayed status. 11: DIO1; 11.02.b00 DIO delayed status. 12: DIO2; 11.02.b01 DIO delayed status. 19: DIL; 10.02.b15 DI delayed status. 40: DI1 plus direction; 10.02.b00 DI delayed status. 20.14 Direction of rotation source is taken into account. 41: DI2 plus direction; 10.02.b01 DI delayed status. 20.14 Direction of rotation source is taken into account. 42: DI3 plus direction; 10.02.b02 DI delayed status. 20.14 Direction of rotation source is taken into account. 43: DI4 plus direction; 10.02.b03 DI delayed status. 20.14 Direction of rotation source is taken into account. 44: DI5 plus direction; 10.02.b04 DI delayed status. 20.14 Direction of rotation source is taken into account. 45: DI6 plus direction; 10.02.b05 DI delayed status. 20.14 Direction of rotation source is taken into account. 46: DIO1 plus direction; 11.02.b00 DIO delayed status. 20.14 Direction of rotation source is taken into account. 47: DIO2 plus direction; 11.02.b01 DIO delayed status. 20.14 Direction of rotation source is taken into account.									
	47: DIO2 plus direction ; 11.02.b01 DIO delayed status. 20.14 Direction of rotation source is taken into account. 48: DIL plus direction ; 10.02.b15 DI delayed status. 20.14 Direction of rotation source is taken into account.									
20.28	0 48 3 wire jogging of	Disable jogging 2	-	1 = 1	n	у	Parameter			
	jogging is taken a time. That means	ff delay when 20.02 C way the opening of th the mains contactor i	e mains s held du	contactor is delay ring cyclic joggin	yed by 20.2 ng.	8 3 wire jog	ging off delay			
	0.0 3250.0	5.0	S	10 = 1 s	n	У	Parameter			
20.33			Value	Remarks						
	Bit Name Value Remarks Mains contactor control mode Control mode for mains contactor or DC breaker. 20.33 Mains contactor control mode determines the reaction to On- and Run command. See 06.09.b03 Used main control word. Notes: If the DC voltage measurement is located at the motor terminals use 20.33 Mains contactor control mode = On (modified H6 H8 drives). The DC contactor (US style) K1.1 is a special designed DC contactor with one normally closed contact for the dynamic braking resistor R _B and two normally open contacts for C1 and D1. The DC contactor should be controlled by 06.24.b10 Current controller status word 1. The acknowledge signal can be connected to either 20.34 Mains contactor acknowledge source or 20.35 DC breaker acknowledge source. Use 20.33 Mains contactor control mode = DC contactor. 0: On; mains contactor or DC breaker closes with the On command. 1: On and Run; mains contactor or DC breaker closes with On- and Run command. 3: DC contactor; if a DC breaker or a DC contactor (US style) is used as a mains contactor, it will be closed with the On command: Use manual voltage balancing. Thus, set 95.37 DC voltage measurement mode = DC contactor and balance 01.21 Armature voltage by means of 95.35 DC voltage measurement offset. The armature voltage measurements are adapted to an open DC breaker by clamping 01.21 Armature voltage in V, 28.05 Armature voltage, 28.06 EMF voltage and 94.01 EMF speed to zero when the drive is Off. The clamping is released either 100 ms after an On command is given in case 20.35 DC br									

Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
		DC breaker acknowleaker is closed.	edge sourc	e = Dlxx until the	acknowledg	ge signal ind	dicates that			
	0 3	On	_	1 = 1	n	V	Parameter			
20.34	Mains contac	ctor acknowledge so	urce							
	 Immediate After 10 s feedback The mains co mode. 0 = No ackno 1 = Acknowle Other [bit]; s 0: No acknowle 2: None; inac 3: DI1; 10.02. 4: DI2; 10.02. 5: DI3; 10.02. 6: DI4; 10.02. 7: DI5; 10.02. 8: DI6; 10.02. 	dge. ource selection. vledge; 0.	ledge signa ve is being s han 10 seco is also depe acknowledge s. s. s. s.	I is selected and to switched on, the a conds. endent on the sett	ıcknowledge	e is selected	d and the			
	12: DIO2 ; 11.02.b01 DIO delayed status.									
		2.b15 DI delayed statu	JS		1		_			
	0 19	None	-	1 = 1	n	y	Parameter			
20.35	DC breaker a	cknowledge source								
	selected and The motor wil 0 = No acknow 1 = Acknowle Other [bit]; so No acknow 1: Acknowled 2: None; inaction 3: DI1; 10.02. 4: DI2; 10.02. 5: DI3; 10.02. 6: DI4; 10.02. 7: DI5; 10.02. 8: DI6; 10.02. 11: DIO1; 11. 12: DIO2; 11.	dge. ource selection. vledge; 0.	ng. is set. nowledge is s. s. s. s. s. status.		the DC bre	aker ackno	wledge is			
	0 19	None	-	1 = 1	n	у	Parameter			
20.38	Drive fan ack	nowledge source								
	31.41 Drive fa – At start th	nowledge source. In fault function = Wa e event generates wa Ind the feedback is m	rning A581			e drive fan a	ncknowledge			

Index	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	drive fan ackn The warning is 31.41 Drive fan fa At start the eviselected and til the feedback acknowledge. During running drive fan acknive fan a	ge. e selection. ge ; 0.	and the n acknown g A581 ng for loer than 1 ely gene and the er than 1 if the dr	feedback is missing vledge is coming to be prive fan acknown nger than 6 second seconds the ever erates warning A5 feedback is missing 0 seconds the ever fan acknowled	ng. back. ledge, if the nds. ent generate 81 Drive far ng. ent generate	e drive fan a es fault 508 n acknowled	ocknowledge is O Drive fan dge, if the O Drive fan			
	12: DIO2 ; 11.02.b01 DIO delayed status. 19: DIL ; 10.02.b15 DI delayed status									
	0 19	None	-	1 = 1	n	у	Parameter			
20.39	Motor fan acknow	wledge source				17				
	 At start the event generates warning A781 Motor fan acknowledge, if the motor/external fan acknowledge is selected and the feedback is missing for longer than 6 seconds. If the feedback is missing for longer than 10 seconds the event generates fault 71B1 Motor fan acknowledge. During running the event immediately generates warning A781 Motor fan acknowledge, if the motor/external fan acknowledge is selected and the feedback is missing. If the feedback is missing for longer than 10 seconds the event generates fault 71B1 Motor fan acknowledge. The warning is reset automatically if the motor/external fan acknowledge is coming back before 10 seconds are elapsed. No acknowledge. Other [bit]; source selection. No acknowledge; 0. 									
	3: DI1 ; 10.02.b00 4: DI2 ; 10.02.b01 5: DI3 ; 10.02.b02 6: DI4 ; 10.02.b03	Motor fan acknowled DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status.	dge is di	sabled.						

	Name									
	Text									
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре			
	12: DIO2 ; 11.02	boo DIO delayed sta boo DIO delayed sta boo DI delayed status	ıtus.							
	0 19	None	-	1 = 1	n	у	Parameter			
0.40	Drive/Motor fai	n delay time	II.	1	-	.,,	•			
	Drive/Motor fan	rive/motor fan. as given an Off comr delay time elapses. I ature has dropped be	f drive or	motor overtemper	ature is per					
	0.0 3250.0	0.0	s	10 = 1 s	n	у	Parameter			
0.43	Dynamic braki	ng acknowledge sou	ırce	Į.	· L		II.			
	This prevents the 0 = Dynamic brate 1 = Dynamic brate 1 = Dynamic brate 1: Dynamic brate 1: Dynamic brate 3: DI1; 10.02.b04; DI2; 10.02.b0	aking active. rce selection. Iking inactive; 0, nor Iking active; 1. Illiant DI delayed status. Illiant DI delayed status.	while dyr	namic braking is a			٠			
	6: DI4 ; 10.02.b0 7: DI5 ; 10.02.b0 8: DI6 ; 10.02.b0 11: DIO1 ; 11.02 12: DIO2 ; 11.02	D2 DI delayed status. D3 DI delayed status. D4 DI delayed status. D5 DI delayed status. D6 DIO delayed status. D6 DIO delayed status. D7 DIO delayed status. D9 DIO delayed status. D9 DIO delayed status.	ıtus.	1 = 1	n	У	Parameter			
0.44	6: DI4 ; 10.02.b0 7: DI5 ; 10.02.b0 8: DI6 ; 10.02.b0 11: DIO1 ; 11.02 12: DIO2 ; 11.02 19: DIL ; 10.02.b	D3 DI delayed status. D4 DI delayed status. D5 DI delayed status. D5 DI delayed status. D10 delayed status. D15 DI delayed status D15 DI delayed status Dynamic braking inactive	itus.	1 = 1	n	У	Parameter			
20.44	6: DI4 ; 10.02.b0 7: DI5 ; 10.02.b0 8: DI6 ; 10.02.b0 11: DIO1 ; 11.02 12: DIO2 ; 11.02 19: DIL ; 10.02.b 0 19	D3 DI delayed status. D4 DI delayed status. D5 DI delayed status. D5 DI delayed status. D10 delayed status. D15 DI delayed status D15 DI delayed status Dynamic braking inactive	itus.	1 = 1	n	у	Parameter			
20.44	6: DI4; 10.02.b0 7: DI5; 10.02.b0 8: DI6; 10.02.b0 11: DIO1; 11.02 12: DIO2; 11.02 19: DIL; 10.02.b 0 19 Dynamic brakin Delay time for DIn case of dynamic feedback fault and DC contactor (Uniformation. The elapsed. ≤ -0.1 s; the mobraking. = 0.0 s; during of	D3 DI delayed status. D4 DI delayed status. D5 DI delayed status. D5 DI delayed status. D6 DIO delayed status. D6 DIO delayed status. D7 DI delayed status D7 DI delayed status D9 DI delayed status D9 DI delayed status D9 DI delayed status D9 DI delayed status	speed fe is not me valid informed excitated directly	edback, see 90.47 asured directly at mation about the rition is active untilely at the motor termed signal is general	1 M1 feedbathe motor to motor speed 20.44 Dynaminals and inted.	ack selection erminals, e.d and no zer amic braking s valid durin	n, or a speed g. due to a ro speed g delay is			
0.44	6: DI4; 10.02.b0 7: DI5; 10.02.b0 8: DI6; 10.02.b0 11: DIO1; 11.02 12: DIO2; 11.02 19: DIL; 10.02.b Dynamic brakin Delay time for DIn case of dynamic feedback fault and DC contactor (Uinformation. The elapsed. ≤ -0.1 s; the moderaking. = 0.0 s; during conditions of the elapsed. ≥ 0.1 s; during conditions of the elapsed.	DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status DI delayed status Dynamic braking inactive Dynamic braking. Dynamic braking. Dynamic braking. Dynamic braking. Dynamic braking. Dynamic braking. Dynamic braking. Dynamic braking. Dynamic braking. Dynamic braking. Dynamic braking. Dynamic braking. Dynamic braking and tor voltage is measuredynamic braking, no zero.	speed fe is not me valid informed excitated directly	edback, see 90.47 asured directly at mation about the rition is active untilely at the motor termed signal is general	1 M1 feedbathe motor to motor speed 20.44 Dynaminals and inted.	ack selection erminals, e.d and no zer amic braking s valid durin	n, or a speed g. due to a ro speed g delay is			
0.44	6: DI4; 10.02.b0 7: DI5; 10.02.b0 8: DI6; 10.02.b0 11: DIO1; 11.02 12: DIO2; 11.02 19: DIL; 10.02.b Dynamic braki Delay time for D In case of dynar feedback fault a DC contactor (U information. The elapsed. ≤ -0.1 s; the mo braking. = 0.0 s; during of elapsed1.0 3250.0	a3 DI delayed status. b4 DI delayed status. b5 DI delayed status. b5 DI delayed status. b00 DIO delayed status. b01 DIO delayed status b15 DI delayed status Dynamic braking inactive b1 DI delayed status Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status. Dynamic braking. b1 DI delayed status. Dynamic braking. b1 DI delayed status. Dynamic braking. b1 DI delayed status. Dynamic braking. b1 DI delayed status. Dynamic braking. b1 DI delayed status. Dynamic braking. b1 DI delayed status. Dynamic braking. b1 DI delayed status. Dynamic braking. b1 DI delayed status. Dynamic braking. b1 DI delayed status. Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status Dynamic braking. b1 DI delayed status	speed fe is not me valid inforund excita ed directly tero speed	edback, see 90.4° asured directly at mation about the rition is active untilly at the motor term disignal is generate	1 M1 feedbathe motor to motor speed 20.44 Dynaminals and ited.	ack selection erminals, e.d and no zen amic braking s valid durin programmen	n, or a speed g. due to a ro speed g delay is ag dynamic d time is			

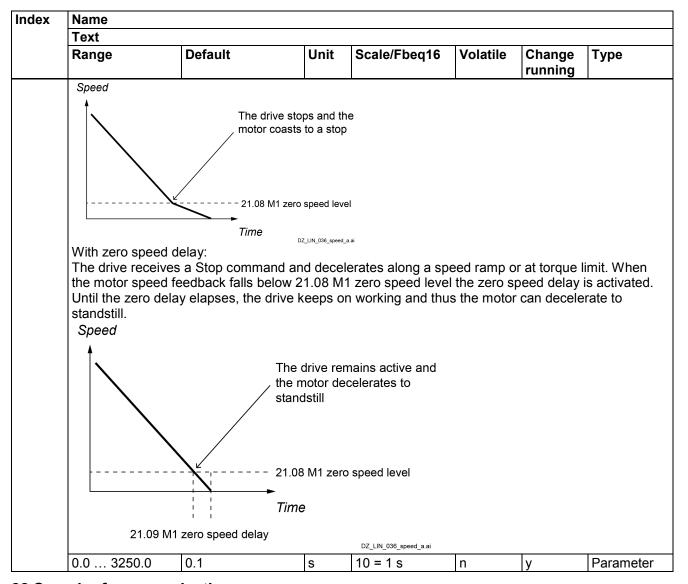
Index	Name	Name									
	Text										
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре				
	0: No trigger cor	nmand; 0, normal ope	eration.								
	1: Trigger; 1.	·									
	3: DI1 ; 10.02.b00	DI delayed status.									
	4: DI2 ; 10.02.b01	DI delayed status.									
	5: DI3 ; 10.02.b02	DI delayed status.									
	6: DI4 ; 10.02.b03	DI delayed status.									
	7: DI5 ; 10.02.b04	DI delayed status.									
	8: DI6 ; 10.02.b05	DI delayed status.									
	11: DIO1 ; 11.02.b	00 DIO delayed statu	IS.								
	12: DIO2 ; 11.02.b	01 DIO delayed statu	IS.								
	19: DIL ; 10.02.b1	5 DI delayed status									
	0 19	No trigger command	-	1 = 1	n	у	Parameter				

21 Start/Stop mode Start and stop modes, emergency stop mode and zero speed.

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
21.01	Start mode						
	word. 0: Start from speed level. In conflict is general: Flying star Torque limit. SOff3 (emerger	otor start function in r zero; wait until the m n case the restart con erated. t; start the drive into a Stop via Dynamic braincy stop) is not interro	otor has reanmand com a rotating mking, Off2 (eupted. Wait	ached zero speed, es before zero spe otor, when stoppin emergency off/elec until zero speed is	then resta eed is reacl ng via Coas ctrical disco reached.	rt. See 21.0 ned, A137 S st stop, Ran nnect/fast c	8 M1 zero Start condition ap stop or current off) or
	Ramp stop, To	t dynamic braking; orque limit or Dynami at the hardware, e.g.	c braking. [ynamic braking is	interrupted	d	•
	0 2	Flying start	-	1 = 1	n	y	Parameter
21.02	Off1 mode						
	control word. In case Off1 of Off1 mode and Priority list: 0. 06.09.b01 1. 21.03 Emet 2. 21.02 Off1 3. 21.04 Stopt 0: Coast stopt firing angle to the firing pulse 1: Ramp stopt deceleration rating angle is When the arm	on the motor is stopped on the motor is stopped on the control of	a stop. The re current a preakers are ramp is select 50.45 Max	e given at the same e same setting. e firing angle is force is fast as possible expended. Field exect to zero. Thus, the sion. When reaching angle	e time or no ced to the v . When the citer and fa ne motor sto ng 21.08 Mi to decrease	ralue of 30.4 armature cons are stopops along the stopops along the stopops at the armative a	mporary 21.02 45 Maximum urrent is zero ped. ne active d level the ure current.

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	the drive is force 3: Torque limit ; limit. When read Maximum firing pulses are block in case 19.20 For the drive is force 4: Dynamic bra	billower force ramp sed to speed control. the output of the driching 21.08 M1 zero angle to decrease the dricked. The breakers arollower force ramp sed to speed control. king ; the motor stored.	ive ramp is speed leven armature opened. top = Force	set to zero. Thus all the firing angle is current. When the Field exciter and the speed control the sof dynamic brakers.	, the motor s forced to ne armature fans are sto e torque se sing.	stops at the the value of current is z pped. lector is byp	e active torque f 30.45 zero the firing passed and
21.03	0 4	Ramp stop	-	1 = 1	n	У	Parameter
	Selects the way 06.09.b02 Used Priority list: 0. 06.09.b01 Of 1. 21.03 Emerg 2. 21.02 Off1 m 3. 21.04 Stop m 0: Coast stop; the firing angle to determine the firing pulses See Off3 stop m 1: Ramp stop; the deceleration randering angle is for When the armate exciter and fans See Off3 stop m In case 19.20 For the drive is force 2: Emergency may be firing angle in current. When the firing angle in current is force 3: Torque limit; limit. When read Maximum firing pulses are block See Off3 stop m In case 19.20 For the drive is force 4: Dynamic brains of the drive is force 4: Dynami	control (emergency since the motor is stopped main control word. Iff2 control. Itency stop mode. Itency stop in 06.20.b10 Itency stop mode. Itency stop in 06.20.b11 Itency stop mode. Itency s	a stop. The e current areakers are Run inhibit top = Force of 30.45 Maxime firing pure to five ramp is zero the Run inhibit top = Force of the driver are armature are opened. Run inhibit top = Force opened.	firing angle is force fast as possible, opened. Field exception. When reaching angle is status word. It to zero. Thus, the firing angle is speed control the set to zero. Thus are to zero time. When reaching pulses are blocked. It is status word. It is speed control the set to zero. Thus is the firing angle is current. When the field exciter and it status word. It is speed control the status word. It is speed control the status word. It is sof dynamic brakers.	ced to the v When the citer and far the motor sto the 21.08 M to decrease The breake e torque se the colocked. The the torque se the torque se the motor the torque se the motor the armature fans are sto the torque se the armature the torque se	alue of 30.4 armature cuns are stoppops along the zero speed the armatures are open lector is bygothe motor stops at the treakers at the value of current is zero pped.	45 Maximum urrent is zero ped. e active do level the ure current. and assed and personal level hature are opened. bassed and personal level hature are opened. coassed and personal level hature are opened. coassed and personal level hature are opened.
		stop				-	
21.04	Stop mode Mode for Run.						
		the motor is stoppe	d when a S	top command is g	given. See (06.09.b03 U	Ised main

Index	Name						
	Text						
	Range	Default	Unit	Scale/Fbeq16	Volatile	Change running	Туре
	In case Off1 com	mand and Stop comi	mand are	e given at the sam	e time or n	early conter	nporary 21.02
		1.04 Stop mode mus	t have th	e same setting.			
	Priority list:	O control					
	0. 06.09.b01 Off 1. 21.03 Emerge						
	2. 21.03 Efficience						
	3. 21.04 Stop me						
	0: Coast stop; th	ne motor coasts to a s					
		crease the armature	current a	s fast as possible	. When the	armature co	urrent is zero
	the firing pulses a			-4.4 Th 41		l 4le	
		ne input of the drive rape. See 23.11 Ramp s					
		ced to the value of 30					
	0 0	ire current is zero the		0 0		o tilo allilati	aro ourrone.
		llower force ramp sto				elector is by	passed and
		d to speed control.					
		the output of the drive					
		ning 21.08 M1 zero sp ingle to decrease the					
	pulses are blocke		aimatui	e current. When the	ic aimature	current is a	zero trie ming
		llower force ramp sto	p = Forc	e speed control th	e torque se	elector is by	passed and
	the drive is forced	d to speed control.				•	
		ting; the motor stops	by mear	_ ,	king.	1	
	0 4	Ramp stop	-	1 = 1	n	у	Parameter
21.08	M1 zero speed l						
	Motor 1 zero spe		4			1 1	- Parit (1 1)
		nmand is given, the r is reached and 21.09					
		otor will coast. At tha					o mode.
		feedback is in the lev					control status
	word.			,		·	
	Notes:		_				
		Start mode = Start f			estart comi	mand come	s before zero
		ched, A137 Start cond M1 zero speed leve			the zero en	and augan	iolon
	0.00 30000.00			See 46.02	-		
21.09	M1 zero speed o		rpm	366 40.02	n	у	Parameter
21.09	Motor 1 zero speed to	•					
		delay compensates fo	or the tim	e the motor needs	s to deceler	ate from 21	08 M1 zero
		andstill. Until 21.09 M					
	Without zero spe		'	, , , ,			,
	The drive receive	es a Stop command a					
		feedback falls below	21.08 M	1 zero speed leve	I, the drive	stops and th	ne motor
1	coasts to standst	111					



22 Speed reference selection

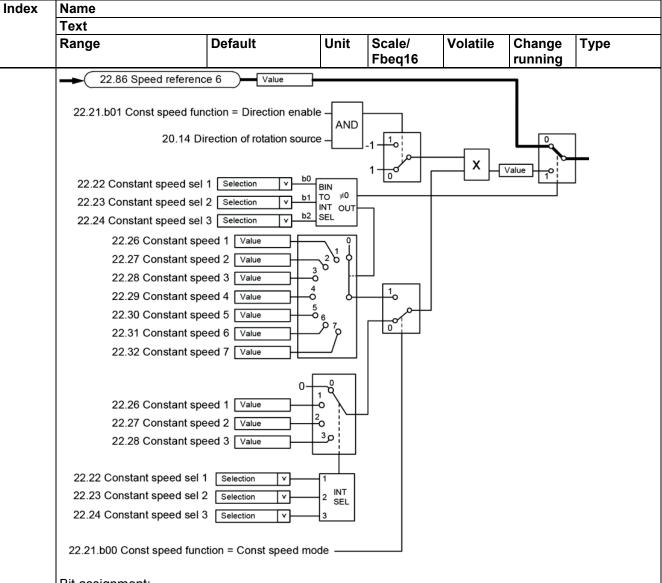
Speed reference selection and motor potentiometer settings

Index	Name									
	Text									
00.04	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
22.01	Speed reference unlim	ited								
	Speed reference after se Displays the speed refer panel and safe speed.		s like co	onstant speed	ds, jogging,	local contro	ol from contro			
	-30000.00 30000.00	-	rpm	See 46.02	у	n	Signal			
22.07	Speed reference									
	Main speed reference input. Main speed reference input of the drive. Can be connected via 22.11 Speed reference 1 source and/or 22.12 Speed reference 2 source.									
	-30000.00 30000.00	0.00	rpm	See 46.02	n	у	Parameter			
22.08	Auxiliary speed referer	ice								
	Auxiliary speed reference Auxiliary speed reference and/or 22.12 Speed refe	e input of the drive.	Can be	connected vi	a 22.11 Sp	eed referer	nce 1 source			

	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	-30000.00 30000.00	0.00	rpm	See 46.02	n	у	Parameter			
2.11	Speed reference 1 sour	ce								
	Selects speed reference Two signal sources can I 2 source. 22.14 Speed re function. The mathematic rotation depends on 20.1	pe defined. See 22. eference 1/2 selectional function dependent	on switc s on 22.	hes betweer 13 Speed re	the two so	urces or a	mathematic			
	Other — 22.11 Other — 0 References — Constant speed —	22.81 ADD SUB MUL	2.13 Refere	.		20.14 wd.	22.83			
	Other Other References Reference 2									
	Constant speed SF_880_025_DCS_speed reference_a.ai									
	0: Zero; 0 rpm, speed reference 1: 22.07 Speed reference 3: 22.08 Auxiliary speed 4: Al1 scaled; 12.12 Al1 5: Al2 scaled; 12.22 Al2 6: Al3 scaled; 12.32 Al3 7: FBA A reference 1; 0 8: FBA B reference 2; 0 9: FBA B reference 1; 0 10: FBA B reference 2; 11: EFB reference 2; 03 12: EFB reference 2; 03 13: DDCS controller ref 14: DDCS controller ref 15: M/F or D2D ref 1; 03 16: M/F or D2D ref 2; 03 17: Motor potentiomete 18: Process PID output	ce; 22.07 Speed reformere; 22.08 scaled value. scaled value. scaled value. 3.05 FBA A referen 3.06 FBA A referen 3.07 FBA B referen 03.08 FBA B referen 09 EFB reference: 10 EFB reference: 10 EFB reference: 11; 03.11 DDCS con 12; 03.12 DDCS con 13 M/F or D2D reformererere; 22.80 actual; 40.01 Proc	ce 1. ce 2. ce 1. nce 2. 1. 2. ntroller r 1. 2. Motor p	ef 1. ef 2. otentiometer	reference.					
	19: Encoder 1 speed; 9/ 20: Encoder 2 speed; 9/ 21: OnBoard encoder; 9/ 26: Constant speed 6; 2	0.20 Encoder 2 spe 94.04 OnBoard enco 22.31 Constant spec	oder spe ed 6.	eed.						
	20: Encoder 2 speed; 9 21: OnBoard encoder; 9 26: Constant speed 6; 2 27: Constant speed 7; 2	0.20 Encoder 2 spe 04.04 OnBoard enco 22.31 Constant spec 22.32 Constant spec	oder spe ed 6.		n	V	Parameter			
2.12	20: Encoder 2 speed; 9 21: OnBoard encoder; 9 26: Constant speed 6; 2 27: Constant speed 7; 2 0 27	0.20 Encoder 2 spe 94.04 OnBoard enco 22.31 Constant spec 22.32 Constant spec Al1 scaled	oder spe ed 6.	eed.	n	у	Parameter			
2.12	20: Encoder 2 speed; 9 21: OnBoard encoder; 9 26: Constant speed 6; 2 27: Constant speed 7; 2	0.20 Encoder 2 spe 94.04 OnBoard enco 22.31 Constant spec 22.32 Constant spec Al1 scaled rce source 2.	oder speed 6. ed 7.	1 = 1		у	Paramete			

Speed reference function

ıdex	Name								
	Text Range	Default	Unit	Scale/	Volatile	Change	Туре		
	Speed reference	<u> </u>		Fbeq16		running			
	Selects a mather Speed reference 0: Ref 1; speed r 1: Add (ref 1 + ref 2: Sub (ref 1 - ref 3: Mul (ref 1 , ref 4: Min (ref 1, ref	matical function betwee 1 source. eference 1 selected by ef 2); the sum of the two ef 2); the result of speed f 2); the multiplication (2); the smaller of the two	22.11 Spe o speed re d reference of the two s wo speed r	eed reference ferences is u 1 minus spe speed referer eferences is	1 source is sed. ed reference ices is used used.	used. e 2 is used.			
		f 2); the greater of the t	wo speed		used.				
	0 5	Ref 1	-	1 = 1	n	У	Parameter		
.14	Speed reference	e 1/2 selection en speed reference 1 ar							
	1: Speed refere 3: DI1 ; 10.02.b00 4: DI2 ; 10.02.b02 5: DI3 ; 10.02.b03 7: DI5 ; 10.02.b04 8: DI6 ; 10.02.b05 11: DIO1 ; 11.02. 12: DIO2 ; 11.02.	nce 1; 0, normal operatince 2; 1. DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI DIO delayed status. DI delayed status. DI delayed status. DI DIO delayed status. DI DIO delayed status. DI DIO delayed status. DI DIO delayed status. DI DIO delayed status.	5. 5.	1 = 1	n	у	Parameter		
.15	Speed additive	1 201120							
-	1 st additive speed Defines a speed source.	d reference. reference to be added ety reasons, the additiv		•		·			
2.16	Speed share								
	Speed reference Defines a scaling	scaling factor. factor between 22.84	Speed refe	erence 4 and	22.85 Spee	d reference	5.		
	-8.000 8.000	1.000	· -	1000 = 1	n	у	Parameter		
2.17	Speed additive	2 source					•		
	2 nd additive spee Defines a speed source. Note : Due to saf functions are act	d reference. reference to be added ety reasons, the additiv		eference is no	ot applied wh	nen any of t	he stop		
	0 27	Zero	-	1 = 1	n	у	Parameter		
.21	Constant speed								
	Determines how	configuration word. constant speeds are se t when applying a cons			14 Direction	of rotation	source is		



Bit assignment:

Bit	Name	Value	Remarks
0	Constant speed mode	1	Packed: 7 constant speeds are selectable using the three sources defined by 22.22 Constant speed sel 1, 22.23 Constant speed sel 2 and 22.24 Constant speed sel 3.
		0	Separate: Constant speeds 1, 2 and 3 are separately activated by the sources defined by 22.22 Constant speed sel 1, 22.23 Constant speed sel 2 and 22.24 Constant speed sel 3. In case of conflict, the constant speed with the smaller number takes priority.
1	Direction enable	1	Depending on direction: To determine the direction of rotation for a constant speed, the sign of the constant speed setting is multiplied by 20.14 Direction of rotation source. This effectively allows the drive to have 14 (7 forward and 7 reverse) constant speeds. WARNING! If the direction signal is reverse and the active constant speed is negative, the drive will run in the forward direction.

	Name								
	Text								
	Range		Default		Unit	Scale/ Fbeq16	Volatile	Change running	Туре
			0	consta	nt spee	parameter:	The running of ined by the seconds.	direction for	
	2 15	reserved							
	0000h l		0000h		-	1 = 1	n	у	Parameter
22		speed sel 1							
	Constant speed selector 22.21.b00 Constant spe following table. Source defined by. 22.22 Constant speed		ed function Source d	efined by	, ,	Source def	fined by		ing to the
	22.22 Co	onstant speed	22.23 Co sel 2	nstant sp	peed	22.24 Cons	stant speed		
	0		0			0		None	
	1		0			0		Constant s	
	0		1			0		Constant s	speed 2
	1		1			0		Constant s	
	0		0			1		Constant s	•
	1		0			1		Constant s	•
	0		1			1		Constant s	•
	1		1			1		Constant s	speed 7
	Other [bit]; source seled: 0: Not selected; 0, nor 1: Selected; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 DI 12: DIO2; 11.02.b01 DI 19: DIL; 10.02.b15 DI de 19: DIL; 10.02		ai oporatio						
	3: DI1; 10. 4: DI2; 10. 5: DI3; 10. 6: DI4; 10. 7: DI5; 10. 8: DI6; 10. 11: DIO1; 12: DIO2; 19: DIL; 10.	.02.b00 DI dela .02.b01 DI dela .02.b02 DI dela .02.b03 DI dela .02.b04 DI dela .02.b05 DI dela 11.02.b00 DIC 11.02.b01 DIC 0.02.b15 DI de	ayed status ayed status ayed status ayed status ayed status delayed s delayed s layed statu Not selec	tatus.	-	1 = 1	n	у	Parametei
22	3: DI1; 10. 4: DI2; 10. 5: DI3; 10. 6: DI4; 10. 7: DI5; 10. 8: DI6; 10. 11: DIO1; 12: DIO2; 19: DIL; 1. 0 19 or 0000h	.02.b00 DI dela .02.b01 DI dela .02.b02 DI dela .02.b03 DI dela .02.b04 DI dela .02.b05 DI dela 11.02.b00 DIC 11.02.b01 DIC 0.02.b15 DI de	ayed status ayed status ayed status ayed status ayed status delayed s delayed s layed status	tatus.	-	1 = 1	n	у	Parameter
23	3: DI1; 10. 4: DI2; 10. 5: DI3; 10. 6: DI4; 10. 7: DI5; 10. 8: DI6; 10. 11: DIO1; 12: DIO2; 19: DIL; 10. 0 19 or 0000h	.02.b00 DI dela .02.b01 DI dela .02.b02 DI dela .02.b03 DI dela .02.b04 DI dela .02.b05 DI dela 11.02.b00 DIC 11.02.b01 DIC 0.02.b15 DI de	ayed status ayed status ayed status ayed status ayed status delayed s delayed status Not select 0000h	tatus.	-	1 = 1	n	У	Parameter
23	3: DI1; 10. 4: DI2; 10. 5: DI3; 10. 6: DI4; 10. 7: DI5; 10. 8: DI6; 10. 11: DIO1; 12: DIO2; 19: DIL; 10. Constant See 22.22	.02.b00 DI dela .02.b01 DI dela .02.b02 DI dela .02.b03 DI dela .02.b04 DI dela .02.b05 DI dela .02.b05 DI dela .11.02.b00 DIC .0.02.b15 DI dela FFFFh speed sel 2 .2.b05 Selector	ayed status ayed status ayed status ayed status ayed status o delayed s o delayed s layed statu Not select 0000h	tatus. tadus. tatus.	-				
23	3: DI1; 10. 4: DI2; 10. 5: DI3; 10. 6: DI4; 10. 7: DI5; 10. 8: DI6; 10. 11: DIO1; 12: DIO2; 19: DIL; 1. 0 19 or 0000h Constant	.02.b00 DI dela .02.b01 DI dela .02.b02 DI dela .02.b03 DI dela .02.b04 DI dela .02.b05 DI dela .02.b05 DI dela .1.02.b00 DIC 11.02.b01 DIC 0.02.b15 DI dela FFFFh speed sel 2 Speed selector	ayed status ayed status ayed status ayed status ayed status delayed status delayed status Not select 0000h	tatus. tadus. tatus.	-	1 = 1	n n	у	
23	3: DI1; 10. 4: DI2; 10. 5: DI3; 10. 6: DI4; 10. 7: DI5; 10. 8: DI6; 10. 11: DIO1; 12: DIO2; 19: DIL; 10. 0 19 or 0000h Constant See 22.22 0 19 or 0000h	.02.b00 DI dela .02.b01 DI dela .02.b02 DI dela .02.b03 DI dela .02.b04 DI dela .02.b05 DI dela .02.b05 DI dela .1.02.b00 DIC 11.02.b01 DIC 0.02.b15 DI dela FFFFh speed sel 2 Speed selector	ayed status ayed status ayed status ayed status ayed status delayed status delayed status Not select 0000h	tatus. tadus. tatus.	-				
	3: DI1; 10. 4: DI2; 10. 5: DI3; 10. 6: DI4; 10. 7: DI5; 10. 8: DI6; 10. 11: DIO1; 12: DIO2; 19: DIL; 10. Constant Constant See 22.22 0 19 or 0000h Constant Constant Constant Constant	.02.b00 DI dela .02.b01 DI dela .02.b02 DI dela .02.b03 DI dela .02.b04 DI dela .02.b05 DI dela .02.b05 DI dela .02.b05 DI dela .02.b01 DIC .02.b01 DIC .02.b15 DI dela FFFH speed sel 2 Speed selector Constant speed FFFFh speed sel 3 Speed selector	ayed status ayed s	tatus. tadus. tatus.	-				Parameter
	3: DI1; 10. 4: DI2; 10. 5: DI3; 10. 6: DI4; 10. 7: DI5; 10. 8: DI6; 10. 11: DIO1; 12: DIO2; 19: DIL; 1. 0 19 or 0000h Constant See 22.22 0 19 or 0000h Constant Constant Constant See 22.22 0 19 or	.02.b00 DI dela .02.b01 DI dela .02.b02 DI dela .02.b03 DI dela .02.b04 DI dela .02.b05 DI dela .02.b05 DI dela .02.b01 DIC .02.b01 DIC .02.b01 DIC .02.b15 DI dela .02.b15 DI dela .02.b15 DI dela .02.b15 DI dela .03.b15 DI dela .04.b15 DI dela .05.b15 DI	ayed status ayed s	tatus. tatus. tstatus. tstatus. ted or	-				
24	3: DI1; 10. 4: DI2; 10. 5: DI3; 10. 6: DI4; 10. 7: DI5; 10. 8: DI6; 10. 11: DIO1; 12: DIO2; 19: DIL; 10. 0 19 or 0000h Constant See 22.22 0 19 or 0000h Constant Constant See 22.22 0 19 or 0000h Constant See 22.22 0 19 or 0000h	.02.b00 DI dela .02.b01 DI dela .02.b02 DI dela .02.b03 DI dela .02.b04 DI dela .02.b05 DI dela .02.b05 DI dela .1.02.b00 DIC 11.02.b01 DIC 0.02.b15 DI dela FFFFh speed sel 2 speed selector Constant speces FFFFh speed selector Constant speces Constant speces Constant speces	ayed status ayed s	tatus. tatus. tstatus. tstatus. ted or	-	1 = 1	n	У	Parameter
	3: DI1; 10. 4: DI2; 10. 5: DI3; 10. 6: DI4; 10. 7: DI5; 10. 8: DI6; 10. 11: DIO1; 12: DIO2; 19: DIL; 1. 0 19 or 0000h Constant See 22.22 0 19 or 0000h Constant Constant Constant See 22.22 0 19 or	.02.b00 DI dela .02.b01 DI dela .02.b02 DI dela .02.b03 DI dela .02.b04 DI dela .02.b05 DI dela .02.b05 DI dela .02.b05 DI dela .02.b01 DIC .02.b01 DIC .02.b15 DI del .03.b15 DI dela .04.b15 DI dela .05.b15	ayed status ayed s	tatus. tatus. tstatus. tstatus. ted or	-	1 = 1	n	У	Parameter

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	-30000.00 30000.00	0.00	rpm	See 46.02	n	у	Parameter
22.27	Constant speed 2						
	Constant speed 2.						
	Defines constant speed						
	-30000.00 30000.00	0.00	rpm	See 46.02	n	У	Parameter
22.28	Constant speed 3						
	Constant speed 3.						
	Defines constant speed		1		1		
	-30000.00 30000.00	0.00	rpm	See 46.02	n	у	Parameter
22.29	Constant speed 4						
	Constant speed 4.	4. 41	. (
	Defines constant speed		1				_
00.00	-30000.00 30000.00	0.00	rpm	See 46.02	n	у	Parameter
22.30	Constant speed 5						
	Constant speed 5. Defines constant speed 5.	the aread the ma	otor will :	turn whon oo	notant anac	nd E in color	otod
	-30000.00 30000.00	0.00		See 46.02	n		Parameter
22.31	Constant speed 6	0.00	rpm	366 40.02	11	У	Farameter
22.31	Constant speed 6.						
	Defines constant speed (S the speed the mo	ntor will	turn when co	netant enec	nd 6 is selec	rted
	-30000.00 30000.00	0.00	rpm	See 46.02	n	V	Parameter
22.32	Constant speed 7	0.00	ITPIII	000 40.02	111	У	T drameter
22.02	Constant speed 7.						
	Defines constant speed	7. the speed the mo	otor will	turn when co	nstant spee	ed 7 is selec	cted.
	-30000.00 30000.00	0.00	rpm	See 46.02	n	у	Parameter
22.42	Jogging 1 reference	1 0 1 0 1	1.6	1000 1010	1	17	1
	Speed reference for jogg	ina function 1.					
	Defines the speed refere		See 20.2	6 Jogging 1	start source) .	
	-30000.00 30000.00	0.00	rpm	See 46.02	n	у	Parameter
22.43	Jogging 2 reference		•		•		
	Speed reference for jogg	ing function 2.					
	Defines the speed refere	nce for jogging 2. S	See 20.2	7 Jogging 2	start source) .	
	-30000.00 30000.00	0.00	rpm	See 46.02	n	у	Parameter
22.46	Speed reference safe						
	Defines a safe speed ref		s used w	ith supervision	on functions	s such as:	
	 12.03 Al supervision 						
	- 49.05 Communicatio						
	- 50.02 FBA A comm I						
	- 50.32 FBA B comm I						
	- 58.14 Communicatio		Tunana	Con 46 00	T.,	T.,	Doromotor
22.71	-30000.00 30000.00	0.00	rpm	See 46.02	n	у	Parameter
22.71	Motor potentiometer fund						
	Motor potentiometer fund Activates and selects the		r notenti	ometer			
	0: Disable ; disable the m).		
	1: Enable (initialization					dopts the va	alue defined
	by 22.72 Motor potention						
	the up and down sources		Motor po	otentiometer	up source a	and 22.74 M	lotor
	potentiometer down sour	ce.					

	Name						
	Text Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	initial value. 2: Enable (resum) The value can be a	cycle will reset the mo e always); the motor p adjusted from the up a	potentiome and down s	ometer to the ter value is r ources defin	etained over ed by 22.73	2 Motor pot a stop or a Motor pote	a power cycle.
	0 2	Motor potentiometer d Disable	lown source	1 = 1			Parameter
22.72			-	=	n	У	Parameter
22.12	Initial value for mo Defines an initial v function.	tor potentiometer. alue (starting point) fo	or the motor	potentiome	ter. See 21.7	Г	otentiometer Parameter
2.73	Motor potentiom			1 - 1	111	у	Farameter
	potentiometer value 2: None ; inactive. 3: DI1 ; 10.02.b00 I 4: DI2 ; 10.02.b01 I 5: DI3 ; 10.02.b02 I 6: DI4 ; 10.02.b03 I 7: DI5 ; 10.02.b05 I 11: DIO1 ; 11.02.b01 I 12: DIO2 ; 11.02.b01	Motor potentiometer under land by delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI DIO delayed status. DI DIO delayed status	up is disable				
	19: DIL ; 10.02.615	5 DI delayed status.		1 = 1	l n	1,,	Doromotor
22.74	Motor potentiom	None	-	1 - 1	n	У	Parameter
	Selects the source 0 = No change. 1 = Decrease. Other [bit]; source 0: No change; 0, I 1: Decrease; 1, de potentiometer value	nold the motor potentic ecrease the motor potenties will not change. Motor potentiometer of DI delayed status.	ometer valu entiometer	ue. Normal o value. If both		down sour	ces are on, th

Index	Name										
MUGA	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
	42: DI3 or stop ; 10.02.b02 DI delayed status plus stop. DI3 = 1 or stop command active → the motor										
	potentiometer value is decreased, DI3 = 0: the motor potentiometer value is held.										
	43: DI4 or stop ; 10.02.b03 DI delayed status plus stop. DI4 = 1 or stop command active → the motor										
	potentiometer value is decreased, DI4 = 0: the motor potentiometer value is held.										
	44: DI5 or stop ; 10.02.b04 DI delayed status plus stop. DI5 = 1 or stop command active → the moto										
	potentiometer value is decreased, DI5 = 0: the motor potentiometer value is held.										
	45: DI6 or stop ; 10.02.b05 DI delayed status plus stop. DI6 = 1 or stop command active → the moto potentiometer value is decreased, DI6 = 0: the motor potentiometer value is held.										
	46: DIO1 or stop ; 11.0						active - the				
	motor potentiometer v										
	47: DIO2 or stop ; 11.										
	motor potentiometer v										
	48: DIL or stop ; 10.02										
	potentiometer value is	decreased, DIL = 0: t	he moto	r potentiome	ter value is	held.					
	0 48	None	-	1 = 1	n	у	Parameter				
22.75	Motor potentiometer	ramp time		•							
	Motor potentiometer c	hange time.									
	Defines the change ra										
	potentiometer to chan-						entiometer				
	max value. The same		ր both di		and down).	•	_				
	0.0 3250.0	10.0	s	10 = 1 s	n	у	Parameter				
22.76	Motor potentiometer	min value									
	Motor potentiometer n										
	Defines the minimum	value of the motor pot	entiome	ter.							
	-30000.00 30000.0	0 -1500.00	-	1 = 1	n	у	Parameter				
22.77	Motor potentiometer	max value									
	Motor potentiometer n										
	Defines the maximum		tentiome	eter.							
	-30000.00 30000.0		-	1 = 1	n	у	Parameter				
22.80	Motor potentiometer	reference									
	Value of the motor pot										
	Displays the output of				rectly be se	t as the sou	ırce of				
	parameters such as 22		1 source		1						
	-30000.00 30000.0	0 -	-	1 = 1	у	n	Signal				
22.81	Speed reference 1										
	Value of speed reference 1 source.										
	Displays the speed ref				ee 22.11 Sp	eed referer					
	-30000.00 30000.0	0 -	rpm	See 46.02	У	n	Signal				
22.82	Speed reference 2										
	Value of speed referen			_							
	Displays the speed ref		ference		ee 22.12 Sp	eed referer					
	-30000.00 30000.0	0 -	rpm	See 46.02	у	n	Signal				
22.83	Speed reference 3										
	Speed reference after										
	Displays the speed ref										
	rotation direction. See		ce functi	on, 22.14 Sp	eed referer	nce 1/2 sele	ction and				
	20.14 Direction of rota		1	T	1		T				
	-30000.00 30000.0	0 -	rpm	See 46.02	у	n	Signal				
22.84	Speed reference 4										
	Speed reference after				_						
	Displays the speed ref	ference after 1st additi	ve speed	d. See 22.15	Speed add	litive 1 sour	ce.				

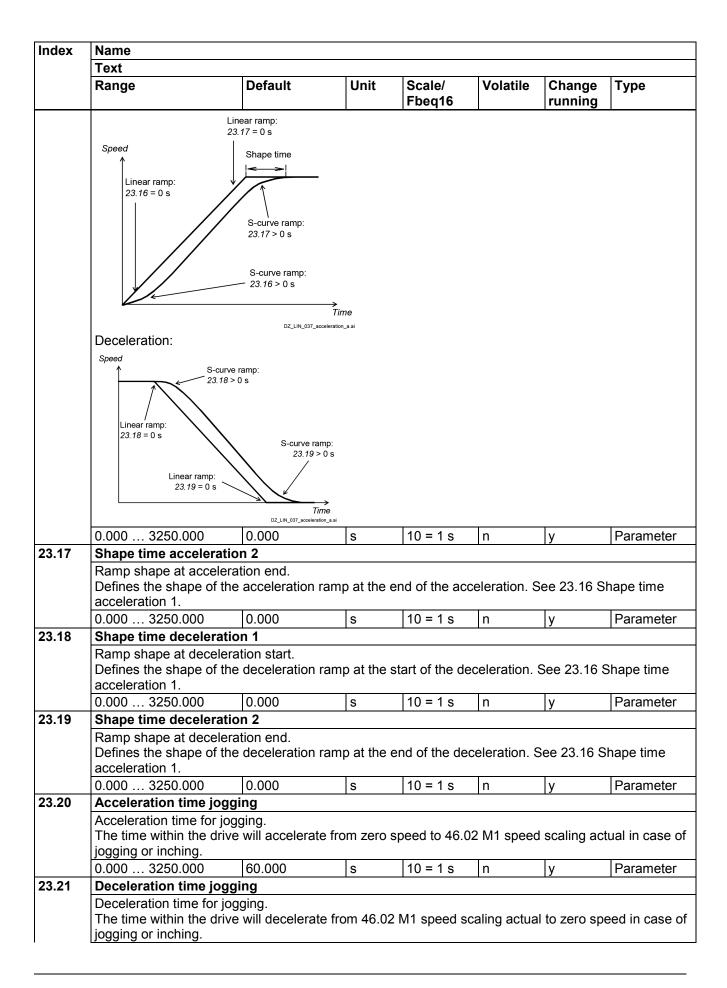
Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Type			
	-30000.00 30000.00	-	rpm	See 46.02	у	n	Signal			
22.85	Speed reference 5									
	Speed reference after speed share. Displays the speed reference after scaling by means of speed share. See 22.16 Speed share.									
	-30000.00 30000.00	-	rpm	See 46.02	у	n	Signal			
22.86	Speed reference 6		•		•	•				
	Speed reference after additive 2.									
	Displays the speed refe	rence after 2 nd addi	tive spe	ed. See 22.17	' Speed ad	ditive 2 sou	rce.			
	-30000.00 30000.00	-	rpm	See 46.02	У	n	Signal			

23 Speed reference ramp

Speed reference ramp settings (programming of the acceleration and deceleration rates for the drive).

Speed r Index	Name									
muex	Text									
	Range Default Unit Scale/ Volatile Change Type Fbeq16									
23.01	Speed reference ramp input									
23.02	Speed reference at the r Displays the speed refer minimum speed and 30. -30000.00 30000.00	ence after limitation		efore ramping See 46.02	and shapii	ng. See 30.	11 M1 Signal			
	Speed reference ramp	output	μγιιι	000 40.02	l y	1	Oigilai			
	Speed reference at the ribisplays the ramped and -30000.00 30000.00	amp output.	eference.	See 46.02	lv	n	Signal			
23.03	Speed reference 7	-	μριιι	066 40.02	y	111	Olgital			
20.00	Speed reference after di Displays the speed refer	ence after direct s	peed ref		1		_			
23.04	-30000.00 30000.00 dv/dt	-	rpm	See 46.02	у	n	Signal			
	Displays the acceleration ramp.	n/deceleration (sp			·	·	_			
	-30000.00 30000.00	-	rpm/s	See 46.02	у	n	Signal			
23.11	Ramp set selection									
	-30000.00 30000.00 - rpm/s See 46.02 y n Signal									

Index	Name									
uux	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	11: DIO1 ; 11.02.b00 DIO delayed status. 12: DIO2 ; 11.02.b01 DIO delayed status. 19: DIL ; 10.02.b15 DI delayed status. 21: Motor1/Motor2 ; used acceleration/deceleration time depends on setting of 42.01 Motor 1/2 selection. If 42.01 Motor 1/2 selection = Motor 2 use Acc/Dec time 2.									
	0 21	Acc/Dec time	1 -	1 = 1	n	у	Parameter			
23.12	Acceleration time	1	W.	-	<u> </u>		•			
	If the speed referer set acceleration tim motor speed will fo If the set accelerati	on time is set too sh	than the se ence increa ort, the driv	t acceleration ises slower the e will acceler	n time, the ment than the set a	notor speed acceleration	will follow the time, the limit.			
23.13	0.000 3250.000 Deceleration time	20.000	S	10 = 1 s	n	У	Parameter			
	If the speed referer deceleration time. I speed will follow th If the set decelerati	Deceleration time 1. The time within the drive will decelerate from 46.02 M1 speed scaling actual to zero speed. If the speed reference decreases faster than the set deceleration time, the motor speed will follow the deceleration time. If the speed reference decreases slower than the set deceleration time, the motor speed will follow the reference. If the set deceleration time is set too short, the drive will decelerate at the active torque limit.								
	0.000 3250.000	20.000	s	10 = 1 s	n	у	Parameter			
23.14	Acceleration time 1 See 23.12 Acceleration 0.000 3250.000		s	10 = 1 s	n	у	Parameter			
23.15	Deceleration time	2	•							
	Deceleration time 2 See 23.13 Deceler	ation time 1.		10 - 1 -	1_	1	Davamatar			
00.40			S	10 = 1 S	n	У	Parameter			
23.16	Shape time acceleration 1 Ramp shape at acceleration start. Defines the shape of the acceleration ramp at the start of the acceleration. 0.0 s: Linear ramp. Suitable for steady acceleration or deceleration and for slow ramps. 0.1 3250.0 s: S-curve ramp. S-curve ramps are ideal for lifting applications. The S-curve consists of curves at both ends of the ramp and a linear part in between. Note: For safety reasons, shape times are not applied during an emergency stop. Acceleration:									



Index	Name										
Index	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
	0.000 3250.000	60.000	S	10 = 1 s	n	у	Parameter				
23.23	Emergency stop	time									
	The time within the Off3 (emergency stault of fault level 4). This applies also the control of the time within the Off3 (emergency states).	Deceleration time for Off3 (emergency stop) command. The time within the drive will decelerate from 46.02 M1 speed scaling actual to zero speed. With an Off3 (emergency stop) command and 21.03 Emergency stop mode = Ramp stop or as reaction to a fault of fault level 4 and 31.15 Fault stop mode fault level 4 = Ramp stop. This applies also to torque control, because the drive automatically switches to speed control with a Off3 (emergency stop) command. For followers see 19.20 Follower force ramp stop.									
	0.000 3250.000	10.000	S	10 = 1 s	n	У	Parameter				
23.24	Speed ramp in ze										
	1: Enable input; 3: DI1; 10.02.b00 4: DI2; 10.02.b01 5: DI3; 10.02.b02 6: DI4; 10.02.b03 7: DI5; 10.02.b04 8: DI6; 10.02.b05 11: DIO1; 11.02.b	orce speed ramp inpu I, enable speed ramp DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status. DI delayed status. OO DIO delayed status	input. Norr	mal operation	i.						
		01 DIO delayed status 5 DI delayed status.	i.								
	0 19	Enable input		1 = 1	n	v	Parameter				
23.26	Ramp out balance	•		-	11	у	r arameter				
	Selects the source This function is us motor back to beir application. When (line) speed. Balar 0 = Enable output 1 = Balance output Other [bit]; source 0: Enable output 1: Balance output 3: DI1; 10.02.b00 4: DI2; 10.02.b01 5: DI3; 10.02.b02 6: DI4; 10.02.b03 7: DI5; 10.02.b04 8: DI6; 10.02.b05 11: DIO1; 11.02.b 12: DIO2; 11.02.b	t.	mp output oth, bumpl he balanci the speed in the speed output. No output to	balancing. ess transfer f ng output is t I reference ca ed controller. Iormal operat	from a torque racking the pan then be q See 25.09 S	oresent (line uickly set to Speed balan	e) speed of the the needed cing enable.				
	0 19	Enable output	-	1 = 1	n	у	Parameter				
23.27	0 19 Ramp out balance	•	-	1 = 1	n	у	Parameter				

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	Defines the reference									
	this value when spe					out balancii				
	-30000.00 30000		rpm	See 46.02	n	у	Parameter			
23.28	Variable slope ena Enable variable slop Activates the variab reference change fr Variable slope rate and deceleration time 1 23.29 Variable slope (rpm). Speed reference (rpr 23.01 Speed referen	ble Dec. Ile slope function, whom the overriding country and the internal drivings have to be faster and 23.13 Decelerate rate defines the spans	hich contro control syste re ramp are re than the contion time 1 coeed ramp	m. connected in complete varia	series. Thu able slope ra	is, the rampate time. Se	g a speed acceleration e 23.12			
	t (ms) = cycle time of the speed reference from the overriding control system. A (rpm) = speed reference change during cycle time t (ms). Note: If the cycle time t (ms) of the speed reference from the overriding control system and 23.29 Variable slope rate are equal, the shape of 23.02 Speed reference ramp output is a straight line. Other [bit]; source selection. 0: Disable; disable variable slope. 1: Enable; enable variable slope (not available in local control).									
	0 1	Disable	-	1 = 1	n	у	Parameter			
23.29	Variable slope rate Variable slope rate. Defines the rate of the speed reference change when variable slope is enabled. See 23.28 Variable slope enable. For the best results, use the speed reference cycle time.									
23 32	Direct speed refere		ms	1 = 1 ms	n	у	Parameter			
23.32	Direct speed reference Feeds the speed recontrol word 1 = 1. Other; source select 0: Zero; 0 rpm, speed reference 3: 22.07 Speed reference 3: 22.08 Auxiliary selection 4: Al1 scaled; 12.12 5: Al2 scaled; 12.22 6: Al3 scaled; 12.32 7: FBA A reference 8: FBA A reference selection for the speed reference selectio	ference direct into the stion. ed reference is set the second of the se	o zero. d reference 2.08 Auxilia ference 1.).		by 06.10.B	00 Auxiliary			

Index	Name										
	Text										
	Range	Default	Unit	Scale/	Volatile	Change	Туре				
				Fbeq16		running					
	9: FBA B reference 1; 03.07 FBA B reference 1.										
	10: FBA B reference	2; 03.08 FBA B refe	rence 2.								
	11: EFB reference 1;	03.09 EFB referenc	e 1.								
	12: EFB reference 2;	03.10 EFB reference	e 2.								
	13: DDCS controller										
	14: DDCS controller ref 2 ; 03.12 DDCS controller ref 2.										
	15: M/F or D2D ref 1 ; 03.13 M/F or D2D ref 1.										
	16: M/F or D2D ref 2 ; 03.14 M/F or D2D ref 2.										
	17: Motor potentiometer reference; 22.80 Motor potentiometer reference.										
	18: Process PID output actual; 40.01 Process PID output actual.										
	19: Encoder 1 speed; 90.10 Encoder 1 speed.										
	20: Encoder 2 speed; 90.20 Encoder 2 speed.										
		21: OnBoard encoder ; 94.04 OnBoard encoder speed.									
	26: Constant speed 6; 22.31 Constant speed 6.										
	27: Constant speed 7	27: Constant speed 7; 22.32 Constant speed 7.									
	0 27	22.07 Speed	-	1 = 1	n	у	Parameter				
		reference									

24 Speed reference conditioningSpeed error calculation, speed error window control configuration and speed error (Δn) step.

Index	Name									
24.01	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
24.01	Used speed reference									
	Speed reference after Displays the speed reference correct reference scaling. Used for speed error	eference after spe ion, 30.11 M1 min calculation.	ed correction	, 30.12 M1 m	aximum spo		14 Speed			
24.02	-30000.00 30000		rpm	See 46.02	у	n	Signal			
	Speed feedback after Displays the speed for speed error	er speed feedback eedback after spe r calculation.		scaling. See	24.15 Spee	ed feedback	scaling.			
	-30000.00 30000	.00 -	rpm	See 46.02	у	n	Signal			
24.00	Filtered speed error Displays the speed error fil $\Delta n = 24.01$ Used speed -30000.00 30000.	(Δn). error after filters ar ter time 2. eed reference - 24			· (error filter ti	me 1 and			
24.04	Speed error inverte				17	I	1 - 0 -			
24.04	Inverted speed error ($-\Delta n$). Displays the inverted speed error (unfiltered). $\Delta n = 24.01$ Used speed reference - 24.02 Used speed feedback.									
24.11	Speed correction	.00 -	rpm	1066 40.02	У	n	Signal			
⊾ -7.11	Speed reference cor The speed reference This is useful to trim machine.	correction is add								

Index	Name										
	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
	Note : Due to safety rea active.	sons, the speed c	correction	s not applied	when any	of the stop f	unctions are				
	-30000.00 30000.00	0.00	rpm	See 46.02	n	y	Parameter				
24.14	Speed reference scali										
	Speed reference scaling factor.										
	Defines a scaling factor	between 23.03 S	peed refe			speed refer					
	-325.00 325.00	1.00	-	100 = 1	n	у	Parameter				
24.15	Speed feedback scalir	ng									
	Speed feedback scaling										
	Defines a scaling factor		lotor spee		and 24.02 L	Jsed speed					
	-325.00 325.00	1.00	-	100 = 1	n	у	Parameter				
24.18	Speed error filter time	1									
	may cause speed controcontradict one another. Note: There are three deconstants smaller three 24.18 Speed error for	A very long filter to a street time is filters for stiller time is filtering an 30 ms. Ilter time 1 and 24	time const speed feed ng the spe 4.19 Speed	ant results in dback and spoed feedback and feedback and error filter tires	unstable co eed error: and should me 2 are fill	ontrol. be used for tering the sp	filter time				
	should be used for f 24.19 Speed error f		ts greater	than 30 ms. S	Set 24.18 S	peed error t	filter time 1 =				
	0 32500	0	ms	1 = 1 ms	n	y	Parameter				
24.19	Speed error filter time	2									
	Speed error (Δn) filter ti										
	See 24.18 Speed error	filter time 1.			1						
	0 32500	0	ms	1 = 1 ms	n	у	Parameter				
24.20	RFE speed filter										
	Source to enable the RI		ice FEequ	ency filter).							
	Enables/Disables the R										
	The speed error value s					2 nd order ba	and-elimination				
	filter to eliminate the am					of fraguence	ov filtoro				
	Note: Tuning the resonant Incorrect tuning can am										
	machinery. To ensure the										
	changing the RFE filter		- p	,							
	0 = Disable RFE filter.	· ·									
	1 = Enable RFE filter.										
	0: Disable RFE filter; 0										
	1: Enable RFE filter; 1,		·	1 .	1	1	1_				
	0 1	Disable RFE filter	-	1 = 1	n	У	Parameter				
24.21	RFE filter zero frequer		1	1	1	1	1				
	RFE filter zero frequenc										
	Defines the zero freque		ter. The va	alue must be s	set near the	e resonance	frequency.				
	which is filtered out before the drawing shows the	ore the speed con	troller.				- 4				

ndex	Name Toyt							
	Text	T	<u> </u>			1		
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре	
	$20\log_{10} H(\omega) $							
	20							
	0							
	-20 -	: V						
	-	· •						
	-40 -							
		•						
1.00	-60 0	50 100	150					
			f (Hz)					
	0.50 500.00	45.00	Hz	1 = 1 Hz	n	у	Parameter	
.22	Defines the damp	amping Imping coefficient. Ding coefficient for 24 Strict on of the resonance			ncy. A value	e of 0 corres	ponds to the	
.22	RFE filter zero da Defines the damp	imping coefficient. Ding coefficient for 24			ncy. A value	e of 0 corres	sponds to the	
.22	RFE filter zero da Defines the damp maximum elimina 20log ₁₀ H(\omega)	imping coefficient. Ding coefficient for 24 ation of the resonance $f_{\text{Zero}} = 45 \text{ Hz}$ $f_{\text{Zero}} = 0.250$			ncy. A value	e of 0 corres	sponds to the	
.22	RFE filter zero da Defines the damp maximum elimina 20log ₁₀ H(\omega)	imping coefficient. Ding coefficient for 24 partial properties and the resonance of the r			ncy. A value	e of 0 corres	sponds to the	
.22	RFE filter zero da Defines the damp maximum elimina 20log ₁₀ H(\omega)	imping coefficient. Ding coefficient for 24 partial properties and the resonance of the r			ncy. A value	e of 0 corres	sponds to the	
.22	RFE filter zero da Defines the damp maximum elimina 20log ₁₀ H(\omega)	imping coefficient. Ding coefficient for 24 partial properties and the resonance of the r			ncy. A value	e of 0 corres	sponds to the	
.22	RFE filter zero da Defines the damp maximum elimina 20log ₁₀ H(\omega) 20 -20 -40	Imping coefficient. Ding coefficient for 24 partial properties and the resonance of the r	e frequency:		ncy. A value	e of 0 corres	sponds to the	
.22	RFE filter zero da Defines the damp maximum elimina 20log ₁₀ H(\omega) 20 -20 -40	imping coefficient. Ding coefficient for 24 partial properties and the resonance of the r	e frequency:		ncy. A value	e of 0 corres	sponds to the	
.22	RFE filter zero da Defines the damp maximum elimina 20log ₁₀ H(\omega) 20 -20 -40 -60 0 5	figure 100 mping coefficient. figure 24 mping coefficient for 24 mping coefficient for 24 mping coefficient for 24 mping coefficient. figure 24 mping coefficient. figure 24 mping coefficient. figure 24 mping coefficient. figure 24 mping coefficient. figure 24 mping coefficient. figure 24 mping coefficient. figure 24 mping coefficient.	150 f (Hz)					
.22	RFE filter zero da Defines the damp maximum elimina 20log ₁₀ H(\omega) 20 -20 -40 -60 Note: To ensure,	Imping coefficient. Ding coefficient for 24 partial properties and the resonance of the r	150 f (Hz) requency ba	ınd is filtered ı	rather than a	amplified, th	ie value in	
.22	RFE filter zero da Defines the damp maximum elimina 20log ₁₀ H(\omega) 20 -20 -40 -60 Note: To ensure,	fzero = 45 Hz fzero = 0.250 fzero = 45 Hz fzero = 0.250	150 f (Hz) requency ba	ınd is filtered ı	rather than a	amplified, th	ie value in lamping.	
.22	RFE filter zero da Defines the damp maximum elimina 20log ₁₀ H(\omega) 20 -20 -40 -60 0 Note: To ensure, 24.22 RFE filter zero da Defines the damp maximum elimina 20log ₁₀ H(\omega)	imping coefficient. Ding coefficient for 24 partial properties and the resonance of the r	150 f (Hz) requency ba	and is filtered i	rather than a	amplified, th	ne value in	
	RFE filter zero da Defines the damp maximum elimina 20log ₁₀ H(\omega) 20 -20 -40 -60 Note: To ensure, 24.22 RFE filter z -1.000 1.000 RFE filter pole fre RFE filter pole fre	Imping coefficient. Ding coefficient for 24 particular and the resonance of the resonance	150 f (Hz) requency bae smaller tha	and is filtered i	rather than a	amplified, th	ie value in lamping.	

Parameter

X	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	$20\log_{10} H(\omega) $									
	40	f _{zero} = 45 Hz	7							
	20 -	$f_{\text{pole}} = 50 \text{ Hz}$ $\int \xi_{\text{zero}} = 0$ $\xi_{\text{pole}} = 0.250$								
	0	Spoile State	<u>.</u>							
	-20 - f _{zero} = 45 Hz	f _{zero} = 45 Hz								
	$-40 - \begin{cases} f_{\text{pole}} = 30 \text{ Hz} \\ \xi_{\text{zero}} = 0 \\ \xi_{\text{pole}} = 0.250 \end{cases}$	$ \begin{cases} f_{\text{pole}} = 40 \text{ Hz} \\ \xi_{\text{zero}} = 0 \end{cases} $								
	-60 + Spole 0.200	$\xi_{\text{pole}} = 0.250$	100							
			f(Hz)							
		in 24.23 RFE filter pole cy, the frequencies nea								

Hz

0.50 ... 500.00 **24.24** RFE filter pole damping

RFE filter pole damping coefficient.

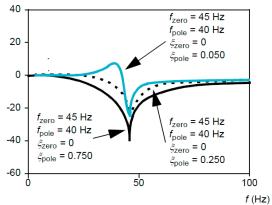
40.00

Defines the damping coefficient for 24.23 RFE filter pole frequency. The coefficient shapes the frequency response of the RFE filter. A narrower bandwidth results in better dynamic properties. By setting 24.24 RFE filter pole damping = 1, the effect of the pole is eliminated. $20\log_{10}|H(\omega)|$

1 = 1 Hz

n

V



Note: To ensure, that the resonance frequency band is filtered rather than amplified, the value in 24.22 RFE filter zero damping must be smaller than the value in 24.24 RFE filter pole damping.

-1.000 ... 1.000 | 0.000 | - | 100 = 1 | n | y | Parameter

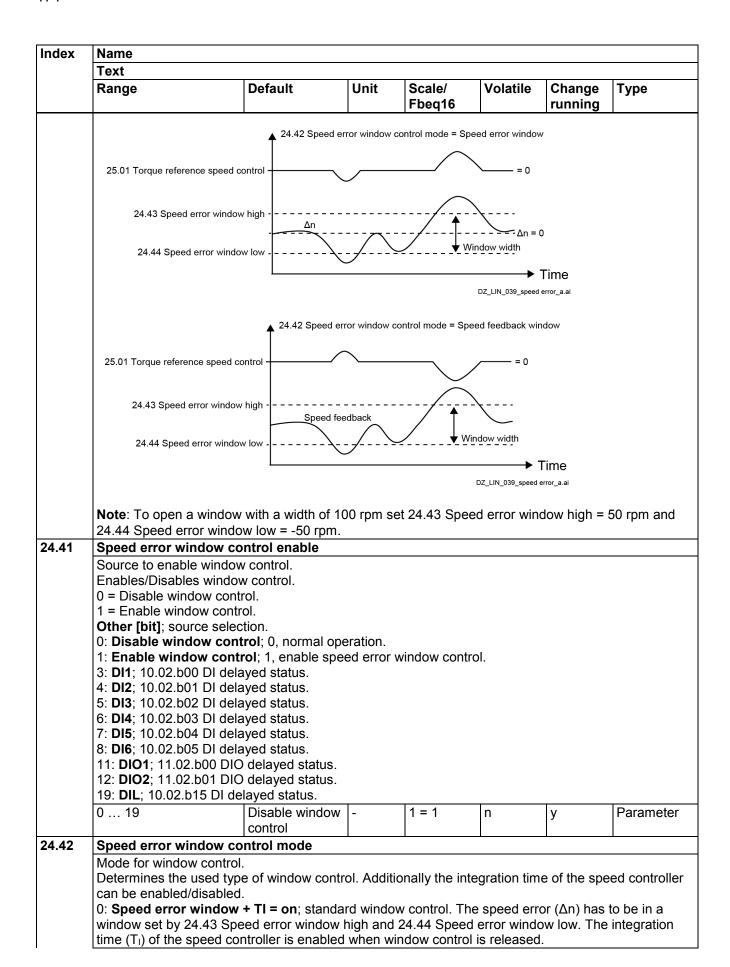
Concept of window control:

The concept of window control is to block the speed controller as long as the speed error (Δn) or the speed feedback remains within the window set by 24.43 Speed error window high and 24.44 Speed error window low. This allows the external torque reference to affect the process directly. See 26.74 Torque reference ramp output.

If the speed error or the speed feedback exceeds the programmed window, the speed controller becomes active and influences the process by means of 25.01 Torque reference speed control. The activation is indicated by 06.21.b03 Speed control status word.

To release window control use 24.42 Speed error window control mode and set the drive to Add operating mode. See 19.12 Ext1 control mode and 19.14 Ext2 control mode.

This function is sometimes also called dead band control or strip break protection. It forms a speed supervision function for a torque-controlled drive, preventing the motor from running away if the material, which is under tension, breaks.



Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	set by 24.43 Speed speed controller is a Typically used for to 10: Speed feedback window high and 24 disabled when window high are 24 disabled when window to 10: Typically used for to 10: Example 1: To get 24.42 Speed error with 24.43 Speed error with 24.43 Speed error with 24.44 Speed error with 24.44 Speed error with 24.44 Speed error with 24.44 Speed error with 24.44 Speed error with 24.43 Speed error with	dow + TI = off; stand error window high a disabled when window orque followers to lime to window; the speed 4.44 Speed error window control is released orque controlled test a window of 10 rpm window control mode window high = 5 rpm a window low = -5 rpm a window control mode window high = 1000 window low = 500 rp a window control mode window control mode window control mode window high = 1000 rp window low = -50 rpr	and 24.44 Sow control in the different and feedback down low. The different area and the different and the different area and the differe	ow control. The speed error win s released. ial speed. It has to be in a speed in the integration of the integration of the speed error window the speed error w	a window so time of the peed or window for set: TI = off. eed feedback d feedback	or has to be the integrated by 24.43 expeed conders.	ion time of the Speed error			
	0 10	Speed error window + TI = off	-	1 = 1	n	У	Parameter			
24.43	Speed error window high									
	Upper boundary of the speed error window. Upper boundary for the window control, when the speed error ($\Delta n = 24.01$ Used speed reference - 24.02 Used speed feedback) is positive.									
24.44	-30000.00 30000		rpm	See 46.02	n	у	Parameter			
4	Speed error window lowLower boundary of the speed error window.Lower boundary for the window control, when the speed error (Δn = 24.01 Used speed reference - 24.02 Used speed feedback) is negative30000.00 30000.00 -50.00 rpm See 46.02 n y Parameter									
24.46	Speed error step		1.14	1 2 2 2 2 2 2 2 2	_1	17	1 2			
27. 4 0	Speed error (Δn) step. Defines an additional speed error step given to the input of the speed controller. The given min/max values are limited by 30.11 M1 minimum speed and 30.12 M1 maximum speed. Note: Make sure the speed error step is removed when a stop command is given.									
	-30000.00 30000	0.00 0.00								

25 Speed control

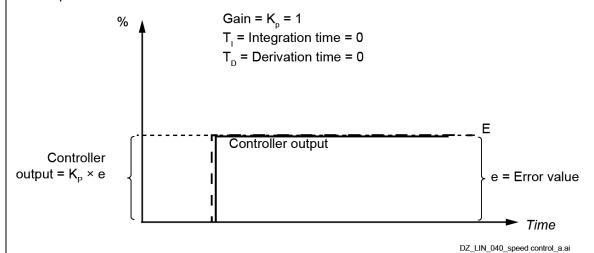
Speed controller settings.

Index	Name										
	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
25.01	Torque reference speed control										
	Limited speed controller output torque.										
	Displays the torque reference in percent of 99.02 M1 nominal torque after limitation. See 30.13										
	Speed control m	in torque and 30.1	14 Speed control	ol max torque.							
	-325.00 325.00 - % See 46.04 y n Signal										
25.02	Speed proportional gain 1										
	Proportional gain 1 (K _P) of the speed controller.										

Index	Name							
	Text							
	Range	Default	Unit	Scale/	Volatile	Change	Туре	
				Fbea16		running		

The proportional gain of the speed controller can be released by means of 25.13 Speed controller set selection.

Too high a gain may cause speed oscillation. The figure below shows a controller output after an error step when the error remains constant:



Example: The speed controller generates 15 % of motor nominal torque with 25.02 Speed proportional gain 1 = 3, if the speed error (Δ n) is 5 % of 46.02 M1 speed scaling actual.

0.00 ... 325.00 | 5.00 | - | 100 = 1 | n | y | Parameter

25.03 Speed integration time 1

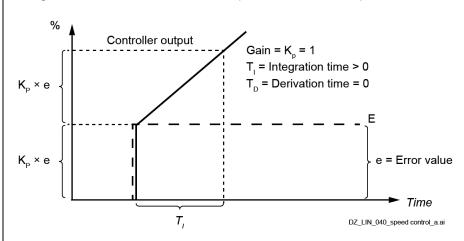
Integration time 1 (T_1) of the speed controller.

The integration time of the speed controller can be released by means of 25.13 Speed controller set selection. Setting the integration time to zero disables the integral part of the speed controller and resets the integrator.

The integration time defines the time within the integral part of the speed controller achieves the same value as the proportional part, when the error value is constant.

The integrator has anti-windup control for operation at torque or current limit.

The figure below shows a controller output after an error step when the error remains constant:



Example: The speed controller generates 15 % of motor nominal torque with 25.02 Speed proportional gain 1 = 3, if the speed error (Δ n) is 5 % of 46.02 M1 speed scaling actual. On that condition and with 25.03 Speed integration time 1 = 300 ms follows:

Index	Name										
	Text										
	Range	С	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	The speed controller generates 30 % of motor nominal torque, if the speed error is constant, after 300 ms are elapsed. 15 % derive from the proportional part and 15 % derive from the integral part.										
	0 32500		500	ms	1 = 1 ms	n	у	Parameter			
25.04	Speed derivation	on time									
	Speed controller controller, others For normal applicative action time, the more the control more restilter to eliminate The figure below $K_{\rm p} \times T_{\rm d} \times \frac{\Delta e}{T_{\rm s}}$	wise as a Fications, den boosts the speed components of external downwards of the components of the co	PID controller. erivation time she controller outportroller output r disturbances. Secontroller output	ould be out if the is boost The spece ee 25.05	left at zero. error value c ed during the ed error deriv Derivation filt	hanges. The change. The ative must le fer time. hen the erro	e longer the ne derivation ne filtered w nor remains c	derivation makes the vith a low pas			

 T_1 = integration time > 0

 T_D = derivation time > 0

 T_S = sample time period = 500 μ s

 Δe = error value change between two samples

0 32500)	ms	1 = 1 ms	n	y	Parameter
---------	---	----	----------	---	---	-----------

25.05 **Derivation filter time**

Derivation filter time constant.

Derivation filter time constant for 25.04 Speed derivation time.

0 32500	8	ms	1 = 1 ms	n	V	Parameter

25.06 Acceleration compensation derivation time

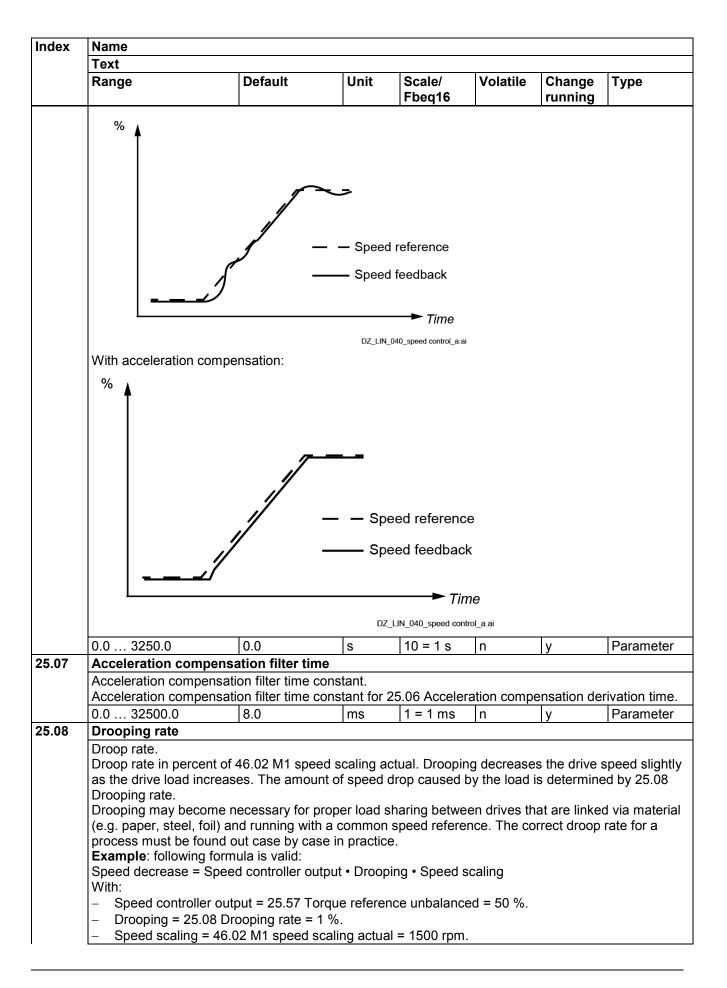
Acceleration compensation derivation time.

Derivation time for the acceleration compensation. Setting the acceleration compensation to zero

In order to compensate for high inertia loads during acceleration/deceleration, a derivative of 23.03 Speed reference 7 is added to the output of the speed controller.

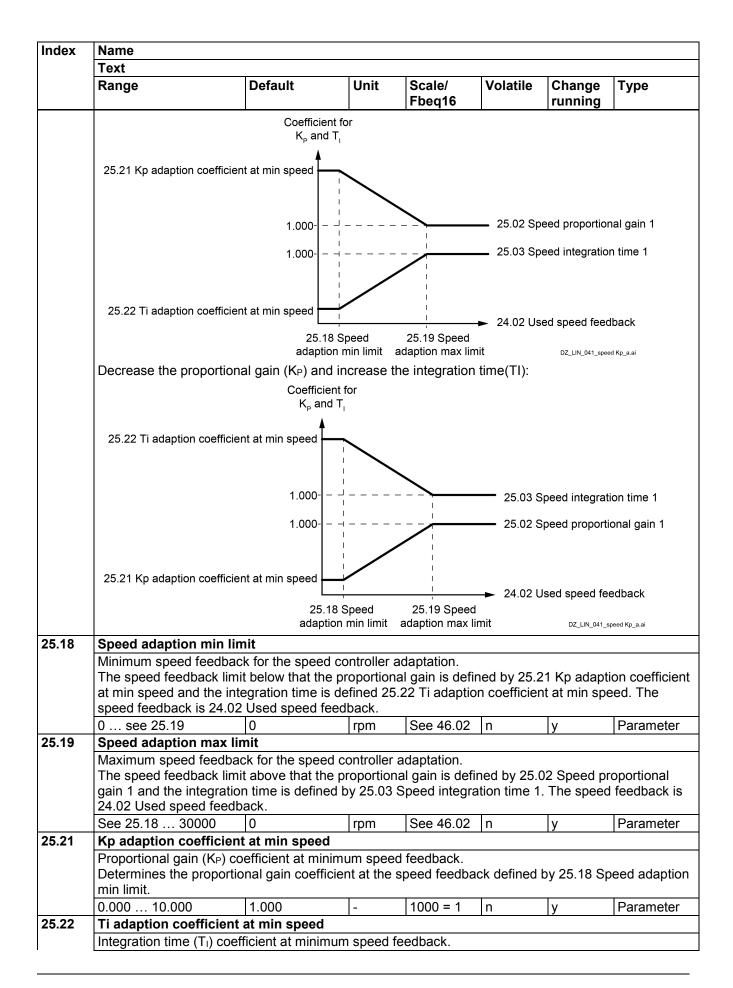
Note: As a rule, use a value between 50 ... 100 % of the sum of the mechanical time constants of the motor and the driven machinery.

The figures below shows the speed responses when a high inertia load is accelerated along a ramp. Without acceleration compensation:



	Text Range Follows: Speed decrease = Motor speed 46.02 M1 speed so		Unit n = 7.5 rpm.		Volatile	Change running	Туре	
	Follows: Speed decrease = Motor speed 46.02 M1 speed so	0.5 x 0.01 x 150 rpm in % of caling actual No drooping		Fbeq16			Туре	
	Speed decrease = Motor speed 46.02 M1 speed se	in % of caling actual No drooping	n = 7.5 rpm		rooping rate			
	Motor speed 46.02 M1 speed so	in % of caling actual No drooping	n = 7.5 rpm.		rooping rate			
	100 %			- 25.08 D	rooping rate			
	100 %	Drooping		25.08 Di	rooping rate			
				1				
					eed controlle ive load	er output /		
					DZ_LIN_040_sp	eed control_a.ai		
	0.00 100.00	0.00	%	100 = 1 %	n	y	Parameter	
25.09	Speed control bal	lancing enable						
	motor back to being speed controlled. Balancing is also possible in the speed ramp. See 23.26 Ramp out balancing enable 0 = Enable output. 1 = Balance output. Other [bit]; source selection. 0: Enable output; 0, enable speed controller output. Normal operation. 1: Balance output; 1, force speed controller to 25.10 Speed control balancing refere 3: DI1; 10.02.b00 DI delayed status. 4: DI2; 10.02.b01 DI delayed status. 5: DI3; 10.02.b02 DI delayed status. 6: DI4; 10.02.b03 DI delayed status. 7: DI5; 10.02.b04 DI delayed status. 8: DI6; 10.02.b05 DI delayed status. 11: DIO1; 11.02.b00 DIO delayed status. 12: DIO2; 11.02.b01 DIO delayed status. 19: DIL; 10.02.b15 DI delayed status. 0 19 Enable output - 1 = 1 n y							
-	Speed control bal							
	Defines the referer The output of the s	utput balancing refer nce for speed control speed controller is for 9 Speed control bala 0.00	ler output broed to this	value when	speed contro			
25.11	Proportional gain	l .			L		•	
-	Proportional gain (l Proportional gain o 25.11 Proportional proportional gain 1	K _P) upon an Off3 (en of the speed controlle gain emergency sto or 25.14 Speed pro	er when an o p is ≠ zero.	Off3 (emerge Otherwise the contract of the con	ency stop) co ne value of ei		Speed	
	0.00 325.00	0.00	-	100 = 1	n	у	Parameter	
-	Speed controller	set selection d controller paramete						

Index	Name										
	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
	Selects the source that switches between the two sets of speed controller parameters. 25.02 Speed proportional gain 1, 25.03 Speed integration time 1, 25.14 Speed proportional gain 2 and 25.15 Speed integration time 2. 0 = Speed controller set 1. 1 = Speed controller set 2. Other [bit]; source selection. 0: Speed controller set 1; 0, proportional gain 1 and integration time 1 are active. Normal operation. 1: Speed controller set 2; 1, proportional gain 2 and integration time 2 are active. 2: Speed level; if 90.01 Motor speed for control ≤ 46.31 Above speed level , then Speed controller set 1 is active. If 90.01 Motor speed for control > 46.31 Above speed level , then Speed controller set 2 is active. 3: DI1; 10.02.b00 DI delayed status. 4: DI2; 10.02.b01 DI delayed status. 5: DI3; 10.02.b02 DI delayed status. 6: DI4; 10.02.b03 DI delayed status. 7: DI5; 10.02.b04 DI delayed status. 8: DI6; 10.02.b05 DI delayed status. 11: DIO1; 11.02.b00 DIO delayed status. 12: DIO2; 11.02.b01 DIO delayed status. 19: DIL; 10.02.b15 DI delayed status. 20: Speed error; if 24.04 Speed error inverted ≤ 46.31 Above speed level , then Speed controller set 1 is active. If 24.04 Speed error inverted > 46.31 Above speed level , then Speed controller set 2 is active. 21: Motor1/Motor2; used speed controller set depends on setting of 42.01 Motor 1/2 selection. If										
	42.01 Motor 1/2 s 2 use Speed conf 0 21	election = Motor 1 use roller set 2. Speed	Speed cor	1 = 1	If 42.01 Mo	tor 1/2 selector	ction = Motor Parameter				
25.14	Canad area artic	controller set 1									
25.14	See 25.02 Speed	2 (K _P) of the speed coproportional gain 1.	ntroller.				I				
25.15	0.00 325.00	5.00	-	100 = 1	n	У	Parameter				
25.15	Speed integration time 2 Integration time 2 (T _I) of the speed controller. See 25.03 Speed integration time 1.										
	0 32500	2500	ms	1 = 1 ms	n	у	Parameter				
	Speed adaptive proportional gain and integration time: In certain applications, it is useful to increase/decrease proportional gain and decrease/increase integration time of the speed controller at low speeds to improve the performance of the speed controller. Thus, it is possible to adapt proportional gain and integration time according to the speed feedback. See 25.02 Speed proportional gain 1, 25.03 Speed integration time 1 and 24.02 Used speed feedback. This is done by multiplying proportional gain and integration time by coefficients at certain speeds. The coefficients are defined individually for both proportional gain and integration time. When the speed feedback is below or equal to 25.18 Speed adaption min limit, proportional gain is multiplied by 25.21 Kp adaption coefficient at min speed and integration time is multiplied by 25.22 Ti adaption coefficient at min speed. When the speed feedback is between 25.18 Speed adaption min limit and 25.19 Speed adaption max limit, the coefficients for proportional gain and integration time are calculated linearly. When the speed feedback is equal to or above 25.19 Speed adaption max limit, no adaptation takes place. Thus, the coefficient is 1. The speed adaptation is valid for positive and negative speeds. Increase the proportional gain (K _P) and decrease the integration time (T _I):										



Index	Name		·		·	·			
	Text								
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
	Determines the integration limit.	gration time coefficie	ent at the s	peed feedbac	k defined by	y 25.18 Spe	eed adaption		
	0.000 10.000	1.000	-	1000 = 1	n	у	Parameter		
	It is possible to adapt 25.02 Speed proporti smooth out disturban This is done by multip When the torque refermin torque. When the torque refermoportional gain is confident with the torque refermance. Thus, the coeffiltering can be applied the load adaptation in	tional gain 1 and 25 nces caused by smatiplying proportional erence is 0 %, properence is between 0 calculated linearly. Ference is equal to officient is 1.	.01 Torque all loads an gain by a cortional gain 3 % and 25 r above 25 eference us	reference sped backlashes oefficient with n is multiplied. 25 Torque add. 25 Torque adding 25.26 Torque	eed control. in a certain by 25.27 K aption max aption max	This can be torque ranged adaption limit, the call limit, no ac	e used to ge. coefficient at oefficient for daptation takes		
	25.27 Kp adaption coeff	Coefficient fo	25.25 To		ption	Speed propor	rtional gain 1		
			adaption m	nax limit			DZ_LIN_041_speed Kp_a.ai		
25.25	Torque adaption max limit Maximum torque reference for the speed controller adaptation. The torque reference limit in percent of 99.02 M1 nominal torque above which the proportional gain defined by 25.02 Speed proportional gain 1. The torque reference is 25.01 Torque reference speed control. 0.00 325.00								
25.26	Torque adaption fi			1220 .0.01	1	1,7	1		
-	Filter time constant for the speed controller adaptation. Filter time constant to soften the proportional gain rate of change.								
	0 32500	100	ms	1 = 1 ms	n	у	Parameter		
25.27	Kp adaption coeffi	cient at min torque)		·		•		
	Proportional gain (K Determines the prop	,			nce.				
	0.000 10.000	1.000	-	1000 = 1	n	у	Parameter		
25.30	Integration time in Force integration tin Selects the source t 0 = Automatic. 1 = Initial reference. Other [bit]; source: 0: Automatic; 0, the Ready reference is: from Torque to Special	ne (T _I) to 25.31 Intego force the integrationselection. e integration time is set, see 06.15.b02 N	on time. set to 25.3 ^r Main Status	1 Integration ti	me initial re				

Index	Name												
	Text												
	Range	Default	Unit	Scale/	Volatile	Change	Type						
				Fbeq16		running							
	1: Initial reference;		time (T ₁) to	25.31 Integra	ation time in	nitial referen	ice.						
	3: DI1 ; 10.02.b00 D												
	4: DI2 ; 10.02.b01 D												
		5: DI3 ; 10.02.b02 DI delayed status. 6: DI4 ; 10.02.b03 DI delayed status.											
	7: DI5 ; 10.02.b04 DI delayed status.												
	8: DI6 ; 10.02.b05 D												
	11: DIO1 ; 11.02.b00		e										
	12: DIO2 ; 11.02.b0												
	19: DIL ; 10.02.b15		0.										
	0 19	Automatic	-	1 = 1	n	у	Parameter						
25.31	Integration time in	itial reference											
	Initial reference of the		T _I).										
				in percent of	99.02 M1 r	ominal torg	ue. The						
	Initial value of the speed controller integration time in percent of 99.02 M1 nominal torque. The integration time is set:												
	 As soon as Ready reference is set. See 06.15.b02 Main Status Word. 												
	 If 19.01 Actual operation mode changes from Torque to Speed. 												
	-325.00 325.00	0.00	%	See 46.04	n	у	Parameter						
25.53	Torque proportion	al reference	•				1						
	Proportional gain (K	Proportional gain (K _P) part of the speed controller.											
	Displays the propor	tional gain (K _P) part	of the spee	ed controller in	percent of	99.02 M1 r	nominal						
	torque.	. , , ,	•		•								
	-325.00 325.00	-	%	See 46.04	у	n	Signal						
25.54	Torque integral ref	erence											
	Integration time (T _I) part of the speed controller.												
	Displays the integration time (T _I) part of the speed controller in percent of 99.02 M1 nominal torque.												
	-325.00 325.00	-	%	See 46.04	у	n	Signal						
25.55	Torque derivative	reference					•						
	Derivation time (T _D)	part of the speed c	ontroller.										
	Displays the derivat	ion time (T _D) part of	the speed	controller in p	ercent of 99	9.02 M1 nor	minal torque.						
	-325.00 325.00	-	%	See 46.04	у	n	Signal						
25.56	Torque acceleration	n compensation	•			•							
	Output of the accele	eration compensatio	n function.										
	Displays the output			ion function in	percent of	99.02 M1 n	ominal torque.						
	-325.00 325.00	-	%	See 46.04	у	n	Signal						
25.57	Torque reference u	ınbalanced		-1			1 0						
	Unlimited speed cor	ntroller output torque	e.										
	Unlimited speed controller output torque.												
	Displays the unlimited speed controller output torque after acceleration compensation in percent of												
	Displays the unlimit		output torq	ue anei accei	eration con	iperisation i	n percent or						

26 Torque reference chainSettings for the torque reference chain.

Index	Name Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
26.01	Torque reference to limitation									
	Torque reference after gear backlash compensation. Displays the torque reference in percent of 99.02 M1 nominal torque after gear backlash compensation and before limitation.									

Index	Name							
	Text							
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре	
	-325.00 325.00) -	%	See 46.04	у	n	Signal	
26.02	Torque reference	e used						
		after torque corre torque reference i ntrol.		9.02 M1 nomi	nal torque a	fter torque o	correction and	
	-325.00 325.00) -	%	See 46.04	у	n	Signal	
26.05	Motor torque un	filtered						
	Unfiltered motor t	orque.						
	Displays the unfilt				ninal torque.			
	-325.00 325.00) -	%	See 46.04	у	n	Signal	
26.07	External torque	reference 1						
	1st external torque							
		eference 1 in perce			lue.	1		
	-325.00 325.00		%	See 46.04	n	y	Parameter	
26.08	External torque							
	2 nd external torqu							
		eference 2 in perce			que.	1		
	-325.00 325.00		%	See 46.04	n	у	Parameter	
26.11	Torque reference 1 source Selects torque reference source 1.							
	Other — 0 — References —	26.11	ADD O SUB O MUL O MIN O	erence 1	26.14	26.72		
	Other — 0 — References —	26.71	MAX	erence 2		SF_880_02	5_DCS_speed reference_a.a	
	Other; source sel 0: Zero; 0 %, torq 1: External torqu 2: External torqu 4: Al1 scaled; 12	ue reference is se le ref 1; 26.07 Ext	ernal torque re					

8: **FBA A reference 2**; 03.06 FBA A reference 2. 9: **FBA B reference 1**; 03.07 FBA B reference 1. 10: **FBA B reference 2**; 03.08 FBA B reference 2. 11: **EFB reference 1**; 03.09 EFB reference 1. 12: **EFB reference 2**; 03.10 EFB reference 2.

13: DDCS controller ref 1; 03.11 DDCS controller ref 1.

	Name														
	Text														
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре								
	14: DDCS controller ref 2; 03.12 DDCS controller ref 2.														
	15: M/F or D2D ref 1 ; 03.13 M/F or D2D ref 1.														
	16: M/F or D2D ref 2 ; 03.14 M/F or D2D ref 2. 17: Motor potentiometer reference ; 22.80 Motor potentiometer reference.														
		PID output actual; 40.	01 Process P		ual.	1	T								
	0 18	Zero	-	1 = 1	n	у	Parameter								
6.12	· · · · · · · · · · · · · · · · · · ·	ence 2 source													
		e reference source 2.													
		s and diagram, see 26.	11 Torque ref			1	1								
	0 18	Zero	-	1 = 1	n	у	Parameter								
6.13		ence function													
	Torque reference function.														
	Selects a mathematical function between torque reference 1 and torque reference 2. See 26.11														
		ence 1 source.	Lb.: 00 44 T-		4										
		ue reference 1 selected				s usea.									
		+ ref 2); the sum of the - ref 2); the result of to				o 2 io ugod									
	3: Mul (ref 1 • ref 2) ; the multiplication of the two torque references is used. 4: Min (ref 1, ref 2) ; the smaller of the two torque references is used.														
		, ref 2) ; the greater of th													
	05	Ref 1		1 = 1	n n	у	Parameter								
6.14		_		11-1	11	y	T arameter								
). I4	Torque reference 1/2 selection Selection between torque reference 1 and torque reference 2.														
	_	e selection between tor	que reterenc	e 1 and torqu	e reterence a	2. See 26.1	1 Forque								
	reference 1.	f 4													
	0 = Torque re														
	1 = Torque re	ource selection.													
		ference 1; 0, normal op	eration												
	1: Torque ref		cration.												
						3: DI1 ; 10.02.b00 DI delayed status.									
		4: DI2 ; 10.02.b01 DI delayed status.													
	5: DI3 ; 10.02.b02 DI delayed status. 6: DI4 ; 10.02.b03 DI delayed status.														
	6: DI4 ; 10.02.b03 DI delayed status. 7: DI5 ; 10.02.b04 DI delayed status.														
		b03 DI delayed status.													
	7: DI5 ; 10.02.	b03 DI delayed status.													
	7: DI5 ; 10.02. 8: DI6 ; 10.02.	b03 DI delayed status. b04 DI delayed status.	atus.												
	7: DI5 ; 10.02. 8: DI6 ; 10.02. 11: DIO1 ; 11.	b03 DI delayed status. b04 DI delayed status. b05 DI delayed status.													
	7: DI5 ; 10.02. 8: DI6 ; 10.02. 11: DIO1 ; 11. 12: DIO2 ; 11.	b03 DI delayed status. b04 DI delayed status. b05 DI delayed status. 02.b00 DIO delayed sta	atus.												
	7: DI5 ; 10.02. 8: DI6 ; 10.02. 11: DIO1 ; 11. 12: DIO2 ; 11.	b03 DI delayed status. b04 DI delayed status. b05 DI delayed status. 02.b00 DIO delayed status. 02.b01 DIO delayed status.	atus.	1 = 1	n	у	Parameter								
6.15	7: DI5 ; 10.02. 8: DI6 ; 10.02. 11: DIO1 ; 11. 12: DIO2 ; 11. 19: DIL ; 10.02	b03 DI delayed status. b04 DI delayed status. b05 DI delayed status. 02.b00 DIO delayed status. 02.b01 DIO delayed status.	atus.	1 = 1	n	у	Parameter								
6.15	7: DI5 ; 10.02. 8: DI6 ; 10.02. 11: DIO1 ; 11. 12: DIO2 ; 11. 19: DIL ; 10.02 0 19 Load share	b03 DI delayed status. b04 DI delayed status. b05 DI delayed status. 02.b00 DIO delayed status. 02.b01 DIO delayed status. 2.b15 DI delayed status. Torque reference	atus.	1 = 1	n	у	Parameter								
6.15	7: DI5 ; 10.02. 8: DI6 ; 10.02. 11: DIO1 ; 11. 12: DIO2 ; 11. 19: DIL ; 10.02 0 19 Load share Torque refere	b03 DI delayed status. b04 DI delayed status. b05 DI delayed status. 02.b00 DIO delayed status. 02.b01 DIO delayed status.	atus. s ce 1 -												
6.15	7: DI5 ; 10.02. 8: DI6 ; 10.02. 11: DIO1 ; 11. 12: DIO2 ; 11. 19: DIL ; 10.02 0 19 Load share Torque reference Defines a sca	b03 DI delayed status. b04 DI delayed status. b05 DI delayed status. 02.b00 DIO delayed status. 02.b01 DIO delayed status. 2.b15 DI delayed status. Torque reference. ence scaling factor. aling factor between 26.	atus. ce 1 - 72 Torque re	ference 3 and	d 26.73 Torqi	ue reference	e 4. This								
6.15	7: DI5 ; 10.02. 8: DI6 ; 10.02. 11: DIO1 ; 11. 12: DIO2 ; 11. 19: DIL ; 10.02 0 19 Load share Torque refered Defines a scallows drives	b03 DI delayed status. b04 DI delayed status. b05 DI delayed status. 02.b00 DIO delayed status. 02.b01 DIO delayed status. 2.b15 DI delayed status. Torque reference	atus. ce 1 - 72 Torque re en two motor	ference 3 and	d 26.73 Torqi e mechanica	ue reference	e 4. This								
6.15	7: DI5 ; 10.02. 8: DI6 ; 10.02. 11: DIO1 ; 11. 12: DIO2 ; 11. 19: DIL ; 10.02 0 19 Load share Torque refered Defines a scallows drives	b03 DI delayed status. b04 DI delayed status. b05 DI delayed status. 02.b00 DIO delayed status. 02.b15 DI delayed status. Torque references ence scaling factor. sharing the load between 26. sharing the load between 26.	atus. ce 1 - 72 Torque re en two motor	ference 3 and	d 26.73 Torqi e mechanica	ue reference I plant to be	e 4. This								
	7: DI5; 10.02. 8: DI6; 10.02. 11: DIO1; 11. 12: DIO2; 11. 19: DIL; 10.02 0 19 Load share Torque refere Defines a sca allows drives share the corresponding to the correspondi	b03 DI delayed status. b04 DI delayed status. b05 DI delayed status. 02.b00 DIO delayed status. 02.b01 DIO delayed status. 2.b15 DI delayed status. Torque references ence scaling factor. aling factor between 26. sharing the load between 26. sharing the load between 26. 1.000 1.000	atus. ce 1 - 72 Torque re en two motor	ference 3 and s on the sam master torqu	d 26.73 Torqi e mechanica e reference.	ue reference	e 4. This tailored to								
6.15 6.16	7: DI5; 10.02. 8: DI6; 10.02. 11: DIO1; 11. 12: DIO2; 11. 19: DIL; 10.02 0 19 Load share Torque refere Defines a sca allows drives share the corresponding to the correspondi	b03 DI delayed status. b04 DI delayed status. b05 DI delayed status. 02.b00 DIO delayed status. 02.b01 DIO delayed status. 2.b15 DI delayed status. Torque references ence scaling factor. aling factor between 26. sharing the load between the loa	atus. ce 1 - 72 Torque re en two motor	ference 3 and s on the sam master torqu	d 26.73 Torqi e mechanica e reference.	ue reference I plant to be	e 4. This tailored to								
	7: DI5; 10.02. 8: DI6; 10.02. 11: DIO1; 11. 12: DIO2; 11. 19: DIL; 10.02 0 19 Load share Torque refere Defines a sca allows drives share the corresponding to the correspondi	b03 DI delayed status. b04 DI delayed status. b05 DI delayed status. 02.b00 DIO delayed status. 02.b15 DI delayed status. Torque reference. ence scaling factor. aling factor between 26. sharing the load between	atus. ce 1 - 72 Torque re en two motor use the same	ference 3 and s on the sam master torqu 1000 = 1	d 26.73 Torqi e mechanica e reference. n	ue reference I plant to be	e 4. This tailored to								
	7: DI5; 10.02. 8: DI6; 10.02. 11: DIO1; 11. 12: DIO2; 11. 19: DIL; 10.02 0 19 Load share Torque refere Defines a sca allows drives share the corresponding to the corresponding of the correspondi	b03 DI delayed status. b04 DI delayed status. b05 DI delayed status. 02.b00 DIO delayed status. 02.b15 DI delayed status. Torque reference. cence scaling factor. aling factor between 26. sharing the load between the load betwee	atus. ce 1 - 72 Torque re en two motor use the same	ference 3 and s on the sam master torqu 1000 = 1	d 26.73 Torqi e mechanica e reference. n	ue reference I plant to be	e 4. This tailored to								
	7: DI5; 10.02. 8: DI6; 10.02. 11: DIO1; 11. 12: DIO2; 11. 19: DIL; 10.02 0 19 Load share Torque refered Defines a scallows drives share the corresponding to the corresponding of the correspondin	b03 DI delayed status. b04 DI delayed status. b05 DI delayed status. 02.b00 DIO delayed status. 02.b15 DI delayed status. Torque reference. cence scaling factor. aling factor between 26. sharing the load between the load betwee	atus. ce 1 - 72 Torque re en two motor use the same -	ference 3 and s on the sam master torque 1000 = 1	d 26.73 Torque mechanica e reference. n	ue reference I plant to be y naring. See	e 4. This tailored to Parameter								

ndex	Name						
	Text Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
6.17	Torque referen	nce filter time		i beqie		ranning	
•	Filter time cons	tant for the torque refetime constant for the to		nce.			
	0 32500	0	ms	1 = 1 ms	n	у	Parameter
6.18	Torque ramp (ıp time	l .	•	1		
		ce ramp-up time. the torque reference w	/ill increase	from zero to	99.02 M1 no	minal torque	e.
	0.0 3250.0	0.0	s	10 = 1 s	n	V	Parameter
5.19	Torque ramp of				I	1 7	
	Torque referen	ce ramp-down time.	ill doorooo	- fram 00 00 I	\11 manainal f	to	
	0.0 3250.0	the torque reference w				1	
6.24	Torque additiv	0.0	S	10 = 1 s	n	у	Parameter
.24		itive torque (load comp					
	4: DI2 ; 10.02.bd 5: DI3 ; 10.02.bd 6: DI4 ; 10.02.bd 7: DI5 ; 10.02.bd 8: DI6 ; 10.02.bd 11: DIO1 ; 11.02 12: DIO2 ; 11.02	00 DI delayed status. 01 DI delayed status. 02 DI delayed status. 03 DI delayed status. 04 DI delayed status. 05 DI delayed status. 2.b00 DIO delayed status. 2.b01 DIO delayed status. b15 DI delayed status. Disable torque		1 = 1	n	у	Parameter
	0 10	additive 2		' '	"	y	- arameter
6.25	Torque additiv	re 2 source			•	•	•
	Defines a torque source. Note: Due to sa WARNING! If the additive to control max tors.	que reference (load cor le reference to be adde afety reasons, the addit orque 2 exceeds the lin que, a ramp stop may la a ramp stop is required	tive torque in the set by 3 pe impossib	Torque refere reference is n 80.13 Speed o ble. Make sure	ot applied du control min to e additive tor itive 2 enable	uring an emo orque and 30 que 2 is red	ergency stop 0.14 Speed uced or
C 20		Zero	-	11 = 1	n	у	Parameter
6.30	0: Disable ; disa			1 = 1	n	lv.	Parameter
2 2 4		טופמטוב	<u> </u>	1 - 1	11	У	Tarameter
6.31	Torque step	luo					
		nue. onal torque step in perc afety reasons, the torqu					reference 6.

Index	Name								
	Text Range Default Unit Scale/ Volatile Change Type								
	max torque, a a ramp stop is	step exceeds the limits so ramp stop may be impose required. See 26.30 To	ossible. Mak orque step e	e sure the torc nable.	que step is r	educed or r	emoved when		
	-325.00 32		%	See 46.04	n	У	Parameter		
	Gear backlast reference direct When the torce torque for the	ch compensation: h compensation is used ection changes faster wire reference is changir time defined by 26.37 (ts normal value according to the control of	thout damaging its directions Sear torque from the rangement of the range	ging the gearbo on, the torque l time. After the	ox. limit is reduc time has ela	ced to 26.36 apsed, the t	Gear start orque limit is		
	00.00.0	Torque reference		26.38 Gear to	orque ramp				
	20.50 Geal	r start torque		7 Gear ue time	Z_LIN_042_gear-to	orque_a.ai			
26.36	Goar start to	ralio							
26.36	Defines the retorque referer	or the gear backlash coreduced torque limit in pence.	ercent of 99.0		torque afte	r a directior	change of the		
	0.00 325.0		%	See 46.04	n	У	Parameter		
26.37		me for the gear backlas que reference is changir			imit is reduc	ced for the t	ime defined by		
26.38		ramp ence ramp-up time for the in the torque reference				minal torqu	Δ		
	0 32500	100	ms	1 = 1 ms	n	v	Parameter		
26.43			,						

	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	4: DI2 ; 10.02.b01 DI									
	5: DI3 ; 10.02.b02 DI									
	6: DI4 ; 10.02.b03 DI									
	7: DI5 ; 10.02.b04 DI	,								
	8: DI6 ; 10.02.b05 DI									
		DIO delayed status. DIO delayed status.								
	19: DIL ; 10.02.b15 [
	0 19	Disable torque	1_	1 = 1	n	у	Parameter			
	0 19	correction		' - '	''	y	arameter			
26.44	Torque correction	source	l		-	I				
	Torque correction.									
		rection to be added to	the tor	que reference	after the lim	nitation. See	26.11 Torque			
	reference 1 source.			_						
		reasons, the additive	torque i	eterence is no	ot applied du	iring an eme	ergency stop.			
	WARNING!	on avacada tha limita	oot by	O O2 Minimum	a tarawa all l	imita and 20	0.04 Maximum			
		on exceeds the limits imp stop may be impo								
		required. See 26.43				in is reduce	a or removed			
	0 18	Zero		1 = 1	n	y	Parameter			
26.70	Torque reference 1		-	1 - 1	11	у	Farameter			
.0.70	•									
	Value of torque refe	reference in percent o	f 00 02	M1 nominal to	orane after to	oralie refere	nce 1 source			
	See 26.11 Torque re		1 33.02	Wil Hollina to	rique arter to	Jique releie	ince i source			
	-325.00 325.00	_	%	See 46.04	у	n	Signal			
26.71	Torque reference 2	<u> </u>	70	366 40.04	l y		Olgital			
20.7 1	Value of torque refe									
	value of torque refe	icilice 2 Source.								
	Displays the torque	reference in nercent o	f 99 02	M1 nominal to	orque after to	oralie refere	nce 2 source			
		reference in percent o eference 2 source	f 99.02	M1 nominal to	orque after to	orque refere	nce 2 source			
	See 26.12 Torque re					· -	T			
26 72	See 26.12 Torque re -325.00 325.00	eference 2 source.	of 99.02	M1 nominal to	y	orque refere	snce 2 source			
26.72	See 26.12 Torque re -325.00 325.00 Torque reference 3	eference 2 source.				· -	T			
26.72	See 26.12 Torque re-325.00 325.00 Torque reference 3 Torque reference af	eference 2 source. - ter source selection.	%	See 46.04	у	n	Signal			
26.72	See 26.12 Torque re-325.00 325.00 Torque reference 3 Torque reference af Displays the torque	eference 2 source. - ter source selection. reference in percent of	% of 99.02	See 46.04 M1 nominal to	y orque after th	n ne mathema	Signal stical function			
26.72	See 26.12 Torque re-325.00 325.00 Torque reference af Displays the torque and torque reference	eference 2 source. - ter source selection.	% of 99.02	See 46.04 M1 nominal to	y orque after th	n ne mathema	Signal stical function			
26.72	See 26.12 Torque re-325.00 325.00 Torque reference 3 Torque reference af Displays the torque and torque reference 1/2 selection.	eference 2 source. - ter source selection. reference in percent of	% of 99.02 6.13 To	See 46.04 M1 nominal to	y orque after the function ar	n ne mathema nd 26.14 Toi	Signal atical function rque reference			
	See 26.12 Torque re-325.00 325.00 Torque reference 3 Torque reference af Displays the torque and torque reference 1/2 selection. -325.00 325.00	ter source selection. reference in percent of the selection. See 20	% of 99.02	See 46.04 M1 nominal to	y orque after th	n ne mathema	Signal stical function			
	See 26.12 Torque re-325.00 325.00 Torque reference 3 Torque reference af Displays the torque and torque reference 1/2 selection. -325.00 325.00 Torque reference 4	eference 2 source.	% of 99.02 6.13 To	See 46.04 M1 nominal to	y orque after the function ar	n ne mathema nd 26.14 Toi	Signal atical function rque reference			
	See 26.12 Torque re-325.00 325.00 Torque reference 3 Torque reference af Displays the torque and torque reference 1/2 selection. -325.00 325.00 Torque reference 4 Torque reference af	ter source selection. reference in percent of the 1/2 selection. See 20 - ter additive 1.	% of 99.02 6.13 To	See 46.04 M1 nominal to rque reference See 46.04	y orque after the function ar	n ne mathemand 26.14 Tor	Signal atical function rque reference			
	See 26.12 Torque re- 325.00 325.00 Torque reference 3 Torque reference af Displays the torque and torque reference 1/2 selection. -325.00 325.00 Torque reference 4 Torque reference af Displays the torque	eference 2 source. ter source selection. reference in percent of a 1/2 selection. See 20 ter additive 1. reference in percent of a 1/2 selection.	% of 99.02 6.13 To %	M1 nominal to rque reference See 46.04 M1 nominal to M1 nominal to	y orque after the function are	ne mathemand 26.14 Too	Signal atical function rque reference			
	See 26.12 Torque re- 325.00 325.00 Torque reference 3 Torque reference af Displays the torque and torque reference 1/2 selection325.00 325.00 Torque reference 4 Torque reference af Displays the torque after torque reference	ter source selection. reference in percent of the 1/2 selection. See 20 - ter additive 1.	% of 99.02 6.13 To % of 99.02 See 26	See 46.04 M1 nominal to rque reference See 46.04 M1 nominal to 16 Torque ad	y orque after the function are y orque after 1 ditive 1 sour	n ne mathemand 26.14 Too	Signal atical function que reference Signal orque and			
26.73	See 26.12 Torque re-325.00 325.00 Torque reference 3 Torque reference af Displays the torque and torque reference 1/2 selection325.00 325.00 Torque reference 4 Torque reference af Displays the torque after torque reference -325.00 325.00	ter source selection. reference in percent of the source selection. See 20 - ter additive 1. reference in percent of the source selection.	% of 99.02 6.13 To %	M1 nominal to rque reference See 46.04 M1 nominal to M1 nominal to	y orque after the function are	ne mathemand 26.14 Too	Signal atical function rque reference			
26.73	See 26.12 Torque re-325.00 325.00 Torque reference 3 Torque reference af Displays the torque and torque reference 1/2 selection. -325.00 325.00 Torque reference 4 Torque reference af Displays the torque after torque reference -325.00 325.00 Torque reference	ter source selection. reference in percent of the source selection. See 20	% of 99.02 6.13 To % of 99.02 See 26	See 46.04 M1 nominal to rque reference See 46.04 M1 nominal to 16 Torque ad	y orque after the function are y orque after 1 ditive 1 sour	n ne mathemand 26.14 Too	Signal atical function que reference Signal orque and			
26.73	See 26.12 Torque re- 325.00 325.00 Torque reference 3 Torque reference af Displays the torque and torque reference 1/2 selection325.00 325.00 Torque reference 4 Torque reference af Displays the torque after torque reference -325.00 325.00 Torque reference reference af Displays the torque after torque reference af Displays the torque after torque reference af Torque reference at Torque reference at	ter source selection. reference in percent of the 1/2 selection. See 20	% of 99.02 6.13 To % of 99.02 See 26	See 46.04 M1 nominal to rque reference See 46.04 M1 nominal to 16 Torque ad See 46.04	y orque after the function are y orque after 1 ditive 1 sour	ne mathemand 26.14 Too	Signal atical function rque reference Signal orque and Signal			
26.73	See 26.12 Torque re- 325.00 325.00 Torque reference 3 Torque reference af Displays the torque and torque reference 1/2 selection325.00 325.00 Torque reference 4 Torque reference af Displays the torque after torque reference af Displays the torque after torque reference reference at Displays the limited,	ter source selection. reference in percent of the 1/2 selection. See 2/2 selection. See 2	% of 99.02 6.13 To % of 99.02 See 26 % orque re	See 46.04 M1 nominal to rque reference See 46.04 M1 nominal to 16 Torque ad See 46.04 See 46.04	y orque after the function are y orque after 1 ditive 1 sour y rcent of 99.0	ne mathemand 26.14 Too	Signal atical function rque reference Signal orque and Signal			
26.73	See 26.12 Torque re- 325.00 325.00 Torque reference 3 Torque reference af Displays the torque and torque reference 1/2 selection. 325.00 325.00 Torque reference 4 Torque reference af Displays the torque after torque reference -325.00 325.00 Torque reference reference at Displays the limited, See 30.03 Minimum	ter source selection. reference in percent of the 1/2 selection. See 20	% of 99.02 6.13 To % of 99.02 See 26 % orque re 60.04 M	See 46.04 M1 nominal to rque reference See 46.04 M1 nominal to 16 Torque ad See 46.04 eference in peaximum torque	y orque after the function are y orque after 1 ditive 1 sour y orcent of 99.0 e all limits.	n ne mathemand 26.14 Too n n st additive to ce.	Signal atical function rque reference Signal orque and Signal al torque.			
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26.72 26.73 26.74	See 26.12 Torque re- 325.00 325.00 Torque reference 3 Torque reference af Displays the torque and torque reference 1/2 selection325.00 325.00 Torque reference 4 Torque reference af Displays the torque after torque reference af Displays the torque after torque reference reference at Displays the limited, See 30.03 Minimum -325.00 325.00 Torque reference 5	ter source selection. reference in percent of the 1/2 selection. See 2/2 selection. See 2/4 selection. See 2	% of 99.02 6.13 To % of 99.02 See 26 % orque re 60.04 M	See 46.04 M1 nominal to rque reference See 46.04 M1 nominal to 16 Torque ad See 46.04 eference in peaximum torque	y orque after the function are y orque after 1 ditive 1 sour y orcent of 99.0 e all limits.	n ne mathemand 26.14 Too n n st additive to ce.	Signal atical function rque reference Signal orque and Signal al torque.			
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26.73 26.74	See 26.12 Torque re- 325.00 325.00 Torque reference 3 Torque reference af Displays the torque and torque reference 1/2 selection. 325.00 325.00 Torque reference 4 Torque reference af Displays the torque after torque reference af Displays the limited, See 30.03 Minimum 325.00 325.00 Torque reference 5 Torque reference 5 Torque reference 5 Torque reference 5	ter source selection. reference in percent of the source selection. See 20	% of 99.02 6.13 To % of 99.02 See 26 % orque re 60.04 M	See 46.04 M1 nominal to rque reference See 46.04 M1 nominal to 16 Torque ad See 46.04 eference in peraximum torque See 46.04	y orque after the function are y orque after 1 ditive 1 sour y rcent of 99.0 e all limits.	ne mathemand 26.14 Too n n st additive to ce. n 2 M1 nomin	Signal atical function rque reference Signal orque and Signal hal torque.			
26.73 26.74	See 26.12 Torque re- 325.00 325.00 Torque reference 3 Torque reference af Displays the torque and torque reference 1/2 selection. -325.00 325.00 Torque reference 4 Torque reference af Displays the torque after torque reference af Displays the torque after torque reference at Displays the limited, See 30.03 Minimum -325.00 325.00 Torque reference 5 Torque reference 5	ter source selection. reference in percent of the source selection. See 20	% of 99.02 6.13 To % of 99.02 See 26 % orque re 60.04 M	See 46.04 M1 nominal to rque reference See 46.04 M1 nominal to 16 Torque ad See 46.04 eference in peraximum torque See 46.04	y orque after the function are y orque after 1 ditive 1 sour y rcent of 99.0 e all limits.	ne mathemand 26.14 Too n n st additive to ce. n 2 M1 nomin	Signal atical function rque reference Signal orque and Signal hal torque.			

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	Torque reference after additive 2 (load compensation). Displays the torque reference in percent of 99.02 M1 nominal torque after 2 nd additive torque. See 26.24 Torque additive 2 enable and 26.25 Torque additive 2 source.									
	-325.00 325.00	-	%	See 46.04	y	n	Signal			
26.77	Torque reference a	idditive A								
	Torque reference after additive 2 (load compensation) source selection. Displays the torque reference in percent of 99.02 M1 nominal torque after additive 2 selection. See 26.25 Torque additive 2 source.									
	-325.00 325.00	-	%	See 46.04	у	n	Signal			
26.78	Torque reference a	dditive B								
		ter additive 2 (load cor reference in percent of ve 2 enable.			que after ac	dditive 2 ena	able. See			
	-325.00 325.00	-	%	See 46.04	у	n	Signal			
26.79	Torque correction	reference								
	Displays the torque	rference after source s correction reference in 43 Torque correction e	percent	t of 99.02 M1 n			urce selection			
	-325.00 325.00	-	%	See 46.04	у	n	Signal			

27 Armature current control

Settings for the armature current control chain.

ndex	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
7.01	Current referen	се	•				•			
		t reference after f								
		nature current refe			nominal cur	rent after flu				
	-325.00 325.0	00 -	%	100 = 1 %	у	n	Signal			
7.02	Used current re	eference								
	Armature curren	t reference after li	mitation.							
		nature current refe								
	limitation. See 30.34 M1 current limit bridge 2, 30.35 M1 current limit bridge 1 and 30.37 30.41									
	Current limit at s	·			1	1				
	-325.00 325.0	00 -	%	100 = 1 %	у	n	Signal			
7.05	Motor current									
	Motor current.									
		current in percen			ıt.	_				
	-325.00 325.0	00 -	%	100 = 1 %	у	n	Signal			
7.06	Motor peak cur	rent								
	Motor peak curre									
		Measured motor peak current in percent of 99.11 M1 nominal current.								
	-325.00 325.0	00 -	%	100 = 1 %	у	n	Signal			
7.09	Current control	ler i-part								
		(T _I) part of the arr								
		gration time (T ₁) p	oart of the arn	nature current co	ontroller in pe	ercent of 99	.11 M1			
	nominal current.									
	-325.00 325.0	00 -	%	100 = 1 %	у	n	Signal			
7.18	Firing angle									
	Firing angle.									

	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	Displays the fir	ing angel in degrees.		•			1
	0.00 180.00		0	100 = 1°	V	n	Signal
19	Selected bridge		ı	1.00	13	1	10.9
		ent-conducting) bridge	3 ·				
		no bridge selected.	.				
		ridge 1 selected.					
		idge 2 selected.					
	0 2	-	_	1 = 1	у	n	Signal
22	Current refere	ence source		1	13	1	Olgiliai
		rent reference source					
		urce for the current re		ner as armatur	drive or as f	iald avcitar	
	Other; source		ici ci ice citi	ici as aimature	dive or as i	ieid exciter.	
		ces single firing pulses	s to suppres	ss the DC curre	ent and sets 2	7 01 Currer	nt reference t
	zero.	oo onigio iiiiig paloo	o to ouppiot		5111 G11G 0010 Z		1010101100
		ent reference; 27.01	Current refe	rence as arma	ture current r	eference.	
		nt reference externa					rrent
	reference.						
	3: 26.02 Torq u	ie reference used; 2	6.02 Torque	e reference use	ed is directly ι	ised as arm	ature curren
	reference (torg	ue = current).	·		-		
	Note: The flux	adaption in field wea	kening is in:	active (means	no flux depen	dent armatı	ure current
	reference).						
		12.12 Al1 scaled value					
		12.22 Al2 scaled value					
		12.32 Al3 scaled value					
		rence 1; 03.05 FBA A					
		rence 2; 03.06 FBA A					
		rence 1; 03.07 FBA E					
		erence 2; 03.08 FBA					
		ence 1; 03.09 EFB re					
		ence 2; 03.10 EFB re troller ref 1; 03.11 D					
		troller ref 2 ; 03.11 D					
		ILIONEL LEI Z, US. 12 D			nature currer		
		7 rof 1: 03 13 M/F or	D2D ref 1 a		rant rafaranc		
	16. M/F or D2I	D ref 1 ; 03.13 M/F or 7 ref 2 : 03.14 M/F or		is armature cui		e.	
		D ref 2 ; 03.14 M/F or	D2D ref 2 a	is armature cui is armature cui	rent referenc	e. e.	
	30: FieldRef v	D ref 2 ; 03.14 M/F or ia DCSLink ; from the	D2D ref 2 a armature o	is armature cui is armature cui drive via DCSL	rent referenc ink. Dependir	e. e. ig on the no	de number
	30: FieldRef v settings in grou	O ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1	D2D ref 2 a armature c field currer	is armature cui is armature cui drive via DCSL nt reference (if	rent referenc ink. Dependir motor 1 field	e. e. ig on the no exciter) or 4	de number 2.45 M2 field
	30: FieldRef v settings in grou	O ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1 ce (if motor 2 field ex	D2D ref 2 a armature c field currer	is armature cui is armature cui drive via DCSL nt reference (if	rent referenc ink. Dependir motor 1 field	e. e. ig on the no exciter) or 4	de number 2.45 M2 field
	30: FieldRef v settings in groucurrent referent mode = Field 6	O ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1 ce (if motor 2 field ex	D2D ref 2 a armature of field currer citer) as field	is armature cui is armature cui drive via DCSL nt reference (if ld current refer	rent referenc ink. Dependir motor 1 field ence. Only av	e. e. ig on the no exciter) or 4 vailable if 99	de number 2.45 M2 field 0.06 Operatio
	30: FieldRef v settings in grou current referen mode = Field e 32: FieldRef v	O ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1 ce (if motor 2 field exexciter.	D2D ref 2 as armature of field currer citer) as field Ext; from the	is armature cui is armature cui drive via DCSL nt reference (if ld current refer e armature driv	rent referenc ink. Dependir motor 1 field ence. Only av ve via DCSLir	e. e. ig on the no exciter) or 4 vailable if 99 nk. Dependi	de number 12.45 M2 field 1.06 Operation
	30: FieldRef v settings in grou current referen mode = Field e 32: FieldRef v node number s 42.45 M2 field	O ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1 ce (if motor 2 field exexciter. ia DCSLink+CurReflecttings in group 70 e current reference (if r	D2D ref 2 as armature of field currer citer) as field Ext; from the fither 28.14 lenotor 2 field	is armature cui is armature cui drive via DCSL nt reference (if ld current refer e armature driv M1 field curren d exciter). Plus	rent reference ink. Dependir motor 1 field ence. Only av ve via DCSLir t reference (if 27.23 Currer	e. e. g on the no exciter) or 4 vailable if 99 nk. Dependi motor 1 fie t reference	de number 12.45 M2 field 1.06 Operation ng on the Id exciter) or
	30: FieldRef v settings in grou current referen mode = Field e 32: FieldRef v node number s 42.45 M2 field field current re	D ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1 uce (if motor 2 field exexciter. ia DCSLink+CurReflettings in group 70 ecurrent reference (if reference. Only availab	D2D ref 2 as armature of field currer citer) as field Ext; from the fither 28.14 motor 2 field field fig. 29.06 C	is armature cui is armature cui drive via DCSL nt reference (if ld current refer e armature driv M1 field curren d exciter). Plus Operation mode	rrent reference ink. Dependir motor 1 field ence. Only avoice via DCSLir t reference (if 27.23 Currer e = Field excite.)	e. e. g on the no exciter) or 4 vailable if 99 nk. Dependi f motor 1 fie t reference er.	de number 2.45 M2 field 0.06 Operation ng on the ld exciter) or external as
	30: FieldRef v settings in grou current referen mode = Field e 32: FieldRef v node number s 42.45 M2 field field current re 34: FluxRef af	O ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1 ce (if motor 2 field exexciter. ia DCSLink+CurRefl settings in group 70 e current reference (if reference. Only availab ter EMF control; 28.	D2D ref 2 as armature of field currer citer) as field Ext; from the fither 28.14 motor 2 field field fig. 2009 Flux references	is armature cui is armature cui drive via DCSL nt reference (if ld current refer e armature driv M1 field curren d exciter). Plus Operation mode erence after EN	rent reference ink. Dependir motor 1 field ence. Only avoice via DCSLingt reference (if 27.23 Currence = Field excit footbook foo	e. e. g on the no exciter) or 4 vailable if 99 nk. Dependi motor 1 fie t reference er. m the armat	de number 2.45 M2 field 0.06 Operation ng on the ld exciter) or external as
	30: FieldRef v settings in grou current referen mode = Field e 32: FieldRef v node number s 42.45 M2 field field current re 34: FluxRef af DCSLink as fie	O ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1 ce (if motor 2 field exexciter. ia DCSLink+CurRefluctings in group 70 e current reference (if reference. Only availabiter EMF control; 28.25 celd current reference.	D2D ref 2 as armature of field currer citer) as field Ext; from the fither 28.14 motor 2 field field fig. 2009 Flux references	is armature cui is armature cui drive via DCSL nt reference (if ld current refer e armature driv M1 field curren d exciter). Plus Operation mode erence after EN	rent reference ink. Dependir motor 1 field ence. Only avoice via DCSLingt reference (if 27.23 Currence = Field excit footbook foo	e. e. g on the no exciter) or 4 vailable if 99 nk. Dependi motor 1 fie t reference er. m the armat	de number 2.45 M2 field 0.06 Operation ng on the ld exciter) or external as
	30: FieldRef v settings in grou current referen mode = Field e 32: FieldRef v node number s 42.45 M2 field field current re 34: FluxRef af	O ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1 ce (if motor 2 field exexciter. ia DCSLink+CurRefl settings in group 70 e current reference (if reference. Only availabiter EMF control; 28.eld current reference.	D2D ref 2 as armature of field currer citer) as field Ext; from the fither 28.14 motor 2 field field fig. 2009 Flux references	is armature cui is armature cui drive via DCSL nt reference (if ld current refer e armature driv M1 field curren d exciter). Plus Operation mode erence after EN	rent reference ink. Dependir motor 1 field ence. Only avoice via DCSLingt reference (if 27.23 Currence = Field excit footbook foo	e. e. g on the no exciter) or 4 vailable if 99 nk. Dependi motor 1 fie t reference er. m the armat	de number 12.45 M2 field 1.06 Operation 1.06 Operation 1.06 Operation 1.06 Operation 1.07 Operation 1.08 Operation 1.09 Operat
	30: FieldRef v settings in grou current referen mode = Field e 32: FieldRef v node number s 42.45 M2 field field current re 34: FluxRef af DCSLink as fie	O ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1 ce (if motor 2 field exexciter. ia DCSLink+CurRefluctings in group 70 e current reference (if reference. Only availabiter EMF control; 28.25 celd current reference.	D2D ref 2 as armature of field currer citer) as field Ext; from the fither 28.14 motor 2 field field fig. 2009 Flux references	as armature cursis armature cursis armature cursit reference (if ld current reference armature driving the exciter). Plus operation mode erence after EN ble if 99.06 Op	rent reference ink. Dependir motor 1 field ence. Only avere via DCSLir treference (if 27.23 Currence = Field excit from the control from the eration mode.	e. e. g on the no exciter) or 4 vailable if 99 nk. Dependi f motor 1 fie t reference er. n the armat = Field exc	de number 12.45 M2 field 1.06 Operation 1.06 Operation 1.06 Operation 1.06 Operation 1.07 Operation 1.08 Operation 1.09 Operat
.23	30: FieldRef v settings in grou current referen mode = Field e 32: FieldRef v node number s 42.45 M2 field field current re 34: FluxRef af DCSLink as fie	O ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1 ce (if motor 2 field exexciter. ia DCSLink+CurRefl settings in group 70 e current reference (if reference. Only available ter EMF control; 28. eld current reference. 27.01 Current reference	D2D ref 2 as armature of field currer citer) as field Ext; from the fither 28.14 motor 2 field field fig. 2009 Flux references	as armature cursis armature cursis armature cursit reference (if ld current reference armature driving the exciter). Plus operation mode erence after EN ble if 99.06 Op	rent reference ink. Dependir motor 1 field ence. Only avere via DCSLir treference (if 27.23 Currence = Field excit from the control from the eration mode.	e. e. g on the no exciter) or 4 vailable if 99 nk. Dependi f motor 1 fie t reference er. n the armat = Field exc	de number 2.45 M2 field 0.06 Operation ng on the ld exciter) or external as
23	30: FieldRef v settings in grou current referen mode = Field e 32: FieldRef v node number s 42.45 M2 field field current re 34: FluxRef af DCSLink as fie 0 34 Current refere	O ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1 ce (if motor 2 field exexciter. ia DCSLink+CurRefl settings in group 70 e current reference (if reference. Only available ter EMF control; 28. eld current reference. 27.01 Current reference	D2D ref 2 a e armature of field currer citer) as fiel Ext; from th ither 28.14 motor 2 field le if 99.06 C 09 Flux refe Only availa	as armature cursis armature cursis armature cursit reference (if ld current reference armature driving the exciter). Plus operation mode erence after EN ble if 99.06 Op	rent reference ink. Dependir motor 1 field ence. Only avere via DCSLir treference (if 27.23 Currence = Field excit from the control from the eration mode.	e. e. g on the no exciter) or 4 vailable if 99 nk. Dependi f motor 1 fie t reference er. n the armat = Field exc	de number 12.45 M2 field 1.06 Operation 1.06 Operation 1.06 Operation 1.06 Operation 1.07 Operation 1.08 Operation 1.09 Operat
23	30: FieldRef v settings in grou current referen mode = Field e 32: FieldRef v node number s 42.45 M2 field field current re 34: FluxRef af DCSLink as fie 0 34 Current refere External armat	D ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1 ce (if motor 2 field exexciter. ia DCSLink+CurRefl settings in group 70 e current reference (if reference. Only available ter EMF control; 28.12 current reference. 27.01 Current reference ence external	D2D ref 2 a armature of field currer citer) as field Ext; from the fither 28.14 motor 2 field le if 99.06 CO9 Flux reference only availa	as armature curs armature curs armature curdive via DCSL of the reference (if the current reference armature drivent field current exciter). Plus operation mode erence after EN ble if 99.06 Op	rent reference ink. Dependir motor 1 field ence. Only aver via DCSLir treference (if 27.23 Currence = Field excit for control from the enterior mode in in in the control from the enterior mode in in the control from the enterior mode in in the control from the enterior mode in the control from the enterior mode in the control from the enterior mode in the control from the enterior mode in the control from the enterior mode in the control from the enterior mode in the	e. e. eg on the no exciter) or 4 vailable if 99 nk. Dependi f motor 1 fie treference eer. m the armat = Field exc	de number 12.45 M2 field 1.06 Operation 1.06 Operation 1.06 Operation 1.06 Operation 1.07 Operation 1.08 Operation 1.09 Operat
23	30: FieldRef v settings in grou current referen mode = Field e 32: FieldRef v node number s 42.45 M2 field field current re 34: FluxRef af DCSLink as fie 0 34 Current refere External armat External armat	D ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1 ce (if motor 2 field exexciter. ia DCSLink+CurRefluctings in group 70 e current reference (if reference. Only available ter EMF control; 28.12 current reference. 27.01 Current reference ence external	D2D ref 2 a armature of field currer citer) as fiel Ext; from the ither 28.14 lenotor 2 field le if 99.06 co 09 Flux refe Only availa	as armature curs armature curs armature curdive via DCSL of reference (if the current referment e armature drivent field current exciter). Plus operation mode after EN ble if 99.06 Op	rent reference ink. Dependir motor 1 field ence. Only average via DCSLir treference (if 27.23 Currence = Field excit for control from the entered in mode in in the entered ence in the en	e. e. e. eg on the no exciter) or 4 vailable if 99 nk. Dependi f motor 1 fie t reference eer. m the armat = Field exc	de number 2.45 M2 field 0.06 Operation ng on the ld exciter) or external as ture drive via iter. Parameter
23	30: FieldRef v settings in grou current referen mode = Field e 32: FieldRef v node number s 42.45 M2 field field current re 34: FluxRef af DCSLink as fie 0 34 Current refere External armat External armat	O ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1 ce (if motor 2 field exexciter. ia DCSLink+CurRefl settings in group 70 e current reference (if reference. Only available ter EMF control; 28.12 current reference. 27.01 Current reference ence external cure current reference current reference current reference external cure current reference external current external current external current external current external current external current external current external current external current external current external current external current external current external current external current external current external current external current exte	D2D ref 2 a armature of field currer citer) as fiel Ext; from the ither 28.14 lenotor 2 field le if 99.06 co 09 Flux refe Only availa	as armature curs armature curs armature curdive via DCSL of reference (if the current referment e armature drivent field current exciter). Plus operation mode after EN ble if 99.06 Op	rent reference ink. Dependir motor 1 field ence. Only average via DCSLir treference (if 27.23 Currence = Field excit for control from the entered in mode in in the entered ence in the en	e. e. e. eg on the no exciter) or 4 vailable if 99 nk. Dependi f motor 1 fie t reference eer. m the armat = Field exc	de number 2.45 M2 field 0.06 Operation ng on the ld exciter) or external as ture drive via iter. Parameter
23	30: FieldRef v settings in grou current referen mode = Field e 32: FieldRef v node number s 42.45 M2 field field current re 34: FluxRef af DCSLink as fie 0 34 Current refere External armat External armat Note: 27.23 Co	O ref 2; 03.14 M/F or ia DCSLink; from the up 70 either 28.14 M1 oce (if motor 2 field exexciter. ia DCSLink+CurRefl settings in group 70 ecurrent reference (if reference. Only available ter EMF control; 28. eld current reference. 27.01 Current reference ence external.	D2D ref 2 a armature of field currer citer) as fiel Ext; from the ither 28.14 lenotor 2 field le if 99.06 co 09 Flux refe Only availa	as armature curs armature curs armature curdive via DCSL of reference (if the current referment e armature drivent field current exciter). Plus operation mode after EN ble if 99.06 Op	rent reference ink. Dependir motor 1 field ence. Only average via DCSLir treference (if 27.23 Currence = Field excit for control from the entered in mode in in the entered ence in the en	e. e. e. eg on the no exciter) or 4 vailable if 99 nk. Dependi f motor 1 fie t reference eer. m the armat = Field exc	de number 2.45 M2 field 0.06 Operation ng on the ld exciter) or external as ture drive via iter. Parameter

Index	Name													
	Text													
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре							
		t reference slope.												
		t reference slope in ed at the input of th				er 1 ms. The	e di/dt							
	0.2 120.0	10.0	%/ms	100 = 1 %/n	ns n	у	Parameter							
27.27	Current control	mode												
	Armature curren													
		t controller mode se			danda Bara Islan		Matanana							
		controller with RL c		n from EIVIF Ca	ilculation bas	ea on 27.05	iviotor current							
		l reference ; PI-cont		RL compensation	on from EME	calculation I	based on							
		e, see 27.22 Curren												
		e a current reference					3 - 3 - 3 - 3							
		ard; PI-controller wi			om EMF calci	ulation and f	eed forward							
		s voltage. Do not us					_							
		dev; same control t												
		ster current control (nigher p-pa			controller p	,							
07.00	0 5	Standard		1 = 1	n	У	Parameter							
27.28		feedback mode	-l -											
		n (K _P) feedback mod		r the properties	and goin of the	o armatura a	urront							
	controller.	nature current feedb	Jack type to	i tile proportio	iai gaiii 0i tiit	e armature c	urrent							
		; peak current meas	surement is	used.										
		ent; average currer												
	0 1	Peak current	-	1 = 1	n	У	Parameter							
27.29	M1 current proj	ortional gain	L	L	I									
		n (K _P) of the armatu	re current c	ontroller.										
		ontroller generates				29 M1 curre	nt proportional							
		rmature current erro	or is 5 % of 9		nal current.									
	0.00 325.00	0.10	-	100 = 1	n	у	Parameter							
27.30	M1 current inte	•												
		(T _I) of the armature			_									
		ration time to zero o	disables the	integral part o	f the armature	e current co	ntroller and							
	resets the integral		a within tha	intogral part of	the ermeture	ourrant car	strallar							
		ime defines the time ne value as the pro					itroller							
		ontroller generates					nt proportional							
		rmature current erro												
		t integration time =												
		er generates 30 % o												
		are elapsed. 15 % d	lerive from t	he proportiona	I part and 15	% derive from	om the integral							
	part.						T_							
		1500	ms	1 = 1 ms	n	У	Parameter							
	0.0 32500.0	50.0												
27.31	M1 discontinuo	us current limit				Motor 1 discontinuous current limit.								
27.31	M1 discontinuo Motor 1 discontin	nuous current limit) Ollpmomt !	normant of 00.4	1 N/1	laumant Ti	o mossyrrad							
27.31	M1 discontinuo Motor 1 discontin Threshold contin	nuous current limit nuous current limit. nuous/discontinuous												
27.31	M1 discontinuo Motor 1 discontin Threshold contin continuous/disco	ous current limit nuous current limit. nuous/discontinuous ontinuous current sta	ate can be r	ead from 06.2	4.b12 Current	t controller s	tatus word 1.							
	M1 discontinuo Motor 1 discontin Threshold contin continuous/disco	nuous current limit nuous current limit. nuous/discontinuous ontinuous current sta												
27.31	M1 discontinuo Motor 1 discontin Threshold contin continuous/disco 0.00 325.00 M1 armature re	nuous current limit nuous current limit. nuous/discontinuous ontinuous current sta 100.00 sistance	ate can be r	ead from 06.2	4.b12 Current	t controller s	tatus word 1.							
	M1 discontinuo Motor 1 discontin Threshold contin continuous/disco 0.00 325.00 M1 armature re Motor 1 armature	nuous current limit nuous current limit. nuous/discontinuous ontinuous current sta 100.00 sistance	ate can be r	read from 06.2 100 = 1 %	4.b12 Current n	t controller s	tatus word 1.							

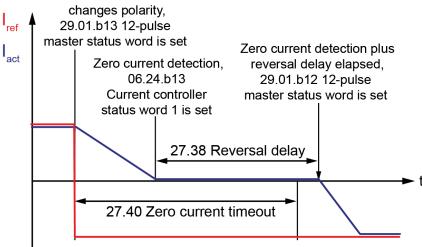
Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	$EMF = U_A - I$	$R_A \times I_A - L_A \times \frac{dI_A}{dt}$					
	from the motor			•	_		
		hange the default va fore autotuning! Cha					armature
	0 65500	0	mOhm	1 = 1 mOhm	n	у	Parameter
27.33	M1 armature	inductance					
	Motor 1 armat	ure inductance.					
		the armature circuit i	n mH.				
		ature inductance can		l bv means of au	ıtotunina. se	e 99.20 Tur	nina reauest.
		tor data sheet.			, , , , , , , , , , , , , , , , , , ,		
		change the default va	dues of 27.3	2 M1 armature re	esistance ar	nd 27 33 M1	armature
		fore autotuning! Cha					amataro
	0.0 3250.0	0.0	mH	10 = 1 mH	n		Parameter
27.24			111111	10 - 111111	11	У	raiailletei
27.34	Mains compe						
		sation filter time con					
		compensation filter t	ime constan	t. Is used for the	mains volta	ge compen	sation at the
	current control	•					
	Setting the ma	ins compensation filt	ter time cons	stant to 32500 ms	s disables th	ne mains vo	ltage
	compensation	i					
	0 32500	10	ms	1 = 1 ms	n	у	Parameter
27.36	Block bridge				L	17	
_,							
	Block bridge 1		. 07 40 0-1-	مناه المسام			
		o block bridge 1. See	27.19 Sele	cted bridge.			
	0 = Release b						
	1 = Block bridg						
		urce selection.					
		dge 1; 0, release bri		ial operation.			
		je 1 ; 1, block bridge					
		000 DI delayed status					
		01 DI delayed status					
		02 DI delayed status					
		03 DI delayed status					
		004 DI delayed status					
		05 DI delayed status					
	11: DIO1 ; 11.0	2.b00 DIO delayed s	status.				
	12: DIO2 ; 11.0	2.b01 DIO delayed s	status.				
	19: DIL ; 10.02	.b15 DI delayed stati	us.				
	0 19	Release bridg	e 1 -	1 = 1	n	у	Parameter
27.37	Block bridge					1,7	
27.07							
	Block bridge 2		27 10 Cala	otad bridga			
		o block bridge 2. See	27.19 Sele	cted bridge.			
	0 = Release b						
	1 = Block bridg						
		urce selection.					
			alara () Niamas	al operation			
	0: Release bri	dge 2; 0, release bri		iai operation.			
	0: Release bri 1: Block bridg	dge 2; 0, release bri ge 2; 1, block bridge	2.	iai operation.			
	0: Release bri 1: Block bridg 3: DI1; 10.02.b	dge 2; 0, release bri ge 2; 1, block bridge soo DI delayed status	2. 3.	iai operation.			
	0: Release bri 1: Block bridg 3: Dl1; 10.02.b 4: Dl2; 10.02.b	dge 2; 0, release bri ge 2; 1, block bridge 000 DI delayed status 011 DI delayed status	2. s. s.	iai operation.			
	0: Release bri 1: Block bridg 3: DI1; 10.02.b 4: DI2; 10.02.b 5: DI3; 10.02.b	dge 2; 0, release bri ge 2; 1, block bridge soo DI delayed status	2. 6. 6. 6.	iai operation.			

Index	Name Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	8: DI6 ; 10.02. 11: DIO1 ; 11. 12: DIO2 ; 11.	b04 DI delayed status b05 DI delayed status 02.b00 DIO delayed s 02.b01 DIO delayed s 2.b15 DI delayed statu	s. status. status.							
	0 19	Release bridg	e 2 -	1 = 1	n	у	Parameter			
27 38	Payareal dal	av	•	•	•	•	•			

27.38 | Reversal delay

Reversal delay during a bridge reversal (bridge changeover/change armature current direction). The reversal delay defines the delay time during a bridge reversal.

27.01 Current reference



DZ_LIN_046_RevDly_a.Al

The reversal delay starts after a bridge reversal command has been given and zero current has been detected. See 27.01 Current reference, 29.01.b13 12-pulse master status word and 06.24.b13 Current controller status word 1.

After a bridge reversal command, zero current has to be reached before 27.40 Zero current timeout elapses otherwise the event generates fault F557 Reversal time. See 04.24.b08 Fault word 4. The setting of the reversal delay depends on the discontinuous current limit:

27.31 M1 discontinuous current limit	27.38 Reversal delay	delta	27.40 Zero current timeout
50 %	5.0 ms	15 ms	20 ms
≤ 35 %	10.0 ms	25 ms	35 ms
≤ 20 %	15.0 ms	35 ms	50 ms
≤ 10 %	20.0 ms	50 ms	70 ms

Notes:

- 29.14 12-pulse reversal timeout must be longer than 27.40 Zero current timeout and 27.40 Zero current timeout must be longer than 27.38 Reversal delay.
- 27.38 Reversal delay must have the same setting in 12-pulse master and 12-pulse slave with one exception only:

If there is no current measurement in the 12-pulse serial slave, set 27.38 Reversal delay in the 12-pulse serial slave to 0 ms. Now the 12-pulse serial slave uses the reversal command of the 12-pulse master for its own bridge reversal. See 29.01.b12 12-pulse master status word.

0.0 32500.0	5.0	ms	1 = 1 ms	n	у	Parameter
-------------	-----	----	----------	---	---	-----------

27.39 Zero current detection

Zero current detection method.

Selects the zero current detection method. Use a binary signal, if the zero current detection is done by another drive.

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	0 = Current not	zero.								
	1 = Zero currer	nt detected.								
	Notes:									
	voltage.	ent is detected if the	•							
	contactor is	Zero current detection s switched off and the					se the mains			
	Other [bit]; so									
	1: Voltage; bas	sed on the drive's ow sed on the drive's ow	n thyristor v	oltages. Not va	alid when galv	anic isolatio	on is used.			
	galvanic isolati	l voltage; based on o	uscontinuot	is current and	inyrisior voita	ges. Not va	iid when			
		on is used. 00 DI delayed status								
		01 DI delayed status								
		02 DI delayed status								
		03 DI delayed status								
		04 DI delayed status								
	8: DI6 ; 10.02.b	05 DI delayed status								
		2.b00 DIO delayed st								
		2.b01 DIO delayed st								
		b15 DI delayed statu	S.	_		1	1			
	0 19	Current	-	1 = 1	n	у	Parameter			
27.40	Zero current t	imeout								
	Zero current timeout during a bridge reversal (bridge changeover/change armature current direction) The zero current timeout defines the time during a bridge reversal, while zero current has to be reached. Otherwise, the event generates fault F557 Reversal time. See 04.24.b08 Fault word 4. See 27.38 Reversal delay. Notes: — 29.14 12-pulse reversal timeout must be longer than 27.40 Zero current timeout and 27.40 Zero									
	- 27.40 Zero with one ex	eout must be longer to current timeout must ception only:	t have the s	ame setting in	12-pulse mas	·				
	the 12-puls	o current measureme e serial slave to 3250	00 ms.	· 	· 					
	0 32500	20	ms	1 = 1 ms	n	у	Parameter			
27.41	Reversal mod									
	Reversal mode	for a bridge reversa defines the behavio sal (torque reversal).								
		eversal mode is autor	matically set	to Hard when	27 38 Revers	sal delav ≤ 2	25 ms			
		eed ramp and speed								
	reversal (no sp			,	9	9				
		not use for hanging l	oads (e.g. c	ranes).						
		eed ramp and speed			ıring reversal.	Thus, the c	Irive follows			
	the ramp.									
	0 1	Hard	-	1 = 1	n	у	Parameter			
27.42	Reversal volt	margin								
	Reversal volt s The reversal vo voltage during against commu	afety margin. Note : Tolt margin in percent regenerative mode. Sutation faults (shootin the reversal volt fund	of 99.10 No Setting the r g through).	minal mains vo eversal volt ma	argin to zero r					

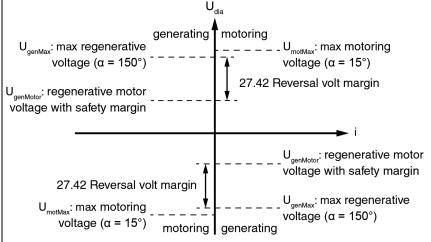
Index	Name						
	Text						
	Range	Default	Unit	Scale/	Volatile		Туре
				Fbeq16		running	

To prevent the drive from blowing fuses when going from motoring to generating the armature voltage has to be lower than the corresponding mains voltage, because thyristors are line commutated. This is automatically checked by the drive and the reverse bridge is blocked as long as the armature voltage is too high. To lower the armature voltage two ways are possible:

- Lowering the motor speed by idling.
- Adapting the flux by lowering the field current. For this option set 28.41 M1 EMF/field control = EMF.

Both options take time and thus delaying the current/torque reversal. For faster adapting of the armature voltage, activate the field weakening function.

This can be supervised with 06.25.b03 Current controller status word 2 and 31.60 Reversal volt function.



DZ LIN 047 RevVoltMargin a.ai

For regenerative mode is valid:

$$\begin{aligned} U_{genMotor} = & |U_{genMax}| - U_{Safety} \\ with \quad & U_{genMax} = 1.35 \bullet \cos \alpha_{\max} \bullet P01.20 \\ & U_{genMax} = 1.35 \bullet \cos P30.45 \bullet P01.20 \\ and \quad & U_{Safety} = P27.42 \end{aligned}$$

follows:

$$U_{genMotor} = |1.35 \bullet \cos P30.45 \bullet P01.20| - P27.42 \bullet P01.20$$

Example: With 30.45 Maximum firing angle = 150° and 27.42 Reversal volt margin = 10 % follows:

$$\begin{split} &U_{\it genMotor} = \mid 1.35 \bullet \cos 150^{\circ} \bullet P01.20) \mid -0.1 \bullet P01.20 \\ &U_{\it genMotor} = \mid -1.16 \bullet P01.20 \mid -0.1 \bullet P01.20 \\ &\it follows: \end{split}$$

$$U_{\mathit{genMotor}} = 1.06 \bullet P01.20$$

Thus, the bridge reversal is only possible if 1.21 Armature voltage in $V < 1.06 \times 01.20$ Mains voltage in V.

0.00 20.00	6.00	%	100 = 1 %	n	у	Parameter

27.50 M1 armature inductance current controller

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
		re inductance. Not ne armature circuit er.			vard (EMF c	ompensatio	n) of the			
	0.0 3250.0	0.0	mH	10 = 1 mH	n	у	Parameter			
27.51	M1 armature in	nductance EMF sp	eed feedba	ck						
	Motor 1 armatu	re inductance. Not	e: Typically le	eft at default.						
	Inductance of th	ne armature circuit	in mH. Used	for the EMF cal	culation.					
	0.0 3250.0	0.0	mH	10 = 1 mH	n	V	Parameter			

28 EMF and field current control

Settings for the EMF and field current control chain.

Index	Name						
	Text						
	Range	Default	Unit	Scale/	Volatile	Change	Type
				Fbeq16		running	
28.01	EMF voltage refer						
	EMF voltage refere						_
	Displays the EMF			nt of 99.12 M1 no	ominal voltage	e atter EMF	reterence
	source. See 28.18	EMF reference		100 - 1 0/	1	1	Oi-ma-al
00.00	-325.00 325.00	-	%	100 = 1 %	у	n	Signal
28.02	EMF voltage refer						
	EMF voltage refere				مرادي المسامي	ofton volton	~
	Displays the EMF vand ramp (slope).	vollage relerer This is an innu	t for the EM	F controller See	ominai voitage 28 20 EME vi	oltane corre	ge correction
	28.21 EMF voltage			Controller. See	ZO.ZO LIVII V	ollage corre	ction and
	-325.00 325.00	-	%	100 = 1 %	у	n	Signal
28.05	Armature voltage		1,70	1.00 . 70	1 3	1	
_0.00	Armature voltage.						
	Measured armature	e voltage in in	percent of 9	9.12 M1 nominal	l voltage.		
	This value is also in					95.35 DC v	oltage
	measurement offse				•		· ·
	-325.00 325.00	-	%	100 = 1 %	у	n	Signal
28.06	EMF voltage						
	EMF voltage.						
	Displays the EMF						
	time constant is de	fined by 28.23				ı	
	-325.00 325.00	-	%	100 = 1 %	У	n	Signal
28.09	Flux reference aft						
	Flux reference afte						
	Displays the EMF		reference in	n percent of nomi	inal flux. Nomi	inal flux is g	enerated with
	100 % field current Note: 28.09 Flux re		EME contro	Lia aat ta zara if	20 41 M4 EM	E/field contr	ol – Eiv
	-325.00 325.00		%	100 = 1 %	V	n rineia conti	Signal
28.10	Flux reference fie	- d woakoning		100 - 1 /6	l y	111	Signal
20.10	Flux reference from						
	Displays the field w			reference in nerce	ent of nomina	l flux Nomi	nal flux is
	generated with 100			cicicioc in pero		r nax. rtoriii	idi ildx io
	Note : 28.10 Flux re			s set to 100 %, if	28.41 M1 EM	IF/field cont	rol = Fix.
	-325.00 325.00	-	%	100 = 1 %	У	n	Signal
28.11	Flux reference su	m	1	1		1	<u>. </u>
-	Flux reference sum						
	1 1231 1 2 1 3 1 3 1 1 1 2 3 3 1 1						

1	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	Displays the sum	of the flux refer	ence in perc	ent of nominal flu	x. Nominal fl	ux is genera	ated with
	100 % field curren	t. 28.11 Flux re	ference sun	n = 28.09 Flux ref	erence after	EMF control	l + 28.10 Flux
	reference field wea	akening.					
	-325.00 325.00	-	%	100 = 1 %	у	n	Signal
28.14	M1 field current r	eference					
	Motor 1 field curre	nt reference.					
	Displays motor 1 f	ield current refe	erence in pe	rcent of 99.13 M1	nominal field	d current.	
	-325.00 325.00	-	%	100 = 1 %	у	n	Signal
28.15	M1 field current						
	Motor 1 field curre	nt.					
	Motor 1 measured	field current in	percent of	99.13 M1 nominal	field current		
	-325.00 325.00	-	%	100 = 1 %	у	n	Signal
28.17	M1 EMF/field con	trol mode	•	1	1.5		<u>, </u>
	Motor 1 EMF/field						
	Motor 1 EMF/field		election.				
	Note: It is not poss	sible to go into	field weaker	ning range when 9	00.41 M1 fee	dback selec	tion = EMF.
	0: Fix; constant fie	eld (no field wea	akening), EN	IF controller block	ked, field rev	ersal blocke	d, optitorque
	blocked.						
	1: EMF ; field weak						
	2: Fix/reversal; co		field weake	ening), EMF contr	oller blocked	, field revers	sal active,
	optitorque blocked		4' 	= t II I			(1)
	3: EMF/reversal;	rield weakening	active, EM	- controller releas	sea, tiela reve	ersal active,	optitorque
	blocked.	constant field	(no field we	okoning) EME oo	ntrallar black	od field row	orgal blooked
	4: Fix/optitorque ; optitorque active.	Constant neid	(110 field wea	akeriirig), Eivir co	TILIONEI DIOCK	eu, neiu rev	ersai biockeu,
	5: EMF/optitorque	e field weaken	ing active E	ME controller rele	eased field re	eversal block	ked
	optitorque active.	o, noid trouton	9 404.70, =		Jacoa, noia n	, , , , , , , , , , , , , , , , , , ,	
	6: Fix/reversal/op	titorque; cons	tant field (no	field weakening)	, EM⊦ contro	lier blocked	, field reversal
			tant field (no	field weakening)	, EMF contro	lier blocked	, field reversal
	6: Fix/reversal/op	active.	`	σ,			
	6: Fix/reversal/op active, optitorque	active.	`	σ,			
	6: Fix/reversal/op active, optitorque a 7: EMF/reversal/o	active.	`	σ,			
28.18	6: Fix/reversal/op active, optitorque a 7: EMF/reversal/o optitorque active.	poportitorque; field	`	active, EMF con	troller release	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque a 7: EMF/reversal/o optitorque active. 0 7	active. ptitorque; field Fix purce	d weakening	active, EMF con	troller release	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque active. 7: EMF/reversal/optitorque active. 0 7 EMF reference so	potitorque; field Fix Durce roltage reference	d weakening	active, EMF con	troller release	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque a 7: EMF/reversal/o optitorque active. 0 7 EMF reference so Selects the EMF v Selects the source Other; source selects	Fix Ource roltage reference for the EMF voection.	d weakening	active, EMF con	troller release	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque a 7: EMF/reversal/o optitorque active. 0 7 EMF reference so Selects the EMF v Selects the source Other; source sele 0: Zero; 0, not in u	Fix Ource roltage reference for the EMF volume.	d weakening - ce source. oltage refere	active, EMF con	troller release	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque a 7: EMF/reversal/o optitorque active. 0 7 EMF reference so Selects the EMF v Selects the source Other; source sele 0: Zero; 0, not in u 1: Internal; internal	Fix Ource of the EMF vection. use. ally calculated E	d weakening - ce source. oltage refere	active, EMF conditions and the service.	n	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque a 7: EMF/reversal/o optitorque active. 0 7 EMF reference so Selects the EMF v Selects the source Other; source sele 0: Zero; 0, not in u 1: Internal; interna 2: EMF voltage ex	Fix Ource oltage reference for the EMF vection. use. ally calculated External reference	d weakening - ce source. oltage refere	active, EMF conditions and the service.	n	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque a 7: EMF/reversal/o optitorque active. 0 7 EMF reference so Selects the EMF v Selects the source Other; source sele 0: Zero; 0, not in u 1: Internal; interna 2: EMF voltage ex 4: Al1 scaled; 12.	Fix ource oltage reference for the EMF vection. use. ally calculated External reference for the EMF vection.	e source. coltage reference; 28.19 Evalue.	active, EMF conditions and the service.	n	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque a 7: EMF/reversal/o optitorque active. 0 7 EMF reference so Selects the EMF v Selects the source Other; source sele 0: Zero; 0, not in u 1: Internal; interna 2: EMF voltage ex 4: Al1 scaled; 12. 5: Al2 scaled; 12.	Fix ource for the EMF vection. Ise. ally calculated External reference 12 Al1 scaled vectors.	ee source. coltage reference; 28.19 Evalue.	active, EMF conditions and the service.	n	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque active. 7: EMF/reversal/optitorque active. 0 7 EMF reference so Selects the EMF v Selects the source Other; source select o: Zero; 0, not in u 1: Internal; internal; internal; ex Al1 scaled; 12. 5: Al2 scaled; 12. 6: Al3 scaled; 12.	Fix Durce oltage reference for the EMF vection. Jally calculated External reference for the EMF vection and the color of the EMF vection. Jally calculated External reference for the EMF vection. Jally calculated External reference for the EMF vection.	ee source. coltage reference; 28.19 Evalue. value.	active, EMF conditions and active activ	n	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque at 7: EMF/reversal/o optitorque active. 0 7 EMF reference so Selects the EMF v Selects the source Other; source select o: Zero; 0, not in u 1: Internal; internal; internal; internal; EMF voltage ex 4: Al1 scaled; 12. 5: Al2 scaled; 12. 6: Al3 scaled; 12. 7: FBA A reference	Fix Durce Toltage reference of the EMF volume. Tally calculated External reference and a scaled volume. Tally scaled volume and a scaled volume.	d weakening	active, EMF conditions and the second	n	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque at 7: EMF/reversal/optitorque active. 0 7 EMF reference so Selects the EMF v Selects the source Other; source selection of the source of the	Fix ource roltage reference for the EMF volection. Ise. ally calculated to termal reference 22 Al2 scaled volections are 12 Al3 scaled volections. Ise. ally calculated to the termal reference 22 Al2 scaled volections are 1; 03.05 FB/cccccccccccccccccccccccccccccccccccc	d weakening	active, EMF conditions and the second	n	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque at 7: EMF/reversal/o optitorque active. 0 7 EMF reference so Selects the EMF v Selects the source Other; source selection of the sel	Fix Ource Toltage reference of the EMF vertion. Isse. It is is is a scaled vertical scaled ver	ee source. coltage reference; 28.19 Evalue. value. A A reference A B reference	active, EMF conditions and active activ	n	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque at 7: EMF/reversal/o optitorque active. 0 7 EMF reference so Selects the EMF v Selects the source Other; source selection of the sel	Fix Ource Toltage reference of the EMF vertion. Ise. It is all y calculated External reference is ally calculated in the image. It is a scaled vertical in the image in the image in the image. It is a scaled vertical in the image in the ima	e source. coltage reference; 28.19 Evalue. value. value. A A reference A B reference BA B reference	active, EMF conditions and active activ	n	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque at 7: EMF/reversal/o optitorque active. 0 7 EMF reference so Selects the EMF v Selects the source Other; source selection of the sel	Fix purce voltage reference for the EMF voltage reference external reference ally calculated External reference 2 Al2 scaled voltage 1; 03.05 FB/de 2; 03.06 FB/de 2; 03.08 FB/de 2; 03.09 EFB	e source. ce source. coltage reference; 28.19 Evalue. value. value. A A reference A B reference BA B reference Treference 1	active, EMF conditions and active acti	n	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque at 7: EMF/reversal/o optitorque active. 0 7 EMF reference so Selects the EMF v Selects the source Other; source selection of the sel	Fix ource oltage reference for the EMF vection. Isse. ally calculated External reference 2 Al2 scaled vection as a Ce 1; 03.05 FB/ce 2; 03.06 FB/ce 2; 03.08 FB/ce 2; 03.09 EFB/ce 2; 03.10 EFB/ce 2; 03.10 EFB/ce 2; 03.10 EFB/ce 2; 03.10 EFB/ce 2; 03.10 EFB/ce 2; 03.10 EFB/ce 2; 03.10 EFB/ce 2; 03.10 EFB/ce 2; 03.10 EFB/ce 2; 03.10 EFB/ce 2; 03.10 EFB/ce 2; 03.10 EFB/ce 2; 03.10 EFB/ce 2; 03.10 EFB/ce 2; 03.10 EFB/ce 2; 03.10 EFB/ce 2	e source. ce source. coltage reference; 28.19 Evalue. value. A A reference A B reference BA B reference 1 reference 2	active, EMF conditions and active acti	n	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque at 7: EMF/reversal/o optitorque active. 0 7 EMF reference so Selects the EMF v Selects the source Other; source selection of the sel	Fix oltage reference for the EMF vection. Ise. ally calculated External reference at 12 Al1 scaled vection at 22 Al2 scaled vection at 24 Al3 scaled vection at 25 Al3 scaled vection at 26 Al3 scaled vection at 26 Al3 scaled vection at 26 Al3 scaled vection at 26 Al3 scaled vection at 27 Al3 scaled vection at 28 Al3 sca	e source. ce source. coltage reference; 28.19 Evalue. value. A A reference A B reference 1 reference 1 reference 2 DDCS con	active, EMF conditions and active activ	n	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque active. 7: EMF/reversal/optitorque active. 0 7 EMF reference so Selects the EMF vice Selects the source other; source selects active. 1: Internal; internal; internal; internal; internal; internal; internal; internal; internal; EMF voltage existed active. 1: Al1 scaled; 12. 1: FBA A reference active. 1: FBA B reference active. 1: EFB reference active.	Fix oltage reference for the EMF vection. Ise. ally calculated External reference 12 Al1 scaled vectors 22 Al2 scaled vectors 24 November 19 November	e source. coltage reference; 28.19 Evalue. A A reference A B reference 1 reference 2 DDCS con 2 DDCS con	active, EMF conditions and active active	n	ed, field reve	ersal active,
28.18	6: Fix/reversal/op active, optitorque active. 7: EMF/reversal/optitorque active. 0 7 EMF reference so Selects the EMF v Selects the source other; source select on the select selec	Fix ource oltage reference et for the EMF verence ally calculated External reference 22 Al2 scaled verence 32 Al3 scaled verence 32 Al3 scaled verence 32 Al3 scaled verence 32 Al3 scaled verence 32 Al3 scaled verence 32 Al3 scaled verence 32 Al3 scaled verence 32 Al3 scaled verence 32 Al3 scaled verence 33 Al3 scaled verence 34 Blee 1; 03.05 FB/Blee 2; 03.08 FB/Blee 1; 03.09 EFB/Blee 2; 03.10 EFB/Blee 1; 03.11 Bleer ref 1; 03.11 Bleer ref 2; 03.12 Bleer ref 1; 03.13 M/F	d weakening	active, EMF conditions and active, EMF conditions are sense. In a sense and a sense are sense and a sense are sense	n	ed, field reve	ersal active,

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
28.19	EMF voltage e	xternal reference					
	External EMF v	oltage reference in	nput.				
		oltage reference in		Irive in percent of	99.12 M1 nc	minal volta	ge. Can be
		28.18 EMF referen			T		1
	-325.00 325		%	100 = 1 %	n	у	Parameter
28.20		orrection source					
i		F voltage correction					
		irce for the EMF vo	oltage corre	ction.			
	Other; source s						
	0: Zero ; 0, not	in use. e correction; 28.2	1 EME volto	an correction			
		12.12 Al1 scaled v		ge correction.			
i		12.12 Al1 scaled v					
ı		12.32 Al3 scaled v					
		ence 1; 03.05 FBA		e 1.			
	8: FBA A refer	ence 2; 03.06 FBA	A A referenc	e 2.			
		ence 1 ; 03.07 FBA					
		rence 2; 03.08 FE					
		nce 1; 03.09 EFB					
		nce 2; 03.10 EFB					
		troller ref 1; 03.11 troller ref 2; 03.12					
) ref 1; 03.13 M/F					
		ref 2; 03.14 M/F					
	0 16	Zero	I-	1 = 1	n	у	Parameter
28.21	EMF voltage c		I		1	_ /	
1	EMF voltage co						
		orrection input of th	ne drive in po	ercent of 99.12 M1	nominal vo	Itage. Can l	oe connected
		voltage correction				Ü	
	-325.00 325	.00 0.00	%	100 = 1 %	n	у	Parameter
28.22	EMF voltage r	eference slope			-		-
ı	EMF voltage re	ference slope.					
ĺ	EMF voltage re	ference slope in p	ercent of 99	.12 M1 nominal vo	ltage per 1	ms. The dv/	dt limitation is
	located at the in	nput of the EMF co	ontroller.				
	0.01 100.00	30.00	%/ms	100 = 1 %/ms	n	у	Parameter
28.23	EMF voltage fi	Iter time					
ĺ		ter time constant.					
	EMF voltage fil	ter time constant fo	or 28.06 EM	F voltage.			
	0 32500	10	ms	1 = 1 ms	n	y	Parameter
28.24	EMF proportion	nal gain					
		in (KP) of the EMF					
		controller generate			with 28.24	EMF propo	rtional gain =
		ror is 5 % of 99.12	2 M1 nomina				_
	0.00 325.00	0.50		100 = 1	n	у	Parameter
28.25	EMF integration	on time					
		(T _I) of the EMF co					
		gration time to zer	o disables th	ne integral part of t	the EMF cor	ntroller and	resets the
	integrator.						
		time defines the ti				troller achie	eves the same
	Ivalue as the nr	oportional part_wh	en the error	value is constant.			

eχ	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	3, if the EMF err integration time - The controlle are elapsed 0 32500	controller generate for is 5 % of 99.12 = 50 ms follows: er generates 30 % . 15 % derive from	M1 nomina of motor ne	ll voltage. On tha	t condition an	d with 28.29	5 EMF after 50 ms
28	Dynamic field w						
	overshoot may	ed passes the bas occur. To solve thi eakening. 28.28 D	is problem t lynamic field	he field weakenin	ig point can b	e lowered b	y means of
	-		n _{Base}		Spee	d	
	speed or slow speed controller to con	•	g point is co	ompensated by the EMF limit has to	.043_FldWeakDyn_ ne EMF contro to be set high	a.ai oller in case enough to a	allow the EMF
να.	speed or slow sp	peed change. 30.8 npensate. 100.00	g point is co	mpensated by th	_043_FldWeakDyn_ ne EMF contro	_{a.ai} oller in case	
29	speed or slow spectontroller to com 80.00 100.00 Flux correction Selects the flux Selects the sour Other; source specton or in the sour of the sour of the sour of the specton or in the specton or in the specton of the specton or in the spect	peed change. 30.8 appensate. 100.00 a source correction source. ace for the flux correlection. a use. on; 28.29 Flux co 2.12 Al1 scaled v 2.22 Al2 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.33 Al3 Scaled v	g point is control of the control of	e 1. e 2. e 1. ce 2. e 1. croller ref 1. croller ref 2.	.043_FldWeakDyn_ ne EMF contro to be set high	a.ai oller in case enough to a	allow the EMF
29	speed or slow spectontroller to com 80.00 100.00 Flux correction Selects the flux Selects the sour Other; source specton or in the sour of the sour of the sour of the specton or in the specton or in the specton of the specton or in the spect	peed change. 30.8 appensate. 100.00 a source correction source. ace for the flux correlection. a use. on; 28.29 Flux co 2.12 Al1 scaled v 2.22 Al2 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.32 Al3 scaled v 2.33 Al3 scaled v	g point is control of the control of	e 1. e 2. e 1. ce 2. e 1. croller ref 1. croller ref 2.	.043_FldWeakDyn_ ne EMF contro to be set high	a.ai oller in case enough to a	allow the EMF

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	Flux correction inpu	ut.		·	•	<u>. </u>	
	Flux correction inpu				minal flux is o	generated w	ith 100 % field
	current. Can be co						
	-100.00 100.00	0.00	%	100 = 1 %	n	у	Parameter
28.31	Field current at 40) % flux					
	Field current at 40	% flux.					
	Field current in per					te 40 % of r	nominal flux. It
	is used to compens	sate the non-lir	nearity betw	een flux and field	current.		
	Flux	Flux	(lineariza	ation			
	90 %						
	70 %			1			
				1 1			
	40.0/						
	40 %						
		<u> </u>		į			
		:		į			
	/	i i		1 1			
	/	I I I I		1			
	<u> </u>	! !		<u></u> : →	Field		
	' P28	3.31 P28.3	32	P28.33	current		
				DZ_LIN_04	4_Flux linear_b.ai		
	0.00 100.00	40.00	%	100 = 1 %	n	у	Parameter
28.32	Field current at 70) % flux					
	Field current at 70	% flux.					
	Field current in per					te 70 % of r	nominal flux. It
	is used to compens	_			current.		
	0.00 100.00	70.00	%	100 = 1 %	n	у	Parameter
28.33	Field current at 90) % flux					
	Field current at 90						
	Field current in per				_	te 90 % of r	nominal flux. It
	is used to compens	_				1	T= .
	0.00 100.00	90.00	%	100 = 1 %	n	у	Parameter
28.36	M1 field heating s						
	Motor 1 field heating			10.55			
	Selects the source		d neating O	n/Off command.			
	0 = Disable field he 1 = Enable with On						
	Notes:	l.					
	Field heating is	disabled if:					
		que off (STO) i	s active				
		n inhibited is a					
	- A fault is		J. 170.				
		ergency off/fas	st current of	f) is active			
		ergency stop)		., .5 45475.			
				eference (Run coi	mmand).		
l	VVIICII (III	S 41170 10 111 310		5.5.5.50 (1 tull 60)			

ndex	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
				28.37 M1 field he			
			erence is se	t to zero. Motor 1	field nomina	Il current is	set with 99.13
	M1 nominal fi		not connec	ted via a separate	a field contac	tor following	n sattings
		or 1 field exciter is		ied via a separati	s liela contac	ioi ioiiovviii	g settings
		Mains contactor of		e = On.			
		//1 field heating s					
				ed and field econ	omy is need	ed for moto	r 1, set 28.36
		ng source = Disa //1 field heating s		ating. able with On, 100	% field curr	ent for moto	or 1 is kent
		cedure to close th			70 Held Cult		л тіз кері,
	Other [bit]; source	e selection.					
	0: Disable field h						
	1: Enable with O 2: Enable field he						
	3: DI1 ; 10.02.b00	•		0			= 0.
	4: DI2 ; 10.02.b01						
	5: DI3 ; 10.02.b02						
	6: DI4 ; 10.02.b03						
	7: DI5 ; 10.02.b04 8: DI6 ; 10.02.b05						
	11: DIO1 ; 11.02.b						
	12: DIO2 ; 11.02.b						
	19: DIL ; 10.02.b1		tus. Enable		Ī		
	0 19	Disable field heating	-	1 = 1	n	У	Parameter
8.37	M1 field heating	reference	•		•	•	•
	Motor 1 field heat						
	Field current refer	rence in percent	of 99.13 M1	nominal field cur	rent for field	heating and	d field
	economy. Field heating:						
		is enabled accor	dina to 28.3	6 M1 field heating	a source.		
				ield heating refere			
		y is only availabl	e when 2 m	otors with 2 indep	endent field	exciters are	e connected to
				en 28.37 M1 field	heating refer	ence < 100	%.
		y for motor 1 is a		an than 10 -			
		n command is giv 2 is selected via 4	-				
	Motor 3		+∠.∪				
	- Motor 2	2 is active. See 0	6.18.b05 Dı	rive status word 3		reference so	ource =
	- Motor 2	2 is active. See 0 //1 field current re	6.18.b05 Dı			reference so	ource =
	- Motor 2 - 28.38 N Interna 0.00 100.00	2 is active. See 0 M1 field current re I. 0.00	6.18.b05 Di eference so	rive status word 3		reference so	ource =
8.38	- Motor 2 - 28.38 N Interna 0.00 100.00 M1 field current	2 is active. See 0 M1 field current re I. 0.00 reference source	6.18.b05 Di eference so %	rive status word 3 urce = 42.53 M2	field current		T
B.38	- Motor 2 - 28.38 M Interna 0.00 100.00 M1 field current Motor 1 field curre	2 is active. See 0 M1 field current re I. 0.00 reference sourcent reference sourcent reference source	6.18.b05 Dieference so	rive status word 3 urce = 42.53 M2	field current		T
B.38	- Motor 2 - 28.38 M Interna 0.00 100.00 M1 field current Motor 1 field curre Selector for motor	2 is active. See 0 A1 field current re B. 0.00 reference source ent reference sour r 1 field current re	6.18.b05 Dieference so %	rive status word 3 urce = 42.53 M2 t 100 = 1 %	field current	у	Parameter
B.38	- Motor 2 - 28.38 M Interna 0.00 100.00 M1 field current Motor 1 field curre Selector for motor 0: Internal; motor	2 is active. See 0 11 field current re 1. 0.00 reference source ent reference sour 1 field current re 1 field current re	6.18.b05 Di eference so % ce urce. eference ac	tive status word 3 urce = 42.53 M2 to 100 = 1 % cording to field he	field current	у	Parameter
B.38	- Motor 2 - 28.38 M Interna 0.00 100.00 M1 field current Motor 1 field curre Selector for motor	2 is active. See 0 M1 field current re I. 0.00 reference source ent reference sour 1 field current re 1 field current re rce and 42.01 Me	6.18.b05 Dieference so % ce urce. eference acotor 1/2 sele	tive status word 3 aurce = 42.53 M2 from 100 = 1 %	field current	у	Parameter
8.38	- Motor 2 - 28.38 M Interna 0.00 100.00 M1 field current Motor 1 field curre Selector for motor 0: Internal; motor Field heating sour	2 is active. See 0 M1 field current rel. 0.00 reference sourcent reference sour r 1 field current reference reand 42.01 Monte; motor 2 field	6.18.b05 Dieference so % ce urce. eference acotor 1/2 seled current re	tive status word 3 aurce = 42.53 M2 to 100 = 1 % cording to field he ection. ference is taken.	n neating or sha	у	Parameter

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
28.39	M1 field current	external referen	се	-	•		•
	Motor1 external fi External field curr connected via 28.	ent reference inp	ut of the dri		99.13 M1 noi	minal field c	urrent. Can be
	-100.00 100.00	0.00	%	100 = 1 %	n	у	Parameter
28.40	Field current refe	erence trimming					
	Field current refer The field current of trimming in percer See drawing in 28 -100.00 100.00	of motor 1 and mo nt of 99.13 M1 no 3.38 M1 field curr	minal field	current or 42.10	neans of 28.4 M2 nominal f	0 Field curr field current	ent reference respectively.
28.44	M1 field control		70	100 - 1 /0		l y	raiametei
	Positive voltage li voltage. Example: With a maximum average possible to limit the E.g. to get a maxi limiting the firing a Note: 4-Q field expoltage limit.	3-phase supply version of the contract of the contract of the field of	oltage of 40 of 521 V _{DC} . tput voltage tput voltage current cont	00 V _{AC} the field controlled the case the rated on the case the rated on the case t	urrent contro I field supply ne limit to 46	ller can gen voltage is 2 %. This is a	erate a 00 V _{DC} it is
	voltage limit.	1,00,00	To:	1400 404			T
28.45	0.00 100.00 M1 field current	100.00	%	100 = 1 %	n	У	Parameter
	Proportional gain Example : The co 28.45 M1 field current.	ntroller generates	15 % of m	otor nominal field			
28.46	M1 field current	integration time				•	
	after 200 ms a integral part.	me defines the tines the proportional ntroller generates rrent proportional ondition and with generates 30 % are elapsed. 15 %	disables the within the part, when the same of 15 % of magain = 3, if 28.46 M1 from the formatter of the formatter of the same	e integral part of the error value i otor nominal field the field current ield current integ minal field voltage in the proportiona	the field curr s constant. d voltage (se- error is 5 % o gration time = ge, if the field	ent controlle e motor nan of 99.13 M1 200 ms foll I current err 5 % derive f	er achieves neplate) with nominal field ows: or is constant, rom the
	0 32500	200	ms	1 = 1 ms	n	у	Parameter
28.54	Field current form Force field current Selects the source 0 = Forward. 1 = Reverse. Other [bit]; source 0: Forward; field 1: Reverse; field 2: None; inactive. 3: DI1; 10.02.b00	t direction. e for the field curre e selection. current direction in current direction in	s forced to s forced to ce direction	forward directior reverse directior	•	eration.	

Index	Name						
	Text					_	
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	4: DI2 ; 10.02.b01				'		
	5: DI3 ; 10.02.b02						
	6: DI4 ; 10.02.b03 7: DI5 ; 10.02.b04						
	8: DI6 ; 10.02.b04						
	11: DIO1 ; 11.02.b						
	12: DIO2 ; 11.02.b						
	19: DIL ; 10.02.b1						
	20: External reve	•		ntactor in the fiel	d current loop	is used to	change the
	field direction, 28.						
	reverse. External	reverse adapts	the armatur	e voltage and sp	eed supervisi	on. The exte	ernal contactor
	interlocking and th				on has to be o	done by me	ans of
	Adaptive Program	n, application pro	ogram or ov	erriding control.			
	0 20	None	-	1 = 1	n	у	Parameter
3.55	Field reversal to	rque reference	hysteresis				
	Torque reference	hysteresis for fi	eld reversal				
	To prevent the fie				all 26.02 Torq	ue referenc	e used, a
	hysteresis in perc				The hysteres	is is symme	trical and is
	set by 28.55 Field						
	The field reversal	itself is controlle	ed by the si	gn of 26.02 Torqu	ie reference ι	ısed.	
		I _F					
		A					
				<u> </u>			
				_	26.02 Torque refer	ence used	
					·		
		-	1	 ▶			
		2	8.55 Field revers				
			reference hyste	eresis			
	•				DZ LIN 045	_hysteresis_a.ai	
		ı			D2_LIN_043	_iiysteiesis_a.ai	
	Note: The hystere	esis is only effec	tive for 28 4	l3 M1 EME/field	control mode	= Fiv/revers	al or
	EMF/reversal.	2313 13 Offiny Cricc	ctive for 20.	O WIT LIVIT /TICIO	Sommon mode	- 1 1X/1CVC13	ai oi
	0.00 325.00	2.00	%	See 46.04	n	V	Parameter
3.56				366 40.04	11	У	rarameter
7.00	Field reversal fie						
	Field current hyste			gonorato the act	nowledge size	aal for tha f	old rovereel
	The sign of 28.15 To avoid signal no						
	needed.	nise hi onieiiis a	Small Hyste	resis in percent (ון וואן כו פבית	ommai neid	Currellt 18
	Note: The hystere	asis is only affec	tive for 28 /	l3 M1 FMF/field	control mode	= Fig/revers	al
	EMF/reversal, Fix					- 1 17/10/013	ui,
	0.00 100.00	2.00	% %	100 = 1 %	n n	у	Parameter
8.57	Field reversal flu			1.00 . 70	1	ı J	1. 0.0
•	Flux monitoring de						
	Maximum allowed			15 M1 field curre	nt and the inte	rnal motor t	lux do not
	correspond to each						
	73A1 Load speed					5p 200 1000	
					- · - ·		

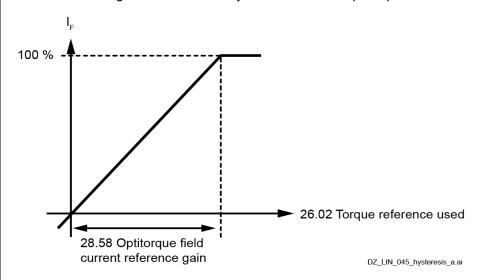
Index	Name									
	Text									
	Range	Default	Unit	Scale/	Volatile	Change	Туре			
				Fbeq16		running				
	Note: The delay is o	only effective for	28.43 M1 E	MF/field control n	node = Fix/	reversal, EN	/IF/reversal,			
	Fix/reversal/optitorq	ue or EMF/rever	sal/optitorq	ue.						
	0 32500	0	ms	1 = 1 ms	n	у	Parameter			

28.58 Optitorque field current reference gain

Field current reference gain for optitorque.

Optitorque calculates the field current reference depending on the torque reference. See 26.02 Torque reference used. The field current is reduced to a smaller value in case of low torque references. Thus, for low torque references the field reversal is faster. Optitorque is activated by means of 28.43 M1 EMF/field control mode.

The relation between 26.02 Torque reference used and 28.14 M1 field current reference is linear and without offset. The gradient is defined by means of 28.58 Optitorque field current reference gain.



Example: With 28.58 Optitorque field current reference gain = 20 %, 100 % field current is generated at 26.02 Torque reference used = 20 %.

Note: The gain is only effective for 28.43 M1 EMF/field control mode = Fix/optitorque,

EMF/optitorque, Fix/reversal/optitorque or EMF/reversal/optitorque.

0.00 ... 100.00 | 50.00 | % | 100 = 1 % | n | y | Parameter

28.61 Set: M1 field exciter current scaling

Set: Motor 1 field exciter scaling factor.

If the scaling is changed, the new value is taken over immediately.

To use 28.61 Set: M1 field exciter current scaling following inequation has to be valid:

- 99.13 M1 nominal field current ≤ 28.61 Set: M1 field exciter current scaling ≤ maximum field current of the used field exciter.

Notes:

- For 28.61 Set: M1 field exciter current scaling > maximum field current of the used field exciter
 A132 Parameter setting conflict is generated. See 4.32.b15 Warning word 2.
- For 99.13 M1 nominal field current > 28.61 Set: M1 field exciter current scaling the scaling is set automatically.
- The scaling factor is released when 99.13 M1 nominal field current < 28.61 Set: M1 field exciter current scaling and 99.07 M1 used field exciter type = OnBoard ... DCF804-0060.

100 = 1 A

n

Parameter

28.62 M1 field exciter freewheeling level

0.00 ... 60.00

Motor 1 field exciter freewheeling level.

0.00

The freewheeling level is shown in percent per 1 ms of the measured field exciter supply voltage. If 2 successive AC-voltage measurements differ more than 28.62 M1 field exciter freewheeling level, the freewheeling function is activated.

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	Note: The freew DCF804-0060.	heeling level is o	nly valid, for	99.07 M1 used fie	ld exciter ty	pe = DCF80	04-0050
	0.00 100.00	20.00	%/ms	100 = 1 %/ms	n	у	Parameter
28.63	M1 field excite	r operation mod	е			•	
	The field exciter phase supply or 0: 1-phase ; sing	on mode for certa is DCF803-0016, a single-phase s gle-phase supply hase supply for th	FEX-425-In upply. for the field	t and DCF803-003 exciter.	5 can be co	nnected to	either a 3-
	0 1	3-phase	-	1 = 1	n	у	Parameter

29 12-pulse/Hardparallel

Bit assignment:

reversal delay

Index	Name	Name									
	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
29.01	12-pulse mas	ster status word									
	12-pulse mas	ter status word.									
	Displays the 1	12-pulse master sta	tus word se	nd from the 12-p	ulse master to	the 12-puls	e slave, whe				
	20.01 Comma	and location = 12-pu	ulse link.								
	Note: The sta	tus word is valid in	12-nulse ma	aster and slave							

Bit Name Value Remarks Off1 control On command for the 12-pulse slave. 1 0 Off1 command for the 12-pulse slave. Off2 control Normal operation (Off2 inactive) for the 12-pulse slave. 1 1 0 Off2 (emergency off/fast current off) command for the 12pulse slave. 2 Motor heating 1 Motor heating active. 0 Motor heating inactive. 3 Run 1 Run command for the 12-pulse slave. 0 Stop command for the 12-pulse slave. 4 Field exciter 1 Field exciter On command for the 12-pulse slave. 0 Field exciter Off command for the 12-pulse slave. 5 Dynamic braking Dynamic braking active/started. 1 0 Dynamic braking inactive. 6 12-pulse type 1 12-pulse serial operation in the 12-pulse master. See 99.06 Operation mode. 0 12-pulse parallel operation in the 12-pulse master. See 99.06 Operation mode. 7 $0 \rightarrow 1$ Acknowledge fault indications in the 12-pulse slave with the Reset positive edge. 8 reserved 9 reserved Waiting for EMF 10 1 Waiting for reduction of EMF to match the mains voltage. reduction See 27.42 Reversal volt margin. 11 Autotuning Autotuning armature current controller active. current controller 12 Zero current detection plus reversal delay elapsed. See Zero current +

06.24.b13 Current controller status word 1 and 27.38

Reversal delay.

ndex	Name								
	Text								
	Range	9	Defau	lt	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	13	Change curre	ent	1		and to change t		the armatu	ire current.
		direction				changeover is a			
	14	Blocked curre	ent	1		urrent controller			the
		controller				ure current contr			
	15	Current direct	tion	1		Used current ref			
				0	27.02	Used current ref	erence is posi	itive.	
	00006	FFFFh				1 = 1	lv.		Signal
.02		Ise slave statu	s wor	d	<u> </u> -	1 - 1	У		Signal
.02		se slave status							
	20.01 Note :	Command loca	tion =	12-pulse	e link.	from the 12-pul	se slave to the	e 12-puise i	naster, whe
	Bit	Name		Value	Rema	rks			
	0	reserved							
	1	reserved							
	2	reserved							
	3	12-pulse slav	e e	1	12-pul	se slave is trippe	ed.		
		tripped	_						
	4	reserved							
	5	reserved							
	6	12-pulse type	;	1		se serial operation mode.	on in the 12-p	ulse slave.	See 99.06
				0		se parallel opera tion mode.	ation in the 12-	-pulse slave	e. See 99.06
	7	reserved							
	8	reserved							
	9	reserved							
	10	reserved							
	11	reserved							
	12	reserved							
	13	Change curred direction	ent	1		and to change to change to		the armatu	ire current.
	14	Blocked curre	ent	1	6.25 C	urrent controller ure current contr	status word 2		the
	15	Current direc	tion	1		Used current ref			
				0		Used current ref			
	0000:				1			1	To: :
.03	_	FFFFh			-	1 = 1	у	n	Signal
.03	12-pul Displa Note:	Ise slave firing se slave firing a ys the firing an Valid in the 12-	angle. gle of	the 12-pi	ulse slave				
		180.00	-		٥	100 = 1°	у	n	Signal
.05	12-pu	lse mode							
	The se		e the	same se	tting in bo	nes the reaction		ulse mode.	29.05 12-

99.06 Operation mode Separate Percent P		ame							
99.06 Operation mode Second	ext								
99.06 Operation mode Normal Difference Diode bridge 12-pulse parallel master/slave Valid Valid - 12-pulse serial master/slave Valid - Valid 6-pulse serial master/slave Valid - Valid All other Valid - Valid All other Valid - Valid All other Valid - Valid All other Valid - Valid All other Valid - Valid All other Valid - Valid All other Valid - Valid - Valid All other Valid - Valid - Valid All other Valid - Valid - Valid - Valid All other Valid - Valid	Ra	ange	Default	Unit			Volatile		Туре
99.06 Operation mode			•	<u>,</u>		lse mode	9		•
12-pulse serial master/slave Valid - Valid 6-pulse serial master/slave Valid - Valid - Valid All other Valid - Valid - Valid - Valid All other Valid - Valid All other Valid - Valid	9	9.06 Operation	mode	Normal					
6-pulse serial master/slave Valid - Valid - Valid All other Valid - - Valid - -	1	2-pulse parallel	master/slave	Valid	Valid				
Ali other	1	2-pulse serial m	aster/slave	Valid	-	Valid	d		
12-pulse parallel 99.06 Operation mode = 12-pulse parallel master or 12-pulse parallel slave: 0: Normal; 12-pulse parallel master and 12-pulse parallel slave use their own current controll independently. 1: Difference; the 12-pulse parallel slave calculates the difference between the 12-pulse paramaster actual current and its own actual current and controls this difference to zero by means current controller, not implemented yet. 2: Diode bridge; not used for 12-pulse parallel mode. 12-pulse serial 99.06 Operation mode = 12-pulse serial master/6-pulse serial master or 12-pulse serial slave serial slave: 0: Normal; 12-pulse serial master/6-pulse serial master and 12-pulse serial slave/6-pulse serial slave: 1: Difference; not used for 12-pulse serial/6-pulse serial slave unit is a diode bridge, not imple yet. 2: Diode bridge; the 2-pulse serial slave/6-pulse serial slave unit is a diode bridge, not imple yet. 3: Diode bridge; the 2-pulse serial slave/6-pulse serial slave unit is a diode bridge, not imple yet. 4: D 2 Normal - 1 = 1 n n Para 4: Pulse reversal timeout 4: Pulse reversal timeout 4: Pulse reversal timeout 4: Difference; not used for 12-pulse serial slave - units is monitored. Fault F pulse reversal timeout is generated, if the 2 units have different bridges fired for longer than 2 12-pulse reversal timeout. Less than 29.06 12-pulse reversal timeout Current direction 12-pulse master of 2.4 b9 Current controller status word Current direction 12-pulse slave 06.24 b9 Current controller status word Notes: - Fault F533 12-pulse reversal timeout must be longer than 27.40 Zero current timeout and 27.4 current timeout must be longer than 27.38 Reversal delay.			ster/slave	Valid	-	Valid	t		
99.06 Operation mode = 12-pulse parallel master or 12-pulse parallel slave: 0: Normal; 12-pulse parallel master and 12-pulse parallel slave use their own current controll independently. 1: Difference; the 12-pulse parallel slave calculates the difference between the 12-pulse paramaster actual current and its own actual current and controls this difference to zero by means current controller, not implemented yet. 2: Diode bridge; not used for 12-pulse parallel mode. 12-pulse serial 99.06 Operation mode = 12-pulse serial master/6-pulse serial master or 12-pulse serial slave: 0: Normal; 12-pulse serial master/6-pulse serial master and 12-pulse serial slave/6-pulse serial slave: 0: Normal; 12-pulse serial master/6-pulse serial mode. 3: Diode bridge; the 2-pulse serial slave/6-pulse serial slave unit is a diode bridge, not imple yet. 0: 2	P	All other		Valid	-	-			
3: Diode bridge; the 2-pulse serial slave/6-pulse serial slave unit is a diode bridge, not imple yet. 0 2 Normal - 1 = 1 n n n Para 12-pulse reversal timeout 12-pulse reversal timeout. In 12-pulse mode the current direction of both - master and slave - units is monitored. Fault F pulse reversal timeout is generated, if the 2 units have different bridges fired for longer than 2 12-pulse reversal timeout. Less than 29.06 12-pulse reversal timeout Current direction 12-pulse master	ind 1: ma cu 2: 12 99 se 0: are	dependently. Difference; the aster actual current controller, Diode bridge; repulse serial 0.06 Operation marial slave: Normal; 12-pulse controlled by the	12-pulse paralent and its own not implemente not used for 12-pulse see serial mastene same firing	lel slave cal n actual curr ed yet. -pulse paral e serial mas er/6-pulse se angle.	culates the dent and controllel mode. ter/6-pulse serial master a	ifference rols this of erial mas nd 12-pu	e between difference ster or 12-	the 12-puls to zero by pulse serial	se parallel means of its
yet. 0 2 Normal - 1 = 1 n n Para 12-pulse reversal timeout 12-pulse reversal timeout. In 12-pulse mode the current direction of both - master and slave - units is monitored. Fault F pulse reversal timeout is generated, if the 2 units have different bridges fired for longer than 2 12-pulse reversal timeout. Less than 29.06 12-pulse reversal timeout Current direction 12-pulse master 06.24.b9 Current controller status word Current direction 12-pulse slave 06.24.b9 Current controller status word Notes: Fault F533 12-pulse reversal timeout is inactive, if 29.06 12-pulse reversal timeout.is set 1 1000 ms. 29.06 12-pulse reversal timeout must be longer than 27.40 Zero current timeout and 27.4 current timeout must be longer than 27.38 Reversal delay.									
12-pulse reversal timeout 12-pulse reversal timeout. 12-pulse reversal timeout. 12-pulse reversal timeout. 12-pulse mode the current direction of both - master and slave - units is monitored. Fault F pulse reversal timeout is generated, if the 2 units have different bridges fired for longer than 2 12-pulse reversal timeout. Less than 29.06 12-pulse reversal timeout Current direction 12-pulse master 06.24.b9 Current controller status word Current direction 12-pulse slave 06.24.b9 Current controller status word Notes: Fault F533 12-pulse reversal timeout is inactive, if 29.06 12-pulse reversal timeout.is set 1 1000 ms. 29.06 12-pulse reversal timeout must be longer than 27.40 Zero current timeout and 27.4 current timeout must be longer than 27.38 Reversal delay.			ne 2-puise seri	ıaı sıave/6-p	uise seriai sia	ave unit	is a diode	bridge, not	implemente
12-pulse reversal timeout. 12-pulse reversal timeout. In 12-pulse mode the current direction of both - master and slave - units is monitored. Fault F pulse reversal timeout is generated, if the 2 units have different bridges fired for longer than 2 12-pulse reversal timeout. Less than 29.06 12-pulse reversal timeout Current direction 12-pulse master reversal timeout Current direction 12-pulse slave 06.24.b9 Current controller status word Notes: Fault F533 12-pulse reversal timeout is inactive, if 29.06 12-pulse reversal timeout.is set 1000 ms. 29.06 12-pulse reversal timeout must be longer than 27.40 Zero current timeout and 27.4 current timeout must be longer than 27.38 Reversal delay.			Normal		14 - 4			T.,	Daramatar
12-pulse reversal timeout. In 12-pulse mode the current direction of both - master and slave - units is monitored. Fault F pulse reversal timeout is generated, if the 2 units have different bridges fired for longer than 2 12-pulse reversal timeout. Less than 29.06 12-pulse reversal timeout Current direction 12-pulse master 06.24.b9 Current controller status word Current direction 12-pulse slave 06.24.b9 Current controller status word Notes: Fault F533 12-pulse reversal timeout is inactive, if 29.06 12-pulse reversal timeout.is set 1 1000 ms. 29.06 12-pulse reversal timeout must be longer than 27.40 Zero current timeout and 27.4 current timeout must be longer than 27.38 Reversal delay.				-	11=1		<u>N</u>	In	Parameter
Current direction 12-pulse master 06.24.b9 Current controller status word Current direction 12-pulse slave 06.24.b9 Current controller status word Notes: Fault F533 12-pulse reversal timeout is inactive, if 29.06 12-pulse reversal timeout.is set 1000 ms. 29.06 12-pulse reversal timeout must be longer than 27.40 Zero current timeout and 27.4 current timeout must be longer than 27.38 Reversal delay.	In pu	12-pulse mode tilse reversal time	the current dire						
Notes: - Fault F533 12-pulse reversal timeout is inactive, if 29.06 12-pulse reversal timeout.is set 1000 ms. - 29.06 12-pulse reversal timeout must be longer than 27.40 Zero current timeout and 27.4 current timeout must be longer than 27.38 Reversal delay.						ulse			
Notes: - Fault F533 12-pulse reversal timeout is inactive, if 29.06 12-pulse reversal timeout.is set 1000 ms. - 29.06 12-pulse reversal timeout must be longer than 27.40 Zero current timeout and 27.4 current timeout must be longer than 27.38 Reversal delay.									
Notes: - Fault F533 12-pulse reversal timeout is inactive, if 29.06 12-pulse reversal timeout.is set 1000 ms. - 29.06 12-pulse reversal timeout must be longer than 27.40 Zero current timeout and 27.4 current timeout must be longer than 27.38 Reversal delay.			•		-			_	
 1000 ms. 29.06 12-pulse reversal timeout must be longer than 27.40 Zero current timeout and 27.4 current timeout must be longer than 27.38 Reversal delay. 		06.24.b9 Current Current di	controller status rection 12-pulse	word slave					
current timeout must be longer than 27.38 Reversal delay.		06.24.b9 Current Current dii 06.24.b9 Current	controller status rection 12-pulse controller status	slaveword	pactive if 20	06 12-n	Ilse rever		_
Valid in the 12 pulse meeter only		Current di 06.24.b9 Current 06.24.b9 Current otes: Fault F533 12- 1000 ms.	controller status rection 12-pulse controller status pulse reversal	word slave word timeout is in		•		sal timeout.	is set to
 Valid in the 12-pulse master only. 		Current dii 06.24.b9 Current 06.24.b9 Current otes: Fault F533 12- 1000 ms. 29.06 12-pulse current timeou	controller status rection 12-pulse controller status repulse reversal reversal timed t must be longe	word slave word timeout is in out must be er than 27.3	longer than 2	27.40 Ze		sal timeout.	is set to
0 1000 100 ms 1 = 1 n y Para	N c - - -	Current dii 06.24.b9 Current 06.24.b9 Current otes: Fault F533 12- 1000 ms. 29.06 12-pulse current timeou Valid in the 12	controller status rection 12-pulse controller status pulse reversal reversal times t must be longe	word slave word timeout is in out must be er than 27.3	longer than 2 8 Reversal d	27.40 Ze		sal timeout.	is set to

Index	Name							
	Text			_				
	Range		Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	M1 no Fault I is still	minal current. -534 12-pulse exceeded who	current differen	ce is gene se parallel	in 12-pulse para rated, if 29.07 12 current difference	2-pulse paral	lel current d	
	1 5	0	10	%	1 = 1	n	у	Parameter
29.08	12-pul 29.08 curren delay	se parallel cu 12-pulse para It difference be is elapsed F5		delay. rence dela than 29.07 arded.	y delays F534 12 ⁄ 12-pulse paralle			
	10	64000	500	ms	1 = 1	n	у	Parameter
29.10	Chanr Calcul 99.11 29.10	nel 1 power ur ated total curi	urrent. The used	rent. r unit conn	ected to channel		1	
29.11			- rrent terminal C		100 = 1 %	у	n	Signal
	Measu OPL-H This s -325.0	ured current flo H01 in percent ignal is used t H0 325.00	of 99.11 M1 no o monitor the cu	erminal C1 minal curre rrent balar	of the power uni			
29.12	Chanr Measu OPL-F This s	nel 1 power ur ured current flo 101 in percent	of 99.11 M1 no	g through terminal D1 minal curre	of the power uni			
29.17			balanced curre		100 - 1 70	y	111	Olgridi
	Chanr Displa curren Any hi not co Note :	nel 1 power ur ys the thyristo t, if 29.65 Pov gh bit means, nduct the full	nit unbalanced control of the power were unit unbalan that all thyristor current.	urrent word unit conne ced current s of the po	d. cted to channel of t level is exceed wer unit are in of B Power unit unba	ed. peration but	one or more	e thyristors do
	Bit	Name	Value	Remark	S			
	1	reserved Thyristor V1	1 1	Current full curre	is unbalanced, the	nis thyristor i	s not condu	cting the
	2	Thyristor V1		Current full curre	is unbalanced, thent.			
	3	Thyristor V1		full curre				
	4	Thyristor V1	4 1	Current	is unbalanced, th	nis thyristor i	s not condu	cting the

Thyristor V15

1

full current.

full current.

Current is unbalanced, this thyristor is not conducting the

xek	Name	<u>' </u>								
	Text									
	Range	е	Defau	ılt	Unit	Scale/ Fbeq16	Volatil	e Chan		Туре
	6	Thyristor V1	16	1	Current full curr	is unbalanced,	this thyristo	or is not co	onduc	ting the
	7	reserved			Tuli Curi	Crit.				
	8	reserved								
	9	Thyristor V2	21	1	Current full curr	is unbalanced,	this thyristo	or is not co	onduc	ting the
	10	Thyristor V2	22	1		is unbalanced,	this thyristo	or is not co	onduc	ting the
	11	Thyristor V2	23	1	Current	is unbalanced,	this thyristo	or is not co	onduc	ting the
	12	Thyristor V2	24	1		is unbalanced,	this thyristo	or is not co	onduc	ting the
	13	Thyristor V2	25	1	full curr Current	is unbalanced,	this thyristo	or is not co	onduc	ting the
	14	Thyristor V2	26	1	full curr Current full curr	is unbalanced,	this thyristo	or is not co	onduc	ting the
	15	reserved								
	0000h	ı FFFFh	-		-	1 = 1	у	n		Signal
.18	Ch1 p	ower unit thy	yristor	loss wor	d					
	Displa words Any hi Note :	not conducting hit means,	ors/brar ng any o , that at	nch fuses current. S t least one	of the pove ee 29.68 thyristor/	s word. wer unit connect Power unit thyris branch fuse of t Power unit thy	stor loss fur he power u	nction. Init is out o	of ope	eration.
	Displa words Any hi Note : Bit ass	ays the thyriston not conducting the	ors/brar ng any o , that at	nch fuses current. S t least one ned in cas	of the povee 29.68 the thyristor/se of 29.68	wer unit connect Power unit thyris branch fuse of t Power unit thy	stor loss fur he power u	nction. Init is out o	of ope	eration.
	Displa words Any hi Note : Bit ass	nys the thyriston not conducting hit means, The bits are resignment:	ors/brar ng any o , that at	nch fuses current. S t least one	of the pove ee 29.68 thyristor/	wer unit connect Power unit thyris branch fuse of t Power unit thy	stor loss fur he power u	nction. Init is out o	of ope	eration.
	Displa words Any hi Note : Bit ass	nys the thyriston not conducting the pit means, The bits are resignment: Name reserved	ors/brar ng any o , that at not latch	nch fuses current. S t least one hed in cas	of the povee 29.68 ethyristor/se of 29.68	wer unit connect Power unit thyris branch fuse of t Power unit thy	stor loss fur he power u ristor loss f	nction. Init is out o unction =	of ope Warn	eration. ing.
	Displa words Any hi Note : Bit ass	nys the thyriston not conducting the pit means, The bits are resignment: Name	ors/brar ng any o , that at not latch	rich fuses current. S t least one hed in cas Value	of the povee 29.68 ethyristor/se of 29.68 Remar	wer unit connect Power unit thyris branch fuse of t Power unit thy ks wristor/branch fu	stor loss fur he power u ristor loss f	nction. Init is out of iunction =	of ope Warn	eration. ing. nt.
	Displa words Any hi Note: Bit ass Bit 0 1	nys the thyriston of conducting the point means, where the point means is a signment: Name	ors/brar ng any o , that at not latch	value	of the povee 29.68 ethyristor/se of 29.68 Remar This thy	wer unit connect Power unit thyris branch fuse of t Power unit thy ks yristor/branch fu yristor/branch fu	stor loss fur he power u ristor loss f se is not co se is not co	nction. Init is out of unction = onducting onducting	of ope Warn	eration. ing. nt. nt.
	Displa words Any hi Note: Bit ass Bit 0 1 2	nys the thyristor on the conduction of the condu	ors/brar ng any o , that at not latch	value	of the povee 29.68 ethyristor/se of 29.68 Remar This thy This thy	wer unit connect Power unit thyris /branch fuse of t B Power unit thy ks yristor/branch fu yristor/branch fu yristor/branch fu	stor loss fur he power u ristor loss f se is not co se is not co se is not co	nction. Init is out of unction = Onducting onducting onducting	curre	eration. ing. nt. nt. nt.
	Displa words Any hi Note: Bit ass Bit 0 1 2 3	nys the thyristor on the conducting his means, The bits are resignment: Name	ors/brar ng any o , that at not latch	Value	of the povee 29.68 ethyristor/se of 29.68 Remar This thy This thy This thy	wer unit connect Power unit thyris branch fuse of t Power unit thy Research Power unit thy Research Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu	stor loss fur he power u ristor loss f se is not co se is not co se is not co se is not co	onducting onducting onducting	curre curre curre	nt. nt. nt.
	Displa words Any hi Note: Bit ass Bit 0 1 2 3 4 5	nys the thyristor on the conduction of conduction of the conductio	ors/brar ng any o , that at not latch	Value 1 1 1 1	Remar This the This t	wer unit connect Power unit thyris branch fuse of t Power unit thy Research Power unit thy Research Power unit thy Research Resea	stor loss fur he power u ristor loss f se is not co se is not co se is not co se is not co se is not co se is not co	onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting	curre curre curre curre curre	nt. nt. nt. nt. nt. nt.
	Displa words Any hi Note: Bit ass Bit 0 1 2 3 4 5 6	nys the thyristor of not conductiring hit means, The bits are resignment: Name	ors/brar ng any o , that at not latch	Value	Remar This the This t	wer unit connect Power unit thyris branch fuse of t Power unit thy Research Power unit thy Research Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu	stor loss fur he power u ristor loss f se is not co se is not co se is not co se is not co se is not co se is not co	onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting	curre curre curre curre curre	nt. nt. nt. nt. nt. nt.
	Displa words Any hi Note: Bit ass Bit 0 1 2 3 4 5 6 7	nys the thyristor in not conductir igh bit means, The bits are resignment: Name reserved Thyristor V' Thyristor V' Thyristor V' Thyristor V' Thyristor V' Thyristor V' Thyristor V' Thyristor V' Thyristor V'	ors/brar ng any o , that at not latch	Value 1 1 1 1	Remar This the This t	wer unit connect Power unit thyris branch fuse of t Power unit thy Research Power unit thy Research Power unit thy Research Resea	stor loss fur he power u ristor loss f se is not co se is not co se is not co se is not co se is not co se is not co	onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting	curre curre curre curre curre	nt. nt. nt. nt. nt. nt.
	Displa words Any hi Note: Bit ass Bit 2 3 4 5 6 7 8	nys the thyristor in not conductir igh bit means, The bits are resignment: Name reserved Thyristor V' Thyristor V' Thyristor V' Thyristor V' Thyristor V' Thyristor V' Thyristor V' reserved reserved	ors/brar ng any o , that at not latch 11 12 13 14 15	Value 1 1 1 1	reference of the power of the power of 29.68 of	wer unit connect Power unit thyris /branch fuse of t B Power unit thy ks yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu	stor loss fur he power u ristor loss f se is not co se is not co se is not co se is not co se is not co se is not co se is not co	onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting	curre curre curre curre curre curre	nt. nt. nt. nt. nt. nt.
	Displa words Any hi Note: Bit ass Bit 2 3 4 5 6 7 8	nys the thyristor in not conductir igh bit means, The bits are resignment: Name reserved Thyristor V' Thyristor V' Thyristor V' Thyristor V' Thyristor V' reserved reserved Thyristor V' T	ors/brar ng any o , that at not latch 11 12 13 14 15 16	Value 1 1 1 1 1 1	ref the povee 29.68 ethyristor/se of 29.68 ref	wer unit connect Power unit thyris /branch fuse of t B Power unit thy ks yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu	se is not cose is	onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting	curre curre curre curre curre curre	nt. nt. nt. nt. nt. nt.
	Displa words Any hi Note: Bit ass Bit 0 1 2 3 4 5 6 7 8 9	nys the thyristor in not conductir igh bit means, The bits are resignment: Name	ors/brar ng any o , that at not latch 11 12 13 14 15 16	Value 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	reference of the power of the power of 29.68 of	wer unit connect Power unit thyris branch fuse of t Power unit thy Res Power unit thy Res Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu	se is not cose is	onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting onducting	curre curre curre curre curre curre	nt. nt. nt. nt. nt. nt. nt. nt. nt.
	Displa words Any hi Note: Bit ass Bit 0 1 2 3 4 5 6 7 8 9 10 11	nys the thyristor on the conduction of conduction of the conductio	ors/brar ng any o , that at not latch 11 12 13 14 15 16	Value 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	reference of the power of the power of 29.68 of	wer unit connect Power unit thyris 'branch fuse of t B Power unit thy ks yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu	se is not cose is	onducting onducting	curre curre curre curre curre curre	nt. nt. nt. nt. nt. nt. nt. nt. nt. nt.
	Displa words Any hi Note: Bit ass 3 4 5 6 7 8 9 10 11 12	nys the thyristor on the conduction of conduction of conducting the conduction of th	ors/brar ng any o , that at not latch 11 12 13 14 15 16	Value 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	reference of the power of the power of 29.68 of	wer unit connect Power unit thyris branch fuse of t Power unit thyris Power unit thy ks yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu	se is not cose is	onducting onducting	curre curre curre curre curre curre curre curre	nt. nt. nt. nt. nt. nt. nt. nt. nt. nt.
	Displa words Any hi Note: Bit ass Bit 0 1 2 3 4 5 6 7 8 9 10 11 12 13	nys the thyristor on the conduction of conduction of conducting his means, where the signment: Name	ors/brar ng any o , that at not latch 11 12 13 14 15 16 21 22 23 24 25	Value 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	reference of the power of the power of 29.68 of	wer unit connect Power unit thyris Power unit thyris Poranch fuse of t Power unit thy Res Power unit thy Res Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu	se is not conse is	onducting onducting	curre curre curre curre curre curre curre curre curre curre	nt. nt. nt. nt. nt. nt. nt. nt. nt. nt.
	Displa words Any hi Note: Bit ass 3 4 5 6 7 8 9 10 11 12	nys the thyristor on the conduction of conduction of conducting the conduction of th	ors/brar ng any o , that at not latch 11 12 13 14 15 16 21 22 23 24 25	Value 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	reference of the power of the power of 29.68 of	wer unit connect Power unit thyris branch fuse of t Power unit thyris Power unit thy ks yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu	se is not conse is	onducting onducting	curre curre curre curre curre curre curre curre curre curre	nt. nt. nt. nt. nt. nt. nt. nt. nt. nt.
	Displa words Any hi Note: Bit ass Bit 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	nys the thyristor in not conductire in not conductire in not conductire in not conductire in not conductire in not conductire in not conductive in not condu	ors/brar ng any o , that at not latch 11 12 13 14 15 16 21 22 23 24 25	Value 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	reference of the power of the power of 29.68 of	wer unit connect Power unit thyris 'branch fuse of t B Power unit thy ks yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu	se is not cose is	onducting onducting	curre curre curre curre curre curre curre curre curre curre	nt. nt. nt. nt. nt. nt. nt. nt. nt. nt.
20	Displa words Any hi Note: Bit ass Bit 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	nys the thyristor on the conduction of conduction of conducting his means, where the signment: Name	nrs/brar ng any o , that at not latch 11 12 13 14 15 16 21 22 23 24 25 26	Value 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ref the powee 29.68 ethyristor/se of 29.68 et	wer unit connect Power unit thyris Power unit thyris Poranch fuse of t Power unit thy Res Power unit thy Res Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu Pristor/branch fu	se is not cose is	onducting onducting	curre curre curre curre curre curre curre curre curre curre	nt. nt. nt. nt. nt. nt. nt. nt. nt. nt.
.20	Displa words Any hi Note: Bit ass Bit 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	Name reserved Thyristor V	nrent c	Value 1	of the povee 29.68 ethyristor/se of 29.68 eth	wer unit connect Power unit thyris 'branch fuse of t B Power unit thy ks yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu	se is not cose is	onducting onducting	curre curre curre curre curre curre curre curre curre curre	nt. nt. nt. nt. nt. nt. nt. nt. nt. nt.
.20	Display words Any his Note: Bit ass Bi	nys the thyristor in not conductir igh bit means, The bits are resignment: Name reserved Thyristor Variation Variat	ors/brar ng any o , that at not latch 11 12 13 14 15 16 21 22 23 24 25 26	Value 1	of the povee 29.68 ethyristor/se of 29.68 eth	wer unit connect Power unit thyris /branch fuse of t B Power unit thy ks yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu yristor/branch fu	se is not conse is	onducting onducting	curre curre curre curre curre curre curre curre curre curre	nt. nt. nt. nt. nt. nt. nt. nt. stinnt. nt. stinnt.
.20	Display words Any his Note: Bit ass Bit 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 0000h Ch2 p Chanr Calcul 99.11	Name reserved Thyristor V	ors/brar ng any o that at not latch 11 12 13 14 15 16 21 22 23 24 25 26 rrent c orit calcurent of surrent.	Value 1	of the povee 29.68 ethyristor/se of 29.68 ethyristor/se of 29.68 ethyristor/se of 29.68 ethyristor/se of 29.68 ethyristor/se of 29.68 ethyristor/se of 29.68 ethyristory This thyristory This	wer unit connect Power unit thyris Power unit thyris Power unit thy Res Power unit thyris Power uni	se is not conse is	onducting onducting	curre curre curre curre curre curre curre curre curre curre	nt. nt. nt. nt. nt. nt. nt. nt. stinnt. nt. stinnt.
.20	Displa words Any hi Note: Bit ass Bit 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 0000h Ch2 p Chanr Calcul 99.11 29.20	nys the thyristor in not conductir igh bit means, The bits are resignment: Name reserved Thyristor V' Thyris	ors/brar ng any o that at not latch 11 12 13 14 15 16 21 22 23 24 25 26 rrent c orit calcurent of surrent.	Value 1	of the povee 29.68 ethyristor/se of 29.68 ethyristor/se of 29.68 ethyristor/se of 29.68 ethyristor/se of 29.68 ethyristor/se of 29.68 ethyristor/se of 29.68 ethyristory This thyristory This	wer unit connect Power unit thyris Power unit thyris Power unit thy Res Power unit thyris Power uni	se is not conse is	onducting onducting	curre curre curre curre curre curre curre curre curre curre	nt. nt. nt. nt. nt. nt. nt. nt. stinnt. nt. stinnt.

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
29.21	Ch2 power unit	current terminal	C1	-			•
	Channel 2 power	unit current flow	ng through	terminal C1.			
		t flowing through			it connected	to channel 2	of the SDCS-
		ent of 99.11 M1 r					
		ed to monitor the					
	-325.00 325.0		%	100 = 1 %	у	n	Signal
29.22		current terminal					
		unit current flow					
	Measured curren				it connected	to channel 2	of the SDCS-
		ent of 99.11 M1 r			l l II - I		
		ed to monitor the					
	-325.00 325.0		%	100 = 1 %	у	n	Signal
29.27	Ch2 power unit						
		unit unbalanced				<i></i>	
		istors of the power				affected by t	ınbalanced
	current, if 29.65 F					ana ar mar	thuristors do
	Any high bit mea not conduct the f		ors or the p	ower unit are in c	pperation but	one or more	triyristors do
	Note: The bits ar		ase of 20 6	3 Power unit unh	alanced curr	ant function	= Warning
	Bit assignment:	e not lateried in e	ase of 29.0	or ower and and	alariced curr	ent function	– warning.
	See 29.17 Ch1 p	ower unit unbalai	nced curren	t word.			
	0000h FFFFh		-	1 = 1	у	n	Signal
29.28	Ch2 power unit		ord	1, ,	J	J.,	Joigilai
20.20	•	unit thyristor/bra		es word			
		istors/branch fuse			ed to channel	2 which are	lost in other
	words not conduc						
	Any high bit mea						eration.
		e not latched in c	ase of 29.6	8 Power unit thyr	istor loss fun	ction = War	ning.
	Bit assignment:						
	See 29.18 Ch1 p		r loss word.				
	0000h FFFFh	-	_	1 = 1	у	n	Signal
29.30	Ch3 power unit	current calculat	ed				
	Channel 3 power	unit calculated c	urrent.				
		current of the pow			l 3 of the SD	CS-OPL-H0	1 in percent of
	99.11 M1 nomina		ed formula i	s:			
	29.30 = (29.31 +	20 221 / 2					
			1	Г	1		
	-325.00 325.0	0 -	%	100 = 1 %	у	n	Signal
29.31	Ch3 power unit	0 - current terminal	C1	1	у	n	Signal
29.31	Ch3 power unit Channel 3 power	0 - current terminal	C1 ing through	terminal C1.			
29.31	Ch3 power unit Channel 3 power Measured curren	0 - current terminal unit current flowit flowing through	C1 ing through terminal C1	terminal C1.			
29.31	Ch3 power unit Channel 3 power Measured curren OPL-H01 in perc	current terminal unit current flow t flowing through ent of 99.11 M1 r	c1 ing through terminal C1 nominal curr	terminal C1. of the power une	it connected	to channel 3	of the SDCS-
29.31	Ch3 power unit Channel 3 power Measured curren OPL-H01 in perc This signal is use	current terminal unit current flow It flowing through ent of 99.11 M1 r	C1 Ing through terminal C1 Inominal curr	terminal C1. of the power unent. nce between the	it connected	to channel 3	of the SDCS-
	Ch3 power unit Channel 3 power Measured curren OPL-H01 in perc This signal is use -325.00 325.0	current terminal unit current flowing through ent of 99.11 M1 red to monitor the	C1 Ing through terminal C1 Inominal current bala	terminal C1. of the power une	it connected	to channel 3	of the SDCS-
29.31	Ch3 power unit Channel 3 power Measured curren OPL-H01 in perc This signal is use -325.00 325.0 Ch3 power unit	current terminal unit current flowing through ent of 99.11 M1 r d to monitor the o current terminal	C1 ing through terminal C1 nominal current bala % D1	terminal C1. of the power unent. nce between the	it connected	to channel 3	of the SDCS-
	Ch3 power unit Channel 3 power Measured curren OPL-H01 in perc This signal is use -325.00 325.0 Ch3 power unit Channel 3 power	current terminal unit current flowing through ent of 99.11 M1 r ed to monitor the o current terminal	C1 ing through terminal C1 nominal current bala % D1 ing through	terminal C1. of the power unent. nce between the 100 = 1 % terminal D1.	it connected hardparallel	to channel 3 connected n	of the SDCS- power units.
	Ch3 power unit Channel 3 power Measured curren OPL-H01 in perc This signal is use -325.00 325.0 Ch3 power unit Channel 3 power Measured curren	current terminal unit current flowing through ent of 99.11 M1 r d to monitor the color current terminal unit current flowing through	c1 ing through terminal C1 nominal current bala % D1 ng through terminal D1	terminal C1. of the power unent. nce between the 100 = 1 % terminal D1. of the power un	it connected hardparallel	to channel 3 connected n	of the SDCS- power units.
	Ch3 power unit Channel 3 power Measured curren OPL-H01 in perc This signal is use -325.00 325.0 Ch3 power unit Channel 3 power Measured curren OPL-H01 in perc	current terminal unit current flowing through ent of 99.11 M1 r d to monitor the current terminal unit current flowing through	ing through terminal C1 tominal current bala % D1 Ing through terminal D1 tominal current bala terminal D1 tominal current bala terminal terminal current bala terminal current	terminal C1. of the power unent. nce between the 100 = 1 % terminal D1. of the power unent.	it connected hardparallel y it connected	to channel 3 connected n	of the SDCS- cower units. Signal
	Ch3 power unit Channel 3 power Measured curren OPL-H01 in perc This signal is use -325.00 325.0 Ch3 power unit Channel 3 power Measured curren OPL-H01 in perc This signal is use	current terminal unit current flowing through ent of 99.11 M1 r ed to monitor the courrent terminal unit current flowing through the flowing through ent of 99.11 M1 r ed to monitor the courrent terminal	ing through terminal C1 current bala by D1 cominal current bala ing through terminal D1 current bala current bala	terminal C1. of the power undent. nce between the 100 = 1 % terminal D1. of the power undent. nce between the	it connected hardparallel y it connected hardparallel	to channel 3 connected n to channel 3 connected	of the SDCS- cower units. Signal of the SDCS- cower units.
29.32	Ch3 power unit Channel 3 power Measured curren OPL-H01 in perc This signal is use -325.00 325.0 Ch3 power unit Channel 3 power Measured curren OPL-H01 in perc This signal is use -325.00 325.0	current terminal unit current flowing through ent of 99.11 M1 r ed to monitor the courrent terminal unit current flowing through ent of 99.11 M1 r ed to monitor the courrent of 99.11 M1 r ed to monitor the courrent of 99.11 M1 r ed to monitor the courrent of 99.11 M1 r	ing through terminal C1 nominal current bala D1	terminal C1. of the power unent. nce between the 100 = 1 % terminal D1. of the power unent.	it connected hardparallel y it connected	to channel 3 connected n	of the SDCS- cower units. Signal
	Ch3 power unit Channel 3 power Measured curren OPL-H01 in perc This signal is use -325.00 325.0 Ch3 power unit Channel 3 power Measured curren OPL-H01 in perc This signal is use -325.00 325.0 Ch3 power unit	current terminal unit current flowing through ent of 99.11 M1 r ed to monitor the courrent terminal unit current flowing through the flowing through ent of 99.11 M1 r ed to monitor the courrent terminal	ing through terminal Carrent bala % D1 Ing through terminal D1 Ing through terminal D1 Inominal current bala % Figure 1 % The current bala of the current bala of the current bala of the current word	terminal C1. of the power unent. nce between the 100 = 1 % terminal D1. of the power unent. nce between the 100 = 1 %	it connected hardparallel y it connected hardparallel	to channel 3 connected n to channel 3 connected	oower units. Signal of the SDCS-

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	Displays the thy	ristors of the pow	er unit conn		3 which are a	affected by u	ınbalanced			
		Power unit unbal				•				
		ans, that all thyris	tors of the p	ower unit are in o	operation but	one or more	thyristors do			
	not conduct the									
		are not latched in	case of 29.6	3 Power unit unb	palanced curr	ent function	= Warning.			
	Bit assignment: See 29.17 Ch1 power unit unbalanced current word.									
			incea curren		1		0:			
	0000h FFFFh		- -	1 = 1	у	n	Signal			
29.38		t thyristor loss w								
		er unit thyristor/bra								
		ristors/branch fus					e lost, in other			
		ucting any current ans, that at least o					oration			
		ans, that at least of are not latched in o								
	Bit assignment:	are not lateried in t	Jase 01 29.0	o i ower and dis	113101 1033 1011	Clion – vvan	illig.			
		power unit thyristo	or loss word	_						
	0000h FFFFI	•	-	1 = 1	у	n	Signal			
29.40		t current calculat	ted	1	13	1	- Cigiliai			
20.40										
	Channel 4 power unit calculated current. Calculated total current of the power unit connected to channel 4 of the SDCS-OPL-H01 in percent of 99.11 M1 nominal current. The used formula is:									
			sea formula	IS:						
	29.40 = (29.41 -		lo/	100 10/	1		0:			
	-325.00 325.		%	100 = 1 %	У	n	Signal			
29.41		t current termina								
	Channel 4 power unit current flowing through terminal C1. Measured current flowing through terminal C1 of the power unit connected to channel 4 of the SDCS OPL-H01 in percent of 99.11 M1 nominal current.									
		sed to monitor the			e hardparallel	connected	oower units.			
	-325.00 325.	00 -	%	100 = 1 %	у	n	Signal			
29.42	Ch4 power uni	t current termina	I D1							
	Channel 4 power	Channel 4 power unit current flowing through terminal D1.								
	Measured current flowing through terminal D1 of the power unit connected to channel 4 of the SDCS									
		cent of 99.11 M1								
		sed to monitor the			hardparallel	connected	ower units.			
	-325.00 325.		%	100 = 1 %	у	n	Signal			
29.47	Ch4 power uni	t unbalanced cui	rent word							
	Channel 4 power unit unbalanced current word.									
	Displays the thyristors of the power unit connected to channel 4 which are affected by unbalanced									
	current, if 29.65 Power unit unbalanced current level is exceeded.									
		ans, that all thyris	tors of the p	ower unit are in o	operation but	one or more	thyristors do			
	not conduct the									
		are not latched in	case of 29.6	3 Power unit unb	palanced curr	ent function	= Warning.			
	Bit assignment:			.4						
		power unit unbala	incea curren				10: 1			
00 15	0000h FFFFI		<u> -</u>	1 = 1	У	n	Signal			
29.48	•	t thyristor loss w								
		er unit thyristor/bra								
		ristors/branch fus					e lost, in other			
		ucting any current								
	I AND A DIAN bit mo									
		ans, that at least o								
		ans, that at least or are not latched in o								

ndex	Name Text									
	Range)	Default	t	Unit	Scale/ Fbeq16	Volatile	Change running	Туре	
	See 29	9.18 Ch1 pow	er unit th	nyristor I	oss word.		•			
		FFFFh	_	<i>y</i>	I <u>-</u>	1 = 1	у	n	Signal	
).60		r units status	word				17	1	1 - 9	
	Power units status word. Displays the status of all hardparallel connected power units. Note: The bits are latched in case of 29.68 Power unit thyristor loss function = Warning Bit assignment:									
	Bit	Name		Value	Remar	ks				
	0	reserved								
	1	Ch1 power unbalanced current	unit	1		istors of the povon but one or m				
	2	Ch2 power unbalanced current	unit	1	All thyr	istors of the povon but one or m				
	3	Ch3 power unbalanced current	unit	1		istors of the povon but one or m				
	4	Ch4 power unbalanced current	unit	1		istors of the pov on but one or m				
	5	reserved								
	6	reserved								
	7	reserved								
	8	reserved								
	9	Ch1 power thyristor los		1		t one thyristor/b ted to channel			nit	
	10	Ch2 power thyristor los	s	1	connec	t one thyristor/b ted to channel 2	2 is out of oper	ation.		
	11	Ch3 power thyristor los	S	1	connec	t one thyristor/b ted to channel :	3 is out of oper	ation.		
	12	Ch4 power thyristor los		1		t one thyristor/b ted to channel			nit	
	13	reserved								
	14	reserved								
	15	reserved								
	0000h	FFFFh	-		-	1 = 1	у	n	Signal	
.63	Power	r units unbal	anced c	urrent f	unction	•	·			
		units unbalar								
	Select unit un	s the type of entering the state of the stat	event por rent fund	wer unit ction if 2	7.05 Moto	ced current. The or current excee e window define	ds 29.65 Powe	er unit unba	lanced curi	
	curren	t window.				side window of 2				
						rent terminal C1		Oii po	uiiit	
	0: No	action; none,	disable	event po	ower unit,	unbalanced cu	rrent.			
						er unit, unbalan				
		rning; the eve			rning A56	0 Power unit, u	inbalanced cur	rent.	T	
	0 2		Warnin	g	-	1 = 1	n	у	Paramete	
.64		r units unbala		_	•					

	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	current of all power	lanced current winger units current is in current is disabled	nside the w	indow (default -25	5.00 % 2	5.00 %) eve	ent power			
	0.00 325.00	25.00	%	100 = 1 %	n	у	Parameter			
29.65	Power units unb	alanced current le	evel							
	Power units unba	lanced current level lanced current tripp lanced current fund	ping level ir		ı		1			
29.68	0.00 325.00	15.00 ristor loss functio	%	100 = 1 %	n	У	Parameter			
	Power units, thyristor loss. Selects the type of event power unit, thyristor loss. A lost thyristor/branch fuse means, that is conducted through thyristor and branch fuse. 0: No action ; none, disable event power unit, thyristor loss. 1: Fault ; the event generates fault F561 Power unit, thyristor loss. 2: Warning ; the event generates warning A561 Power unit, thyristor loss.									
				unit, thyristor loss						
				unit, thyristor loss		у	Parameter			
29.70	2: Warning; the ed 0 2 Power units test. Power units test. 29.69 Power units thyristor loss. This 0: Normal mode; 1:Ch1 power units 2:Ch2 power units 3:Ch3 power units 1:Ch3 power units 1	event generates wa Fault	nulate even moving firir mode. 1 power ur 2 power ur 3 power ur	unit, thyristor loss Power unit, thyris 1 = 1 Its power units unling pulses from thy it firing pulses from thirt firing pulses from thirt firing pulses from the pulses fro	calanced curistors V11 m thyristors m thyristors m thyristors m thyristors m thyristors	urrent and pand V21. S V11 and V S V11 and V S V11 and V	oower units 721. 721. 721.			

30 Control limits

Drive operation limits.

Index Name

Tex	ct										
Rar	nge	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
Lim	Limit word 1										
Driv	Drive limit word 1.										
Dis	Displays the limit word 1 of the drive.										
Bit a	assignment:										
	4 1 11	1 37 1	· ·								
Bi		Value	Remarks								
0	Negative speed	1	Speed reference is limited by 20.24 Negative speed enable.								
1	Positive speed	1	Speed reference is limited by 20.23 Positive speed enable.								
2	Min speed	1	Speed reference is limited by 30.11 Minimum speed.								
3	Max speed	1	Speed reference is limited by 30.12 Maximum speed.								
4	Bridge 2 current	1	Armature cu	rrent referenc	e is limited b	y 30.34 M1	current limit				
			bridge 2.								
5	Bridge 1 current	1	Armature cu	irrent referenc	e is limited b	y 30.35 M1	current limit				
			bridge 1.								
6	Speed 1 current	1	Armature cu	rrent referenc	e is limited b	y 30.37 Cu	rrent limit at				
			speed 1.								
7	Speed 2 current	1	Armature cu	irrent referenc	e is limited b	y 30.38 Cu	rrent limit at				
11 -			Armature current reference is limited by 30.38 Current limit speed 2.								

	Name										
	Text										
	Range		Default		Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
	8	Speed 3 current	1	Arma		ent reference	is limited b	y 30.39 Cur	rent limit at		
	9	Speed 4 current	1		ture curr	ent reference	is limited b	y 30.40 Cur	rent limit at		
	10	Speed 5 current	1		ture curr	ent reference	is limited b	y 30.41 Cur	rent limit at		
	11	Min firing angle	1			limited by 30	.44 Minimu	m firing and	ıle.		
	12	Max firing angle	1			limited by 30					
	13	Min EMF controller	1	EMF	controlle	er output is lim	ited by 30.4	19 Minimum	EMF limit.		
	14	Max EMF controller	1	EMF	controlle	er output is lim	ited by 30.5	0 Maximun	n EMF limit.		
	15	reserved									
	0000h	FFFFh	_		_	1 = 1	у	n	Signal		
0.02	Torqu	e limit status									
	Bit			Remarks Torque/current reference is limited by 2-Q operation. See							
	0	0 Min 2-Q 1		Torqu	e/currer				on. See		
	1	operation Min speed controller	1		d contro			ock bridge 2. by 30.13 Speed control min			
	2	Max speed controller	1		d contro	ller output is l	mited by 30	0.14 Speed	control max		
	3	Min external	1		nal torqu	ie reference is	s limited by	30.15 Minin	linimum torque		
	4	Max external	1		nal torqu	ie reference is	s limited by	30.16 Maxi	mum torque		
	5	Min 1	1	Torqu	e refere	nce is limited	by 30.19 M	inimum tord	ue 1.		
	6	Max 1	1	Torqu	e refere	nce is limited	by 30.20 M	aximum tor	que 1.		
	7	Min 2	1			nce is limited					
	8	Max 2	1	Torqu	e refere	nce is limited	by 30.24 M	aximum tor	que 2.		
	9	Max	1	Torqu	e refere	nce is limited	by 30.27 M	ax torque d	uring		
		regenerating			erating.						
	10	10 Min emergency 1 stop			Speed controller output is limited by 30.30 Minimum torque emergency stop.						
		σιορ		Speed controller output is limited by 30.31 Maximum tord emergency stop.							
	11	Max emergency stop	1			•	imited by 30	0.31 Maximi	um torque		
	12	Max emergency	1			•	miled by 30	0.31 Maximi	um torque		
		Max emergency stop	1			•	imited by 30	0.31 Maximi	um torque		
	12	Max emergency stop reserved	1			•	miled by 30	0.31 Maximu	um torque		
	12 13	Max emergency stop reserved reserved	1			•	miled by 30	J.31 Maximi	um torque		
	12 13 14 15	Max emergency stop reserved reserved reserved	-			•	y	n	um torque		
0.03	12 13 14 15	Max emergency stop reserved reserved reserved reserved	-			op.	,				
0.03	12 13 14 15 0000h	Max emergency stop reserved reserved reserved reserved FFFFh	- ts	emerç	gency st	op.	,				
0.03	12 13 14 15 0000h Minim Comb Larges	Max emergency stop reserved re	- ts um torque rque/curre	/current	limits.	1 = 1 ent of 99.02 N	y M1 nominal	n torque. Eva	Signal		

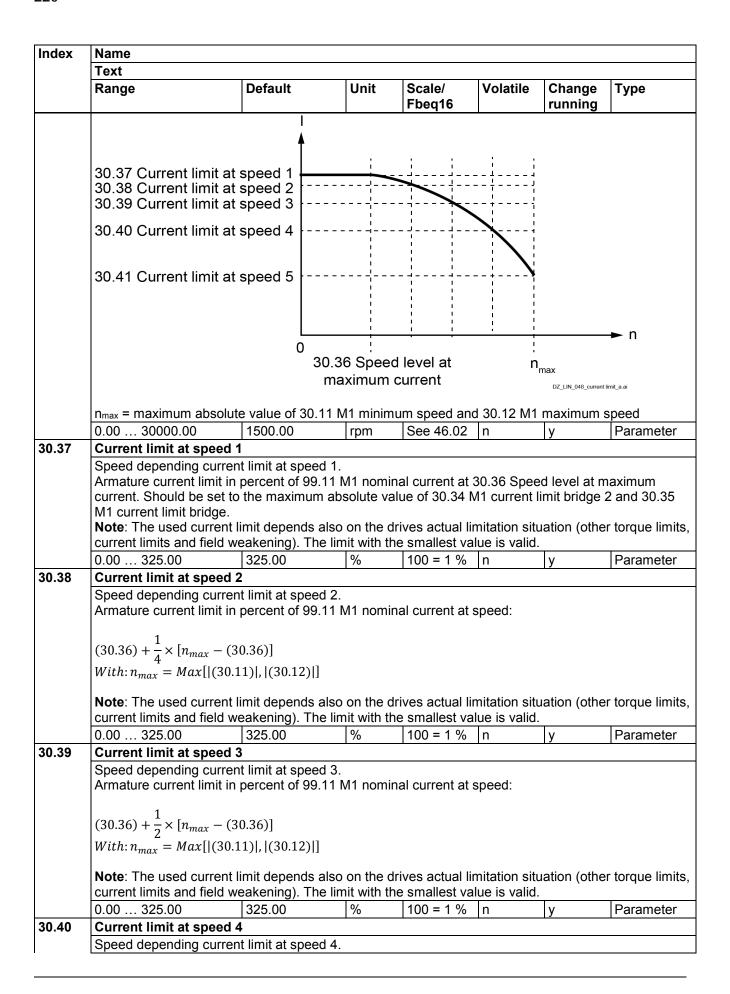
	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
30.04	Maximum torque	all limits								
		maximum torque/c								
		ximum torque/curre				al torque. E	valuated from			
	30.06 Maximum u	sed torque and 30.3	35 M1 current	t limit bridge 1						
	-325.00 325.00	-	%	See 46.04	у	n	Signal			
30.05	Minimum used to	orque								
	Minimum used tor	que reference limit.								
	Minimum torque lii	mit in percent of 99.	02 M1 nomin	al torque. The	e source is	selected wit	h 30.17			
	Minimum torque se	el.								
		torque limiter after 2	26.01 Torque	reference to I	imitation.					
	-325.00 325.00	-	%	See 46.04	у	n	Signal			
30.06	Maximum used to	orque	•			•				
		rque reference limit								
		imit in percent of 99		nal torque. Th	e source is	selected wi	th 30.18			
	Maximum torque s									
		torque limiter after 2	26.01 Torque	reference to I	imitation.					
	-325.00 325.00		%	See 46.04	v	n	Signal			
30.11	M1 minimum spe	ed			1,7		1 - 3 -			
	Motor 1 minimum									
		speed iiffit. speed reference lim	it in rom for 3	23.01 Sneed r	eference ra	ımn innut ar	nd 24 01 Used			
	speed reference.	opeca reference iiii	iii iii ipiii ioi 2	-0.01 Opeca 1	Ciciciioc ic	imp impat ai	10 24.01 0000			
	Notes:									
		mum sneed is annli	ed to 24 01 I	lsed sneed re	ference to	avoid excee	ding the			
	- 30.11 M1 minimum speed is applied to 24.01 Used speed reference to avoid exceeding the									
	 speed limits by means of 24.11 Speed correction. To be able to overspeed the drive (e.g. for winders) it is possible to switch off the speed limit for 									
					sible to swit	ch off the sr	need limit for			
	 To be able to d 	overspeed the drive	(e.g. for wind	ders) it is pos			peed limit for			
	To be able to 0 24.01 Used sp	overspeed the drive beed reference by m	(e.g. for wind neans of 6.10	ders) it is poss .b02 Auxiliary	control wo	<u>d 1.</u>	_			
RN 12	- To be able to 0 24.01 Used sp -30000.00 3000	overspeed the drive beed reference by m 00.00 -1500.00	(e.g. for wind	ders) it is pos			peed limit for Parameter			
30.12	- To be able to 0 24.01 Used sp -30000.00 3000 M1 maximum spe	overspeed the drive beed reference by m 00.00 -1500.00 eed	(e.g. for wind neans of 6.10	ders) it is poss .b02 Auxiliary	control wo	<u>d 1.</u>				
30.12	- To be able to c 24.01 Used sp -30000.00 3000 M1 maximum spe Motor 1 maximum	overspeed the drive beed reference by m 00.00 -1500.00 eed speed limit.	(e.g. for wind neans of 6.10 rpm	ders) it is poss .b02 Auxiliary See 46.02	n control wo	rd 1.	Parameter			
30.12	- To be able to one 24.01 Used spring -30000.00 3000 M1 maximum specific Motor 1 maximum Motor 1 maximum	overspeed the drive beed reference by m 00.00 -1500.00 eed speed limit. speed reference lir	(e.g. for wind neans of 6.10 rpm	ders) it is poss .b02 Auxiliary See 46.02	n control wo	rd 1.	Parameter			
30.12	- To be able to de 24.01 Used sp -30000.00 3000 M1 maximum spe Motor 1 maximum Motor 1 maximum Used speed refere	overspeed the drive beed reference by m 00.00 -1500.00 eed speed limit. speed reference lir	(e.g. for wind neans of 6.10 rpm	ders) it is poss .b02 Auxiliary See 46.02	n control wo	rd 1.	Parameter			
30.12	- To be able to 0 24.01 Used sp -30000.00 3000 M1 maximum spe Motor 1 maximum Motor 1 maximum Used speed refere Notes:	overspeed the drive seed reference by m 00.00 -1500.00 seed speed limit. speed reference lineace.	(e.g. for wind neans of 6.10 rpm nit in rpm for	ders) it is poss .b02 Auxiliary See 46.02 23.01 Speed	control wor	rd 1. y amp input a	Parameter nd 24.01			
30.12	- To be able to 0 24.01 Used sp -30000.00 3000 M1 maximum spe Motor 1 maximum Motor 1 maximum Used speed refere Notes: - 30.12 M1 max	overspeed the drive seed reference by m 00.00 -1500.00 sed speed limit. speed reference linence.	rpm nit in rpm for	ders) it is poss .b02 Auxiliary See 46.02 23.01 Speed Used speed re	control wor	rd 1. y amp input a	Parameter nd 24.01			
30.12	- To be able to c 24.01 Used sp -30000.00 3000 M1 maximum spe Motor 1 maximum Motor 1 maximum Used speed refere Notes: - 30.12 M1 max speed limits by	overspeed the drive beed reference by m 00.00 -1500.00 eed speed limit. speed reference line ence. imum speed is apply y means of 24.11 S	rpm nit in rpm for lied to 24.01 peed correction	ders) it is poss.b02 Auxiliary See 46.02 23.01 Speed Used speed roon.	reference reference to	amp input a	Parameter nd 24.01 eding the			
30.12	- To be able to ce 24.01 Used sp -30000.00 3000 M1 maximum spe Motor 1 maximum Motor 1 maximum Used speed refere Notes: - 30.12 M1 max speed limits by - To be able to ce 24.01 Used speed speed limits by - To be able to ce 24.01 Used speed speed limits by - To be able to ce 24.01 Used speed speed limits by - To be able to ce 24.01 Used speed speed limits by - To be able to ce 24.01 Used speed speed speed speed speed speed speed s	overspeed the drive beed reference by m 00.00 -1500.00 eed speed limit. speed reference line ence. imum speed is apply y means of 24.11 Spoverspeed the drive	rpm rit in rpm for lied to 24.01 peed correction (e.g. for wind rectangle)	ders) it is poss.b02 Auxiliary See 46.02 23.01 Speed Used speed roon. ders) it is poss	reference to	amp input a avoid exceed	Parameter nd 24.01 eding the			
30.12	- To be able to ce 24.01 Used specification - 30000.00 3000 M1 maximum specification 1 maximum Motor 1 maximum Used speed reference Notes: - 30.12 M1 max speed limits by - To be able to ce 24.01 Used speed speed speed specification - 24.01 Used specification - 30.12 M1 max speed limits by - To be able to ce 24.01 Used specification - 300000000000000000000000000000000000	overspeed the drive beed reference by monopole of the property	rpm nit in rpm for lied to 24.01 peed correction (e.g. for wind leans of 6.10	ders) it is possibus about Auxiliary See 46.02 23.01 Speed Used speed roon. ders) it is possibus auxiliary	reference reference to sible to swit control wor	amp input a avoid exceed the off the specific off.	Parameter nd 24.01 eding the peed limit for			
	- To be able to 0 24.01 Used sp -30000.00 3000 M1 maximum spe Motor 1 maximum Motor 1 maximum Used speed refere Notes: - 30.12 M1 max speed limits by - To be able to 0 24.01 Used sp -30000.00 3000	overspeed the drive peed reference by mo to the peed reference by mo to the peed reference limit. Speed limit. Speed reference limit. Speed reference limit. Speed reference by means of 24.11 Spoverspeed the drive peed reference by mo to the peed reference by the peed reference by the peed reference by the peed reference by the peed reference by the peed refere	rpm rit in rpm for lied to 24.01 peed correction (e.g. for wind rectangle)	ders) it is poss.b02 Auxiliary See 46.02 23.01 Speed Used speed roon. ders) it is poss	reference to	amp input a avoid exceed	Parameter nd 24.01 eding the			
	- To be able to ce 24.01 Used specification and specification with the specification and specification	overspeed the drive peed reference by monopole of the peed speed limit. speed reference limit. speed reference limit. speed reference limit. speed reference by monopole of the drive peed reference by monopole of the peed reference by monopole of the torque	rpm ried to 24.01 peed correcti (e.g. for wind peeds correcti (e.g. for wind peans of 6.10 rpm	ders) it is possibus about Auxiliary See 46.02 23.01 Speed Used speed roon. ders) it is possibus auxiliary	reference reference to sible to swit control wor	amp input a avoid exceed the off the specific off.	Parameter nd 24.01 eding the peed limit for			
	- To be able to ce 24.01 Used specification - 30000.00 3000 M1 maximum specification - 30000 months - 30.12 M1 max speed limits by - To be able to ce 24.01 Used specification - 30000.00 30000 Speed control mi	overspeed the drive beed reference by monopole of the property	rpm ried to 24.01 peed correcti (e.g. for wind peed correcti (e.g. for wind peans of 6.10 rpm	ders) it is possibus Auxiliary See 46.02 23.01 Speed Used speed roon. ders) it is possibus Auxiliary See 46.02	reference to sible to swit control wor	amp input a avoid exceed the off the spectral sp	Parameter nd 24.01 eding the peed limit for Parameter			
	- To be able to ce 24.01 Used specification of 24.01 Used	overspeed the drive beed reference by monopole of the property	rpm ried to 24.01 peed correcti (e.g. for wind peed correcti (e.g. for wind peans of 6.10 rpm	ders) it is possibus Auxiliary See 46.02 23.01 Speed Used speed roon. ders) it is possibus Auxiliary See 46.02	reference to sible to swit control wor	amp input a avoid exceed the off the spectral sp	Parameter nd 24.01 eding the peed limit for Parameter			
	- To be able to ce 24.01 Used specification of the second	overspeed the drive beed reference by monopole of the property	rpm ried to 24.01 peed correcti (e.g. for wind peed correcti (e.g. for wind peans of 6.10 rpm	ders) it is possibus Auxiliary See 46.02 23.01 Speed Used speed roon. ders) it is possibus Auxiliary See 46.02	reference to sible to swit control wor	amp input a avoid exceed the off the spectral sp	Parameter nd 24.01 eding the peed limit for Parameter			
	- To be able to ce 24.01 Used sp -30000.00 3000 M1 maximum speed Motor 1 maximum Motor 1 maximum Used speed refere Notes: - 30.12 M1 max speed limits by - To be able to ce 24.01 Used sp -30000.00 3000 Speed control mi Minimum speed co Minimum speed co Torque reference se Notes:	speed reference by monosome of the drive open of the process of th	rpm nit in rpm for lied to 24.01 peed correction (e.g. for wind reans of 6.10 rpm ue limit. ue limit in per	ders) it is possibuted by the second by the	reference reference to sible to swit control working in M1 nomina	amp input a avoid exceed the off the sport 1.	Parameter nd 24.01 eding the beed limit for Parameter ee 25.01			
	- To be able to ce 24.01 Used sp -30000.00 3000 M1 maximum specific Motor 1 maximum Used speed reference Notes: - 30.12 M1 max speed limits by - To be able to ce 24.01 Used sp -30000.00 3000 Speed control mi Minimum speed co Minimum speed co Torque reference Notes: - The used torque The Notes of 24.01 Used sp -30000.00 3000	overspeed the drive peed reference by mo 20.00 -1500.	rpm ried to 24.01 peed correcti (e.g. for wind peed correcti (e.g. for wind peans of 6.10 rpm ue limit. ue limit in per	ders) it is possibus ders) it is possibus Auxiliary See 46.02 23.01 Speed Used speed recon. ders) it is possibus Auxiliary See 46.02 recent of 99.02 es actual limit	reference reference to sible to swit control working M1 nominal ation situation	amp input a avoid exceed the off the sport of 1.	Parameter nd 24.01 eding the beed limit for Parameter ee 25.01			
	- To be able to ce 24.01 Used sp -30000.00 3000 M1 maximum specific Motor 1 maximum Motor 1 maximum Used speed reference Notes: - 30.12 M1 max speed limits by - To be able to ce 24.01 Used sp -30000.00 3000 Speed control mi Minimum speed co Minimum speed co Torque reference so Notes: - The used torque current limits as	overspeed the drive beed reference by monopole of the prediction o	rpm ried to 24.01 peed correcti (e.g. for wind peed correcti (e.g. for wind peans of 6.10 rpm ue limit. ue limit in per so on the driv). The limit wind	ders) it is possibused in the largest ders. It is possibused speed reconders) it is possibused Auxiliary See 46.02	reference reference to sible to swit control words In M1 nominal ation situativalue is value	amp input a avoid exceed the off the spread 1. If torque. See on (other to lid.	Parameter nd 24.01 eding the peed limit for Parameter ee 25.01 rque limits,			
	- To be able to ce 24.01 Used special distribution of the second of the	overspeed the drive beed reference by monopole of the process of t	rpm ried to 24.01 peed correcti (e.g. for wind peed correcti (e.g. for wind peans of 6.10 rpm ue limit. ue limit in per so on the driv). The limit witting of 30.13	ders) it is possibused by the second of the second by the	reference reference to sible to swit control wor n M1 nomination situativalue is value in torque	amp input a avoid exceed the off the spect of 1. If torque. Seed on (other toolid. ee for 2-Q open arms)	Parameter nd 24.01 eding the peed limit for Parameter ee 25.01 rque limits, peration,			
	- To be able to ce 24.01 Used sp -30000.00 3000 M1 maximum specific Motor 1 maximum Used speed reference Speed limits by - To be able to ce 24.01 Used sp -30000.00 3000 Speed control mi Minimum speed company Minimum speed company of the Speed Control mi Minimum speed company of the Speed	speed reference by monopole of the drive oped reference by monopole of the drive oped reference limit. Speed reference limit. Speed reference limit. Speed reference limit. Speed reference by monopole oped reference open open open open open open open ope	rpm ried to 24.01 peed correcti (e.g. for wind peed correcti (e.g. for wind peans of 6.10 rpm ue limit. ue limit in per so on the driv). The limit witting of 30.13	ders) it is possibused by the second of the second by the	reference reference to sible to swit control wor n M1 nomination situativalue is value in torque	amp input a avoid exceed the off the spect of 1. If torque. Seed on (other toolid. ee for 2-Q open arms)	Parameter nd 24.01 eding the peed limit for Parameter ee 25.01 rque limits, peration,			
	- To be able to ce 24.01 Used specification of the second	poverspeed the drive beed reference by monopole of the property of the propert	rpm nit in rpm for lied to 24.01 peed correcti (e.g. for wind leans of 6.10 rpm ue limit. ue limit in per lied to 24.01 lied t	ders) it is possibused by the second by the	reference reference to sible to swit control words in M1 nominal ation situativalue is value is value is value is value ee 07.61 Dispersion of the control words in the control w	amp input a avoid exceed the off the spread 1. y If torque. See on (other to lid. er for 2-Q oprive block but to the spread to	Parameter nd 24.01 eding the peed limit for Parameter ee 25.01 rque limits, peration, ridge 2 set =			
30.13	- To be able to 24.01 Used sp -30000.00 3000 M1 maximum spe Motor 1 maximum Motor 1 maximum Used speed refere Notes: - 30.12 M1 max speed limits by - To be able to 0 24.01 Used sp -30000.00 3000 Speed control mi Minimum speed co Minimum speed co Torque reference so Notes: - The used torque current limits a - No need to cha because the m Block bridge 2 -325.00 325.00	overspeed the drive beed reference by monopole of the process of t	rpm ried to 24.01 peed correcti (e.g. for wind peed correcti (e.g. for wind peans of 6.10 rpm ue limit. ue limit in per so on the driv). The limit witting of 30.13	ders) it is possibused by the second of the second by the	reference reference to sible to swit control wor n M1 nomination situativalue is value in torque	amp input a avoid exceed the off the spect of 1. If torque. Seed on (other toolid. ee for 2-Q open arms)	Parameter nd 24.01 eding the peed limit for Parameter ee 25.01 rque limits, peration,			
30.13	- To be able to ce 24.01 Used specification and specification with the specification and specification	poverspeed the drive seed reference by monopole of the predict of	rpm nit in rpm for lied to 24.01 peed correction (e.g. for wind reans of 6.10 rpm ue limit. ue limit in per limit witting of 30.13 is internally a second reans of 30.13 is internally	ders) it is possibused by the second by the	reference reference to sible to swit control words in M1 nominal ation situativalue is value is value is value is value ee 07.61 Dispersion of the control words in the control w	amp input a avoid exceed the off the spread 1. y If torque. See on (other to lid. er for 2-Q oprive block but to the spread to	Parameter nd 24.01 eding the peed limit for Parameter ee 25.01 erque limits, peration, ridge 2 set =			
30.12	- To be able to ce 24.01 Used specification of the control maximum specification of the control minimum specification of t	speed reference by monopole of the drive oped reference by monopole of the drive oped reference limit. speed reference limit. speed reference limit. speed reference limit. speed reference by monopole oped reference limit to oped reference by monopole oped reference limit. -325.00 ax torque controller output torcome oped reference limit.	rpm nit in rpm for lied to 24.01 peed correction (e.g. for wind reans of 6.10 rpm ue limit. ue limit in per limit witting of 30.13 is internally limit.	ders) it is possibused by the second of the	reference reference to sible to swit control wor n M1 nomination situativalue is value is value is value of 1.61 Direction n	amp input a avoid exceed the off the spread 1. If torque. See on (other to lid. ee for 2-Q oprive block but y	Parameter nd 24.01 eding the peed limit for Parameter ee 25.01 erque limits, peration, ridge 2 set = Parameter			
30.13	- To be able to ce 24.01 Used specification of the control maximum specification of the control minimum specification of t	speed limit. speed reference by monopole of the process of the pro	rpm nit in rpm for lied to 24.01 peed correction (e.g. for wind reans of 6.10 rpm ue limit. ue limit in per limit witting of 30.13 is internally limit.	ders) it is possibused by the second of the	reference reference to sible to swit control wor n M1 nomination situativalue is value is value is value of 1.61 Direction n	amp input a avoid exceed the off the spread 1. If torque. See on (other to lid. ee for 2-Q oprive block but y	Parameter nd 24.01 eding the peed limit for Parameter ee 25.01 arque limits, peration, ridge 2 set = Parameter			

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	Note: The used torque li current limits and field w	eakening). The lin	nit with the	smallest va		·				
	-325.00 325.00	325.00	%	See 46.04	n	у	Parameter			
30.15	Minimum torque refere									
	Minimum external torque Minimum external torque references. See 26.11 T Notes: - The used torque limi current limits and fie: - No need to change t because the minimu Block bridge 2.	e reference limit in orque reference 1 t depends also on d weakening). The he default setting m torque limit is in	the drives e limit with of 30.13 S ternally se	nd 26.12 Tores actual limita the largest speed controlet to -1 %. Se	que referer ation situati value is val I min torque ee 07.61 Dr	on (other to id. e for 2-Q op ive block br	e. orque limits, peration, ridge 2 set =			
	-325.00 325.00	-325.00	%	See 46.04	n	у	Parameter			
30.16	Maximum torque refere Maximum external torqu Maximum external torqu references. See 26.11 T Note: The used torque li current limits and field w	e reference limit. e reference limit ir orque reference 1 mit depends also	source ar	nd 26.12 Tor ves actual lim	que referer nitation situ	nce 2 source ation (other	€.			
	-325.00 325.00	325.00	%	See 46.04	n	у	Parameter			
	Minimum torque reference Selects a source that sw define two sets of torque input. 30.17 Minimum torque so The first set of limits is do The second set has sele torque 2 source and 30.3 0 = Minimum torque 1. 1 = Minimum torque 2.	itches between twellimits and switch el is independent efined by 30.19 M ctor parameters fo	between to the between to the between the	he sets using faximum tord rque 1 and 3 nimum and n	g a binary s que sel. 0.20 Maxin naximum lir	source such num torque mit. See 30.	as a digital 1. 21 Minimum			
	Other — 0 — References — 30.19 Minimum torque 1 —	30.21	30.17	30.05 Minimu used torque						
	Other — 0 — References — 30.20 Maximum torque 1 —		30.18	30.06 Maximu used torque						
	Other [bit]; source select	ction.								

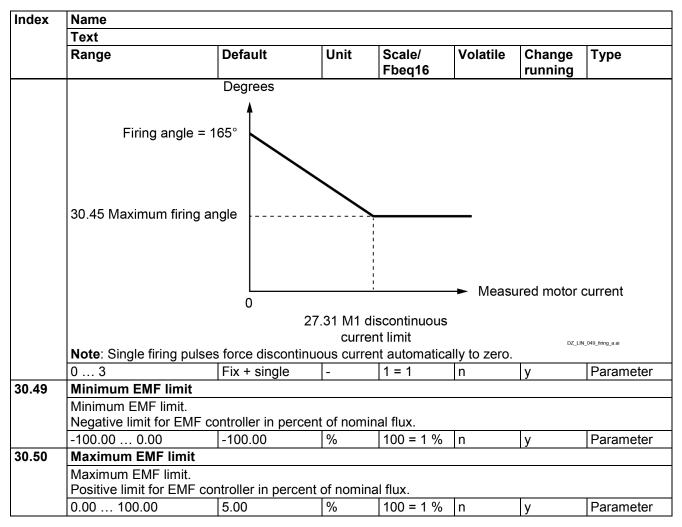
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			0.19 Minimum tor								
	1: Minimum torque 2; the source selected by 30.21 Minimum torque 2 source is active.										
	3: DI1 ; 10.02.b0										
	4: DI2 ; 10.02.b01 DI delayed status.										
	5: DI3 ; 10.02.b02 DI delayed status. 6: DI4 ; 10.02.b03 DI delayed status.										
	6: DI4 ; 10.02.b03 DI delayed status. 7: DI5 ; 10.02.b04 DI delayed status.										
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			delayed status.								
	19: DIL ; 10.02.b										
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	Maximum torque			o differe	at prodofice -	minimum 1	araua limita	Sac 20 17			
	Minimum torque		itches between tw	o dillerei	nt predefined	minimum to	orque ilmits.	See 30.17			
	0 = Maximum to										
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	Other [bit]; sour		tion								
				raue 1 is	active Norm	nal operation	1				
	0: Maximum torque 1 ; 30.20 Maximum torque 1 is active. Normal operation. 1: Maximum torque 2 : the source selected by 30.22 Maximum torque 2 source is active.										
		1: Maximum torque 2 ; the source selected by 30.22 Maximum torque 2 source is active. 3: DI1 ; 10.02.b00 DI delayed status.									
		4: DI2 ; 10.02.b01 DI delayed status.									
	5: DI3 ; 10.02.b02 DI delayed status. 6: DI4 ; 10.02.b03 DI delayed status.										
		3 DI dela	yed status.								
	6: DI4 ; 10.02.b0	3 DI dela 4 DI dela	yed status. Tyed status.								
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	6: DI4 ; 10.02.b0 7: DI5 ; 10.02.b0 8: DI6 ; 10.02.b0 11: DIO1 ; 11.02 12: DIO2 ; 11.02	3 DI dela 4 DI dela 5 DI dela .b00 DIC .b01 DIC	ayed status. ayed status. ayed status. delayed status. delayed status.								
	6: DI4 ; 10.02.b0 7: DI5 ; 10.02.b0 8: DI6 ; 10.02.b0 11: DIO1 ; 11.02 12: DIO2 ; 11.02 19: DIL ; 10.02.b	3 DI dela 4 DI dela 5 DI dela .b00 DIC .b01 DIC	ayed status. ayed status. ayed status. delayed status. delayed status.								
	6: DI4 ; 10.02.b0 7: DI5 ; 10.02.b0 8: DI6 ; 10.02.b0 11: DIO1 ; 11.02 12: DIO2 ; 11.02	3 DI dela 4 DI dela 5 DI dela .b00 DIC .b01 DIC	ayed status. ayed status. ayed status. delayed status. delayed status.	<u> </u> -	1 = 1	n	у	Parameter			
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Index	Name									
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	30.17 Minimum to									
	Other; source selection.									
	0: Zero ; 0, not in	use. ue 2 ; 30.23 Minimum t	oralie 2							
		num torque 2; 30.24 M		orque 2 multir	olied with -1.					
		.12 Al1 scaled value.								
	· ·	.22 Al2 scaled value.								
		.32 Al3 scaled value.	Dragona Di	D acidocid and	اما					
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		um torque 2 ; 30.23 Mi		aue 2 multipl	ied with -1.					
		.12 Al1 scaled value.		quo =a.u.p.						
		.22 Al2 scaled value.								
	6: Al3 scaled ; 12.32 Al3 scaled value. 18: Process PID output actual ; 40.01 Process PID output actual.									
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30.23	Minimum torque									
	Minimum torque r									
		reference limit 2 in perc	ent of 99.0	02 M1 nomina	al torque for	the torque	limiter. See			
	30.17 Minimum to	orque sel.								
	Notes:	Part describe els els		and the set that		/ . 11 1 -	anna Bartha			
		que limit depends also (and field weakening). ٦					orque ilmits,			
		nange the default setting		•			hecause the			
		ue limit is internally set								
	2.	,				J	J			
	-325.00 325.00	-325.00	%	See 46.04	n	у	Parameter			
30.24	Maximum torque									
	Maximum torque									
		reference limit 2 in per	cent of 99.	02 M1 nomir	nal torque for	the torque	limiter. See			
	30.17 Minimum to	orque sel.				-4' (-41				
	Note: The used to	•	o on the d	rivae actital i	imitation eiti i	ation (other	toralia limite			
		orque limit depends als					torque limits,			
	current limits and	orque limit depends als field weakening). The	limit with t	he smallest v	alue is valid.	· · · · · · · · · · · · · · · · · · ·				
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Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
30.31	Minimum speed controlle active and 30.30 Minimum control min torque is take 06.20.b13 Run inhibit state Notes: The emergency stope remain valid. No need to change to operation, because to bridge 2 set = Block -325.00 325.00 Maximum torque emer Maximum speed control	im torque emergeren. See 21.03 Emetus word. torque limit overrente default setting the minimum torque bridge 2. 0.00 gency stop ler output torque limit orque limit overrente default setting torque limit overre	ncy stop is lergency stides all ot of 30.30 Nue limit is imit for a r	a ramped Offs = zero. Other stop mode, 06 her minimum torquinternally set See 46.04	torque limi ue emerge to -1 %. Se	ncy stop) covalue of 30. un inhibit states. Minimum ncy stop for e 07.61 Dri	13 Speed atus word and n current limits 2-Q ve block Parameter mand.
	Maximum speed control active and 30.31 Maximum control max torque is take 06.20.b13 Run inhibit state. Note: The emergency state limits remain valid.	um torque emerge cen. See 21.03 En atus word.	ency stop nergency	is ≠ zero. Oth stop mode, 0	erwise the 6.20.b11 R	value of 30 un inhibit st	.14 Speed atus word and
	-325.00 325.00	0.00	%	See 46.04	n	у	Parameter
30.34	M1 current limit bridge Motor 1 armature current Current limit bridge 2 in = 0 % disables bridge 2. Notes: The used current limicurrent limits and fie No need to change to because the minimu Block bridge 2. -325.00 0.00	t limit for bridge 2. percent of 99.11 M it depends also or ld weakening). Th he default setting	M1 nominant the driver e limit with of 30.34 M	es actual limit th the largest v M1 current lim	ation situat value is val nit bridge 2f	ion (other to id. for 2-Q ope	orque limits,
30.35	M1 current limit bridge		70	100 - 1 70	<u> </u>	у	i arameter
30.30	Motor 1 armature current Current limit bridge 1 in = 0 % disables bridge 1. Note: The used current current limits and field w	t limit for bridge 1 percent of 99.11 N limit depends also	M1 nomina on the dr	ives actual lir	nitation situ	uation (othe	_
30.36	Speed level at maximu		1 /0	1100 - 170	1.,	y	i didilictoi
30.00	Speed level for the spee Speed level where the a	d depending curre		egins.			



Index	Name										
	Text										
	Range	Default	Unit	Scale/	Volatile	Change	Туре				
	Armature current limit in percent of 99.11 M1 nominal current at speed:										
	Armature current lin	nit in percent of 99.	11 M1 nom	nal current at	speed:						
	2										
	$(30.36) + \frac{3}{4} \times [n_{max}]$	-(30.36)]									
	$With: n_{max} = Max[]$										
	mux El	7,7,71									
	Note: The used cur						r torque limits,				
	current limits and fie				lue is valid						
	0.00 325.00	325.00	%	100 = 1 %	n	у	Parameter				
30.41	Current limit at spe										
	Speed depending c										
	Armature current lin	nit in percent of 99.	11 M1 nomi	nal current at	n _{max} .						
	Mith — Mauli	(20.11) (20.12)]									
	$with: n_{max} = Max[]$	With: $n_{max} = Max[(30.11) , (30.12)]$									
	Note: The used current limit depends also on the drives actual limitation situation (other torque limits										
	current limits and fie						. torquo iiriito,				
	0.00 325.00	325.00	%	100 = 1 %	n	у	Parameter				
30.44	Minimum firing an	gle	•	•	'		•				
	Minimum firing angl	e.									
	Minimum firing angl	e in degrees.									
	0.00 165.00	15.00	0	100 = 1°	n	у	Parameter				
30.45	Maximum firing an	gle									
	Maximum firing ang										
	Maximum firing ang	le in degrees. The	maximum fi	ring angel can	be forced	using 06.10	.b10 Auxiliary				
	control word 1.		1.		T	1	1_				
	0.00 172.00	150.00	٥	100 = 1°	n	n	Parameter				
30.46	Maximum firing an	•									
	Maximum firing ang										
	Selects the strategy 0: Fix ; the maximum			20 45 Mayim	um firina ar	alo					
	1: Fix + single ; the						e When the				
	maximum firing ang										
	2: Calculated ; the r	naximum firing limit	t is automat	ically reduced	from 165°	to 30.45 Ma	iximum firina				
	angle depending on										
	3: Calculated + sin	gle; same function									
	maximum firing ang	le is reached.									



31 Fault functions and fault levels

Configuration of external events. Selection of the drive behavior in fault situations.

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
31.01	External event 1	source	•				•
	0 = Active. 1 = Inactive. Other [bit]; source 0: Active (false); 1: Inactive (true) 3: DI1; 10.02.b00 4: DI2; 10.02.b01 5: DI3; 10.02.b03 7: DI5; 10.02.b04 8: DI6; 10.02.b05 11: DIO1; 11.02.b	e of external event 1. e selection.	rmal operati		nt 1 type.		
		5 DI delayed status.					
	0 19	Inactive (true) -	1 = 1	n	у	Parameter
31.02	External event 1	type					

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	Type of external e									
		f external event 1.								
		e, disable external eve		!4						
		t generates fault 9081 l vent generates warning			a 1					
		llt ; if the drive is in stat				rates fault 0	0081 External			
		, the event generates w				iales iauli s	OOT External			
		nult ; if the drive is in sta				erates fault	9081 External			
		, the event is inactive.	·							
		rning; if the drive is in s			the event g	enerates wa	arning A981			
		1. Otherwise, the event	is inactiv							
	0 5	No action	-	1 = 1	n	у	Parameter			
31.03	External event 2									
	Source of externa									
		e of external event 2. S	see 31.04	External ever	nt 2 type and	d 31.01 Exte	ernal event 1			
	source.	La (' / ()		4 4	1	1	D			
04.04	0 19	Inactive (true)	-	1 = 1	n	У	Parameter			
31.04	External event 2									
	Type of external e		21 02 Ev	tornal avant 1	1 tupo					
	0 5	f external event 2. See No action	31.02 EX	1 = 1		T.,	Doromotor			
24.05			-	=	n	У	Parameter			
31.05	External event 3									
	Source of externa	ા event ૩. e of external event 3. S	21 06	External ever	nt 3 type and	d 31 01 Evt	arnal event 1			
	source.	e oi external event 5. 5	51.00	LXICITIAI EVE	it 5 type air	U 31.01 LX	errial everit i			
	0 19	Inactive (true)	1_	1 = 1	n	V	Parameter			
31.06	External event 3			1	1	13	- aramotor			
	Type of external e									
		f external event 3. See	31.02 Ex	ternal event 1	1 type.					
	0 5	No action	-	1 = 1	n	У	Parameter			
31.07	External event 4		1	1			I .			
	Source of externa									
		e of external event 4. S	ee 31.08	External ever	nt 4 type and	d 31.01 Exte	ernal event 1			
	source.					T-				
	0 19	Inactive (true)	-	1 = 1	n	у	Parameter			
31.08	External event 4									
	Type of external e									
		f external event 4. See	31.02 Ex		1 type.					
	0 5	No action	-	1 = 1	n	у	Parameter			
31.09	External event 5									
	Source of externa									
		e of external event 5. S	See 31.10	External ever	nt 5 type and	d 31.01 Exte	ernal event 1			
	source.	1 (()	1		<u> </u>	1	In (
		Inactive (true)	-	1 = 1	n	у	Parameter			
<u> </u>	0 19	, ,								
31.10	External event 5	type								
31.10	External event 5 Type of external e	type event 4.	24.00.5	formal sures of	1 4					
31.10	External event 5 Type of external expects the type of	type event 4. f external event 4. See	31.02 Ex			Т.,	Davanastan			
31.10	External event 5 Type of external e	type event 4. f external event 4. See No action	31.02 Ex	ternal event 1	1 type.	у	Parameter			

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	Selects the way the motor master-follower, DDCS a 0: Coast stop; the motor firing angle to decrease to the firing pulses are block 1: Ramp stop; the input stop ramp. See 23.23 Emangle is forced to the valuation that the armature current is zero fans are stopped. In case 19.20 Follower for the drive is forced to specific to the drive is forced to specific to the drive is forced to specific to the drive is forced to specific to pulses are blocked. The lin case 19.20 Follower for the drive is forced to specific the drive is forced to specific to the drive is forced to specific to the drive is forced to specific to the drive is forced to specific the drive is forced	nd DCSLink) cause coasts to a stop. the armature currenced. The breakers of the drive ramp argency stop time of 30.45 Maximero the firing pulse arce ramp stop = Fixed control. The drive ramp areakers are operated control.	sing a faul The firing ent as fast are open is set to ze e. When r num firing es are bloc Force spec ap is set to level the ature curre ned. Field Force spec	t. angle is force as possible. ed. Field excero. Thus, the eaching 21.0 angle to decicked. The breed control the excero. Thus, firing angle is ent. When the exciter and faced control the	ed to the va When the a iter and far e motor sto 8 M1 zero rease the a eakers are torque sel the motor se forced to te armature ans are sto e torque sel	alue of 30.4 armature cures are stopp ps along the speed level rmature cure opened. Fie ector is byp stops at the he value of current is z pped.	5 Maximum irrent is zero bed. e emergency the firing rent. When eld exciter and bassed and active torque 30.45 tero the firing
	0 4	Ramp stop	-	1 = 1	n	у	Parameter
31.14	Fault stop mode fault le				1.5	<u> </u>	1
	Stop mode for faults with Selects the way the moto Note : 31.14 Fault stop m 0: Coast stop ; the motor firing angle to decrease the firing pulses are block 4: Dynamic braking ; the	or is stopped for all ode fault level 3 d coasts to a stop. he armature curre ked. The breakers	loes not a The firing ent as fast are open	pply to commangle is force as possible. ed. Field exc	nunication for ed to the van When the a iter and far	alue of 30.4 armature cu	rrent is zero
	0 4	Coast stop	-	1 = 1	n	у	Parameter
31.15	Fault stop mode fault le						
	Stop mode for faults with Selects the way the moto Note: 31.15 Fault stop m stop mode communicatio 0: Coast stop; the motor firing angle to decrease the firing pulses are block 1: Ramp stop; the input stop ramp. See 23.23 Emangle is forced to the valuation that the armature current is zefans are stopped. In case 19.20 Follower for the drive is forced to specific the drive is forced to specific the drive is forced. The land maximum firing angle to pulses are blocked. The land case 19.20 Follower for the drive is forced to specific the dr	or is stopped for all ode fault level 4 denoted and the coasts to a stop. The armature currenced. The breakers of the drive rampher of 30.45 Maximuser of the firing pulse force ramp stop = Field control. The drive ramp stop = Field control are are stoped decrease the armature or amp stop = Field control.	The firing ent as fast are open is set to zee. When roum firing es are blocked are specially as the force specially are currently are currently are specially angle is force as possible. ed. Field excero. Thus, the eaching 21.0 angle to decicked. The breed control the excero. Thus, firing angle is ent. When the exciter and faced control the	ed to the va When the a iter and far e motor sto 8 M1 zero rease the a eakers are torque sel the motor se forced to te armature ans are sto e torque sel	alue of 30.4 armature curps along the speed level rmature curps ector is bypostops at the he value of current is zpped.	5 Maximum arrent is zero bed. e emergency the firing rent. When eld exciter and bassed and active torque 30.45 tero the firing	
31.16	Residual current detect		<u> </u>	1 - 1	<u> </u>	y	i arameter
31.10	Source of the residual cu						

Index	Name													
	Text													
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре							
	Defines the source	ce of the residual currer	nt detection	. The drive re	eacts accord	ding to 31.1	8 Residual							
		type if the earth curren	it exceeds 3	31.19 Residu	al current d	etection lev	el for 31.20							
	Residual current	detection delay.												
	0 = No current.													
	1 = Current detec		:		l: -::t- :t		Danish and							
		ual current detection so												
	device.	delay remains valid. The	ne residuai	current detec	cuon level is	aujusteu a	t the external							
	Other [bit]; source	e selection												
		residual current detec	ted. Norma	al operation.										
		ted; residual current de												
		DI delayed status. The		urrent is mea	sured by m	eans of an	external							
	device (e.g. Bend													
		DI delayed status. The	e residual c	urrent is mea	sured by m	eans of an	external							
	device (e.g. Bend													
		DI delayed status. The	e residual c	urrent is mea	isured by m	eans of an	external							
	device (e.g. Bend	ier reiays). DI delayed status. The	o rocidual c	urrant is maa	eurod by m	oans of an	ovtornal							
	device (e.g. Bend		s residual c	urrent is mea	isured by iii	cans or an	exterrial							
			e residual c	urrent is mea	sured by m	eans of an	external							
	7: DI5 ; 10.02.b04 DI delayed status. The residual current is measured by means of an external device (e.g. Bender relays).													
	8: DI6 ; 10.02.b05 DI delayed status. The residual current is measured by means of an external													
	device (e.g. Bender relays).													
	11: DIO1 ; 11.02.b00 DIO delayed status. The residual current is measured by means of an external													
	device (e.g. Bend													
		001 DIO delayed status	3. The resid	ual current is	measured	by means o	f an external							
	device (e.g. Bend													
		5 DI delayed status. Ti	ne residuai	current is me	easured by r	neans of ar	i externai							
	device (e.g. Bend	No current		4 – 4	1	T.,	Danamatan							
04.40	0 19		-	1 = 1	n	у	Parameter							
31.18	Residual current													
	3.	idual current detection												
	Selects the type of	of event residual currer												
	O: No action: non	a disable residual our	rant dataat	on										
		ne, disable residual cur			ha									
	1: Fault; the even	nt generates fault 2330	Residual c	urrent detecte										
	1: Fault ; the even 2: Warning ; the e	nt generates fault 2330 event generates warnin	Residual c	urrent detecto sidual curren	t detected.	lv.	Parameter							
31 10	1: Fault ; the even 2: Warning ; the e 0 2	nt generates fault 2330 event generates warnin No action	Residual c	urrent detecte		у	Parameter							
31.19	1: Fault; the even 2: Warning; the e 0 2 Residual current	nt generates fault 2330 event generates warnin No action t detection level	Residual c	urrent detecto sidual curren	t detected.	у	Parameter							
31.19	1: Fault; the even 2: Warning; the e 0 2 Residual current Residual current	nt generates fault 2330 event generates warnin No action t detection level detection level.	Residual c ng A2B3 Re -	urrent detectorisidual curren	n detected.									
31.19	1: Fault; the even 2: Warning; the e 0 2 Residual current Residual current Residual current	nt generates fault 2330 event generates warnin No action t detection level detection level. detection tripping level	Residual c ng A2B3 Re - - in amperes	urrent detectorsidual current	t detected. n s calculated									
31.19	1: Fault; the even 2: Warning; the e 0 2 Residual current Residual current of Residual current of	nt generates fault 2330 event generates warnin No action t detection level detection level. detection tripping level er. Thus, the current tra	Residual c ng A2B3 Re - - in amperes ansformer i	urrent detectorsidual current 1 = 1 1 1 1 1 1 1 1 1	n s calculated 400 to 1.	to the prim	ary side of the							
31.19	1: Fault; the even 2: Warning; the e 0 2 Residual current of Residual current of Current transforme Note: If the residual	nt generates fault 2330 event generates warnin No action t detection level detection level. detection tripping level er. Thus, the current tra ual current detection so	Residual c ng A2B3 Re - in amperes ansformer i	urrent detecte sidual current 1 = 1 s. The value is ratio must be inected to a control of the sidual current	s calculated 400 to 1.	to the prim	ary side of the							
31.19	1: Fault; the even 2: Warning; the e 0 2 Residual current of Residual current of Current transforme Note: If the residual	nt generates fault 2330 event generates warnin No action t detection level detection level. detection tripping level er. Thus, the current tra	Residual c ng A2B3 Re - in amperes ansformer i	urrent detecte sidual current 1 = 1 s. The value is ratio must be inected to a control of the sidual current	s calculated 400 to 1.	to the prim	ary side of the							
	1: Fault; the even 2: Warning; the e 0 2 Residual current Residual current Residual current current transform Note: If the residu detection level is 0.00 20.00	nt generates fault 2330 event generates warning No action t detection level detection level. detection tripping level er. Thus, the current traual current detection so deactivated. The residual description des	Residual c ng A2B3 Re - in amperes ansformer i ource is cor ual current	urrent detected sidual current detected in a second process. The value is a ratio must be an ected to a condetection level.	s calculated 400 to 1. digital input	to the prim 31.19 Resid	nary side of the dual current ernal device.							
	1: Fault; the even 2: Warning; the e 0 2 Residual current of Residual current of Current transforme Note: If the residual detection level is o 0.00 20.00 Residual current	nt generates fault 2330 event generates warning No action t detection level detection tripping level er. Thus, the current traual current detection so deactivated. The residuent	Residual c ng A2B3 Re - in amperes ansformer i ource is cor ual current	urrent detected sidual current detected in a second process. The value is a ratio must be an ected to a condetection level.	s calculated 400 to 1. digital input	to the prim 31.19 Resid	nary side of the dual current ernal device.							
	1: Fault; the even 2: Warning; the e 0 2 Residual current of Residual current of Residual current of Current transformor Note: If the residual detection level is 0.00 20.00 Residual current Delay of the residual	nt generates fault 2330 event generates warning No action to detection level detection tripping level er. Thus, the current traval current detection so deactivated. The residual to detection delay	in amperes ansformer in current A	urrent detecte sidual current 1 = 1 s. The value is ratio must be inected to a condition level 100 = 1 A	s calculated 400 to 1. digital input	to the prim 31.19 Resid	nary side of the dual current ernal device.							
	1: Fault; the even 2: Warning; the e 0 2 Residual current of Residual current of Residual current of Current transformor Note: If the residual detection level is 0.00 20.00 Residual current Delay of the residual	No action t detection level detection tripping level er. Thus, the current traual current detection so deactivated. The residual current detection delay t detection delay lual current detection.	in amperes ansformer in current A	urrent detecte sidual current 1 = 1 s. The value is ratio must be inected to a condition level 100 = 1 A	s calculated 400 to 1. digital input	to the prim 31.19 Resid	nary side of the dual current ernal device.							
31.20	1: Fault; the even 2: Warning; the e 0 2 Residual current Residual current Residual current current transform Note: If the residu detection level is e 0.00 20.00 Residual current Delay of the resid Time delay for the 0 32500	No action t detection level detection tripping level er. Thus, the current tradal current detection so deactivated. The residual current detection. t detection delay lual current detection. eresidual current detection.	in amperes ansformer in curre is conual current	urrent detecte sidual current 1 = 1 s. The value is ratio must be inected to a condition level 100 = 1 A	s calculated 400 to 1. digital input el is adjuste	to the prim 31.19 Resid d at the ext	ary side of the dual current ernal device. Parameter							
31.19 31.20	1: Fault; the even 2: Warning; the e 0 2 Residual current Residual current Residual current current transforme Note: If the residu detection level is e 0.00 20.00 Residual current Delay of the resid Time delay for the 0 32500 Mains phase los	nt generates fault 2330 event generates warning No action t detection level detection level. detection tripping level er. Thus, the current traval current detection so deactivated. The resident along t detection delay lual current detection. e residual current detection. e residual current detection.	in amperes ansformer in curre is conual current	urrent detecte sidual current 1 = 1 s. The value is ratio must be inected to a condition level 100 = 1 A	s calculated 400 to 1. digital input el is adjuste	to the prim 31.19 Resid d at the ext	ary side of the dual current ernal device. Parameter							
31.20	1: Fault; the even 2: Warning; the e 0 2 Residual current of Residual current of Current transformor Note: If the residual detection level is of 0.00 20.00 Residual current Delay of the residual current Time delay for the 0 32500 Mains phase los Type of event ma	No action t detection level detection tripping level er. Thus, the current traval current detection so deactivated. The residual current detection. e	in amperes ansformer in aurce is corrual current A ction event.	urrent detecte sidual current 1 = 1 s. The value is ratio must be inected to a condition level 100 = 1 A	s calculated 400 to 1. digital input el is adjuste	to the prim 31.19 Resid d at the ext	ary side of the dual current ernal device. Parameter							
31.20	1: Fault; the even 2: Warning; the even 2: Warning; the even 0 2 Residual current of Residual current transformer. Note: If the residual detection level is even to the company of the residual current. Delay of the residual current. Delay of the residual current. 0 32500 Mains phase los Type of event man Selects the type of	nt generates fault 2330 event generates warning No action t detection level detection level. detection tripping level er. Thus, the current traval current detection so deactivated. The resident along t detection delay lual current detection. e residual current detection. e residual current detection.	in amperes ansformer in aurce is corrual current A ction event. ms	urrent detecte sidual current 1 = 1 s. The value is ratio must be inected to a condition level 100 = 1 A	s calculated 400 to 1. digital input el is adjuste	to the prim 31.19 Resid d at the ext	ary side of the dual current ernal device. Parameter							

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	2: Warning; the	2: Warning; the event generates warning A130 Mains phase loss.								
	0 2	Warning	-	1 = 1	n	у	Parameter			

31.22 STO indication run/stop

Type of event STO indication.

Selects which indications are given when one or both Safe torque off (STO) signals are switched off or are lost. The indications also depend on whether the drive is running or stopped, when this occurs. The tables at each selection below show the indications generated with that particular setting.

Notes:

- This parameter does not affect the operation of the STO function itself. The STO function will operate regardless of the setting of this parameter. A running drive will stop upon removal of one or both STO signals. It will not start until both STO signals are restored and all faults are reset. The loss of only one STO signal is interpreted as a malfunction. This event generates either fault FA81 Safe torque off 1 loss or FA82 Safe torque off 2 loss.
- For more information on the STO, see safety supplement for functional safety converter DCS880 (3ADW000452).

Settin	g of 31.22	Fault /									No indica	ation /		
STO i	ndication	Fault	Fault / W	arning	Fault / Ev	vent	Warning	/ Warning	Event / E	vent	No indica	ation	Warning	/ Event
run/st	ор													
IN1	IN2		running	stopped	running	stopped	running	stopped	running	stopped	running	stopped	running	stopped
0	0	5091	5091	A5A0	5091	B5A0	A5A0	A5A0	B5A0	B5A0	None	None	A5A0	B5A0
0	1	5091	5091	A5A0	5091	B5A0	A5A0	A5A0	B5A0	B5A0	None	None	A5A0	B5A0
1	0	5091	5091	A5A0	5091	B5A0	A5A0	A5A0	B5A0	B5A0	None	None	A5A0	B5A0
1	1	normal o	peration											

The normal STO operation (IN1 = IN2 = 0) has different, selectable indications.

0: Fault/Fault;

Inpu	ts	Indication (running or stopped)
IN1	IN2	
0	0	Fault 5091 Safe torque off.
0	1	Faults 5091 Safe torque off and FA81 Safe torque off 1 loss fault.
1	0	Faults 5091 Safe torque off and FA82 Safe torque off 2 loss fault.
1	1	Normal operation.

1: Fault/Warning;

Inpu	ts	Indication	
IN1	IN2	Running	Stopped
0	0	Fault 5091 Safe torque off.	Warning A5A0 Safe torque off.
0	1	Faults 5091 Safe torque off and	Warning A5A0 Safe torque off and
		FA81 Safe torque off 1 loss fault.	FA81 Safe torque off 1 loss fault.
1	0	Faults 5091 Safe torque off and	Warning A5A0 Safe torque off and
		FA82 Safe torque off 2 loss fault.	FA82 Safe torque off 2 loss fault.
1	1	Normal operation.	

2: Fault/Event;

Inpu	ts	Indication	
IN1	IN2	Running	Stopped
0	0	Fault 5091 Safe torque off.	Event B5A0 Safe torque off.
0	1	Faults 5091 Safe torque off and	Event B5A0 Safe torque off and
		FA81 Safe torque off 1 loss fault.	FA81 Safe torque off 1 loss fault.
1	0	Faults 5091 Safe torque off and	Event B5A0 Safe torque off and
		FA82 Safe torque off 2 loss fault.	FA82 Safe torque off 2 loss fault.
1	1	Normal operation.	

3: Warning/Warning;

Inpu	ts	Indication (running or stopped)
IN1	IN2	
0	0	Warning A5A0 Safe torque off.

Index	Name											
	Text											
	Range)			Default	Unit	Scale/ Fbeq16	Volati		Change unning	Туре	
		0	1	War	ning A5A0 Safe	torque off	and FA81	Safe torqu	ie off '	1 loss fau	lt.	
		1	0	War	ning A5A0 Safe	torque off	and FA82	Safe torqu	ie off 2	2 loss fau	lt.	
		1	1	Norr	mal operation.	-		-				
	4: Eve	nt/Eve	nt;									
		Inpu		Indi	cation (running	or stopp	ed)					
		IN1	IN2	F	-1 DEAO O-1- 1							
		0	0		nt B5A0 Safe tor		4 F 4 0 4 C	ofo towario	-tt 1 la	aa falt		
		0	0		nt B5A0 Safe tor							
		1	1		nt B5A0 Safe tore	que on ar	u FA82 5	ale lorque	011 2 10	oss rauit.		
	5: No i	Indicat	•									
	5: No indication/No indication; Inputs											
	0 0 STO is performed, but not indicated.											
		0	1		1 Safe torque off							
		1	0		2 Safe torque off							
		1	1		nal operation.	2 1000 10	uit.					
	6: War	ning/E	•	110	пагорогалогі.							
		Inpu		Indi	cation							
	1	IN1	IN2		ning	Stopped	opped					
		0	0		ning A5A0 Safe	torque o	ff.					
		0	1		ning A5A0 Safe		Event B5A					
				FA82 Safe torque off 2 loss fault. FA82 Safe torque								
		1	0									
										e off 2 los	s fault.	
		1	1	Norr	mal operation.							
						1	1	4 10 10			Devenue	
	0 6				Fault/Fault	-	1 = 1	n	n		Parameter	
31.24	Stall fo											
	Stall, function. Selects the type of event stall. The drive reacts according to 31.24 Stall function if the torque											
					ue level and unde ble stall supervisi		1.20 Stall	speed leve	11013	1.20 Stat	i ume.	
					ates fault 7121 N							
					nerates warning							
	0 2	9,		J 9 G	No action	-	1 = 1	n	v	,	Parameter	
31.25	Stall to	orque	level		110 401011		1	1	1,7		i aramotor	
0	Stall, to	•										
				perce	ent of 99.02 M1 n	ominal to	raue.					
	0.00			p	75.00	%	See 46.	04 n	у	,	Parameter	
31.26	Stall s					1,0	1000	<u> </u>	<u> </u>			
20	Stall, s	•										
	Stall s											
	0.00			5.00 rpm See 46.02 n y Parame							Parameter	
31.27	Stall ti		0.00		0.00	Ιιριιι	1000 40.	<u>- </u>	l y		i arameter	
J 1.41	Stall, c											
			or the c	tall fu	inction event							
				iaii iu	nction event. 0.0	6	10 = 1 s	r	1.,	,	Parameter	
	1 () ()	. 17:111	i		U.U	S	110 - IS	n	17		ı – aı aı ı ı etel	
04.00	0.0			level								
31.28	M1 ov	erspe	ed trip		positive vel positive.				1,			

Index	Name	Name									
	Text										
	Range	Default	Unit	Scale/	Volatile	Change	Туре				
				Fbeq16		running					
	Example : If the maximum speed is 1100 rpm and overspeed trip margin is 300 rpm, the drive trips at										
	1400 rpm. See 31.30 M1 overspeed trip margin.										
	-30000.00 30000.00	-	rpm	See 46.02	у	n	Signal				
31.29	M1 overspeed trip level negative										
	Motor 1 overspeed trip le	vel negative.									
	If the negative (minimum) trip level for over	rspeed is	exceeded, fa	ult 7310 Ov	erspeed is	generated.				
	Example: If the minimun	n speed is -1420 r	pm and o	verspeed trip	margin is 3	300 rpm, the	drive trips at				
	-1720 rpm. See 31.30 M	1 overspeed trip n	nargin.								
	-30000.00 30000.00	-	rpm	See 46.02	у	n	Signal				
		•	•		•	•					

31.30 M1 overspeed trip margin

Motor 1 overspeed trip margin.

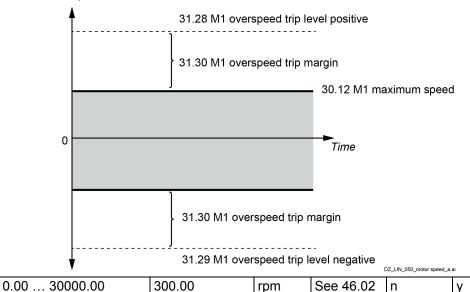
Defines, together with 30.11 M1 minimum speed and 30.12 M1 maximum speed, the maximum allowed speed of the motor (overspeed protection). The event generates fault 7310 Overspeed, if the speed feedback, see 90.01 Motor speed for control, exceeds the speed limit defined by 30.11 M1 minimum speed or 30.12 M1 maximum speed by more than the overspeed trip margin. It is recommended to set 31.30 M1 overspeed trip margin at least 20 % higher than the maximum motor speed.

Examples:

- If the maximum speed is 1100 rpm and overspeed trip margin is 300 rpm, the drive trips at 1400 rpm. See 31.28 M1 overspeed trip level positive.
- If the minimum speed is -1420 rpm and overspeed trip margin is 300 rpm, the drive trips at -1720 rpm. See 31.29 M1 overspeed trip level negative.

Note: The overspeed fault for motor 1 is inactive, if 31.30 M1 overspeed trip margin = 0.

90.01 Motor speed for control



31.31 Emergency ramp supervision

Maximum deviation from the expected deceleration rate.

31.32 Emergency ramp supervision, 31.33 Emergency ramp supervision delay and 01.07 Speed change rate, provide a supervision function for a ramped Off3 (emergency stop) command. See 21.03 Emergency stop mode, 06.20.b11 Run inhibit status word and 06.20.b13 Run inhibit status word.

Parameter

The supervision is based on either observing the time within which the motor stops or comparing the actual and expected deceleration rates.

Maximum ramp-down time

	Emergency ramp su Comparing decele Otherwise, 31.31 En expected decelerati (21.03 Emergency su (21.03 Emergency su much from the expe	upervision delay. ration rates mergency ramp sup on rate, which is ca		Scale/ Fbeq16 e maximum s	Volatile	Change running	Type							
	If 31.31 Emergency Emergency ramp so Comparing decele Otherwise, 31.31 En expected decelerati (21.03 Emergency so (21.03 Emergency so much from the expe	ramp supervision = upervision delay. ration rates mergency ramp sup on rate, which is ca	0.00 %, the	Fbeq16		running								
	Emergency ramp su Comparing decele Otherwise, 31.31 En expected decelerati (21.03 Emergency su (21.03 Emergency su much from the expe	upervision delay. ration rates mergency ramp sup on rate, which is ca		e maximum s	top time is o	directly set in	n 31 32							
	Comparing decele Otherwise, 31.31 En expected decelerati (21.03 Emergency s (21.03 Emergency s much from the expe	ration rates mergency ramp sup on rate, which is ca	orvision do		If 31.31 Emergency ramp supervision = 0.00 %, the maximum stop time is directly set in 31.32									
	Otherwise, 31.31 En expected decelerati (21.03 Emergency s) (21.03 Emergency s) much from the expe	mergency ramp sup on rate, which is ca	onvision do	Emergency ramp supervision delay.										
	expected decelerati (21.03 Emergency s (21.03 Emergency s much from the expe	on rate, which is ca	onvicion do	Comparing deceleration rates										
	(21.03 Emergency s (21.03 Emergency s much from the expe		Otherwise, 31.31 Emergency ramp supervision defines the maximum allowed deviation from the expected deceleration rate, which is calculated from parameters 23.11 23.19 for Off3 stop mode 1											
	(21.03 Emergency smuch from the expe	(21.03 Emergency stop mode = Ramp stop) or 23.23 Emergency stop time for Off3 stop mode 2												
	much from the expe													
	much from the expected rate, the event generates fault 73B0 Emergency ramp stop. Additionally 06.17.b08 Drive status word 2 is set and the motor coasts to a stop.													
	Note: The emergency stop ramp supervision is disabled, if 31.31 Emergency ramp supervision = 0.00 % and 31.32 Emergency ramp supervision delay = 0.0 s.													
	0.00 325.00	0.00	%	100 = 1 %	n	у	Parameter							
31.32	Emergency ramp		1.5	1100 170	1	13	1							
·			on activatio	n delay										
	Maximum ramp-down time or supervision activation delay. Maximum ramp-down time													
	Maximum ramp-down time If 31.31 Emergency ramp supervision = 0.00 %, 31.32 Emergency ramp supervision delay defines													
	the maximum time a ramped Off3 (emergency stop) command is allowed to take. If the motor has no													
	stopped when the time elapses, the event generates fault 73B0 Emergency ramp stop, sets													
	06.17.b08 Drive status word 2 and the motor coasts to a stop.													
	Supervision activation delay													
	If 31.31 Emergency ramp supervision > 0.00 %, 31.32 Emergency ramp supervision delay defines a													
	delay between the receipt of a ramped Off3 (emergency stop) command and the activation of the													
	supervision. It is recommended to specify a short delay to allow the speed change rate to stabilize. Note: The emergency stop ramp supervision is disabled, if 31.31 Emergency ramp supervision =													
	Note: The emergency stop ramp supervision is disabled, if 31.31 Emergency ramp supervision = 0.00 % and 31.32 Emergency ramp supervision delay = 0.0 s.													
					1	I	Danamatan							
31.33	0.0 3250.0	0.0	S	10 = 1 s	n	У	Parameter							
31.33	Ramp stop supervision													
	Maximum deviation the from expected deceleration rate.													
	31.33 Ramp stop supervision, 31.34 Ramp stop supervision delay and 01.07 Speed change rate, provide a supervision function for a normal (non-emergency) ramp stop. See 06.09.b03 Used main													
	control word.		mai (non-ci	nergency) rai	iip stop. oc	C 00.00.b0c	OSCU IIIAIII							
	The supervision is based on either observing the time within which the motor stops, or comparing the													
	actual and expected deceleration rates.													
	Maximum ramp-down time													
	If 31.33 Ramp stop	supervision = 0.00	%, the maxi	imum stop tin	ne is directly	set in 31.3	4 Ramp stop							
	supervision delay.													
	Comparing decele													
	Otherwise, 31.33 R													
	deceleration rate, w													
	deviates too much f Additionally 06.17.b						o stop.							
	Note: The ramp sto						and 31 34							
	Ramp stop supervis		abieu, ii 51.	33 Ivamp sto	p supervisio	11 - 0.00 /0	and 51.54							
	0.00 325.00	0.00	%	100 = 1 %	n	у	Parameter							
31.34	Ramp stop superv		70	100 - 1 70		у	T didiffeter							
J 1.U7	Maximum ramp-dov		on activatio	n delay										
	Maximum ramp-do		on activatio	ii u c iay.										
	If 31.33 Ramp stop		% 31 34 P	amn ston sun	ervision del	av defines t	he maximum							
	time a normal ramp stop is allowed to take. If the motor has not stopped when the time elapses, the event generates fault 73B1 Normal ramp stop, sets 06.17.b14 Drive status word 2 and the motor													

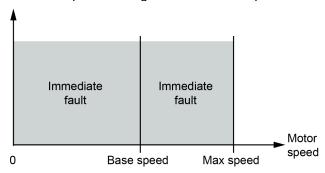
Index	Name Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	If 31.33 Ramp stop supervision > 0.00 %, 31.34 Ramp stop supervision delay defines a delay between the receipt of the stop command and the activation of the supervision. It is recommended to specify a short delay to allow the speed change rate to stabilize. Note: The ramp stop supervision is disabled, if 31.33 Ramp stop supervision = 0.00 % and 31.34 Ramp stop supervision delay = 0.0 s.									
	0.0 3250.0	0.0	s	10 = 1 s	n	у	Parameter			

31.35 Motor feedback fault

Motor feedback fault.

Selects how the drive reacts to a loss of a speed feedback measured with an encoder or tacho. See 90.41 M1 feedback selection.

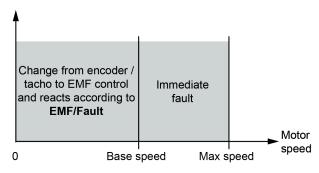
- 0: No action; none, disable motor feedback fault.
- 1: **Fault**; the event generates fault 7301 Motor speed feedback or 7381 Speed feedback device and the motor stops according to 31.14 Fault stop mode fault level 3.



DZ_LIN_050_motor speed_a.ai

2: **EMF/Fault**; the event changes the speed feedback to EMF and stops the motor at the emergency stop ramp. Then the event generates fault 7301 Motor speed feedback or 7381 Speed feedback device.

In case speed actual is greater than base speed the event generates fault 7301 Motor speed feedback or 7381 Speed feedback device and the motor stops according to 31.14 Fault stop mode fault level 3.

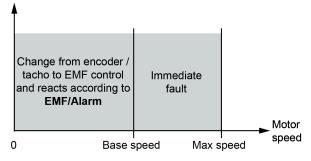


DZ_LIN_050_motor speed_a.ai

3: **EMF/Warning**; the event changes the speed feedback to EMF and generates warning A798 Encoder interface communication, A7B0 Motor speed feedback or A7E1 Speed feedback device. **Attention:** The warning can only be reset by setting 96.27 Control board boot = Reboot or by cycling the auxiliary power.

In case speed actual is greater than base speed the event generates fault 7301 Motor speed feedback or 7381 Speed feedback device and the motor stops according to 31.14 Fault stop mode fault level 3.

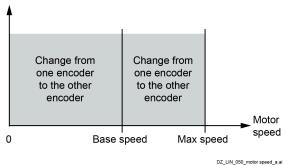
Index Name Text Range Default Unit Scale/ Fbeq16 Volatile Change running



DZ_LIN_050_motor speed_a.ai

4: **Encoder/Warning**; This selection is only valid if 2 pulse encoders are connected. Depending on the setting of 90.41 M1 feedback selection, the speed feedback is changed from one encoder to the other encoder, in case of a problem. Additionally the event generates warning A798 Encoder interface communication, A7B0 Motor speed feedback or A7E1 Speed feedback device. **Attention:** The warning can only be reset by setting 96.27 Control board boot = Reboot or by cycling

Attention: The warning can only be reset by setting 96.27 Control board boot = Reboot or by cycling the auxiliary power.



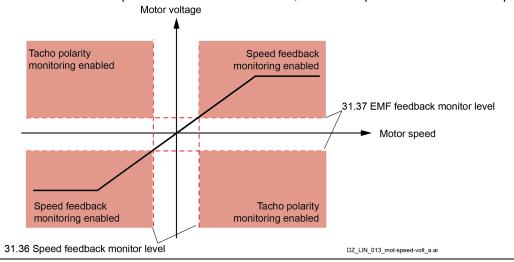
Fault - 1 = 1 n y Parameter

31.36 Speed feedback monitor level

Speed feedback monitor level.

The drive reacts according to 31.35 Motor feedback fault or generates fault 7381 Speed feedback device, if the measured speed feedback does not exceed 31.36 Speed feedback monitor level while the measured EMF exceeds 31.37 EMF feedback monitor level. See 90.01 Motor speed for control and 28.06 EMF voltage.

Example: With 31.36 Speed feedback monitor level = 15 rpm and 31.37 EMF feedback monitor level = 50 V_{DC} the drive trips when the EMF is $> 50 \text{ V}_{DC}$, while the speed feedback is $\le 15 \text{ rpm}$.



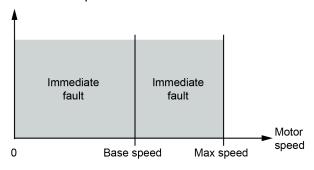
Index	Name Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
	0.00 30000.00	15.00	rpm	See 46.02	n	у	Parameter				
31.37	EMF feedback monitor level										
		EMF feedback monitor level. See 31.36 Speed feedback monitor level.									
	0.0 3250.0	50.0	V	10 = 1 V	n	у	Parameter				

31.38 Load feedback fault

Load feedback fault.

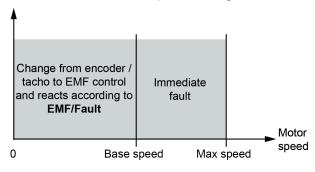
Selects how the drive reacts to a loss of a load feedback. See 90.51 Load feedback selection.

- 0: No action; none, disable load feedback fault.
- 1: **Fault**; the event generates fault 73A1 Load speed feedback and the motor stops according to 31.14 Fault stop mode fault level 3.



DZ_LIN_050_motor speed_a.ai

2: **EMF/Fault**; the event changes the speed feedback to EMF and stops the motor at the emergency stop ramp. Then the event generates fault 73A1 Load speed feedback. In case speed actual is greater than base speed the event generates fault 73A1 Load speed feedback and the motor stops according to 31.14 Fault stop mode fault level 3.



DZ_LIN_050_motor speed_a.ai

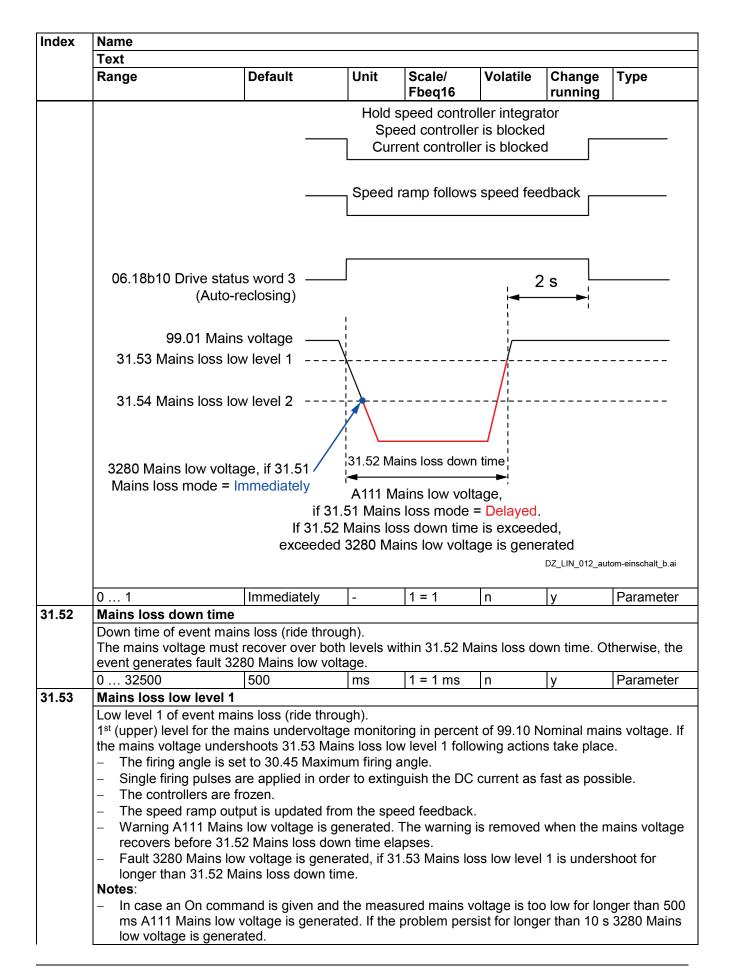
3: **EMF/Warning**; the event changes the speed feedback to EMF and generates warning A798 Encoder interface communication or A7B1 Load speed feedback.

Attention: The warning can only be reset by setting 96.27 Control board boot = Reboot or by cycling the auxiliary power.

In case speed actual is greater than base speed the event generates fault 73A1 Load speed feedback and the motor stops according to 31.14 Fault stop mode fault level 3.

Index	Name											
	Text											
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре					
	†											
	Change from enco tacho to EMF con and reacts accordin EMF/Alarm	itrol Immediate	_ Moto	or								
	0 Base speed Max speed speed											
	4: Encoder/Warning ; This selection is only valid if 2 pulse encoders are connected. Depending on the setting of 90.41 M1 feedback selection, the speed feedback is changed from one encoder to the other encoder, in case of a problem. Additionally the event generates warning A798 Encoder interface communication or A7B1 Load speed feedback. Attention: The warning can only be reset by setting 96.27 Control board boot = Reboot or by cyclin the auxiliary power.											
	the auxiliary power.											
	Change from one encoder	_										
	to the other encoder	to the other encoder	_ Mo	tor								
	0 1	Base speed Max s	speed	eed								
			DZ_LIN_050_motor spe	_	T	T	T					
	0 4	Fault	-	1 = 1	n	у	Parameter					
31.41	Drive fan fault function											
	Type of event drive cooling fan fault.											
	Selects the type of event drive cooling fan fault. See also 20.38 Drive fan acknowledge source.											
	0: No action ; none, disable drive cooling fan fault. 1: Fault ; the event generates fault 5080 Drive fan acknowledge.											
		ent generates warnir	IU ASO I DII	ive iali aukliu								
	2: Warning; the ev			1 = 1	n	v	Parameter					
31.44		Fault			1	у	Parameter					
31.44	2: Warning; the evolution 2 Armature overcur	Fault rent level			1	у	Parameter					
31.44	2: Warning; the evolution of the event generate M1 nominal current	Fault Frent level ent level. es fault 2310 Armatult is exceeded. It is re	re overcurre	1 = 1 ent, if 31.44 C	n Overcurrent	level in perc	cent of 99.11					
31.44	2: Warning; the evolution of the event generate M1 nominal current higher than 99.11 Example: With 99.	Fault rent level ent level. es fault 2310 Armatu	re overcurre commende nt = 850 A	1 = 1 ent, if 31.44 C d to set 31.44	n Overcurrent Overcurre	level in perd	cent of 99.11 east 25 %					
	2: Warning; the evolution of the event generate M1 nominal current higher than 99.11 Example: With 99.	Fault Frent level Ent level. Es fault 2310 Armatult is exceeded. It is rewind in a service of the service of th	re overcurre commende nt = 850 A	1 = 1 ent, if 31.44 C d to set 31.44	n Overcurrent Overcurre	level in perd	cent of 99.11 east 25 %					
31.44	2: Warning; the evolution of the event generate M1 nominal current higher than 99.11 Nexample: With 99. trips with armature	Fault rent level ent level. es fault 2310 Armatult is exceeded. It is re M1 nominal current. 11 M1 nominal curre currents > 2125 Apc 250.00	re overcurre commende nt = 850 A _E	1 = 1 ent, if 31.44 C d to set 31.44 oc and 31.44 (n Overcurrent Overcurre	level in peront level at le	cent of 99.11 east 25 % % the drive					
	2: Warning; the evonument of the event generate M1 nominal current higher than 99.11 Example: With 99. trips with armature 0.00 400.00 Maximum current Maximum armature The event generate with generate maximum armature.	Fault rent level ent level. es fault 2310 Armatur t is exceeded. It is re M1 nominal current. 11 M1 nominal curre currents > 2125 ADC 250.00 rise level e current rise level. es fault F539 Fast cu	re overcurre commende nt = 850 A _D	1 = 1 ent, if 31.44 C d to set 31.44 cap and 31.44 (100 = 1 %	n Overcurrent Overcurre Overcurrent	level in peront level at level at level = 250	cent of 99.11 east 25 % % the drive Parameter					
	2: Warning; the evonument of the event generate M1 nominal current higher than 99.11 Mexample: With 99. trips with armature 0.00 400.00 Maximum current Maximum armature The event generate 99.11 M1 nominal of t	Fault rent level ent level. es fault 2310 Armatur it is exceeded. It is re M1 nominal current. 11 M1 nominal curre currents > 2125 Apc 250.00 rise level e current rise level. es fault F539 Fast cu current per 1 ms is e	re overcurre commende nt = 850 A	1 = 1 ent, if 31.44 C d to set 31.44 c and 31.44 (100 = 1 %	n Overcurrent Overcurrent Overcurrent n num current	level in peront level at level at level = 250	cent of 99.11 east 25 % % the drive Parameter					
	2: Warning; the evonument of the event generate M1 nominal current higher than 99.11 Mexample: With 99. trips with armature 0.00 400.00 Maximum current Maximum armature The event generate 99.11 M1 nominal of t	Fault rent level ent level. es fault 2310 Armatur t is exceeded. It is re M1 nominal current. 11 M1 nominal curre currents > 2125 ADC 250.00 rise level e current rise level. es fault F539 Fast cu	re overcurre commende nt = 850 A	1 = 1 ent, if 31.44 C d to set 31.44 c and 31.44 (100 = 1 %	n Overcurrent Overcurrent Overcurrent n num current	level in peront level at level at level = 250	cent of 99.11 east 25 % % the drive Parameter					

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	Type of event armature current ripple. Selects the type of event armature current ripple, if 31.47 Current ripple level is reached. The cripple function detects broken fuses, thyristors, current transformers (T51, T52) or a too high gathe current controller. 0: No action ; none, disable current ripple. 1: Fault ; the event generates fault F517 Armature current ripple. 2: Warning ; the event generates warning A117 Armature current ripple.									
	0 2	Fault	-	1 = 1	n	у	Parameter			
31.47	Current ripple leve	<u> </u>								
			ng.		11 nominal o	current.	Parameter			
31.50	Armature overvolta		70	10 - 1 70	111	y	i arameter			
	M1 nominal voltage is exceeded. It is recommended to set 31.50 Overvoltage level at least 20 % higher than 99.12 M1 nominal voltage. Example : With 99.12 M1 nominal voltage = 525 V_{DC} and 31.50 Overvoltage level = 120 % the drive trips with armature voltages > 630 V_{DC} . The overvoltage supervision is inactive, if 31.50 Overvoltage level = 1000.0 % .									
	0.0 1000.0	120.0	%	10 = 1 %	n	у	Parameter			
31.51	 Mains loss mode Type of event mains loss (ride through). Selects the type of event mains loss. 0: Immediately; The event generates warning A111 Mains low voltage, if 31.53 Mains loss low level 1 is undershoot. The warning is removed when the mains voltage recovers before 31.52 Mains loss down time elapses. The event generates fault 3280 Mains low voltage, if 31.53 Mains loss low level 1 is undershoot for longer than 31.52 Mains loss down time. The event immediately generates fault 3280 Mains low voltage, if 31.54 Mains loss low level 2 is undershoot. 1: Delayed; The event generates warning A111 Mains low voltage, if 31.53 Mains loss low level 1 and/or 31.54 Mains loss low level 2 is undershoot. The warning is removed when the mains voltage recovers before 31.52 Mains loss down time elapses. 									
	 The event gener Mains loss low let 	rates fault 3280 Mai evel 2 is undershoot oting 31.54 Mains lo	ns low volta t for longer	age, if 31.53 M than 31.52 M	ains loss do	own time.	ınd/or 31.54			



Index	Name										
	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
	loss low level 1 f	s low level 2 is not r irst. Thus for a prop nas to be higher tha	er function	of the mains u	undervoltag						
	0.00 150.00	80.00	%	100 = 1 %	n	у	Parameter				
31.54	Mains loss low leve					17					
	- Fault 3280 - If 31.51 Mains lot - The field a - The firing - Single firin - The control - The speed - Warning A voltage re - Fault 3280 longer tha - Thus, und Notes: - In case an On coms A111 Mains low voltage is ge-	ne mains undervoltandershoots 31.54 M less mode = Immedia D Mains low voltage less mode = Delayed acknowledge signal angle is set to 30.4 ng pulses are applied ollers are frozen. Id ramp output is fro A111 Mains low voltage on 31.52 Mains loss dershooting 31.54 M command is given ar low voltage is gene	age monitor ains loss lostely: is generated: s are ignored from the speed age is generated down time. It is generated and the measurated. If the monitored, to	ed immediately ed. In firing angle. In firing angle. In extinguish the difference of extinguish the difference of extinguish the difference of the way and the ed, if 31.53 Markey level 2 generated mains vor problem persualless the mains where of the extinguish the mains where of the extinguish the extingu	wing action y. The DC curre arning is real lapses. The lapses is lowerates no in coltage is too coltage is too coltage is too coltage is too coltage is too coltage is too coltage is too coltage is too coltage is too	ent as fast a moved when w level 2 is mmediate fa to low for lor er than 10 s drops below	e: as possible. In the mains undershoot for ault. ager than 500 3280 Mains w 31.53 Mains				
		nas to be higher tha				ge monitorii	ig o 1.00 ividii io				
	0.00 150.00	60.00	%	100 = 1 %	n	у	Parameter				
31.57	Minimum field curr	ent trip delay			-1	17					
	Delay time of event 31.57 Minimum field recovers before the M1 field current low Note : 31.57 Minimum 0 32500	current trip delay d delay elapses, F54 level.	elays F541 1 M1 field e	xciter low curr	ent will be	disregarded	d. See 31.58				
31.58	M1 field current lov		1113	1 - 11113	11	у	T drameter				
	cases, the fault I generates fault I still undershot w - 31.58 M1 field c EMF/optitorque, level is automati	d fault F541 M1 field	ot valid duri y set to 50 er low curre n field curre ot valid for 2 que and EN 28.14 M1 fi	dershot when ing field heatin % of 28.37 M1 nt, if 50 % of 2 nt trip delay el 28.43 M1 EMF //F/reversal/op ield current ref	31.57 Mining and field I field heating and field heating apses. Fifield contribution of the field contribution of the fie	economy. Ing reference the heating reference to mode = Ference these case the event ger	In these e. The event reference is -ix/optitorque, s, the fault nerates fault				
		mum field current to	<u> </u>		1		Ta .				
	0.00 325.00	50.00	%	100 = 1 %	n	у	Parameter				

Index	Name										
	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
31.59	M1 field overcurre	nt level	•	-	•		•				
	percent of 99.13 M	urrent level. es fault F515 M1 field 1 nominal field curre l least 25 % higher th	nt is excee	ded. It is reco	mmended to						
	 The field overcurrent fault is inactive, if 31.59 M1 field overcurrent level = 325 %. During field boost, the internal field overcurrent level is set to field overcurrent level plus field boost current. 										
	0.00 325.00	125.00	%	100 = 1 %	n	٧	Parameter				
31.80	Power units STO		1	1100 170	1	17	1				
		nent for functional sa	fety convei	ter DCS880 (3ADW0004	52).					
	0000h FFFFh	-	-	1 = 1	у	In	Signal				
31.81		C:STO status word]	1	10.9				
		nent for functional sa	fety convei	ter DCS880 (3ADW0004	52)					
	0000h FFFFh			1 = 1	V	n	Signal				
31.82	Ch1 power unit S	ΓΩ time 1		<u>''''</u>	y	111	Olgital				
31.02	· · · · · · · · · · · · · · · · · · ·	nent for functional sa	fety convei	ter DCS880 (3AD\\\\0004	.52)					
	0 65535		ms	1 = 1	7v	n	Signal				
31.83	Ch1 power unit S	- [0 time 2	1115	1 - 1	у	11	Signal				
31.03	•	nent for functional sa	foty convo	tor DC8880 (3 V D/V/0004	52)					
	0 65535		ms	1 = 1	V	n	Signal				
31.84		- 	1115	1 - 1	y	111	Signal				
31.04	Ch2 power unit STO time 1 See safety supplement for functional safety converter DCS880 (3ADW000452).										
	0 65535		i	1 = 1	ı	T '	Cianal				
24 OF		- 	ms	-	у	n	Signal				
31.85	Ch2 power unit STO time 2 See safety supplement for functional safety converter DCS880 (3ADW000452).										
		Tent for functional sa	Ī				Oi ava al				
24.00	0 65535	- 	ms	1 = 1	у	n	Signal				
31.86	Ch3 power unit STO time 1 See safety supplement for functional safety converter DCS880 (3ADW000452).										
		nent for functional sa					10: 1				
	0 65535	-	ms	1 = 1	у	n	Signal				
31.87	Ch3 power unit STO time 2 See safety supplement for functional safety converter DCS880 (3ADW000452).										
		nent for functional sa	i i				lo: .				
	0 65535	-	ms	1 = 1	У	n	Signal				
31.88	Ch4 power unit S			. 500000	0.4.00.0.4	=0\					
		nent for functional sa	i i				To: I				
	0 65535	-	ms	1 = 1	У	n	Signal				
31.89	Ch4 power unit S		_								
		nent for functional sa				52).	T				
	0 65535	-	ms	1 = 1	у	n	Signal				
31.90	XSMC:STO indica		_								
		nent for functional sa	fety convei	<u> </u>	3ADW0004	52).					
	0 2	Fault	-	1 = 1	n	у	Parameter				
31.91	STO status word										
		nent for functional sa	fety convei	ter DCS880 (3ADW0004	52).					
	0000h FFFFh	-	-	1 = 1	у	n	Signal				
31.94	STO time 1										
	See safety supplen	nent for functional sa	fety convei	ter DCS880 (3ADW0004	52).					
	0 65535		ms	1 = 1	у	n	Signal				

Index	Name	Name										
	Text											
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре					
31.95	STO time 2	STO time 2										
	See safety supplem	See safety supplement for functional safety converter DCS880 (3ADW000452).										
	0 65535	-	ms	1 = 1	у	n	Signal					
31.98	STO actual status											
	See safety supplement for functional safety converter DCS880 (3ADW000452).											
	0000h FFFFh	-	-	1 = 1	у	n	Signal					
31.99	STO fault diagnostic											
	See safety supplem	See safety supplement for functional safety converter DCS880 (3ADW000452).										
	0000h FFFFh	-	-	1 = 1	у	n	Signal					
31.100	STO test mode	_					_					
	See safety supplem	ent for functional s	afety conve	rter DCS880	(3ADW0004	52).						
	0 2	None	-	1 = 1	у	у	Parameter					

32 Supervision

Configuration of signal supervision functions 1 ... 3. Three values can be monitored. A warning or fault is generated whenever predefined limits are exceeded.

Index 32.xx	Name Text										
	Not jet part of the manual.										
32.xx		<u>.</u>				•	•				

33 Generic timer & counter

Configuration of maintenance timers/counters.

Index	Name											
	Text											
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре					
33.xx	Not jet part of the manual.											
33.xx			•		•							

35 Motor thermal protection

Motor thermal protection settings such as temperature measurement configuration and load curve definition.

Index	Name Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Type				
35.01	Estimated temperature 1										
	Displays the m		e as estimat	ed by the internal m		protection n	nodel. See				
	-80.0 1000.	0 -	°C or °F	1 = 1°C or °F	n	n	Signal				

Index	Name										
	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
35.02	Measured temperature 1										
35.03	Displays the motor t The unit is selected	Measured motor temperature 1. Displays the motor temperature received through the source defined by 35.11 Temperature 1 source The unit is selected by 96.02 Unit selection. Note: With a PTC sensor, the unit is Ω .									
	-80.0 1000.0 - °C,										
	Estimated tempera	Estimated temperature 2									
	Displays the motor t	Estimated motor temperature 2. Displays the motor temperature as estimated by the internal motor thermal protection model. See parameters 35.58 35.63. The unit is selected by 96.02 Unit selection. -80.0 1000.0 C or F 1 = 1°C or F n Signal									
35.04		-80.0 1000.0 - °C or °F 1 = 1°C or °F n n Signal Measured temperature 2									
	Measured motor temperature 2. Displays the motor temperature received through the source defined by 35.21 Temperature 2 source The unit is selected by 96.02 Unit selection. Note: With a PTC sensor, the unit is Ω .										
	-80.0 1000.0 -76 1832 or 0 5000	_	°C, °F or Ohm	1 = 1°C, °F or Ohm	У	n	Signal				
35 11	Tomporature 1 cou	irco									

35.11 Temperature 1 source

Motor temperature monitoring function 1 source.

Selects the source for 35.02 Measured temperature 1.

Connection possibilities KTY84 sensors:

 Maximum one KTY84 sensor for motor temperature monitoring function 1 and maximum one KTY84 sensor for motor temperature monitoring function 2.

Connection possibilities for PT100 sensors:

 Maximum 3 PT100 sensors for motor temperature monitoring function 1 and maximum 3 PT100 sensors for motor temperature monitoring function 2.

Connection possibilities PTC sensors:

 Maximum one PTC sensor for motor temperature monitoring function 1 and maximum one PTC sensor for motor temperature monitoring function 2.

Connection possibilities for PT1000 sensors:

 Maximum 3 PT1000 sensors for motor temperature monitoring function 1 and maximum 3 PT1000 sensors for motor temperature monitoring function 2.

For wiring examples, see chapter *Motor thermal protection* of this manual.

Usually this source is from a sensor connected to the motor controlled by the drive, but it could be used to measure and monitor a temperature from other parts of the process as long as a suitable sensor is used as per the selection list.

- 0: Disable; disable motor temperature monitoring function 1.
- 1: **Estimated temperature 1**; Estimated motor temperature 1. See 35.01 Motor estimated temperature 1. The temperature is estimated by the drive calculation. It is important to set up the ambient temperature of the motor in 35.50 Motor ambient temperature 1.
- 2: **KTY84 analog I/O**; KTY84 sensor connected to the analog input selected by 35.14 Temperature 1 Al source and an analog output. The input and output can be on the SDCS-CON-H01 or on an I/O extension module. The following settings are required:
- Set the unit selection parameter of the analog input to volts.
- Set the hardware jumper or switch related to the analog input to volts. Any change must be validated by either cycling the power or through 96.27 Control board boot.
- Set the source selection parameter of the analog output to Force KTY84 excitation.
- Select the analog input in 35.14 Temperature 1 Al source. In case the input is located on an I/O extension module, use Other to connect to e.g. 14.26 Al1 actual value.

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	The analog output for changes along with analog input and coder temp sensor type at 4: KTY84 encoder temp sensor type at 5: 1 × PT100 analom Temperature 1 Alsor on an I/O extensi I/O, except that the excitation. 6: 2 × PT100 analom series. Using multip 7: 3 × PT100 analom series. Using multip 8: PTC DI6; PTC seletther 0 Ω, normal to temperature 1. 9: PTC encoder modern temp sensor type and 91. 10: PTC encoder modern temp sensor type at 11: Direct temperature 1. 9: PTC encoder modern temp sensor type and 11: Direct temperature 1. 3: 1 × PT1000 analom series. The valuation on an I/O extensi I/O, except that the excitation. 14: 2 × PT1000 analom series. Using multip 15: 3 × PT1000 analom series.	its temperanverted into module 1; and 91.22 Momodule 2; and 91.25 Mog I/O; PT10 purce and a con module. Source seles ensors and 91.25 Module 1; PT 22 Module 1; PT 22 Module 2; Pnd 91.25 Module 2; Pnd 91.25 Module 1; PT 25 Module 1; PT 26 Module 2; Pnd 91.25 Module 2; Pnd 91.25 Module 2; Pnd 91.25 Module 3; PTC senson module. Source seles and a con module.	ature, the voltage degrees. KTY84 sensor odule 1 temp fix KTY84 sensor odule 2 temp fix of sensor connected to digital interest of the provest of the prov	connected to encoulter time. connected to encoulter time. lected to a standard out. The input and out esettings are the same of the analog I/O, but neasurement accuration analog I/O, but neasurement accuration analog I/O, but neasurement accuration analog I/O, but neasurement accuration analog I/O, but neasurement accuration analog I/O, but neasurement accurate time. Indected to encoder in the input DI6. Indected to encoder in the input DI6 in the unit of the input and out of the input a	der module der module I analog input can bene as with sput must be with two seacy significations with three seacy significations. The selected of temperature dard analogutput can bene as with sput must be but with two acy significations but with two acy significations but with two acy significations but with the acy signification but with the acy signification but with the acy signification but with the acy signification but with the acy signification but with the acy signification but with the acy signification but with the acy signification but with selections are significated as with selections are significated as with selections.	1. See 91.2 2. See 91.2 2. See 91.2 3. See 91.2 3. See 91.2 4. See set to Ford ensors connantly. 4. See 91.21 M 4. See 91.24 4. See 91.24 5. See 91.24 6. See 91.24 6. See 91.24 6. See 91.26 6. See 91.27 6. See 91.27 6. See 91.28 6. See 91.29 6. See 91.24 6. See 91.24 6. See 91.24 6. See 91.24 6. See 91.24 6. See 91.25 6. See 91.26 6. See 91.26 6. See 91.26 6. See 91.27 6. See 91.	s read by the 21 Module 1 24 Module 2 2 by 35.14 CS-CON-H01 2784 analog are PT100 ected in 1 1 by 96.02 are PT100 are PT100 are PT100 are PT100 are PT100 are PT1000
	0 20	Disable	-	1 = 1	n	у	Parameter
35.12	Temperature 1 fau						
	Fault level for motor Defines the fault level temperature 1 excemeasured/estimated. The unit is selected Note : With a PTC s	el for motoreds the level. d. by 96.02 Uensor, the u	r temperature r el, the event ge Init selection. unit is Ω.	nonitoring function enerates fault 4981			motor
	-80.0 1000.0 -76 1832 or	130, 266 or 4500	°C, °F or	1 = 1°C, °F or	n	у	Parameter
35.13	0 5000 Temperature 1 wai		Ohm	Ohm		1	

Index	Name											
	Text											
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре					
	Defines the warning temperature 1 excerned/estimate The unit is selected Note: With a PTC selected to the warning temperature of	Warning level for motor temperature monitoring function 1. Defines the warning level for motor temperature monitoring function 1. When the measured motor temperature 1 exceeds the level, the event generates warning A491 Motor temperature 1 measured/estimated. The unit is selected by 96.02 Unit selection.										
	-80.0 1000.0 -76 1832 or 0 5000	130, 266 or 4500	°C, °F or Ohm	1 = 1°C, °F or Ohm	n	У	Parameter					
35.14	Temperature 1 Al	source	II.	- I		I.	l.					
	on an I/O extension module, use Other to connect to e.g. 14.26 Al1 actual value. Other; source selection. 0: Not selected; not in use. 1: Al1 actual value; analog input Al1 on the control unit. 2: Al2 actual value; Analog input Al2 on the control unit. 3: Al3 actual value; Analog input Al3 on the control unit.											
	0 3	Not	- Put Ais on the	1 = 1	n	у	Parameter					
		selected										
	Klixon source for motor temperature monitoring function 1. The event generates fault 4981 Motor temperature 1 measured/estimated if a digital input is selected and the klixon is open. 0 = Klixon open. 1 = Klixon closed. Note: It is possible to connect several klixons in series. 0: Klixon open; klixon is open. Generates fault 4981 Motor temperature 1 measured/estimated. 1: Klixon closed; klixon is closed. Normal operation. 2: None; inactive. Supervision 1 klixon is disabled. 3: DI1; 10.02.b00 DI delayed status. 4: DI2; 10.02.b01 DI delayed status. 5: DI3; 10.02.b02 DI delayed status. 6: DI4; 10.02.b03 DI delayed status. 7: DI5; 10.02.b04 DI delayed status. 8: DI6; 10.02.b05 DI delayed status. 11: DIO1; 11.02.b00 DIO delayed status. 12: DIO2; 11.02.b01 DIO delayed status.											
	0 19	None	-	1 = 1	n	у	Parameter					
35.21	Temperature 2 source											
	Selects the source	Motor temperature monitoring function 2 source. Selects the source for 35.04 Measured temperature 2. Connection possibilities KTY84 sensors:										

Connection possibilities KTY84 sensors:

 Maximum one KTY84 sensor for motor temperature monitoring function 1 and maximum one KTY84 sensor for motor temperature monitoring function 2.

Connection possibilities for PT100 sensors:

 Maximum 3 PT100 sensors for motor temperature monitoring function 1 and maximum 3 PT100 sensors for motor temperature monitoring function 2.

Connection possibilities PTC sensors:

 Maximum one PTC sensor for motor temperature monitoring function 1 and maximum one PTC sensor for motor temperature monitoring function 2.

Connection possibilities for PT1000 sensors:

Index	Name						
	Text						
	Range	Default	Unit	Scale/	Volatile	Change	Туре
				Fbeq16		running	

 Maximum 3 PT1000 sensors for motor temperature monitoring function 1 and maximum 3 PT1000 sensors for motor temperature monitoring function 2.

For wiring examples, see chapter <u>Motor thermal protection</u> of this manual.

Usually this source is from a sensor connected to the motor controlled by the drive, but it could be used to measure and monitor a temperature from other parts of the process as long as a suitable sensor is used as per the selection list.

- 0: Disable; disable motor temperature monitoring function 2.
- 1: **Estimated temperature 2**; Estimated motor temperature 2. See 35.03 Motor estimated temperature 2. The temperature is estimated by the drive calculation. It is important to set up the ambient temperature of the motor in 35.58 Motor ambient temperature 2.
- 2: **KTY84 analog I/O**; KTY84 sensor connected to the analog input selected by 35.24 Temperature 2 Al source and an analog output. The input and output can be on the SDCS-CON-H01 or on an I/O extension module. The following settings are required:
- Set the unit selection parameter of the analog input to volts.
- Set the hardware jumper or switch related to the analog input to volts. Any change must be validated by either cycling the power or through 96.27 Control board boot.
- Set the source selection parameter of the analog output to Force KTY84 excitation.
- Select the analog input in 35.24 Temperature 2 Al source. In case the input is located on an I/O extension module, use Other to connect to e.g. 14.26 Al1 actual value.

The analog output feeds a constant current through the sensor. As the resistance of the sensor changes along with its temperature, the voltage over the sensor changes. The voltage is read by the analog input and converted into degrees.

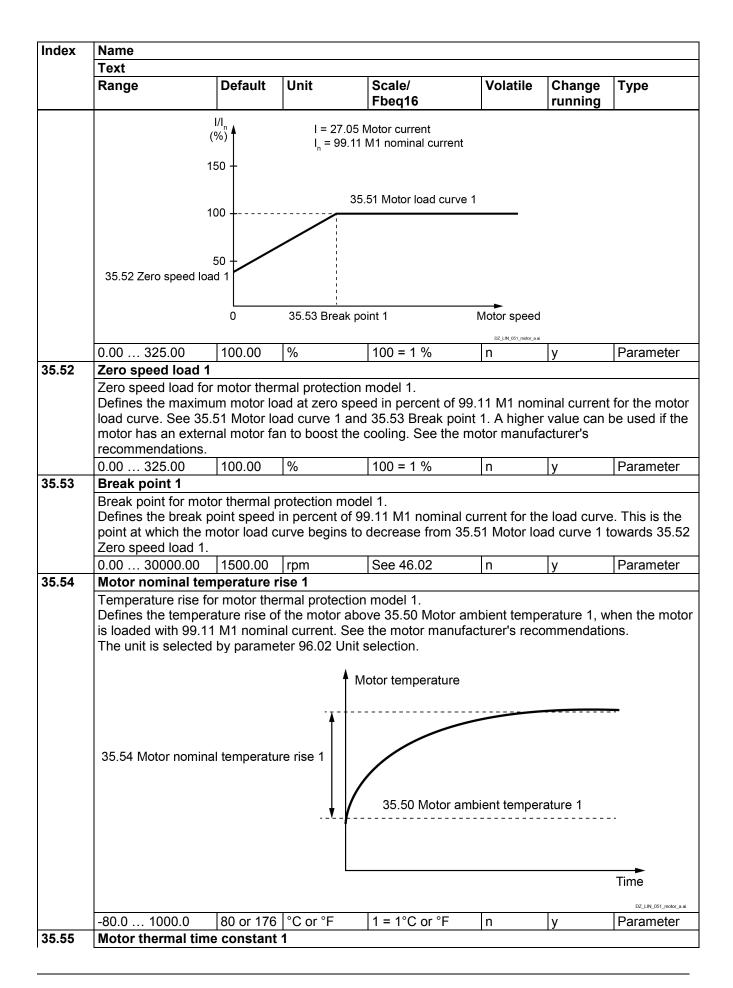
- 3: **KTY84 encoder module 1**; KTY84 sensor connected to encoder module 1. See 91.21 Module 1 temp sensor type and 91.22 Module 1 temp filter time.
- 4: **KTY84 encoder module 2**; KTY84 sensor connected to encoder module 2. See 91.24 Module 2 temp sensor type and 91.25 Module 2 temp filter time.
- 5: **1 × PT100** analog I/O; PT100 sensor connected to a standard analog input selected by 35.24 Temperature 2 Al source and an analog output. The input and output can be on the SDCS-CON-H01 or on an I/O extension module. The required settings are the same as with selection KTY84 analog I/O, except that the source selection parameter of the analog output must be set to Force PT100 excitation.
- 6: **2 × PT100 analog I/O**; as selection 1 × PT100 analog I/O, but with two sensors connected in series. Using multiple sensors improves the measurement accuracy significantly.
- 7: **3 × PT100 analog I/O**; as selection 1 × PT100 analog I/O, but with three sensors connected in series. Using multiple sensors improves the measurement accuracy significantly.
- 8: PTC DI6; PTC sensor connected to digital input DI6.

Either 0 Ω , normal temperature, or 4000 Ω , excessive temperature, will be shown in 35.04 Measured temperature 2.

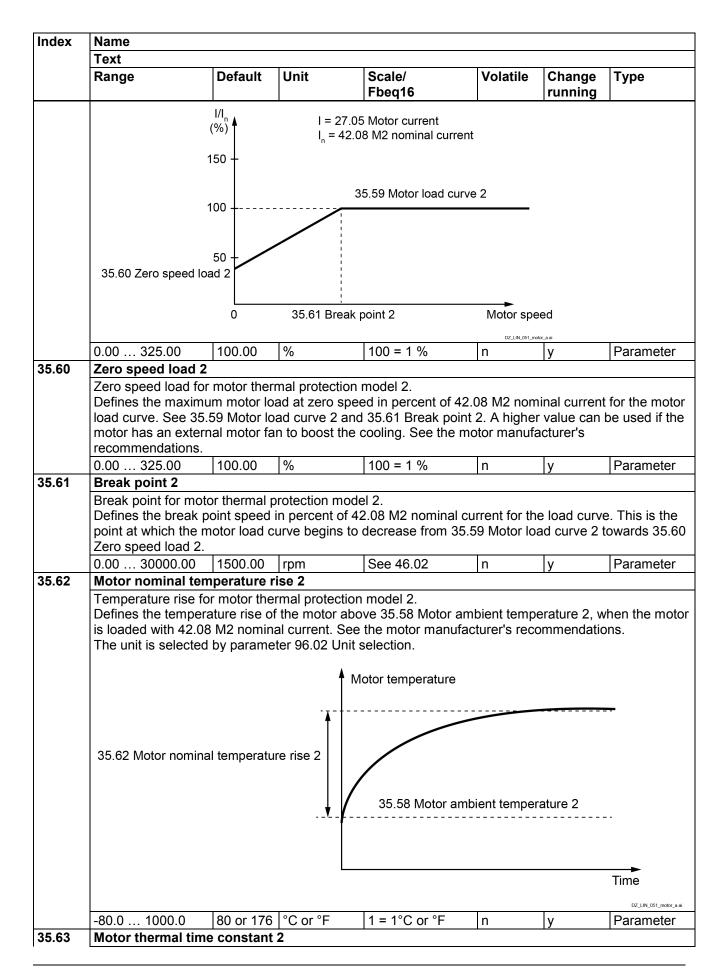
- 9: **PTC encoder module 1**; PTC sensor connected to encoder interface 1. See 91.21 Module 1 temp sensor type and 91.22 Module 1 temp filter time.
- 10: **PTC encoder module 2**; PTC sensor connected to encoder interface 2. See 91.24 Module 2 temp sensor type and 91.25 Module 2 temp filter time.
- 11: **Direct temperature**; the temperature is taken from the source selected by 35.24 Temperature 2 Al source. The value of the source is assumed to be in the unit of temperature specified by 96.02 Unit selection
- 13: **1 × PT1000** analog I/O; PT1000 sensor connected to a standard analog input selected by 35.24 Temperature 2 Al source and an analog output. The input and output can be on the SDCS-CON-H01 or on an I/O extension module. The required settings are the same as with selection KTY84 analog I/O, except that the source selection parameter of the analog output must be set to Force PT1000 excitation.
- 14: **2 × PT1000** analog I/O; as selection 1 × PT1000 analog I/O, but with two sensors connected in series. Using multiple sensors improves the measurement accuracy significantly.
- 15: **3 × PT1000 analog I/O**; as selection 1 × PT1000 analog I/O, but with three sensors connected in series. Using multiple sensors improves the measurement accuracy significantly.

Index	Name											
	Text											
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре					
	Temperature 2 or on an I/O ex I/O, except that excitation.	20: PTC analog I/O; PTC sensor connected to a standard analog input selected by 35.24 Temperature 2 Al source and an analog output. The input and output can be on the SDCS-CON-H0 or on an I/O extension module. The required settings are the same as with selection KTY84 analog I/O, except that the source selection parameter of the analog output must be set to Force PTC excitation. Either 0 Ω , normal temperature, or 4000 Ω , excessive temperature, will be shown in 35.04 Measure										
	temperature 2. 0 20	Disable	<u> </u>	1 = 1	n	v	Parameter					
35.22	Temperature 2 fault level											
	temperature 2 emeasured/estin The unit is sele Note : With a P	It level for moto exceeds the level nated. cted by 96.02 LTC sensor, the 130,	r temperature el, the event g Init selection. unit is Ω. o C,	monitoring func enerates fault 4			d motor Parameter					
	-76 1832 or 0 5000	266 or 4500	°F or Ohm	°F or Ohm								
35.23	Temperature 2 warning level Warning level for motor temperature monitoring function 2. Defines the warning level for motor temperature monitoring function 2. When the measured motor temperature 2 exceeds the level, the event generates warning A492 Motor temperature 2 measured/estimated. The unit is selected by 96.02 Unit selection. Note: With a PTC sensor, the unit is Ω .											
	-80.0 1000.0 -76 1832 or 0 5000		°C, °F or Ohm	1 = 1°C, °F or Ohm	n	У	Parameter					
35.24	Temperature 2 Al source											
	Analog input source for motor temperature monitoring function 2. Specifies an analog input when required by 35.21 Temperature 2 source. In case the input is located on an I/O extension module, use Other to connect to e.g. 14.26 Al1 actual value. Other; source selection. 0: Not selected; not in use. 1: Al1 actual value; analog input Al1 on the control unit. 2: Al2 actual value; analog input Al2 on the control unit. 3: Al3 actual value; analog input Al3 on the control unit.											
	0 3	Not selected	-	1 = 1	n	У	Parameter					
35.25	Klixon source for motor temperature monitoring function 2. The event generates fault 4982 Motor temperature 2 measured/estimated if a digital input is selected and the klixon is open. 0 = Klixon open. 1 = Klixon closed. Note: It is possible to connect several klixons in series. 0: Klixon open; klixon is open. Generates fault 4982 Motor temperature 2 measured/estimated. 1: Klixon closed; klixon is closed. Normal operation. 2: None; inactive. Supervision 2 klixon is disabled. 3: Dl1; 10.02.b00 Dl delayed status. 4: Dl2; 10.02.b01 Dl delayed status. 5: Dl3; 10.02.b02 Dl delayed status. 6: Dl4; 10.02.b03 Dl delayed status.											

Index	Name									
	Text									
	Range		Default	Unit		Scale/ Fbeq16	Volatile	Change running	Туре	
	8: DI6 ; 10. 11: DIO1 ; 12: DIO2 ;	02.b05 D 11.02.b00 11.02.b01	I delayed s I delayed s I DIO delay I DIO delay DI delayed	status. yed sta yed sta	ıtus.					
	0 19	0.02.0131	None		•	1 = 1	n	у	Parameter	
35.30	FPTC con FPTC-xx r Activates t warnings, Bit assign	nodule co the FPTC- but not the ment:	n word nfiguration	stor pro	nodule.	nodules. With	this word, it is p			
	Bit	Name			Value	Remarks				
	0	Module	in slot 1	_	0		installed in slot is installed in slo			
	1	Disable	slot 1 warr		0		om module in slo om module in slo			
	2	Module in slot 2			0	A module is installed in slot 2. No Module is installed in slot 2.				
	3	Disable slot 2 warning Module in slot 3			1 0	Warnings from module in slot 2 are inactive. Warnings from module in slot 2 are active.				
	4				1 0	A module is	installed in slot is installed in slot	3.	VC.	
	5	Disable slot 3 warning			0		om module in slo om module in slo			
	6 15 reserved									
25.50	0000h I		2Ah	<u> -</u>		1 = 1	n	У	Parameter	
35.50	Motor ambient temperature 1									
	Ambient temperature for motor thermal protection model 1. Defines the ambient temperature of the motor from the motor thermal protection model. The unit is selected by 96.02 Unit selection. The motor thermal protection model estimates the motor temperature based on parameters 35.50 35.55. The motor temperature increases if it operates in the region above the load curve, and decreases if it operates in the region below the load curve. WARNING!									
	-80.0 10		20 or 68	°C or		1 = 1°C or °F	ool properly bed n	y	Parameter	
35.51				0 01	1	1 - 1 O OI T		y	i arameter	
	Maximum load for motor thermal protection model 1. Defines the motor load curve in percent of 99.11 M1 nominal current together with 35.52 Zero speed load 1 and 35.53 Break point 1. The load curve is used by the motor thermal protection model to estimate the motor temperature. When the motor load curve = 100 %, the maximum load equals the value of 99.11 M1 nominal current. Higher loads will 'heat up' the motor. Note: The load curve level should be adjusted, if the ambient temperature differs from 35.50 Motor ambient temperature 1.									



Index Name **Text** Range Default Unit Scale/ Volatile Change Type Fbeq16 running Motor thermal time constant for motor thermal protection model 1. Defines the thermal time constant for the motor thermal protection model. It is the time to reach 63 % of nominal motor temperature. See the motor manufacturer's recommendations. Motor current 100 % Time Temperature rise 100 % 63 % Time 35.55 Motor thermal time constant 1 0 ... 32500 256 s n Parameter 35.58 Motor ambient temperature 2 Ambient temperature for motor thermal protection model 2. Defines the ambient temperature of the motor from the motor thermal protection model. The unit is selected by 96.02 Unit selection. The motor thermal protection model estimates the motor temperature based on parameters 35.58 ... 35.63. The motor temperature increases if it operates in the region above the load curve, and decreases if it operates in the region below the load curve. WARNING! The model cannot protect the motor if the motor does not cool properly because of dust, dirt, etc. -80.0 ... 1000.0 20 or 68 °C or °F $1 = 1^{\circ}C \text{ or } {^{\circ}F}$ n Parameter 35.59 Motor load curve 2 Maximum load for motor thermal protection model 2. Defines the motor load curve in percent of 42.08 M2 nominal current together with 35.60 Zero speed load 2 and 35.61 Break point 2. The load curve is used by the motor thermal protection model to estimate the motor temperature. When the motor load curve = 100 %, the maximum load equals the value of 42.08 M2 nominal current. Higher loads will 'heat up' the motor. Note: The load curve level should be adjusted, if the ambient temperature differs from 35.58 Motor ambient temperature 2.



ndex	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	Motor thermal time constant for motor thermal protection model 2. Defines the thermal time constant for the motor thermal protection model. It is the time to reach 63 % of nominal motor temperature. See the motor manufacturer's recommendations.									
	Motor current	A								
	100 %									
	Temperature rise	1		•	-					
	100 %									
	63 %				-					
	35.63	Motor thermal t	ime constant 2							
		T		DZ_LIN_051_motor_						
	0 32500	256	S	1 = 1 s	n	y	Parameter			

36 Load analyzer Peak value and amplitude logger settings.

Index	Name Text										
	36.xx	Not jet part of the manual.									
36.xx											

37 User load curve

Settings for user load curve.

Index	Name Text										
	37.xx	Not jet part of the manual.									
37.xx											
						_					

40 Process PID

Parameter values for process PID controller.

Index	Name								
	Text								
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
40.xx	Not jet part of the manual.								
40.xx									

42 Shared motion (2nd motor)Configuration of 2nd motor.

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
42.xx	Not jet part of the manual.									
42.xx		<u>.</u>				•				

44 Mechanical brake control

Configuration of mechanical brake.

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
44.xx	Not jet part of the manual.									
44.xx		·		•						

45 Energy efficiency

Settings for the energy saving calculators.

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Type			
45.xx	Not jet part of the manual.									
45.xx										
45.xx										

46 Monitoring/Scaling settings

Speed supervision settings, signal filtering and general scaling settings.

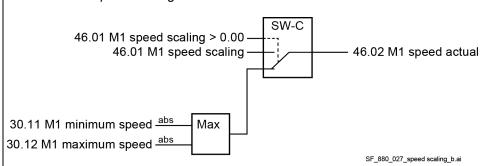
Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
46.04	M1 apped soci	na					

46.01 M1 speed scaling

Motor 1 speed scaling.

Sets the 16-bit scaling of all speed related parameters in rpm. The set scaling value corresponds to 20000 speed units in e.g. fieldbus or master-follower communication.

46.01 M1 speed scaling is valid for values greater than 0 rpm. For a value equal to 0 rpm, the maximum absolute value of 30.11 M1 minimum speed and 30.12 M1 maximum speed is taken. See 46.02 M1 speed scaling actual.



Notes:

- 46.01 M1 speed scaling has to be set in case the speed is read or written by means of an overriding control (e.g. fieldbus).
- The maximum amount of speed units is 32000.

Commissioning hints:

- Set 99.14 M1 nominal (base) speed to the base speed of motor 1.
- Set 30.11 M1 minimum speed and 30.12 M1 maximum speed to ± maximum speed.

	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
		speed scaling to the	maximum a	bsolute speed	l value of 30).11 M1 mir	nimum speed
		maximum speed.					
		t the settings of:					
		minimum speed.					
		maximum speed.					
		overspeed trip margi	n.				
		speed scaling.					
		nominal (base) speed					
		or equal to 1.6 • 46.0				000/20000).	
		out of range A124 S					1_
	0.0 30000.0	0.0	rpm	See 46.02	n	У	Parameter
16.02	M1 speed scaling	actual					
	Motor 1 speed sca	ling actual and accel	leration/dec	eleration ramp	o rate.		
		caling of all speed re					
		in e.g. fieldbus or m					
		ration/ deceleration i					
		 The speed acceler 					
		caling actual and not	to 30.11 M	•	eed or 30.1	2 Maximum	
	0.0 30000.0	-	rpm	1 = 1 rpm	у	n	Signal
6.03	M1 torque scaling]					
	Motor 1 torque sca	iling.					
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	scaling value corre	sponds to 10000 in	e.g. fieldbus	or master-fol	lower comn	nunication.	
	scaling value corre	esponds to 10000 in a 100.00		or master-fol	lower comn		Parameter
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47 Data storage

Data storage parameters that can be written to and read from using other parameters' source and target settings.

Note: There are different storage parameters for different data types. Integer-type storage parameters 47.11 ... 47.28 cannot be used as source for other parameters. No Other; source selection possible.

Index	Name	•			•		
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
47.01	Data storage 1 rea	32	·				
	e.g. as Other; so - Can be used as - Can be used as	47.01 47.08: loating-point) num	ived 16-bit o	lata. See grou	ıp 62 D2D a	and DDCS re	eceive data.
	data.	an are defined by	aramatara	47 24 47 20			
	This data storage pa	ge are defined by p				d whon the	drivo io do
	energized. Thus, it v			airi. Its value v	WIII DE Save	u when the	unve is de-
	See 47.31	0.000		See 47.31	n	у	Parameter
47.02	Data storage 2 real			366 47.31	111	l y	i arameter
47.02	Data storage param						
	See 47.01 Data stor						
	See 47.32	0.000	-	See 47.32	n	у	Parameter
47.03	Data storage 3 rea			000 47.02	1	y	1 drameter
47.00	Data storage param						
	See 47.01 Data stor						
	See 47.33	0.000	1_	See 47.33	n	у	Parameter
47.04	Data storage 4 real			17.00	1	Į y	i didiliotoi
	Data storage param See 47.01 Data stor	eter 4.					
	See 47.34	0.000	-	See 47.34	n	V	Parameter
47.05	Data storage 5 real		1	1000 47.04		l y	1 didifictor
-11100	Data storage param See 47.01 Data stor	eter 5.					
	See 47.35	0.000	-	See 47.35	n	У	Parameter
47.06	Data storage 6 rea	32		•	•	112	•
	Data storage param See 47.01 Data stor						
	See 47.36	0.000	-	See 47.36	n	у	Parameter
47.07	Data storage 7 rea	32					
	Data storage param	eter 7.					
	See 47.01 Data stor	age 1 real32.					
	See 47.37	0.000	-	See 47.37	n	у	Parameter
47.08	Data storage 8 rea	32					
	Data storage param See 47.01 Data stor						
	See 47.38	0.000	-	See 47.38	n	у	Parameter
47.11	Data storage 1 int3	32					
	Data storage param 32-bit integer.	eter 9.					
	-2147483648 2147483647	0	-	-	n	у	Parameter
47.12	Data storage 2 int3	2	•	•	•	•	•

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	Data storage paramet 32-bit integer.	ter 10.	•	·	1		
	-2147483648 2147483647	0	-	-	n	у	Parameter
47.13	Data storage 3 int32			•		•	
	Data storage paramet 32-bit integer.						
	-2147483648 2147483647	0	-	-	n	у	Parameter
47.14	Data storage 4 int32						
	Data storage paramet 32-bit integer.	ter 12.					
	-2147483648 2147483647	0	-	-	n	у	Parameter
47.15	Data storage 5 int32						
	Data storage paramet 32-bit integer.	ter 13.					
	-2147483648 2147483647	0	-	-	n	у	Parameter
47.16	Data storage 6 int32						
	Data storage paramet 32-bit integer.	ter 14.					
	-2147483648 2147483647	0	-	-	n	у	Parameter
47.17	Data storage 7 int32						
	Data storage paramet 32-bit integer.	ter 15.					
	-2147483648 2147483647	0	-	-	n	у	Parameter
47.18	Data storage 8 int32						
	Data storage paramet 32-bit integer.	ter 16.					
	-2147483648 2147483647	0	-	-	n	у	Parameter
47.21	Data storage 1 int16						
	Data storage paramet						
	-32768 32767	0	-	1 = 1	n	у	Parameter
47.22	Data storage 2 int16						
	Data storage paramet						
	-32768 32767	0	-	1 = 1	n	у	Parameter
47.23	Data storage 3 int16 Data storage paramet						
	16-bit integer. -32768 32767	0	-	1 = 1	n	у	Parameter
47.24	Data storage 4 int16		ı	1	<u> </u>	1 -	
	Data storage paramet						
	-32768 32767	0	-	1 = 1	n	у	Parameter
	1		I		I		

1	Name						
	Text						
<u> </u>	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
47.25	Data storage 5 int						
	Data storage param 16-bit integer.						
	-32768 32767	0	-	1 = 1	n	У	Parameter
47.26	Data storage 6 int	16					
	Data storage param 16-bit integer.	neter 22.					
<u>. </u>	-32768 32767	0	-	1 = 1	n	у	Parameter
47.27	Data storage 7 int	16					
	Data storage param 16-bit integer.	neter 23.					
	-32768 32767	0	-	1 = 1	n	у	Parameter
47.28	Data storage 8 int	16			l		•
	Data storage paran 16-bit integer.	neter 24.					
	-32768 32767	0	-	1 = 1	n	у	Parameter
47.31	Data storage 1 rea	l32 type					
	Data type for 47.01 Defines the scaling			ne 1 real32 T	The scaling i	e usad wha	n the data
	storage parameter:		Data Stora	ge i leaisz. i	ine scaling i	s used wile	ii liie dala
		data. See group 62	D2D and I	DDCS receive	e data		
		it data. See group 6					
	0: Unscaled; data s						
1		Sidiade dilly. Italide	e: -2147483	.264 2147 _'	473.264.		
ſ	1: Transparent; So	aling: 1 = 1. Range	: -32768	32767.	473.264.		
	1: Transparent ; Scaling 2: General ; Scaling	caling: 1 = 1. Range g: 100 = 1. Range: -:	: -32768 327.68 3	32767. 27.67.			
	1: Transparent ; Sc 2: General ; Scaling 3: Torque ; the scal	caling: 1 = 1. Range g: 100 = 1. Range: -: ing is defined by 46	: -32768 327.68 3 .04 M1 torq	32767. 27.67. ue scaling ac	tual. Range		
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	1: Transparent; Sc 2: General; Scaling 3: Torque; the scal 4: Speed; the scaling 5: Current; the sca	caling: 1 = 1. Range g: 100 = 1. Range: -(ing is defined by 46. ng is defined by 46.	: -32768 327.68 3 5.04 M1 torq 02 M1 spee	32767. 27.67. ue scaling act	tual. Range ual. Range:	-30000.00 .	30000.00.
	1: Transparent; So 2: General; Scaling 3: Torque; the scal 4: Speed; the scalin 5: Current; the sca 325.00.	caling: 1 = 1. Range g: 100 = 1. Range: -ing is defined by 46. ng is defined by 46. ling is in percent of	: -32768 327.68 3 5.04 M1 torq 02 M1 spee	32767. 27.67. ue scaling act ominal currer	etual. Range ual. Range: nt: 100 = 1 %	-30000.00 . 6. Range: -3	30000.00. 325.00
47.32	1: Transparent; Sc 2: General; Scaling 3: Torque; the scal 4: Speed; the scaling 5: Current; the sca 325.00. 0 5	caling: 1 = 1. Range: -3; 100 = 1. Range: -3; ing is defined by 46. Ing is in percent of Unscaled	: -32768 327.68 3 5.04 M1 torq 02 M1 spee	32767. 27.67. ue scaling act	tual. Range ual. Range:	-30000.00 .	30000.00.
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47.33 47.34	1: Transparent; Sc 2: General; Scaling 3: Torque; the scaling 4: Speed; the scaling 5: Current; the sca 325.00. 0 5 Data storage 2 rea Data type for 47.02 Defines the scaling 0 5 Data storage 3 rea Data type for 47.03 Defines the scaling 0 5 Data storage 4 rea Data type for 47.04 Defines the scaling 0 5 Data storage 5 rea Data type for 47.05 Defines the scaling 0 5	caling: 1 = 1. Range g: 100 = 1. Range: -i ing is defined by 46. Ing is defined by 46. Iling is in percent of Unscaled Iling is in	: -32768 3 327.68 3 3.04 M1 torq 02 M1 spee 99.11 M1 n - 132. 132. 1 Data stora - 132. 1 Data stora - 132. 1 Data stora - 132. 1 Data stora - 132. 1 Data stora - 1 -	32767. 27.67. ue scaling act of scaling act ominal currer 1 = 1 ge 2 real32. S 1 = 1 ge 4 real32. S 1 = 1	etual. Range ual. Range: nt: 100 = 1 % n See 47.31 D n See 47.31 D n See 47.31 D	-30000.00 . 6. Range: -3 y ata storage y ata storage y ata storage y ata storage	30000.00. 325.00 Parameter 1 real32 type. Parameter 1 real32 type. Parameter 1 real32 type. Parameter 1 real32 type. 1 real32 type. Parameter
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47.34 47.35	1: Transparent; Sc 2: General; Scaling 3: Torque; the scaling 4: Speed; the scaling 5: Current; the sca 325.00. 0 5 Data storage 2 rea Data type for 47.02 Defines the scaling 0 5 Data storage 3 rea Data type for 47.03 Defines the scaling 0 5 Data storage 4 rea Data type for 47.04 Defines the scaling 0 5 Data storage 5 rea Data type for 47.05 Defines the scaling 0 5 Data storage 5 rea Data type for 47.05 Defines the scaling 0 5	caling: 1 = 1. Range g: 100 = 1. Range: - ing is defined by 46. Ing is defined by 46. Iling is in percent of Unscaled Ilaz type Data storage 2 rea and range of 47.02 Unscaled Ilaz type Data storage 3 rea and range of 47.03 Unscaled Ilaz type Data storage 4 rea and range of 47.04 Unscaled Ilaz type Data storage 5 rea and range of 47.05 Unscaled Ilaz type Data storage 5 rea and range of 47.05 Unscaled Ilaz type Data storage 5 rea and range of 47.05 Unscaled Ilaz type Data storage 6 rea	: -32768 3 327.68 3 3.04 M1 torq 02 M1 spee 99.11 M1 n - -	32767. 27.67. ue scaling act of scaling act ominal currer 1 = 1 1 = 1 1 = 1 1 = 1 1 = 1 1 = 1 1 = 1 1 = 1 1 = 1 1 = 1 1 = 1 1 = 1 1 = 1 1 = 1 1 = 1 1 = 1 1 = 1 1 = 1	Etual. Range ual. Range: nt: 100 = 1 % n See 47.31 D n See 47.31 D n See 47.31 D n	-30000.00 . 6. Range: -3 y ata storage y ata storage y ata storage y ata storage y	30000.00. 325.00 Parameter 1 real32 type. Parameter 1 real32 type. Parameter 1 real32 type. Parameter 1 real32 type. Parameter

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
47.37	Data storage 7	real32 type				·	
		7.07 Data storage 7 rea ling and range of 47.07		ge 7 real32. S	See 47.31 D	ata storage	1 real32 type.
	0 5	Unscaled	-	1 = 1	n	у	Parameter
47.38	Data storage 8	real32 type					
	Data type for 47	'.08 Data storage 8 rea	132.				
	• •	ling and range of 47.08		ge 8 real32. S	See 47.31 D	ata storage	1 real32 type.
	0 5	Unscaled	-	1 = 1	n	V	Parameter

49 Panel port communicationCommunication settings for the control panel port on the drive

	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
19.01	Node ID number						
	Control panel/PC to Defines the node ID node ID. Note : For drives in spare/replacement	of the drive. All dr a network, it is advi	ives connec		etwork ID nu	,	or
	1 32	1	-	1 = 1	n	у	Parameter
19.03	Baud rate						
	0: 9.6 kbps ; 9.6 kbi 1: 38.4 kbps ; 38.4 2: 57.6 kbps ; 57.6 3: 86.4 kbps ; 86.4 4: 115.2 kbps ; 115 5: 230.4 kbps ; 230	kbit/s. kbit/s. kbit/s. .2 kbit/s. .4 kbit/s.					
	6: 460.8 kbps ; 460 7: 921.6 kbps ; 921						
			-	1 = 1	n	ly	Parameter
19.04	7: 921.6 kbps ; 921 0 7 Communication Id	.6 kbit/s. 230.4 kbps pss time	-		n	у	Parameter
9.04	7: 921.6 kbps ; 921 0 7 Communication lo Control panel/PC to Defines the time de Communication los update the messag	230.4 kbps 230.4 kbps 230.6 kbit/s 230.4 kbps 230.6 kbit/s 230.7 kbps 230.8 k	anel/PC too	eout. Il communica It starts wher	tion before t	he action de	efined in 49.0
49.04 49.05	7: 921.6 kbps ; 921 0 7 Communication Ic Control panel/PC to Defines the time de Communication los	230.4 kbps 230.4 kbps 230.4 kbps 230.6 kbit/s 230.6 kbit/s 230.7 kbps 230.8 k	anel/PC too	eout. Il communica	tion before t	he action de	efined in 49.0

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	3: Last speed; the evet freezes the speed to the speed feedback using an WARNING!	level the drive wa	s operatir	•			
	Make sure that it is safe 4: Speed reference safe communication and sets WARNING! Make sure that it is safe	e; the event gener the speed to the	ates warn value defi	ing A7EE Co ned in 22.46	ontrol panel Speed refe	/PC tool link rence safe.	
	0 4	Fault	-	1 = 1	n	у	Parameter
49.06	Refresh settings			•		1.5	
	Control panel/PC tool lin Applies the settings of parefresh is done. Note : Refreshing may ca 0: Done ; 0, normal opera 1: Refresh ; 1, refresh pa	arameters 49.01 . ause a communica ation or refreshing	49.05. T ation brea done.	he value rev		•	
	0 1	Done	-	1 = 1	у	у	Parameter

50 Fieldbus adapter (FBA) Fieldbus communication configuration.

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
50.01	FBA A enable	<u>.</u>	•	•		•	
	the adapter in slot 0: Disable ; disable 1: Option slot 1 ; clocated in slot 1. 2: Option slot 2 ; clocated in slot 2.	communication betw	ween drive on between	and fieldbus drive and field	adapter A. dbus adapte dbus adapte	r A. The ad	apter is apter is
	located in slot 3.	District.		4 4		1	D
50.02	0 3 FBA A comm los	Disable	-	1 = 1	n	n	Parameter
	Selects how the d 0: No action; non 1: Fault; the even Fault stop mode c 2: Warning; the econtrol is expected WARNING! Make sure that it is 3: Last speed; the	A communication loss rive reacts to a fieldbe, disable communication to generates fault 751 communication. This covent generates warned from the fieldbus. It is safe to continue ope evet generates war was operating at. The cov-pass filter.	us communation loss fu 0 FBA A coloccurs only ing A7C1 FE eration in caning A7C1 I	inction. mmunication when the driv BA A communication ase of a communication	ve is controll nication. This munication b nunication an	ed from the s occurs ev oreak. d freezes th	fieldbus. en though no ne speed to

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	4: Speed reference safe speed to the value define WARNING! Make sure that it is safe 5: Fault always; the eve 31.13 Fault stop mode of fieldbus. 0 5	ed in 22.46 Speed to continue opera nt generates fault	l reference tion in cas 7510 FB	e safe. se of a comm A A commun	unication b	reak. the motor s	stops due to
50.03	FBA A comm loss time					1 9	1 dramotor
00.00	Fieldbus adapter A commoder Defines the time delay for commoder loss func is execumessage. 0 32500	nunication loss tin or the fieldbus com	nmunicatio				
50.04	FBA A ref1 type	1000	1110	1 11110	1	<u> </u>	T didiffeter
	Selects the type and sca adapter A. 0: Auto ; automatic type a connected to. If the refer	and scaling accord	ding to wh	nich reference	e chain the	incoming re	eference is
	Parameter		Auto ty	pe and scali	ng		
	22.11 Speed reference 22.12 Speed reference 23.32 Direct speed re	e 2 source ference	Speed				
	26.11 Torque reference 26.12 Torque reference	ce 2 source	Torque				
	27.22 Current referen		Current				
	28.18 EMF reference 28.20 EMF voltage co 28.29 Flux correction	rrection source	General				
	1: Transparent ; no scali 2: General ; generic refer 3: Torque ; the scaling is 4: Speed ; the scaling is 5: Current ; the scaling is 0 5	ence with a scalir defined by 46.04 defined by 46.02 I	M1 torque	e scaling actu scaling actua	ial. al.	·	Parameter
50.05		Auto	-	1 – 1	11	у	rarameter
50.05	FBA A ref2 type Fieldbus adapter A reference Selects the type and sca adapter A. See 50.04 FB 0 5	ling of 03.06 FBA	A referen	ce 2 sent by	the master	(e.g. PLC)	to fieldbus
50.07	FBA A act1 type		1	1	1	13	1 0
30.01	Fieldbus adapter A actual Selects the type/source a PLC). 0: Auto; type/source and For individual settings set 1: Transparent; the value 1. No scaling is applied. 2: General; the value set 1. The sealing of 100 = 1.	and scaling of actual scaling follow the below. e selected by 50. The 16-bit scaling ected by 50.10 Fi	e type of r 10 FBA A ı is 1 = 1 u BA A act1	eference 1 so act1 transpa unit. transparent	elected by s	50.04 FBA	A ref1 type.

	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
		Motor torque filtered is	s sent as a	ctual value 1.	The scaling	is defined l	by 46.04 M1
	torque scaling ac						
		Used motor speed filte	red is sent	as actual vali	ue 1. The sc	aling is defi	ned by 46.02
	M1 speed scaling			alua 1 Tha a		araamt of O	0 44 144
	nominal current.	Motor current is sent	as actual v	alue I. The s	caling is in p	ercent of 9	9.11 1011
		notor position is sent a	s actual va	lue 1 See 90	06 Motor n	nsition scal	ed
	0 6	Auto		1 = 1	n	v	Parameter
50.08	FBA A act2 type					y	1 drameter
50.00		A actual value 2 type.					
		source and scaling of a	ctual value	2 sent hy fie	ldhus adant	er A to the r	master (e a
		FBA A act1 type.	iotaai vaiac	2 Some by no	iabas adapt		master (e.g.
	0 6	Auto	1_	1 = 1	n	V	Parameter
50.09	FBA A SW trans		1			J	
-0.00		A status word transpa	rent source	<u> </u>			
		e of the status word w			is set to a t	ransnarent	
		rofile e.g. by its configu					to be used is
	fieldbus depende			3			
	Other; source se	lection e.g. 06.88 FBA	A profile st	atus word.			
	0: Not selected;	no source selected.					
	0 0	Not selected	-	1 = 1	n	y	Parameter
50.10	FBA A act1 tran	sparent source					
	Fieldbus adapter	A actual value 1 trans	oarent soui	ce.			
	-						
		e of actual value 1 ser		is adapter A t	to the maste	r (e.g. PLC)), when 50.07
	FBA A actual 1 ty	pe = Transparent or G	eneral.	ıs adapter A t	to the maste	r (e.g. PLC)), when 50.07
	FBA A actual 1 ty Other; source se	/pe = Transparent or G lection e.g. a value fro	eneral.	ıs adapter A t	to the maste	r (e.g. PLC)), when 50.07
	FBA A actual 1 ty Other; source se 0: Not selected;	pe = Transparent or G lection e.g. a value from no source selected.	eneral.			_	
	FBA A actual 1 ty Other; source se 0: Not selected; 0 0	rpe = Transparent or G lection e.g. a value from no source selected. Not selected	eneral.	1 = 1	n n	r (e.g. PLC)), when 50.07
50.11	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source	eneral. m group 1.	1 = 1		_	
50.11	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 trans	eneral. m group 1 parent soul	1 = 1	n	у	Parameter
50.11	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 trans te of actual value 2 ser	eneral. m group 1 coarent sould by fieldbu	1 = 1	n	у	Parameter
50.11	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G rpe = Transparent or G	eneral. m group 1. - coarent soul it by fieldbu	1 = 1	n	у	Parameter
50.11	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from lection e.g. a value from	eneral. m group 1. - coarent soul it by fieldbu	1 = 1	n	у	Parameter
50.11	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected;	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from no source selected.	eneral. m group 1.	1 = 1 rce. us adapter A t	n to the maste	y r (e.g. PLC)	Parameter), when 50.08
	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected; 0 0	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from no source selected. Not selected	eneral. m group 1. - coarent soul it by fieldbu	1 = 1	n	у	Parameter
	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected; 0 0 FBA A debug me	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from no source selected. Not selected ode	eneral. m group 1.	1 = 1 rce. us adapter A t	n to the maste	y r (e.g. PLC)	Parameter), when 50.08
	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected; 0 0 FBA A debug me Fieldbus adapter	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 trans re of actual value 2 ser re = Transparent or G lection e.g. a value from no source selected. Not selected ode A debug mode.	eneral. m group 1.	1 = 1 rce. us adapter A t	n to the maste	y r (e.g. PLC)	Parameter), when 50.08 Parameter
	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected; 0 0 FBA A debug me Fieldbus adapter Enables the disple	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from no source selected. Not selected ode A debug mode. ay of the raw (unmodification e.g. avalue from no source selected.	eneral. m group 1.	1 = 1 rce. us adapter A t	n to the maste	y r (e.g. PLC)	Parameter), when 50.08 Parameter
50.11	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected; 0 0 FBA A debug me Fieldbus adapter Enables the displayed	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from no source selected. Not selected Not selected ode A debug mode. lay of the raw (unmodified in parameters 50.13	eneral. m group 1.	1 = 1 Total To	n to the maste	y r (e.g. PLC)	Parameter), when 50.08 Parameter
	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected; 0 0 FBA A debug me Fieldbus adapter Enables the displaye Note: This function	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from no source selected. Not selected Not selected A debug mode. ay of the raw (unmodification parameters 50.13 conality should only be used.	eneral. m group 1.	1 = 1 Toce. Is adapter A to the second from	n to the maste	y r (e.g. PLC)	Parameter), when 50.08 Parameter
	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected; 0 0 FBA A debug management Fieldbus adapter Enables the displaye Note: This function 0: Disable; disable	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from no source selected. Not selected Not selected A debug mode. ay of the raw (unmodification parameters 50.13 consists) should only be alled the display of raw data.	eneral. m group 1.	1 = 1 Toce. Is adapter A to the second from the second from the second from the second flows adapte.	n to the mastern n and sent to the r.A.	y r (e.g. PLC)	Parameter), when 50.08 Parameter
	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected; 0 0 FBA A debug management Fieldbus adapter Enables the displaye Note: This function 0: Disable; disable	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from no source selected. Not selected Not selected A debug mode. ay of the raw (unmodification parameters 50.13 conality should only be used.	eneral. m group 1.	1 = 1 Toce. Is adapter A to the second from the second from the second from the second flows adapte.	n to the mastern n and sent to the r.A.	y r (e.g. PLC)	Parameter), when 50.08 Parameter
50.12	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected; 0 0 FBA A debug me Fieldbus adapter Enables the displ data are displaye Note: This function 0: Disable; disable; enable	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from no source selected. Not selected Not selected ode A debug mode. ay of the raw (unmodified in parameters 50.13 conality should only be used the display of raw day the the display of raw day bisable	eneral. m group 1.	1 = 1 ce. us adapter A to the seceived from the seceived bugging. Idbus adapter the seceived from th	n n to the master n and sent to the A.	y r (e.g. PLC) y fieldbus ada	Parameter), when 50.08 Parameter apter A. The
50.12	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected; 0 0 FBA A debug m Fieldbus adapter Enables the displ data are displaye Note: This function 0: Disable; disable 1: Enable; enable 0 1 FBA A control w	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from no source selected. Not selected Not selected A debug mode. ay of the raw (unmodified in parameters 50.13 consists) should only be use the display of raw day of the day of the display of raw day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the d	eneral. m group 1.	1 = 1 ce. us adapter A to the seceived from the seceived bugging. Idbus adapter the seceived from th	n n to the master n and sent to the A.	y r (e.g. PLC) y fieldbus ada	Parameter), when 50.08 Parameter apter A. The
50.12	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected; 0 0 FBA A debug m Fieldbus adapter Enables the displedata are displaye Note: This function 0: Disable; disable; enable 0 1 FBA A control w Fieldbus adapter	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from no source selected. Not selected Not selected Not selected ode A debug mode. lay of the raw (unmodified in parameters 50.13 onality should only be useled the display of raw day the day the display of raw day the day the display of raw day the day	eneral. m group 1.	1 = 1 ce. us adapter A to the secence of the secen	n to the master n and sent to the r.A.A.	y r (e.g. PLC) y fieldbus ada	Parameter), when 50.08 Parameter apter A. The Parameter
	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected; 0 0 FBA A debug manifold from the selected of the s	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from no source selected. Not selected Not selected A debug mode. ay of the raw (unmodified in parameters 50.13 consists) should only be use the display of raw day of the day of the display of raw day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the day of the d	eneral. m group 1.	1 = 1 ce. us adapter A to the secence of the secen	n to the master n and sent to the r.A.A.	y r (e.g. PLC) y fieldbus ada	Parameter), when 50.08 Parameter apter A. The Parameter
50.12	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected; 0 0 FBA A debug ma Fieldbus adapter Enables the displ data are displaye Note: This function 0: Disable; disable; enable 0 1 FBA A control w Fieldbus adapter Displays the raw 50.12 FBA A deb	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from no source selected. Not selected Not selected Not selected A debug mode. ay of the raw (unmodified in parameters 50.13 conality should only be used the display of raw day of the day of the	eneral. m group 1.	1 = 1 ce. us adapter A to the secence of the secen	n n to the master n and sent to the n and sent t	y r (e.g. PLC) y fieldbus ada	Parameter), when 50.08 Parameter apter A. The Parameter
50.12	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected; 0 0 FBA A debug manifold from the selected of the s	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from no source selected. Not selected Not selected Not selected A debug mode. ay of the raw (unmodified in parameters 50.13 conality should only be used the display of raw day of the day of the	eneral. m group 1.	1 = 1 ce. us adapter A to the second from the	n to the master n and sent to the r.A.A.	y r (e.g. PLC) y fieldbus ada	Parameter), when 50.08 Parameter apter A. The Parameter
50.12	FBA A actual 1 ty Other; source se 0: Not selected; 0 0 FBA A act2 trans Fieldbus adapter Selects the source FBA A actual 2 ty Other; source se 0: Not selected; 0 0 FBA A debug ma Fieldbus adapter Enables the displedata are displayed Note: This function 0: Disable; disable; enable 0 1 FBA A control w Fieldbus adapter Displays the raw 50.12 FBA A deb 000000000h	rpe = Transparent or G lection e.g. a value from no source selected. Not selected sparent source A actual value 2 transparent or G lection e.g. a value from no source selected. Not selected Not selected A debug mode. lay of the raw (unmodified only be used the display of raw date the disp	eneral. m group 1.	1 = 1 ce. us adapter A to the second from the	n n to the master n and sent to the n and sent t	y r (e.g. PLC) y fieldbus ada	Parameter), when 50.08 Parameter apter A. The Parameter

Index	Name							
	Text							
	Range	Default		Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	Displays the raw (unmo A if 50.12 FBA A debug			(REF1)	sent by the n	naster (e.g. l	PLC) to field	lbus adapter
	-2147483648 2147483647	-		-	1 = 1	у	n	Signal
50.15	FBA A reference 2							
	Fieldbus adapter A raw Displays the raw (unmo A if 50.12 FBA A debug	dified) refe	erence 2	(REF2)			, 	·
	-2147483648 2147483647	-		-	1 = 1	у	n	Signal
50.16	FBA A status word							
	Fieldbus adapter A raw Displays the raw (unmo 50.12 FBA A debug mo	dified) sta	tus word	sent by	fieldbus adar	oter A to the	master (e.g	j. PLC) if
	00000000h FFFFFFFh	-		-	1 = 1	У	n	Signal
50.17	FBA A actual value 1							
	Fieldbus adapter A raw Displays the raw (unmo PLC) if 50.12 FBA A de	dified) act	ual value	e 1 (ACT e.	1) sent by fie	ldbus adapt	er A to the r	naster (e.g.
	-2147483648 2147483647	-		-	1 = 1	у	n	Signal
50.18	FBA A actual value 2			•			•	
	Fieldbus adapter A raw Displays the raw (unmo PLC) if 50.12 FBA A de -2147483648	dified) act	ual value		2) sent by fie	ldbus adapt	er A to the r	naster (e.g.
	2147483647							
50.21	FBA A timelevel sel			•			•	
	Fieldbus adapter A com In general, lower time le time levels of read/write timelevel sel:	evels of rea	ad/write s for cyclic	services high an	d cyclic low d	lata dependi		
ĺ	50.21 FBA A timeleve	el sel	Cyclic	high*	Cyclic lov	V**		
	Normal		2 ms		10 ms			
	Fast Very fast		500 μs 250 μs		2 ms			
	Monitoring		250 μs 10 ms		10 ms			
	Worldoning		10 1115		101115			
	*Cyclic high data consis **Cyclic low data consis out and acyclic data. Control word, REF1 and cyclic high messages. 0: Normal; normal spec 1: Fast; fast speed. 2: Very fast; very fast s 3: Monitoring; low spec	t of the pa I REF2 fro ed. peed.	arameter	data ma	pped in grou	ps 52 FBA <i>F</i> s interrupts g	jenerated o	n receipt of
	0 3	Normal		-	1 = 1	n	n	Parameter
50.29	FBA A profile			1				l
	Fieldbus adapter A prof	ile.						

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	ABB Drive profile 0: ABB Drive pro 1: ODVA basic; N 2: ODVA extende	ed; NOT supported. eed: value in 46.02 == 4 supported.	using 50.2 6.02 == 20	9 FBA A prof 1000 speed u	file. nits. Any oth	er: 100.00 ^c	% == 10000.
50.31	FBA B enable	prome					
	Enables/Disables the adapter in slo 0: Disable ; disab 1: Option slot 1 ; located in slot 1. 2: Option slot 2 ; located in slot 2.	B enable/disable. communication betwe t 1 slot 3. le communication betwe enable communication enable communication enable communication	veen drive n between n between	and fieldbus drive and field	adapter B. dbus adapte	er B. The ad	apter is apter is
	0 3	Disable	_	1 = 1	n	n	Parameter
50.32	FBA B comm los	L		1	''	1	i didiliotoi
	0: No action; nor 1: Fault; the even Fault stop mode of 2: Warning; the econtrol is expected WARNING! Make sure that it 3: Last speed; the level the driver using an 850 ms WARNING! Make sure that it 4: Speed referent speed to the value WARNING! Make sure that it 5: Fault always;	drive reacts to a fieldburie, disable communication, disable communication are generates fault 7520 communication. This occurrence warning the from the fieldbus. It is safe to continue ope to e evet generates warning at the low-pass filter. It is safe to continue ope to e safe; the event generate defined in 22.46 Specials safe to continue ope the event generates farmode communication.	tion loss fur FBA B corporation in caration inction. mmunication when the driv BA B communication ase of a commu	ve is controll nication. This munication be desired on the munication be munication be munication be munication and munication and munication and	oreak. oreak. oreak. oreak. oreak. oreak. oreak. oreak. oreak. oreak. oreak. oreak.	fieldbus. en though no ne speed to feedback and sets the	
50.33	FBA B comm los			<u> </u>	1]	, arameter
30.00	Fieldbus adapter Defines the time of	B communication loss delay for the fieldbus cost executed. Time count	ommunica				
50.34	FBA B ref1 type	1000	11110	1. 11113		J	. arameter
30.04		B reference 1 type.					
l	1 lolabas adapter	2 . G.G.G. G. G. C. Lype.					

Text Range Default Unit Scale/ Fbeq16 Selects the type and scaling of 03.07 FBA B reference 1 sent by the master adapter B. See 50.04 FBA A ref1 type. 0 5 Auto - 1 = 1 n 50.35 FBA B ref2 type Fieldbus adapter B reference 2 type. Selects the type and scaling of 03.08 FBA B reference 2 sent by the master adapter A. See 50.04 FBA A ref1 type. 0 5 Auto - 1 = 1 n 50.37 FBA B act1 type Fieldbus adapter B actual value 1 type. Selects the type/source and scaling of actual value 1 sent by fieldbus adapter PLC). See 50.07 FBA A act1 type. 0 6 Auto - 1 = 1 n 50.38 FBA B act2 type Fieldbus adapter B actual value 2 type. Selects the type/source and scaling of actual value 2 sent by fieldbus adapter PLC). See 50.07 FBA A act1 type. 0 6 Auto - 1 = 1 n 50.39 FBA B SW transparent source Fieldbus adapter B status word transparent source. Selects the source of the status word when the fieldbus adapter is set to a to communication profile e.g. by its configuration parameters in group 54. The fieldbus dependent. Other; source selection e.g. 06.15 Main Status Word. 0: Not selected; no source selected.	y er (e.g. PLC) y oter B to the y transparent	Parameter to fieldbus Parameter master (e.g. Parameter master (e.g. Parameter
Selects the type and scaling of 03.07 FBA B reference 1 sent by the master adapter B. See 50.04 FBA A ref1 type. 0 5	running r (e.g. PLC) y r (e.g. PLC) y oter B to the y transparent	Parameter to fieldbus Parameter to fieldbus Parameter master (e.g. Parameter master (e.g. Parameter
adapter B. See 50.04 FBA A ref1 type. 0 5	y er (e.g. PLC) y oter B to the y transparent	Parameter to fieldbus Parameter master (e.g. Parameter master (e.g. Parameter
FBA B ref2 type Fieldbus adapter B reference 2 type. Selects the type and scaling of 03.08 FBA B reference 2 sent by the master adapter A. See 50.04 FBA A ref1 type. 0 5	er (e.g. PLC) y eter B to the y eter B to the y transparent	Parameter master (e.g. Parameter master (e.g. Parameter master (e.g.
Fieldbus adapter B reference 2 type. Selects the type and scaling of 03.08 FBA B reference 2 sent by the master adapter A. See 50.04 FBA A ref1 type. 0 5	y oter B to the y oter B to the y transparent	Parameter master (e.g. Parameter master (e.g. Parameter
Selects the type and scaling of 03.08 FBA B reference 2 sent by the master adapter A. See 50.04 FBA A ref1 type. 0 5	y oter B to the y oter B to the y transparent	Parameter master (e.g. Parameter master (e.g. Parameter
FIBA B act1 type Fieldbus adapter B actual value 1 type. Selects the type/source and scaling of actual value 1 sent by fieldbus adapter PLC). See 50.07 FBA A act1 type. 0 6	oter B to the y oter B to the y transparent	master (e.g. Parameter master (e.g. Parameter
Fieldbus adapter B actual value 1 type. Selects the type/source and scaling of actual value 1 sent by fieldbus adapter PLC). See 50.07 FBA A act1 type. 0 6	y y oter B to the y transparent	Parameter master (e.g.
Selects the type/source and scaling of actual value 1 sent by fieldbus adapted PLC). See 50.07 FBA A act1 type. 0 6	y y oter B to the y transparent	Parameter master (e.g.
FBA B act2 type Fieldbus adapter B actual value 2 type. Selects the type/source and scaling of actual value 2 sent by fieldbus adapted PLC). See 50.07 FBA A act1 type. 0 6	ter B to the	master (e.g.
Fieldbus adapter B actual value 2 type. Selects the type/source and scaling of actual value 2 sent by fieldbus adapter PLC). See 50.07 FBA A act1 type. 0 6	y transparent	Parameter
FBA B SW transparent source Fieldbus adapter B status word transparent source. Selects the source of the status word when the fieldbus adapter is set to a t communication profile e.g. by its configuration parameters in group 54. The fieldbus dependent. Other; source selection e.g. 06.15 Main Status Word.	transparent	
Fieldbus adapter B status word transparent source. Selects the source of the status word when the fieldbus adapter is set to a t communication profile e.g. by its configuration parameters in group 54. The fieldbus dependent. Other; source selection e.g. 06.15 Main Status Word.		
Not colocted 1 - 1 - n	1.,	Davamatar
0 0 Not selected - 1 = 1 n 50.40 FBA B act1 transparent source	У	Parameter
FBA B act1 transparent source Fieldbus adapter B actual value 1 transparent source. Selects the source of actual value 1 sent by fieldbus adapter B to the master FBA B actual 1 type = Transparent or General. Other; source selection e.g. a value from group 1. 0: Not selected; no source selected. 0 0 Not selected - 1 = 1 n	er (e.g. PLC	e), when 50.37
50.41 FBA B act2 transparent source	y	i arameter
Fieldbus adapter B actual value 2 transparent source. Selects the source of actual value 2 sent by fieldbus adapter B to the master FBA B actual 2 type = Transparent or General. Other; source selection e.g. a value from group 1. 0: Not selected; no source selected. 0 0 Not selected - 1 = 1 n	er (e.g. PLC	e), when 50.38
50.42 FBA B debug mode	1,7	
Fieldbus adapter B debug mode. Enables the display of the raw (unmodified) data received from and sent to data are displayed in parameters 50.43 50.48. Note: This functionality should only be used for debugging. 0: Disable; disable the display of raw data from fieldbus adapter B. 1: Enable; enable the display of raw data from fieldbus adapter B.	fieldbus ad	
0 1 Disable - 1 = 1 n	n	Parameter
50.43 FBA B control word		•
Fieldbus adapter B raw control word.		

PLC) if 50.42 FBA B debug mode = Enable. -2147483648 2147483647 -	Index	Name									
Displays the raw (unmodified) control word sent by the master (e.g. PLC) to fieldbus adapter B if 50.42 FBA B debug mode = Enable. 00000000 FFFFFFFFF		Text									
So.42 FBA B debug mode = Enable.		Range	Default	Unit		Volatile		Туре			
FFFFFFF FR Fieldbus adapter B raw reference 1 Fieldbus adapter B raw reference 1 (REF1) sent by the master (e.g. PLC) to fieldbus adapte B if 50.42 FBA B debug mode = Enable. -2147483643				ord sent by	the master ((e.g. PLC) to	fieldbus ac	lapter B if			
Fieldbus adapter B raw reference 1. Displays the raw (unmodified) reference 1 (REF1) sent by the master (e.g. PLC) to fieldbus adapte B if 50.42 FBA B debug mode = Enable. 2147483648 2147483647 - 1 = 1 = 1			-	-	1 = 1	у	n	Signal			
Displays the raw (unmodified) reference 1 (REF1) sent by the master (e.g. PLC) to fieldbus adapte B if 50.42 FBA B debug mode = Enable. -2147483643	50.44	FBA B reference 1									
2147483647		Displays the raw (unr B if 50.42 FBA B deb	nodified) reference				PLC) to field				
Fieldbus adapter B raw reference 2. Displays the raw (unmodified) reference 2 (REF2) sent by the master (e.g. PLC) to fieldbus adapter B if 50.42 FBA B debug mode = Enable. -2147483648			-	-	1 = 1	У	n	Signal			
Displays the raw (unmodified) reference 2 (REF2) sent by the master (e.g. PLC) to fieldbus adapte B if 50.42 FBA B debug mode = Enable. -2147483648	50.45	FBA B reference 2									
Fieldbus adapter B raw status word. Fieldbus adapter B raw status word.		Displays the raw (unr B if 50.42 FBA B deb -2147483648	nodified) reference				· -				
Fieldbus adapter B raw status word. Displays the raw (unmodified) status word sent by fieldbus adapter B to the master (e.g. PLC) if 50.42 FBA B debug mode = Enable. 000000000h FFFFFFFF h FBA B actual value 1 Fieldbus adapter B raw actual value 1. Displays the raw (unmodified) actual value 1 (ACT1) sent by fieldbus adapter B to the master (e.g. PLC) if 50.42 FBA B debug mode = Enable. -2147483648 2147483647 -	= 0.40										
Displays the raw (unmodified) status word sent by fieldbus adapter B to the master (e.g. PLC) if 50.42 FBA B debug mode = Enable. 0000000000. FFFFFFFFF h FBA B actual value 1 Fieldbus adapter B raw actual value 1. Displays the raw (unmodified) actual value 1 (ACT1) sent by fieldbus adapter B to the master (e.g. PLC) if 50.42 FBA B debug mode = Enable. -2147483648 2147483647 FBA B actual value 2 Fieldbus adapter B raw actual value 2. Displays the raw (unmodified) actual value 2 (ACT2) sent by fieldbus adapter B to the master (e.g. PLC) if 50.42 FBA B debug mode = Enable. -2147483648 2147483648 2147483647 FBA B timelevel sel. Fieldbus adapter B communication time levels. See 50.21 FBA A timelevel sel. 0 3 Normal - 1 = 1 n n n Paramete Fieldbus adapter B profile. The DCS880 only supports transparent16 profile, so profile adaption according to bus specific pro ABB Drive profile or others are handled using 50.59 FBA B profile. 0: ABB Drive profile or others are handled using 50.59 FBA B profile. 0: ABB Drive profile; speed: value in 46.02 == 20000 speed units. Any other: 100.00 % == 10000. 1: ODVA basic; NOT supported. 2: ODVA extended; NOT supported. 10: DCP; NOT supported.	50.46										
FFFFFFFh FBA B actual value 1 Fieldbus adapter B raw actual value 1 (ACT1) sent by fieldbus adapter B to the master (e.g. PLC) if 50.42 FBA B debug mode = Enable. -2147483648		Displays the raw (unmodified) status word sent by fieldbus adapter B to the master (e.g. PLC) if 50.42 FBA B debug mode = Enable.									
Fieldbus adapter B raw actual value 1. Displays the raw (unmodified) actual value 1 (ACT1) sent by fieldbus adapter B to the master (e.g. PLC) if 50.42 FBA B debug mode = Enable. -2147483648			-	-	1 = 1	у	n	Signal			
Displays the raw (unmodified) actual value 1 (ACT1) sent by fieldbus adapter B to the master (e.g. PLC) if 50.42 FBA B debug mode = Enable. -2147483648	50.47	FBA B actual value	1								
2147483647 50.48 FBA B actual value 2 Fieldbus adapter B raw actual value 2. Displays the raw (unmodified) actual value 2 (ACT2) sent by fieldbus adapter B to the master (e.g. PLC) if 50.42 FBA B debug mode = Enable. -2147483648 2147483647 -		Displays the raw (unmodified) actual value 1 (ACT1) sent by fieldbus adapter B to the master (e.g. PLC) if 50.42 FBA B debug mode = Enable.									
Fieldbus adapter B raw actual value 2. Displays the raw (unmodified) actual value 2 (ACT2) sent by fieldbus adapter B to the master (e.g. PLC) if 50.42 FBA B debug mode = Enable. -2147483648 2147483647 -			-	-	1 = 1	У	n	Signal			
Displays the raw (unmodified) actual value 2 (ACT2) sent by fieldbus adapter B to the master (e.g. PLC) if 50.42 FBA B debug mode = Enable. -2147483648 2147483647 50.51 FBA B timelevel sel Fieldbus adapter B communication time levels. See 50.21 FBA A timelevel sel. 0 3 Normal - 1 = 1 n n n Paramete 50.59 FBA B profile Fieldbus adapter B profile. The DCS880 only supports transparent16 profile, so profile adaption according to bus specific pro ABB Drive profile or others are handled using 50.59 FBA B profile. 0: ABB Drive profile; speed: value in 46.02 == 20000 speed units. Any other: 100.00 % == 10000 1: ODVA basic; NOT supported. 2: ODVA extended; NOT supported. 3: ProfiDrive; speed: value in 46.02 == 4000h. Any other: 100.00 % == 10000. NOT supported. 4: CIA 402; NOT supported. 10: DCP; NOT supported. 0 10 ABB drive - 1 = 1 n n n Paramete	50.48	FBA B actual value	2	•	•	<u>.</u>	•				
2147483647 50.51 FBA B timelevel sel Fieldbus adapter B communication time levels. See 50.21 FBA A timelevel sel. 0 3 Normal - 1 = 1 n n n Paramete 50.59 FBA B profile Fieldbus adapter B profile. The DCS880 only supports transparent16 profile, so profile adaption according to bus specific profile DCS880 only supports are handled using 50.59 FBA B profile. 0: ABB Drive profile; speed: value in 46.02 == 20000 speed units. Any other: 100.00 % == 10000 1: ODVA basic; NOT supported. 2: ODVA extended; NOT supported. 3: ProfiDrive; speed: value in 46.02 == 4000h. Any other: 100.00 % == 10000. NOT supported. 4: CIA 402; NOT supported. 10: DCP; NOT supported. 0 10 ABB drive - 1 = 1 n n Paramete		Displays the raw (unmodified) actual value 2 (ACT2) sent by fieldbus adapter B to the master (e.g. PLC) if 50.42 FBA B debug mode = Enable.									
Fieldbus adapter B communication time levels. See 50.21 FBA A timelevel sel. 0 3 Normal - 1 = 1 n n n Paramete 50.59 FBA B profile Fieldbus adapter B profile. The DCS880 only supports transparent16 profile, so profile adaption according to bus specific pro ABB Drive profile or others are handled using 50.59 FBA B profile. 0: ABB Drive profile; speed: value in 46.02 == 20000 speed units. Any other: 100.00 % == 10000 1: ODVA basic; NOT supported. 2: ODVA extended; NOT supported. 3: ProfiDrive; speed: value in 46.02 == 4000h. Any other: 100.00 % == 10000. NOT supported. 4: CIA 402; NOT supported. 10: DCP; NOT supported. 0 10 ABB drive - 1 = 1 n n n Parameter					- '	y	"	Signal			
See 50.21 FBA A timelevel sel. 0 3 Normal - 1 = 1 n n n Paramete 50.59 FBA B profile Fieldbus adapter B profile. The DCS880 only supports transparent16 profile, so profile adaption according to bus specific profile ABB Drive profile or others are handled using 50.59 FBA B profile. 0: ABB Drive profile; speed: value in 46.02 == 20000 speed units. Any other: 100.00 % == 10000 1: ODVA basic; NOT supported. 2: ODVA extended; NOT supported. 3: ProfiDrive; speed: value in 46.02 == 4000h. Any other: 100.00 % == 10000. NOT supported. 4: CIA 402; NOT supported. 10: DCP; NOT supported. 0 10 ABB drive - 1 = 1 n n Paramete	50.51										
FBA B profile Fieldbus adapter B profile. The DCS880 only supports transparent16 profile, so profile adaption according to bus specific profile DCS880 only supports transparent16 profile, so profile adaption according to bus specific profile DCS880 only supports are handled using 50.59 FBA B profile. 0: ABB Drive profile; speed: value in 46.02 == 20000 speed units. Any other: 100.00 % == 10000 1: ODVA basic; NOT supported. 2: ODVA extended; NOT supported. 3: ProfiDrive; speed: value in 46.02 == 4000h. Any other: 100.00 % == 10000. NOT supported. 4: CIA 402; NOT supported. 10: DCP; NOT supported. 0 10 ABB drive - 1 = 1 n n Parameter		Fieldbus adapter B communication time levels.									
Fieldbus adapter B profile. The DCS880 only supports transparent16 profile, so profile adaption according to bus specific profile Drive profile or others are handled using 50.59 FBA B profile. 0: ABB Drive profile; speed: value in 46.02 == 20000 speed units. Any other: 100.00 % == 10000 1: ODVA basic; NOT supported. 2: ODVA extended; NOT supported. 3: ProfiDrive; speed: value in 46.02 == 4000h. Any other: 100.00 % == 10000. NOT supported. 4: CIA 402; NOT supported. 10: DCP; NOT supported. 0 10 ABB drive - 1 = 1 n n Parameter		0 3	Normal	_	1 = 1	n	n	Parameter			
The DCS880 only supports transparent16 profile, so profile adaption according to bus specific profile Drive profile or others are handled using 50.59 FBA B profile. 0: ABB Drive profile; speed: value in 46.02 == 20000 speed units. Any other: 100.00 % == 10000 1: ODVA basic; NOT supported. 2: ODVA extended; NOT supported. 3: ProfiDrive; speed: value in 46.02 == 4000h. Any other: 100.00 % == 10000. NOT supported. 4: CIA 402; NOT supported. 10: DCP; NOT supported. 0 10 ABB drive - 1 = 1 n n Parameter	50.59	FBA B profile									
0 10 ABB drive - 1 = 1 n n Paramete	5 0.53	The DCS880 only supports transparent16 profile, so profile adaption according to bus specific profile ABB Drive profile or others are handled using 50.59 FBA B profile. 0: ABB Drive profile ; speed: value in 46.02 == 20000 speed units. Any other: 100.00 % == 10000. 1: ODVA basic ; NOT supported. 2: ODVA extended ; NOT supported. 3: ProfiDrive ; speed: value in 46.02 == 4000h. Any other: 100.00 % == 10000. NOT supported. 4: CIA 402 ; NOT supported.									
			ABB drive	-	1 = 1	n	n	Parameter			

51 FBA A settings

Fieldbus adapter A configuration.

Index	Name											
	Text											
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре					
51.01	FBA A type			<u> </u>								
	Fieldbus adapter											
	Displays the type	of the connected fiel is not found or is not	dbus adapte	er A module.	disabled by	50 01 EDA	A onable					
	1: FPBA ;	is not lound of is not	property cor	inected of is	disabled by	30.01 FBA	A enable.					
	32: FCAN ;											
	37: FDNA ;											
	101: FCNA ; 128: FENA-11/21											
	135: FECA ;	,										
	136: FEPL ;											
	485: FSCA ;											
	0 485	-	-	1 = 1	у	n	Signal					
51.02	FBA A Par2 FI	BA A Par26										
to 51.26												
31.20	Fieldhus adanter	Δ configuration para	meter									
i	Fieldbus adapter A configuration parameter. Parameters 51.02 51.26 are adapter module-specific. For more information, see the											
	documentation of the fieldbus adapter module.											
	Note: Not all of these parameters are necessarily in use.											
	0 65535	0	-	1 = 1	n	у	Parameter					
51.27	FBA A par refresh											
	Fieldbus adapter A refresh.											
	Validates any changed fieldbus adapter A module configuration settings. The value reverts to Done automatically, when the refresh is done.											
	0: Done ; 0, refres		e.									
	1: Refresh ; 1, refreshing.											
	0 1	Done	-	1 = 1	у	n	Parameter					
51.28	FBA A par table	ver	l.	- 1	1,3		1					
	Fieldbus adapter A parameter table revision.											
	Displays the parameter table revision of the fieldbus adapter A module-mapping file (stored in the											
	memory of the drive) in format axyz, where ax = major table revision number and yz = minor table											
	revision number.			14 - 4	1	1_	Ciara al					
51.29	0000h FFFFh	- -	- -	1 = 1	У	n	Signal					
31.23	FBA A drive type code Fieldbus adapter A drive type code											
	Fieldbus adapter A drive type code. Displays the drive type code in the fieldbus adapter A module-mapping file (stored in the memory of											
	the drive).	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				(010100 ti						
	0 65535	-	-	1 = 1	у	n	Signal					
51 30	FBA A mapping	file ver		•		•						
51.30	Fieldbus adapter A mapping file revision.											
31.30			Displays the fieldbus adapter A module-mapping file revision stored in the memory of the drive in									
01.00	Displays the fields			ile revision st	ored in the r	nemory of the	ne drive in					
01.00	Displays the fields decimal format.		e-mapping f		<u> </u>							
	Displays the fields decimal format. 0 65535	ous adapter A modul		ile revision st	ored in the r	nemory of the	Signal					
51.31	Displays the fields decimal format. 0 65535 D2FBA A comm	ous adapter A modul - status	e-mapping f		<u> </u>							
	Displays the fields decimal format. 0 65535 D2FBA A comm Fieldbus adapter	- status A communication sta	e-mapping f	1 = 1	У							
	Displays the fields decimal format. 0 65535 D2FBA A comm Fieldbus adapter a Displays the statu	- status A communication states of the fieldbus ada	e-mapping f - htus. pter A modu	1 = 1	У							
	Displays the fields decimal format. 0 65535 D2FBA A comm Fieldbus adapter A Displays the statu 0: Not configured	- status A communication sta	e-mapping f - utus. pter A modu is not config	1 = 1	У							

Index	Name									
	Text									
	Range Default Unit Scale/ Volatile Change Type Fbeq16									
	3: Configuration e system of the drive 4: Off-line; fieldbus 5: On-line; fieldbus not to detect a com adapter. 6: Reset; fieldbus	or mappi s adapter a s adapter a munication	ng file upload A communica A communica n break. For r	has failed tion is off- tion is on- nore infor	more than the line. ine or fieldbu mation, see t	nree times. Is adapter A	A has been	configured		
	0 6	-		-	1 = 1	y	n	Signal		
51.32	FBA A comm SW ver									
	Displays the patch patch version numl	Fieldbus adapter A, firmware patch and build versions. Displays the patch and build versions of the adapter module A firmware in format xxyy, where xx = patch version number and yy = build version number. Example : C802 = 200.02 (patch version 200, build version 2).								
	0000h FFFFh	-		-	1 = 1	y	n	Signal		
51.33	FBA A appl SW ver									
	Fieldbus adapter A, firmware major and minor versions. Displays the major and minor versions of the adapter module A firmware in format xyy, where x = major revision number and yy = minor revision number. Example : 300 = 3.00 (major version 3, minor version 00).									
	0000h FFFFh	-		-	1 = 1	у	n	Signal		

52 FBA A data in

Selection of data sent by fieldbus adapter A to the master (e.g. PLC).

Note: 32-bit values require two consecutive parameters. Whenever a 32-bit value is selected in a data parameter, the next parameter is automatically reserved.

Index	Name										
	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
52.01 to 52.12	FBA A data in1	FBA A data in1 FBA A data in12									
52.12	Fieldbus adapter A data from the drive to the master (e.g. PLC). Parameters 52.01 52.12 select data sent from the drive by fieldbus adapter A to the master (e.g. PLC). Other; source selection (10 ms update). 0: None; inactive. FBA A data in is disabled. 4: SW 16bit; status word (16-bit) (2 ms update). Taken from 06.88 FBA A profile status word. 5: Act1 16bit; actual value 1 ACT1 (16-bit) (2 ms update). Depending on 50.07 FBA A actual 1 type. 6: Act2 16bit; actual value 2 ACT2 (16-bit) (2 ms update). Depending on 50.08 FBA A actual 2 type. 15: Act1 32bit; actual value 1 ACT1 (32-bit) (2 ms update). Depending on 50.07 FBA A actual 1 type. 16: Act2 32bit; actual value 2 ACT2 (32-bit) (2 ms update). Depending on 50.08 FBA A actual 2 type.										
	0 16	None	_	1 = 1	n	V	Parameter				

53 FBA A data out

Selection of data sent by the master (e.g. PLC) to fieldbus adapter A.

Note: 32-bit values require two consecutive parameters. Whenever a 32-bit value is selected in a data parameter, the next parameter is automatically reserved.

Index	Name										
	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
53.01 to 53.12	FBA A data out1	FBA A data out1 FBA A data out12									
30.12	Fieldbus adapter A data from the master (e.g. PLC) to the drive. Parameters 53.01 53.12 select data sent from the master (e.g. PLC) by fieldbus adapter A to the drive. Other; source selection (10 ms update). 0: None; inactive. FBA A data out is disabled. 1: CW 16bit; control word (16-bit) (2 ms update). Send to 06.03 FBA A transparent control word. 2: Ref1 16bit; reference REF1 (16-bit) (2 ms update). Send to 03.05 FBA A reference 1. 3: Ref2 16bit; reference REF2 (16-bit) (2 ms update). Send to 03.06 FBA A reference 2. 12: Ref1 32bit; reference REF1 (32-bit) (2 ms update). Send to 03.06 FBA A reference 1.										
	0 13	None	-	1 = 1	n	у	Parameter				

54 FBA B settings

Description see group 51 FBA A settings.

55 FBA B data in

Description see group 52 FBA A data in.

56 FBA B data out

Description see group 53 FBA A data out.

58 Embedded fieldbus

Embedded fieldbus (EFB) configuration.

Index	Name								
	Text								
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
58.01	Protocol enable								
	Embedded fieldbus ena Enables/Disables the e Note : When the embed communication is disab 0: None ; inactive, disab	mbedded fieldbus ded fieldbus interfa led. le communication.	ace is en	abled, the de	vice-to-devi	_	oup 60 DDCS		
	1: Modbus RTU; enable Embedded fieldbus interface. Modbus RTU protocol is used.								
	0 1	None	-	1 = 1	n	n	Parameter		
8.02	Protocol ID								
	Protocol ID and revision. Displays the protocol ID and revision.								
	0000h FFFFh	-	-	1 = 1	у	n	Signal		
58.03	Node address								
	 Embedded fieldbus node address. Defines the node address of the drive for the embedded fieldbus communication. All drives connected to the network must have a unique node address. Notes: The address range for the embedded fieldbus is 1 247. For drives in a network, it is advisable to reserve 58.03 Node address = 1 for spare/replacement drives. 								

Index	Name											
	Text								_			
	Range)	Default		Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
		anges to 58.03 No lidated by 58.06 Co				er the drive is	s rebooted o	or the new s	etting is			
	0 2		1		-	1 = 1	n	у	Parameter			
58.04	Baud	rate			1			1,7				
	Define Note: validat 2: 9.6 3: 19.2 4: 38.4 5: 57.6 6: 76.8	dded fieldbus link s s the transfer rate of Changes to 58.04 led by 58.06 Comm kbps; 9.6 kbit/s. 2 kbps; 19.2 kbit/s. 4 kbps; 38.4 kbit/s. 5 kbps; 57.6 kbit/s. 8 kbps; 76.8 kbit/s.	of the emb Baud rate to nunication	take ef	fect after		ebooted or	the new set	ting is			
	7: 115	.2 kbps ; 115.2 kbit	/s.									
	2 7		19.2 kbps		-	1 = 1	n	у	Parameter			
58.05	Embedded fieldbus, parity bit and stop bits. Selects the type of parity bit and the number of stop bits. Note: Changes to 58.05 Parity take effect after the drive is rebooted or the new setting is validated by 58.06 Communication control. 0: 8 NONE 1; eight data bits, no parity bit, one stop bit. 1: 8 NONE 2; eight data bits, no parity bit, two stop bits. 2: 8 EVEN 1; eight data bits, even parity bit, one stop bit. 3: 8 ODD 1; eight data bits, odd parity bit, one stop bit. 0 3								Parameter			
	0 2		Enable		-	1 = 1	у	у	Parameter			
58.07	Embed Displa	nunication diagno dded fieldbus, com ys the status of the signment:	munication			unication.						
	Bit	Name	Value	Rema		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·				
	0	Init failed	1			dbus initializ						
	1	Addr config err	1			not allowed						
	2	Silent mode	1			ed transmitt	ing.					
			0	Drive	allowed t	ransmitting.						
	3	reserved	1	F	dot	Događali Ad	/Di	ا مسمحا				
	4	Wiring error	1			Possibly A			Doritor			
1	5	Parity error	1			Check 58.0						
	6	Baud rate error	1			Check 58.0			a rate.			
	8	No bus activity No packets	1	0 pac	kets (add	ed during the ressed to ar			ng the last			
				5 sec	onds.							

Index	Name										
	Text		I =		T	T	T	12.	т		
	Rang	e	Default		Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
	9	Noise or addressing error	1		detected	: Interference ne.	e or anothe	r drive with	the same		
	10	Comm loss	1			ressed to the	unit receiv	ed within 58	3.16		
	11	CW/Ref loss	1	No co	ontrol wor	d or reference on loss time.	ces received	d within 58.	16		
	12	reserved									
	13	reserved									
	14	reserved									
	15	reserved									
		FFFFh	-		-	1 = 1	у	n	Signal		
58.08		ved packets									
	Displa increa Can b	dded fieldbus, num ays a count of valid ases constantly. he reset from the co	packets a	ddresse	ed to the	drive. During	normal ope		number		
	0 4	294967295	0		-	1 = 1	у	n	Signal		
58.09	Trans	mitted packets									
	increa Can b	ays a count of valid uses constantly. he reset from the co 294967295			•				s number Signal		
58.10	All pa	ickets	l .					•	<u> </u>		
	Displa numb Can b	dded fieldbus, num ays a count of valid er increases consta er reset from the co	packets a antly. ntrol pane	ddresse	ed to any	device on th	d for over 3	seconds.	·		
		294967295	0		-	1 = 1	у	n	Signal		
58.11	Embe Displa config Can b	ded fieldbus, num ays a count of chara juration problem on he reset from the co 294967295	acter errors the bus.	s receiv	ed by the				es a		
58.12	CRC	errors									
	Displainterfe Can b	dded fieldbus, num ays a count of packer erence on the bus. he reset from the co 294967295	ets with a	CRC er	ror receiv	-			nt indicates		
58.14		nunication loss ac	_		I	1	1,4	_1	<u>, J - </u>		
	Embedded fieldbus, communication loss action. Selects how the drive reacts to a fieldbus communication loss. Note: Changes to 58.14 Communication loss action take effect after the drive is rebooted or the setting is validated by 58.06 Communication control. 0: No action; none, disable communication loss function. 1: Fault; the event generates fault 6681 EFB communication and the motor stops due to 31.13 F stop mode communication. This occurs only when the drive is controlled from the fieldbus. 2: Warning; the event generates warning A7CE EFB communication. This occurs even though r control is expected from the fieldbus.							to 31.13 Fault			

Index	Name								
	Text								
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
58.15	Embedded fieldbus, communication loss mode. Defines which message types reset the timeout counter for detecting a fieldbus communication								
	See 58.14 Comm Note: Changes to setting is validated 1: Any message;	essage types reset the unication loss action at 58.15 Communication by 58.06 Communication any message address of the control CW / Ref1 / Ref2	nd 58.16 (a loss mod ation contr sed to the	Communication e take effect a ol. drive resets the	on loss time. after the driv	/e is reboote	ed or the new		
58.16	Communication								
	Embedded fieldbu Defines the time of Communication to Note : Changes to	us communication loss delay for the fieldbus coss action is executed. 58.16 Communication d by 58.06 Communication 300	ommunica See 58.15 I loss time	Communication Co	tion loss mo	de.			
58.17	Transmit delay		•	-	'		•		
	Defines a minimum Note: Changes to	us minimum response on response delay in action 58.17 Transmit delay Communication contraction contrac	ddition to a take effectol.		e is reboote	ed or the ne			
58.18	EFB control work		ms	1 - 1	n	У	Farameter		
30.10	Embedded fieldbu	us raw control word. (unmodified) control wo	ord sent by	the Modbus	controller (e	e.g. PLC) to	the drive. For		
58.19	EFB status word	<u> </u>			1,7	1	10.9		
	Embedded fieldbu Displays the raw (debugging purpos	us raw status word. (unmodified) status wo	rd sent by			<u>, </u>	,		
	0000h FFFFh	-	-	1 = 1	у	n	Signal		
58.25	Control profile								
	Embedded fieldbu Defines the contro	us control profile. ol profile used by the p	rotocol.						

Index	Name								
	Text								
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
	0: ABB Drives; ABB Driv	es profile (with a	16-bit cor	trol word) wi	th registers	in the class	sic format for		
	backward compatibility.								
	2: Transparent; transpar		or 32-bit			ers in the cl			
	0 2	ABB Drives	-	1 = 1	n	у	Parameter		
58.26	EFB ref1 type								
	Embedded fieldbus referous Selects the type and scalar the embedded fieldbus. 0: Auto ; automatic type a connected to. If the referous series is the connected to the referous series and the series is the connected to the series are the series and the series are the series a	ing of 03.09 EFB and scaling accord	ding to wh	ich reference	e chain the	incoming re	eference is		
	Parameter		Auto ty	oe and scali	ng				
	22.11 Speed reference	e 1 source	Speed		9				
	22.12 Speed reference								
	23.32 Direct speed re	ference							
	26.11 Torque reference	ce 1 source	Torque						
	26.12 Torque reference	ce 2 source							
	27.22 Current referen		Current						
	28.18 EMF reference		General						
	28.20 EMF voltage co								
	28.29 Flux correction	source							
	3: Torque ; the scaling is 4: Speed ; the scaling is 6 5: Current ; the scaling is 0 5	lefined by 46.02 N	/11 speed	scaling actua	al.	y	Parameter		
58.27	EFB ref2 type	Auto		1 – 1	111	l y	i arameter		
	Embedded fieldbus refero Selects the type and scal the embedded fieldbus. S	ing of 03.10 EFB See 58.26 EFB re		2 sent by the	e Modbus o	· ·	,		
58.28						1,7			
	the embedded fieldbus. See 58.26 EFB ref1 type. 0 5 Auto - 1 = 1 n y Parameter EFB act1 type Embedded fieldbus actual value 1 type. Selects the type/source and scaling of actual value 1 sent by the embedded fieldbus to the Modbus controller (e.g. PLC). 0: Auto; type/source and scaling follow the type of reference 1 selected by 58.26 EFB ref1 type. For individual settings see below. 1: Transparent; The value selected by 58.31 EFB act1 transparent source is sent as actual value 1. No scaling is applied. The 16-bit scaling is 1 = 1 unit. 2: General; The value selected by parameter 58.31 EFB act1 transparent source is sent as actual value 1 with a 16-bit scaling of 100 = 1 unit (e.g. integer and two decimals). 3: Torque; 01.17 Motor torque filtered is sent as actual value 1. The scaling is defined by 46.04 M1 torque scaling actual. 4: Speed; 01.01 Used motor speed filtered is sent as actual value 1. The scaling is defined by 46.02 M1 speed scaling actual. 5: Current; 27.05 Motor current is sent as actual value 1. The scaling is in percent of 99.11 M1 nominal current. 6: Position; Motor position is sent as actual value 1. See 90.06 Motor position scaled.								
58.29	0 6 EFB act2 type	Auto	-	1 = 1	n	У	Parameter		
30.20	Embedded fieldbus actua	al value 2 type.							

Index	Name										
	Text										
	Range		Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
			and scaling of act e 58.28 EFB act1		2 sent by the	embedded	fieldbus to	the Modbus			
	0 6		Auto	-	1 = 1	n	у	Parameter			
58.30	EFB status	word trans	parent source								
	Selects the Other; source	source of the	is word transpare e status word whe e.g. 06.15 Main S rce selected. Not selected	n 58.25 C	Control profile	= Transpar	T	Parameter			
E0 24			1	<u> </u>	1 - 1		у	Parameter			
58.31		ansparent s									
	Selects the PLC), when Other ; sour	Embedded fieldbus actual value 1 transparent source. Selects the source of actual value 1 sent by the embedded fieldbus to the Modbus controller (e.g. PLC), when 58.28 EFB act1 type = Transparent or General. Other; source selection e.g. a value from group 1. 0: Not selected; no source selected.									
58.32		ansparent s	Not selected	-	1 = 1	n	У	Parameter			
	Selects the source of actual value 2 sent by the embedded fieldbus to the Modbus controlle PLC), when 58.29 EFB act2 type = Transparent or General. Other; source selection e.g. a value from group 1. 0: Not selected; no source selected.										
58.33	0 0 Addressing		Not selected	-	1 = 1	n	У	Parameter			
	Embedded fieldbus addressing mode. Defines the mapping between parameters and holding registers in the 400101 465535 Modbus register range. Note: Changes to 58.33 Addressing mode take effect after the unit is rebooted or the new setting is validated by 58.06 Communication control. 0: Mode 0; 16-bit values (groups 1 99, indexes 1 99): Register address = 400000 + 100 × parameter group + parameter index. For example, parameter 22.80 would be mapped to register 400000 + 2200 + 80 = 402280. 32-bit values (groups 1 99, indexes 1 99): Register address = 420000 + 200 × parameter group + 2 × parameter index. For example, parameter 22.80 would be mapped to register 420000 + 4400 + 160 = 424560. 1: Mode 1; 16-bit values (groups 1 255, indexes 1 255): Register address = 400000 + 256 × parameter group + parameter index. For example, parameter 22.80 would be mapped to register 400000 + 5632 + 80 = 405712. 2: Mode 2; 32-bit values (groups 1 127, indexes 1 255): Register address = 400000 + 512 × parameter group + 2 × parameter index.										
		411424.	T	1	1 .		T	T_			
	0 2		Mode 0	-	1 = 1	n	у	Parameter			
58.34	Word order Embedded fieldbus word order. Selects in which order 16-bit registers of 32-bit parameters are transferred. For each register, the firs byte contains the high order byte and the second byte contains the low order byte. Note: Changes to 58.34 Word order take effect after the drive is rebooted or the new setting is validated by 58.06 Communication control. 0: HI-LO; the 1st register contains the high order word. The 2nd register contains the low order word.										

Index											
	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
	1: LO-HI; the 1st re	gister contains the lov	w order wo	rd. The 2 nd re	egister conta	ins the high	order word.				
	0 1	LO-HI	-	1 = 1	n	y	Parameter				
58.101	Data I/O 1 Data	I/O 24									
to											
58.124											
	Embedded fieldbus	s I/O data.									
		s in the drive, which t	he Modbus	s master acco	esses when	it reads from	m or writes to				
	register address 40										
		the type of the data									
	consisting of two 16- bit words. If the value is 16-bit, it is transmitted in the LSW (least significant										
	,	word). If the value is 32-bit, the subsequent parameter is also reserved for it and must be set to									
	None.										
	Notes:		l 4 - 41		DL O)						
		ata transfer from the c			PLC).						
		data from the master		to the drive.							
		ction (10 ms update). Data I/O is disabled.									
		ol word (16-bit) (2 ms	undata) T	akan from 06	S 00 Llead m	ain control	word /Sand to				
	06.01 Main control		upuate). I	aken nom ot	o.os Osea III	iaiii contioi	word./Seria to				
		rence 1 REF1 (16-bit)	(2 ms und	ate) Taken t	rom 03 09 F	FR referen	ce 1 /Send to				
	03.09 EFB reference	, ,	(2 ms upo	ato). Taken	10111 00.00 E	LI B ICICICII	oc 1.70cma to				
		rence 2 REF2 (16-bit)	(2 ms upd	ate). Taken t	rom 03.10 F	FB referen	ce 2./Send to				
	03.10 EFB reference	,	(=								
		ร word (16-bit) (2 ms เ	update). Ta	ken from 06	.15 Main sta	tus word./N	A.				
		al valuè 1 ACT1 (16-l									
		al value 2 ACT2 (16-l									
		rol word (32-bit) (2 m	s update).	Taken from (06.09 Used i	main contro	I word./Send				
	to 06.01 Main cont										
		erence 1 REF1 (32-bi	t) (2 ms up	date). Taker	from 03.09	EFB refere	nce 1./Send to				
	03.09 EFB reference										
		erence 2 REF2 (32-bi	t) (2 ms up	date). Taker	from 03.10	EFB refere	nce 2./Send to				
	03.10 EFB reference										
		us word (32-bit) (2 ms									
		ual value 1 ACT1 (32									
		ual value 2 ACT2 (32			pending on a	08.29 EFB 8	actz type./NA.				
		tus word 2 (16-bit) (2 tus word 2 (16-bit) (2									
		ol word; see 10.99 R			en from 10	00 PO/DIO	control				
		9 RO/DIO control wo		ioi word. Tai	cerrironi io.	.99 KO/DIO	CONTROL				
		age; see 13.91 AO1 (e Taken froi	n 13 91 ΔΩ	1 data stora	ige /Send to				
	13.91 AO1 data sto		adia Storag	c. rakcii iioi	11 13.31 7.0	i data store	ige./Octid to				
	33: AO2 data storage ; see 13.92 AO2 data storage. Taken from 13.92 AO2 data storage./Send to										
	13.92 AO2 data sto		adia otorag	o a		_	.90., 00.14 10				
		a storage; see 40.91	Feedback	data storace	. Taken from	1 40.91 Fee	dback data				
		0.91 Feedback data s		2.00.0.90							
		storage; see 40.92 S		a storage. Ta	aken from 40	0.92 Setpoii	nt data				
		0.92 Setpoint data sto		.		•					
	0 41	None	-	1 = 1	n	у	Parameter				
	1	1	I	<u> </u>	1	1,					

60 DDCS Communication

DDCS communication configuration.

The DDCS protocol is used in the communication between:

Drives in a master-follower configuration.

Drives and an external controller such as an AC 800M.

All of the above utilize a fiber optic link, which requires FDCO modules. Master-follower and external controller communication can also be implemented through shielded twisted-pair cable via connector XD2D (drive-to-drive link) of the drive.

ndex	Name													
	Text													
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре							
60.01	M/F communicati	on port												
	Master-follower lin	k, communication port.												
	Selects the connection used by the master-follower link.													
	0: Not in use ; not in use, communication is disabled.													
	1: Slot 1A ; activates channel A on the FDCO-0x which is located in slot 1.													
	2: Slot 2A; activates channel A on the FDCO-0x which is located in slot 2.													
	•	es channel A on the FD												
	•	es channel B on the FD												
		es channel B on the FD												
		es channel B on the FD	CO-0x wl	nich is locate	d in slot 3.									
	7: XD2D ; activates		1	1			1							
	0 7	Not in use	-	1 = 1	n	n	Parameter							
60.02	M/F node address	S												
	Master-follower lin	k, node address.												
	Defines the node a	address of the drive for	the maste	er-follower lin	k. Two drive	es with the s	same node							
	address are not all	lowed.												
	Notes:													
	 The allowable 	address for the master	is 1.											
	 The allowable 	addresses for followers	are 2	254.										
	1 254	1	-	1 = 1	n	n	Parameter							
60.03	M/F mode	<u>.</u>	•	•			•							
	Master-follower link, mode.													
	Defines the role of the drive on the master-follower link.													
	0: Not in use ; not in use, master-follower link is disabled.													
		in use, master-follower	link is dis	abled.	1: FDCO-XD2D Master ; the drive is the master on the master-follower link either via FDCO-0x or via									
	0: Not in use; not				ollower link	either via F	OCO-0x or via							
	0: Not in use; not				ollower link	either via FI	OCO-0x or via							
	0: Not in use ; not 1: FDCO-XD2D M connector XD2D.		naster on	the master-fo										
	0: Not in use ; not 1: FDCO-XD2D M connector XD2D.	aster; the drive is the nollower; the drive is a fo	naster on	the master-fo										
	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fo via connector XD2 3: ApplPrg Maste	aster; the drive is the nollower; the drive is a for D. r; reserved.	naster on	the master-fo										
	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fo via connector XD2 3: ApplPrg Maste 4: ApplPrg Follow	aster; the drive is the notation bllower; the drive is a for D. r; reserved. ver; reserved.	naster on	the master-fo	follower link	either via F	DCO-0x or							
	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fo via connector XD2 3: ApplPrg Maste 4: ApplPrg Follow 5: FDCO-XD2D fo	aster; the drive is the nollower; the drive is a for D. r; reserved. ver; reserved. rcing; the role of the drive	naster on	the master-fo	follower link	either via F	DCO-0x or							
	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fo via connector XD2 3: ApplPrg Maste 4: ApplPrg Follow 5: FDCO-XD2D fo master and 60.16	aster; the drive is the mollower; the drive is a for D. r; reserved. ver; reserved. rcing; the role of the differce follower.	naster on	the master-fo	follower link	either via F	DCO-0x or							
	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fo via connector XD2 3: ApplPrg Maste 4: ApplPrg Follow 5: FDCO-XD2D fo master and 60.16 6: ApplPrg forcin	aster; the drive is the mollower; the drive is a for D. r; reserved. ver; reserved. rcing; the role of the drive is a force follower. g; reserved.	naster on	the master-follo	follower link	either via F	DCO-0x or 0.15 Force							
	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fo via connector XD2 3: ApplPrg Maste 4: ApplPrg Follow 5: FDCO-XD2D fo master and 60.16 6: ApplPrg forcin 0 5	aster; the drive is the notation of the drive is a form. collower; the drive is a form. collower; reserved. collower; reserved. collower. g; reserved. Not in use	naster on	the master-fo	follower link	either via F	DCO-0x or							
60.05	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fo via connector XD2 3: ApplPrg Maste 4: ApplPrg Follow 5: FDCO-XD2D fo master and 60.16 6: ApplPrg forcin	aster; the drive is the notation of the drive is a form. collower; the drive is a form. collower; reserved. collower; reserved. collower. g; reserved. Not in use	naster on	the master-follo	follower link	either via F	DCO-0x or 0.15 Force							
60.05	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fo via connector XD2 3: ApplPrg Maste 4: ApplPrg Follow 5: FDCO-XD2D fo master and 60.16 6: ApplPrg forcin 0 5 M/F HW connecti Master-follower lin	aster; the drive is the mollower; the drive is a form. To plower; the drive is a form. To plower; the drive is a form. To plower; reserved. To plower; reserved. To plower; the role of the drive is a form. To plower; reserved. To plower; the drive is a form. To plower; the drive is a form. To plower; the drive is the moleon is a form. To plower; the drive is the moleon is a form. To plower; the drive is the moleon is a form. To plower; the drive is the moleon is a form. To plower; the drive is the moleon is a form. To plower; the drive is the moleon is a form. To plower; the drive is the moleon is a form. To plower; the drive is a form.	naster on ollower on the	the master-follo	follower link	either via F	DCO-0x or 0.15 Force							
60.05	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fovia connector XD2 3: ApplPrg Maste 4: ApplPrg Follow 5: FDCO-XD2D for master and 60.16 6: ApplPrg forcin 0 5 M/F HW connectin Master-follower lin Selects the topological	aster; the drive is the mollower; the drive is a form. To pollower; the drive is a form. To pollower; the drive is a form. To pollower; reserved. To pollower. To pol	naster on ollower on the large of large on the large on the large on the large on the large on the large on the large on the large on the large on the large on t	the master-follo	follower link ower link is o	either via F defined by 6	DCO-0x or 0.15 Force Parameter							
60.05	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fo via connector XD2 3: ApplPrg Maste 4: ApplPrg Follov 5: FDCO-XD2D fo master and 60.16 6: ApplPrg forcin 0 5 M/F HW connecti Master-follower lin Selects the topolog 0: Ring; The drive	aster; the drive is the mollower; the drive is a form. Tr; reserved. Tr; reserved. Tr; reserved. Tr; reserved. Tring; the role of the drive is a form. Tr; reserved. Tring; the role of the drive is a form. Tring; the role of the drive is a form. Tring; the role of the drive is a form. Tring; the role of the drive is a form. Tring; the drive is the moleon is a form. Tring; the drive is the moleon is a form. Tring; the drive is the moleon is a form. Tring; the drive is the moleon is a form. Tring; the drive is the moleon is a form. Tring; the drive is the moleon is a form. Tring; the drive is the moleon is a form. Tring; the drive	naster on ollower on the large of large on the large on the large on the large on the large on the large on the large on the large on the large on the large on t	the master-follo	follower link ower link is o	either via F defined by 6	DCO-0x or 0.15 Force Parameter							
60.05	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fo via connector XD2 3: ApplPrg Maste 4: ApplPrg Follov 5: FDCO-XD2D fo master and 60.16 6: ApplPrg forcin 0 5 M/F HW connecti Master-follower lin Selects the topolog 0: Ring; The drive set when using con	aster; the drive is the mollower; the drive is a for D. r; reserved. ver; reserved. rcing; the role of the drive follower. g; reserved. Not in use on k, hardware connection gy of the master-followers are connected in a rinnector XD2D.	naster on ollower on the large	the master-folloger master-folloger than the master-follower than the m	follower link ower link is o	either via F defined by 6 n ges is enabl	DCO-0x or 0.15 Force Parameter ed. Not to be							
60.05	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fo via connector XD2 3: ApplPrg Maste 4: ApplPrg Follow 5: FDCO-XD2D fo master and 60.16 6: ApplPrg forcin 0 5 M/F HW connecti Master-follower lin Selects the topolog 0: Ring; The drive set when using con 1: Star; The drives	aster; the drive is the mollower; the drive is a form. r; reserved. ver; reserved. rcing; the role of the drive follower. g; reserved. Not in use on k, hardware connection gy of the master-followers are connected in a rinnector XD2D. s are connected in a sta	naster on ollower on the large on the large on the large on the large of the large	the master-folloger master-fol	follower link ower link is o	either via F defined by 6 n ges is enabl	DCO-0x or 0.15 Force Parameter ed. Not to be							
60.05	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fo via connector XD2 3: ApplPrg Maste 4: ApplPrg Follow 5: FDCO-XD2D fo master and 60.16 6: ApplPrg forcin 0 5 M/F HW connecti Master-follower lin Selects the topolog 0: Ring; The drives set when using con 1: Star; The drives messages is disab	aster; the drive is the mollower; the drive is a form. r; reserved. ver; reserved. rcing; the role of the drive follower. g; reserved. Not in use on k, hardware connection gy of the master-followers are connected in a rin nector XD2D. s are connected in a stabled. To be set when us	naster on ollower on the rive on the rink. In topologous topologous ing conne	the master-following the master-following the master-following the master-following the following th	follower link ower link is o n g of messag h a branchi	either via F defined by 6 n ges is enabl ng unit. For	DCO-0x or 0.15 Force Parameter ed. Not to be							
60.05	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fo via connector XD2 3: ApplPrg Maste 4: ApplPrg Follow 5: FDCO-XD2D fo master and 60.16 6: ApplPrg forcin 0 5 M/F HW connecti Master-follower lin Selects the topolog 0: Ring; The drives set when using con 1: Star; The drives messages is disab Note: Set to Star,	aster; the drive is the mollower; the drive is a form. r; reserved. ver; reserved. rcing; the role of the drive follower. g; reserved. Not in use on k, hardware connection gy of the master-followers are connected in a rinnector XD2D. s are connected in a sta	naster on ollower on the rive on the rink. In topologous topologous ing conne	the master-following the master-following the master-following the master-following the following th	follower link ower link is o n g of messag h a branchi	either via F defined by 6 n ges is enabl ng unit. For	DCO-0x or 0.15 Force Parameter ed. Not to be							
60.05	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fo via connector XD2 3: ApplPrg Maste 4: ApplPrg Follow 5: FDCO-XD2D fo master and 60.16 6: ApplPrg forcin 0 5 M/F HW connecti Master-follower lin Selects the topolog 0: Ring; The drives set when using con 1: Star; The drives messages is disab	aster; the drive is the mollower; the drive is a form. r; reserved. ver; reserved. rcing; the role of the drive follower. g; reserved. Not in use on k, hardware connection gy of the master-followers are connected in a rin nector XD2D. s are connected in a stabled. To be set when us	naster on ollower on the rive on the rink. In topologous topologous ing conne	the master-following the master-following the master-following the master-following the following th	follower link ower link is o n g of messag h a branchi	either via F defined by 6 n ges is enabl ng unit. For	DCO-0x or 0.15 Force Parameter ed. Not to be							
60.05	0: Not in use; not 1: FDCO-XD2D M connector XD2D. 2: FDCO-XD2D Fo via connector XD2 3: ApplPrg Maste 4: ApplPrg Follow 5: FDCO-XD2D fo master and 60.16 6: ApplPrg forcin 0 5 M/F HW connecti Master-follower lin Selects the topolog 0: Ring; The drives set when using con 1: Star; The drives messages is disab Note: Set to Star,	aster; the drive is the mollower; the drive is a form. Tr, reserved. Tr, reserved. Tr, reserved. Tr, reserved. Tr, reserved. Tr, reserved. Troce follower. Troce follower in a standard follower in the master-follower ling. Troce follower in the master-follower in the master-follow	naster on ollower on the rive on the rink. In topologous topologous ing conne	the master-following the maste	ower link is on the link is of message in the link is of message in a branchi ector XD2D	either via F defined by 6 n ges is enabl ng unit. For	DCO-0x or 0.15 Force Parameter ed. Not to be warding of							

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	Defines the time delay function is executed.	or the master-follow	er link b	efore the act	tion defined	in 60.09 M/	F comm loss			
	0 65535	100	ms	1 = 1 ms	n	у	Parameter			
60.09	M/F comm loss functi	on								
	Selects how the drive re 0: No action; none, dis 1: Warning; the event of when the drive is control warning! Make sure that it is safe 2: Fault; the event gene 31.13 Fault stop mode follower link. 3: Fault always; the event of the master-follower link.	able communication penerates warning Aulled from the maste to continue operationates fault 7582 Macommunication. This mode communication	loss fur 7CB Mar-follower on in ca ster-follower occurs	nction. ester-follower er link. se of a comn ower commu only when the	nunication build and a distribution and a drive is communication and a distribution and a	oreak. If the motor is ontrolled from the and	stops due to om the master-			

0 ... 3 **60.10** M/F ref1 type

Master-follower link, reference 1 type.

Fault

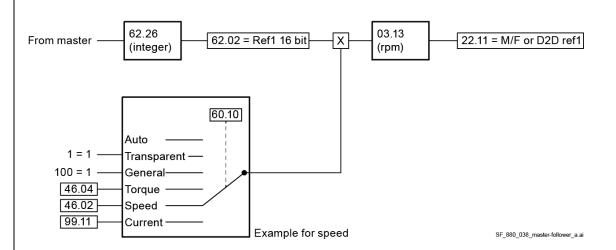
Selects the type and scaling of reference 1 received from the master-follower link, if any parameter 62.01 62.03 is set to Ref1 16bit. The received and scaled value is then sent to 03.13 M/F or D2D ref1.

1 = 1

n

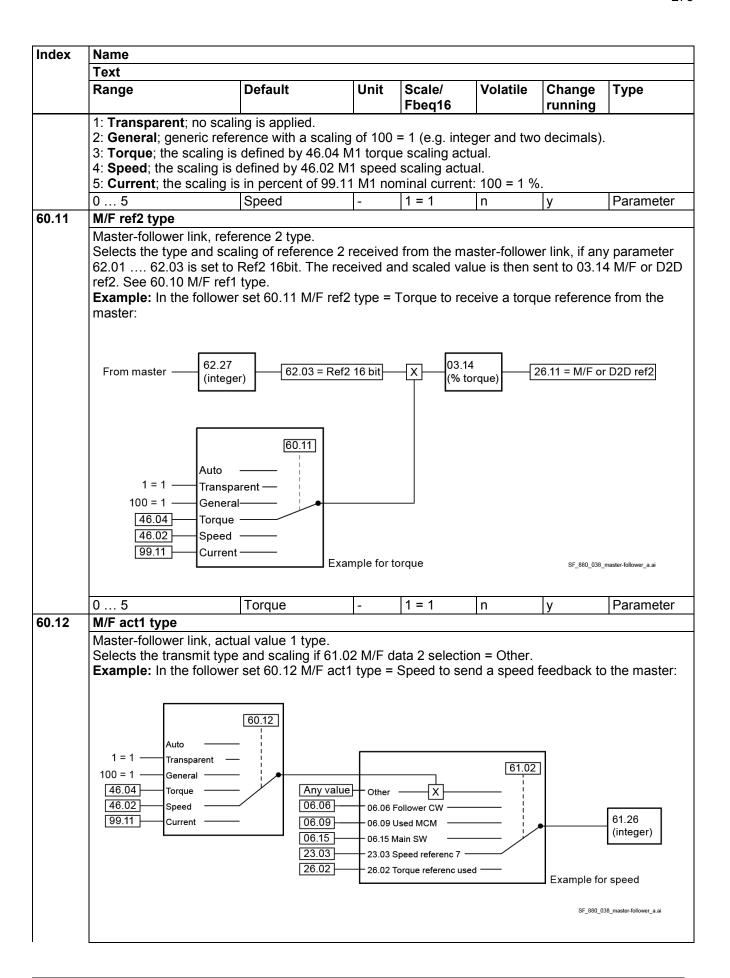
Parameter

Example: In the follower set 60.10 M/F ref1 type = Speed to receive a speed reference from the master:



0: **Auto**; automatic type and scaling according to which reference chain 03.13 M/F or D2D ref1 is connected to. If 03.13 M/F or D2D ref1 is not connected to any chain, setting Transparent is applied.

Parameter	Auto type and scaling
22.11 Speed reference 1 source	Speed
22.12 Speed reference 2 source	
23.32 Direct speed reference	
26.11 Torque reference 1 source	Torque
26.12 Torque reference 2 source	
27.22 Current reference source	Current



Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	0: Auto ; type/source and scaling follow the type of reference 1 selected by 60.10 M/F ref1 type. For individual settings see below. 1: Transparent ; no scaling is applied. The 16-bit scaling is 1 = 1 unit. Only valid for 61.02 M/F data selection = Other. 2: General ; generic actual value with a scaling of 100 = 1 (e.g. integer and two decimals). Only valid for 61.02 M/F data 2 selection = Other. 3: Torque ; the scaling is defined by 46.04 M1 torque scaling actual. Only valid for 61.02 M/F data 2 selection = Other. 4: Speed ; the scaling is defined by 46.02 M1 speed scaling actual. Only valid for 61.02 M/F data 2 selection = Other. 5: Current ; the scaling is in percent of 99.11 M1 nominal current. Only valid for 61.02 M/F data 2									
	selection = Other.	01			1	1	D			
60.13	0 5 M/F act2 type	Speed	-	1 = 1	n	у	Parameter			
	1 = 1 — Transpar 100 = 1 — General 46.04 — Torque 46.02 — Speed 99.11 — Current	Any 06.0	value Other 06.06 06.09 06.05 06.15 3 23.03		61.0:	3 Example for	61.27 (integer)			
<u></u>	0 5	Torque	-	1 = 1	n	у	Parameter			
60.14		k, follower supervisio				Values are	visible in			
60.45	parameters 62.28 0: Broadcast; sup 2: Follower node 4: Follower node 8: Follower node 10: Follower node 12: Follower node 14: Follower node 0 14	Defines the supervised followers. Reaction see 60.17 Follower fault action. Values are visible in parameters 62.28 62.36. 0: Broadcast; supervision is disabled. 2: Follower node 2; data is read from follower node 2, supervision is enabled. 4: Follower node 3; data is read from follower node 3, supervision is enabled. 6: Follower node 2+3; data is read from followers node 2 and 3, supervision is enabled. 8: Follower node 4; data is read from follower node 4, supervision is enabled. 10: Follower node 2+4; data is read from followers node 2 and 4, supervision is enabled. 12: Follower node 3+4; data is read from followers node 3 and 4, supervision is enabled. 14: Follower node 2+3+4; data is read from followers node 2, 3 and 4, supervision is enabled. 15: Follower node 2+3+4; data is read from followers node 2, 3 and 4, supervision is enabled. 16: Follower node 3+4; data is read from followers node 2, 3 and 4, supervision is enabled. 17: Follower node 2+3+4; data is read from followers node 2, 3 and 4, supervision is enabled. 18: Follower node 2+3+4; data is read from followers node 2, 3 and 4, supervision is enabled. 19: Follower node 2+3+4; data is read from followers node 2, 3 and 4, supervision is enabled.								
60.15	Force master	l. fausat								
		k, force master. node is set to FDCO-2 is the drive to be the i				.15 Force m	naster selects			

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	1 = Drive is the m Other [bit]; source 0: False; 0, not the 1: True; 1, the materials	ie master.		nk.						
	0 1	False	-	1 = 1	n	у	Parameter			
60.16	Force follower						•			
	a source that forces the drive to be a follower on the master-follower link. 0 = Drive is not a follower on the master-follower link. 1 = Drive is a follower on the master-follower link. Other [bit]; source selection. 0: False; 0, not a follower. 1: True; 1, a follower.									
	0 1	False	-	1 = 1	n	у	Parameter			
60.17	Follower fault action									
	Selects how the r 0: No action ; no 1: Warning ; the e master-follower li 2: Fault ; the ever 31.13 Fault stop r Note: Each follow master. Thus: — In all followers Main SW. — In the master node x.	nk, follower faulty action aster reacts to a fault action taken. Unaffect event generates warnink will continue running generates fault FF7E mode communication. Wer to be supervised must be one of the three data	ty follower of the definition	n the master the master llower in the master the master igured to fee arameters 6 ter 62.04	-follower link master. Una r and the mo ed 06.15 Mai 2.04 62.1 62.14 must	will continuaffected drivers tor(s) stop(s in status wo 2 must be set to Fo	ves on the s) according to rd back to the set to 06.15			
	0 2	Fault	-	1 = 1	n	у	Parameter			
60.18	Follower enable									
		nk, follower enable act rting of the master dep			all followers	on the mas	ster-follower			

- 0: MSW bit 0; the master can only start if all followers are Ready to be switched on, see 06.15.b0 Main status word.
- 1: MSW bit 1; the master can only start if all followers are Ready to operate, see 06.15.b1 Main status word.
- 2: MSW bits 0+1; the master can only start if all followers are Ready to be switched on and Ready to operate, see 06.15.b0 Main status word and 06.15.b1 Main status word.
- 3: **Always**; the starting of the master is not interlocked by the status of any follower.
- 4: MSW bit 12; the master can only start if the user-definable 06.11.b12 Main status word in each follower is set. See 06.31 MSW bit 12 sel.
- 5: MSW bits 0+12; the master can only start if in all followers 06.11.b0 Main status word and 06.11.b12 Main status word are set.
- 6: MSW bits 1+12; the master can only start if in all followers 06.11.b1 Main status word and 06.11.b12 Main status word are set.

Note: Each follower to be supervised must be configured to feed 06.15 Main status word back to the master. Thus:

In all followers one of the three data words in parameters 62.04 ... 62.12 must be set to 06.15 Main SW.

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	 In the master the node x. 	ne corresponding targ	jet paramet	er 62.04 6	62.14 must l	pe set to Fo	llower SW			
	0 6	Always	-	1 = 1	n	у	Parameter			
60.31	M/F wake up delay		I	1	1	17	1. 0 0			
	generated. This alle	delay during which nows all drives on the start until the delay is	master-follo	ower link to p	ower up wit	hout causin	g nuisance			
	0.0 180.0	10.0	s	10 = 1 s	n	у	Parameter			
60.41	Extension adapte			1.0	1	1 3	, aramotor			
	Selects the connection on the connection of the	adapter communication used by the FEA n use, communication is channel A on the Fes channel A on the Fes channel B	03 extensin is disable DCO-0x which continues the continues of the conti	d. nich is locate ed in slot 2. ed in slot 3. ed in slot 1. ed in slot 2.						
	0 6	Not in use	-	1 = 1	n	n	Parameter			
60.50	In ModuleBus com 0: ABB engineere	k, communication typmunication, defines we discussed diving the drive is a drive; the drive is a "strive; the drive; s a "strive;	whether the in "enginee standard dri	red drive" (da	ata sets 10	25 are us				
60.51	DDCS controller of	drive								
	DDCS controller lin Selects the connect 0: Not in use; not i 1: Slot 1A; activate 2: Slot 2A; activate 3: Slot 3A; activate 4: Slot 1B; activate 5: Slot 2B; activate	ik, communication po tion used by a DDCS n use, communicatio es channel A on the F es channel A on the F es channel B on the F es channel B on the F es channel B on the F es channel B on the F	controller on is disable in is disable in CO-0x which is DCO-0x which is DCO-0x which is DCO-0x which is disable.	d. nich is locate d in slot 1. d in slot 2. d in slot 3. d in slot 1. d in slot 2.						
	0 7	Not in use	-	1 = 1	n	n	Parameter			
60.52	DDCS controller r		<u> </u>	•	<u>.</u>	•	•			
	DDCS controller lin Defines the node a address are not all DriveBus connection — AC 800M with 0	ddress of the drive for owed.	r the DDCS	S controller. 7	Γwo drives ν	vith the sam	ne node			

Index	Name										
	Text										
	Range		Default		Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
	Е	xamples:			I.			<u>, </u>	1		
	,	D ''' I		00 50 0000	F2 DDCC controller node address						
		Position val	ue		60.52 DDCS controller node address 16 • 1 + 01 = 17						
		101 712									
	l	/ 12		16 • 7 + 12 =	124						
	 AC 80 with TB810 or TB811, drives must be addressed the following 1. Multiply the hundreds of the position value by 16. 6. Add the tens and ones of the position value to the result. Examples: 										
		Position value	ue	60.52 DDCS	control	ler node add	ress				
		101		16 • 1 + 01 =	: 17						
		712		16 • 7 + 12 =	124						
					1	T	1		T		
	1 254		1		-	1 = 1	n	n	Parameter		
60.55		roller HW co		e connection.							
	0: Ring ; The drives are connerd 1: Star ; The drives are connermessages is disabled. 0 1 Sta		cted in a star to								
60.56		ntroller baud rate			1	1 - 1	111	111	i arameter		
	controller co 1: 1 Mbps; 2: 2 Mbps; 4: 4 Mbps; 8: 8 Mbps;	1 Mbit/s. 2 Mbit/s. 4 Mbit/s.									
	1 8		4 M	bps	-	1 = 1	n	у	Parameter		
60.58	DDCS contr Defines the controller co Notes: - 60.58 D the DDC - There is commur - The AC done at - The sen task. WI	DCS controlled control	s timer the ction er co	eout. DDCS control is executed. mm loss time s t-up delay imm on is disabled y detects a cor rvals. data set is not Bus, the sendii	should I nediatel , but co nmunic the san	oe set to at le y after power mmunication ation break. ne as the exe	east 3 times r-up of the c itself can b Re-establis ecution inter	the transm drive. During e active. hing the cor	it interval of the delay, the mmunication is		
		ycle Time (by		uit, 100 ms).	T	14 - 4	1_	1	Danamatan		
60 FC	0 65535	wallan ac	100	function	ms	1 = 1 ms	n	у	Parameter		
60.59		roller comm									
	Selects how		acts t	on. o a DDCS con ommunication							

Index	Name									
muex	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	31.13 Fault stop controller link. 2: Last speed; the to the level the discontroller link. The filter. WARNING! Make sure that it 3: Speed referent the speed to the controlled from the WARNING! Make sure that it 4: Fault always; to 31.13 Fault stopping to 5: Warning; the	nt generates fault 7581 D mode communication. The me evet generates warning rive was operating at. The ne last speed is determined is safe to continue opera- nce safe; the event gene value defined in 22.46 Spane DDCS controller link. is safe to continue opera- the event generates faul op mode communication. link. event generates warning olled from the DDCS con	nis occurs og A7CA E is occurs ed based ation in ca rates ward peed refer ation in ca t 7581 DE This occu	only when the DDCS control only when the on the speed see of a comming A7CA Drence safe. The see of a common of a common of a common of a controller of a cont	the drive is coller comm lose drive is coller comm lose discours of the comm lose ugh no controller comm lose ugh no controller cont	ontrolled from the second of t	ezes the speed m the DDCS or ms low-pass oss and sets he drive is			
	_	is safe to continue opera	ation in ca	se of a comn	nunication b	reak.				
	0 5	No action	-	1 = 1	n	у	Parameter			
60.60	DDCS controller Selects the type communication of	DDCS controller ref1 type DDCS controller link, reference 1 type. Selects the type and scaling of 03.11 DDCS controller ref 1 send by the DDCS controller to a DDCS communication option module (FDCO-0x). 0: Auto; automatic type and scaling according to which reference chain the incoming reference is								
		he reference is not conne								
	Parameter		Auto ty	pe and sca	ling					
	22.12 Speed	reference 1 source reference 2 source	Speed	•	-					
		speed reference	+-							
		reference 1 source	Torque							
		reference 2 source reference source	Current	+						
		ference source	Genera							
		oltage correction source	- 0011010							
		rrection source								
	2: General ; general; 3: Torque ; the soft 4: Speed ; the soft	no scaling is applied. eric reference with a scali caling is defined by 46.04 aling is defined by 46.02 caling is in percent of 99	M1 torqu M1 speed	e scaling act I scaling actu minal curren	tual. ıal.					
I	0 5	Auto	-	1 = 1	n	y	Parameter			
60.61	DDCS controlle						-			
	Selects the type	link, reference 2 type. and scaling of 03.12 DD0 ption module (FDCO-0x)					er to a DDCS			
	0 5	Auto	-	1 = 1	n	у	Parameter			
60.62	DDCS controlle									
	DDCS controller	link, actual value 1 type.								

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	Selects the type/source and scaling of actual value 1 sent by a DDCS communication option module (FDCO-0x) to the DDCS controller. 0: Auto ; type/source and scaling follow the type of reference 1 selected by 60.60 DDCS controller ref1 type. For individual settings see below. 1: Transparent ; no scaling is applied. The 16-bit scaling is 1 = 1 unit. 2: General ; generic actual value with a scaling of 100 = 1 (e.g. integer and two decimals). 3: Torque ; 01.17 Motor torque filtered is sent as actual value 1. The scaling is defined by 46.04 M1 torque scaling actual. 4: Speed ; 01.01 Used motor speed filtered is sent as actual value 1. The scaling is defined by 46.02 M1 speed scaling actual. 5: Current ; 27.05 Motor current is sent as actual value 1. The scaling is in percent of 99.11 M1									
	nominal current.									
60.63	DDCS controller act2 t	Auto	-	1 = 1	n	У	Parameter			
33.33	DDCS controller link, ac Selects the type/source (FDCO-0x) to the DDCS	tual value 2 type. and scaling of actua controller. See 60.6		S controller a	act1 type.	T				
20.04	0 5	Auto	-	1 = 1	n	у	Parameter			
60.64	DDCS controller link, ma Selects the pair of data s External controller interformation Dataset 32/33; data see	DDCS controller link, mailbox dataset selection. Selects the pair of data sets used by the mailbox service in the DDCS controller link. See chapter External controller interface . 0: Dataset 32/33; data sets 32 and 33 are dedicated for the mailbox service. 1: Dataset 24/25; Data sets 24 and 25 are dedicated for the mailbox service.								
	0 1	Dataset 32/33	-	1 = 1	n	y	Parameter			

61 D2D and DDCS transmit data

Defines the data sent from the drive to the DDCS/D2D link.

Index	Name								
	Text								
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
31.01	M/F data 1 s	election	•		'		•		
	Select data s data 1 value. Other; sourc 0: None; inac 1542: 06.06 l 1545: 06.15 l 5891: 23.03	e selection. Always trans	rive to the management (unschaper control main control atus word.	aster-follower aled). word. word. erence 7.	r link. The va	alue is visibl	e in 61.25 M/F		
	0 6658	06.06 Follower CW	-	1 = 1	n	у	Parameter		
61.02	M/F data 2 s	M/F data 2 selection							
	Master-follower link, data 2 from the drive to the master-follower link. Select data sent as word 2 from the drive to the master-follower link. The value is visible in 61.26 M/F data 2 value. Other; source selection. Type and scaling is set by 60.12 M/F act1 type. See 61.01 M/F data 1 selection.								
61 03	0 6658	23.03 Speed reference	e 7 -	1 = 1	n	V	Parameter		
	M/F data 3 selection								
61.03	M/F data 3 s			' '		13	1 didifictor		

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
		sent as word 3 from the	drive to the ma	aster-followe	r link. The va		e in 61.27 M/F			
	data 3 value. Other ; source selection. Type and scaling is set by 60.13 M/F act2 type.									
			scaling is set by	/ 60.13 M/F a	act2 type.					
	0 6658	I/F data 1 selection. 26.02 Torque refere		1 = 1	T_	1.,	Doromotor			
	0 0050	used	ence -	-	n	У	Parameter			
61.25	M/F data 1 v									
		ver link, data 1 value fro	om the drive to	the master-f	ollower link					
		alue sent as word 1 to t								
		s been preselected by 6				be sent car	n be written			
	directly into	61.25 M/F data 1 value.								
	0 65535	0	-	1 = 1	у	n	Signal			
61.26	M/F data 2 v	value value								
		ver link, data 2 value fro								
		alue sent as word 2 to t								
	If no data has been preselected by 61.02 M/F data 2 selection, the value to be sent can be written directly into 61.26 M/F data 2 value.									
	0 65535	0		1 = 1		n	Signal			
61.27	M/F data 3 v		-	1 - 1	у	П	Signal			
01.21			om the drive to	the meeter f	ollower link					
	Master-follower link, data 3 value from the drive to the master-follower link. Shows the value sent as word 3 to the master-follower link as integer.									
		s been preselected by 6				be sent car	n be written			
		61.27 M/F data 3 value.		0 0010011011,	tile value te	bo oont our	1 DO WILLON			
	0 65535	0	_	1 = 1	у	n	Signal			
	Parameters		ata sent from t	he drive in da		d 4 to the D				
	Parameters 61.45 61.50 select data sent from the drive in data sets 2 and 4 to the DDCS controller. These data sets are used in communication with 60.50 DDCS controller drive type = ABB									
	standard driv									
		5 61.100 display the								
		en preselected, the valu 1.45 Data set 2 data 1 s								
		r.45 Data set 2 data 1 s ie displays the selected								
		written directly into para				Joicotca, tri	s value to be			
61.45		ata 1 selection								
	DDCS contro	oller link, data set 2 data	a 1 from the dri	ive to the DD	CS controlle	r link.				
							lue is visible in			
	Select data sent as data set 2 data 1 from the drive to the DDCS controller link. The value is visible in 61.95 Data set 2 data 1 value.									
	Other; source									
		ctive. DDCS controller I								
	· ·	status word (16-bit). Ta t; actual value 1 ACT1 (troller act1	type			
		t; actual value 1 ACT1 (
	06	None	-	1 = 1	n	v	Parameter			
61.46		ata 2 selection	L	1	1	J				
J•		oller link, data set 2 data	a 2 from the dri	ive to the DD	CS controlle	r link.				
		sent as data set 2 data 2					lue is visible in			
	61.96 Data s	et 2 data 2 value. See (61.45 Data set	2 data 1 sele	ection.					
	0 6	None	-	1 = 1	n	у	Parameter			
61.47	Data set 2 d	ata 3 selection Data	a set 4 data 3	selection	•					
to										
61.50										
		ata set 2 data 1 selection	on.	1			T_			
	0 6	None	-	1 = 1	n	У	Parameter			

Index	Name					Name								
	Text													
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре							
		61.51 61.74 selec												
		CS controller. These		ed in commu	nication with	60.50 DDC	S controller							
		ABB engineered driv												
)1 61.124 display												
		n preselected, the v												
		Example: 61.51 Data set 11 data 1 selection preselects the data for data set 11 word 1. 61.101 Data set 11 data 1 yelve displays the selected data in integer format. If no data is preselected the value to												
	set 11 data 1 value displays the selected data in integer format. If no data is preselected, the value to be sent can be written directly into 61 101 Data set 11 data 1 value													
61.51		be sent can be written directly into 61.101 Data set 11 data 1 value. Data set 11 data 1 selection												
01.01		ller link, data set 11	data 1 from the d	rive to the DI	CS controll	or link								
		ent as data set 11 c					alue is visible							
		a set 11 data 1 valu		e to the DD	50 controller	iiik. The v	alue is visible							
	Other; source		10.											
		tive. DDCS controll	ler link data in is di	sabled.										
	4: SW 16bit;	status word (16-bit)). Taken from 06.1	5 Main status	s word.									
	5: Act1 16bit	; actual value 1 AC	T1 (16-bit). Dependent	ding on 60.6	2 DDCS con	troller act1	type.							
	6: Act2 16bit	; actual value 2 AC	T2 (16-bit). Dependent	ding on 60.6	3 DDCS con	troller act2	type.							
	0 6	None	-	1 = 1	n	у	Parameter							
61.52	Data set 11 c	data 2 selection												
	DDCS contro	ller link, data set 11	data 2 from the de	rive to the DI	DCS controll	er link.								
	Select data se	ent as data set 11 c	data 2 from the driv	e to the DD0	CS controller	link. The v	alue is visible							
	in 61.102 Dat	a set 11 data 2 valu	ue. See 61.51 Data	a set 11 data	1 selection.									
	0 6	None	-	1 = 1	n	у	Parameter							
61.53	Data set 11 c	data 3 selection	Data set 25 data	3 selection	•									
to														
61.74														
		ata set 11 data 1 se	lection.											
	0 6	None	-	1 = 1	n	у	Parameter							
61.95	Data set 2 da	ata 1 value												
		ller link, data set 2												
İ	Shows the value sent as data set 2 data 1 to the DDCS controller link as integer.													
				2 data 1 cala	sation that wa									
	If no data has	been preselected		z uata i sete	ection, the va	llue to be se	ent can be							
	If no data has written directl	been preselected y into 61.95 Data s			ction, the va	1								
	If no data has written directl	s been preselected y into 61.95 Data se 0		1 = 1	y	llue to be se	ent can be							
61.96	If no data has written directl 0 65535 Data set 2 da	s been preselected y into 61.95 Data so 0 ata 2 value	et 2 data 1 value.	1 = 1	у	n								
61.96	If no data has written directl 0 65535 Data set 2 da DDCS contro	s been preselected y into 61.95 Data so 0 ata 2 value ller link, data set 2 o	et 2 data 1 value. - data 2 from the driv	1 = 1	y CS controlle	n r link.								
61.96	If no data has written directl 0 65535 Data set 2 da DDCS contro Shows the va	s been preselected y into 61.95 Data so 0 ata 2 value Iller link, data set 2 olue sent as data se	et 2 data 1 value. - data 2 from the drivet 2 data 2 to the DI	1 = 1 ve to the DD DCS controll	y CS controlle er link as int	n r link. eger.	Signal							
61.96	If no data has written directl 0 65535 Data set 2 da DDCS contro Shows the va If no data has	s been preselected y into 61.95 Data se 0 ata 2 value Iller link, data set 2 calue sent as data set set been preselected	et 2 data 1 value. - data 2 from the drivet 2 data 2 to the DI by 61.46 Data set 2	1 = 1 ve to the DD DCS controll	y CS controlle er link as int	n r link. eger.	Signal							
61.96	If no data has written directl 0 65535 Data set 2 da DDCS contro Shows the val If no data has written directl	s been preselected y into 61.95 Data so 0 ata 2 value Iller link, data set 2 o lue sent as data set s been preselected y into 61.96 Data so	et 2 data 1 value. - data 2 from the drivet 2 data 2 to the DI by 61.46 Data set 2	1 = 1 ve to the DD DCS controll 2 data 2 sele	y CS controlle er link as int ection, the va	n r link. eger. alue to be se	Signal ent can be							
	If no data has written directl 0 65535 Data set 2 da DDCS contro Shows the va If no data has written directl 0 65535	s been preselected y into 61.95 Data so 0 ata 2 value Iller link, data set 2 clue sent as data set been preselected y into 61.96 Data so 0	et 2 data 1 value.	1 = 1 ve to the DD DCS controll 2 data 2 sele	y CS controlle er link as int	n r link. eger.	Signal							
61.97	If no data has written directl 0 65535 Data set 2 da DDCS contro Shows the va If no data has written directl 0 65535	s been preselected y into 61.95 Data so 0 ata 2 value Iller link, data set 2 o lue sent as data set s been preselected y into 61.96 Data so	et 2 data 1 value.	1 = 1 ve to the DD DCS controll 2 data 2 sele	y CS controlle er link as int ection, the va	n r link. eger. alue to be se	Signal ent can be							
61.97 to	If no data has written directl 0 65535 Data set 2 da DDCS contro Shows the va If no data has written directl 0 65535	s been preselected y into 61.95 Data so 0 ata 2 value Iller link, data set 2 clue sent as data set been preselected y into 61.96 Data so 0	et 2 data 1 value.	1 = 1 ve to the DD DCS controll 2 data 2 sele	y CS controlle er link as int ection, the va	n r link. eger. alue to be se	Signal ent can be							
61.97	If no data has written directl 0 65535 Data set 2 da DDCS contro Shows the va If no data has written directl 0 65535 Data set 2 da	s been preselected y into 61.95 Data se 0 ata 2 value Iller link, data set 2 calue sent as data set been preselected y into 61.96 Data set 0 ata 3 value Data	et 2 data 1 value.	1 = 1 ve to the DD DCS controll 2 data 2 sele	y CS controlle er link as int ection, the va	n r link. eger. alue to be se	Signal ent can be							
61.97 to	If no data has written directl 0 65535 Data set 2 da DDCS contro Shows the valif no data has written directl 0 65535 Data set 2 da See 61.95 Da	s been preselected y into 61.95 Data se 0 ata 2 value Iller link, data set 2 calue sent as data set s been preselected y into 61.96 Data set 0 ata 3 value Data ata set 2 data 1 value	et 2 data 1 value.	1 = 1 ve to the DD DCS controll 2 data 2 sele 1 = 1 e	y CS controlle er link as intection, the va	n r link. eger. alue to be se	Signal ent can be Signal							
61.97 to 61.100	If no data has written directl 0 65535 Data set 2 da DDCS contro Shows the va If no data has written directl 0 65535 Data set 2 da See 61.95 Da 0 65535	s been preselected y into 61.95 Data so 0 ata 2 value Iller link, data set 2 data set as data set been preselected y into 61.96 Data so 0 ata 3 value Data ata set 2 data 1 value 0	et 2 data 1 value.	1 = 1 ve to the DD DCS controll 2 data 2 sele	y CS controlle er link as int ection, the va	n r link. eger. alue to be se	Signal ent can be							
61.97 to	If no data has written directl 0 65535 Data set 2 da DDCS contro Shows the va If no data has written directl 0 65535 Data set 2 da See 61.95 Data 0 65535	s been preselected y into 61.95 Data so 0 ata 2 value Iller link, data set 2 data set as data set been preselected y into 61.96 Data so 0 ata 3 value Data ata set 2 data 1 value 0 data 1 value	et 2 data 1 value. - data 2 from the drivet 2 data 2 to the Diby 61.46 Data set 2 et 2 data 2 value. - a set 4 data 3 value.	1 = 1 ve to the DD DCS controll 2 data 2 sele 1 = 1 e	y CS controlle er link as intection, the va	n r link. eger. alue to be se	Signal ent can be Signal							
61.97 to 61.100	If no data has written directl 0 65535 Data set 2 da DDCS contro Shows the valif no data has written directl 0 65535 Data set 2 da See 61.95 Data 0 65535 Data set 11 conditions	s been preselected y into 61.95 Data se 0 ata 2 value Iller link, data set 2 calue sent as data set been preselected y into 61.96 Data set 0 ata 3 value Data ata set 2 data 1 value Iller link, data set 11 Iller link, data set 11	et 2 data 1 value. data 2 from the drivet 2 data 2 to the Diby 61.46 Data set 2 data 2 value. - set 4 data 3 value. Jee. data 1 from the difference of the properties of t	1 = 1 ve to the DD DCS controll 2 data 2 selection 1 = 1 e	y CS controlle er link as intection, the value y y CS controlle	n r link. eger. alue to be se	Signal ent can be Signal							
61.97 to 61.100	If no data has written directl 0 65535 Data set 2 da DDCS contro Shows the val If no data has written directl 0 65535 Data set 2 da See 61.95 Data 0 65535 Data set 11 co DDCS contro Shows the val	s been preselected y into 61.95 Data set 0 ata 2 value Iller link, data set 2 data set 2 data 1 value Italia set 2 data 1 value Italia set 2 data 1 value Italia set 2 data 3 value set 2 data 1 value Italia set 3 data set 11 data set 3 data set 3 data set 11 data set 3 data set 11 data set 3 data set 3 data set 3 data set 3 data set 3 data set 4 data	data 2 from the drivet 2 data 2 to the Dlby 61.46 Data set 2 data 2 value.	1 = 1 ve to the DD DCS controll 2 data 2 sele 1 = 1 e	CS controlle er link as intection, the value y	n r link. eger. n	Signal ent can be Signal							
61.97 to 61.100	If no data has written directl 0 65535 Data set 2 da DDCS contro Shows the va If no data has written directl 0 65535 Data set 2 da See 61.95 Data 0 65535 Data set 11 co DDCS contro Shows the va If no data has	s been preselected y into 61.95 Data set 0 ata 2 value Iller link, data set 2 calue sent as data set s been preselected y into 61.96 Data set 0 ata 3 value Data ata set 2 data 1 value Iller link, data set 11 alue sent as data set s been preselected s been preselected	data 2 from the drivet 2 data 2 to the Dl by 61.46 Data set 2 et 2 data 2 value. - a set 4 data 3 value. - I data 1 from the drivet 11 data 1 to the E by 61.51 Data set	ve to the DD DCS controll 2 data 2 select 1 = 1 e 1 = 1 rive to the DI DDCS control 11 data 1 se	CS controlle er link as intection, the value y	n r link. eger. n	Signal ent can be Signal							
61.97 to 61.100	If no data has written directl 0 65535 Data set 2 da DDCS contro Shows the va If no data has written directl 0 65535 Data set 2 da See 61.95 Data 0 65535 Data set 11 contro Shows the va If no data has written directl	s been preselected y into 61.95 Data so 0 ata 2 value Iller link, data set 2 data set as data set y into 61.96 Data so 0 ata 3 value Data ata set 2 data 1 value link, data set 11 data 1 value sent as data set 11 data 1 value sent as data set 2 data 1 value link, data set 11	data 2 from the drivet 2 data 2 to the Diby 61.46 Data set 2 data 2 value. - a set 4 data 3 value. - I data 1 from the drivet 11 data 1 to the Education by 61.51 Data set set 11 data 1 value.	1 = 1 ve to the DD DCS controll 2 data 2 selection 1 = 1 e 1 = 1 rive to the DI DDCS control 11 data 1 selection	y CS controlle er link as intection, the value y DCS controll oller link as intection, the value	n r link. eger. alue to be se	Signal ent can be Signal Signal							
61.97 to 61.100	If no data has written directl 0 65535 Data set 2 da DDCS contro Shows the va If no data has written directl 0 65535 Data set 2 da See 61.95 Data 0 65535 Data set 11 co DDCS contro Shows the va If no data has	s been preselected y into 61.95 Data so 0 ata 2 value Iller link, data set 2 data set as been preselected y into 61.96 Data so 0 ata 3 value Data ata set 2 data 1 value ata 1 value Iller link, data set 11 alue sent as data set 2 data 1 value ata 1 value Iller link, data set 11 alue sent as data set 2 data 1 value Iller link, data set 11 alue sent as data set 2 data 1 value Iller link, data set 11 alue sent as data set 2 data 1 value Iller link, data set 11 alue sent as data set 3 data 1 value sent as data set 3 data set 3 data set 3 data 1 value sent as data 1 value sent as data 1 value sent as data 1 value sent as data 1 value sent as data 1 value sent as data 1 value sent as data 1 value sent as data 2 data 1 value sent as data 2 data 1 value sent as data 2 data 1 value sent as data 2 data 1 value sent as data 2 data 1 value sent as data 3 value sent as data 3 value sent as data	data 2 from the drivet 2 data 2 to the Dl by 61.46 Data set 2 et 2 data 2 value. - a set 4 data 3 value. - I data 1 from the drivet 11 data 1 to the E by 61.51 Data set	ve to the DD DCS controll 2 data 2 select 1 = 1 e 1 = 1 rive to the DI DDCS control 11 data 1 se	CS controlle er link as intection, the value y	n r link. eger. n	Signal ent can be Signal							

Index	Name Text									
	Range	Default	Unit	Scale/	Volatile	Change	Туре			
				Fbeq16		running				
	DDCS controll	er link, data set 11 data 2 fro	om the dri	ve to the DD	CS controll	er link.				
	Shows the value	ue sent as data set 11 data :	2 to the D	DCS controll	er link as ir	iteger.				
	If no data has been preselected by 61.52 Data set 11 data 2 selection, the value to be sent can be									
	written directly into 61.102 Data set 11 data 2 value.									
	0 65535	0	-	1 = 1	у	n	Signal			
61.103	Data set 11 data 3 value Data set 25 data 3 value									
to										
61.124										
	See 61.101 Da	nta set 11 data 1 value.								
	0 65535	0	-	1 = 1	у	n	Signal			

62 D2D and DDCS receive data

Defines the data sent from the DDCS/D2D link to the drive.

Index	Name								
	Text								
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
62.01	M/F data 1 selecti	on			•	•	•		
	Master-follower link, data 1 from the master via master-follower link to the followers (followers only). Select data sent as word 1 from the master via master-follower link to the followers. The value is visible in 62.25 M/F data 1 value. Other; source selection. 0: None; inactive. 1: CW 16bit; control word (16-bit). Send to 06.07 Follower control word received. 2: Ref1 16bit; reference REF1 (16-bit). Send to 03.13 M/F or D2D ref1. Type and scaling are set by 60.10 M/F ref1 type.								
	3: Ref2 16bit ; refe 60.11 M/F ref2 type	rence REF2 (16-bit). e.	Send to 03	.14 M/F or D	2D ref2. Typ	e and scali	ng are set by		
	0 3	CW 16bit	-	1 = 1	n	У	Parameter		
62.02	M/F data 2 selecti	on				17			
	Select data sent as	k, data 2 from the mass word 2 from the mass data 2 value. See 6 Ref1 16bit	aster via ma	ster-follower	link to the fo				
62.03	M/F data 3 selecti	on	•	-					
	Master-follower link, data 3 from the master via master-follower link to the followers (followers only). Select data sent as word 3 from the master via master-follower link to the followers. The value is visible in 62.27 M/F data 3 value. See 62.01 M/F data 1 selection. 0 3 Ref2 16bit - 1 = 1 n y Parameter								
62.04	Follower node 2 d			-		l y	i arameter		
02.04	Master-follower link, data 1 from follower node 2 via master-follower link to the master (master data sent as word 1 from follower node 2 via master-follower link to the master. The visible in 62.28 Follower node 2 data 1 value. Other; source selection. 0: None; inactive. 26: 06.122 Follower SW node 2; follower status word node 2 (16-bit). 06.15 Main status received from follower node 2 and sent to 06.122 Follower status word node 2. See also 6 Follower enable.								
00.05	0 26	Follower SW node	2 -	1 = 1	n	у	Parameter		
62.05	Follower node 2 of Master-follower line	lata 2 sel k, data 2 from followe	er node 2 vi	a master-folk	ower link to	the master ((master only).		

Index	Name								
	Text								
	Range		Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре	
			2 from follower r					The value is	
	-		node 2 data 2 va	llue. See 6			ata 1 sel.		
	0 26	Non		-	1 = 1	n	У	Parameter	
2.06	Follower nod								
			3 from follower						
			3 from follower r					i ne value is	
			node 2 data 3 va	liue. See t				Donomotor	
2.07	0 26	Non		-	1 = 1	n	у	Parameter	
2.07	Follower nod		sei 1 from follower				l	/	
	visible in 62.3° Other; source 0: None; inact 26: 06.123 Fo received from	I Follower selection. ive. Ilower SW follower no	1 from follower r node 3 data 1 va node 3; follower ode 3 and sent to	ilue. r status w	ord node 3 (1	6-bit). 06.1	5 Main statı	us word	
	Follower enab			_			_		
	0 26		ower SW node 3	-	1 = 1	n	У	Parameter	
2.08	Follower nod								
	Master-follower link, data 2 from follower node 3 via master-follower link to the master (master only Select data sent as word 2 from follower node 3 via master-follower link to the master. The value is visible in 62.32 Follower node 3 data 2 value. See 62.04 Follower node 2 data 1 sel.								
	0 26	Non	е	-	1 = 1	n	у	Parameter	
2.09	Follower nod	e 3 data 3	sel						
	Master-follower link, data 3 from follower node 3 via master-follower link to the master (master only Select data sent as word 3 from follower node 3 via master-follower link to the master. The value is visible in 62.33 Follower node 3 data 3 value. See 62.04 Follower node 2 data 1 sel.								
	0 26	Non	-	-	1 = 1	n	у	Parameter	
2.10	Follower nod	e 4 data 1	sel						
	Select data se visible in 62.34 Other; source 0: None; inact 26: 06.124 Fo	nt as word 4 Follower selection. ive. Ilower SW follower no le.	1 1 from follower 1 from follower r node 4 data 1 va node 4; follower ode 4 and sent to	node 4 via ilue. r status w 06.124 F	master-follo ord node 4 (1	wer link to to	he master. 5 Main stati	The value is	
2.11	Follower nod	e 4 data 2	sel		1		1.5	1	
	Master-follower link, data 2 from follower node 4 via master-follower link to the master (master only)								
	Select data sent as word 2 from follower node 4 via master-follower link to the master. The value is								
	visible in 62.35	5 Follower	node 4 data 2 va	llue. See 6	32.04 Followe	er node 2 da	ata 1 sel.		
	0 26	Non	e	_	1 = 1	n	у	Parameter	
2.12	Follower nod	e 4 data 3	sel			_			
	Select data se	nt as word	3 from follower a from follower r	node 4 via	master-follo	wer link to tl	he master.		
		1	node 4 data 3 va	11ue. See (1	1	Doromotor	
2 25	0 26	Non	Е	-	1 = 1	n	у	Parameter	
2.25	M/F data 1 va		A control of the			Lauren P. J. C.	41 f !!	/f - !!	
	Master-follower only).	er link, data	1 value from the	e master v	ia master-fol	lower link to	the followe	ers (follo	

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	Shows the value se						s as integer			
	by 62.01 M/F data 1	selection. Can als	o be used as	source by o	ther parame	eters.				
	0 65535	0	-	1 = 1	у	n	Signal			
62.26	M/F data 2 value									
	Master-follower link, only). Shows the value set by 62.02 M/F data 2	nt as word 2 from t	he master via	a master-follo	ower link to	the follower	s as integer			
	0 65535	0	-	1 = 1	у	n	Signal			
62.27	M/F data 3 value									
	Master-follower link, only). Shows the value selby 62.03 M/F data 3	nt as word 3 from the selection. Can als	he master via	a master-follo s source by o	ower link to	the follower	s as integer			
62.28	0 65535 Follower node 2 da	0	-	1 = 1	У	n	Signal			
	Master-follower link, only). Shows the value set by 62.04 Follower n	nt as word 1 from fo ode 2 data 1 sel. C	ollower node	2 via master sed as sourc	r-follower lin	ık to the ma	ster as integer			
	0 65535	0	-	1 = 1	у	n	Signal			
	Master-follower link, only). Shows the value set by 62.05 Follower notes in 65535	nt as word 2 from fo	ollower node	2 via master	r-follower lin	ık to the ma	`			
62.30	Follower node 2 da	ata 3 value	· ·	l	1,7		1 5			
	Master-follower link, only). Shows the value set by 62.06 Follower notes to 100 miles.	nt as word 3 from fo	ollower node	2 via master	r-follower lin	ık to the ma	`			
62.31	Follower node 3 da	ata 1 value	· ·	l	1,7		1 5			
	Master-follower link, only). Shows the value set by 62.07 Follower not 0 65535	nt as word 1 from fo	ollower node	3 via master	r-follower lin	ık to the ma	`			
62.32	Follower node 3 da			' '	l y	1	Olgital			
	Master-follower link, only). Shows the value set by 62.08 Follower not 0 65535	data 2 value from	ollower node	3 via master	r-follower lin	ık to the ma	`			
62.33			ı	1	1 3	1	1 - 3			
3	Follower node 3 data 3 value Master-follower link, data 3 value from follower node 3 via master-follower link to the master (master only). Shows the value sent as word 3 from follower node 3 via master-follower link to the master as integer									
							ster as integer			
	by 62.09 Follower n						ster as integer Signal			

la dasa	Namo									
Index	Name									
	Text			1		1	T			
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
62.34	Follower node 4 da	ta 1 value	·							
	Master-follower link, data 1 value from follower node 4 via master-follower link to the master (master only). Shows the value sent as word 1 from follower node 4 via master-follower link to the master as intege by 62.10 Follower node 4 data 1 sel. Can also be used as source by other parameters.									
	0 65535	0	_	1 = 1	V	n	Signal			
62.35	Follower node 4 da	ta 2 value	l	l	1,3	·	1 5			
	only). Shows the value ser by 62.11 Follower no	Master-follower link, data 2 value from follower node 4 via master-follower link to the master (master								
	0 65535	0	-	1 = 1	у	n	Signal			
62.36	Follower node 4 da									
	only). Shows the value ser by 62.12 Follower no	Master-follower link, data 3 value from follower node 4 via master-follower link to the master (master only). Shows the value sent as word 3 from follower node 4 via master-follower link to the master as integer by 62.12 Follower node 4 data 3 sel. Can also be used as source by other parameters.								
	0 65535	0	-	1 = 1	у	n	Signal			
	Parameters 62.45 62.50 select targets for the data received from the DDCS controller in data sets 1 and 3. These data sets are used in communication with 60.50 DDCS controller drive type = ABB standard drive. Signals 62.95 62.100 display the data received from the DDCS controller in integer format and can also be used as sources by other parameters. Example: 62.45 Data set 1 data 1 selection selects a target for data set 1 data 1. Then 62.95 Data set 1 data 1 value displays the received data in integer format and can also be used as a source by other parameters.									
62.45	Data set 1 data 1 selection									
	DDCS controller link, data set 1 data 1 from the DDCS controller via DDCS controller link to the drive. Select data sent as data set 1 data 1 from the DDCS controller via DDCS controller link to the drive. The value is visible in 62.95 Data set 1 data 1 value. Other; source selection. 0: None; inactive. DDCS controller link data out is disabled. 1: CW 16bit; control word (16-bit). Send to 06.110 DDCS control word. 2: Ref1 16bit; reference REF1 (16-bit). Send to 03.11 DDCS controller ref 1. 3: Ref2 16bit; reference REF2 (16-bit). Send to 03.12 DDCS controller ref 2.									
	0 3	None	-	1 = 1	n	y	Parameter			
62.46	Data set 1 data 2 selection DDCS controller link, data set 1 data 2 from the DDCS controller via DDCS controller link to the drive. Select data sent as data set 1 data 2 from the DDCS controller via DDCS controller link to the drive. The value is visible in 62.96 Data set 1 data 2 value. See 62.45 Data set 1 data 1 selection. 0 3 None - 1 = 1 n y Parameter									
62.47	Data set 1 data 3 se		ot 3 data 3	1]	. aramotor			
to 62.50			ei o uala o	Selection						
	See 62.45 Data set	1	1	T		1	1			
	0 3	None	-	1 = 1	n	у	Parameter			
-	10, 12, 14, 16, 18, 2	Parameters 62.51 62.74 select targets for the data received from the DDCS controller in data sets 10, 12, 14, 16, 18, 20, 22 and 24. These data sets are used in communication with 60.50 DDCS controller drive type = ABB engineered drive.								

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
		62.124 display the da			OCS controlle	er in integer	format and			
	can also be used as sources by other parameters. Example: 62.51 Data set 10 data 1 selection selects a target for data set 10 data 1. Then 62.1 Data set 10 data 1 value displays the received data in integer format and can also be used as									
			eceived data	a in integer fo	ormat and ca	ın also be u	sed as a			
20.54	source by other pa									
52.51	Data set 10 data		l for the F	DOO	landa DDO	N 1 1	Parte to the c			
	drive.	nk, data set 10 data 1	I from the L	DCS control	ier via DDCs	s controller	link to the			
		s data set 10 data 1 f	rom the DC	CS controlle	r via DDCS (controller lin	k to the drive			
		e in 62.101 Data set			i via DDCC i		ik to the drive.			
	Other; source sele		io data i vi	aido.						
		DDCS controller link	data out is	disabled.						
		ol word (16-bit). Sen			ol word.					
	2: Ref1 16bit; refe	erence REF1 (16-bit).	Send to 03	.11 DDCS co	ontroller ref 1	l.				
		erence REF2 (16-bit).	Send to 03	.12 DDCS co	ontroller ref 2) 				
	0 3	None	-	1 = 1	n	y	Parameter			
32.52	Data set 10 data 2	2 selection								
		nk, data set 10 data 2	2 from the D	DCS control	ler via DDCS	S controller	link to the			
	drive.									
	Select data sent as data set 10 data 2 from the DDCS controller via DDCS controller link to the drive									
		e in 62.102 Data set	10 data 2 va		51 Data set	<u>10 data 1 s</u>	1			
	0 3	None	-	1 = 1	n	у	Parameter			
2.53	Data set 10 data	3 selection Data	set 24 data	3 selection						
0										
32.74										
		et 10 data 1 selection		T			T= .			
	0 3	None	-	1 = 1	n	у	Parameter			
32.95	Data set 1 data 1									
		nk, data set 1 data 1	from the DI	OCS controlle	er via DDCS	controller li	nk to the			
	drive.	ent as data set 1 dat	a 1 from the	DDCS contr	rollor via DD	CS controll	ar link to the			
		62.45 Data set 1 da								
	parameters.	02.43 Data Set Tua	ia i selectio	ni. Can also i	be used as s	source by or	.1161			
	0 65535	0		1 = 1	V	n	Signal			
62.96	Data set 1 data 2			1	13	1	Olg.ia.			
,	DDCS controller link, data set 1 data 2 from the DDCS controller via DDCS controller link to the									
	drive.									
	Shows the value sent as data set 1 data 2 from the DDCS controller via DDCS controller link to the									
	drive as integer by 62.46 Data set 1 data 2 selection. Can also be used as source by other									
	parameters.					•				
	0 65535	0	-	1 = 1	у	n	Signal			
62.97	Data set 1 data 3	value Data set 3	data 3 valu	ie	•					
to										
62.100										
	See 62.95 Data se	et 1 data 1 value.								
	0 65535 0		-	1 = 1	у	n	Signal			
32.101	Data set 10 data	1 value								
	DDCS controller li	nk, data set 10 data 1	I from the D	DCS control	ler via DDCS	S controller	link to the			
	drive.									
	Shows the value sent as data set 10 data 1 from the DDCS controller via DDCS controller link to the									
		ent as data set 10 da 62.51 Data set 10 d								

Index	Name	Name									
	Text										
	Range	Defau	lt Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
	0 65535 0 - 1 = 1 y n Signa										
62.102	Data set 10 da	Data set 10 data 2 value									
			et 10 data 2 from et 10 data 2 selec								
	0 65535	0	-	1 = 1	у	n	Signal				
62.102 to 62.124	Data set 10 da	ta 3 value Da	ta set 24 data 3 v	value							
	See 62.101 Da	ta set 10 data 1 v	/alue.								
	0 65535	0	-	1 = 1	у	n	Signal				

70 DCSLink Communication

Defines the communication parameters for the DCSLink board SDCS-DSL-H1x.

For communication between the armature converter and the field exciters or 12-pulse communication only the basic communication parameters $70.05 \dots 70.14$ have to be set.

ndex	Name														
	Text														
	Range	Def	ault	Unit	Scale/ Fbeq16	Volatile	Change running	Туре							
	Parameter setting	s for:		<u>I</u>	-	1	<u> </u>	1							
	Single drive with	excitation	70.05 DCS 70.13 M1 fi 70.14 M2 fi	eld excite		See example 1.									
	12-pulse drive	31. 21.	See exam	nple 2.											
	Example 1 Single drive with or	ne or two fi	eld exciters a	and comr	nunication su	upervision:									
	single drive P70.05 = 1 P70.13 = 21 P70.14 = 30		1 st exc P70.05 2 nd exc P70.05	5 = 21 :itation											
	Example 2 12-pulse configura	tion and co	mmunication	supervis	sion:										
	12-pulse master of P70.05 = 1	drive	12-pulse sl P70.05												
	P70.09 = 31 P70.13 = 21		1 st exci st P70.05												
	DCSLink status 1														
70.01	DCSLINK status 1						DCSLink status 1 DCSLink status 1 of field exciter nodes 1 16.								

Index	Name										
	Text Range)		Defa	ult	Unit	Scale/ Fbeq16	Volatile	Change running	Туре	
		ord displays the	he sta	atus o	f the DCSLi	nk for fie		es 1 16		1	
	Bit	Name	Va	lue	Remarks						
	0	Node01	1		DCSLink	node01 a	active and OK				
			0		DCSLink	node01 r	not active or fa	aulty.			
	1	Node02	1		DCSLink	node02 a	ctive and OK				
			0		DCSLink	node02 r	not active or fa	aulty.			
	2	Node03	1		DCSLink	node03 a	active and OK				
			0				not active or fa				
	3	Node04	1				active and OK				
			0				not active or fa				
	4	Node05 1 0			DCSLink node05 active and OK.						
					DCSLink node05 not active or faulty.						
	5	Node06 1 0 Node07 1					active and OK				
							not active or fa				
	6	Node07					active and OK				
			0				not active or fa				
	7	Node08	0				active and OK				
			1		DCSLink node08 not active or faulty.						
	8	Node09	0				active and OK				
			1				not active or fa				
	9	Node10	0				active and OK				
			1				not active or fa				
	10	Node11	0				active and OK				
			1				not active or fa				
	11	Node12	0				active and OK				
	I		1				ot active or fa				
	12	Node13	0				active and OK				
	I		1				ot active or fa				
	12	Node14	0				active and OK				
			1				ot active or fa				
	14	Node15	0		1		active and OK				
	I		1				not active or fa				
	15	Node16	0		1		active and OK				
			1		DCSLink	node16 r	not active or fa	aulty.			
	0000		ı			1	1	1	1	To: :	
		FFFFh		-		-	1 = 1	у	n	Signal	
70.02		ink status 2									
	l l	nk status 2 of									
		ord displays th	he sta	atus o	f the DCSLi	nk for fie	ld exciter nod	es 17 3	2.		
	Bit ass	signment:									
	D''	Na	117	1	D						
	Bit	Name		lue	Remarks						
	0	Node17	1				active and OK				
		Node 10	0				not active or fa				
	1	Node18	1				active and OK				
		Node 10	0				not active or fa				
	2	Node19	1				active and OK				
1		No.d-00	0				not active or fa				
	3	Node20	1				active and OK				
[0		DUSLINK	node20 r	not active or fa	auity.			

	Name								
	Text								
	Range			efault	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	4	Node21	1	DCSLink	node21	active and O	K.	•	•
			0			not active or			
	5	Node22	1			active and O			
			0			not active or			
	6	Node23	1			active and O			
			0			not active or			
	7	Node24	0			active and O			
	<u> </u>		1			not active or			
	8	Node25	0			active and O			
			1			not active or			
	9	Node26	0			active and O			
			1			not active or			
	10	Node27	0			active and O			
			1			not active or			
	11	Node28	0			active and O			
	10		1			not active or			
	12	Node29	0			active and O			
	10		1			not active or			
	12	Node30	0			active and O			
	4.4	N. 1 04	1			not active or			
	14	Node31	0			active and O			
	45	N. 1 00	1			not active or			
	15	Node32	0	DCSLink	node32	active and ()	K		
			1			not active or			
	0000h				node32	not active or	faulty.	In	Signal
0.05		FFFFh						n	Signal
0.05	DCSLi	FFFFh nk node ID			node32	not active or	faulty.	n	Signal
0.05	DCSLi	FFFFh nk node ID nk node ID.	1 -	DCSLink	node32	not active or	faulty.		
0.05	DCSLi DCSLir Defines	FFFFh nk node ID nk node ID. s the DCSLink	1 -	DCSLink ID of the drive.	node32	1 = 1 ves with the s	faulty. y ame node I	D are not al	lowed.
0.05	DCSLin DCSLin Defines Maxim	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr	1 - c node rive co	DCSLink ID of the drive. unt is 50. See a	node32 - Two drivalso exam	1 = 1 ves with the s	faulty. y ame node I	D are not al	lowed.
0.05	DCSLin DCSLin Defines Maximi inactive	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC	1 - c node rive co	ID of the drive. unt is 50. See a	rode32	1 = 1 ves with the samples 1 2 a	y ame node I	D are not al	lowed. de ID is
0.05	DCSLind Defines Maximum inactive A chos	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC en (70.05 DC	1	ID of the drive. unt is 50. See a node ID is set to	Two drivalso exano 0. ut not co	1 = 1 ves with the samples 1 2 annected or fa	y ame node I above. The l	D are not al DCSLink no	lowed. de ID is pard generat
0.05	DCSLin DCSLin Defines Maximi inactive A chos fault 70	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC en (70.05 DC	1	ID of the drive. unt is 50. See a	Two drivalso examo 0. ut not co	1 = 1 ves with the samples 1 2 annected or fa	y ame node I above. The l	D are not al DCSLink no	lowed. de ID is pard generat
0.05	DCSLin DCSLin Defines Maximi inactive A chos fault 70	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC en (70.05 DC 082 I/O extens ting of 70.07 [1	ID of the drive. unt is 50. See a node ID is set to node ID > 0), b mmunication on	Two drivalso examo 0. ut not co	1 = 1 ves with the samples 1 2 annected or fa	y ame node I above. The l	D are not al DCSLink no	lowed. de ID is eard generat epending or
	DCSLi DCSLin Defines Maximi inactive A chos fault 70 the set	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC en (70.05 DC 082 I/O extens ting of 70.07 [1 - c node rive co SLink SLink sion co	ID of the drive. unt is 50. See a node ID is set to node ID > 0), b mmunication on	Two drivalso examo 0. ut not co	not active or 1 = 1 ves with the samples 1 2 annected or far A7AB I/O ex	ame node I above. The ulty SDCS-i	D are not al DCSLink no DSL-H0x bo	lowed. de ID is eard generat epending or
	DCSLind Defines Maximum inactive A chos fault 70 the set 0 63	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC en (70.05 DC 082 I/O extens ting of 70.07 [B rate	1 - c node rive co SLink SLink sion co	ID of the drive. unt is 50. See a node ID is set to node ID > 0), b mmunication on	Two drivalso examo 0. ut not co	not active or 1 = 1 ves with the samples 1 2 annected or far A7AB I/O ex	ame node I above. The ulty SDCS-i	D are not al DCSLink no DSL-H0x bo	lowed. de ID is eard generat epending or
	DCSLi DCSLin Defines Maximi inactive A chos fault 70 the set 0 63 Baud r	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC en (70.05 DC 082 I/O extens ting of 70.07 [B] rate ate.	noderive co SLink SLink Sion co OCSLi	ID of the drive. unt is 50. See a node ID is set to node ID > 0), b mmunication on	Two drivalso examo 0. ut not cor warning unction.	not active or 1 = 1 ves with the samples 1 2 annected or far A7AB I/O ex 1 = 1	ame node I above. The lulty SDCS-tension cor	D are not al DCSLink no DSL-H0x bo offiguration d	lowed. de ID is pard generat epending or
	DCSLind Defines Maximum inactive A chost fault 70 the set of the s	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC en (70.05 DC 082 I/O extens ting of 70.07 [B] rate ate.	noderive co SLink SLink Sion co OCSLi	ID of the drive. unt is 50. See a node ID is set to node ID > 0), b mmunication on nk comm loss for	Two drivalso examo 0. ut not cor warning unction.	not active or 1 = 1 ves with the samples 1 2 annected or far A7AB I/O ex 1 = 1	ame node I above. The lulty SDCS-tension cor	D are not al DCSLink no DSL-H0x bo offiguration d	lowed. de ID is pard generat epending or
	DCSLind Defines Maximum inactive A chose fault 70 the set 0 63 Baud rad Defines DCSLind D	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC en (70.05 DC 082 I/O extens ting of 70.07 [3] rate ate. s the transfer nk cable:	nodecive costink SLink sion coocsti	ID of the drive. unt is 50. See a node ID is set to node ID > 0), b mmunication on nk comm loss for	Two drivalso examo 0. ut not co r warning unction.	not active or 1 = 1 /es with the samples 1 2 annected or far A7AB I/O exiter 1 = 1	ame node I above. The lulty SDCS-tension cor	D are not al DCSLink no DSL-H0x bo offiguration d	lowed. de ID is pard generat epending or
	DCSLind Defines Maximum inactive A chose fault 70 the set 0 63 Baud range Baud range DCSLind O: 20 km 1: 50 km	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC en (70.05 DC 082 I/O extens ting of 70.07 [3 rate ate. s the transfer nk cable: bit/s; 20 kbit/s bit/s; 50 kbit/s	nodecive cossLinksSLinksion cooperate of	ID of the drive. unt is 50. See a node ID is set to node ID > 0), b mmunication on nk comm loss for the DCSLink.	Two drivalso examo 0. ut not co r warning unction.	not active or 1 = 1 /es with the samples 1 2 and a A7AB I/O exit in the sample of the sample	ame node I above. The lulty SDCS-tension cor	D are not al DCSLink no DSL-H0x bo offiguration d	lowed. de ID is pard generat epending or
	DCSLind Defines Maxima inactive A chose fault 70 the set 0 63 Baud radius Baud radius Defines DCSLind C: 20 kd 1: 50 kd 2: 125	FFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC en (70.05 DC 082 I/O extens ting of 70.07 [3 rate ate. s the transfer nk cable: bit/s; 20 kbit/s kbit/s; 125 kb	noderive co SLink SLink SLink Sion co OCSLi co	ID of the drive. unt is 50. See a node ID is set to node ID > 0), b mmunication on nk comm loss for the DCSLink.	Two drivalso examo 0. ut not cor warning unction.	not active or 1 = 1 ves with the samples 1 2 and a A7AB I/O existed or far a A7AB I/O ex	ame node I above. The lulty SDCS-tension cor	D are not al DCSLink no DSL-H0x bo offiguration d	lowed. de ID is pard generat epending or
	DCSLind Defines Maximal inactive A chose fault 70 the set of the s	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC 082 I/O extens ting of 70.07 [3 rate ate. s the transfer nk cable: bit/s; 20 kbit/s kbit/s; 125 kb	nodecive constitution constitut	ID of the drive. unt is 50. See a node ID is set to node ID > 0), b mmunication on nk comm loss for the DCSLink. cable length m cable length m tal cable length tal cable length	Two drivalso examo 0. ut not cor warning unction. The transmax. 500 max. 500 max. 500 max. 500 max. 500 max. 250 max. 2	not active or 1 = 1 ves with the same ted or far A7AB I/O existed the same ted	ame node I above. The lulty SDCS-tension cor	D are not al DCSLink no DSL-H0x bo offiguration d	lowed. de ID is pard generat epending or
	DCSLind Defines Maximal inactive A chose fault 70 the set 0 63 Baud radiation Baud radiation Defines DCSLind 1: 50 k 2: 125 3: 250 4: 500	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC 082 I/O extens ting of 70.07 [3 rate ate. s the transfer nk cable: bit/s; 20 kbit/s kbit/s; 50 kbit/s kbit/s; 50 kb	a node rive co SLink SLink sion co OCSLi Co co co co co co co co co co co co co co	ID of the drive. unt is 50. See a node ID is set to node ID > 0), b mmunication on nk comm loss for the DCSLink. cable length m cable length m tal cable length tal cable length	Two drivalso examo 0. ut not cor warning unction.	not active or 1 = 1 ves with the same and A7AB I/O examples 1 2 and A7AB I/O examples 2 2 and A7AB I/O examples 2	ame node I above. The lulty SDCS-tension cor	D are not al DCSLink no DSL-H0x bo offiguration d	lowed. de ID is pard generat epending or
	DCSLind Defines Maximi inactive A chose fault 70 the set 0 63 Baud range DCSLind 0: 20 kd 1: 50 kd 2: 125 de 3: 250 de 5: 800	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC en (70.05 DC 082 I/O extens ting of 70.07 [rate ate. s the transfer nk cable: bit/s; 20 kbit/s kbit/s; 50 kbit/s kbit/s; 500 kb kbit/s; 500 kb kbit/s; 800 kb	a noderive constitute of the c	ID of the drive. unt is 50. See a node ID is set to node ID > 0), b mmunication on nk comm loss for the DCSLink. cable length m cable length m tal cable length tal cable length tal cable length tal cable length	Two drivalso examo 0. ut not cor warning unction. The transmax. 500 max. 5	not active or 1 = 1 ves with the same ted or far A7AB I/O examples 1 2 and a line ted or far A7AB I/O examples 2 2 and a line ted or far A7AB I/O examples 2 2 and a line ted or far A7AB I/O examples 2 2 and a line ted or far A7AB I/O examples 2 2 and a line ted or far A7AB I/O examples 2 2 and a line ted or far A7AB I/O examples 2 2 and a line ted or far A7AB I/O examples 2 2 and a line ted or far A7AB I/O examples 2 2 and a line ted or far A7AB I/O examples 2 2 and a line ted or far A7AB I/O examples 2 2 and a line ted or far A7AB I/O examples 2 2 and a line ted or far A7AB I/O examples 2 2 and a line ted or far A7AB I/O examples 2 2 and a line ted or far A7AB I/O examples 2 2 and a line ted or far A7AB I/O examples 2 2 and a line ted or far A7AB I/O examples 2	ame node I above. The lulty SDCS-tension cor	D are not al DCSLink no DSL-H0x bo offiguration d	lowed. de ID is pard generat epending or
	DCSLind Defines Maximi inactive A chose fault 70 the set 0 63 Baud range DCSLind Defines DCSLind DCSLind DCSLind DCSLind DCSLind DCSLind DCSLind DCSLind DCSLind DCSLind DCSLind DCSLind	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC en (70.05 DC 082 I/O extens ting of 70.07 [3 rate ate. s the transfer nk cable: bit/s; 20 kbit/s kbit/s; 50 kbit/s kbit/s; 500 kb kbit/s; 500 kb bit/s; 1 Mbit/s;	a node rive co SLink SLink sion co OCSLi Co oit/s, to oit/s, to oit/s, to total oit/s, to tota	ID of the drive. unt is 50. See a node ID is set to node ID > 0), b mmunication on k comm loss for the DCSLink. cable length m cable length tal cable length tal cable length tal cable length tal cable length tal cable length	Two drivalso examo 0. ut not cor warning unction. The transmax. 500 max. 5	not active or 1 = 1 ves with the same and A7AB I/O examples 1 2 and A7AB I/O examples 1 2 and A7AB I/O examples 1 2 and A7AB I/O examples 1 2 and A7AB I/O examples 1 2 and A7AB I/O examples 2 and A7	faulty. y ame node I above. The I ulty SDCS-I ttension cor n eases with t	D are not al DCSLink no DSL-H0x bo offiguration d n	lowed. de ID is pard generat epending or Parameter gth of the
0.05	DCSLi DCSLi DCSLi Defines Maximi inactive A chos fault 70 the set 0 63 Baud r Defines DCSLi 0: 20 k 1: 50 k 2: 125 3: 250 4: 500 5: 800 7: 1 Mk Note: I	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC en (70.05 DC 082 I/O extens ting of 70.07 I rate ate. s the transfer nk cable: bit/s; 20 kbit/s kbit/s; 50 kbit/s kbit/s; 500 kb kbit/s; 1 Mbit/s Maximum tota	a node rive co SLink SLink sion co OCSLi Co oit/s, to oit/s, to oit/s, to total of t	ID of the drive. unt is 50. See a node ID is set to node ID > 0), b mmunication on nk comm loss for the DCSLink. cable length m cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length	Two drivalso examo 0. ut not cor warning unction. The transmax. 500 max. 5	not active or 1 = 1 /es with the saples 1 2 annected or far A7AB I/O ex 1 = 1 /efer rate decrease o m. o m. o m. o m. ely 25 m. ed 100 m. March Mar	faulty. y ame node I above. The I ulty SDCS-I ttension cor n eases with t	D are not al DCSLink no DSL-H0x bo offiguration d n	lowed. Ide ID is pard generat epending or Parameter gth of the
	DCSLind Defines Maximum inactive A chose fault 70 the set 0 63 Baud range DCSLind Defines DCSLind 0: 20 kd 1: 50 kd 2: 125 dd: 500 for 1 Miles Note: 1 is 50 (6)	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC en (70.05 DC 082 I/O extens ting of 70.07 I rate ate. s the transfer nk cable: bit/s; 20 kbit/s kbit/s; 50 kbit/s kbit/s; 500 kb kbit/s; 1 Mbit/s Maximum tota	a node rive co SLink SLink sion co OCSLi Co Co Co Co Co Co Co Co Co Co Co Co Co	ID of the drive. unt is 50. See a node ID is set to node ID > 0), b mmunication on k comm loss for the DCSLink. cable length m cable length tal cable length tal cable length tal cable length tal cable length tal cable length cable length able length ap e length should ng one externa	Two drivalso examo 0. ut not cor warning unction. The transmax. 500 max. 5	not active or 1 = 1 /es with the same of the same	faulty. y ame node I above. The I ulty SDCS-I atension cor n eases with t	D are not all DCSLink not DSL-H0x bount of conrections of the conrection of the conr	lowed. Inde ID is pard generate epending or Parameter of the ected drives
	DCSLind Defines Maximal inactive A chose fault 70 the set of the s	FFFFh nk node ID nk node ID. s the DCSLink um allowed dr e, if 70.05 DC en (70.05 DC 082 I/O extens ting of 70.07 I rate ate. s the transfer nk cable: bit/s; 20 kbit/s kbit/s; 50 kbit/s kbit/s; 500 kb kbit/s; 1 Mbit/s Maximum tota	a node rive co SLink SLink sion co OCSLi Co Co Co Co Co Co Co Co Co Co Co Co Co	ID of the drive. unt is 50. See a node ID is set to node ID > 0), b mmunication on nk comm loss for the DCSLink. cable length m cable length m tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length tal cable length	Two drivalso examo 0. ut not cor warning unction. The transmax. 500 max. 5	not active or 1 = 1 /es with the saples 1 2 annected or far A7AB I/O ex 1 = 1 /efer rate decrease o m. o m. o m. o m. ely 25 m. ed 100 m. March Mar	faulty. y ame node I above. The I ulty SDCS-I ttension cor n eases with t	D are not al DCSLink no DSL-H0x bo offiguration d n	lowed. Ide ID is pard generat epending or Parameter gth of the

	ex Name								
	Text								
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
	Selects how the drive reacts to a DCSLink communication and DCSLink board (SDCS-DSL-H1) loss. 0: No action; none, disable communication loss function and board loss function. 1: Fault; the event generates fault F544 P2P and M/F communication or 7082 I/O extension communication and the motor stops due to 31.13 Fault stop mode communication. This occurs when the drive is controlled via the DCSLink. 2: Warning; the event generates warning A112 P2P and M/F communication or A7AB I/O exter configuration. This occurs even though no control is expected via the DCSLink. WARNING! Make sure that it is safe to continue operation in case of a communication break or a board loss 3: Last speed; the evet generates warning A112 P2P and M/F communication or A7AB I/O extension configuration and freezes the speed to the level the drive was operating at. The last s is determined based on the speed feedback using an 850 ms low-pass filter. WARNING! Make sure that it is safe to continue operation in case of a communication break or a board loss 4: Speed reference safe; the event generates warning A112 P2P and M/F communication or A I/O extension configuration and sets the speed to the value defined in 22.46 Speed reference sc WARNING! Make sure that it is safe to continue operation in case of a communication break or a board loss 5: Fault always; the event generates fault F544 P2P and M/F communication or 7082 I/O exterested always; the event generates fault F544 P2P and M/F communication or 7082 I/O exterested always; the event generates fault F544 P2P and M/F communication or 7082 I/O exterested always; the event generates fault F544 P2P and M/F communication or 7082 I/O exterested always; the event generates fault F544 P2P and M/F communication or 7082 I/O exterested always; the event generates fault F544 P2P and M/F communication or 7082 I/O exterested always; the event generates fault F544 P2P and M/F communication or 7082 I/O exterested always; the event generates fault F544 P2P and M/F communication or 7082 I/O exteres								
	communication and the though no control is ex	e motor stops due pected via the DC	to 31.13 F	ault stop mo	de commun	ication. This	s occurs even		
	0 5	No action	-	1 = 1	n	у	Parameter		
70.08	12-pulse timeout 12-pulse communication								
70.00	12-pulse communication Defines the time delay communication is general message. 70.08 12-pulse timeout inactive, if 70.08 12-pulse to Note: 70.08 12-pulse to Note: 70.08 12-pulse to Define the Note: 70.08 12-pulse the Note: 70.08 12-pulse to Define the Note: 70.08 12-pulse to Define the Note: 70.08 12-pulse to Define the Note: 70.08 12-pulse to Define the Note: 70.08 12-pulse to Define the Note: 70	before a 12-pulse trated. Time count is only active in t lse timeout is set	t starts wh he 12-puls to 0 ms.	en the comm	unication lin	k fails to up	date the		
70.00	12-pulse communication Defines the time delay communication is general message. 70.08 12-pulse timeout inactive, if 70.08 12-pulse to Note: 70.08 12-pulse to exciter or xxx Slave.	before a 12-pulse trated. Time count is only active in t lse timeout is set imeout is void, wh	t starts wh he 12-puls to 0 ms. en 99.06	en the comm se master driv Operation mo	re. The com	k fails to up	date the fault is er, Large field		
	12-pulse communication Defines the time delay communication is general message. 70.08 12-pulse timeout inactive, if 70.08 12-pulse to exciter or xxx Slave. 0 32500	before a 12-pulse trated. Time count is only active in the lise timeout is set imeout is void, where 100	t starts wh he 12-puls to 0 ms.	en the comm	unication lin	k fails to up	date the		
70.09	12-pulse communication Defines the time delay communication is general message. 70.08 12-pulse timeout inactive, if 70.08 12-pulse to Note: 70.08 12-pulse to exciter or xxx Slave.	before a 12-pulse rated. Time count is only active in the last timeout is set imeout is void, where the last timeout is void, where last timeout is void in the last timeout is void in the last timeout is void in the last timeout is void in the last timeout in the last timeout is void in the last timeout in the last timeout is void in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout is void in the last timeout in the last timeout is void in the last timeout in the last timeout is void in the last timeout is void in the last timeout in the last timeout is void in the last timeout is void in the last timeout in the last timeout is void in the last timeout in the last timeout is void in the last timeout in the last timeout is void in the last timeout in the last timeout in the last timeout is void in the last timeout in the last t	t starts when the 12-pulse to 0 ms. en 99.06 ms. ms	en the comm se master driv Operation mo 1 = 1 ms e drive in the slave node II	re. The com de = Armato n 12-pulse ma D is set to 0	k fails to up munication ure converte y aster drive.	fault is er, Large field Parameter See also		
	12-pulse communication Defines the time delay communication is general message. 70.08 12-pulse timeout inactive, if 70.08 12-pulse texciter or xxx Slave. 0 32500 12-pulse slave node ID Defines the DCSLink in example 2 above. The 12-pulse node ID in Note: 70.09 12-pulse size.	before a 12-pulse rated. Time count is only active in the last timeout is set imeout is void, where the last timeout is void, where last timeout is void in the last timeout is void in the last timeout is void in the last timeout is void in the last timeout in the last timeout is void in the last timeout in the last timeout is void in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout in the last timeout is void in the last timeout in the last timeout is void in the last timeout in the last timeout is void in the last timeout is void in the last timeout in the last timeout is void in the last timeout is void in the last timeout in the last timeout is void in the last timeout in the last timeout is void in the last timeout in the last timeout is void in the last timeout in the last timeout in the last timeout is void in the last timeout in the last t	t starts when the 12-pulse to 0 ms. en 99.06 ms. ms	en the comm se master driv Operation mo 1 = 1 ms e drive in the slave node II	re. The com de = Armato n 12-pulse ma D is set to 0	k fails to up munication ure converte y aster drive.	fault is er, Large field Parameter See also		
	12-pulse communication Defines the time delay communication is general message. 70.08 12-pulse timeout inactive, if 70.08 12-pulse texciter or xxx Slave. 0 32500 12-pulse slave node ID Defines the DCSLink in example 2 above. The 12-pulse node ID in Note: 70.09 12-pulse slave is Large field exciter or xxx Slave.	before a 12-pulse trated. Time count is only active in the last timeout is set imeout is void, where the last timeout is only active the last to 0 ms and the last timeout is void, where timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void, where the last timeout is void.	t starts when 12-pulse slave of 12-pulse slave of 12-pulse oid, when 12-pulse oid, when 12-pulse oreak. Time in the arm 12-pulse oreak. Time in the arm 13-pulse oreak.	en the common the common the count starts atture drive. The common the count starts atture drive. The common the count starts atture drive. The common the count starts atture drive. The common the count starts atture drive. The common the count starts atture drive. The count starts atture drive. The count starts atture drive. The count starts atture drive. The count starts atture drive. The count starts atture drive. The count starts atture drive. The count starts atture drive. The count starts atture drive. The count starts atture drive attached the count starts attached the count starts atture drive. The count starts attached the co	unication ling. The communication ling. The communication ling. The communication is good when the communication is good or the communication ling. The communication excited exciter the communication ling.	k fails to up munication ure converte y aster drive. Armature co n ed and eithe enerated, de communication faul	fault is er, Large field Parameter See also onverter, Parameter er fault F516 lepending on tion link fails to		

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
70.13	M1 field exciter node ID									
	Motor 1 field exciter no Defines the DCSLink n 2 above. Motor 1 field exciter no Note: 70.13 M1 field ex OnBoard or External field	ode ID of motor 1 fi de ID is inactive, if cciter node ID is vo	70.13 M1	field exciter	node ID is s	set to 0.	·			
	0 32	21	-	1 = 1	n	n	Parameter			
70.14	M2 field exciter node	ID	•	•	•	•				
	Motor 2 field exciter node ID. Defines the DCSLink node ID of motor 2 field exciter in the armature drive. See also example 1 above. Motor 1 field exciter node ID is inactive, if 70.14 M2 field exciter node ID is set to 0. Note: 70.14 M2 field exciter node ID is void, when 42.49 M2 used field exciter type = NotUsed, OnBoard or External field exciter via Alx.									
	0 32	30	-	1 = 1	n	n	Parameter			

74 ... 89 Application specific groups

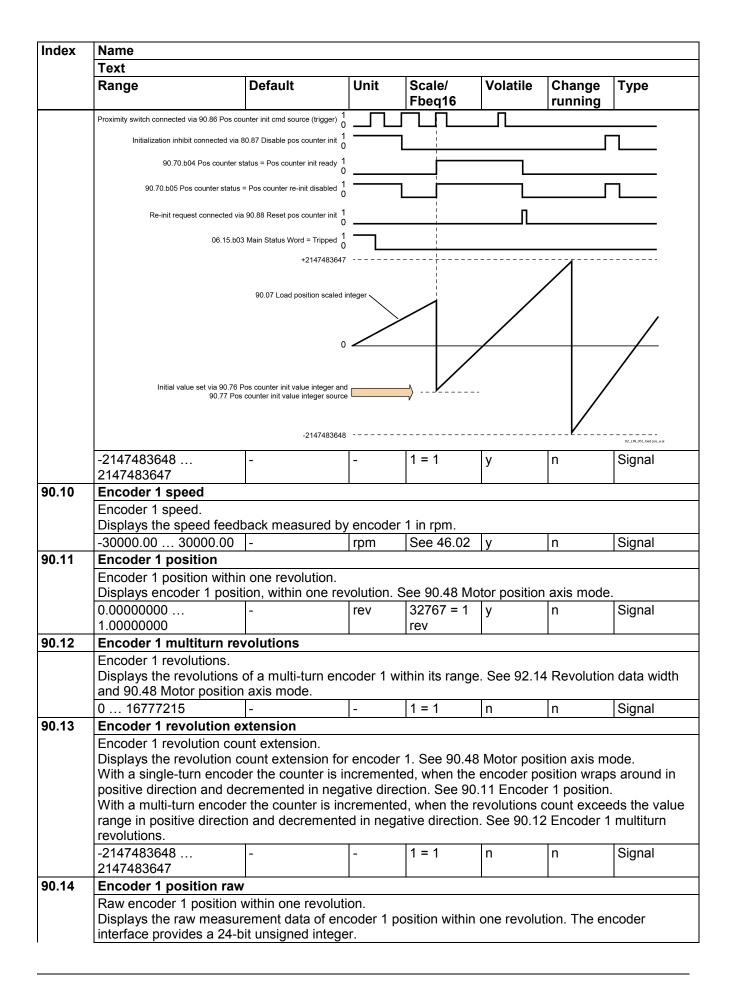
Groups used for application programming.

90 Feedback selection

Motor and load feedback configuration.

Index	Name									
	Text		,		,					
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
90.01	Motor speed for control	l								
	Displays measured, EMF feedback selection. For n Filter time motor speed.	In case a measured or external feedback is selected, it is also scaled by the motor gear function. See								
	-30000.00 30000.00	-	rpm	See 46.02	v	ln	Signal			
90.02	Motor position Motor position. Displays the motor position feedback selection. This An encoder feedback is selection. 90.44 Motor gear denomination of the selection of the selection.	parameter is only scaled by the moto	valid for e	encoder spee	ed feedback	ζ.				
90.03	1.00000000 Load speed			rev						
	Measured (tacho/encoder), EMF or external load speed. Displays measured, EMF or external load speed depending on the used feedback. See 9 feedback selection. A filter time constant is defined by 90.52 Load speed filter time. In case an encoder feedback from the load is selected, it is also scaled by the load gear f See 90.53 Load gear numerator and 90.54 Load gear denominator. In case a feedback from the motor is used, it is inversely scaled by 90.61 Gear numerator Gear denominator (90.62 divided by 90.61).									
	-30000.00 30000.00	-	rpm	See 46.02	у	n	Signal			
90.04	Load position Load position.									

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	Displays the (rotational) load position received from the source selected by 90.51 Load feedback selection. This parameter is only valid for encoder speed feedback. In case an encoder feedback from the load is selected, it is also scaled by the load gear function. See 90.53 Load gear numerator and 90.54 Load gear denominator. In case a feedback from the motor is used, it is inversely scaled by 90.61 Gear numerator and 90.62 Gear denominator (90.62 divided by 90.61). Offset and resolution are defined by 90.56 Load position offset and 90.57 Load position resolution. -2147483648 - 1 = 1 y n Signal									
0.05	2147483647 Load position scaled									
	Scaled (translatory) load Displays the output of th initial position set by 90.8 The number of decimal position. This is a floating-prange. Consider using 90-2147483.648	e position counter 30 Pos counter ini places is defined b point parameter an	function i t value an by 90.82 P ad the acc	d 90.81 Pos os counter d uracy is com	counter init ecimals.	value.				
	2147483.647			<u> </u>	,		Olgridi			
0.06	Of Motor position scaled Scaled motor position. Displays the calculated (rotational) motor position. The axis mode (linear or rollover) and resolution are defined by 90.48 Motor position. Note: The position resolution. Note: The position value can be sent on a fast time level to the fieldbus controller Position in either 50.07 FBA A actual 1 type, 50.08 FBA A actual 2 type, 50.37 FB or 50.38 FBA B actual 2 type.									
	-2147483.648 2147483.647	-	-	1 = 1	у	n	Signal			
0.07	Load position scaled int Scaled (translatory) load position in integer format. Displays the output of the position counter function as an integer. The position is relative to the initial position set by 90.76 Pos counter init value int and 90.77 Pos counter init value int source.									



Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	0 16777215	-	-	1 = 1	у	n	Signal			
90.15	Encoder 1 revolutions	raw					•			
	Raw encoder 1 revolutions Displays the revolutions 92.14 Revolution data	s of a multi-turn	encoder 1 v			a raw measi				
	0 16777215	-	-	1 = 1	У	n	Signal			
90.20	Encoder 2 speed									
	Encoder 2 speed. Displays the speed fee -30000.00 30000.00		d by encode	er 2 in rpm. See 46.02	у	n	Signal			
90.21	Encoder 2 position		1.6	000 .0.02	13	1	10.9			
	Encoder 2 position with Displays encoder 1 pos 0.000000000 1.00000000			See 90.48 Mo 32767 = 1 rev	otor position	n axis mode	e. Signal			
90.22	Encoder 2 multiturn r			IEV						
	Encoder 2 revolutions. Displays the revolutions and 90.48 Motor positions.		encoder 2 v	within its range		T				
90.23	0 16777215 Encoder 2 revolution	-	-	1 = 1	n	n	Signal			
	With a single-turn enco positive direction and d With a multi-turn encod range in positive directi revolutions.	ecremented in er the counter i	negative dire s increment	ection. See 90 ed, when the i pative direction	0.21 Encode revolutions n. See 90.2	er 2 position count excee	i. eds the value 2 multiturn			
	-2147483648 2147483647	-	-	1 = 1	n	n	Signal			
90.24	Encoder 2 position ra	w					•			
	Raw encoder 2 position Displays the raw meas interface provides a 24 0 16777215	urement data of	encoder 2	position within	one revolu	tion. The er	ncoder			
90.25	Encoder 2 revolutions	s raw	I		1,7		1-3-			
	Raw encoder 2 revolutions Displays the revolutions 93.14 Revolution data v 0 16777215	on count. s of a multi-turn	encoder 2 v	within its value	e range as a	a raw measi	urement. See			
90.26	Motor revolution exte	nsion								
	Motor revolution count Displays the revolution The counter is increme around in positive direct -2147483648	count extension ted, when the	position sele	ected by 90.41		dback selec	tion wraps			
	2147483647									
90.27	Load revolution exter									
	Displays the revolution		n for the loa	d.						

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	The counter is increr around in positive dir						ion wraps
	-2147483648 2147483647	-	-	1 = 1	n	n	Signal
90.39	External speed feed	lhack source					
	Selects the external speed 90.39 External speed feedback can be con - Any source via o - Via 90.40 Extern program or overr - Via an analog ing - Via serial communication	speed feedback soud source is valid if 90 nected in several want of the several was speed. This parariding control. Sout. Inication using the faction cycle of direct	0.41 M1 fe ays: meter can	be written to l	by e.g. Ada e of REF1/F	ptive Progra	am, application
	90.40 External s Refere	·	_	Board enco —— Exte EMF volt	oder — — rnal — age —	90.41	eed-source_b.ai
	Other; source select 0: 90.40 External sp 4: Al1 scaled; 12.12 5: Al2 scaled; 12.22 6: Al3 scaled; 12.32 7: FBA A reference 8: FBA A reference 9: FBA B reference 10: FBA B reference 11: EFB reference 12: EFB reference 13: DDCS controlled 14: DDCS controlled 15: M/F or D2D ref 16: M/F or D2D ref 0 16	eed; 90.40 External Al1 scaled value. Al2 scaled value. Al3 scaled value. 1; 03.05 FBA A refe 2; 03.06 FBA A refe 1; 03.07 FBA B refe 2; 03.08 FBA B refe 3; 03.09 EFB referent; 03.10 EFB referent; 03.11 DDCS 7 ref 2; 03.12 DDCS 7; 03.13 M/F or D2D 1; 03.14 M/F or D2D 190.40 External	rence 1. rence 2. rence 1. ference 2. ce 1. ce 2. controller controller	ref 1.	n	у	Parameter
		speed					
90.40	External speed						
	External speed feedb			_			
	This parameter can be						rriding control
	and is valid if 90.39 E				selection =	External.	1
	-30000.00 30000.	00 0.00	rpm	See 46.02	lv	V	Parameter

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
90.41	M1 feedback selection	•			<u>.</u>	<u>. </u>	•			
	Motor 1 speed feedback Selects the motor speed Other ; source selection.	I feedback for moto	or control.							
	1: OnBoard encoder; the SDCS-CON-H01. Se	ee group 94.		-			onnected to			
	2: Encoder 1; the speed 3: Encoder 2; the speed 4: Tacho; the speed fee	d feedback is meas dback is measure	sured by e	encoder 2. Se	ee group 93	3.	the SDCS-			
	CON-H01. See group 94 5: EMF ; the speed feedl weakening area). Thus,	back is calculated t								
	compared to encoder or Commissioning hint: T	analog tacho feed he flux linearizatio	lback. In must be	e tuned manu	ually.		, porrormanio			
	6: External ; the speed for t						eakening is			
	1 7	EMF	-	1 = 1	n	У	Parameter			
90.42	Motor speed filter time			•	. I	1.	1			
	Filter time constant for 9 Note: There are three di - 90.42 Motor speed f constants smaller th - 24.18 Speed error fi should be used for fi 24.19 Speed error fi	ifferent filters for spilter time is filtering an 30 ms. Iter time 1 and 24. Iter time constants	peed feed the spee 19 Speed	back and spend feedback a error filter tir	and should one 2 are filt	ering the sp	need error and			
	0 32500	5	ms	1 = 1 ms	n	у	Parameter			
90.43	Motor gear numerator	10	1110	1 11110	III.	y	T drameter			
	Motor gear numerator. 90.43 Motor gear numer motor speed feedback a motor and measured (ta on the motor shaft.	and motor control.	The gear t	function is us	sed to corre	ct a differer	nce between			
	Motor speed	= 90.4	13 Motor	gear numera	itor					
	Measured (tacho/encod	ler) speed 90.44	4 Motor g	ear denomin	ator					
	Load encoder to load	scaling	Motor to	load scaling		Motor tacho / e to motor sca				
		4								
	90.53 X Y Load encoder	Load	×	Y	M	90.43 X	Motor tacho / encoder			
	90.54			90.61		90.44	58, 550, 550, 550, years year, a si			

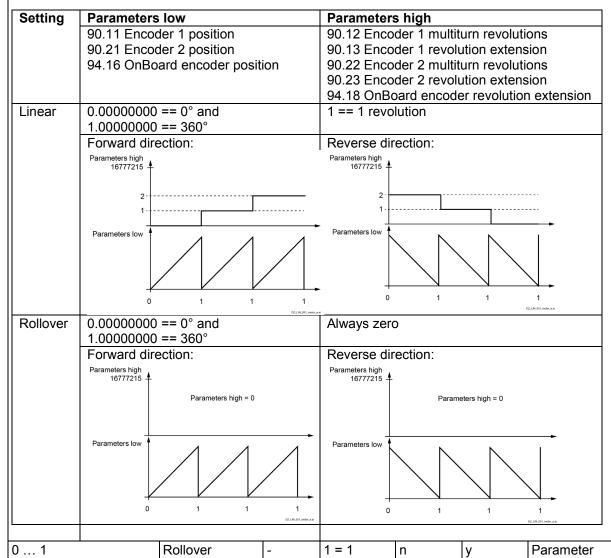
Index	Name Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	-2147483648 2147483647	1	-	1 = 1	n	у	Parameter			
90.44	Motor gear denomi	nator		•		•				
	Motor gear denomina See 90.43 Motor gea									
	-2147483648 2147483647	1	-	1 = 1	n	у	Parameter			
			ll .				-			

90.48 Motor position axis mode

Axis type for the motor position.

Selects the axis type for the motor position measurement.

- 0: Linear; linear.
- 1: Rollover; the value is between 0 and 1 revolutions, and rolls over at 360 degrees.



90.49 Motor position resolution

Motor position resolution.

Defines how many bits are used for the motor position count within one revolution. For example, with the setting of 16, the position value is multiplied by 2^{16} = 65536 to be displayed in 90.06 Motor position scaled and thus, also or for the fieldbuses.

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	0 31	16	-	1 = 1	n	у	Parameter
90.51	Load feedback select	ion					
	Load speed feedback s Selects the load speed 90.53 Load gear nume 0: None; no load feedb 1: OnBoard encoder; from a pulse encoder of 2: Encoder 1; load fee encoder 1. See group s 3: Encoder 2; load fee encoder 2. See group s 8: Motor feedback; the feedback. Any difference inverted ratio between 0 8	selection. feedback and porator and 90.54 Leack selected. load feedbacks attended to the selected to the selected and selected and selected and selected and selected selected between the nesselected and selected selected and selected and selected selected and selected selected and selected and selected selected and selected selected and selected selected and selected selected and selected selected selected and selected selected selected and selected	ne updated SDCS-COI ted based ted based to be seed to both the based to be seed denominator. I based on th N-H01. See g on the speed on the speed Motor feedba oad speed/po	e speed and roup 94. and position and position ck selection sition can b	d position van n values rea n values rea can also be e compensa	alues read ad from ad from e used for load	
0.52	Load speed filter time						1 0
	Load speed feedback f Filter time constant for 0 32500	ilter time constar		1 = 1 ms	n	у	Parameter
90.53	Load gear numerator			1	1	13	1. 0.0
	speed and encoder fee	dback selected b	y 90.51 Lo	ad feedback	selection. T	he gear fun	
	speed and encoder fee to correct a difference I directly on the rotated r	edback selected between load and machinery. 53 Load gear nur	oy 90.51 Lo d encoder s nerator	ad feedback	selection. T	he gear fun	ction is used
	speed and encoder feet to correct a difference is directly on the rotated related speed 90.5	edback selected between load and machinery. 53 Load gear num 4 Load gear deno	oy 90.51 Lod d encoders merator ominator	ad feedback	selection. T	he gear fun	ction is used not mounted
	speed and encoder feet to correct a difference is directly on the rotated reduced $\frac{Load\ speed}{Encoder\ speed} = \frac{90.5}{90.5}$	edback selected between load and machinery. 53 Load gear num 4 Load gear deno	oy 90.51 Lod d encoders merator ominator	oad feedback speed, for exa	selection. T	The gear fun encoder is I	ction is used not mounted
	speed and encoder feet to correct a difference is directly on the rotated reduced $\frac{Load\ speed}{Encoder\ speed} = \frac{90.5}{90.5}$	edback selected between load and machinery. 53 Load gear num 4 Load gear deno	oy 90.51 Lod encoder somerator ominator	oad feedback speed, for exa	selection. T	The gear fun encoder is I	encoder caling
	speed and encoder feet to correct a difference is directly on the rotated respectively. Since $\frac{Load\ speed}{Encoder\ speed} = \frac{90.5}{90.5}$ Load encoder to load $\frac{90.53}{40.5}$ Load encoder $\frac{90.53}{40.5}$ $\frac{90.53}{40.5}$ $\frac{90.53}{40.5}$ $\frac{90.53}{40.5}$ $\frac{90.54}{40.5}$	edback selected between load and machinery. 53 Load gear number dead scaling Load	oy 90.51 Lod encoder somerator ominator	to load scaling 90.62	selection. Tample if the	Motor tacho / to motor so	encoder caling
90.54	speed and encoder feet to correct a difference is directly on the rotated respectively. Since $\frac{Load\ speed}{Encoder\ speed} = \frac{90.5}{90.5}$ Load encoder to load encoder to load encoder. The load encoder of the load encoder. The load encoder of the load encoder. The load encoder of the load encoder. The load encoder of the load encoder. The load encoder of the load encoder of the load encoder. The load encoder of the load encoder of the load encoder of the load encoder. The load encoder of the load encoder of the load encoder of the load encoder of the load encoder. The load encoder of the load encoder of the load encoder of the load encoder of the load encoder. The load encoder of the load encoder of the load encoder of the load encoder of the load encoder of the load encoder of the load encoder. The load encoder of the load encoder of the load encoder of the load encoder of the load encoder of the load encoder of the load encoder. The load encoder of the load encode	edback selected between load and machinery. 53 Load gear num 4 Load gear denoted scaling Load	oy 90.51 Lod encoder s	to load scaling 90.62 X Y 90.61	selection. Tample if the	Motor tacho / to motor so	encoder caling Motor tacho / encode
90.54	speed and encoder feet to correct a difference is directly on the rotated reduced and speed. Load speed = 90.5 Load encoder to load encoder to load encoder to load encoder = 2147483648 2147483647 Load gear denominat Load (e.g. driven equip See 90.53 Load gear necessary in the control of the load encoder encoder equip see 90.53 Load gear necessary encoder en	cdback selected between load and machinery. 53 Load gear num 4 Load gear denoted scaling Load Load Torespectively.	oy 90.51 Lod encoder s	to load scaling 90.62 X Y 90.61 1 = 1	selection. Tample if the	Motor tacho / to motor so	encoder caling encoder tacho / encoder tacho
0.54	speed and encoder feet to correct a difference is directly on the rotated respectively. The speed $\frac{Load\ speed}{Encoder\ speed} = \frac{90.5}{90.5}$ Load encoder to load $\frac{90.53}{90.54}$ Load encoder $\frac{90.54}{90.54}$ -2147483648 2147483647 Load gear denominat Load (e.g. driven equip	cdback selected between load and machinery. 53 Load gear num 4 Load gear denoted scaling Load Load Torespectively.	oy 90.51 Lod encoder s	to load scaling 90.62 X Y 90.61	selection. Tample if the	Motor tacho / to motor so	encoder caling Motor tacho / encode
0.54	speed and encoder feet to correct a difference is directly on the rotated reduced by the rotated reduced reduced by the rotated reduced reduced by the rotated reduced by the rotated reduced reduced reduced	cdback selected between load and machinery. 53 Load gear num 4 Load gear denoted scaling Load Load Torespectively.	oy 90.51 Lod encoder s	to load scaling 90.62 X Y 90.61 1 = 1	selection. Tample if the	Motor tacho / to motor so	encoder caling Motor tacho / encoder

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	Defines a load side p	osition offset.					•
	-2147483648 2147483647	0	-	1 = 1	n	у	Parameter
90.57	Load position resolu	ution	.	_	- 1		1
	Load position resoluti Defines how many bi the setting of 16, the position. 0 31	ts are used for the	load position	on count with 2 ¹⁶ = 65536	in one revol to be displa	ution. For e yed in 90.04	xample, with 4 Load
90.61	Gear numerator	10		-	11	У	Farameter
	$\frac{1}{Load\ eed} = \frac{1}{90.62}$	or and 90.62 Gear of Gear numerator of Gear denominator	.	·	ear function		
	Load encoder to l	oad scaling	Motor t	o load scaling		Motor tacho / e to motor sca	
	90.53			90.62		90.43	7 _
	Load encoder 90.54	Load		Y 90.61	M	90.44	e Motor tacho / encoder
	-2147483648 2147483647	1	-	1 = 1	n	у	Parameter
90.62	Gear denominator		•		•	'	
	Gear denominator (lo See 90.61 Gear num						
	-2147483648 2147483647	1	-	1 = 1	n	у	Parameter
90.63	Feed constant nume	erator					
	Feed constant numer 90.63 Feed constant the position calculation	numerator and 90 on.	64 Feed co	onstant deno	minator defii	ne the feed	constant for
	90.63 Feed constant						
	The feed constant co distance the load more The translatory load positi	nverts rotational m ves during one turi position is shown in	n of the mo n 90.07 Loa	tor shaft. ad position so	caled int.		stant is the
	-2147483648 2147483647	1	-	1 = 1	n	у	Parameter
	Feed constant deno			i		1	1

Index	Name									
	Text									
	Range		Default		Unit	Scale/ Fbeq16	Volatile	Change running	Туре	
	Feed cons	stant denomina	itor.		•		•		•	
	See 90.63	3 Feed constan	t numera	tor.						
	-2147483		1		-	1 = 1	n	у	Parameter	
	21474836									
90.70		nter status								
		counter status w		aguntar						
	Bit assign	the status of the	position	counter.						
	Dit assign	iniont.								
	Bit	Name		Value	Rema	ırks				
	0	feedback		1	OnBo	ard encoder	is selected a	as load feed	lback	
					sourc					
	1	Encoder 1 fee		1						
	2	Encoder 2 fee		1	Encoder 1 is selected as load feedback source. Encoder 2 is selected as load feedback source. Motor is feedback selected as load feedback so					
	3	Motor feedba		1						
	4	Pos counter i ready	MIL	I	Positi	on counter is	s successfull	y muanzed.		
		ready		0	Positi	on counter is	not initialize	ed or encod	er feedback	
							unter initializ			
					Note:	Always zero	o if 90.85 Po	s counter sy	nc mode =	
					Cyclic					
	5	Pos counter r	e-init	1		Position counter initialization is prevented. See 90.8				
		disabled		4		le pos count			a aluitus is	
	6	Position data inaccurate		1			intermittent ion counting			
		maccurate					r the connect			
	7 15	reserved			0000					
				•	,			_		
	0000h		-		-	1 = 1	n	n	Signal	
90.73		nter error and		on						
		counter, error ha								
		ow the position st re-initializat						nitialization (of the position	
		recommended		0.004 FC	os courite	zi Status is C	ieaieu. Ne-ii	iiliaiiZaliOii (or the position	
		ue from previo		e: the po	sition co	untina resum	nes from the	previous va	llue over a	
		ad feedback or								
		tatus is set to ir	idicate th	at an err	or has o	ccurred.				
	WARNIN	_								
		edback is lost w	nen the c	irive is st	opped o	r not powere	ed, the count	er is not upo	dated even if	
	the load n	noves.	Reques	t ro		1 = 1	n	T _V	Parameter	
	0 1		initializa		-	' - '	''	У	Farameter	
90.76	Pos cour	nter init value i			1			1	1	
00.70		ounter, initial p		teger val	IIE					
		n initial position				n counter as	s an integer v	alue. For th	nis, set 90.77	
		ter init value int							,	
		e 90.07 Load p								
	-2147483		0		-	1 = 1	n	у	Parameter	
	21474836									
90.77		nter init value i								
	Position of	ounter, source	of the init	tial positi	on integ	er value.				

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	Selects the source of the initial position integer value. When the device selected by 90.86 Pos counter init cmd source (trigger) activates, the selection in 90.77 Pos counter init value int source becomes the position of the load. Other; source selection. 0: Zero; 0. 1: Pos counter init value integer; see 90.76 Pos counter init value int.									
	0 1	Pos counter ir value integer	nit -	1 = 1	n	у	Parameter			
90.80	Pos counter init va Position counter, init Defines an initial pos 90.81 Pos counter in The number of decin Result see 90.05 Lo	tial position value. sition or distance for nit value source = P mal places is define	os counter	init value.		number. For	this, set			
	2147483.647					,				
90.81	Pos counter init va Position counter, so Selects the source of cmd source (trigger) position of the load. Other; source select 0: Zero; 0. 1: Pos counter init	urce of the initial po of the initial position activates, the selection.	value. Whe	en the device 81 Pos count	er init value					
	0 1	Pos counter ir value		1 = 1	n	у	Parameter			
90.82	Pos counter decim									
	Scales the values of read by an external Examples with a se - An integer value 1000. The value - The value of 90.	Position counter, number of decimal places. Scales the values of 90.05 Load position scaled and 90.80 Pos counter init value when written to or read by an external source (e.g. fieldbus). The setting corresponds to the number of decimal places. Examples with a setting of 3: An integer value written into 90.80 Pos counter init value by an external source is divided by 1000. The value written is 12345 and the value shown is 12.345. The value of 90.05 Load position scaled is multiplied by 1000 when read by an external source. The value shown is 12.345 and the value written is 12345.								
	0 9	3	_	1 = 1	n	у	Parameter			
90.85	Pos counter sync i	node	L							
	Position counter, synchronization mode. Position counter synchronization mode for encoder feedback. 0: Single ; the next synchronization of the encoder feedback must be prepared by resetting 90.70.b04 Pos counter status using 90.88 Reset pos counter init ready. 1: Cyclic ; the synchronization of the encoder feedback happens at every occurrence of the synchronization event.									
	0 1	Single	-	1 = 1	n	у	Parameter			
90.86	Pos counter init cn Position counter, so Selects a digital sou triggers, the selectio 0 = No trigger. 0 → 1 = Trigger. Note: The position of Other [bit]; source so 0: No trigger; 0, no	urce of the initialization of the initializa	tion comma ch that initia nter init val	alizes the pos ue int source	becomes th	e position o	of the load.			

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	1: Trigger ; 1. 3: DI1 ; 10.02.b00 DI delayed status.									
	4: DI2 ; 10.02.b01 DI de 5: DI3 ; 10.02.b02 DI de									
	6: DI4 ; 10.02.b03 DI de									
	7: DI5 ; 10.02.b04 DI de	,								
	8: DI6 ; 10.02.b05 DI de									
	11: DIO1 ; 11.02.b00 D									
	12: DIO2 ; 11.02.b01 D									
	19: DIL ; 10.02.b15 DI				_					
	50: Z OnBoard ; taken									
	51: Z OnBoard forwar				encoder an	d the motor	is rotating			
	forward. See 06.21.b0					d t ba waataw	io rotation			
	52: Z OnBoard revers reverse. See 06.21.b0				encoder an	a the motor	is rotating			
İ	0 52	No trigger	1_	1 = 1	n	у	Parameter			
90.87	Disable pos counter			' '		13	- arameter			
1	Position counter, source		n inhibit	command.						
	Selects a source that p				ounter. Thus	, it blocks tl	he			
	synchronization comm	and.								
	0 = Release.									
	0 = Release. 1 = Disable.									
	Other [bit]; source sel									
	0: Release; 0, normal									
	0: Release ; 0, normal 1: Disable ; 1.	operation.								
	0: Release ; 0, normal 1: Disable ; 1. 3: DI1 ; 10.02.b00 DI de	operation. elayed status.								
	0: Release ; 0, normal 1: Disable ; 1. 3: DI1 ; 10.02.b00 DI de 4: DI2 ; 10.02.b01 DI de	operation. elayed status. elayed status.								
	0: Release ; 0, normal 1: Disable ; 1. 3: DI1 ; 10.02.b00 DI do 4: DI2 ; 10.02.b01 DI do 5: DI3 ; 10.02.b02 DI do	operation. elayed status. elayed status. elayed status.								
	0: Release ; 0, normal 1: Disable ; 1. 3: DI1 ; 10.02.b00 DI de 4: DI2 ; 10.02.b01 DI de	operation. elayed status. elayed status. elayed status. elayed status.								
	0: Release ; 0, normal 1: Disable ; 1. 3: DI1 ; 10.02.b00 DI de 4: DI2 ; 10.02.b01 DI de 5: DI3 ; 10.02.b02 DI de 6: DI4 ; 10.02.b03 DI de	elayed status. elayed status. elayed status. elayed status. elayed status.								
	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 D	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status.								
	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI do 4: DI2; 10.02.b01 DI do 5: DI3; 10.02.b02 DI do 6: DI4; 10.02.b03 DI do 7: DI5; 10.02.b04 DI do 8: DI6; 10.02.b05 DI do 11: DIO1; 11.02.b00 D 12: DIO2; 11.02.b01 D	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. lo delayed status. IO delayed status.								
	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 DI 12: DIO2; 11.02.b01 DI 19: DIL; 10.02.b15 DI de 19: DIL; 10.02.b15	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. lO delayed status. IO delayed status. delayed status.								
	0: Release; 0, normal 1: Disable; 1. 3: Di1; 10.02.b00 DI de 4: Di2; 10.02.b01 DI de 5: Di3; 10.02.b02 DI de 6: Di4; 10.02.b03 DI de 7: Di5; 10.02.b04 DI de 8: Di6; 10.02.b05 DI de 11: DIO1; 11.02.b00 DI 12: DIO2; 11.02.b01 DI 19: DIL; 10.02.b15 DI e 0 19	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. IO delayed status. IO delayed status. delayed status. Release	-	1 = 1	n	у	Parameter			
90.88	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 DI 12: DIO2; 11.02.b01 DI 19: DIL; 10.02.b15 DI e 0 19 Reset pos counter in	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. lO delayed status. IO delayed status. delayed status. Release it ready	-		n	у	Parameter			
90.88	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 DI 12: DIO2; 11.02.b01 DI 19: DIL; 10.02.b15 DI de 0 19 Reset pos counter in Position counter, source	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. IO delayed status. IO delayed status. delayed status. Release it ready ee of the initializatio		and reset.	•					
90.88	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 DI 12: DIO2; 11.02.b01 DI 19: DIL; 10.02.b15 DI de 19: DIL; 10.02.b15	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. IO delayed status. IO delayed status. delayed status. Release it ready ee of the initializatio		and reset.	•					
90.88	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 DI 12: DIO2; 11.02.b01 DI 19: DIL; 10.02.b15 DI de 0 19 Reset pos counter in Position counter, source Selects a source that e counter status.	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. IO delayed status. IO delayed status. delayed status. Release it ready ee of the initializatio		and reset.	•					
90.88	0: Release; 0, normal 1: Disable; 1. 3: Di1; 10.02.b00 DI de 4: Di2; 10.02.b01 DI de 5: Di3; 10.02.b02 DI de 6: Di4; 10.02.b03 DI de 7: Di5; 10.02.b04 DI de 8: Di6; 10.02.b05 DI de 11: DIO1; 11.02.b00 DI 12: DIO2; 11.02.b01 DI 19: DIL; 10.02.b15 DI de 0 19 Reset pos counter in Position counter, source Selects a source that e counter status. 0 = No reset.	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. IO delayed status. IO delayed status. delayed status. Release it ready ee of the initializatio		and reset.	•					
90.88	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 D 12: DIO2; 11.02.b01 D 19: DIL; 10.02.b15 DI de 0 19 Reset pos counter in Position counter, source Selects a source that eccounter status. 0 = No reset. 0 → 1 = Reset.	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. lo delayed status. IO delayed status. Release it ready enables a new initial		and reset.	•					
90.88	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 D 12: DIO2; 11.02.b01 D 19: DIL; 10.02.b15 DI de 0 19 Reset pos counter in Position counter, source Selects a source that e counter status. 0 = No reset. 0 → 1 = Reset. Other [bit]; source sel	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. lo delayed status. IO delayed status. Release it ready enables a new initial		and reset.	•					
90.88	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 D 12: DIO2; 11.02.b01 D 19: DIL; 10.02.b15 DI de 0 19 Reset pos counter in Position counter, source Selects a source that e counter status. 0 = No reset. 0 → 1 = Reset. Other [bit]; source sel 0: No Reset; 0.	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. lo delayed status. IO delayed status. Release it ready enables a new initial		and reset.	•					
90.88	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 D 12: DIO2; 11.02.b01 DI 19: DIL; 10.02.b15 DI de 0 19 Reset pos counter in Position counter, source Selects a source that e counter status. 0 = No reset. 0 → 1 = Reset. Other [bit]; source sel 0: No Reset; 0. 1: Reset; 1.	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. IO delayed status. IO delayed status. Release ready ee of the initializatio enables a new initial		and reset.	•					
90.88	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 D 12: DIO2; 11.02.b01 D 19: DIL; 10.02.b15 DI de 0 19 Reset pos counter in Position counter, source Selects a source that e counter status. 0 = No reset. 0 → 1 = Reset. Other [bit]; source sel 0: No Reset; 0.	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. IO delayed status. IO delayed status. Release it ready ee of the initializatio enables a new initial ection.		and reset.	•					
90.88	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 D 12: DIO2; 11.02.b01 DI 19: DIL; 10.02.b15 DI de 0 19 Reset pos counter in Position counter, source Selects a source that de counter status. 0 = No reset. 0 → 1 = Reset. Other [bit]; source sel 0: No Reset; 0. 1: Reset; 1. 3: DI1; 10.02.b00 DI de	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. lo delayed status. IO delayed status. Release it ready ee of the initializatio enables a new initial ection. elayed status.		and reset.	•					
90.88	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 D 12: DIO2; 11.02.b01 DI 19: DIL; 10.02.b15 DI de 0 19 Reset pos counter in Position counter, source Selects a source that de counter status. 0 = No reset. 0 → 1 = Reset. Other [bit]; source sel 0: No Reset; 0. 1: Reset; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 6: DI4; 10.02.b03 DI de 6: DI4; 10.02.b03 DI de 6: DI4; 10.02.b03 DI de	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. IO delayed status. IO delayed status. IO delayed status. Release it ready ee of the initializatio enables a new initial ection. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status.		and reset.	•					
90.88	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 D 12: DIO2; 11.02.b01 DI 19: DIL; 10.02.b15 DI 0 19 Reset pos counter in Position counter, source Selects a source that e counter status. 0 = No reset. 0 → 1 = Reset. Other [bit]; source sel 0: No Reset; 0. 1: Reset; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 7: DI5; 10.02.b04 DI de	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. lO delayed status. IO delayed status. Release it ready ce of the initializatio enables a new initial ection. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status.		and reset.	•					
90.88	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 D 12: DIO2; 11.02.b01 D 19: DIL; 10.02.b15 DI de 0 19 Reset pos counter in Position counter, source Selects a source that e counter status. 0 = No reset. 0 → 1 = Reset. Other [bit]; source sel 0: No Reset; 0. 1: Reset; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 8: DI6; 10.02.b05 DI de 8: DI6; 10.02.b05 DI de 8: DI6; 10.02.b05 DI de 8: DI6; 10.02.b05 DI de	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. lO delayed status. lO delayed status. Release ready ce of the initializatio enables a new initial ection. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status.		and reset.	•					
90.88	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 D 12: DIO2; 11.02.b01 D 19: DIL; 10.02.b15 DI de 10 19 Reset pos counter in Position counter, source Selects a source that e counter status. 0 = No reset. 0 → 1 = Reset. Other [bit]; source sel 0: No Reset; 0. 1: Reset; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 D	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. lo delayed status. lo delayed status. Release it ready ce of the initializatio enables a new initial ection. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. elayed status.		and reset.	•					
90.88	0: Release; 0, normal 1: Disable; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 11: DIO1; 11.02.b00 D 12: DIO2; 11.02.b01 D 19: DIL; 10.02.b15 DI de 0 19 Reset pos counter in Position counter, source Selects a source that e counter status. 0 = No reset. 0 → 1 = Reset. Other [bit]; source sel 0: No Reset; 0. 1: Reset; 1. 3: DI1; 10.02.b00 DI de 4: DI2; 10.02.b01 DI de 5: DI3; 10.02.b02 DI de 6: DI4; 10.02.b03 DI de 7: DI5; 10.02.b04 DI de 8: DI6; 10.02.b05 DI de 8: DI6; 10.02.b05 DI de 8: DI6; 10.02.b05 DI de 8: DI6; 10.02.b05 DI de 8: DI6; 10.02.b05 DI de	elayed status. elayed status. elayed status. elayed status. elayed status. elayed status. lo delayed status. lo delayed status. Release it ready ce of the initializatio enables a new initial ection. elayed status.		and reset.	•					

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	0 19	No Reset	-	1 = 1	n	У	Parameter

91 Encoder module settings Configuration of the encoder interface modules

Index	Name	e encoder interfac													
	Text														
	Range		Default	Unit	Scale/	Volatile	Change	Туре							
					Fbeq16		running								
91.01	FEN DI status														
	Module 1 and 2, status of digital inputs. Displays the electrical status of DI1 and DI2.														
		nd 1 reflect the sta	tus of DI	1 and DI2 of mo	odule 1. Bits 4	and 5 refle	ct the status	of DI1 and							
	DI2 of m		00406 - [014 of modeling 0	and DIO of m										
	Example: 000000000010010b = DI1 of module 2 and DI2 of module 1 are on. Bit assignment:														
	Bit Name Value Remarks														
	0	DI1 / module 1	1	_	maters 01 11	and 01 12									
	1	DI2 / module 1	1	On. See parameters 91.11 and 91.12. On. See parameters 91.11 and 91.12.											
	2	reserved		On. See para	1116615 91.11	anu 91.12.									
	3	reserved													
		DI1 / module 2	4	02 02 22		and 01 11									
	4		1	On. See para											
	5	DI2 / module 2	1	On. See para	meters 91.13	and 91.14.									
	6 15	reserved													
	0000h	. FFFFh		-	1 = 1	у	n	Signal							
91.02		1 status	-	-	1 - 1	l y	11	Signal							
91.02		1, status													
		the type of the m	odula fou	ınd in the locati	on specified h	v 91 12 Mo	dula 1 locat	ion							
		otion; no module				y 01.12 W0	adic i local	1011.							
		mmunication; a				be commu	nicated with	l.							
	2: Unkn	own; the module	type is un	ıknown.											
						ported at th	16: FEN-01; a FEN-01 has been detected and is active.17: FEN-11; a FEN-11 has been detected and is active. Not supported at the time of publication.								
	18: FEN-21 ; a FEN-21 has been detected and is active.														
	21: FEN-31 ; a FEN-31 has been detected and is active.														
		-31; a FEN-31 has	s been de	etected and is a	ctive.	ported at th									
	25: FSE		s been de	etected and is a	ctive. ctive. Not sup	1	e time of pu	blication.							
04.02	25: FSE 0 25	-31 ; a FEN-31 ha: -31 ; a FSE-31 ha:	s been de	etected and is a	ctive.	ported at th									
91.03	25: FSE 0 25 Module	-31; a FEN-31 has -31; a FSE-31 has 2 status	s been de	etected and is a	ctive. ctive. Not sup	1	e time of pu	blication.							
91.03	25: FSE 0 25 Module Module 2	-31; a FEN-31 has -31; a FSE-31 has 2 status 2, status.	s been de s been de	etected and is a stected and is a -	ctive. ctive. Not sup	у	e time of pu	blication. Signal							
91.03	25: FSE 0 25 Module Module 2 Displays	-31; a FEN-31 has -31; a FSE-31 has 2 status 2, status. the type of the m	s been de s been de	etected and is a stected and is a -	ctive. ctive. Not sup	у	e time of pu	blication. Signal							
91.03	25: FSE 0 25 Module Module 2 Displays Module	-31; a FEN-31 has -31; a FSE-31 has 2 status 2, status. the type of the m	s been de s been de	etected and is a stected and is a -	ctive. ctive. Not sup 1 = 1 on specified b	y y 91.14 Mo	e time of punn	blication. Signal ion. See 91.02							
	25: FSE: 0 25 Module Module 2 Displays Module 0 25	-31; a FEN-31 has -31; a FSE-31 has 2 status 2, status. 5 the type of the m 1 status.	s been de s been de	etected and is a etected and is a - and in the location	ctive. ctive. Not sup	у	e time of pu	blication. Signal							
	25: FSE: 0 25 Module Module 2 Displays Module 0 25 Module	-31; a FEN-31 has -31; a FSE-31 has 2 status 2, status. the type of the many of the ma	s been de s been de - odule fou	etected and is a etected and is a - and in the location	ctive. ctive. Not sup 1 = 1 on specified b	y y 91.14 Mo	e time of punn	blication. Signal ion. See 91.02							
	25: FSE: 0 25 Module Module 2 Displays Module 0 25 Module Module	-31; a FEN-31 has -31; a FSE-31 has 2 status 2, status. the type of the many of the ma	s been de s been	etected and is a stected and is a stected and is a stected and is a stected and in the location	ctive. ctive. Not sup 1 = 1 on specified b	y 91.14 Mo	e time of punn	blication. Signal ion. See 91.02							
	25: FSE: 0 25 Module Module 2 Displays Module 0 25 Module Module Displays	-31; a FEN-31 has -31; a FSE-31 has 2 status 2, status. the type of the many of the ma	s been de s been	etected and is a etected and is a etected and is a etected and is a etected and is a etected and in the location -	ctive. ctive. Not sup 1 = 1 on specified b	y 91.14 Mo	e time of punn	blication. Signal ion. See 91.02							
	25: FSE: 0 25 Module Module: Displays Module: 0 25 Module Module Displays The unit	-31; a FEN-31 has -31; a FSE-31 has 2 status 2, status. 5 the type of the m 1 status. 1 temperature 1, measured temps the temperature	odule four erature. 02 Unit s	etected and is a stected and in the location and in the location at through the selection.	ctive. ctive. Not sup 1 = 1 on specified b	y 91.14 Mo	e time of punn	blication. Signal ion. See 91.02							
91.03	25: FSE: 0 25 Module Module: Displays Module: 0 25 Module Module Displays The unit	-31; a FEN-31 has -31; a FSE-31 has 2 status 2, status. 4 the type of the management of the temperature 1, measured temperature 1, the temperature 1 is selected by 96 6 the a PTC sensor,	odule four erature. 02 Unit s	etected and is a etected and is a etected and is a etected and is a etected and is a etected and in the location ————————————————————————————————————	ctive. ctive. Not sup 1 = 1 on specified b 1 = 1 ensor input of	y 91.14 Mo	e time of punn	blication. Signal ion. See 91.02							
	25: FSE: 0 25 Module Module Displays Module 0 25 Module Module Displays The unit Note: W	-31; a FEN-31 has -31; a FSE-31 has 2 status 2, status. 4 the type of the management of the temperature 1, measured temperature 1, the temperature 1 is selected by 96 6 the a PTC sensor,	odule four erature. 02 Unit s	etected and is a etected and is a etected and is a etected and is a etected and is a etected and in the location ————————————————————————————————————	ctive. ctive. Not sup 1 = 1 on specified b 1 = 1 ensor input of	y 91.14 Mo	e time of punts	iblication. Signal ion. See 91.02 Signal							

Index	Name									
	Text									
	Range Default Unit Scale/ Volatile Change running Type									
91.06	Module 2 temperature									
	The unit is selected Note: With a PTC	red temperature. Derature measured the ed by 96.02 Unit selec C sensor, the unit is Ω	ction.	ensor input of	module 2.					
	0 1000	-	°C, °F or Ohm	1 = 1°C, °F or Ohm	У	n	Signal			
91.10	Encoder parame	ter refresh	l .	'			•			
	Validates any cha	•								
	0 1	Done	-	1 = 1	у	у	Parameter			
	0: None; inactive. 1: FEN-01; FEN-0 2: FEN-11; FEN-0 publication. 3: FEN-21; FEN-2 4: FEN-31; FEN-3	ecifies the type of) mo 01, 2 inputs (TTL enco 11, 2 inputs (absolute 21, 2 inputs (resolver, 31, 1 input (HTL enco 31. Not supported at the	oder), 1 outpencoder, T TTL encoder, der), 1 outp	TL encoder), er), 1 output. ut (beta).	1 output. No	ot supported	I at the time of			
91.12	Module 1 location									
	Alternatively, spe- 1: Slot 1; module 2: Slot 2; module 3: Slot 3; module 04 254: Node I with Drive compo 1 254	ecifies the slot (1 3) cifies the node ID of the slot of the slot of the slot of the slot of the slot on the FD of the slot on the FD of the slot on the FD.	he slot on a EA-03 exte	FEA-03 exte	nsion modu	le.				
91.13	Module 2 type	·								
	Module 2, type. Activates (and sp See 91.11 Module 0 5	None	odule 2.	1 = 1	n	n	Parameter			
91.14	Module 2 location									
		ecifies the slot (1 3) cifies the node ID of the cifies the node ID of the cifies the node ID of the cifies the node ID of the cifies the node ID of the cifies the cifies the cifies the slot (1 3) and the cifies					2 is installed. Parameter			
91.21	Module 1 temp s	ensor type		·	<u> </u>	•	•			
	Module 1, temper Specifies the type	Module 1 temp sensor type Module 1, temperature sensor type. Specifies the type of temperature sensor connected to module 1. Note: Module 1 must also be activated by parameters 91.11 91.12.								

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	0: None; disable module						
	1: PTC; PTC sensor con	nected to module	1. See 35	5.11 Tempera	iture 1 soui	ce and 35.2	21
	Temperature 2 source.						
	2: KTY84 ; KTY84 sensor	r connected to mo	odule 1. S	ee 35.11 Ten	nperature 1	source and	35.21
	Temperature 2 source.	T	П	T .		1	1_
	0 2	None	-	1 = 1	n	у	Parameter
91.22	Module 1 temp filter tin						
	Module 1, filter time cons						
	Defines the filter time con		1	1			T_
	0 10000	1500	ms	1 = 1 ms	n	у	Parameter
91.24	Module 2 temp sensor	• •					
	Module 2, temperature s						
	Specifies the type of tem						
	Note: Module 2 must als				91.14.		
	0: None ; disable module 1: PTC ; PTC sensor con				turo 1 com	oo and 35 '	21
	Temperature 2 source.	nected to module	2. 366 30	o. i i rempera	iture i soui	ce and 35.	2 1
	2: KTY84 ; KTY84 sensor	r connected to mo	dule 2 S	ee 35 11 Ten	nperature 1	source and	1 35 21
	Temperature 2 source.		/uu.o <u>-</u> . o		iporataro i	oodi oo airi	
	0 2	None	_	1 = 1	n	у	Parameter
91.25	Module 2 temp filter tin		I		1	1,7	
	Module 2, filter time cons		ure measi	urement.			
	Defines the filter time con				through m	odule 2.	
	0 10000	1500	ms	1 = 1 ms	n	V	Parameter
91.31	Module 1 TTL output so	ource	ı				
	Module 1, source for TTI						
	Selects the encoder input		ose signa	I is echoed b	y or emulat	ed to the T	TL output.
	Note: This can be used a	as a splitter.			-		·
	0: Not selected; module						
	1: Module input 1; modu						
	2: Module input 2; modu		noed by o			1	T= .
	0 2	Not selected	-	1 = 1	n	У	Parameter
91.32	Module 1 emulation pu						
	Module 1, pulses per rev						
	Defines the number of T	1	olution for	1			
	0 65535	0	-	1 = 1	n	у	Parameter
91.33	Module 1 emulated Z-p						
	Module 1, position of the						
	Defines when zero pulse	s are emulated in	relation to	o the zero po	sition recei	ved from th	e encoder.
	Examples:	200			(l		0 5
	 With a value of 0.500 revolutions. 	iou, a zero puise i	is emulate	a wnenever	ine encode	r position p	asses 0.5
	With a value of 0.000	nn a zero nulce i	is amulata	d whenever	the encode	r nocition n	acces zero
	position.	oo, a zero puise i	is ciliulate	d whenever	ille elicode	i position p	asses Zei0
	0.00000 1.00000	0.00000	rev	32767 = 1	n	у	Parameter
	0.00000 1.00000	0.00000	ICV	rev	"	y	arameter
91.41	Module 2 TTL output so	ource	1	1.01			
3	Module 2, source for TTI						
	Selects the encoder input	•	ose signa	l is echoed h	v or emulat	ed to the T	TL output
	Note: This can be used a		o.g.iu		,		. <u>_</u> 00.pati
	0: Not selected; module	2 TTL output not					
	1: Module input 1; modu	ule 2 input 1 is ecl	hoed by o	r emulated to	the TTL o	utput.	

Index	Name								
	Text								
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
	2: Module input 2; mo	odule 2 input 2 is e	choed by o	or emulated to	the TTL o	utput.			
	0 2	Not selected	-	1 = 1	n	у	Parameter		
91.42	Module 2 emulation	oulses/rev							
	Module 2, pulses per r Defines the number of			r the encoder	emulation	output of m	odule 2.		
	0 65535	0	-	1 = 1	n	у	Parameter		
91.43	Module 2 emulated Z-pulse offset								
	Module 2, position of the emulated zero pulses. Defines when zero pulses are emulated in relation to the zero position received from the encoder. Examples: With a value of 0.50000, a zero pulse is emulated whenever the encoder position passes 0.5								
	revolutions.	revolutions. — With a value of 0.00000, a zero pulse is emulated whenever the encoder position passes zero							
	0.00000 1.00000	0.00000	rev	32767 = 1 rev	n	У	Parameter		

92 Encoder 1 configuration

Settings for encoder 1.

Notes:

- The contents of the parameter group varies according to the selected encoder type.
- It is recommended that encoder connection 1 (this group) is used whenever possible since the data received through this interface is fresher than the data received through connection 2 (group 93).

Index	Name									
	Text									
00.04	Range Default Unit Scale/ Volatile Change Type Fbeq16									
2.01	Encoder 1 type									
	Encoder 1, type. Activates (and spec 0: None configured 1: TTL; TTL, moduld 2: TTL+; TTL+, mod 3: Absolute encod 4: Resolver; resolve 5: HTL; HTL, modul 6: HTL 1; HTL, mod 7: HTL 2; HTL, mod	d; inactive. e type (input): FENdule type (input): FE er; absolute encode er, module type (input): FENdule type (input): FENdule type (input): FS	-01 (X31), F EN-01 (X32) er, module t out): FEN-2 -31 (X82). SE-31 (X31) SE-31 (X32)	EN-11 (X41) . ype (input): F I (X52). Not support Not support	EN-11 (X42 ed at the timed at t	e of publicate of publicate				
	Attention: FEN-11 and FSE-31 are not supported at the time of publication. 0 7									
2.02	Encoder 1 source									
	Encoder 1, source. Selects the module (either module 1 or module 2) that the encoder is connected to. The physical locations and types of encoder interface modules are defined in group 91 Encoder module settings. 0: Module 1 ; module 1 is activated by parameters 91.11 91.12. 1: Module 2 ; module 2 is activated by parameters 91.13 91.14.									
	0 1 Module 1 - 1 = 1 n n Parameter									
2.10	Pulses/revolution Encoder 1, pulses per revolution (ppr). (Visible when 92.01 Encoder 1 type = TTL, TTL+ or HTL) Defines encoder 1 pulses per revolution, see encoder nameplate.									

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	0 65535 2048 ppr 1 = 1 ppr n y Parameter									
92.10	Sine/cosine number Encoder 1, Number of sine/cosine wave cycles within one revolution.									
	(Visible when 92. Defines encoder Note: 92.10 Sine	per of sine/cosine way 01 Encoder 1 type = , 1 number of sine/cosi /cosine number must . Valid when 92.30 Se	Absolute en ne wave cy not be set v	coder) cles within on vhen an EnDa	e revolution at or SSI en	coder is use				
	0 65535	0	-	1 = 1	n	у	Parameter			
92.10	Excitation signa	I frequency		-	\(\begin{align*}		1			
	(Visible when 92. Defines the frequence Note: With an En 92.10 Excitation series).	tion signal frequency 01 Encoder 1 type = lency of the excitation Dat or HIPERFACE esignal frequency is au	Resolver) signal. encoder and tomatically	set using 91.1	0 Encoder	parameter r	efresh =			
92.11	1 20 Pulse encoder ty	1	kHz	1 = 1 kHz	n	У	Parameter			
	Selects the type of 0: Quadrature; q 1: Single track; s Note: With this serotation.	uadrature encoder wi single-track encoder v etting, the measured s	th two chan vith one cha speed value	nels, A and B nnel, A. is always pos	sitive regard	1				
	0 1	Quadrature	-	1 = 1	n	у	Parameter			
92.11	(Visible when 92. Selects the source 0: None; not select 1: Commut signary: EnDat; serial in 3: Hiperface; serial: SSI; resolver, serial:	e for absolute position 01 Encoder 1 type = 2 e of the absolute pos	Absolute en ition informa nals. der. ACE encodencoder.	ation. É	n	у	Parameter			
92.11	-			' '	111	y	1 drameter			
	Excitation signal amplitude Encoder 1, excitation signal amplitude. (Visible when 92.01 Encoder 1 type = Resolver) Defines the rms amplitude of the excitation signal. 4.0 12.0									
92.12	(Visible when 92. Selects the speed *With a single-tra 0: A&B all ; chann	der speed calculation 01 Encoder 1 type = d d calculation mode. ck encoder, 92.11 Pu nels A and B rising an es the direction of rota	TTL, TTL+ of lse encoder and falling edgation, see co	type = Single ges are used omment abov	for the spee e	d calculatio	n.			

Index	Name						
IIIUEX	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	*Channel B defines the c 2: A rising; channel A ris *Channel B defines the c 3: A falling; channel A fa *Channel B defines the c 4: Auto rising; one of th Pulse frequency < 2442 Hz 2442 4884 Hz > 4884 Hz 5: Auto falling; one of th Pulse frequency	sing edges are used lirection of rotation alling edges are used lirection of rotation e above modes is the channel(s) are above modes is the channel side above modes is the above modes is the above modes is the above modes is the above modes is the above modes is the channel side above modes is the above modes in the above modes is the above modes is the above modes is th	ed for spe n, see cor sed for sp n, see cor selected Used A&B a A all A risin	nment above red calculationment above eed calculationment above automatically mode all	n. on. / dependino	g on the pul	
	< 2442 Hz 2442 4884 Hz > 4884 Hz	or the chainlei(s)	A&B all A falli	all			
	0 5	Auto rising	-	1 = 1	n	у	Parameter
92.12	Zero pulse enable Encoder 1, enable zero p (Visible when 92.01 Enco Enables/Disables the en. Note: No zero pulse exis HIPERFACE, SSI or Tar 0: Disable; disable the en 1: Enable; enable the en	oder 1 type = Abso coder zero pulse f sts with serial inter nagawa. ncoder zero pulse	or the abs faces, wh	solute encode			
	0 1	Disable	-	1 = 1	n	у	Parameter
92.12	Resolver polepairs Encoder 1, number of re (Visible when 92.01 Encoderines the number of polepairs)	oder 1 type = Res					
	1 32	1	-	1 = 1	n	у	Parameter
92.13	Position estimation enal Encoder 1, enable position (Visible when 92.01 Encoder 1) Enables/Disables the position of Disable; disable the paramount of pulses per reversevolution for single-tract 1: Enable; enable the position is extrapolated at 10 1	on estimation. oder 1 type = TTL sition estimation to osition estimation. rolution for quadra of encoders. sition estimation.	o increase . Measure ture enco Estimated	e the position ed position is ders and 2 tile d position is u	used. The mes the an	resolution is nount of pul	ses per
92.13	Position data width	Lilabio		1	1)	ı aramotor
	Encoder 1, number of bit (Visible when 92.01 Encoder 1) Defines the number of bit Example: A setting of 15 The value is used when Absolute position source Note: With an EnDat or 92.13 Position data width 0 32	oder 1 type = Absorts used to indicate bits corresponds 92.11 Absolute po = Tamagawa, 92 HIPERFACE enco	olute enco e the posit to 32768 esition sou .13 Position oder and a	oder) tion within on positions pe trce = EnDat, on data width a FEN-11 with	e revolutior r revolution Hiperface i is internall n FPGA ver	n. or SSI. Wh y set to 17. sion VIE12 er refresh =	200 or later,
92.14	Speed estimation enab		1	1 - 1	Lu	у	Ti didilietei
94. IT	Tobeen estimation silan	16					

Index											
	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
	Encoder 1, enable speed estimation. (Visible when 92.01 Encoder 1 type = TTL, TTL+ or HTL) Selects whether calculated or estimated speed is used. Estimation increases the speed ripple in steady state operation, but improves the dynamics. Note: 92.14 Speed estimation enable is not effective using FEN-xx with FPGA version VIEx 2000 or later. 0: Disable; last calculated speed is used. The calculation interval is 62.5 µs 4 ms.										
	1: Enable; estima	ted speed is used, es		he time of da	ta request.		Danamatan				
92.14	0 1 Revolution data	Disable		1 = 1	n	у	Parameter				
	(Visible when 92.0 Defines the numb Example : A settine The value is used Absolute position activates the mult Note : With an En	er of bits used in the report of bits used in the error of bits used in the error of 12 bits would sure when 92.11 Absolute source = Tamagawa, iturn data requesting. Dat or HIPERFACE erricth is automatically service.	Absolute en revolution of pport count position so setting 92.	coder) ounting with a ing up to 409 ource = EnDa 14 Revolutior a FEN-11 FF	6 revolution: t, Hiperface i data width PGA version	s. or SSI. Wh to a non-ze	ro value or later, 92.14				
92.15	Transient filter	,		"	· ·		•				
	Encoder 1, transic (Visible when 92.0	D1 Encoder 1 type = T	TL, TTL+ c	or HTL)							
	(Visible when 92.0 Activates the transignored. Should b 0: 4880 Hz ; chang 1: 2440 Hz ; chang 2: 1220 Hz ; chang 3: Disabled ; chang	O1 Encoder 1 type = 7 sient filtering for enco e activated when the ge in direction of rotat ge in direction of rotat ge in direction of rotat age in direction of rotat	der 1. Thus connected ion allowed ion allowed ion allowed	, unintentiona mechanics ar below 4880 I below 2440 I below 1220 I d at any pulse	e vibrating h Hz. Hz. Hz.	neavily.					
	(Visible when 92.0 Activates the transignored. Should but 0: 4880 Hz; change 1: 2440 Hz; change 2: 1220 Hz; change 3: Disabled; change 0 3	O1 Encoder 1 type = 7 sient filtering for enco e activated when the ge in direction of rotat ge in direction of rotat ge in direction of rotat age in direction of rotat ge in direction of rotat 4880 Hz	der 1. Thus connected ion allowed ion allowed ion allowed	, unintentiona mechanics ar below 4880 I below 2440 I below 1220 I	e vibrating h Hz. Hz. Hz.	neavily.	of rotation are				
92.16	(Visible when 92.0 Activates the transignored. Should be 0: 4880 Hz ; change 1: 2440 Hz ; change 2: 1220 Hz ; change 3: Disabled ; change 0 3 Encoder 1 supply (Visible when 92.0 Selects the power 0: 0V ; disable. 1: 5V ; 5 V. 2: 24V ; 24 V.	21 Encoder 1 type = 7 sient filtering for enco e activated when the ge in direction of rotat ge in direction of rotat ge in direction of rotat ge in direction of rotat 4880 Hz y voltage voltage. 21 Encoder 1 type = 1 supply voltage for er	der 1. Thus connected ion allowed ion allowed ion allowed tion allowed HTL 1 or HT	, unintentional mechanics are below 4880 I below 2440 I below 1220 I d at any pulse 1 = 1	e vibrating h Hz. Hz. Hz. e frequency.	y	Parameter				
	(Visible when 92.0 Activates the transignored. Should be 0: 4880 Hz ; change 1: 2440 Hz ; change 2: 1220 Hz ; change 3: Disabled ; change 0 3 Encoder 1 supply (Visible when 92.0 Selects the power 0: 0V ; disable. 1: 5V ; 5 V. 2: 24V ; 24 V. 0 2	O1 Encoder 1 type = T sient filtering for enco e activated when the ge in direction of rotat ge in direction of rotat ge in direction of rotat ge in direction of rotat 4880 Hz y voltage voltage. O1 Encoder 1 type = F supply voltage for er	der 1. Thus connected ion allowed ion allowed ion allowed tion allowe -	, unintentiona mechanics ar below 4880 I below 2440 I below 1220 I d at any pulse 1 = 1	e vibrating hetal Hz. Hz. Hz. e frequency.	neavily.					
92.16	(Visible when 92.0 Activates the transignored. Should be 0: 4880 Hz ; change 1: 2440 Hz ; change 2: 1220 Hz ; change 3: Disabled ; change 0 3 Encoder 1 supply (Visible when 92.0 Selects the power 0: 0V ; disable. 1: 5V ; 5 V. 2: 24V ; 24 V. 0 2 Accepted pulse of Encoder 1, maximal (Visible when 92.0 Defines the maximal part of the street of the stre	O1 Encoder 1 type = Tosient filtering for encode activated when the ge in direction of rotatige	der 1. Thus connected ion allowed ion allowed ion allowed ion allowed tion allower - HTL 1 or HT ncoder 1.	, unintentional mechanics are below 4880 I below 2440 I below 1220 I d at any pulse 1 = 1 L 2)	e vibrating had be vibr	y y	Parameter				
92.17	(Visible when 92.0 Activates the transignored. Should be 0: 4880 Hz ; change 1: 2440 Hz ; change 2: 1220 Hz ; change 3: Disabled ; change 0 3 Encoder 1 supply (Visible when 92.0 Selects the power 0: 0V ; disable. 1: 5V ; 5 V. 2: 24V ; 24 V. 0 2 Accepted pulse 1 Encoder 1, maxim (Visible when 92.0 Defines the maxim 0 300	on Encoder 1 type = 7 sient filtering for encode activated when the ge in direction of rotatige	der 1. Thus connected ion allowed ion allowed ion allowed tion allowed - HTL 1 or HT acoder 1.	, unintentional mechanics are below 4880 leads 12440 leads 1220 leads 1 = 1	e vibrating h Hz. Hz. Hz. e frequency.	y	Parameter				
	(Visible when 92.0 Activates the transignored. Should be 0: 4880 Hz; changed: 2: 1240 Hz; changed: 1: 2440 Hz; changed: 1: 2440 Hz; changed: 2: 1220 Hz; changed: 2: 1220 Hz; changed: 0 3 Encoder 1 supply (Visible when 92.0 Selects the power 0: 0V; disable. 1: 5V; 5 V. 2: 24V; 24 V. 0 2 Accepted pulse in Encoder 1, maximed (Visible when 92.0 Defines the maximed 0 300 Encoder 1, moded Selects which encoder 1, moded Selects which encoder 1, moded Selects which encoder 1, moded Selects which encoder 31.3 0: A, B; tracks A at 1: A, B, Z; tracks 2: A+, A-, B+, B-;	on Encoder 1 type = Tosient filtering for encode activated when the ge in direction of rotatige	der 1. Thus connected ion allowed ion allo	unintentional mechanics are below 4880 below 2440 below 1220 dat any pulse 1 = 1	e vibrating halz. Hz. Hz. hz. frequency. n	y y ge of probler	Parameter Parameter Parameter Parameter ms, the event				

Index	Name										
	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
92.23	Maximum pulse w	aiting time	•		•		•				
	Encoder 1, maximum pulse waiting time. (Visible when 92.01 Encoder 1 type = TTL or HTL) When an encoder is used as speed feedback device the actual speed is measured by counting pulses per measurement interval. The base (minimum) measurement interval is 4 ms. 92.23 Maximum pulse waiting time determines the pulse waiting time for the speed feedback calculation of encoder 1.If no pulse edges are detected within the measurement interval, the measured speed feedback is set to zero. Increasing the time can improve measuring performance especially at low, near zero speeds. Only the speed measurement is affected. The position is updated whenever a new pulse edge is detected. When the measured speed from the interface is zero, the drive updates its speed data based on position changes. Note: 92.23 Maximum pulse waiting time is only supported using FEN-xx with FPGA version VIEx										
	Note: 92.23 Maxim	um pulse waiting tim			ith FPGA ve	ersion VIEx					
	1 200	der FEN-xx, the puls	ms	1 = 1 ms	n 4 ms.	у	Parameter				
92.24	Pulse edge filterin	g	•								
	Enables pulse edge especially from encontrol Notes: - 92.24 Pulse ed - Pulse edge filte	e is 1 µs.	e filtering cended conreported us naximum p	an improve th ection. ing FEN-31 w	vith FPGA ve	ersion VIE3	2200 or later.				
	0 2	No filtering		1 = 1	n	v	Parameter				
92.25	Pulse overfrequer			-	Ĭī	у	rarameter				
	Encoder 1, overfred (Visible when paral Selects how the dri Note: 92.25 Pulse 2200 or later. 0: Warning; the every continue to update	quency function. meter 92.01 Encoder ve reacts when the F overfrequency function ent generates warning speed and position of	FEN-31 det on is only s ng 7381 Sp lata.	ects a pulse of the control of the c	ng FEN-31 v	with FPGA v	version VIEx				
	0 1	Fault	-	1 = 1	n	у	Parameter				
92.30	Serial link mode Encoder 1, serial link mode. (Visible when 92.01 Encoder 1 type = Absolute encoder) Selects the serial link mode with an EnDat or SSI encoder. 0: Initial position; single position transfer mode (initial position). 1: Continuous; continuous position data transfer mode.										
	for EnDat 2.2 enco	ed and position; Co ders without sin/cos equires a FEN-11 re	signals.		sition data ti	ransfer mod	e. Intended				
	0 2	Initial position	-	1 = 1	n	у	Parameter				
92.31	EnDat max calculation time Encoder 1, maximum calculation time. (Visible when 92.01 Encoder 1 type = Absolute encoder) Selects the maximum encoder calculation time for an EnDat encoder.										

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	Note: 92.31 EnDat max calculation time needs to be set only when an EnDat encoder is used in									
	continuous mode, e.g. w 92.30 Serial link mode. 0: 10 μs ; 10 μs. 1: 100 μs ; 100 μs. 2: 1 ms ; 1 ms. 3: 50 ms ; 50 ms.	ithout incremental	sin/cos s	ignals (suppo	orted only a	s encoder 1). See also			
	0 3	50 ms	_	1 = 1	n	У	Parameter			
92.32	SSI cycle time	100.000	l	1	1	17				
92.33	Encoder 1. SSI cycle tim (Visible when 92.01 Encoder Selects the transmission Note: 92.32 SSI cycle tire.g. without incremental mode. 0: 50 µs; 50 µs. 1: 100 µs; 100 µs. 2: 200 µs; 200 µs. 3: 500 µs; 500 µs. 4: 1 ms; 1 ms. 5: 2 ms; 2 ms. 0 5 SSI clock cycles Encoder 1, SSI message (Visible when 92.01 Encoder 1) Defines the length of an cycles can be calculated	oder 1 type = Absocycle for an SSI eneeds to be sesin/cos signals (substitution of the sesin for a signal of the sesin fo	encoder. It only whe upported of	en a SSI enco	n of clock cy	y cles. The nu	Serial link Parameter			
	2 127	2	-	1 = 1	n	у	Parameter			
92.34	SSI position msb		•							
	Encoder 1, position data MSB (M ost S ignificant B it) location (bit number). (Visible when 92.01 Encoder 1 type = Absolute encoder) With an SSI encoder, defines the location of the MSB of the position data within an SSI message. 1 126 1 1 1 n y Parameter									
92.35	SSI revolution msb	1 •		1	1	13	i didiliotoi			
92.36	Encoder 1, revolution co (Visible when 92.01 Enco With an SSI encoder, de 1 126 SSI data format	oder 1 type = Abs	olute enco	oder)	,		SSI message. Parameter			
92.36	Encoder 1, SSI data form (Visible when 92.01 Enco With an SSI encoder, set 0: Binary ; binary code. 1: Gray ; gray code. 0 1	oder 1 type = Abs		oder)	n	у	Parameter			
92.37	SSI baud rate	, j	<u> </u>	<u> </u>	<u> </u>	17				
	Encoder 1, SSI baud rate (Visible when 92.01 Enco With an SSI encoder, set 0: 10 kBit/s; 10 kBit/s. 1: 50 kBit/s; 50 kBit/s. 2: 100 kBit/s; 100 kBit/s.	oder 1 type = Absolects the baud rate		oder)						

Index	Name										
	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
	3: 200 kBit/s; 200 4: 500 kBit/s; 500 5: 1000 kBit/s; 10	kBit/s.			·						
	0 5	100 kBit/s	-	1 = 1	n	у	Parameter				
92.40	SSI zero phase										
	Selects the phase the SSI serial link position data and may cause an erro	of Encoder 1 type = A angle within one sine data. 92.40 SSI zero the position based or or of ±1 incremental pero phase needs to be Serial link mode). 5° 45°. ° 135°. 35° 225°.	e/cosine sig phase is us sine/cosin period.	nal period the sed to adjust e incrementa	the synchro I signals. Inc	nization of t correct sync	he SSI hronization				
	03	315-45 deg	_	1 = 1	n	у	Parameter				
92.45	Hiperface parity	1	<u> </u>			1,5					
	Encoder 1, HIPERFACE parity. (Visible when 92.01 Encoder 1 type = Absolute encoder) With a HIPERFACE encoder, selects the use of parity and stop bits. Note: Typically 92.45 Hiperface parity does not need to be set. 0: Odd; odd parity indication bit, one stop bit. 1: Even; even parity indication bit, one stop bit.										
	0 1	Odd	-	1 = 1	n	У	Parameter				
92.46	Hiperface baud rate Encoder 1, HIPERFACE baud rate. (Visible when 92.01 Encoder 1 type = Absolute encoder) With a HIPERFACE encoder, selects the transfer rate of the link. Note: Typically 92.46 Hiperface baud rate does not need to be set. 0: 4800 bits/s; 4800 bits/s. 1: 9600 bits/s; 9600 bits/s. 2: 19200 bits/s; 19200 bits/s. 3: 38400 bits/s; 38400 bits/s.										
	0 3	4800 bits/s	-	1 = 1	n	у	Parameter				
92.47	Hiperface node address Encoder 1, HIPERFACE encoder node address. (Visible when 92.01 Encoder 1 type = Absolute encoder) With a HIPERFACE encoder, selects the node address. Typically this parameter need not be set. Note: Typically 92.46 Hiperface baud rate does not need to be set.										
	0 255	64		-	n	У	Parameter				

93 Encoder 2 configuration

Settings for encoder 2.

Description see group 92 Encoder 1 configuration.

Notes:

- The contents of the parameter group varies according to the selected encoder type.
- It is recommended that encoder connection 1 (group 92) is used whenever possible since the data received through that interface is fresher than the data received through connection 2 (this group).

94 OnBoard speed feedback configurationSettings for analog tacho and OnBoard encoder.

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
94.01	EMF speed	1	<u> </u>							
	EMF speed.									
	Displays the speed fee	dback calculated	from the E	MF in rpm.						
	-30000.00 30000.00	-	rpm	See 46.02	у	n	Signal			
94.02	Tacho voltage									
	Value of XTAC (tacho t		alta VTAC	\ : \ /						
	Displays the value of th				1	1_	Circal			
04.00	-3250.0 3250.0	-	V	10 = 1 V	у	n	Signal			
94.03	Tacho speed									
	Tacho speed.	-Us I I - I	41 41							
	Displays the speed fee			•	1	1	To: .			
	-30000.00 30000.00		rpm	See 46.02	У	n	Signal			
94.04	OnBoard encoder spe									
	OnBoard encoder spee									
	Displays the speed fee				1	1	Ta			
	-30000.00 30000.00	-	rpm	See 46.02	У	n	Signal			
94.07	M1 tacho type									
	Type of connected tach									
	Depending on the type		tacho, a h	ardware filter	of 40 ms is	activated.				
	0: DC tacho; filter disal									
	1: AC tacho; filter enab			1 - 1	T.,	1.,	Doromotor			
04.00	0 1	DC tacho	-	1 = 1	n	у	Parameter			
94.08	M1 tacho voltage at 1	-								
	Motor 1 tacho voltage a		4 ~£ 1000			مممد مناه	l to poloviloto			
	A tacho generates this 94.10 M1 tacho tuning									
	feedback assistant.	gain. Measure an	u set tile v	alue using 99	.20 Turning	requested	- Speeu			
		tage at 1000 rpm	≥ 1 0 V th	ne value is set	by hand					
	 94.08 M1 tacho voltage at 1000 rpm ≥ 1.0 V, the value is set by hand. 94.08 M1 tacho voltage at 1000 rpm = 0.0 V, the value is to be measured by means of the speed 									
	feedback assistant.		0.0 1, 1.	io raido io to i	o mododi (oa by mean	or the opeca			
	 94.08 M1 tacho voltage at 1000 rpm ≤ -1.0 V, the value was successfully measured and set by 									
	means of the speed					•	,			
	-270.0 270.0	0.0	V	10 = 1 V	n	у	Parameter			
			v	10 = 1 V	11	<i>J</i>	i arameter			
94.09	M1 tacho max display		_ v	10 = 1 V	111	1	i didilictei			
94.09		able speed		10 = 1 V	111	17	T didiffeter			
94.09	M1 tacho max display Motor 1 maximum disp Internally used maximu	able speed ayable speed.								
94.09	Motor 1 maximum disp	able speed ayable speed. m tacho speed fo	r motor 1.	This value is	depending	on the tach	o output			
94.09	Motor 1 maximum disp Internally used maximu voltage, see 94.08 M1 maximum speed, see 4	rable speed layable speed. m tacho speed fo tacho voltage at 1 6.02 M1 speed so	r motor 1. 000 rpm, caling actu	This value is and the maxinal, 30.11 M1	depending num speed minimum s	on the tach of the drive peed, 30.12	o output			
94.09	Motor 1 maximum displanternally used maximum voltage, see 94.08 M1 maximum speed, see 4 speed, 31.30 M1 overs	rable speed layable speed. m tacho speed fo tacho voltage at 1 6.02 M1 speed so peed trip margin a	r motor 1. 000 rpm, caling actu	This value is and the maxinal, 30.11 M1	depending num speed minimum s	on the tach of the drive peed, 30.12	o output			
94.09	Motor 1 maximum displanternally used maximum voltage, see 94.08 M1 maximum speed, see 4 speed, 31.30 M1 overs The value is only valid	rable speed layable speed. m tacho speed fo tacho voltage at 1 6.02 M1 speed so peed trip margin a f written to by:	r motor 1. 000 rpm, caling actu and 99.14	This value is and the maxin al, 30.11 M1 M1 nominal (I	depending num speed minimum s	on the tach of the drive peed, 30.12	o output			
94.09	Motor 1 maximum dispondered Internally used maximum voltage, see 94.08 M1 maximum speed, see 4 speed, 31.30 M1 overs The value is only valid — Via 99.20 Tuning research	rable speed layable speed. m tacho speed fo tacho voltage at 1 6.02 M1 speed so peed trip margin a if written to by: equested = Speed	r motor 1. 000 rpm, caling actu and 99.14	This value is and the maxin al, 30.11 M1 M1 nominal (I	depending num speed minimum s	on the tach of the drive peed, 30.12	o output			
94.09	Motor 1 maximum dispondered Internally used maximum voltage, see 94.08 M1 maximum speed, see 4 speed, 31.30 M1 overs The value is only valid – Via 99.20 Tuning re – Via 94.08 M1 tacho	rable speed layable speed. m tacho speed fo tacho voltage at 1 6.02 M1 speed so peed trip margin a if written to by: equested = Speed voltage at 1000 r	r motor 1. 000 rpm, caling actu and 99.14	This value is and the maxin ial, 30.11 M1 M1 nominal (l	depending num speed minimum s	on the tach of the drive peed, 30.12	o output			
94.09	Motor 1 maximum displanternally used maximum voltage, see 94.08 M1 maximum speed, see 4 speed, 31.30 M1 overs The value is only valid – Via 99.20 Tuning re – Via 94.08 M1 tacho – Via parameter down	rable speed layable speed. m tacho speed fo tacho voltage at 1 6.02 M1 speed so peed trip margin a if written to by: equested = Speed voltage at 1000 r nload.	r motor 1. 000 rpm, caling actu and 99.14 feedback pm.	This value is and the maxin ial, 30.11 M1 M1 nominal (t assistant.	depending num speed minimum s	on the tach of the drive peed, 30.12 d.	o output system. For M1 maximum			
	Motor 1 maximum disp Internally used maximu voltage, see 94.08 M1 maximum speed, see 4 speed, 31.30 M1 overs The value is only valid – Via 99.20 Tuning re – Via 94.08 M1 tacho – Via parameter down 0.00 30000.00	rable speed layable speed. m tacho speed fo tacho voltage at 1 6.02 M1 speed so peed trip margin a if written to by: equested = Speed voltage at 1000 r	r motor 1. 000 rpm, caling actu and 99.14	This value is and the maxin ial, 30.11 M1 M1 nominal (l	depending num speed minimum s	on the tach of the drive peed, 30.12	o output			
94.09	Motor 1 maximum displanternally used maximum voltage, see 94.08 M1 maximum speed, see 4 speed, 31.30 M1 overs The value is only valid — Via 99.20 Tuning re— Via 94.08 M1 tacho — Via parameter down 0.00 30000.00 M1 tacho tuning gain	rable speed layable speed. m tacho speed fo tacho voltage at 1 6.02 M1 speed so peed trip margin a if written to by: equested = Speed voltage at 1000 r nload. 0.00	r motor 1. 000 rpm, caling actu and 99.14 feedback pm.	This value is and the maxin ial, 30.11 M1 M1 nominal (t assistant.	depending num speed minimum s pase) spee	on the tach of the drive peed, 30.12 d.	o output e system. For ! M1 maximum			
	Motor 1 maximum dispondered line internally used maximum voltage, see 94.08 M1 maximum speed, see 4 speed, 31.30 M1 overs The value is only valid — Via 99.20 Tuning re— Via 94.08 M1 tacho — Via parameter down 0.00 30000.00 M1 tacho tuning gain Motor 1 tacho tuning gain	rable speed layable speed. m tacho speed fo tacho voltage at 1 6.02 M1 speed so peed trip margin a if written to by: equested = Speed voltage at 1000 r nload. 0.00	r motor 1. 000 rpm, caling actuand 99.14 feedback rpm.	This value is and the maxin ial, 30.11 M1 M1 nominal (t assistant.	depending num speed minimum s pase) spee	on the tach of the drive peed, 30.12 d.	o output e system. For ! M1 maximum			
	Motor 1 maximum displanternally used maximum voltage, see 94.08 M1 maximum speed, see 4 speed, 31.30 M1 overs The value is only valid — Via 99.20 Tuning re— Via 94.08 M1 tacho — Via parameter down 0.00 30000.00 M1 tacho tuning gain Motor 1 tacho tuning gain Internally used tacho gain	rable speed layable speed. m tacho speed fo tacho voltage at 1 6.02 M1 speed so peed trip margin a f written to by: equested = Speed voltage at 1000 r nload. 0.00	r motor 1. 000 rpm, caling actuand 99.14 feedback rpm.	This value is and the maxin ial, 30.11 M1 M1 nominal (t assistant.	depending num speed minimum s pase) spee	on the tach of the drive peed, 30.12 d.	o output e system. For ! M1 maximum			
	Motor 1 maximum dispondered line internally used maximum voltage, see 94.08 M1 maximum speed, see 4 speed, 31.30 M1 overs The value is only valid — Via 99.20 Tuning re— Via 94.08 M1 tacho — Via parameter down 0.00 30000.00 M1 tacho tuning gain Motor 1 tacho tuning gain	rable speed layable speed. m tacho speed for tacho voltage at 1.6.02 M1 speed so speed trip margin at the first written to by: equested = Speed to voltage at 1000 repload. 0.00	r motor 1. 000 rpm, caling actuand 99.14 feedback pm. rpm	This value is and the maxinual, 30.11 M1 M1 nominal (the assistant.	depending num speed minimum s pase) spee	on the tach of the drive peed, 30.12 d.	o output system. For M1 maximum			

Index	Name								
	Text								
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
	Via 94.08 M1 tacVia parameter do	ho voltage at 1000 ownload.	rpm.						
	0 5	5	-	1 = 1	n	y	Parameter		
94.11	M1 tacho fine-tunin	g adjust							
	selection is autor Via parameter do Attention: The value of a hand held tacho	uning adjust of the to tacho. Set the value hand held tacho. id if written to by: requested = Tacho matically forced to Edwindown by the company of 94.11 M1 tacho and not to the deltated to	ue of 94.16 fine-tunin MF. fine-tuning between	1 M1 tacho fing g. During the fig g adjust has to speed referen	e-tuning ad tacho fine-t be the me ce and me	uning 90.41 asured spe	measured M1 feedback ed feedback ed.		
	-30000.00 30000.		rpm	See 46.02	n	y	Parameter		
94.12	M1 tacho fine-tunin Motor 1 tacho fine-tu Internally used tacho 0.30 3.00	ning factor.	or motor 1.	100 = 1	ln.	T _V	Parameter		
94.13	M1 tacho offset	1.00		100 = 1	n	У	Parameter		
34.13	Motor 1 tacho offset. Adds an offset to 94.	· · · · · · · · · · · · · · · · · · ·					I		
94.16	-10.00 10.00 OnBoard encoder p	0.00	rpm	See 46.02	n	у	Parameter		
	OnBoard encoder po Displays the OnBoar 0.00000000 1.00000000	d encoder position,	within one rev	revolution. Se 32767 = 1 rev	ee 90.48 M	otor position	n axis mode. Signal		
94.18	OnBoard encoder r								
	OnBoard encoder revolution count extension. Displays the revolution count extension for the OnBoard encode. See 90.48 Motor position axis mode. The counter is incremented, when the encoder position wraps around in positive direction and decremented in negative direction. See 90.11 Encoder 1 position. -2147483648 1 = 1 y n Signal								
94.23	OnBoard encoder p	ulses/revolution	l .			· L	-1		
	OnBoard encoder pulses per revolution (ppr). Defines the OnBoard encoder pulses per revolution, see encoder nameplate. Note : Formula to calculate the frequency at the encoder with maximum speed: $f \ kHz = \frac{n_{max} \left[rpm\right] \times ppr}{60 \ s * 1000}$								
	with: ppr = pulses p If the calculated freq 0 65535		kHz, set 9			ansient filte	er = 0.0 μs. Parameter		
94.24	OnBoard encoder t		ppr	i = i ppi	111	У	raiaiiielei		
₩ 71 2. 7	OnBoard encoder ty Selects the type of the 0: Quadrature; quad 1: Single track; sing	oe. ne OnBoard encode Irature encoder with	two chani						

Index	Name											
	Text											
	Range Default Unit Scale/ Fbeq16 Change running Type Note: With this setting, the measured speed value is always positive regardless of direction of											
	rotation.	ting, the measured spe	eed value	is always pos	sitive regard	lless of dire	ction of					
	0 1	Quadrature	-	1 = 1	n	У	Parameter					
94.25	OnBoard encode	r speed calculation m	ode									
	Selects the speed 0: A&B all; channel direction. Set 94.2 1: A all, B direction defines the direction evaluation factor = 2: A rising, B direction the direction of rot = 1. 3: A falling, B direction the direction of rot = 1. 4: A all; channel A defines the direction type = Single-track 5: B all; channel B	els A and B rising and to 4 OnBoard encoder typen; channel A rising and to not rotation. Set 94.24 of 2. Section; channel A rising ation. Set 94.24 OnBoat ection; channel A falling ation. Set 94.24 OnBoat rising and falling edge on of rotation. Can be used. The speed evaluation of rising and falling edges or rising and falling edges or rising and falling edges or rising and falling edges or rising and falling edges or rising and falling edges	falling edgoe = Quad d falling edgoe at d edgoes at and encod g edgoes at and encod es are use ased, if ch in factor = as are use	drature. The sidges are used encoder type are used for speed cannel B is defacted.	speed evaluation of for speed one = Quadra one deed calculation of the	ation factor calculation. ture. The specific tion. Channe speed evention.	= 4. Channel B beed lel B defines aluation factor nel B defines aluation factor feedback bard encoder feedback					
	defines the direction of rotation. Can be used, if channel A is defective. Set 94.24 OnBoard encoder type = Single-track. The speed evaluation factor = 2.											
			1 Tactor =		1	1	Danamatan					
94.26	0 5 OnBoard encode	A&B all		1 = 1	n	у	Parameter					
	rotation are ignore 0: 0.0 μ s; filter not 1: 3.2 μ s; fast filter 2: 6.4 μ s; medium 3: 12.8 μ s; slow fil Note : Formula to 0 $f kHz = \frac{n_{max} [rpn]}{60 \ s}$ with: ppr = pulses If the calculated from	ient filtering for the On d. Should be activated active. Time. filter time. ter time. calculate the frequency $\frac{n}{1000} \times \frac{ppr}{1000}$ s per revolution, see 94 equency exceeds 150 l	when the at the en	connected management coder with management coder with management coder and coder 4.26 OnBoard	aximum spe pulses/revold encoder tr	re vibrating ed: lution.	heavily. er = 0.0 μs.					
04.00	0 3	3.2 µs	-	1 = 1	n	у	Parameter					
94.30	OnBoard encoder, When an encoder pulses per measur 94.30 OnBoard en feedback calculation measurement inte	r maximum pulse waiting maximum pulse waiting is used as speed feedly ement interval. The bacoder maximum pulse on of the OnBoard encountry, the measured spending at low	ng time. Dack device Se (minime) Waiting tire Oder. If no	ce the actual num) measure me determine p pulse edges ack is set to z	ement interves the pulse are detected	ral is 4 ms. waiting time ed within the	e for the speed					

ex	Name												
	Text												
	Range			Default		Unit Scale/ Fbeq16		Volatile	Change running	Туре			
	Spe	ed											
			I	i		94.30) ;		;	;			
	2		 			-		94.30	-				
	1		 		! ! !								
				i ! !	i !		1			→ t			
	Puls	es	 	!									
		1.1	ı	1	! !	1							
					!								
	1 +			<u> </u>	<u> </u>		s 4 ms	4 ms		t			
		4 ms	4 ms	4 ms	.★ 4 ms	→ : 4 ms			4 ms 4	——►; 1 ms			
										DZ_LIN_051_motor_a.ai			
	Notes: - Formula to calculate the maximum speed using an encoder:												
	$n_{max} [rpm] = \frac{300 kHz * 60 s}{ppr} * 1000$												
	with: ppr = pulses per revolution, see 94.23 OnBoard encoder pulses/revolution. 300 kHz are the maximum allowed input frequency.												
	– Forr	nula to c	alculate	the minimu	ım spe	ed resolu	tion using a	n encoder:					
	n_{mir}	$_{i}\left[rpm ight] =% {\displaystyle\int\limits_{0}^{\infty }} \left[{\displaystyle\int\limits_{0}^{\infty }} {\displaystyle\int\limits_{0}^{\infty$	$=\frac{k \times pp}{k \times pp}$	$\frac{60 s}{or \times t_{cycle}}$	* 1000								
	with	ı	pr = pul	ses per rev	volution	, see 94.	.25 OnBoard 23 OnBoard back measu	d encoder pi	ulses/revolu				
	_	t	_{cycle} = cy	cle time of	the sp	eed feedl	ack measu	rement, 4 m	IS.				

95 HW configuration Various hardware-related settings

0 ... 200

based on position changes.

4

Index	Name										
	Text										
95.14	Range Default Unit Scale/ Volatile Change Type Fbeq16										
	Set: Power unit										
	Power unit read unit. See also 0' Either adapt the memory unit wit 0: DCS convert 20: DCT contro	er unit is only shown ar from SDCS-CON-H01 7.02 Power unit set. SDCS-CON-H01 using the an appropriate firmwoter; the unit is a DCS8 foller; the unit is a DCT8 for unit; the unit is a TSU	and 95.14 g 95.14 Se are. 80. 880.	Set: Power เ	unit read from	the plugge	d in memor				

ms

Only the speed measurement is affected. The position is updated whenever a new pulse edge is detected. When the measured speed from the interface is zero, the drive updates its speed data

1 = 1 ms

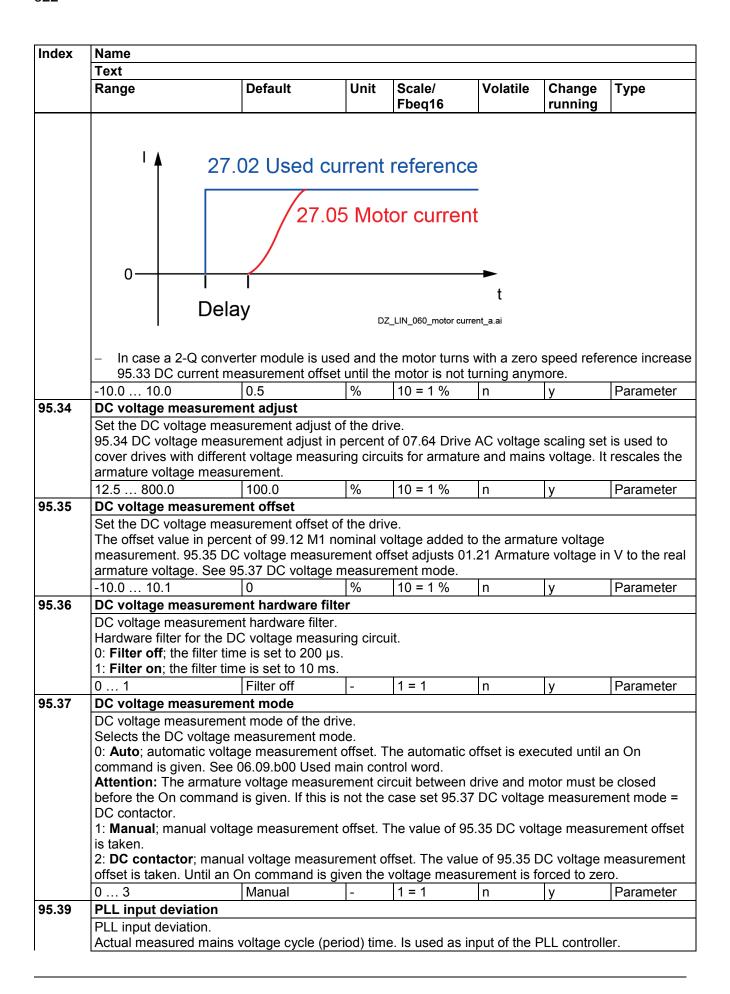
n

Parameter

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
		power unit type; mis					
		4 Set: Power unit read de and shows 95.14 S			nemory unit.	This event	generates
	0 100	Unsupported power unit type	-	1 = 1	n	n	Parameter
95.15	Set: Special HW s	ettings	•		1	1	
	95.24 Service mod Service mode = Se 0: 3ph B6C ; the co 4: 1ph B2C ; the co	ationrelated settings. 95.1s e = Set: Type code. st: Type code has to be nnected power part is nnected power part is setting is e.g. needed	e set bac a B6 cor a B2 cor	k to Normal m figuration cor figuration or a	ode by the u	user. Iree phase I	mains.
	0 4	3ph B6C	-	1 = 1	n	n	Parameter
	Service mode is au is finished/failed. In The reason of the 6 Service mode = Service mode = Service mode = Service mode = Service mode = Service mode = Service mode = Service mode; rd	contains Type code se stomatically reset to No a case errors occur dur error can be seen in the et: Type code or Firing chain is blocked while individual firing pulses normal operating mode enables setting of foll cial HW settings.	ormal moring the see AUX copulses V 95.24 See the power depended owing paragraph of the power of	de after the delected procesode. xx has to be service mode ≠ er needs to be ing on 99.06 or ameters: All thyristors tor V11 are retor V12 are retor V13 are retor V14 are retor V15 are retor V21 are retor V22 are retor V22 are retor V22 are retor V23 are retor V24 are retor V25 a	eleting the a dure, AF90 Are tested to Normal mode cycled, oth Operation medical eleased. Eleased.	pplication of Autotuning lormal modelerwise the code.	r thyristor test is generated. e by the user. drive will not
	0 26	Normal mode	-	1 = 1	у	n	Parameter
95.25	Set: Type code Set the type code of Contains the drives Type code is prese Type code. The ch	•	write prot	ected. To ena liately taken o	ible use 95.2 ver.	adrant type	. 95.25 Set:

dex	Name									
	Text									
	Range	Defa	ult	Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
	0: None ; the type co current scaling, 95.2 e.g. for rebuild kits. 1: S01-0020-04 ; type 152: S02-5200-05 ; ty	8 Set: Driv	e AC volta							
	The drive's basic typ	e code: D (CS880-aal	h-ccc-c	ldef					
	Product family:	DCS880	<u> </u>	D-0000-0	idei					
	Product type:	aa	= S0	Standard	d converter m	nodule				
	l roudet type:			Standard converter module Rebuild kit						
				Panel so						
	Bridge type:	b								
	3 37		-							
	Module type:	cccc			C current (IP	, ,				
	Rated AC voltage:	dd	_		415 V _{AC}	,				
			= 05	100 Vac 413 Vac 100 Vac 525 Vac 270 Vac 600 Vac						
			= 06							
		= 07 315 V		315 V _{AC} 690 V _{AC}						
			= 08	360 V _{AC}	800 V _{AC}					
			= 10	450 V _{AC} 990 V _{AC}						
			= 12	540 V _{AC}	1190 V _{AC}					
	Power connection:	е	= X Standard H1 H7							
			= L	Left side	H8					
				Right side H8						
	Revision code:	f	= 0	1 st generation						
	Attention: When usi				rent and volt	age range of	the type co	de setting i		
	0 520	None		-	1 = 1	n	n	Paramete		
26	Set: Drive block bri									
	Set the quadrant type		ve (1 or 2	bridges)	•					
	Bridge 2 can be bloc 0: Auto ; operation m		an from 05	25 Sat.	Type code I	f 05 25 Sat. T	Type code =	None set		
	95.26 Set: Drive bloc						ype code -	None set		
	1: Block bridge 2; b	lock bridge	e 2 (≡ 2-Q	operatio	n), e.g. for 2-	Q rebuild kits				
	2: Release bridge 2							٥. ،		
	0 2	This value overrides the type code and is immediately visible in 07.61 Drive block bridge 2 set.								
27		Auto	1		=	n	n	Paramete		
- I	Set: Drive DC curre		·							
	Adjustment of DC cu DC current scaling is	rrent meas	suring cha							
	0 A Ta	ike value fr	om 95.25	Set: Typ	e code.					
					e DC curren	t scaling.				
	This value overrides			immodi		- 07 CO Daise				

Index	Name									
	Text									
	Range	Default		Fbeq16	Volatile	Change running	Туре			
	Attention: When us limited to max 1190			current and vol	tage range of	the type co	de setting is			
	0 32500	0	А	1 = 1 A	n	n	Parameter			
95.28	Set: Drive AC voltage scaling									
	Set the nominal AC voltage of the drive. Adjustment of AC voltage measuring channels (SDCS-PIN-H01 or SDCS-PIN-H51). 95.28 Set: Drive AC voltage scaling is write protected. To enable use 95.24 Service mode = Set: Type code.									
	0.0 V Take value from 95.25 Set: Type code.									
	0.1 3250.0 V	Take value f	rom 95.28 Set	: Drive AC volt	age scaling.					
	This value overrides the type code and is immediately visible in 07.64 Drive AC voltage scaling set. 95.24 Service mode has to be set back to Normal mode by the user. Attention: When using H1 H5 modules the current and voltage range of the type code setting is limited to max 1190 ADC and max 600 VAC.									
	0.0 3250.0	0.0	V	10 = 1 V	n	n	Parameter			
95.29	Set: Drive max brid	dge temperat	ture							
	Set the maximum bridge temperature of the drive. Adjustment of the drive bridge temperature tripping level.									
	0°C/32°F		Take value fr	om 95.25 Set:	Type code.					
	1°C 149°C/33°F 300°F		Take value from 95.29 Set: Drive max bridge temperature.							
	150°C/301°F		The tempera	ture supervisio	n is inactive,	e.g. for rebu	uild kits.			
	This value overrides the type code and is immediately visible in 07.65 Drive max bridge temperature set. Maximum setting for converters size H7 and H8 is 55°C/131°F, because the cooling air input temperature is measured. For more details, see DCS880 Hardware manual (3ADW000462). The unit is selected by 96.02 Unit selection. -80.0 1000.0									
			°F	°F						
95.32	DC current measu	rement adjus	st							
	Set the DC current measurement adjust of the drive. 95.32 DC current measurement adjust in percent of 07.62 Drive DC current scaling set is used to cover drives with different current measuring circuits for bridge 1 and bridge 2. It rescales the measured armature current if bridge 2 is active. 12.5 800.0 100.0 % 10 = 1 % n y Parameter									
95.33	DC current measur		i i	10 - 1 70		<u> </u>	T drameter			
25.30	Set the DC current measurement offset of the drive. The offset value in percent of 99.11 M1 nominal current is added to the armature current measurement. 95.33 DC current measurement offset adjusts 01.10 Motor current in to the real armature current. Commissioning hints: — In case the response of the current controller is delayed when starting at zero current, increase 95.33 DC current measurement offset slowly to 1.0 %:									



Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	For 50 Hz mains the value should be: $\frac{1}{50Hz}=20ms\equiv0^\circ.$ For 60 Hz mains the value should be: $\frac{1}{60Hz}=16.67ms\equiv0^\circ.$									
	100.00 100.00		0	100 = 1°	1	T.,	Cianal			
95.40	-180.00 180.00 PLL output, internal	- mains frequenc		100 = 1	У	n	Signal			
00.40	PLL output. Calculated and interr		-	ncy. Output of	PLL control	ler.				
	0.00 100.00	-	Hz	100 = 1 Hz	у	n	Signal			
95.43	PLL offset synchroi	nization transforr	ner				•			
	PLL offset due to a synchronization transformer. Compensation of a synchronization transformer's phase shift compared to the mains transformer. The maximum phase shift compensation is $\pm 60.00^{\circ}$. -60.00 60.00 0.00 0.00 0 Parameter									
95.44	PLL deviation level	0.00		100 - 1		У	i arameter			
	Maximum allowed deviation of the PLL controller. The current controller is blocked in case the limit is reached. For 50 Hz mains is valid: $\frac{1}{50Hz}=20ms~\equiv0^{\circ}$. For 60 Hz mains is valid: $\frac{1}{60Hz}=16.67ms~\equiv0^{\circ}$.									
	5.00 20.00	10.00	0	100 = 1°	n	v	Parameter			
95.45	PLL proportional gain PLL p-part. Gain of firing unit's phase lock loop.									
	0.01 2.00	0.50	-	100 = 1	n	у	Parameter			
95.46	PLL filter time PLL filter time consta Filter of firing unit's p 0.0 500.0	-	ms	10 = 1 ms	n	lv	Parameter			
95.47	PLL Uk compensati	on	l .			1,7				
	PLL mains transformer u_k compensation. The measured firing angle of the firing unit's PLL can be corrected in order to compensate the error caused by the commutation notches of the thyristors. The compensation depends on the u_k (short circuit voltage) of the mains. 95.47 PLL Uk compensation defines the mains short circuit voltage, in percent of 99.01 Mains voltage, which is caused by the unit's nominal current for the PLL correction: $PLL\ u_k\ compensation = u_k\ \times \frac{S_c}{S_t} \times 100\ \%$ With: u_k = related mains short circuit voltage. S_c = apparent power of the drive. S_t = apparent power of transformer. $S_t = \text{apparent power of transformer}$ Commissioning hint: 95.47 PLL Uk compensation is used to compensate for the phase shift of the mains due to the thyristors switching, in case the mains are measured on the secondary side of the									

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
	This situation leads to unstable output currents during high loads. Increase 95.47 PLL Uk compensation slowly (1 by 1) until the output current becomes stable.									
	0.0 15.0	0.0	%	10 = 1	n	у	Parameter			
95.50	PLL sync mode									
	PLL synchronization mode.									
	reserved									
	0 1	1	-	1 = 1	n	у	Parameter			

96 System

Language selection; access levels; macro selection; parameter save and restore; control board reboot; user parameter sets; unit selection; data logger triggering; parameter checksum calculation; user lock.

Index	Name									
	Text									
	Range	Default		Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
96.01	Languag	е								
	Selects the language of the parameter interface and other displayed information when viewed on the control panel. Notes: Not all languages listed below are necessarily supported. 96.01 Language does not affect the languages visible in the PC tool. Not selected; none. 1029: Czech; Czech. 1030: Dansk; Danish. 1031: Deutsch; German. 1033: English; English. 1036: Suomi; Finnish. 1036: Français; French. 1040: Italiano; Italian. 1043: Nederlands; Dutch. 1049: Russki; Russian. 1053: Svenska; Swedish. 1055: Türkçe; Turkish. 2052: Chinese (Simplified, PRC); Simplified Chinese. 2070: Portugues; Portuguese. 3082: Español; Spanish. 0 3082									
	Bit	Name	Value	_	arks					
	0	Power unit	0	hp kW						
	1	reserved								
	2	Temperature unit	1	°F °C						
	3	reserved	-							
	11 4	7.000.700	+_							

Torque unit

0

Lb ft

Nm

Index	Name									
	Text									
	Range		Default		Unit	Scale/ Fbeq16	Volatile	atile Change running	Туре	
	5 15	5 15 reserved								
	00001- 5		00001-		1	4 4	1	1	D	
	0000h F	rrrn	0000h		-	1 = 1	n	У	Parameter	
96.03	Unit for sp	peed contro	ol							
	Unit for the	speed cont	rol.							
	Sets the sp	eed control	unit.							
	0: rpm ; in	rpm.								
	1: %; in pe	rcent of 99.	14 M1 nomi	nal (base	e) speed	d. Set 99.14 N	M1 nominal ((base) spee	d = 100 %.	
						99.12 M1 nc				
	Following	signals / par	ameters are	affected	d:					
	_	on R&D								
	Note: After	r changing, t	he speed c	ontrol un	it restar	t the PC tool	to make the	change vis	ible.	
	0 2	Note: After changing, the speed control unit restart the PC tool to make the change visible. 0 2								
6.04	Access le	vels active	•		•	•	•	• -	•	
	Active acce	ess levels.								
	Shows wh	ich access l	evels have	heen ac	tivated	hy 96 07 Pas	bne abon a	96 102 Hsp	r lock	

Shows, which access levels, have been activated by 96.07 Pass code and 96.102 User lock functionality.

Bit assignment:

Bit	Name	Value	Remarks	
0	End user	1	End user active.	
1	Service	1	Service active.	
2	Advanced programmer	1	Advanced programmer active.	
3	reserved			
4	reserved			
5	reserved			
6	reserved			
7	reserved			
8	reserved			
9	reserved			
10	reserved			
11	reserved			
12	reserved			
13	reserved			
14	Parameter lock	1	Parameter lock active.	
15	reserved			

96.07 Pass code

Pass code.

Enter a pass code to activate the parameter lock or to configure the user lock. See 96.102 User lock functionality.

1 = 1

n

n

Parameter lock:

0000h ... FFFFh

Entering "358" toggles the parameter lock, which prevents the changing of all other parameters through control panel or PC tool.

User lock (opening generates warning A6B0 User lock open):

Entering the user pass code, by default "10000000", unhides parameters 96.100 ... 96.102. Now it is possible to define a new user pass code and to select the actions to be prevented.

Entering an invalid pass code will close an open user lock, by hiding parameters 96.100 ... 96.102. After entering the code, check that the parameters are in fact hidden.

Note: We recommend changing the default user pass code.

Example: For better cyber security, set a user pass code preventing change of parameter values or loading of firmware and other files.

Signal

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
	Pass code. This user pass functionality define To close the user Control board book	ser lock for the first time unhide parameters 96 is code and confirm the the actions to be precious, enter an invalidation of cycle the power.	.100 96.7 le code in 90 evented. user pass 0	e default user 102. Then en 6.101 Confirr code into 96.0	iter a new us n user pass 07 Pass cod	"10000000" er pass coo code. In 96 e then activ	de into 96.100 .102 User lock ate 96.27
	parameters 96.10 WARNING! Do not forget You control board has	or user pass code. The to be purchased.		s no means t	to reset the c	control boar	d! A new
	0 99999999	0	-	1 = 1	у	У	Parameter
96.08	Local control			·			
	the PC tool. WARNING!		·		·		
	0 1	Enable	-	1 = 1	n	у	Parameter
96.11	Macro active		l.	1		13	- arameter
	0: None; no macr 1: Default; defaul 10: Factory; facto 11: ABB standar 12: ABB standar 13: 3-wire standa 14: 3-wire standa 15: Fieldbus/Loc 16: Motor potent 17: Speed/Torqu	cro is currently selected to selected. It parameter set. See bry parameter set. See bry parameter set. See bry parameter set. See bry parameter set. See bry parameter set. See bry parameter ABB standard US; macro ABB standard US; macro 3 wire standard US; macro 3 wire standard US; macro control sciometer; macro moto be; macro speed control acro for the demo un	96.15 Parar e 96.14 Mac ard. See 96. andard with andard. See 9 with US sty via fieldbus or potentiom	meter restore cro select. 14 Macro sel US style DC- 96.14 Macro le DC-contac /control via lo eter. See 96.	e = Default. ect. contactor. S select. ctor. See 96. ocal I/O. See 14 Macro se 5.14 Macro se	ee 96.14 M 14 Macro s 96.14 Mac elect.	acro select. elect.
96.14	Macro select			' '		1	Olgital
	Selects a macro (Selects a macro (Selects a macro (selected macro is Notes: - Only macro d - It is possible t - Selecting the values. 0: Done; normal of 10: Factory; factor 11: ABB standar	pre-defined parameters. The value reverts autorises shown in 96.11 Macroscopending parameters to change all preset parameters actual macro again respection or application or parameter set. Sand; macro ABB standard US; macro ABB s	omatically to active. will be set. arameters contestores all mon macro seeme as 96.15 and. undard with	The rest of the falloaded macro dependence lection done. Farameter	he paramete acro. ding paramet restore = De	rs will not b	e changed.

Index	Name									
	Text									
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
		ometer; macro motor								
		; macro speed contro		ntrol.						
	0 20	acro for the demo unit		1 = 1	T.,	1	Davamatar			
96.15	Parameter restore		-	-	n	n	Parameter			
90.13	Reset parameter v									
		alues. Ilt settings of the firm\	ware Dene	ending on the	choice only	certain par	ameters or all			
		ored. The value rever								
	Note: Restoring m	ay cause a communio	cation brea							
		peration or restore do								
	1	ameter are restored to	o default, e	xcept:						
		otor 2 parameters.	44:							
	·	PC communication se nodule settings.	ungs.							
	I/O extension rFieldbus adapt	•								
	 Encoder config 									
	_	ng parameters.								
	 99.10 Nominal 									
	 Defaults imple 	mented by 95.20 HW	options wo	ord 1 and 95.	21 HW optio	ns word 2.				
		meters 96.100 96.								
		meter are restored to		cept:						
		PC communication se	ttings.							
	Fieldbus adapt Freeder confidence Freed	_								
	Encoder configMacro depend	ng parameters.								
	- 99.10 Nominal	- .								
		mented by 95.20 HW	options wo	ord 1 and 95.	21 HW optio	ns word 2.				
		meters 96.100 96.								
		ameters are restored								
	0 70	Done	-	1 = 1	у	n	Parameter			
96.16	Parameter save n	nanually								
	Save/Load parame	ters and enable/disal	ble an appl	ication progr	am.					
				ry. 96.16 Pai	rameter save	e manually :	should be			
	Saves valid parameter values to permanent memory. 96.16 Parameter save manually should be used to save e.g. values sent from a fieldbus. 96.16 Parameter save manually is also used to save/load a parameter set on/from the memory unit									
		ble application progra		ve/load a pai	ameter set c	m/mom me	memory unit			
		automatically to Done		parameter s	ave is done.					
	Notes:	,	,							
		eter save function on								
		ter value is saved aut				control pane	el or PC tool			
		Itered through a field								
		peration or parameter								
	0 1	to save parameters	or saviriy p	1 = 1	<u> </u>	T _n	Darameter			
96.19	User set status	Done	<u> </u>	1 - 1	У	n	Parameter			
JU. 13	User parameter se	t etatus dienlav								
		of the user parameter	sets							
		parameter sets have t		l .						
		tly loading a user par								
	2: Saving; current	y saving a user parar								
	3: Faulted; invalid									
	4: User set 1; user	set 1 is loaded.								

Index	Name										
	Text										
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре				
	5: User set 2; user set 2 is loaded. 6: User set 3; user set 3 is loaded. 7: User set 4; user set 4 is loaded.										
	0 7	-	-	1 = 1	n	n	Signal				

96.22 User set save/load

User parameter set handling.

Enables the saving and restoring of up to four user parameter sets. The value reverts automatically to Done, when the loading or saving is done.

Notes:

- Hardware configuration settings such as I/O extension module, fieldbus and encoder configuration parameters (groups 14 ... 16, 47, 51 ... 56, 58 and 92 ... 93) are not included in the user parameter sets.
- Forced input/output values such as 10.03 DI force selection and 10.04 DI force data are not included in the user parameter sets.
- The user parameter set that was in use before powering down the drive is in use after the next power-up. Except User set I/O mode is used.
- Parameter changes made after loading a user parameter set are not automatically stored in it.
 They must be saved again using 96.22 User set save/load.
- The loaded user parameter set is shown in 96.19 User set status and 06.18.b06 ... b09 Drive status word 3.
- The PC tool backup function only saves the active parameter set. Thus, user set 1 ... user set 4 must be backed-up separately.
- 0: **Done**; normal operation, loading or saving is done.
- 1: **User set I/O mode**; load user parameter set using 96.23 User set I/O mode in1 and 96.24 User set I/O mode in2.
- 2: Load set 1; load user set 1.
- 3: Load set 2; load user set 2.
- 4: Load set 3; load user set 3.
- 5: Load set 4; load user set 4.
- 18: Save to set 1; save parameters to user set 1.
- 19: Save to set 2; save parameters to user set 2.
- 20: Save to set 3; save parameters to user set 3.
- 21: Save to set 4; save parameters to user set 4.

-	0 21	Done	-	1 = 1	у	n	Parameter
---	------	------	---	-------	---	---	-----------

96.23 User set I/O mode in1

Load user sets using digital I/O.

With 96.22 User set save/load = User set I/O mode it is possible to select user parameter sets via 96.23 User set I/O mode in1 and 96.24 User set I/O mode in2 according to the following table.

Source defined by 96.23 User set I/O mode in1	Source defined 96.24 User set I/O mode in2	Selected user parameter set
0	0	User set 1
1	0	User set 2
0	1	User set 3
1	1	User set 4

0 = Always off.

1 = Always on.

Other [bit]; source selection.

- 0: Not selected; 0, normal operation.
- 1: Selected; 1.
- 3: **DI1**; 10.02.b00 DI delayed status.
- 4: DI2; 10.02.b01 DI delayed status.

Index	Name										
	Text										
	Range	9	Default		Unit	Scale/ Fbeq16	Volatile	Change running	Туре		
	6: DI4 7: DI5 8: DI6 11: DI 12: DI	; 10.02.b02 DI del ; 10.02.b03 DI del ; 10.02.b04 DI del ; 10.02.b05 DI del O1 ; 11.02.b00 DIO O2 ; 11.02.b01 DIO	ayed status ayed status ayed status) delayed s) delayed s	s. s. status. status.							
	19: 10	L ; 10.02.b15 DI de 9	Not selecte		_	1 = 1	n	n	Parameter		
96.24	User set I/O mode in2										
	See 9	Load user sets using digital I/O. See 96.23 User set I/O mode in1.									
	0 1		Not selecte	ed	-	1 = 1	n	n	Parameter		
96.27		ol board boot ot the control board									
	The va Other 0: Doi 1: Rek	ots the control unit alue reverts autom [bit]; source sele- ne; 0, normal oper boot; 1, reboot the	atically to Ection. ation or reb control boa	Done, w	hen the	reboot is do	ne.	ed.			
96.28	0 1 FSO r		Done		-	1 = 1	у	n	Parameter		
96.31	Note: Other 0: Dor 1: Rek 0 1 Time:	ots the optional FS The value does no [bit]; source sele- ne; 0, normal oper boot; 1, reboot the sync source state source status word	ot revert to otion. ation or reb FSO-xx sa Done	done au	utomatic ne.	ally.	- I-				
	Displays the time source status word. See 96.35 Time sync primary source. Bit assignment:										
	Bit ass	ys the time source		rd. See	96.35 T		n mary source		Parameter		
	Bit ass	ys the time source		rd. See					Parameter		
		ys the time source signment:	status wor	Rema	arks ority tick	ime sync pri			Parameter		
	Bit	ys the time source signment: Name Time tick	value	Rema 1st pri Tick h	arks ority tick nas beer iority tic	ime sync prii	mary source	y source.	Parameter		
	Bit 0	ys the time source signment: Name Time tick received Aux Time tick	Value	Rema 1st pri Tick h 2nd pr Tick h Yes:	arks ority tick nas beer iority tic nas beer	received: received from receiv	mary source	y source.	Parameter		
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	Bit 0 1 2	ys the time source signment: Name Time tick received Aux Time tick received Tick interval is too long	Value 1 1	Rema 1st pri Tick h 2nd pr Tick h Yes: Tick ii Tick r Tick r	ority tick nas beer iority tick nas beer nterval t eceived nas beer eceived	ime sync print received: a received from rec	mary source om 1 st priority om 2 nd priority	y source. y. omised. nal DDCS-P	LC.		
	Bit 0 1 2 3 4 5	ys the time source signment: Name Time tick received Aux Time tick received Tick interval is too long DDCS controlle M/F reserved	Value 1 1 1 1	Rema 1st prir Tick h 2nd pr Tick h Yes: Tick ii Tick r Tick r Tick r	arks ority tick has beer iority tic has beer hterval t eceived has beer eceived has beer	ime sync print received: n received from received from received from received from received from received from received from received the received t	mary source om 1 st priority om 2 nd priority uracy compr	y source. y. omised. nal DDCS-P	LC.		
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	Name								
	Text								
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						n received fro		ol panel, or	the PC tool
						the control pa	anel.		
	12	Ethernet tool	1	_	received		11 DO 1-		
		link				received fro	m the PC to	ool through a	a FENA
	13	Parameter	1	mod	uie. received	•			
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		00 23:59:59	1-		1-	1 = 1	у	n	Signal
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70.00		ority time synchro		urca					
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96.37	0: Intellicition of the control of t	ernal; no externa CS controller; et A A or FBA B; fieldbus ada B; fieldbus ada B or M/F; master B; embedded fiel link; control pernet tool link; end D2D clock synctes the clock synctive; clo	I source sel xternal DDC eldbus adapter A. apter B. drive of a ridbus. DDCS cormentation achronization ected. CS-PLC. oter A or master-for e PC too ough a For troller tion (master n for ma not active. beginning within or rom a figure sy ce midne	ollower li ollower li	adapter B. nk or drive-to ted to the cordule. 1 = 1 owers). ower and drive 1 = 1 year 1980. To application pation. 1 = 1 day	-drive link. Introl panel. In Pe-to-drive co	y n 96.28 Time t the date aris may be no	Parameter e in minutes nd time in the ecessary if th	
96.37	0: Intellicition of the control of t	ernal; no externa CS controller; e A A or FBA B; fieldbus ada A B; fieldbus ada D or M/F; master B; embedded fiel ink; control pernet tool link; ernet tool link; et the clock synctes the clock synctes the clock synctive; c	I source sel xternal DDC eldbus adapter A. apter B. drive of a ridbus. DDCS corunchronization achronization achronization achronization achronization and Inactive an 1980 of 1980. Ssed since Time in ms r interface finot support 12055 in 24 h t. passed since 1st January and DDCS corunchronization achronization	ected. CS-PLC. oter A or master-for e PC too ough a For troller tion (master n for ma not active. beginning within or rom a figure sy ce midne	ollower lide of the neminute eldbus or nehronization.	adapter B. nk or drive-to ted to the cordule. 1 = 1 owers). wer and drive 1 = 1 year 1980. The makes it post application pation. 1 = 1 day example, the	-drive link. Introl panel. In De-to-drive colorogether with ssible to selectorogram. The year of the colorogram with the colorogram with the colorogram with the colorogram with the colorogram with the colorogram with the colorogram with the colorogram with the colorogram with the color with	y ommunication y n 96.28 Time t the date are is may be need to be	Parameter e in minutes nd time in the ecessary if th Parameter s to 14:20.
96.37	0: Intellicition of the control of t	ernal; no externa CS controller; e A A or FBA B; fieldbus ada A B; fieldbus ada D or M/F; master B; embedded fiel ink; control pernet tool link; ernet tool link; et the clock synctes the clock synctes the clock synctive; c	I source sel xternal DDC eldbus adapter A. apter B. drive of a ridbus. DDCS corunchronization achronization achronization achronization achronization ar interface finot support 12055 in 24 h t. passed sinner 1st Jan 0	ected. CS-PLC. oter A or master-for e PC too ough a For troller tion (master n for ma not active. beginning within or rom a figure sy ce midne	ollower li ollower li	adapter B. nk or drive-to ted to the cordule. 1 = 1 owers). ower and drive 1 = 1 year 1980. To application pation. 1 = 1 day	-drive link. Introl panel. In Pe-to-drive co	y n 96.28 Time t the date aris may be no	Parameter e in minutes nd time in the ecessary if th

Index	Name								
	Text								
	Range		Default		Unit	Scale/ Fbeq16	Volatile	Change running	Туре
		f milliseconds ' Full days sind			minute.	•	•		
	0 5999	·	0		ms	1 = 1 ms	у	у	Parameter
96.51	Clear fau	It and event le	ogger						
	Clears the	e fault and eve ar fault and ev	nt logge						
	0 6553	5	0		-	1 = 1	у	у	Parameter
96.61	User data Provides s	logger statu logger status status informa	word.	ut the use	r data log	ger.			
	Bit assign				1 _				
	Bit	Name		Value	Remark				
	0	Running		1	Running	,	. io nooood		
	1	Triggered		1	Triggere	st-trigger time	e is passed.		
	'	riiggered		0	Restarte				
	2	Data availa	able	1		s data that c	an be read.		
				0		s no data.			
	3	Configured	ı	1	Configu				
		4 15 recogned			Not con	figured.			
	4 15	reserved							
	0000h	FFFFh	_		Ī-	1 = 1	v	ln	Signal
96.63	-	logger trigge	er			' '	1	1	Olgilai
	Triggers of 0 = No triggers 1 = Trigger Other [bit	:]; source sele ger command	urce tha d. ction.	t triggers t		ata logger.			
	0 1		No trigg		-	1 = 1	n	у	Parameter
96.64	User data	logger start							-
	Starts or s 0 = No sta 1 = Start. Other [bit	ce for the user selects a source art command. []; source sele rt command;	ce that s	tarts the u		ogger.			
	0 1		No star		-	1 = 1	n	у	Parameter
96.65	Factory d	ata logger tir			•				•
	Select factory06.0906.15	ata logger sam is the sampling y data logger a Used main co Main Status V Current contro	g interva are: Introl wo Vord.	al for the fa	·	a logger. The	e values tha	t are record	ed in the

Index	Name								
	Text								
	Range		Default		Unit	Scale/ Fbeq16	Volatile	Change running	Туре
96.70	90.01 M27.02 U27.05 M27.18 Fi	; 500 micros 2 millisecor as; 10 millise 00 aptive prog able an adaptables an adaptive prog adaptive prog adaptive prog	reference t. ent. eters can seconds. seconds. 500µs ram otive prog daptive program. ogram.	ol. e. not be ch	-		n	y	Parameter
	0: Enable a 1: Disable a	daptive pro	ogram; 0,	adaptive	peration	1 = 1	n	n	Parameter
96.100	pass code. Vocanfirmed. To cancel clenter an invite power.	ass code. O the current t Warning A6 hanging the alid user pa	nly visible user pass B1 User p pass cod	code, en pass code de, close t	ter a neve not con the user	v one here ar firmed is acti lock without o	ve until the confirming.	new pass co To close the	
	See 96.07 F 10000000 99999999		1000000	00	-	1 = 1	у	у	Parameter
96.101	Confirm us	e new user e new user	pass cod			en the user lo 0 Change us		e.	1
00 400	10000000 99999999		1000000	00	-	1 = 1	у	у	Parameter
96.102	Selects the	actions to b actions or fo ges made,	e prevent unctionali	ties to be	prevente	k. Only visibled by the use	r lock.		
	Bit	Name		Value	Remar	ks			
	0	Disable Al		1		ABB access			
	1	Freeze pa lock state		1	Prever	mmer, etc. So t changing th ode = 358.			
	2	Disable file download	e	1	Prever	nt loading of f nware upgra fety functions	des.		

X	Name										
	Text										
	Range		Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре			
				LoaChangeEdiparConsultation	rameter restonding of adaption and anging the hoting drive texting the favorable. Infiguration seed as time/dations displayed.	etive or appli ome view of its. rite paramet ettings made te formats a	cation prog the control ers list on the	rams. panel. ne control ntrol panel			
	3 15	reserved									

99 Motor data

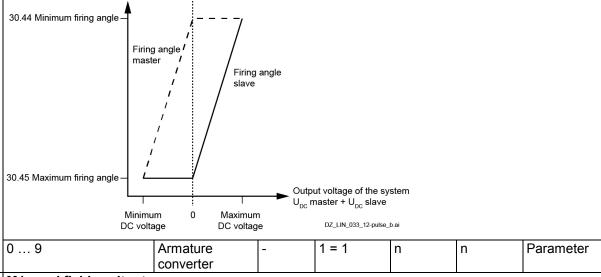
Motor configuration settings.

Index	Name							
	Text							
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре	
99.01	Mains voltage			•	•	•		
	Mains voltage. Measured mains voltage in percent of 99.10 Nominal mains voltage.							
	0.00 325.00	-	%	100 = 1 %	у	n	Signal	
99.02	M1 nominal torque		•				•	
	Motor 1, calculated no Motor 1 nominal torqu	ue is calculated th	· ·	•	M1 armature re	sistancel × 99 11	M1 nominal curren	
	99.02 M1 nominal torque = $\frac{60}{2\pi} \times$	[77.12 M I NOMEMAN VOLLAGE	ge 99.11 M1 Roma	99.14 M1 nominal (b	ase) speed	(Stance] × 77.111	ar nominal carren	
	The unit is selected b	y 96.02 Unit sele	ction.					
	0 200000000	-	Nm or Lb ft	1 = 1 Nm or Lb ft	у	n	Signal	
99.03	M1 nominal power			•	•	•	•	
	Motor 1, calculated no	ominal power.						
	Motor 1 nominal power	er is calculated th	e following v	vay:				
	00.12 M1 maminal malta as y 00.11 M1 maminal assurant							
		99.03 M1 nominal power = $\frac{99.12 \text{ M1 nominal voltage} \times 99.11 \text{ M1 nominal current}}{1000}$						
	99.03 M1 nominal por	$wer = \frac{99.12 M17}{2}$		1000				
	99.03 M1 nominal por	$wer = \frac{99.12 \text{ M } 17}{}$		1000				
	The unit is selected b	wer = 	ction.				_	
		wer = 	ction.	1 = 1 kW	у	n	Signal	
	The unit is selected b 0.00 32500.00	wer = 	ction.		У	n	Signal	
99.06	The unit is selected b	y 96.02 Unit sele	ction.	1 = 1 kW	У	n	Signal	
99.06	The unit is selected b 0.00 32500.00 Operation mode Operation mode of th Specifies the operatin	y 96.02 Unit selection y e drive. g mode of the drive.	ction. kW or hp	1 = 1 kW or hp			Signal	
99.06	The unit is selected b 0.00 32500.00 Operation mode Operation mode of th Specifies the operatin 0: Armature convert	y 96.02 Unit selection y 96.02 Unit selection e drive. g mode of the driver; the drive is us	ction. kW or hp ive. sed as a 6-pu	1 = 1 kW or hp			Signal	
99.06	The unit is selected b 0.00 32500.00 Operation mode Operation mode of the Specifies the operation of the Specifies the operation of the Specifies the operation of the Specifies the operation of the Specifies the operation of the Specifies the operation of the Specifies the operation of the Specifies the operation of the Specifies the Operation of the Specifies the Specifie	y 96.02 Unit selection e drive. g mode of the dri er; the drive is use r; the drive is use	kW or hp ive. sed as a 6-pud as a large	1 = 1 kW or hp ulse single arr field exciter.	mature con	verter.		
99.06	The unit is selected b 0.00 32500.00 Operation mode Operation mode of the Specifies the operation 0: Armature convert 1: Large field excited Attention: The digital	y 96.02 Unit selected by 96.02 Unit selected	kW or hp ive. sed as a 6-pud as a large	1 = 1 kW or hp ulse single arr field exciter.	mature con	verter.		
99.06	The unit is selected b 0.00 32500.00 Operation mode Operation mode of the Specifies the operation of the Specifies the operation of the Specifies the operation of the Specifies the operation of the Specifies the operation of the Specifies the operation of the Specifies the operation of the Specifies the operation of the Specifies the Operation of the Specifies the Specifie	y 96.02 Unit selected by 96.02 Unit selected	kW or hp ive. sed as a 6-pud as a large ernal overvol	1 = 1 kW or hp alse single arr field exciter. tage protection	mature conv	verter.	ns of 20.47	

Index Name **Text** Unit Range Default Scale/ Volatile Change Type Fbeq16 running 3: 12-pulse parallel slave; the drive is used as 12-pulse parallel slave. Connected to a 3-winding

- transformer having 30° phase shift between secondary windings.
- 4: 12-pulse serial master; the drive is used as 12-pulse serial master. Connected to a 3-winding transformer having 30° phase shift between secondary windings.
- 5: 12-pulse serial slave; the drive is used as 12-pulse serial slave. Connected to a 3-winding transformer having 30° phase shift between secondary windings.
- 6: **6-pulse serial master**; the drive is used as 6-pulse serial master. Connected to a 3-winding transformer having no (0°) phase shift between secondary windings.
- 7: 6-pulse serial slave; the drive is used as 6-pulse serial slave. Connected to a 3-winding transformer having no (0°) phase shift between secondary windings.
- 8: Serial sequential master 30°; the drive is used as a serial sequential master. Connected to a 3winding transformer having a 30° phase shift between secondary windings.
- 9: Serial sequential slave 30°; the drive is used as a serial sequential slave. Connected to a 3winding transformer having a 30° phase shift between secondary windings.
- 10: Serial sequential master 0°; the drive is used as a serial sequential master. Connected to a 3winding transformer having no (0°) phase shift between secondary windings.
- 11: Serial sequential slave 0°; the drive is used as a serial sequential slave. Connected to a 3winding transformer having no (0°) phase shift secondary windings.

Note: Sequential control of the firing angles. Only one of the two drives changes the firing angle. The other drive keeps the firing angle fixed at minimum- or maximum firing angle limit.



99.07 M1 used field exciter type

Motor 1 field exciter type.

99.07 M1 used field exciter type ≠ None, activates motor 1 field exciter. Now it reacts to an On command and generates field current.

Note: To start both field exciters (motor 1 and motor 2) set also 42.49 M2 used field exciter type ≠ None.

- 0: None; no or third party field exciter connected.
- 1: **OnBoard**; integrated 1-Q field exciter (for sizes H1 ... H4 only).
- 2: DCF803-0016; external 1-Q 16 A field exciter used for field currents from 0.3 A to 16 A.
- 3: FEX-425-Int; internal 1-Q 25 A field exciter (for size H5 and H6 only) used for field currents from 0.3 A to 25 A.
- 4: DCF803-0035; external 1-Q 35 A field exciter used for field currents from 0.3 A to 35 A.
- 5: DCF803 terminal 5 A; external 1-Q 16 A field exciter (DCF803-0016), internal 1-Q 25 A field exciter (FEX-425-Int) or external 1-Q 35 A field exciter (DCF803-0035) used for field currents from 0.3 A to 5 A.

Note: Use 5 A terminals.

6: DCF803-0050; external 1-Q 50 A field exciter.

Index	Name							
	Text							
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре	
	7: DCF804-0050 ; exter	nal 4-Q 50 A field	exciter.	-	•		•	
	8: DCF803-0060 ; exter							
	9: DCF804-0060 ; exter							
	10: DCS880-S01 ; exter							
	11: DCS880-S02; extent 16: External field exci				owledae vis	۸11		
	17: External field exci							
	18: External field exci							
	19: Multiple field excit						0xxx).	
	0 19	OnBoard	-	1 = 1	n	n	Parameter	
99.10	Nominal mains voltage	je	'	-	•	•	•	
	Nominal mains voltage							
	Nominal mains voltage	(AC) of the supp	ly. The def	fault and max	imum value	s are prese	t automatically	
	according to 95.25 Set	Type coder and	95.28 Set:	Drive AC vol	Itage scalino	g. The abso	lute maximum	
	is 1200.0 V _{AC} .	1			•	1	1	
	0.0 95.25/95.28	0.0	V	10 = 1 V	n	y	Parameter	
99.11	M1 nominal current							
	Motor 1 nominal curren	-						
	Motor 1 nominal armat	ure current (DC) t	rom the m	otor rating pla	ate.			
	Notes:	al mada, aaa DC9	2000 12 n	ulaa manual (3 V D/V/000^	ww\		
	For 12-pulse parallIn case the convert						ld current from	
	the motor rating pla				value to the	nominal ne	ia carrent nom	
	The allowable rang				230 % of	the nominal	drive current.	
	See 7.35 Drive DC							
	0 32500	0	Α	1 = 1 A	n	у	Parameter	
99.12	M1 nominal voltage		•		•			
	Motor 1 nominal voltag	e.						
	Motor 1 nominal armat	ure voltage (DC)	from the m	notor rating pla	ate.			
	Notes:							
	- For 12-serial paralle	el mode or serial	sequential	mode, see D	CS880 12- _l	oulse manua	al	
	(3ADW000xxx).	or is used as a la	rae field e	voitor oot the	valua ta tha	nominal fia	ld voltage	
	 In case the convert from the motor ratir 				value to the	nominal ne	id voitage	
	0.0 3250.0	350.0	V	10 = 1 V	n	у	Parameter	
99.13	M1 nominal field curr		V	110 1 4	111	y	T drameter	
00.10	Motor 1 nominal field current.							
	Motor 1 nominal field current. Motor 1 nominal field current from the motor rating plate.							
	Note: In case the conv				99.11 M1 no	minal curre	nt to set the	
	nominal field current.							
	0.3 3250.0	0.3	Α	10 = 1 A	n	y	Parameter	
99.14	M1 nominal (base) speed							
	Motor 1 nominal (base)	•						
	Motor 1 nominal (base)		motor ratin	-		weak point.		
	0.00 30000.00	1500.00	rpm	See 46.02	n	у	Parameter	
99.17	Last tuning performe	d						
	Last performed tuning.							
	Shows the type of tunir	ng that was perfor	rmed last.	See 99.20 Tu	ining reques		1	
	0 16	-			у	n	Signal	
99.20	Tuning request							
	Drive tuning request.	Antonia alla di	al and the state of the state o					
1	The tuning request con	tains all auto- and	u manuai t	uning proced	ures.			

When choosing manual tuning 99.20 Tuning request has to be set back to Normal mode by the user. **Notes:**

- The reference chain is blocked while 99.20 Tuning request ≠ Normal mode.
- Depending on 06.18B04/B05 Drive status word 3 the field current of motor 1 or motor 2 is tuned.
- A standard DCS800 converter used as a large field exciter cannot be tuned by means of the armature converter it is connected to. Tune the field current controller by setting 99.20 Tuning request = Field current autotuning in the large field exciter itself.
- 0: Normal mode; normal operating mode depending on 99.06 Operation mode.
- 1: Field current autotuning; autotuning the field current controller.

Attention: The field autotuning is realized through increasing the field voltage (≡ decreasing the firing angel) and not via field current reference. Please note that the limits in group 30 will not be taken in consideration during the autotuning. The maximum field current during tuning can be reduced by adapting 99.13 M1 nominal field current if required.

- 2: Armature current autotuning; autotuning the armature current controller.
- 3: **Speed feedback assistant**; test the speed feedback. See 90.41 M1 feedback selection, 94.08 M1 tacho voltage at 1000 rpm, 94.23 OnBoard encoder pulses/revolution, 94.24 OnBoard pulse encoder type and 94.25 OnBoard encoder speed calculation mode.
- 4: **Speed controller autotuning**; autotuning the speed controller.
- 5: **EMF controller autotuning**; autotuning the EMF controller.
- 6: **Flux linearization autotuning**; autotuning the flux linearization.
- 10: Field current manual tuning; manual tuning of the field current controller.
- 11: Field reversal assistant; assistant to test the field reversal.
- 12: Armature current manual tuning; manual tuning of the Armature current controller.
- 13: Find discontinuous current limit; find the discontinuous current limit.
- 14: **Tacho fine-tuning**; tacho fine-tuning. See 94.11 M1 tacho fine-tuning adjust and 94.12 M1 tacho fine-tuning factor.
- 15: **Speed controller manual tuning**; manual tuning the speed controller.
- 16: EMF controller manual tuning; manual tuning the EMF controller.

0 16	Normal mode	l ly	n	Parameter
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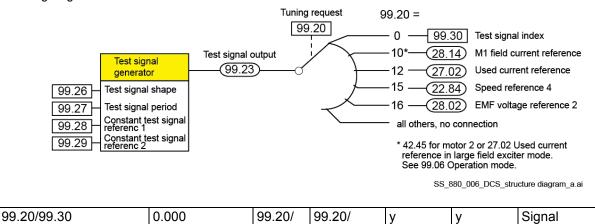
99.23 Test signal output

Test signal generator, output.

Output signal of the test signal generator.

Note: The range, the unit and the scaling for the fieldbus communication depends on the chosen sink. See 99.20 Tuning request and 99.30 Test signal index.

Test signal generator



99.30

99.30

Index	Name						
	Text						
	Range	Default	Unit	Scale/ Fbeq16	Volatile	Change running	Туре
99.26	Test signal shape						
	Test signal generate Signal forms for the request. Note: After a power 0: Zero; not in use. 1: Square wave; a 2: Triangle; a triang 3: Sine save; a sine 4: Constant test si 5: Constant test si	test signal generate- r-up, the value is se square wave is used gle wave is used. wave is used. gnal 1; a constant	t back to Ze	o and thus o	disables the	test signal ç gnal referen	generator.
	0 5	Zero		1 = 1	V	v	Parameter
99.27	Test signal period	2610		1 - 1	l y	l y	i arameter
	Test signal generate The time period for request. Note : After a power 0.00 655.36	the test signal gene			ning function	s. See 99.2	0 Tuning
99.28	Constant test sign			1	1,7	17	1
		ence 1 for the test s	ıgnaı genera	tor and the r	nanual tunin	g functions.	See 99.20
	Tuning request. Notes: The range, the see 99.20 Tunine After a power-une Examples: 100.00 % voltage 100.00 % currene 100.00 % powe 100.00 % torque	unit and the scaling ng request and 99.3 p, the value is set b ge ≡ 10,000. nt ≡ 10,000.	for the field! 30 Test signal ack to 0. orque scaling scaling act	ous communal index. g actual = 10 ual = 20,000.	ication depe		
00.20	Tuning request. Notes: The range, the see 99.20 Tuning After a power-und Examples: 100.00 % voltage 100.00 % currender 100.00 % powed 100.00 % torqued 99.20/99.30	unit and the scaling ng request and 99.3 p, the value is set b ge = 10,000. nt = 10,000. r = 10,000. e = see 46.04 M1 to $d = 46.02$ M1 speed	for the field! 30 Test signa ack to 0. orque scaling I scaling acti	ous commun al index. g actual ≡ 10 ual ≡ 20,000.	ication depe	ends on the	chosen sink.
99.29	Tuning request. Notes: The range, the see 99.20 Tuning After a power-uper see 100.00 % voltage 100.00 % curred 100.00 % torque 100.00 % speed	unit and the scaling ng request and 99.3 p, the value is set b ge = 10,000. nt = 10,000. r = 10,000. e = see 46.04 M1 to d = 46.02 M1 speed of the test signal reference 2 for the test signal	for the field! 30 Test signal ack to 0. orque scaling scaling act 99.20/9 9.30 ence 2. ignal genera	ous communal index. g actual ≡ 10 ual ≡ 20,000. 99.20/ 99.30 tor and the r	,000.	ends on the	chosen sink.
	Tuning request. Notes: The range, the see 99.20 Tuning After a power-up Examples: 100.00 % voltage 100.00 % currend 100.00 % torque 100.00 % speed 99.20/99.30 Constant test signal generate Constant test refered See 99.28 Constant 99.20/99.30	unit and the scaling ng request and 99.3 p, the value is set b ge = 10,000. nt = 10,000. r = 10,000. e = see 46.04 M1 to d = 46.02 M1 speed 0 al reference 2 for the test sit test signal reference	for the fielding for th	actual ≡ 10 al ≡ 20,000. 99.20/ 99.30 tor and the r	,000.	y g functions.	chosen sink.
99.29	Tuning request. Notes: The range, the see 99.20 Tuniner. After a power-uper. Examples: 100.00 % voltager. 100.00 % power. 100.00 % torquer. 100.00 % speed. 99.20/99.30 Constant test sign. Test signal generate. Constant test referese 99.28 Constant. 99.20/99.30 Test signal index. Test signal generate. Index pointer to the 22.07 Speed refere. Notes: 99.30 Test signal request.	unit and the scaling ng request and 99.3 p, the value is set b ge = 10,000. Int = 10,000. Int = 10,000. Int = 10,000. Int = 46.04 M1 to the set of the set of the test signal reference 2 to the test signal reference 2 for the test signal reference 2 to the test signal reference 2 for the test signal reference 2 fo	for the field! 30 Test signal ack to 0. prque scaling action of the scaling action of t	g actual = 10 yal = 20,000. 99.20/ 99.30 tor and the rest signal general gen	,000. y nanual tunin y enerator. E.ç	y g functions. y	Parameter Parameter of 2207 equals

Fault tracing

What this chapter contains

This chapter lists all warning/fault messages including possible causes and corrective actions. By means of this chapter, the causes of all warnings/faults can be identified and corrected. If not, an ABB service representative should be contacted.

Warnings/faults are listed below in separate tables. Each table is sorted by warning and fault code.

Safety



WARNING! Only qualified electricians are allowed to service the drive. Read the Safety instructions on the first pages of the DCS880 Hardware manual (3ADW000462) before working on the drive.

Indications

Warnings and faults

Warnings/faults indicate an abnormal drive status. The codes and names of active warnings/faults are displayed on the control panel of the drive as well as in the PC tool. Via fieldbus only the codes of the warnings/faults are available.

Warnings do not need to be reset. They stop showing when the cause of the warning ceases. Warnings do not latch and the drive will continue to operate the motor.

Faults do latch inside the drive. They cause the drive to trip and the motor stops. After the cause of a fault has been removed, the fault can be reset from a selectable source. See 20.13 Fault reset selection. This can be the control panel, the PC tool, a digital input of the drive or the fieldbus. After the fault is reset, the drive can be restarted.

Note: Some faults require a reboot of the control board, either by cycling the power or via 96.27 Control board boot. This is mentioned in the fault listing wherever appropriate.

The warning/fault indications can be directed to a relay output or a digital input/output by selecting Warning, Tripped or Tripped (-1) in the source selection parameter. See groups:

- 10 Standard DI. RO.
- 11 Standard DIO, FI, FO.
- 14 ... 16 I/O extension module 1 ... 3.

Events

In addition to warnings and faults, there are notices that are only recorded in the event logs of the drive. The codes of these notices are included in the Warning messages table.

Editable messages

For some warnings/faults, the message text can be edited and instructions and contact information added. To edit these messages, choose **Menu - Settings - Edit texts** on the control panel.

Warning/fault history and analysis

Event logs

The drive has several event logs, to access, choose **Menu - Event log** on the control panel. The event logs can also be accessed and reset using the PC tool.



The event logs contain faults, warnings and notices, as well as cleared entries. Each event log contains 32 most recent events. All indications in the event logs are stored including a time stamp and other information.

AUX codes

Some events generate AUX codes helping to pinpoint the problem.

The AUX codes are displayed on the control panel together with a corresponding message. It is also stored in the event logs details. In the PC tool, AUX codes can be found in the event listing.



Factory data logger

The drive has a factory data logger that samples preselected drive values. The default sampling time is 500 µs. See 96.65 Factory data logger time level for additional sampling times.

Approximately 7000 samples are recorded immediately before and after a fault. They are saved to the memory unit of the drive. The fault data of the last five faults are only accessible in the event log of the Drive composer pro PC tool.



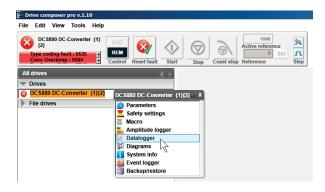
The values that are recorded in the factory data logger are:

- 06.09 Used main control word.
- 06.15 Main Status Word.
- 06.25 Current controller status word 2.
- 99.01 Mains voltage.
- 24.01 Used speed reference.
- 90.01 Motor speed for control.
- 27.02 Used current reference.
- 27.05 Motor current.
- 27.18 Firing angle.
- 28.15 M1 field current.

This selection of parameters cannot be changed by the user.

User data logger

A custom data logger can be configured using the Drive composer pro PC tool.



This functionality enables the free selection of up to eight drive parameters to be sampled at selectable intervals. The triggering conditions and the length of the monitoring period can also be defined by the user within the limit of approximately 8000 samples.

In addition to the PC tool, the status of the logger is shown in 96.61 User data logger status word. The triggering sources can be selected by 96.63 User data logger trigger and 96.64 User data logger start. The configuration, status and collected data is saved on the memory unit for later analysis.

Parameters that contain warning/fault information

The drive stores a list of active faults and the one causing the trip in signals 04.01 ... 04.05. Active warnings are shown in signals 04.06 ... 04.10. The group 04 also displays a list of faults and warnings that have previously occurred.

Event word (parameters 04.40 ... 04.72)

04.40 Event word 1 can be configured by the user to indicate the status of 16 selectable events, e.g. faults, warnings or notices. It is possible to specify an AUX code for each event to filter out other AUX codes.

QR Code generation for mobile service application

A QR Code or a series of QR Codes can be generated by the drive for display on the control panel. The QR Code contains drive identification data, information on the latest events, status information and counter parameters. The code can be read with a mobile device containing the ABB service application, which then sends the data to ABB for analysis. For more information on the application, contact your local ABB service representative.

The QR Code can be generated by choosing Menu - Assistants - QRCode on the control panel.

Warnings

Warning levels

The warning handling provides 5 warning levels.

Warning level 1

- The drive keeps on running and the warning is indicated.
- After the drive is stopped, the main contactor cannot be switched on again (no re-start possible).

Warning level 2

- The drive keeps on running and the warning is indicated.
- The fan contactor stays on as long as the warning is pending.
- After the warning disappears 20.40 Drive/Motor fan delay time starts.

Warning level 3

- Auto-reclosing logic is active (auto re-start). See 06.18.b10 Drive status word 3.
- Ready run is disabled, but the drive is automatically restarted when the warning condition vanishes. See 06.15.b01 Main Status Word.
- The firing angle is forced to the value of 30.45 Maximum firing angle.
- Single firing pulses to suppress the DC current are given.

Warning level 4

The drive keeps on running and the warning is indicated.

Warning level 5

 Used for STO related warnings. See safety supplement for functional safety converter DCS880 (3ADW000452).

Warning messages

The list contains the warning/notice code in hex, its name, the cause and hints what to do.

Note: The list also contains notices that only appear in the Event log.

Code	Warning/Notice	Cause and what to do	Warning level
A103	DC-breaker acknowledge.	Selected motor, DC-breaker acknowledge at the DI is missing. The firing angle is forced to the value of 30.45 Maximum firing angle and single firing pulses to suppress the DC current are given, thus the drive cannot be started or re-started while the DC-breaker acknowledge is missing. Check:	3

Code	Warning/Notice	Cause and what to do	Warning level
		 The setting of 20.35 DC breaker acknowledge source, if necessary invert the signal. 	
A105	Dynamic braking acknowledge.	Selected motor, dynamic braking is still pending. The firing angle is forced to the value of 30.45 Maximum firing angle and single firing pulses to suppress the DC current are given, thus the drive cannot be started or re-started while dynamic braking is active, except if 21.01 Start mode = Flying start dynamic braking. Check: The setting of 20.43 Dynamic braking acknowledge source. The setting of 21.01 Start mode.	3
A111	Mains low voltage.	 Mains/AC side low (under-) voltage. See also 3280. The firing angle is forced to the value of 30.45 Maximum firing angle and single firing pulses to suppress the DC current are given. Check: The setting of 31.51.Mains loss mode, 31.52 Mains loss down time, 31.53 Mains loss low level 1 and 31.54 Mains loss low level 2. That the mains voltage scaling is correct. See 99.10 Nominal mains voltage. The cutting of the voltage coding resistors on the SDCS-PIN-H51. The condition of the mains (voltage, cabling, fuses, switchgear). That all 3 phases are present directly at the drive. H1 H5: measure the fuses F100 F102 on the SDCS-PIN-H01. H6 H8: check and measure the connections XU1/XU2, XV1/XV2 and XW1/XW2 on the SDCS-PIN-H51. That the mains voltage is within the set tolerance. For mains supply imbalance. For loose mains cable connections. That the mains contactor closes and opens. For H1 H4, that the field circuit has no short circuit or ground fault. In case an On command is given and the measured mains voltage is too low for longer than 500 ms A111 Mains low voltage is set. If the problem persist for longer than 10 s 	3
A112	P2P and M/F communication. Programmable, see 70.07 DCSLink comm loss function.	 3280 Mains low voltage is generated. Peer to peer and master-follower communication loss. See also F544. Check: DCSLink node ID settings. See 70.05 DCSLink node ID. The setting of 31.13 Fault stop mode communication and 70.07 DCSLink comm loss function. The setting of 70.17 Mailbox 1 node ID, 70.23 Mailbox 2 node ID, 70.29 Mailbox 3 node ID and 70.35 Mailbox 4 node ID. The setting of 70.18 Mailbox 1 cycle time/timeout, 70.24 Mailbox 2 cycle time/timeout, 70.30 Mailbox 3 cycle time/timeout and 70.36 Mailbox 4 cycle time/timeout. The DCSLink cable connections. The DCSLink terminations. 	4

Code	Warning/Notice	Cause and what to do	Warning level
A114	Armature current deviation.	27.02 Used current reference differs from 27.05 Motor current for longer than 5 sec by more than 20 % of nominal motor current. If the current controller cannot match the given current reference, the warning signal is created. Normally the reason is a too small incoming voltage compared to the motor EMF. For non-motoric applications, it is possible to block the warning using 06.11.b07 Auxiliary control word 2. Check: For blown DC fuses. The ratio between mains voltage and armature voltage (either the mains voltage is too low or the motor's armature voltage is too high). If the setting of 30.44 Minimum firing angle is too high.	4
A116	Brake long falling	Selected motor, the acknowledge signal for the mechanical brake closed (applied) stage at the DI is missing. Check: The mechanical brake settings in group 44 Mechanical brake control. The mechanical brake itself. The mechanical brake cable connections. The used digital inputs and outputs (groups 10 and 11).	4
A117	Armature current ripple.	 One or several thyristors may carry no current. See also F517. Check: — The values of 01.50 Current ripple and 01.51 Current ripple filtered1. — The setting of 31.46 Current ripple function and 31.47 Current ripple level. — For too high gain of current controller. See 27.29 M1 current proportional gain. — The positive/negative current feedback with an oscilloscope (6 pulses within one cycle visible?). — The thyristor gate-cathode resistance. — The thyristor gate connection. — The current transformers (T51, T52). — The condition of the mains (voltage, cabling, fuses, switchgear). 	4
A118		Application file new or different. Check the AUX code. Actions see below. Found a new application on the memory unit. Activate the application on the memory unit by means of 96.16 Parameter save manually = Enable application. Application in drive memory and on memory unit are different. Activate the application on the memory unit by means of 96.16 Parameter save manually = Enable application.	1
A120	Overvoltage protection active.	Overvoltage protection DCF506 is active and the field exciter is blocked. Note: The DO of the DCF506 must be connected to a DI of the large field exciter. See 20.47 Overvoltage protection trigger source. The firing angle is forced to the value of 30.45 Maximum firing angle and single firing pulses to suppress the field current are given. Check:	3

Code	Warning/Notice	Cause and what to do	Warning level
		 The setting of 20.47 Overvoltage protection trigger source if necessary invert the signal. The field converter cables and connections. 	
A124	Speed scaling	The settings of: - 30.11 M1 minimum speed. - 30.12 M1 maximum speed. - 31.30 M1 overspeed trip margin. - 46.01 M1 speed scaling. - 99.14 M1 nominal (base) speed. Must be less than or equal to 1.6 • 46.02 M1 speed scaling actual (1.6 = 32000/20000). - The parameters causing the warning can be identified in the AUX code (format YYZZ). YY specifies the parameter group. ZZ specifies the parameter number. The firing angle is forced to the value of 30.45 Maximum firing angle and single firing pulses to suppress the DC current are given. Check: The settings of: - 30.11 M1 minimum speed. - 30.12 M1 maximum speed. - 31.30 M1 overspeed trip margin. - 46.01 M1 speed scaling.	3
A130	Mains phase loss. Programmable, see 31.21 Mains phase loss.	 99.14 M1 nominal (base) speed. One or several mains voltage phase(s) are missing or the mains voltage phases are imbalanced. See also 3130. The firing angle is forced to the value of 30.45 Maximum firing angle and single firing pulses to suppress the DC current are given. Check: The condition of the mains (voltage, cabling, fuses, switchgear). That all 3 phases are present directly at the drive. H1 H5: measure the fuses F100 F102 on the SDCS-PIN-H01. H6 H8: check and measure the connections XU1/XU2, XV1/XV2 and XW1/XW2 on the SDCS-PIN-H51. For mains supply imbalance. For loose mains cable connections. That the mains contactor closes and opens. The AUX code: O: All phase voltages U (L1), V (L2) and W (L3) are missing. 1: Mains voltage phases are imbalanced. Phase-to-phase voltage Uvv is the smallest voltage. 2: Mains voltage phases are imbalanced. Phase-to-phase voltage Uvv is the smallest voltage. 3: Phase V (L2) is missing. 4: Mains voltage phases are imbalanced. Phase-to-phase voltage Uvv is the smallest voltage. 5: Phase U (L1) is missing. 5: Phase U (L1) is missing. 	3
A132	Parameter setting conflict.	- 6: Phase W (L3) is missing. Parameter settings conflicting with other parameters.	4

Code	Warning/Notice	Cause and what to do	Warning level
		The parameters causing the warning can be identified in the AUX code (format YYZZ YYZZ). YY specifies the parameter group. In case of 00, see the actions below. ZZ specifies the parameter number or the actions below. Additionally check: — 95.25 Set: Type code for proper value.	
	0070	No field reversal possible due to 28.54 Field current force direction = External reverse.	
	0071	Flux linearization parameters not consistent. See 28.31 Field current at 40 % flux, 28.32 Field current at 70 % flux and 28.33 Field current at 90 % flux.	
	0077	 Encoder 1 parameters not consistent. Check: 46.02 M1 speed scaling actual or 42.14 M2 speed scaling actual. 92.10 Pulses/revolution. 92.11 Pulse encoder type. At scaling speed the pulse frequency must be greater than 600 Hz according to following formula: 	
		$f \ge 600Hz = \frac{ppr \times evaluation \times speed\ scaling}{60s}$	
		$f \ge 600Hz = \frac{(92.10) \times (92.11) \times (46.02 \text{ or } 42.14)}{60s}$	
		E.g. the speed scaling must be greater than 9 rpm for a quadrature pulse encoder (with two channels, A and B) and 1024 pulses.	
	0078	Encoder 2 parameters not consistent. Check: 46.02 M1 speed scaling actual or 42.14 M2 speed scaling actual. 93.10 Pulses/revolution. 93.11 Pulse encoder type. At scaling speed the pulse frequency must be greater than 600 Hz according to following formula:	
		$f \ge 600Hz = \frac{ppr \times evaluation \times speed\ scaling}{60s}$	
		$f \ge 600Hz = \frac{(93.10) \times (93.11) \times (46.02 \text{ or } 42.14)}{60s}$	
		E.g. the speed scaling must be greater than 9 rpm for a quadrature pulse encoder (with two channels, A and B) and 1024.	
A137	Start condition conflict.	Re-start of the drive is not possible. Check: — The AUX code (format XXXX 00YY). XXXX specifies the parameter group and number e.g. — 0619: 06.19 Drive inhibit status word 2. — 0620: 06.20 Run inhibit status word. — 9524: 95.24 Service mode ≠ Normal mode. YY specifies the bit showing the reason.	1

Code	Warning/Notice	Cause and what to do	Warning level
A2B3	Residual current detected. Programmable, see 31.18 Residual current detection type.	 The drive has detected an unbalance typically due to a residual current in the motor or the motor cables. Sum of I_{L1}, I_{L2}, I_{L3} ≠ zero. See also 2330. Check: The settings of 31.17 Residual current detection source, 31.18 Residual current detection type, 31.19 Residual current detection level and 31.20 Residual current detection delay. The sum current transformer, if necessary change transformer or connected drive hardware. The insulation resistances of motor and motor cables. Disconnect the mains, verify safe isolation from supply in armature and field circuits and make insulation tests for the complete installation. 	1
A490	Incorrect temperature sensor setup.	Sensor type mismatch. Check the settings of temperature source parameters 35.11 and 35.21 against 91.21 and 91.24. Faulty wiring between an encoder interface module and the temperature sensor. Check: The wiring of the sensor. The AUX code identifies the encoder interface module. 0: Encoder interface Module 1. 1: Encoder interface Module 2.	1
A491	Motor temperature 1 measured/estimated. (Editable message text)	Measured/Estimated motor temperature 1 has exceeded the warning level. See also 4981. Wait until the motor/motor model is cooled down. The fan contactor stays on as long as the warning is pending. Check: The value of 35.02 Measured temperature 1. The real motor temperature. Let motor cool down and restart. The value of 35.13 Temperature 1 warning level. The cooling of the motor or other temperature measured equipment. The ambient conditions (e.g. ambient temperature). The airflow and fan operation. The motor fan supply voltage. The motor fan direction of rotation. The motor fan components. The motor cooling air inlet (e.g. filters). The motor load and drive ratings. Inadmissible load cycle. The wiring of the temperature sensor by measuring it. Hint: The measured/estimated motor temperature is blocked, if 35.11 Temperature 1 source = Disable.	2
A492	Motor temperature 2 measured/estimated. (Editable message text)	Measured/Estimated motor temperature 2 has exceeded the warning level. See also 4982. Wait until the motor/motor model is cooled down. The fan contactor stays on as long as the warning is pending. Check: The value of 35.03 Measured temperature 2.	2

Code	Warning/Notice	Cause and what to do	Warning level
		 The real motor temperature. Let motor cool down and restart. The value of 35.23 Temperature 2 warning level. The cooling of the motor or other temperature measured equipment. The ambient conditions (e.g. ambient temperature). The airflow and fan operation. The motor fan supply voltage. The motor fan direction of rotation. The motor cooling air inlet (e.g. filters). The motor cooling air outlet. The motor load and drive ratings. Inadmissible load cycle. The wiring of the temperature sensor by measuring it. Hint: The measured/estimated motor temperature is blocked, if 	
A497	Motor temperature slot 1 measured. (Editable message text)	35.21 Temperature 2 source = Disable. The thermistor protection module (FEN-xx or FPTC-xx) installed in slot 1 Depending on the used module, a PTC and/or KTY temperature sensor can be attached. See also	2
A498	Motor temperature slot 2 measured. (Editable message text)	indicates overtemperature. The thermistor protection module (FEN-xx or FPTC-xx) installed in slot 2 indicates overtemperature. 4991 4993. Check: The cooling of the motor or other temperature measured equipment.	2
A499	Motor temperature slot 3 measured. (Editable message text)	The thermistor protection module (FEN-xx or FPTC-xx) installed in slot 3 indicates overtemperature. - The motor load and drive ratings The wiring of the temperature sensor The resistance of the temperature sensor by measuring it.	2
A4A0	Control board temperature measured.	Excessive control board temperature. Check the AUX code (format XXXXZZZZ). ZZZZ indicates the problem. Actions see below. Temperature above warning limit of xx °C or xx °F.	2
		Check: - The value of 05.10 Control board temperature. - The ambient conditions. - The airflow and fan operation. - The heatsink fins for dust pick-up. Thermistor broken.	
		Contact an ABB service representative for control board replacement.	
A4B0	Bridge temperature measured.	Excessive bridge temperature. See also 4310. Wait until the bridge is cooled down. The fan contactor stays on as long as the warning is pending. Shutdown temperature, see 07.65 Drive max bridge temperature set. The bridge overtemperature warning will already appear at approximately 5°C below the shutdown temperature. Check:	2

Code	Warning/Notice	Cause and what to do	Warning level
		 The values of 05.11 Ch1 bridge temperature 05.14 Ch4 bridge temperature. The setting of 20.38 Drive fan acknowledge source. The setting of 20.40 Drive/Motor fan delay time. The ambient conditions (e.g. ambient temperature). The airflow and fan operation. The drive fan supply voltage. The drive fan direction of rotation. The drive fan components. The heatsink fins for dust pick-up. The drive cooling air inlet (e.g. filters). The drive cooling air outlet. For open drive doors. The motor power against the drive power. Inadmissible load cycle. The AUX code (format XXXYYYZZ). YYY identifies the power unit channel. In case of a hardparallel configuration. 	
A560	Power unit, unbalanced current. Programmable, see 29.63 Power unit unbalanced current function.	The unbalanced current between hardparallel connected power units is excessive. See also F560. Check: That the mains and motor cable routing is according to the specification for hardparallel configurations. The branch fuses. The thyristors. The AUX code (format XXXYYYZZ). YYY identifies the power unit channel. ZZ identifies the affected thyristor. Example: 00000314 means thyristor14 in the power unit connected to channel 3.	4
A561	Power unit, thyristor loss function. Programmable, see 29.68 Power unit thyristor loss function.	Displays the thyristors/branch fuses of a power unit which are lost, in other words not conducting any current. See also F561. Check: The branch fuses. The thyristors. The AUX code (format XXXYYYZZ). YYY identifies the power unit channel. ZZ identifies the affected thyristor. Example: 00000314 means thyristor14 in the power unit connected to channel 3.	4
A581	Drive fan acknowledge. Programmable, see 31.41 Drive fan fault function.	 Drive cooling fan feedback at the DI is missing. See also 5080. Check: The settings of 20.38 Drive fan acknowledge source and 20.40 Drive/Motor fan delay time. The drive fan operation and connection. The drive fan circuit. The drive fan klixon. The drive fan components. The drive fan supply voltage. The drive fan direction of rotation. The drive door open. The drive cooling air inlet (e.g. filter). The drive cooling air outlet. H7 an H8 pressure switch (setting should be 2 mbar). 	2

Code	Warning/Notice	Cause and what to do	Warning level
		The used digital inputs and outputs (groups 10 and 11).	
A5A0	Safe torque off. Programmable, see 31.22 STO indication run/stop.	STO active, no drive problem. See safety supplement for functional safety converter DCS880 (3ADW000452). See also B5A0 and 5091.	5
A5A3	Safe off main contactor XSMC:STO. Programmable, see 31.90 XSMC:STO Indication.	STO monitor DC current not zero (zero current time out). See safety supplement for functional safety converter DCS880 (3ADW000452). See also B5A3 and 5093.	5
A5F4	Control unit battery.	The battery on the SDCS-CON-H01 is low. Exchange the battery:	4
A682	Flash erase speed exceeded.	The flash memory in the memory unit has been erased too frequently. This compromises the lifetime of the memory. Avoid forcing unnecessary parameter saves by 96.16 Parameter save manually or cyclic parameter writes. E.g. user logger triggering via parameters. Check the AUX code (format XYYYYZZZ). X specifies the source of warning. 1: generic flash erase supervision. ZZZ specifies the flash subsector number that generated the warning.	1
A6B0	User lock open.	The user lock is open and parameters 96.100 96.102 are visible. Close the user lock by entering an invalid pass code in 96.07 Pass code.	4
A6B1	User pass code not confirmed.	A new user pass code has been entered, but not confirmed yet. A new user pass code has been entered in 96.100 Change user pass code. Confirm the new pass code by entering the same code in 96.101 Confirm user pass code. To cancel, close the user lock without confirming the new code. To close the user lock, enter an invalid user pass code into 96.07 Pass code then activate 96.27 Control board boot or cycle the power.	4
A6D1	FBA A parameter conflict.	Fieldbus adapter A (FBA A): The drive does not have a functionality requested by a PLC or a requested functionality has not been activated. See also 65A1. The settings of parameter groups 50 Fieldbus adapter (FBA) and 51 FBA A settings are not set according to the fieldbus adapter or the device has not been selected. Check: The PLC programming. The settings of parameter groups 50 Fieldbus adapter (FBA) and 51 FBA A settings. The configuration of the fieldbus adapter.	4
A6D2	FBA B parameter conflict.	Fieldbus adapter B (FBA B): The drive does not have a functionality requested by a PLC or a requested functionality has not been activated. See also 65A2.	4

Code	Warning/Notice	Cause and what to do		Warning level
		and 54 FBA B settings are not adapter or the device has not Check: The PLC programming.	been selected. groups 50 Fieldbus adapter (FBA)	
A6DA	Reference source parametrization.	A reference source is simultan parameters with different units Check: The reference source sele The AUX code (format YY) YY specifies the paramete ZZ specifies the paramete	eously connected to multiple . See also 65B1. ction parameters. ZZ). r group.	4
A6E5	Al parametrization	not correspond to the paramet Check the AUX code. The cod	le identifies the analog input Adjust either the jumper (J1, J2)	4
A6E6	ULC configuration 0000	User load curve configuration of Check the AUX code (format > ZZZZ indicates the problem. A Speed points inconsistent. Check that each speed point, shas a higher value than the problem.	XXXZZZZ). actions see below. see parameters 37.11 37.15,	4
		Underload point above overload point. Overload point below underload point.	Check that each overload point, see parameters 37.31 37.35, has a higher value than the corresponding underload point,	
A780	Motor stall. Programmable, see 31.24 Stall function.	Selected motor, the motor is of because of excessive load or in 7121. The motor torque exceeded 3' longer than 31.28 Stall time will below 31.26 Stall speed level. Check: The motor load/mechanics The drive ratings. For correct field current. The settings of 31.24 Stall 31.26 Stall speed level and	1.25 Stall torque level for a time hile the speed feedback was (e.g. brake).	1
A781	Motor fan acknowledge. Programmable, see 20.39 Motor fan acknowledge source.	Motor/External cooling fan feer also 71B1. Check: The setting of 20.39 Motor The fan operation and con motor/external fan if faulty. The fan contactor. The fan supply voltage.	nection. Replace the	2
A782	Measurement circuit FEN temperature		measurement when a FEN-xx is	1

Code	Warning/Notice	Cause and what to do	Warning level
		Check that 35.11 Temperature 1 source and 35.21 Temperature 2 source setting corresponds to the actual installation connected to the encoder interface.	
		Problem with the temperature measurement when a FEN-01 is used.	
		A non-supported KTY sensor is connected to the encoder interface FEN-01. Use either a PTC sensor or another encoder interface module.	
A797	Speed feedback configuration.	The speed feedback configuration via encoder interface modules has changed. See also 73A0. Check the AUX code (format XXYYZZZZ). XX specifies the encoder interface module. - 01: For module 1 see parameters 91.11 and 91.12. - 02: For module 2 see parameters 91.13 and 91.14. YY specifies the encoder. - 01: Group 92 Encoder 1 configuration. - 02: Group 93 Encoder 2 configuration.	4
	0001	ZZZZ indicates the problem. Actions see below. Adapter not found in specified slot.	
	0002	Check module location. See parameters 91.12 and 91.14. Detected type of interface module does not match parameter setting. Check the module type parameters 91.11 and 91.13 against status parameters 91.02 and 91.03.	
	0003	Logic version too old. Contact your local ABB representative.	
	0004	Firmware version too old. Contact your local ABB representative.	
	0006	Encoder type incompatible with interface module type. Check module type parameters 91.11 and 91.13 against encoder type parameters 92.01 and 93.01.	
	0007	Adapter not configured. Check module location parameters 91.12 and 91.14.	
	0008	Speed feedback configuration has changed. Use 91.10 Encoder parameter refresh to validate any changes in the settings.	
	0009	No encoders configured in the encoder module. Configure the encoder in group 92 Encoder 1 configuration or 93 Encoder 2 configuration.	
		Non-existing emulation input. Check input selection parameters 91.31 and 91.41.	
	000B	Echo not supported by the selected input. E.g. resolver or absolute encoder. Check: The input selection parameters 91.31 and 91.41.	
	000C	The interface module type against the encoder type. Emulation in continuous mode not supported.	
		Check: The input selection parameters 91.31 and 91.41. The serial link mode parameters 92.30 and 93.30.	
A798	Encoder interface communication. Programmable, see 31.35 Motor feedback	Measured motor/load feedback via an encoder interface module is lost. Check: That the encoder interface module is properly seated in its slot.	4

Code	Warning/Notice	Cause and what to do	Warning level
	fault and 31.38 Load feedback fault.	 That the encoder interface module or slot connectors are not damaged. To pinpoint the problem, try installing the module into another slot. The AUX code (format XXXXYYYY). YYYY indicates the problem. Actions see below. 	
		Failed answer to encoder configuration message. Contact your local ABB representative.	
		Failed answer to adapter watchdog disable message.	
		Failed answer to adapter watchdog enable message.	
		Failed answer to adapter configuration message.	
		Too many failed answers inline to speed and position messages.	
		DDCS driver failed.	
A7A1	Mechanical brake not closed. Programmable, see 44.17 M1 brake fault function.	Selected motor, the acknowledge signal for the mechanical brake closed (applied) stage at the DI is missing. See also 71A2. Check: The mechanical brake itself. The mechanical brake cable connections.	4
		 The mechanical brake settings in group 44 Mechanical brake control. That the acknowledgement signal, if used, matches actual status of brake. The used digital inputs and outputs (groups 10 and 11). 	al
A7A2	Mechanical brake not opened. Programmable, see 44.17 M1 brake fault function.	Selected motor, the acknowledge signal for the mechanical brake opened (applied) stage at the DI is missing. See also 71A3. Check: The mechanical brake itself. The mechanical brake cable connections. The mechanical brake settings in group 44 Mechanical brake control. That the acknowledgement signal, if used, matches actual status of brake. The used digital inputs and outputs (groups 10 and 11).	
A7A5	Mechanical brake opening not allowed. Programmable, see 44.17 M1 brake fault function.	Selected motor, open (lift) conditions of the mechanical brake are not fulfilled. See also 71A5. The brake has been prevented from opening (lifting) by 44.11 M1 keep brake closed, 44.12 Brake close request or torque actual does not reach 44.10 M1 brake open torque, during torque proving. Check: The mechanical brake settings in group 44 Mechanical brake control. Especially 44.11 M1 keep brake closed an 44.12 Brake close request. That the acknowledgement signal, if used, matches actual status of brake. The used digital inputs and outputs (groups 10 and 11).	d
A7AA	Extension Al parameterization.	The hardware current/voltage and parameter settings do not match for an analog input on an I/O extension module. Check the AUX code (format XX0000YY).	4

Code	Warning/Notice	Cause and what to do	Warning level
		XX specifies the number of the I/O extension module. - 01: Group 14 I/O extension module 1. - 02: Group 15 I/O extension module 2. - 03: Group 16 I/O extension module 3. YY specifies the analog input on the module. Example: In case of I/O extension module 1 and analog input Al1 the AUX code is 01000001). The hardware current/voltage setting on the module is shown by 14.29 Al1 HW switch position. The corresponding parameter setting is in 14.30 Al1 unit selection. Adjust either the hardware setting on the module or the parameter to solve the mismatch.	
A7AB		The I/O extension module/DCSLink board (SDCS-DSL-H1x) types and locations specified by parameters do not match the detected configuration or do not communicate with the drive. See also 7082. Check: The type and location settings of the modules/board. See parameters 14.01, 14.02, 15.01, 15.02, 16.01, 16.02, 70.01, 70.02, 70.05 and 70.07. That the module/board is properly seated in its slot. That the module/board and the slot connector is not damaged. Try installing the module into another slot. Check the AUX code (format XXYYYYYY). XX specifies the number of the I/O extension module. — 01: Group 14 I/O extension module 1. — 02: Group 15 I/O extension module 2. — 03: Group 16 I/O extension module 3. — 04: Group 70 DCSLink Communication. YYYYYY indicates the problem. Actions see below. Communication with module/board failed.	4
	000003	Module/Board not found. Configuration of module/board failed.	
	000004		
A7B0	Motor speed feedback. Programmable, see 31.35 Motor feedback fault.	 Selected motor, no motor speed feedback is received. See also 7301. Check the AUX code (format XXYYZZZZ). XX specifies the location of the speed feedback device. Either an encoder interface module or the control board. O1: Encoder interface module 1, see parameters 91.11 and 91.12. O2: Encoder interface module 2, see parameters 91.13 and 91.14. O3: Control board, see group 94 OnBoard speed feedback configuration. YY specifies the speed feedback device. O1: Encoder 1, see group 92 Encoder 1 configuration. O2: Encoder 2, see group 93 Encoder 2 configuration. O3: OnBoard encoder, see group 94 OnBoard speed feedback configuration. O4: Tacho, see group 94 OnBoard speed feedback configuration. ZZZZ indicates the problem. Actions see below. 	4
	0001	Motor gear definition invalid or outside limits.	-

Code	Warning/Notice	Cause and what to do	Warning level
		Check motor gear settings. See 90.43 Motor gear numerator and 90.44 Motor gear denominator. This warning is always active independent of 31.35 Motor feedback fault.	
	0002	 Speed feedback device not configured. Check the settings of the speed feedback device: Encoder 1, see group 92 Encoder 1 configuration. Encoder 2, see group 93 Encoder 2 configuration. The OnBoard encoder, see group 94 OnBoard speed feedback configuration. The tacho, see group 94 OnBoard speed feedback configuration. Use 91.10 Encoder parameter refresh to validate any changes in the settings for an encoder. 	
		Speed feedback device stopped working. Check the status of the speed feedback device.	
		Speed feedback device drift detected. Check for slippage between speed feedback device and motor. The comparison of the measured speed feedback from pulse	_
A7D4		 encoder or analog tacho to measured EMF has failed. Check: The setting of 90.41 M1 feedback selection, 31.14 Fault stop mode fault level 3, 31.35 Motor feedback fault, 31.36 Speed feedback monitor level and 31.37 EMF feedback monitor level. At the encoder: The encoder itself, alignment, cabling, coupling, power supply (feedback might be too low), mechanical disturbances, jumper J4 on the SDCS-CON-H01. At the tacho: The tacho itself, tacho polarity and voltage, alignment, cabling, coupling, mechanical disturbances. EMF: The armature cable connection form the drive to the motor and the polarity. 	
A7B1	Load speed feedback. Programmable, see 31.38 Load feedback fault.	Selected motor, no load speed feedback is received. See also 73A1. Attention: The warning can only be reset by setting 96.27 Control board boot = Reboot or by cycling the auxiliary power. Check the AUX code (format XXYYZZZZ). XX specifies the location of the speed feedback device. Either an encoder interface module or the control board. - 01: Encoder interface module 1, see parameters 91.11 and 91.12. - 02: Encoder interface module 2, see parameters 91.13 and 91.14. - 03: Control board, see group 94 OnBoard speed feedback configuration. YY specifies the speed feedback device. - 01: Encoder 1, see group 92 Encoder 1 configuration. - 02: Encoder 2, see group 93 Encoder 2 configuration. - 03: OnBoard encoder, see group 94 OnBoard speed feedback configuration. - 04: Tacho, see group 94 OnBoard speed feedback configuration. ZZZZ indicates the problem. Actions see below. Load gear definition invalid or outside limits.	

Code	Warning/Notice	Cause and what to do	Warning level
		Check load gear settings. See 90.53 Load gear numerator and 90.54 Load gear denominator. This warning is always active independent of 31.38 Load feedback fault.	
	0002	Feed constant definition invalid or outside limits. Check feed constant settings. See 90.63 Feed constant numerator and 90.64 Feed constant denominator. This warning is always active independent of 31.38 Load feedback fault.	
	0003	Motor/load gear definition invalid or outside limits. Check motor/load gear settings. See 90.61 Gear numerator and 90.62 Gear denominator. This warning is always active independent of 31.38 Load feedback fault.	
	0004	 Speed feedback device not configured. Check the settings of the speed feedback device: Encoder 1, see group 92 Encoder 1 configuration. Encoder 2, see group 93 Encoder 2 configuration. The OnBoard encoder, see group 94 OnBoard speed feedback configuration. The tacho, see group 94 OnBoard speed feedback configuration. Use 91.10 Encoder parameter refresh to validate any changes 	
	0005	in the settings for an encoder. Speed feedback device stopped working. Check the status of the speed feedback device.	
A7C1	FBA A communication.	 The comparison of the measured speed feedback from pulse encoder or analog tacho to measured EMF has failed. Check: The setting of 90.41 M1 feedback selection, 31.14 Fault stop mode fault level 3, 31.35 Motor feedback fault, 31.36 Speed feedback monitor level and 31.37 EMF feedback monitor level. At the encoder: The encoder itself, alignment, cabling, coupling, power supply (feedback might be too low), mechanical disturbances, jumper J4 on the SDCS-CON-H01. At the tacho: The tacho itself, tacho polarity and voltage, alignment, cabling, coupling, mechanical disturbances. EMF: The armature cable connection form the drive to the motor and the polarity. Fieldbus adapter A (FBA A): Cyclical communication between 	4
AIUI	Programmable, see 50.02 FBA A comm loss func.	PLC and fieldbus adapter module A or between drive and fieldbus adapter module A is lost. See also 7510. 7510 FBA A communication is only activated after the first data set from the overriding control is received by the drive. Before the first data set is received, only A7C1 FBA A communication is active. The reason is to suppress unnecessary faults (the startup of the overriding control is usually slower than the one of the drive). Check: The status of the fieldbus communication. See user documentation of the fieldbus interface. The settings of groups 50 Fieldbus adapter (FBA), 51 FBA A settings, 52 FBA A data in and 53 FBA A data out. The cable connections.	

Code	Warning/Notice	Cause and what to do	Warning level
		 The fieldbus termination. The fieldbus adapter. That the master is able to communicate. 	
A7C2	FBA B communication. Programmable, see 50.32 FBA B comm loss func.	Fieldbus adapter B (FBA B): Cyclical communication between PLC and fieldbus adapter module B or between drive and fieldbus adapter module B is lost. See also 7520. 7520 FBA B communication is only activated after the first data set from the overriding control is received by the drive. Before the first data set is received, only A7C2 FBA B communication is active. The reason is to suppress unnecessary faults (the startup of the overriding control is usually slower than the one of the drive). Check: The status of the fieldbus communication. See user documentation of the fieldbus interface. The settings of group 50 Fieldbus adapter (FBA), 54 FBA B settings, 55 FBA B data in and 56 FBA B data out. The cable connections. The fieldbus termination. The fieldbus adapter. That the master is able to communicate.	4
A7CA	DDCS controller communication. Programmable, see 60.59 DDCS controller comm loss function.	Cyclical communication between DDCS controller and drive is lost or there is no communication at all. The drive is waiting for the very first dataset. See also 7581. Check: The status/settings of the DDCS controller. See user documentation of the DDCS controller. The adapters between DDCS controller and drive. The setting of 20.01 Command location. The settings of group 60 DDCS communication, 61 D2D and DDCS transmit data and 62 D2D and DDCS receive data. The fiber optic cable connections.	4
A7CB	Master-follower communication. Programmable, see 60.09 M/F comm loss function.	Cyclical communication between master and a follower (DDCS/D2D) is lost or there is no communication at all. The drive is waiting for the very first dataset. See also 7682. Check: The AUX code. It indicates which node address on the master-follower link is affected. See 60.02 M/F node address in each drive. The setting of 20.01 Command location. The settings of group 60 DDCS communication. The cable connections.	4
A7CE	EFB communication. Programmable, see 58.14 Communication loss action.	Cyclical communication to the embedded fieldbus (EFB) is lost. See also 6681. 6681 EFB communication is only activated after the first data set from the overriding control is received by the drive. Before the first data set is received, only A7CE EFB communication is active. The reason is to suppress unnecessary faults (the startup of the overriding control is usually slower than the one of the drive). Check: The status of the fieldbus master (online, offline, error etc.). The settings of group 58 FBA Embedded fieldbus.	4

Code	Warning/Notice	Cause and what to do		Warning level
		The cable connections to board.The fieldbus termination.	connector XD2D on the control	
A7E1	Speed feedback		edback device error. See also 7381.	
	device. Programmable, see 31.35 Motor feedback fault.	an encoder interface module of 1.12. - 01: Encoder interface module of 91.12. - 02: Encoder interface module of 91.14. - 03: Control board, see group configuration. YY specifies the speed feedbare of 1. Encoder 1, see group of 1. Encoder 2, see group of 1. Encoder 2, see group of 1. Encoder 2, see group of 1. Encoder 2, see group of 1. Encoder 3. OnBoard encoder, see feedback configuration. - 04: Tacho, see group 94 of 1. Configuration. - 05: EMF, see group 94 of 1. Configuration.	e speed feedback device. Either or the control board. dule 1, see parameters 91.11 and dule 2, see parameters 91.13 and oup 94 OnBoard speed feedback ack device. 92 Encoder 1 configuration. 93 Encoder 2 configuration. 9 group 94 OnBoard speed OnBoard speed feedback	
	0001	If the encoder was working pr encoder cable and encoder in Check:	eviously, check the encoder, terface module for damage. th ends of the encoder cable. coder cable. mode.	
	0002	No encoder signal. Check the condition of the encoder.		
	0000			+
		Overspeed. Overfrequency.	Contact your local ABB representative.	
		Resolver ID run failed.	10011101110110	
				1
Ī		Resolver overcurrent fault.	Ocatast con L. LARR	4
		Absolute encoder communication error.	Contact your local ABB representative.	
	0009	Absolute encoder initialization error.		
	000A	Absolute SSI encoder configuration error.		
	000B	Encoder reported an internal error.	See the documentation of the encoder.	
	000C	Encoder reported a battery error.		
	000D	Encoder reported overspeed or decreased resolution due to overspeed.		
	000E	Encoder reported a position counter error.		

Code	Warning/Notice	Cause and what to do	Warning level
	000F	Encoder reported an internal error.	
	0010	Speed feedback device. Speed feedback was change from speed feedback device to EMF. This warning is always active independent of 31.35 Motor feedback fault.	
	0011	Encoder speed feedback. Speed feedback was change from one encoder to the other encoder (only valid if 2 encoders are connected). This warning is always active independent of 31.35 Motor feedback fault.	
	0012	Selected motor, wrong direction of speed feedback. The speed feedback direction of tacho and encoders is checked against the speed feedback direction of the EMF. See 90.41 M1 feedback selection. Check:	
		 The real direction of motor rotation. The settings of 31.36 Speed feedback monitor level and 31.37 EMF feedback monitor level. The connection of the tacho cable. To correct, swap the two wires. 	
		 The connection of the encoder cable. To correct, swap e.g. channels A and A The connection of armature and field cables. 	
	0013	Selected motor, tacho range. Check: — That the tacho voltage at overspeed fits to the tacho input. It should not be higher than 270 V.	
	0014	Re-do the tacho fine-tuning. 31.30 M1 overspeed trip margin or 42.25 M2 overspeed trip margin have been changed. Use 99.20 Tuning request = Tacho fine-tuning. This warning is always active independent of 31.35 Motor feedback fault.	
A7EE	Control panel/PC tool link communication. Programmable, see 49.05 Communication loss action.	Control panel/PC tool has stopped communicating. See also 7081. Check: The setting of 49.05 Communication loss action. The control panel/PC tool connection cable. The control panel connector. The mounting platform if being used. Disconnect and reconnect the control panel/PC tool.	4
A880	Motor bearings. Programmable, see 33.14 On-time 1 warn message, 33.24 On- time 2 warn message, 33.55 Value counter 1 warn message and 33.65 Value counter 2 warn message	Warning generated by an on time timer or a value counter. See group 33 Generic timer & counter. Check the AUX code for the source of the warning. O: 33.13 On-time 1 source. 1: 33.23 On-time 2 source. 4: 33.53 Value counter 1 source. 5: 33.63 Value counter 2 source.	4 (default) 1 5 user selectable
A881	Any relay.	Warning generated by an edge counter. See group 33 Generic	4 (default)
A882 A883	Motor starts. Power ups.	timer & counter.	1 5 user selectable

Code	Warning/Notice	Cause and what to do	Warning level
A884 A885	Mains contactor. DC-breaker.	Programmable warnings, see 33.35 Edge counter 1 warn message and 33.45 Edge counter 2 warn message. Check the AUX code for the source of the warning. 2: 33.33 Edge counter 1 source. 3: 33.43 Edge counter 2 source.	
A886	On-time 1. (Editable message text) Programmable, see 33.14 On-time 1 warn message.	Warning generated by on-time timer 1. See group 33 Generic timer & counter. Check the source of the warning. See 33.13 On-time 1 source.	4 (default) 1 5 user selectable
A887	On-time 2. (Editable message text) Programmable, see 33.24 On-time 2 warn message.	Warning generated by on-time timer 2. See group 33 Generic timer & counter. Check the source of the warning. See 33.23 On-time 2 source.	4 (default) 1 5 user selectable
A888	Edge counter 1. (Editable message text) Programmable, see 33.35 Edge counter 1 warn message.	Warning generated by edge counter 1. See group 33 Generic timer & counter. Check the source of the warning. See 33.33 Edge counter 1 source.	4 (default) 1 5 user selectable
A889	Edge counter 2. (Editable message text) Programmable, see 33.45 Edge counter 2 warn message.	Warning generated by edge counter 2. See group 33 Generic timer & counter. Check the source of the warning. See 33.43 Edge counter 2 source.	4 (default) 1 5 user selectable
A88A	Value counter 1. (Editable message text) Programmable, see 33.55 Value counter 1 warn message.	Warning generated by value counter 1. See group 33 Generic timer & counter. Check the source of the warning. See 33.53 Value counter 1 source.	4 (default) 1 5 user selectable
A88B	Value counter 2. (Editable message text) Programmable, see 33.65 Value counter 2 warn message.	Warning generated by value counter 2. See group 33 Generic timer & counter. Check the source of the warning. See 33.63 Value counter 2 source.	4 (default) 1 5 user selectable
A88C	Clean device.	Warning generated by an on time timer. See group 33 Generic	4 (default)
A88D	Any fan.	timer & counter.	1 5 user
A88E	Cabinet fan.	Programmable warnings, see 33.14 On-time 1 warn message	selectable
A88F A890	Cooling fan. Additional cooling.	and 33.24 On-time 2 warn message. Check the AUX code for the source of the warning. O: 33.13 On-time 1 source. 1: 33.23 On-time 2 source. 10: 05.04 Fan on-time counter.	
A8A0	Al supervision. Programmable, see 12.03 Al supervision function.	An analog signal is outside the limits specified for the analog input. See also 80A0. Check: The AUX code (format XYY). X specifies the location of the input. 0: Control board. 1: I/O extension module 1. 2: I/O extension module 2 3: I/O extension module 3. 4: YY specifies the input and limit. 01: Al1 under minimum.	4

Code	Warning/Notice	Cause and what to do	Warning level
		 02: Al1 over maximum. 03: Al2 under minimum. 04: Al2 over maximum. 05: Al3 under minimum. 06: Al3 over maximum. The signal level at the analog input. The wiring connected to the input. Polarity of the connection. The minimum and maximum limits of the input in groups 12 Standard Al, 14 I/O extension module 1, 15 I/O extension module 2 and 16 I/O extension module 3. 	
A8B0	Signal supervision 1. (Editable message text) Programmable, see 32.06 Supervision 1 action.	Warning generated by signal supervision 1. See group 32 Supervision. See also 80B0. Check the source of the warning. See 32.07 Supervision 1 signal.	4 (default) 1 5 user selectable
A8B1	Signal supervision 2. (Editable message text) Programmable, see 32.16 Supervision 2 action.	Warning generated by signal supervision 2. See group 32 Supervision. See also 80B1. Check the source of the warning. See 32.17 Supervision 2 signal.	4 (default) 1 5 user selectable
A8B2	Signal supervision 3. (Editable message text) Programmable, see 32.26 Supervision 3 action.	Warning generated by signal supervision 3. See group 32 Supervision. See also 80B2. Check the source of the warning. See 32.27 Supervision 3 signal.	4 (default) 1 5 user selectable
A8BE	ULC overload. Programmable, see 37.03 ULC overload actions.	Selected signal has exceeded the user overload curve. See group 37 User load curve. See also 8002. Check: - For any operating conditions increasing the monitored signal. E.g., the load of the motor if the torque or current is being monitored. - The definition of the load curve.	4 (default) 1 5 user selectable
A8BF	ULC underload. Programmable, see 37.04 ULC underload actions.	Selected signal has fallen below the user underload curve. See group 37 User load curve. See also 8001. Check for any operating conditions decreasing the monitored signal. E.g., the loss of load if the torque or current is being monitored. Check the definition of the load curve.	4 (default) 1 5 user selectable
A8C0	Fan service counter	A cooling fan has reached the end of its estimated lifetime. See 05.41 Main fan service counter. Check the AUX code for the fan to be replaced. — 0: Main cooling fan. Refer to the <u>DCS880 Service Manual (3ADW000488)</u> of the drive for fan replacement instructions.	4
A981	External warning 1. (Editable message text) Programmable, see 31.01 External event 1 source and 31.02 External event 1 type.	There is no problem with the drive itself! Warning generated by external device 1. See group 31 Fault functions and fault levels. See also 9081. Check: External device 1. 31.01 External event 1 source.	4 (default) 1 5 user selectable.
A982	External warning 2. (Editable message text) Programmable, see 31.03 External event 2	There is no problem with the drive itself! Warning generated by external device 2. See group 31 Fault functions and fault levels. See also 9082. Check:	4 (default) 1 5 user selectable

Code	Warning/Notice	Cause and what to do	Warning level
	source and 31.04	External device 2.	
	External event 2 type.	 31.03 External event 2 source. 	
A983	External warning 3. (Editable message text) Programmable, see 31.05 External event 3	There is no problem with the drive itself! Warning generated by external device 3. See group 31 Fault functions and fault levels. See also 9083. Check:	4 (default) 1 5 user selectable
	source and 31.06	 External device 3. 	
	External event 3 type.	31.05 External event 3 source.	
A984	External warning 4. (Editable message text) Programmable, see 31.07 External event 4 source and 31.08 External event 4 type.	There is no problem with the drive itself! Warning generated by external device 4. See group 31 Fault functions and fault levels. See also 9084. Check: External device 4. 31.07 External event 4 source.	4 (default) 1 5 user selectable
A985	External warning 5. (Editable message text) Programmable, see 31.09 External event 5 source and 31.10 External event 5 type.	There is no problem with the drive itself! Warning generated by external device 5. See group 31 Fault functions and fault levels. See also 9085. Check: - External device 5 31.09 External event 5 source.	4 (default) 1 5 user selectable
AF8C	Process PID sleep mode.	The drive is entering sleep mode. Informative warning. See parameters 40.41 40.48.	4
AF90	Autotuning.	The autotuning or assistant did not complete successfully. To clear the warning, either finish an autotuning/assistant successfully or keep Reset (e.g. via DI) depressed for over 3 seconds. Check the AUX code (format XXXXYYYY). XXXX specifies the autotuning or assistant. 0001: Field current autotuning. 0002: Armature current autotuning. 0003: Speed feedback assistant. 0004: Speed controller autotuning. 0006: Flux linearization autotuning. 0007: Thyristor test. 0008: Tacho fine tuning. YYYY indicates the problem. Actions see below.	4
	00010001	 The drive was stopped before the autotuning finished. The On command (06.09.b00 Used main control word) was prematurely removed. Autotuning aborted by a fault. Repeat autotuning until successful. Motor is turning. No speed zero indication. 	
	00010003	Armature current not zero.]
	00010004	Field current autotuning wrongly started in armature drive, please use the field exciter.	
		No field exciter selected. See 99.07 M1 used field exciter type.	
	00010006	Autotuning timeout, On command (06.09.b00 Used main control word) was not set in time.	
	00010007 0001000A	 Measured field current does not reach the field current reference. No detection of field resistance. Field circuit open (e.g. not connected) respectively interrupted. Unable to detect a field inductance.	
	0001000B	Unable to detect a field inductance.	

Code	Warning/Notice	Cause and what to do	Warning level
	0001000C	Firmware fault.	
		Contact your local ABB representative.	
	00020002	 The drive was stopped before the autotuning finished. 	
		- The Run command (06.09.b03 Used main control word) was	
		prematurely removed.	
		Autotuning aborted by a fault. Pencat autotuning until successful.	
	00020003	Repeat autotuning until successful. Autotuning timeout, Run command (06.09.b03 Used main	
	00020003	control word) was not set in time or is missing.	
	00020004	,	
		Armature current 99.11 M1 nominal current is set to zero.	
	00020005	Motor is turning. No speed zero indication.	
	00020006	Armature circuit and/or armature voltage measurement circuit	
		wrongly connected (e.g. at C1/D1 or at the SDCS-PIN-H51).	
	00020007		
	00020008	Armature voltage measurement circuit open (e.g. not connected	
		at C1/D1 or at the SDCS-PIN-H51) or interrupted. This can be	
		checked by measuring the motor resistance at C1/D1 and the SDCS-PIN-H51. Check also current and torque limits.	
	00020009		
	00020003	Contact your local ABB representative.	
	00030001	The drive was stopped before the autotuning finished.	
		The Run command (06.09.b03 Used main control word) was	
		prematurely removed.	
		Autotuning aborted by a fault.	
		Repeat autotuning until successful.	
	00030002	, ,	
		fine-tuning not possible due to speed limitation - see 30.11 M1 minimum speed and 30.12 M1 maximum speed.	
	00030003		
	0000000	fine-tuning not possible due to voltage limitation.	
		During the tuning of the speed controller, the speed feedback	
		assistant or the tacho fine-tuning base speed, 99.14 M1 nominal	
		(base) speed, might be reached. Thus full armature voltage,	
		99.12 M1 nominal voltage, is necessary. In case the mains voltage is too low to provide for the needed armature voltage	
		the autotuning procedure is canceled.	
		Check and adapt if needed:	
		– 99.10 Nominal mains voltage.	
		 99.12 M1 nominal voltage. 	
		 99.14 M1 nominal (base) speed. 	
	00030004	Autotuning timeout, Run command (06.09.b03 Used main	
	0000005	control word) was not set in time or is missing.	
	00030005	· ·	
		Decrease 23.12 Acceleration time 1 to get more torque and current.	
		Increase torque step or decrease speed step. See 25.38	
		Autotune torque step and 25.39 Autotune speed step.	
	00030006	Tacho adjustment faulty or not OK or the tacho voltage is too high during autotuning	
	00040001	The drive was stopped before the autotuning finished.	
	30010001	The Give was stopped before the autoturing infished. The Run command (06.09.b03 Used main control word) was	
		prematurely removed.	
		 Autotuning aborted by a fault. 	

Code	Warning/Notice	Cause and what to do	Warning level
		Repeat autotuning until successful.	
	00040002	Autotuning timeout, Run command (06.09.b03 Used main control word) was not set in time or is missing.	
	00040003	Tuning of speed controller, speed feedback assistant or tacho fine-tuning not possible due to speed limitation - see 30.11 M1 minimum speed and 30.12 M1 maximum speed.	
	00040004 00040006	Motor is turning. No speed zero indication.	
	00040007	Motor could not decelerate with full autotuning torque. Decrease 23.13 Deceleration time 1 to get more torque and current. Decrease torque step or speed step. See 25.38 Autotune torque step and 25.39 Autotune speed step.	
	00040008	Armature current not zero.	
	00040009	Tuning of speed controller, speed feedback assistant or tacho fine-tuning not possible due to voltage limitation. During the tuning of the speed controller, the speed feedback assistant or the tacho fine-tuning base speed, 99.14 M1 nominal (base) speed, might be reached. Thus full armature voltage, 99.12 M1 nominal voltage, is necessary. In case the mains voltage is too low to provide for the needed armature voltage the autotuning procedure is canceled. Check and adapt if needed: Mains voltage 99.12 M1 nominal voltage 99.14 M1 nominal (base) speed	
	0004000A	Required torque reference could not be reached before the drive reached base speed. Decrease torque step or increase speed step. See 25.38	
	0004000B	Autotune torque step and 25.39 Autotune speed step. Drive is not in speed control mode. See 19.01 Actual operation mode.	
	0004000C	Motor could not accelerate to base speed. Decrease 23.12 Acceleration time 1 to get more torque and current. Increase torque step or decrease speed step. See 25.38 Autotune torque step and 25.39 Autotune speed step.	
	0004000D	No writing of control parameters of speed controller possible.	
		Firmware fault. Contact your local ABB representative.	
		 The drive was stopped before the autotuning finished. The Run command (06.09.b03 Used main control word) was prematurely removed. Autotuning aborted by a fault. 	
	00060001	 The drive was stopped before the autotuning finished. The Run command (06.09.b03 Used main control word) was prematurely removed. 	

Code	Warning/Notice	Cause and what to do	Warning level
		Autotuning aborted by a fault.	
		Repeat autotuning until successful.	
	00060002	Autotuning timeout, Run command (06.09.b03 Used main control word) was not set in time or is missing.	
	00060003	Field weakening not allowed. See 90.41 M1 feedback selection and 28.41EMF/Field control mode.	
	00060004	Motor is turning. No speed zero indication.	
		Drive is not in speed control mode. See 19.01 Actual operation mode.	
	00060006	Requested speed was not reached after 300 seconds.	
		Wrong order of measurement results in the flux linearization parameters. See 28.31 Field current at 40 % flux, 28.32 Field current at 70 % flux and 28.33 Field current at 90 % flux.	
	00060008	Firmware fault. Contact your local ABB representative.	
	00070002		
	00070003	Autotuning timeout, Run command (06.09.b03 Used main control word) was not set in time or is missing.	
	00070004	Field current not zero.	
		Armature current not zero.	
		Motor is turning. No speed zero indication.	
		Thyristor block test failed.	
		Motor connected to ground (near terminal C).	
		Motor connected to ground (near terminal D).	
		Armature winding is not connected (terminals C and D are open).	
	00070011	V11 short circuit.	
		V12 short circuit.	
		V13 short circuit.	
		V14 short circuit.	
		V15 short circuit.	
	00070016	V16 short circuit.	
	00070C11	V11 not conducting.	
	00070C12	V12 not conducting.	
	00070C13	V13 not conducting.	
	00070C14	V14 not conducting.	
	00070C15	V15 not conducting.	
		V16 not conducting.	
		V21 not conducting.	
		V22 not conducting.	
		V23 not conducting.	
		V24 not conducting.	
		V25 not conducting.	
		V26 not conducting.	
		V11 or V24 short circuit	
		V12 or V25 short circuit.	
		V13 or V26 short circuit.	
	00071421	V14 or V21 short circuit.	

Code	Warning/Notice	Cause and what to do	Warning level
	00071522	V15 or V22 short circuit.	
	00071623	V16 or V23 short circuit.	
	00072000	Armature winding is short-circuited (short circuit between	
		terminals C and D).	
	0007FFFF	Thyristor test finishes successful, stack okay.	
	00080001		
		- The Run command (06.09.b03 Used main control word) was	
		prematurely removed.	
		 Autotuning aborted by a fault. 	
		Repeat autotuning until successful.	
	00080002	Autotuning timeout, Run command (06.09.b03 Used main	
		control word) was not set in time or is missing.	
	00080003	Drive in On state (06.09.b0 Used main control word = 1) when	
		autotuning was requested. Remove the on command.	
	00080004	A fault happened during the autotuning. For details see event	
		logger.	
AFE1	Off 2 (emergency off).	The drive has received an Off2 command (emergency off/fast	1
		current off).	
		There is no problem with the drive itself!	
		Check:	
		The AUX code (format 00XXYYYY).	
		XX specifies the source of the Off2 command.	
		- 04: 20.04 Off2 source 1 (emergency off).	
		- 08: 20.08 Off2 source 2 (emergency off).	
		- 09: 06.09.b01 Used main control word.	
		YYYY specifies the digital input or bit.	
		- 0000: Other [bit]; source selection.	
		 0100: Off2 command; 0, emergency off/fast current off. 	
		– 0101: Off2 inactive; 1, normal operation.	
		- 0101: 0112 inactive, 1, normal operation 0103: DI1; 10.02.b00 DI delayed status.	
		- 0104: DI2; 10.02.b01 DI delayed status.	
		- 0104: DI2; 10:02:001 DI delayed status.	
		- 0106: DI4; 10.02.b03 DI delayed status.	
		- 0107: DI5; 10.02.b04 DI delayed status.	
		- 0108: DI6; 10.02.b05 DI delayed status.	
		- 0111: DIO1; 11.02.b00 DIO delayed status.	
		- 0112: DIO2; 11.02.b01 DIO delayed status.	
		- 0119: DIL; 10.02.b15 DI delayed status.	
		 1001: 06.09.b01 Used main control word. 	
		 That it is safe to continue operation. 	
		 That it is safe to reset the source of the Off2 command. E.g. 	
		a push button. Then restart the drive.	
		 If necessary, invert the signal, since the signal should be 	
		low active.	
		If On/Run command is still high.	
		Follower drive in a master-follower configuration.	
		The drive has received an Off2 command from the master.	
		Informative warning. After stopping on an Off2 command, the	
		master sends a short, 10 ms Off2 command to the follower(s).	
	0.00	Thus, the Off2 event is stored in the event log of the follower.	
AFE2	Off 3 (emergency stop).	The drive has received an Off3 command (emergency stop).	1
		There is no problem with the drive itself!	
		Check:	

Code	Warning/Notice	Cause and what to do	Warning level
		 The AUX code (format 00XXYYYY). XX specifies the source of the Off3 command. 05: 20.05 Emergency stop source. 09: 06.09.b02 Used main control word. YYYY specifies the digital input or bit. 0000: Other [bit]; source selection. 0100: Off2 command; 0, emergency off/fast current off. 0101: Off2 inactive; 1, normal operation. 0103: DI1; 10.02.b00 DI delayed status. 0104: DI2; 10.02.b01 DI delayed status. 0105: DI3; 10.02.b02 DI delayed status. 0106: DI4; 10.02.b03 DI delayed status. 0107: DI5; 10.02.b04 DI delayed status. 0108: DI6; 10.02.b05 DI delayed status. 0111: DIO1; 11.02.b00 DIO delayed status. 0112: DIO2; 11.02.b01 DIO delayed status. 0119: DIL; 10.02.b15 DI delayed status. 1002: 06.09.b02 Used main control word. That it is safe to continue operation. That it is safe to reset the source of the Off2 command. E.g. a push button. Then restart the drive. If necessary, invert the signal, since the signal should be low active. If On/Run command is still high. Follower drive in a master-follower configuration. The drive has received an Off3 command from the master. Informative warning. After stopping on an Off3 command, the master sends a short, 10 ms Off3 command to the follower(s). Thus, the Off3 event is stored in the event log of the follower. 	
AFE7	Follower.	A follower drive has tripped. Check the AUX code. Add 2 to the code to find out the node address of the faulted follower. Then correct its fault.	1
AFEB	Run enable command. (Editable message text)	No run enable command received. Check: - The setting of 20.12 Enable run command source. - That the signal of the selected source is enabled. - The wiring of selected source.	1
B5A0	Safe torque off. Programmable, see 31.22 STO indication run/stop.	STO active, no drive problem. See safety supplement for functional safety converter DCS880 (3ADW000452). See also A5A0 and 5091.	4
B5A3	Safe off main contactor XSMC:STO. Programmable, see 31.90 XSMC:STO Indication.	STO monitor DC current not zero (zero current time out). See safety supplement for functional safety converter DCS880 (3ADW000452). See also A5A3 and 5093.	4
B5A4	Firmware internal diagnostics.	Drive control unit rebooted unexpectedly. Notice.	4

Faults

In case a fault occurs, it stays active until the cause is eliminated and a Reset is given. All fault signals are resetable except of:

- 50FE Type code.
- 6000 Internal firmware.
- F501 Auxiliary undervoltage.
- F547 Drive hardware.

To reset a fault following steps are required:

- The above-mentioned faults can only be reset by cycling the power.
- Remove the Run and On commands.
- Eliminate the faults.
- Acknowledge the fault with Reset via digital input, overriding control system or with Control panel/PC tool.
- Depending on the systems condition, generate Run and On commands again.

Fault levels

The fault signals will switch the drive off completely or partly depending on its fault level.

The fault handling provides 6 fault levels.

Fault level 1

- The main contactor is switched off immediately.
- The field contactor is switched off immediately.
- The fan contactor is switched off immediately.

Fault level 2

- The main contactor is switched off immediately.
- The field contactor is switched off immediately.
- The fan contactor stays on as long as the fault is pending or as long as 20.40 Drive/Motor fan delay time is running.

Fault level 3

The drive is stopping via 31.14 Fault stop mode fault level 3, thus:

- The main contactor is switched off immediately.
- The field contactor is switched off immediately in case of 31.14 Fault stop mode fault level 3 = Coast stop, but it stays on in case of field heating or 31.14 Fault stop mode fault level 3 = Dynamic braking (this is valid for all level 3 faults).
- The fan contactor stays on.

At standstill:

- The main contactor cannot be switched on again.
- The field contactor stays on in case of field heating.
- The fan contactor stays on as long as 20.40 Drive/Motor fan delay time is running.

Fault level 4

The drive is stopping via 31.15 Fault stop mode fault level 4, thus:

- The main contactor is switched off immediately in case of 31.15 Fault stop mode fault level 4 = Coast stop or Dynamic braking, but it stays on in case of 31.15 Fault stop mode fault level 4 = Ramp stop or Torque limit
- The field contactor is switched off immediately in case of 31.15 Fault stop mode fault level 4 = Coast stop, but it stays on in case of field heating or 31.15 Fault stop mode fault level 4 = Ramp stop, Torque limit or Dynamic braking.
- The fan contactor is switched off immediately in case of 31.15 Fault stop mode fault level 4 = Coast stop, but stays on in case of 31.15 Fault stop mode fault level 4 = Ramp stop, Torque limit or Dynamic braking.

At standstill:

- The main contactor is switched off immediately.
- The field contactor stays on in case of field heating.
- The fan contactor stays on as long as 20.40 Drive/Motor fan delay time is running.

Fault level 5

The drive is stopping via any communication loss action - see 49.05 Communication loss action, 50.02 FBA A comm loss func, 50.32 FBA B comm loss func, 58.14 Communication loss action, 60.09 M/F comm loss function, 60.59 DDCS controller comm loss function and 70.07 DCSLink comm loss function - thus:

 The main contactor is switched off immediately or stays on depending on the selected communication loss action.

- The field contactor is switched off immediately or stays on depending on the selected communication loss action, but it stays on in case of field heating.
- The fan contactor is switched off immediately or stays on depending on the selected communication loss action.

At standstill:

- The main contactor is switched off immediately.
- The field contactor stays on in case of field heating.
- The fan contactor stays on as long as 20.40 Drive/Motor fan delay time is running.

Fault level 6

Used for STO related faults. See safety supplement for functional safety converter DCS880 (3ADW000452).

Fault messages

The list contains the fault code in hex, its name, the cause and hints what to do.

Code	Fault	Cause and what to do	Fault level
1412	Fault reset	A fault has been reset. Notice.	-
1414	Backup/Restore Timeout	The unit encountered problems creating a backup file or restoring one. Please try again.	1
2310	Armature overcurrent.	The armature current has exceeded either 07.63 Drive DC overcurrent level or 31.44 Armature overcurrent level. Check: That the start-up data in group 99 corresponds to the motor rating plate and that the drive is matching the motor. The setting of 07.63 Drive DC overcurrent level and 31.44 Armature overcurrent level. The settings of the current controller in group 27 Armature current control. The settings of current and torque limits in group 30 Control limits. The motor and motor cables. All connections in the armature circuit. The incoming voltage for synchronizing. If the synchronizing voltage is not taken from the mains directly, but via a synchronizing transformer or the 230 VAC/115 VAC network, check that there is no phase shift between the same phases. Use an oscilloscope to verify. The mains/branch fuses. That there are no contactors opening and closing in the motor cables. That there are no power factor correction capacitors or surge absorbers between line reactor and drive. The AUX code (format XXXYYYZZ). YYY identifies the power unit channel. In case of a hardparallel configuration. In case of a rebuild kit check: For proper connection of the firing pulses. For proper connection of the CTs. That 95.25 Set: Type code = None. The setting of 95.27 Set: Drive DC current scaling, because 07.63 Drive DC overcurrent level = 2.3 • 95.27 Set: Drive DC current scaling.	3
2330	Residual current detected. Programmable, see 31.18 Residual current detection type.	The drive has detected an unbalance typically due to a residual current in the motor or the motor cables. Sum of IL1, IL2, IL3 ≠ zero. See also A2B3. Check:	1

Code	Fault	Cause and what to do	Fault level
		 The settings of 31.17 Residual current detection source, 31.18 Residual current detection type, 31.19 Residual current detection level and 31.20 Residual current detection delay. The residual current transformer, if necessary change transformer or connected drive hardware. The insulation resistances of motor and motor cables. Disconnect the mains, verify safe isolation from supply in armature and field circuits and make insulation tests for the complete installation. 	
3130	Mains phase loss. Programmable, see 31.21 Mains phase loss.	One or several mains voltage phase(s) are missing or the mains voltage phases are imbalanced. See also A130. Check: The condition of the mains (voltage, cabling, fuses, switchgear). That all 3 phases are present directly at the drive. H1 H5: measure the fuses F100 F102 on the SDCS-PIN-H01. H6 H8: check and measure the connections XU1/XU2, XV1/XV2 and XW1/XW2 on the SDCS-PIN-H51. For mains supply imbalance. For loose mains cable connections. That the mains contactor closes and opens. The AUX code: O: All phase voltages U (L1), V (L2) and W (L3) are missing. I: Mains voltage phases are imbalanced. Phase-to-phase voltage Uvv is the smallest voltage. Z: Mains voltage phases are imbalanced. Phase-to-phase voltage Uvw is the smallest voltage. 3: Phase V (L2) is missing. 4: Mains voltage phases are imbalanced. Phase-to-phase voltage Uwu is the smallest voltage. 5: Phase U (L1) is missing.	3
3280	Mains low voltage.	 Mains low (under-) voltage (AC side). See also A111. The firing angle is forced to the value of 30.45 Maximum firing angle and single firing pulses to suppress the DC current are given. Check: The setting of 31.51.Mains loss mode, 31.52 Mains loss down time, 31.53 Mains loss low level 1 and 31.54 Mains loss low level 2. That the mains voltage scaling is correct. See 99.10 Nominal mains voltage. The cutting of the voltage coding resistors on the SDCS-PIN-H51. The condition of the mains (voltage, cabling, fuses, switchgear). That all 3 phases are present directly at the drive. H1 H5: measure the fuses F100 F102 on the SDCS-PIN-H01. H6 H8: check and measure the connections XU1/XU2, XV1/XV2 and XW1/XW2 on the SDCS-PIN-H51. 	3

Code	Fault	Cause and what to do	Fault level
		 That the mains voltage is within the set tolerance. For mains supply imbalance. For loose mains cable connections. That the mains contactor closes and opens. For H1 H4, that the field circuit has no short circuit or ground fault. In case an On command is given and the measured mains voltage is too low for longer than 500 ms A111 Mains low voltage is set. If the problem persist for longer than 10 s 3280 Mains low voltage is generated. 	
4310	Bridge temperature measured.	Excessive bridge temperature. See also A4B0. Wait until the bridge is cooled down. The fan contactor stays on as long as the fault is pending. Temperature fault level, see 07.65 Drive max bridge temperature set. The bridge overtemperature warning will already appear at approximately 5°C below the temperature fault level. Check: The values of 05.11 Ch1 bridge temperature 05.14 Ch4 bridge temperature. The setting of 20.38 Drive fan acknowledge source. The setting of 20.40 Drive/Motor fan delay time. The ambient conditions (e.g. ambient temperature). The airflow and fan operation. The drive fan supply voltage. The drive fan direction of rotation. The drive fan components. The heatsink fins for dust pick-up. The drive cooling air inlet (e.g. filters). The drive cooling air outlet. For open drive doors. The motor power against the drive power. Inadmissible load cycle. When 95.25 Set: Type code = None, that 95.29 Set: Drive max bridge temperature is set properly. The AUX code (format XXXYYYZZ). YYY identifies the power unit channel. In case of a hardparallel configuration.	2
4981	Motor temperature 1 measured/estimated. (Editable message text)	Measured/Estimated motor temperature 1 has exceeded the fault level. See also A491. Wait until the motor/motor model is cooled down under the warning level. The fan contactor stays on as long as the fault is pending. It is not possible to reset the fault as long as the motor remains too hot. Check: The value of 35.02 Measured temperature 1. The real motor temperature. Let motor cool down and restart. The value of 35.12 Temperature 1 fault level. The setting of 35.15 Supervision 1 klixon source, if klixons are used. The cooling of the motor or other temperature measured equipment. The ambient conditions (e.g. ambient temperature). The airflow and fan operation. The motor fan supply voltage.	2

Code	Fault	Cause and what to do	Fault level
4982	Motor temperature 2 measured/estimated. (Editable message text)	Cause and what to do The motor fan direction of rotation. The motor fan components. The motor cooling air inlet (e.g. filters). The motor cooling air outlet. The motor load and drive ratings. Inadmissible load cycle. The wiring of the temperature sensor. The resistance of the temperature sensor by measuring it. Hint: The measured/estimated motor temperature is blocked, if 35.11 Temperature 1 source = Disable. Measured/Estimated motor temperature 2 has exceeded the fault level. See also A492. Wait until the motor/motor model is cooled down under the warning level. The fan contactor stays on as long as the fault is pending. It is not possible to reset the fault as long as the motor remains too hot. Check: The value of 35.03 Measured temperature 2. The real motor temperature. Let motor cool down and restart. The value of 35.22 Temperature 2 fault level. The setting of 35.25 Supervision 2 klixon source, if klixons are used. The cooling of the motor or other temperature measured equipment. The ambient conditions (e.g. ambient temperature). The airflow and fan operation. The motor fan supply voltage. The motor fan direction of rotation. The motor fan components. The motor load and drive ratings. Inadmissible load cycle. The wiring of the temperature sensor. The resistance of the temperature sensor by measuring it.	2
		Hint: - The measured/estimated motor temperature is blocked, if 35.21 Temperature 2 source = Disable.	
4990	FPTC-xx module not found.	A thermistor protection module (FPTC-xx) was activated in 35.30 FPTC configuration word, but it is not detected. Power down the drive control unit and make sure that the module is properly inserted in the correct slot. The last digit of the AUX code identifies the slot.	4
4991	Motor temperature slot 1 measured. (Editable message text)	The thermistor protection module (FEN-xx or FPTC-xx) installed in slot 1 sensor can be attached. See also indicates overtemperature. Depending on the used module, a PTC and/or KTY temperature sensor can be attached. See also A497 A499.	2
4992	Motor temperature slot 2 measured. (Editable message text)	The thermistor protection module (FEN-xx or FPTC-xx) installed in slot 2 indicates overtemperature. Check: The cooling of the motor or other temperature measured equipment.	2
4993	Motor temperature slot 3 measured.	The thermistor protection module (FEN-xx or FPTC-	2

Code	Fault	Cause and what to do	Fault level
	(Editable message text)	 xx) installed in slot 3 indicates overtemperature. The wiring of the temperature sensor. The resistance of the temperature sensor by measuring it. 	
5080	Drive fan acknowledge. Programmable, see 31.41 Drive fan fault function.	 Drive cooling fan feedback at the DI is missing. See also A581. Check: The settings of 20.38 Drive fan acknowledge source and 20.40 Drive/Motor fan delay time. The drive fan operation and connection. The drive fan contactor. The drive fan circuit. The drive fan klixon. The drive fan supply voltage. The drive fan direction of rotation. The drive door open. The drive cooling air inlet (e.g. filter). The drive cooling air outlet. H7 an H8 pressure switch (setting should be 2 mbar). The used digital inputs and outputs (groups 10 and 11). 	4
5090	STO hardware fault.	STO redundancy circuit control board fault. See safety supplement for functional safety converter DCS880 (3ADW000452).	6
5091	Safe torque off. Programmable, see 31.22 STO indication run/stop.	STO active, no drive problem. See safety supplement for functional safety converter DCS880 (3ADW000452). See also A5A0 and B5A0.	6
5092	STO overall fault.	Or function 5090, 5093, FA81, FA82. See safety supplement for functional safety converter DCS880 (3ADW000452). It becomes active when any of the following faults is detected in the STO related circuits: - 5090 STO hardware fault. - 5093 Safe off main contactor XSMC:STO (zero current time out). - FA81 Safe torque off 1 loss fault. - FA82 Safe torque off 2 loss fault.	6
5093	Safe off main contactor XSMC:STO. Programmable, see 31.90 XSMC:STO Indication.	STO monitor DC current not zero (zero current time out). See safety supplement for functional safety converter DCS880 (3ADW000452). See also A5A3 and B5A3.	6
5094	Measurement circuit bridge temperature.	Problem with the internal temperature measurement of the bridge. Check: The wiring of the temperature sensor. The temperature sensor. The (format XXXYYYZZ). YYY identifies the power unit channel. In case of a hardparallel configuration.	4
50FE	Type code.	The hardware of the drive/SDCS-CON-H01 does not match the information stored in the memory unit. This may occur e.g. after a firmware update, memory unit replacement or replacement of the SDCS-CON-H01. To reset, cycle the auxiliary power of the drive. Check:	1

Code	Fault	Cause and what to do	Fault level
		 The settings of 95.14 Set: Power unit (if shown and available), 95.25 Set: Type code, 95.27 Set: Drive DC current scaling and 95.28 Set: Drive AC voltage scaling. The AUX code (format ZZ). ZZ indicates the AUX code category. 6 = Power unit rating ID invalid. 7 = Reading power unit rating ID or power unit type failed on power unit connection. 8 = Power unit not supported (illegal rating ID). 10 = Type code out of range. For module sizes H1 H5 the current and voltage range of the type code setting is limited to max 1190 ADC and max 600 VAC. 20 = Saving of 95.25 Set: Type code failed. 21:= Saving of 95.14 Set: Power unit failed. 	
5681	Power unit, communication.	Communication errors between the control unit and a power unit. Check: The connections between the control unit and the power unit. The auxiliary code (format XXXYYYZZ). XXX specifies the transmitter FIFO error code. 000: No transmitter FIFO error. 001: Internal error [invalid call parameter]. 002: Internal error [configuration not supported]. 003: Transmission buffer full. YYY identifies the power unit. 000: Broadcast. 001: Power unit connected to channel 1 on SDCS-DSL-H1x. 002: Power unit connected to channel 2 on SDCS-DSL-H1x. 003: Power unit connected to channel 3 on SDCS-DSL-H1x. 004: Power unit connected to channel 4 on SDCS-DSL-H1x. ZZ specifies the error source. 01: Transmitter side [link error] from power unit to control unit. 02: Transmitter side [no communication] from power unit to control unit. 03: Receiver side [link error] from control unit to power unit. 04: Receiver side [no communication] from control unit to power unit. 05: Transmitter FIFO error, see XXX. 06: SDCS-OPL-H01 not found.	1
5692	Power unit, power board failure.	Power unit, SDCS-POW-H01 failure. See also A5EB. Check the AUX code (format XXXYYYZZ). YYY identifies the power unit channel. In case of a hardparallel	1
6000	Internal firmware.	configuration. Internal firmware error. To reset, cycle the auxiliary power of the drive. If the problem persist, contact your local ABB representative, quoting the AUX code. Check the AUX code (format YYYY). YYYY indicates the problem. Actions see below.	1

Code	Fault	Cause and what to do	Fault level
	0001	Default setting of parameters wrong.	
		Parameter flash image too small for all parameters.	
	0004	Illegal write attempt on a signal or write-protected parameter, e.g. writing on 06.01 Main control word or 06.09 Used main control word.	
	0006	Wrong type code.]
	0007	An un-initialized interrupted has occurred.	
	0010	Wrong parameter value.	
	0101 9999	The read only parameter, which is being written to by means of a pointer parameter, e.g. 62.51 Data set 10 data 1 selection, Adaptive Program or application program, can be identified by means of the last 4 digits.	
6306	FBA A mapping file.	Fieldbus adapter A mapping file read error. Contact your local ABB representative.	5
6307	FBA B mapping file.	Fieldbus adapter B mapping file read error. Contact your local ABB representative.	5
6481	Internal task overload.	Internal fault. Cycle the power to the drive or use 96.27 Control board boot. If the problem persists, contact your local ABB representative.	1
6487	Internal stack overflow.	Internal fault. Cycle the power to the drive or use 96.27 Control board boot. If the problem persists, contact your local ABB representative.	1
64A1	Internal file load.	File read error. Cycle the power to the drive or use 96.27 Control board boot. If the problem persists, contact your local ABB representative.	1
64A2	Internal record load.	Internal record load error. Contact your local ABB representative.	1
64A3	Application loading.	Application file incompatible or corrupted. Check the AUX code. Actions see below.	1
	8006	Not enough memory for the application.	
	8007	The application contains the wrong library version.	
	800A	The application contains an unknown target (system) library function.	
	800B XXXX	The application load failed. For more details, check 05.22 Diagnostic.	
64A5	Licensing.	Running the control program is prevented either because a restrictive license exists, or because a required license is missing. Record the AUX codes of all active licensing faults and contact your product vendor for further instructions.	1
64A6	Adaptive program.	Error running the adaptive program. Check the AUX code (format XXXXYYYY). XXXX specifies the number of the function block. XXXX = 0000 is a generic error. YYYY indicates the problem. Actions see below.	1
	000A	Program corrupted or block non-existent. Restore the template program or download the program to the drive.	
	000E	Program corrupted or block non-existent. Restore the template program or download the program to the drive.	
		Program too large. Remove blocks until the error stops.	
	001C	A nonexistent parameter or block is used in the program.	

Code	Fault	Cause and what to do	Fault level
		Edit the program to correct the parameter reference, or to use an existing block.	
	001E	Output to parameter failed because the parameter was write-protected. Check: The parameter reference in the program. For other sources affecting the target parameter.	
	0023	Program file incompatible with current firmware version.	
		Adapt the program to current block library and firmware version.	
	Other		
64B0	Memory unit detached.	The memory unit was detached while the drive control unit is powered. Switch off the power to the drive control unit and reinstall the memory unit. In case the memory unit was not actually removed when the fault occurred, check that the memory unit is properly inserted into its connector and its mounting screw is tight. Then cycle the power to the drive or use 96.27 Control board boot. If the	1
64B1	Internal firmware.	problem persists, contact your local ABB representative. Internal firmware fault. Cycle the power to the drive or use 96.27 Control board boot. If	1
64B2	User set fault.	the problem persists, contact your local ABB representative. Loading of user parameter set failed. Ensure that a valid user parameter set exists. Reload if uncertain. Check: That the requested set does exists. See 96.14 Macro select. That the set is compatible with the control program. If the drive was switched off during loading. The memory unit.	1
64E1	Kernel overload.	Operating system error. Cycle the power to the drive or use 96.27 Control board boot. If the problem persists, contact your local ABB representative.	1
6581	Parameter system.	Parameter load or save failed. Try forcing a save using 96.16 Parameter save manually.	3
65A1	FBA A parameter conflict.	Fieldbus adapter A (FBA A): The drive does not have a functionality requested by a PLC or a requested functionality has not been activated. See also A6D1. The settings of parameter groups 50 Fieldbus adapter (FBA) and 51 FBA A settings are not set according to the fieldbus adapter or the device has not been selected. Check: The PLC programming. The settings of parameter groups 50 Fieldbus adapter (FBA) and 51 FBA A settings. The configuration of the fieldbus adapter.	5
65A2	FBA B parameter conflict.	Fieldbus adapter B (FBA B): The drive does not have a functionality requested by a PLC or a requested functionality has not been activated. See also A6D2. The settings of parameter groups 50 Fieldbus adapter (FBA) and 54 FBA B settings are not set according to the fieldbus adapter or the device has not been selected. Check: The PLC programming.	5

Code	Fault	Cause and what to do		Fault level
		 The settings of parameter groups 50 Fie (FBA) and 54 FBA B settings. The configuration of the fieldbus adapter 	·	
65B1	Reference source parametrization.	A reference source is simultaneously conner parameters with different units. See also A6 Check: The reference source selection parameter. The AUX code (format YYZZ). YY specifies the parameter group. ZZ specifies the parameter number.	3	
6681	EFB communication. Programmable, see 58.14 Communication loss action.			5
6682	EFB configuration file.	Embedded fieldbus (EFB) configuration file of Contact your local ABB representative.	could not be read.	5
6683	EFB invalid parameterization.	Embedded fieldbus (EFB) parameter setting or not compatible with the selected protocol. Check the settings of group 58 FBA Embedden.	5	
6684	EFB load fault	Embedded fieldbus (EFB) protocol firmware could not be loaded. Version mismatch between embedded fieldbus (EFB) protocol firmware and drive firmware.	Contact your local ABB representative.	5
6881	Text data overflow.	Internal fault.		5
6882	Text 32-bit table overflow.	Reset the fault. Contact your local ABB representation fault persists.	esentative if the	5
6883	Text 64-bit table overflow.			5
6885	Text file overflow.			5
7081	Control panel/PC tool link communication. Programmable, see 49.05 Communication loss action.	Control panel/PC tool has stopped communicating. See also A7EE. Check: The setting of 49.05 Communication loss action. The control panel/PC tool connection cable. The control panel connector. The mounting platform if being used. Disconnect and reconnect the control panel/PC tool. Check the AUX code. The code specifies the I/O port used as follows: O: Panel/PC tool. 1: Fieldbus interface A. 2: Fieldbus interface B. 3: Ethernet. 4: D2D/EFB port.		5

Code	Fault	Cause and what to do	Fault level
7082	I/O extension communication. Programmable, see 70.07 DCSLink comm loss function.	The I/O extension module/DCSLink board (SDCS-DSL-H1x) types and location specified by parameters do not match the detected configuration or do not communicate with the drive. See also A7AB. Check: The type and location settings of the modules/board. See parameters 14.01, 14.02, 15.01, 15.02, 16.01, 16.02, 70.01, 70.02, 70.05 and 70.07. That the module/board is properly seated in its slot. That the module/board and the slot connector is not damaged. Try installing the module into another slot. Check the AUX code (format XXYYYYYY). XX specifies the number of the I/O extension module/board. O1: Group 14 I/O extension module 1. O2: Group 15 I/O extension module 2. O3: Group 16 I/O extension module 3. O4: Group 70 DCSLink Communication. YYYYYY indicates the problem. O0 0001: Communication with module/board failed. O0 0002: Module/Board not found. O0 0003: Configuration of module/board failed. O0 0004: Configuration of module/board failed.	1
7083	Panel reference conflict.	Use of saved control panel reference in multiple control modes attempted. The control panel reference can only be saved for one reference type at a time. Consider the possibility of using a copied reference instead of saved reference (see the reference selection parameter).	3
7084	Control panel/PC tool version conflict.	The current version of the control panel/PC tool does not support a function. E.g. older control panel versions cannot be used as a source of external references. Update the control panel/PC tool. Contact your local ABB representative if necessary.	4
7085	Incompatible option Module.	Option module not supported. E.g. type Fxxx-xx-M fieldbus adapters are not supported. Replace the module with a supported type. Check the AUX code. It specifies the interface to which the unsupported module is connected: — 1: Fieldbus interface A. — 2: Fieldbus interface B.	4
7121	Motor stall. Programmable, see 31.24 Stall function.	Selected motor, the motor is operating in the stall region because of excessive load or insufficient motor power. See also A780. The motor torque exceeded 31.25 Stall torque level for a time longer than 31.28 Stall time while the speed feedback was below 31.26 Stall speed level. Check: The motor load/mechanics (e.g. brake). The drive ratings. For correct field current. The settings of 31.24 Stall function, 31.25 Stall torque level, 31.26 Stall speed level and 31.28 Stall time. The settings for current and torque limits in group 30 Control limits.	4

Code	Fault	Cause and what to do	Fault level
71A2	Mechanical brake not closed. Programmable, see 44.17 M1 brake fault function.	Selected motor, the acknowledge signal at the DI for the mechanical brake closed (applied) stage is missing. See also A7A1. Check: The mechanical brake itself. The mechanical brake cable connections. The mechanical brake settings in group 44 Mechanical brake control. That the acknowledgement signal, if used, matches actual status of brake.	3
71A3	Mechanical brake not opened. Programmable, see 44.17 M1 brake fault function.	 The used digital inputs and outputs (groups 10 and 11). Selected motor, the acknowledge signal at the DI for the mechanical brake opened (applied) stage is missing. See also A7A2. Check: The mechanical brake itself. The mechanical brake cable connections. The mechanical brake settings in group 44 Mechanical brake control. That the acknowledgement signal, if used, matches actual status of brake. 	3
		The used digital inputs and outputs (groups 10 and 11).	
71A5	Mechanical brake opening not allowed. Programmable, see 44.17 M1 brake fault function.	Selected motor, open (lift) conditions of the mechanical brake are not fulfilled. See also A7A5. The brake has been prevented from opening (lifting) by 44.11 M1 keep brake closed, 44.12 Brake close request or torque actual does not reach 44.10 M1 brake open torque, during torque proving. Check: The mechanical brake settings in group 44 Mechanical brake control. Especially 44.11 M1 keep brake closed and 44.12 Brake close request. That the acknowledgement signal, if used, matches actual status of brake. The used digital inputs and outputs (groups 10 and 11). Selected motor, open (lift) conditions of the mechanical brake are not fulfilled. The brake has been prevented from opening (lifting) by an FSO-xx safety functions module. Check the safety circuits connected to the FSO-xx safety functions module.	3
71B1	Motor fan acknowledge. Programmable, see 20.39 Motor fan acknowledge source.	Motor/External cooling fan feedback at the DI is missing. See also A781. Check: The setting of 20.39 Motor fan acknowledge source. The fan operation and connection. Replace the motor/external fan if faulty. The fan contactor. The fan supply voltage.	4
7301	Motor speed feedback. Programmable, see 31.35 Motor feedback fault.	Selected motor, no motor speed feedback is received. See also A7B0. Check the AUX code (format XXYYZZZZ). XX specifies the location of the speed feedback device. Either an encoder interface module or the control board. — 01: Encoder interface module 1, see parameters 91.11 and 91.12.	3

Code	Fault	Cause and what to do	Fault level	
		- 02: Encoder interface module 2, see parameters 91.13 and		
		91.14.		
		 03: Control board, see group 94 OnBoard speed feedback configuration. 	30ard speed reedback	
		YY specifies the speed feedback device.		
		 O1: Encoder 1, see group 92 Encoder 1 configuration. 		
		02: Encoder 2, see group 93 Encoder 2 configuration.		
		 03: OnBoard encoder, see group 94 OnBoard speed 		
		feedback configuration.		
		O4: Tacho, see group 94 OnBoard speed feedback		
		configuration. ZZZZ indicates the problem. Actions see below.		
	0002	Speed feedback device not configured.	-	
	0002	Check the settings of the speed feedback device:		
		 Encoder 1, see group 92 Encoder 1 configuration. 		
		 Encoder 2, see group 93 Encoder 2 configuration. 		
		 The OnBoard encoder, see group 94 OnBoard speed 		
		feedback configuration.		
		The tacho, see group 94 OnBoard speed feedback configuration.		
		Use 91.10 Encoder parameter refresh to validate any changes		
		in the settings for an encoder.		
	0003	Speed feedback device stopped working.		
		Check the status of the speed feedback device.		
	0004	Speed feedback device drift detected.		
		Check for slippage between speed feedback device and motor.		
	0007	, · · · · · · · · · · · · · · · · · · ·		
		encoder or analog tacho to measured EMF has failed. Check:		
		The setting of 90.41 M1 feedback selection, 31.14 Fault		
		stop mode fault level 3, 31.35 Motor feedback fault, 31.36		
		Speed feedback monitor level and 31.37 EMF feedback		
		monitor level.		
		 At the encoder: The encoder itself, alignment, cabling, coupling, power supply (feedback might be too low), 		
		mechanical disturbances, jumper J4 on the SDCS-CON-		
		H01.		
		 At the tacho: The tacho itself, tacho polarity and voltage, 		
		alignment, cabling, coupling, mechanical disturbances.		
		EMF: The armature cable connection form the drive to the		
7310	Overspeed	motor and the polarity. Selected motor, the motor is turning faster than highest allowed	2	
1310	Overspeed.	speed due to incorrectly set minimum/maximum speed,	3	
		insufficient braking torque or changes in load when in torque		
		control.		
		Check:		
		The settings of 30.11 M1 minimum speed, 30.12 M1		
		maximum speed and 31.30 M1 overspeed trip margin. The settings of the speed controller in group 25 Speed		
		control.		
		The setting of 46.02 M1 speed scaling actual.		
		The torque control settings.		
		 For correct speed feedback when using an encoder or a 		
		tacho. Thus, compare the value of 90.01 Motor speed for		
		control vs. the measured motor speed (hand held tacho).		

Code	Fault	Cause and what to do			Fault level
		 For proper connection of 	the speed feedb	ack	
		measurement.			
		 For correct field current. 			
		If the motor was accelerated and the motor was accelerated.	•		
		 If the DC-voltage measurement (C1, D1) might be swapped when EMF speed feedback is used. 			
		 If the armature circuit is of breaker,) when EMF s 			
7380	Encoder internal.	Internal encoder fault.			3
		See the documentation of the Contact your local ABB repre			
7381	Speed feedback	Speed feedback device error			3
	device.	Check the AUX code (format		ala da da a EMara	
	Programmable, see 31.35 Motor feedback	XX specifies the location of the an encoder interface module			
	fault.	 01: Encoder interface mo 			
		91.12. – 02: Encoder interface mo	odule 2, see para	meters 91.13 and	
		91.14. – 03: Control board, see gr	oup 94 OnBoard	speed feedback	
		configuration.	•		
		YY specifies the speed feedt			
		01: Encoder 1, see group			
		02: Encoder 2, see group		_	
		 03: OnBoard encoder, se feedback configuration. 	ee group 94 OnBo	pard speed	
		 04: Tacho, see group 94 configuration. 	OnBoard speed	feedback	
		- 05: EMF, see group 94 C	nBoard speed fe	edback	
		configuration.			
		ZZZZ indicates the problem.	Actions see belo	W.	
	0001				
		If the encoder was working p			
		encoder cable and encoder i Check:	nterrace module	ior damage.	
		The conductor order at b	oth ends of the e	ncoder cable	
		 The groundings of the en 			
		 92.21 Encoder cable faul 			
		 94.29 OnBoard encoder 	cable fault mode	<u>. </u>	
	0002	No encoder signal.			
		Check the condition of the er			
		Overspeed.	Contact your loc	al ABB	
		Overfrequency.	representative.		
		Resolver ID run failed.			
		Resolver overcurrent fault.		To	_
		Absolute encoder communic		Contact your	
		Absolute encoder initializatio		local ABB representative.	
		Absolute SSI encoder config			-
		Encoder reported an internal		See the	
		Encoder reported a battery e		documentation of the encoder.	
	000D	Encoder reported overspeed resolution due to overspeed.	or decreased	and direction.	
	000E	Encoder reported a position	counter error.		
	000F	Encoder reported an internal	error.		

Code	Fault		Cause and what to do	Fault level
			Selected motor, wrong direction of speed feedback. The speed feedback direction of tacho and encoders is checked against the speed feedback direction of the EMF. See 90.41 M1 feedback selection. Check: The real direction of motor rotation. The settings of 31.36 Speed feedback monitor level and 31.37 EMF feedback monitor level. The connection of the tacho cable. To correct, swap the two wires. The connection of the encoder cable. To correct, swap e.g. channels A and A The connection of armature and field cables. Selected motor, tacho range. If Tacho range comes up for longer than 10 s, there is an overflow at the tacho input.	
			Check: — That the tacho voltage at overspeed fits to the tacho input. It should not be higher than 270 V.	
73A0	Speed feedback configuration.		The speed feedback configuration via encoder interface modules has changed. See also A797. Check the AUX code (format XXYYZZZZ). XX specifies the encoder interface module. O1: For module 1 see parameters 91.11 and 91.12. O2: For module 2 see parameters 91.13 and 91.14. YY specifies the encoder. O1: Group 92 Encoder 1 configuration. O2: Group 93 Encoder 2 configuration. ZZZZ indicates the problem. Actions see below.	3
			Adapter not found in specified slot. Check module location. See parameters 91.12 and 91.14.	
		0002	Detected type of interface module does not match parameter setting. Check the module type parameters 91.11 and 91.13 against status parameters 91.02 and 91.03.	
			Logic version too old. Contact your local ABB representative.	
			Firmware version too old. Contact your local ABB representative.	
		0006	Encoder type incompatible with interface module type. Check module type parameters 91.11 and 91.13 against encoder type parameters 92.01 and 93.01.	
			Adapter not configured. Check module location parameters 91.12 and 91.14.	
		8000	Speed feedback configuration has changed. Use 91.10 Encoder parameter refresh to validate any changes in the settings.	
			No encoders configured in the encoder module. Configure the encoder in group 92 Encoder 1 configuration or 93 Encoder 2 configuration.	
			Non-existing emulation input. Check input selection parameters 91.31 and 91.41.	
		000B	Echo not supported by the selected input. E.g. resolver or absolute encoder. Check:	

Code	Fault	Cause and what to do	Fault level
		 The input selection parameters 91.31 and 91.41. 	
		 The interface module type against the encoder type. 	
	000C	Emulation in continuous mode not supported. Check:	
		 The input selection parameters 91.31 and 91.41. The serial link mode parameters 92.30 and 93.30. 	
73A1	Load speed feedback.	Selected motor, no load speed feedback is received. See also	3
7341	Programmable, see 31.38 Load feedback fault.	A7B1. Check the AUX code (format XXYYZZZZ). XX specifies the location of the speed feedback device. Either an encoder interface module or the control board. - 01: Encoder interface module 1, see parameters 91.11 and 91.12. - 02: Encoder interface module 2, see parameters 91.13 and 91.14. - 03: Control board, see group 94 OnBoard speed feedback configuration. YY specifies the speed feedback device. - 01: Encoder 1, see group 92 Encoder 1 configuration. - 02: Encoder 2, see group 93 Encoder 2 configuration. - 03: OnBoard encoder, see group 94 OnBoard speed feedback configuration. - 04: Tacho, see group 94 OnBoard speed feedback	3
		configuration.	
	0004	ZZZZ indicates the problem. Actions see below. Speed feedback device not configured.	-
		 Check the settings of the speed feedback device: Encoder 1, see group 92 Encoder 1 configuration. Encoder 2, see group 93 Encoder 2 configuration. The OnBoard encoder, see group 94 OnBoard speed feedback configuration. The tacho, see group 94 OnBoard speed feedback configuration. Use 91.10 Encoder parameter refresh to validate any changes in the settings for an encoder. 	
	0005	Speed feedback device stopped working.	
	0007	 Check the status of the speed feedback device. The comparison of the measured speed feedback from pulse encoder or analog tacho to measured EMF has failed. Check: The setting of 90.41 M1 feedback selection, 31.14 Fault stop mode fault level 3, 31.35 Motor feedback fault, 31.36 Speed feedback monitor level and 31.37 EMF feedback monitor level. At the encoder: The encoder itself, alignment, cabling, coupling, power supply (feedback might be too low), mechanical disturbances, jumper J4 on the SDCS-CON-H01. At the tacho: The tacho itself, tacho polarity and voltage, alignment, cabling, coupling, mechanical disturbances. EMF: The armature cable connection form the drive to the motor and the polarity. 	
73B0	Emergency ramp stop	Emergency stop did not finish within the expected time. Check: The settings of 31.31 Emergency ramp supervision and 31.32 Emergency ramp supervision delay.	3

Code	Fault	Cause and what to do	Fault level
		 The settings of parameters 23.11 23.19 for Off3 stop mode 1 (21.03 Emergency stop mode = Ramp stop). The setting of 23.23 Emergency stop time for Off3 stop mode 2 (21.03 Emergency stop mode = Emergency ramp stop). The current and torque limits in group 30 Control limits. 	
73B1	Normal ramp stop	Normal (non-emergency) ramp stop did not finish within the expected time. Check: The settings of 31.33 Ramp stop supervision and 31.34 Ramp stop supervision delay. The settings of parameters 23.11 23.19.	3
7510	FBA A communication. Programmable, see 50.02 FBA A comm loss func.	Fieldbus adapter A (FBA A): Cyclical communication between PLC and fieldbus adapter module A or between drive and fieldbus adapter module A is lost. See also A7C1. 7510 FBA A communication is only activated after the first data set from the overriding control is received by the drive. Before the first data set is received, only A7C1 FBA A communication is active. The reason is to suppress unnecessary faults (the startup of the overriding control is usually slower than the one of the drive). Check: The status of the fieldbus communication. See user documentation of the fieldbus interface. The settings of groups 50 Fieldbus adapter (FBA), 51 FBA A settings, 52 FBA A data in and 53 FBA A data out. The cable connections. The fieldbus termination. The fieldbus adapter. That the master is able to communicate.	5
7520	FBA B communication. Programmable, see 50.32 FBA B comm loss func.	Fieldbus adapter B (FBA B): Cyclical communication between PLC and fieldbus adapter module B or between drive and fieldbus adapter module B is lost. See also A7C2. 7520 FBA B communication is only activated after the first data set from the overriding control is received by the drive. Before the first data set is received, only A7C2 FBA B communication is active. The reason is to suppress unnecessary faults (the startup of the overriding control is usually slower than the one of the drive). Check: The status of the fieldbus communication. See user documentation of the fieldbus interface. The settings of group 50 Fieldbus adapter (FBA), 54 FBA B settings, 55 FBA B data in and 56 FBA B data out. The cable connections. The fieldbus termination. The fieldbus adapter. That the master is able to communicate.	5
7581	DDCS controller communication. Programmable, see 60.59 DDCS controller comm loss function.	Cyclical communication between DDCS controller and drive is lost or there is no communication at all. The drive is waiting for the very first dataset. See also A7CA. Check: The status/settings of the DDCS controller. See user documentation of the DDCS controller. The adapters between DDCS controller and drive. The setting of 20.01 Command location.	5

Code	Fault	Cause and what to do	Fault level
		 The settings of group 60 DDCS communication, 61 D2D and DDCS transmit data and 62 D2D and DDCS receive data. The fiber optic cable connections. 	
7582	Master-follower communication. Programmable, see 60.09 M/F comm loss function.	Cyclical communication between master and a follower (DDCS/D2D) is lost or there is no communication at all. The drive is waiting for the very first dataset. See also A7CB. Check: The AUX code. It indicates which node address on the master-follower link is affected. See 60.02 M/F node address in each drive. The setting of 20.01 Command location. The settings of group 60 DDCS communication. The cable connections.	5
8001	ULC underload. Programmable, see 37.04 ULC underload actions.	Selected signal has fallen below the user underload curve. See group 37 User load curve. See also A8BF. Check for any operating conditions decreasing the monitored signal. E.g., the loss of load if the torque or current is being monitored. Check the definition of the load curve.	1 (default) 1 6 user selectable
8002	ULC overload. Programmable, see 37.03 ULC overload actions.	Selected signal has exceeded the user overload curve. See group 37 User load curve. See also A8BE. Check: - For any operating conditions increasing the monitored signal. E.g., the load of the motor if the torque or current is being monitored. - The definition of the load curve.	1 (default) 1 6 user selectable
80A0	Al supervision. Programmable, see 12.03 Al supervision function.	An analog signal is outside the limits specified for the analog input. See also A8A0. Check: The AUX code (format XYY). X specifies the location of the input. 0: Control board. 1: I/O extension module 1. 2: I/O extension module 2. 3: I/O extension module 3. 4: YY specifies the input and limit. 01: Al1 under minimum. 02: Al1 over maximum. 03: Al2 under minimum. 04: Al2 over maximum. 05: Al3 under minimum. The signal level at the analog input. The wiring connected to the input. Polarity of the connection. The minimum and maximum limits of the input in groups 12 Standard AI, 14 I/O extension module 3.	4
80B0	Signal supervision 1. (Editable message text) Programmable, see 32.06 Supervision 1 action.	Fault generated by signal supervision 1. See group 32 Supervision. See also A8B0. Check the source of the warning. See 32.07 Supervision 1 signal.	1 (default) 1 6 user selectable

Code	Fault	Cause and what to do	Fault level
80B1	Signal supervision 2. (Editable message text) Programmable, see 32.16 Supervision 2 action.	Fault generated by signal supervision 2. See group 32 Supervision. See also A8B1. Check the source of the warning. See 32.17 Supervision 2 signal.	1 (default) 1 6 user selectable
80B2	Signal supervision 3. (Editable message text) Programmable, see 32.26 Supervision 3 action.	Fault generated by signal supervision 3. See group 32 Supervision. See also A8B2. Check the source of the warning. See 32.27 Supervision 3 signal.	1 (default) 1 6 user selectable
9081	External fault 1. (Editable message text) Programmable, see 31.01 External event 1 source and 31.02 External event 1 type.	There is no problem with the drive itself! Fault generated by external device 1. See group 31 Fault functions and fault levels. See also A981. Check: External device 1. 31.01 External event 1 source.	1 (default) 1 6 user selectable
9082	External fault 2. (Editable message text) Programmable, see 31.03 External event 2 source and 31.04 External event 2 type.	There is no problem with the drive itself! Fault generated by external device 2. See group 31 Fault functions and fault levels. See also A982. Check: External device 2. 31.03 External event 2 source.	1 (default) 1 6 user selectable
9083	External fault 3. (Editable message text) Programmable, see 31.05 External event 3 source and 31.06 External event 3 type.	There is no problem with the drive itself! Fault generated by external device 3. See group 31 Fault functions and fault levels. See also A983. Check: External device 3. 31.05 External event 3 source.	1 (default) 1 6 user selectable
9084	External fault 4. (Editable message text) Programmable, see 31.07 External event 4 source and 31.08 External event 4 type.	There is no problem with the drive itself! Fault generated by external device 4. See group 31 Fault functions and fault levels. See also A984. Check: External device 4. 31.07 External event 4 source.	1 (default) 1 6 user selectable
9085	External fault 5. (Editable message text) Programmable, see 31.09 External event 5 source and 31.10 External event 5 type.	There is no problem with the drive itself! Fault generated by external device 5. See group 31 Fault functions and fault levels. See also A985. Check: External device 5. 31.09 External event 5 source.	1 (default) 1 6 user selectable
F501	Auxiliary undervoltage.	The auxiliary voltage is too low, e.g. short dip, while the drive is in operation. To reset, cycle the auxiliary power of the drive. Check: The auxiliary voltage itself. The internal auxiliary voltages on the SDCS-CON-H01. If the problem persist, change SDCS-CON-H01 and/or SDCS-PIN-H01 or SDCS-POW-H01 respectively. Auxiliary supply voltage Trip level	1

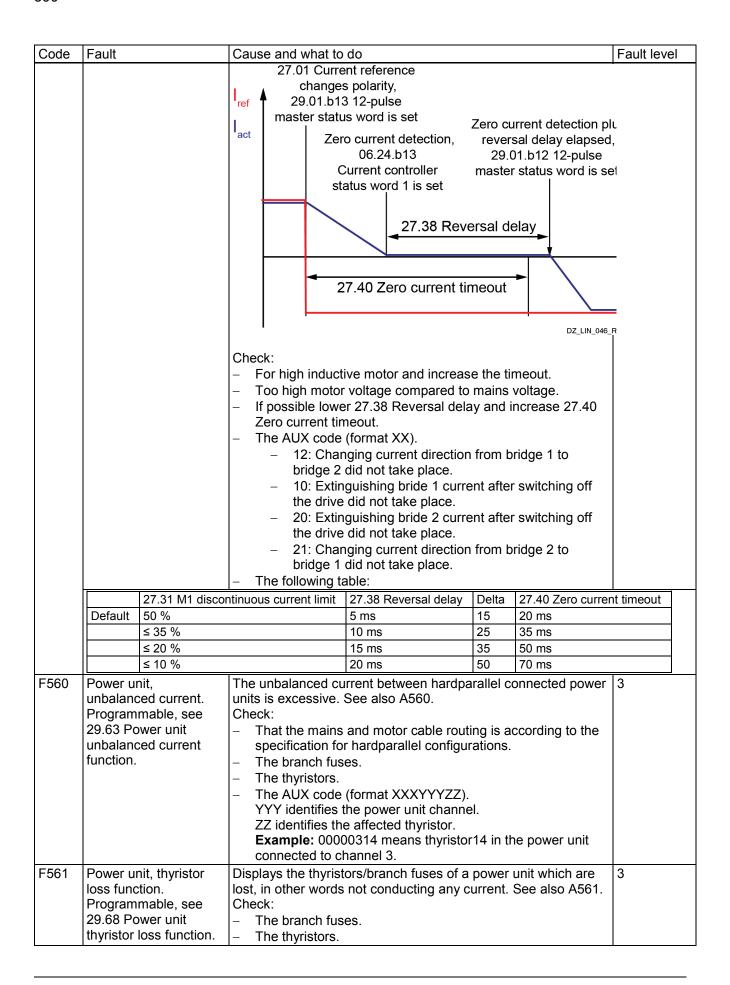
Code	Fault	Cause and what to do		Fault level
		230 VAC	< 185 VAC	
		115 VAC	< 96 VAC	
F503	Armature overvoltage.	Too high voltage on the a Check:	rmature/DC side.	1
		 If the setting of 31.50 system. The settings of the fie flux linearization in gree. E.g. field weakening is provided. For too high field curre weakening). If the motor was acce For overspeed. For proper speed sca actual. For proper armature weakening. 	IF controller, irrent control. ield	
		 The cutting of the volt 	age coding resistors on	the SDCS-
F513	Mains overvoltage.	PIN-H51. Too high voltage on the n voltage is > 1.3 * 99.10 N 10 s while Ready run = 1. Check:	ominal mains voltage for	
		 If the mains voltage is If the mains voltage semains voltage. 	within the set tolerance caling is correct. See 99 age coding resistors on	.10 Nominal the SDCS-
F514	Mains synchronization lost.	switchgear). - The mains frequency stability (df/dt = 17 %/	the mains has been lost nains (voltage, cabling, f (50 Hz ±5 Hz; 60 Hz ±5 's) see 95.39 PLL input o ernal mains frequency.	iuses, Hz) and
F515	M1 field exciter overcurrent.	Motor 1 field exciter over Check: In case this fault happed deactivate the supervovercurrent level = 32 The setting of 31.59 North and field current control and field current control and field current control and field current control and field current control and field current control and field current control and field current control and field current control and field current control and field current control and field current control and field current control and field current control and field current control and field current c	current. Dens during field exciter a ision by setting 31.59 M 25 %. M1 field overcurrent leve ld current controller in grool. e field exciter. es and field winding.	1 field I. roup 28 EMF ashing LEDs),
F516	M1 field exciter communication.	Field exciter timeout.	M1 used field exciter type for integrated and extern	

Code	Fault	Cause and what to do	Fault level
		 The DCSLink termination set dipswitch S1100:1 = ON (DCF803-0016, DCF803-0035 and FEX-425-Int). The DCSLink node ID settings. See 70.05 DCSLink node ID and 70.13 M1 field exciter node ID or switches S800 and S801 on DCF803-0016, DCF803-0035 and FEX-425-Int respectively. For fault messages at the field exciter itself (flashing LEDs), 04.26 M1 field exciter fault word and 04.36 M1 field exciter warning word. 	
F517	Armature current ripple.	 One or several thyristors may carry no current. See also A117. Check: The values of 01.50 Current ripple and 01.51 Current ripple filtered1. The setting of 31.46 Current ripple function and 31.47 Current ripple level. For too high gain of current controller. See 27.29 M1 current proportional gain. The positive/negative current feedback with an oscilloscope (6 pulses within one cycle visible?). The thyristor gate-cathode resistance. The thyristor gate connection. The current transformers (T51, T52). The condition of the mains (voltage, cabling, fuses, switchgear). 	3
F518	M2 field exciter overcurrent.	 Motor 2 field exciter overcurrent. Check: In case this fault happens during field exciter autotuning, deactivate the supervision by setting 42.63 M2 field overcurrent level = 325 %. The setting of 42.63 M2 field overcurrent level. The settings of the field current controller in group 42 Shared motion (2nd motor). The connections of the field exciter. The insulation of cables and field winding. The resistance of the field winding. For fault messages at the field exciter itself (flashing LEDs), 04.27 M2 field exciter fault word and 04.37 M2 field exciter warning word. 	1
F519	M2 field exciter communication.	 Motor 2 field exciter loss of communication. Check: The settings of 42.49 M2 used field exciter type and 70.12 Field exciter timeout. The auxiliary voltage for integrated and external field exciter. The DCSLink cable connections. The DCSLink termination set dipswitch S1100:1 = ON (DCF803-0016, DCF803-0035 and FEX-425-Int). The DCSLink node ID settings. See 70.05 DCSLink node ID and 70.14 M2 field exciter node ID or switches S800 and S801 on DCF803-0016, DCF803-0035 and FEX-425-Int respectively. For fault messages at the field exciter itself (flashing LEDs), 04.27 M2 field exciter fault word and 04.37 M2 field exciter warning word. 	1
F521	Field acknowledge missing.	Selected motor, field acknowledge at the DI is missing. Check:	1

Code	Fault	Cause and what to do	Fault level
OGGC	Taut	 The setting of 99.07 M1 used field exciter type. The selection must match the connected field exciter type. The settings of 06.26 M1 field exciter status word. For fault messages at the field exciter itself (flashing LEDs), 04.26 M1 field exciter fault word and 04.36 M1 field exciter warning word. F521 Field acknowledge missing is the sum fault for all field related faults like: F515 M1 field exciter overcurrent. F516 M1 field exciter communication. F529 M1 field exciter not OK. F537 M1 field exciter ready lost. 	Tauriever
		F541 M1 field exciter low current.	
F524	Main contactor acknowledge.	 Main contactor acknowledge at the DI is missing. Check: The settings of 20.33 Main contactor control mode and 20.34 Main contactor acknowledge source. The switch on/off sequence. The auxiliary contactor/relay switching the main contactor after an On/Off command. The safety relays if existing. The used digital inputs and outputs (groups 10 and 11). 	4
F529	M1 field exciter not OK.	 Motor 1 field exciter is not okay. A fault was found during self-diagnosis of the field exciter or a power failure happened in the field exciter. Check: The field exciter operation. E.g. the field contactor or mains contactor (in case of an OnBoard field exciter) is not closed or closing too late. For fault messages at the field exciter itself (flashing LEDs), 04.26 M1 field exciter fault word and 04.36 M1 field exciter warning word. 	1
F530	M2 field exciter not OK.	 Motor 2 field exciter is not okay. A fault was found during self-diagnosis of the field exciter or a power failure happened in the field exciter. Check: The field exciter operation. E.g. the field contactor or mains contactor (in case of an OnBoard field exciter) is not closed or closing too late. For fault messages at the field exciter itself (flashing LEDs), 04.27 M2 field exciter fault word and 04.37 M2 field exciter warning word. 	1
F533	12-pulse reversal timeout.	The current direction is not changed before 29.14 12-pulse reversal timeout is elapsed. Check: - For high inductive motor and increase the timeout Too high motor voltage compared to mains voltage.	3
F534	12-pulse current difference.	The current of difference of a 12-pulse parallel configuration exceeded the current difference level. Check: The settings of 29.17 12-pulse parallel current difference level and 29.18 12-pulse parallel current difference delay. The settings of the current controller in group 27 Armature current control.	3
F535	12-pulse communication.	12-pulse communication is disturbed: Check:	3

Code	Fault	Cause and what to do	Fault level
		 The settings of 70.05 DCSLink node ID, 70.07 DCSLink comm loss function, 70.08 12-pulse timeout and 70.09 12-pulse slave node ID. DCSLink cable connections. DCSLink termination. 	
F536	12-pulse slave.	The 12-pulse slave has tripped. 12-pulse master is tripped by a fault of the 12-pulse slave. Correct the fault in the 12-pulse slave.	4
F537	M1 field exciter ready lost.	Motor 1 field exciter lost the ready-for-operation message while working. The mains voltage of the field exciter is missing or not in synchronism. Check: If all mains phases are present. If the mains voltage is within the set tolerance. For fault messages at the field exciter itself (flashing LEDs), 04.26 M1 field exciter fault word and 04.36 M1 field exciter warning word.	1
F538	M2 field exciter ready lost.	Motor 2 field exciter lost the ready-for-operation message while working. The mains voltage of the field exciter is missing or not in synchronism. Check: If all mains phases are present. If the mains voltage is within the set tolerance. For fault messages at the field exciter itself (flashing LEDs), 04.27 M2 field exciter fault word and 04.37 M2 field exciter warning word.	1
F539	Fast current rise.	The rise of the current (di/dt) is too fast. This indicates a short circuit. Check: The setting of 31.45 Maximum current rise level.	1
F541	M1 field exciter low current.	 Motor 1 field exciter low (under-) current. Check: The settings of 31.57 Minimum field current trip delay and 31.58 M1 field current low level. The settings of the EMF controller, flux linearization and field current controller in group 28 EMF and field current control. The motor nameplate for minimum current at maximum field weakening ≡ maximum speed. The field circuit fuses. The field auxiliary supply voltage. The field contactor is not closed. If the field current oscillates. If the motor is not compensated and has a high armature reaction. For fault messages at the field exciter itself (flashing LEDs), 04.26 M1 field exciter fault word and 04.36 M1 field exciter warning word. 	1
F542	M2 field exciter low current.	Motor 2 field exciter low (under-) current. Check: The settings of 31.57 Minimum field current trip delay and 42.62 M2 field current low level. The settings of the EMF controller, flux linearization and field current controller in group 42 Shared motion (2nd motor).	1

Code	Fault	Cause and what to do	Fault level
		 The motor nameplate for minimum current at maximum field weakening ≡ maximum speed. The field circuit fuses. The field auxiliary supply voltage. The field contactor is not closed. If the field current oscillates. If the motor is not compensated and has a high armature reaction. For fault messages at the field exciter itself (flashing LEDs), 04.27 M2 field exciter fault word and 04.37 M2 field exciter warning word. 	
F544	P2P and M/F communication. Programmable, see 70.07 DCSLink comm loss function.	Peer to peer and master-follower communication loss. See also A112. Check: DCSLink node ID settings. See 70.05 DCSLink node ID. The setting of 31.13 Fault stop mode communication and 70.07 DCSLink comm loss function. The setting of 70.17 Mailbox 1 node ID, 70.23 Mailbox 2 node ID, 70.29 Mailbox 3 node ID and 70.35 Mailbox 4 node ID. The setting of 70.18 Mailbox 1 cycle time/timeout, 70.24 Mailbox 2 cycle time/timeout, 70.30 Mailbox 3 cycle time/timeout and 70.36 Mailbox 4 cycle time/timeout. The DCSLink cable connections. The DCSLink terminations.	5
F547	0051	Drive hardware failure. To reset, cycle the auxiliary power of the drive. If the problem persists, check the AUX code (format YYYY). YYYY indicates the problem. Actions see below. Parameter flash faulty (erase). Parameter flash faulty (program). Check connector XC12 on SDCS-CON-H01 and connector XC12 on SDCS-PIN-H01/H51.	1
F556	Torque proving.	Selected motor, torque proving. The acknowledge signal for torque proving is missing. Check: The setting of 44.19 M1 brake torque proving time. The Adaptive Program, application program or overriding control providing the torque proving OK signal. See 06.11.b04 Auxiliary control word 2.	3
F557	Reversal time.	The current direction not changed before 27.40 Zero current timeout is elapsed.	3

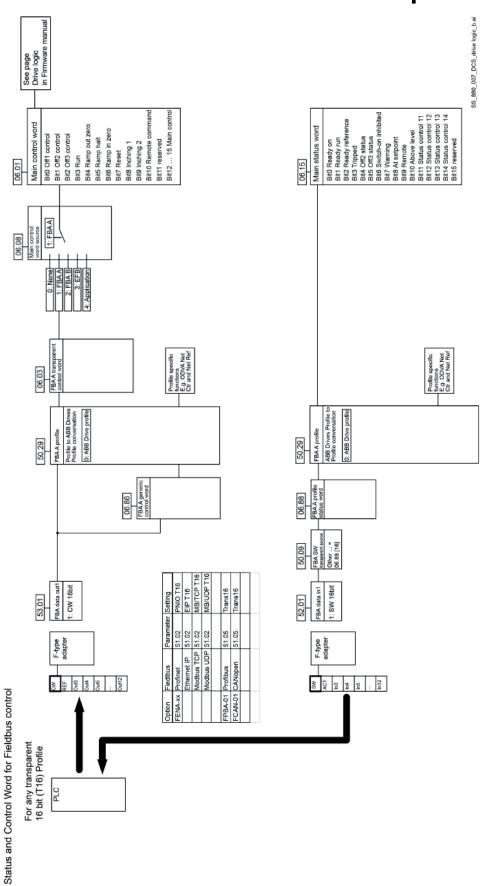


Code	Fault	Cause and what to do	Fault level
		 The AUX code (format XXXYYYZZ). YYY identifies the power unit channel. ZZ identifies the affected thyristor. Example: 00000314 means thyristor14 in the power unit connected to channel 3. 	
FA81	Safe torque off 1 loss fault.	XSTO:IN1 is not equal to XSTO:IN2 or the time delay between the two signals is greater than 20 ms. See safety supplement for functional safety converter DCS880 (3ADW000452).	6
FA82	Safe torque off 2 loss fault.		6
FB11	Memory unit missing.	No memory unit is attached to the drive control unit. Power down the drive control unit. Check that the memory unit is properly inserted into the drive control unit. The memory unit attached to the drive control unit is empty. Power down the drive control unit. Attach a memory unit with the appropriate firmware to the drive control unit.	1
FB12	Memory unit incompatible.	The memory unit attached to the drive control unit is incompatible. Try to download a compatible firmware. If the problem persist, power down the drive control unit. Attach a compatible memory unit.	1
-	Panel and Drive not Compatible Panel and Drive not Compatible	The memory unit attached to the drive control unit is incompatible or broken. Try to download a compatible firmware. If the problem persist, power down the drive control unit. Attach a working and compatible memory unit.	1
FB13	Memory unit, firmware incompatible.	The firmware on the attached memory unit is incompatible with the drive control unit. Try to download a compatible firmware. If the problem persist, power down the drive control unit. Attach a memory unit with a compatible firmware.	1
FB14	Memory unit, firmware load failed.	The firmware on the attached memory unit could not be loaded to the drive control unit. Try to download a compatible firmware. If the problem persist, power down the drive control unit. Check that the memory unit is properly inserted into the drive control unit. If the problem persists, replace the memory unit.	1
FF7E	Follower	A follower has tripped. Check the AUX code and add 2 for its node address. See 60.02 M/F node address. Correct the fault in the follower.	4
FF81	FBA A force fault.	A fault has been forced through fieldbus adapter A. Check the fault information provided by the PLC.	1 (default) 1 6 user selectable
FF82	FBA B force fault.	A fault has been forced through fieldbus adapter B. Check the fault information provided by the PLC.	1 (default) 1 6 user selectable

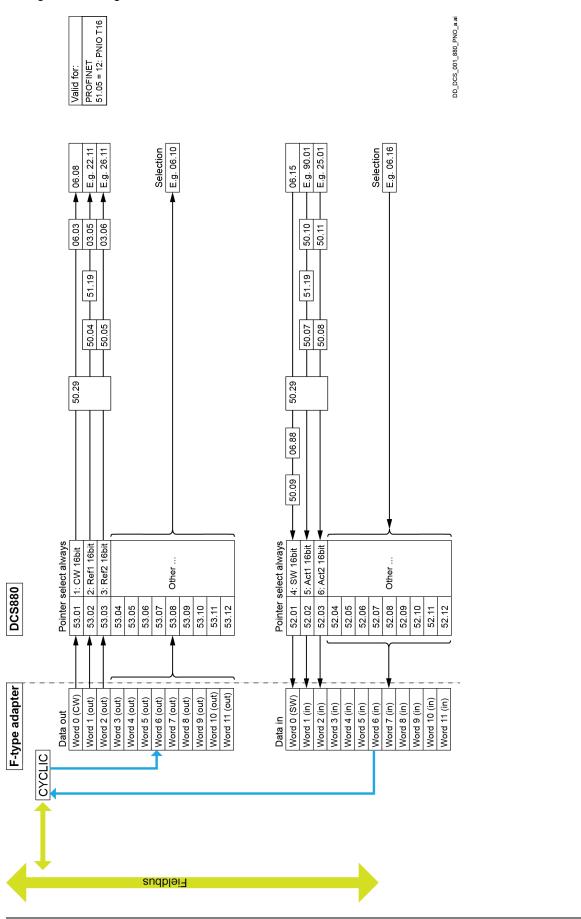
Code	Fault	Cause and what to do	Fault level
FF8E	EFB force fault.	A fault has been forced through the embedded fieldbus (EFB) interface. Check the fault information provided by the Modbus controller.	1 (default) 1 6 user selectable



Fieldbus control via fieldbus adapter

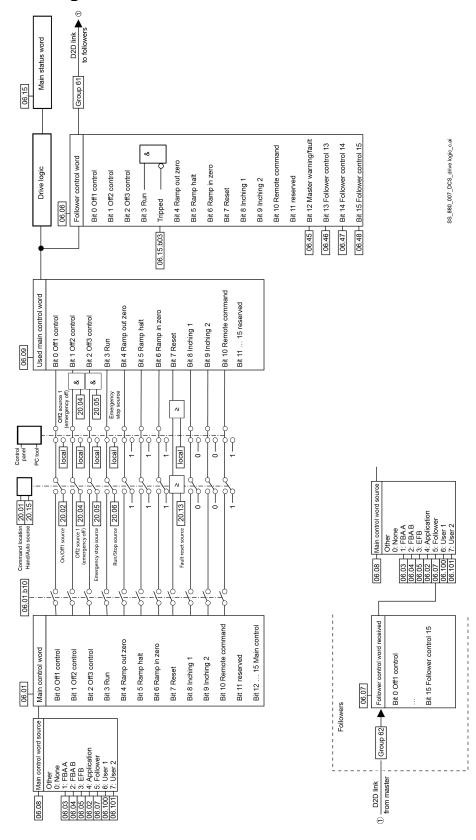


Configuration using CW 16bit, Ref1 16bit, Ref2 16bit and Other...



Firmware structure diagrams

Drive logic



Master

₩ MF link ①

96.35 Time sync primary source Selection v

96.36 M/F and D2D clock synchronization = Active Selection v

Time sync

Selection v

60.03 M/F mode = FDCO-XD2D Master 60.05 M/F HW connection = Star

Master setup

60.01 M/F communication port

60.02 M/F node address = 1

Signal selection for master's broadcast message

₩ MF link ②

DS41.1 DS41.2 DS41.3

61.01 M/F data 1 selection = 6.06 Follower CW Selection v (61.25 M/F data 1 selection

61.02 M/F data 2 selection = 23.03 Speed reference 7 61.03 M/F data 3 selection = 26.02 Torque reference used

Defines targets which values will be transmitted to all followers

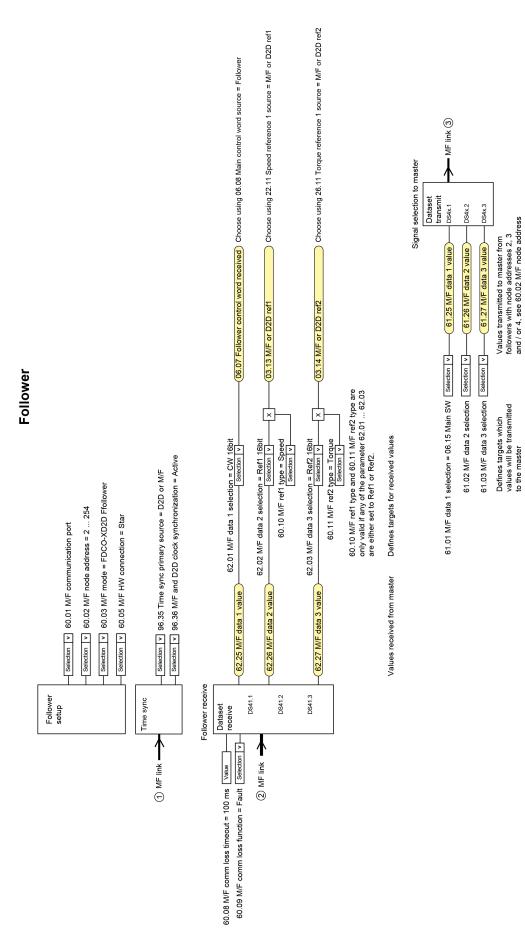
60.08 M/F comm loss timeout = 100 ms Value 60.09 M/F comm loss function = Fault Selection

Values transmitted to all followers

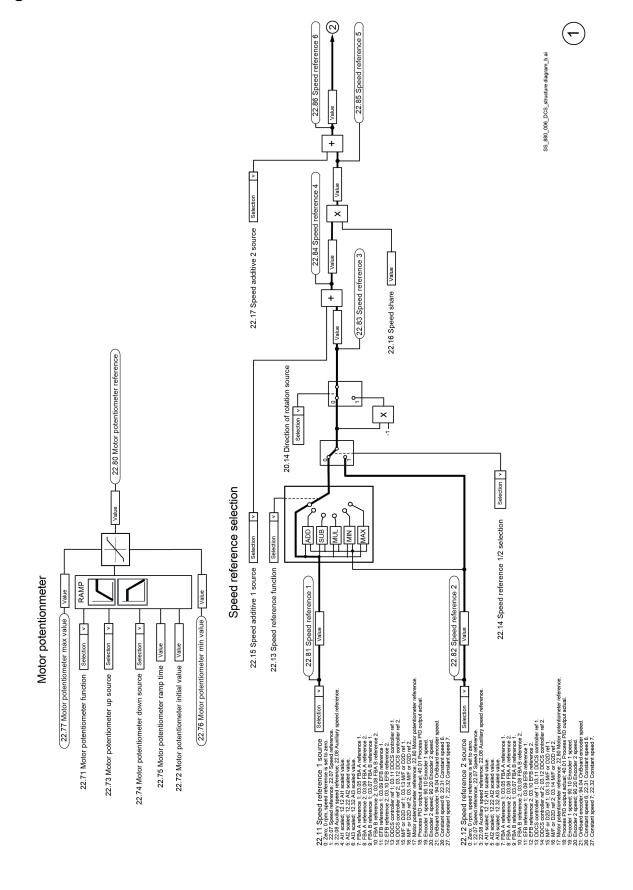
Selection v 61.26 M/F data 2 selection Selection V 61.27 M/F data 3 selection

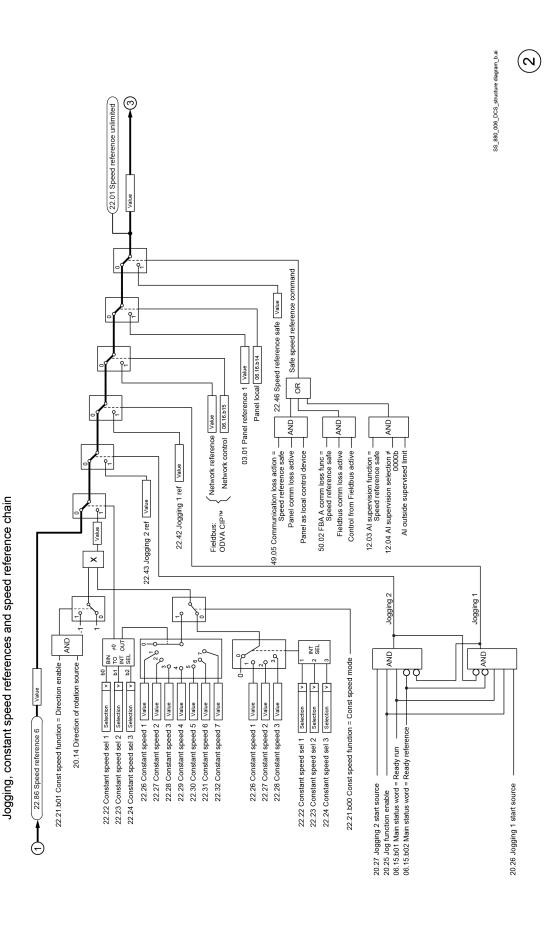
Master-follower link

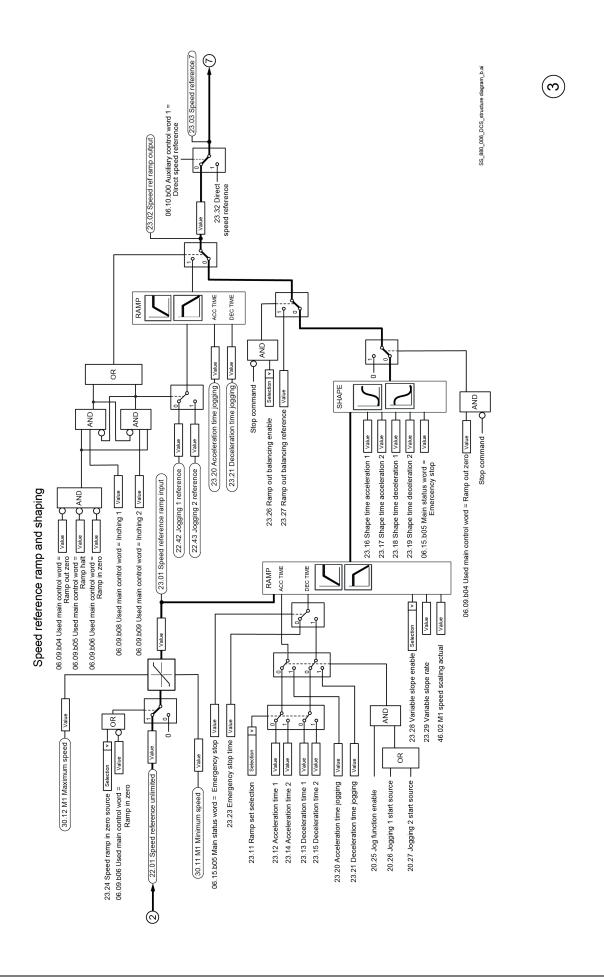
SF_880_032_DCS_MF_a.ai

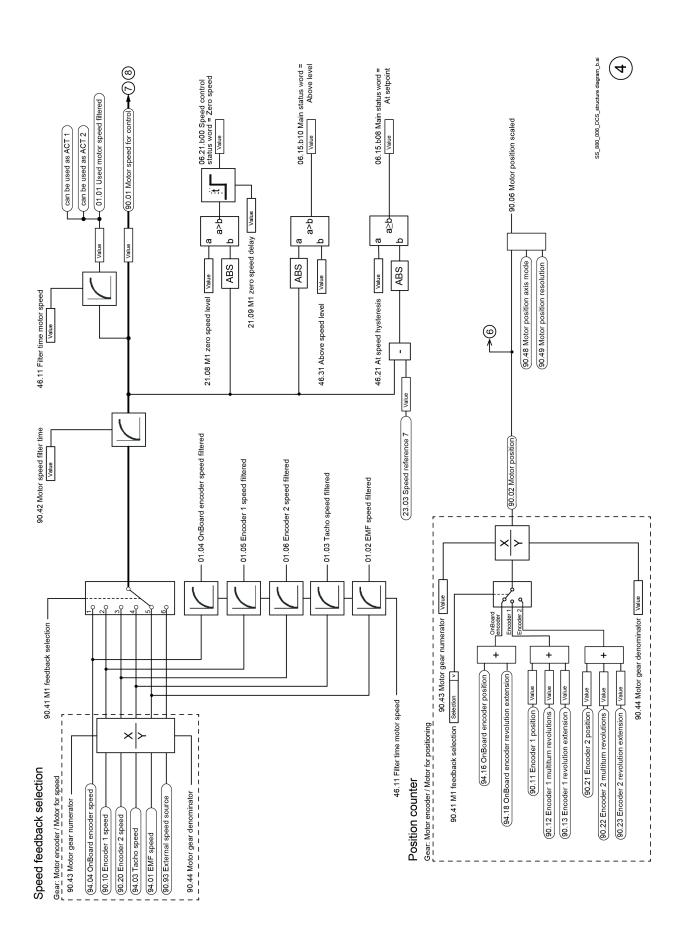


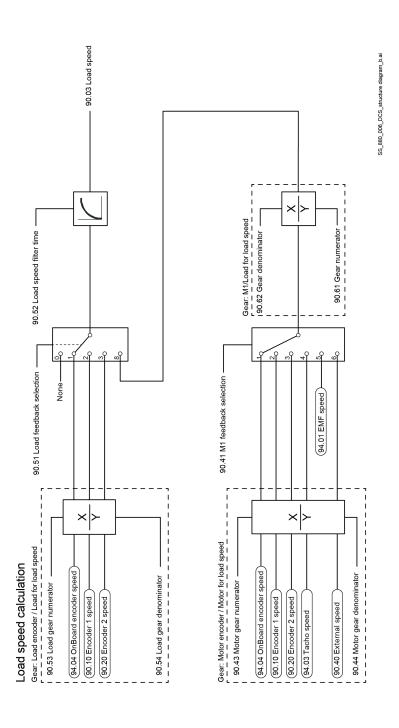
Diagrams

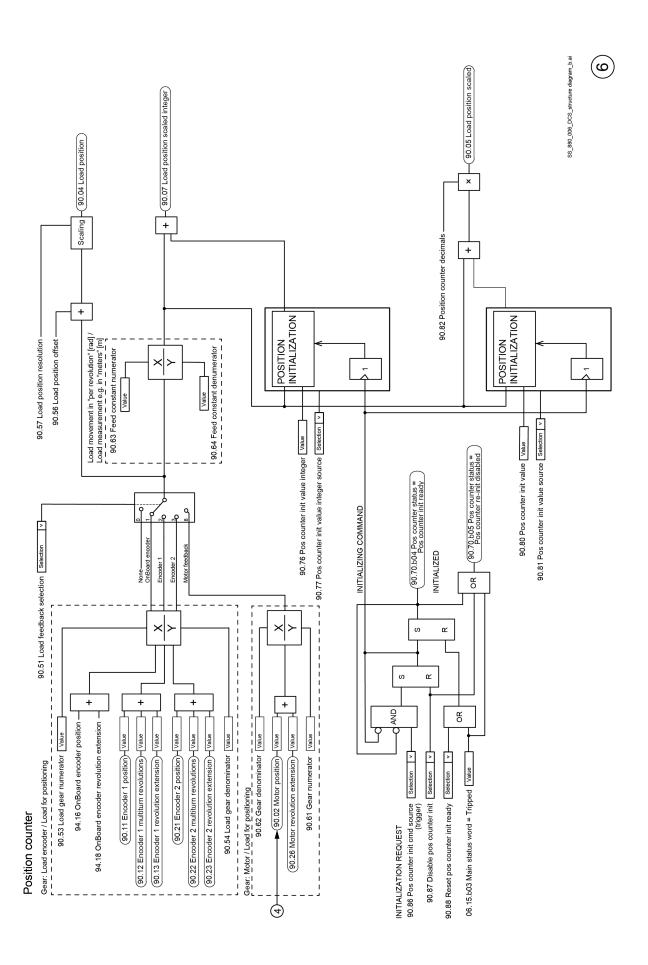


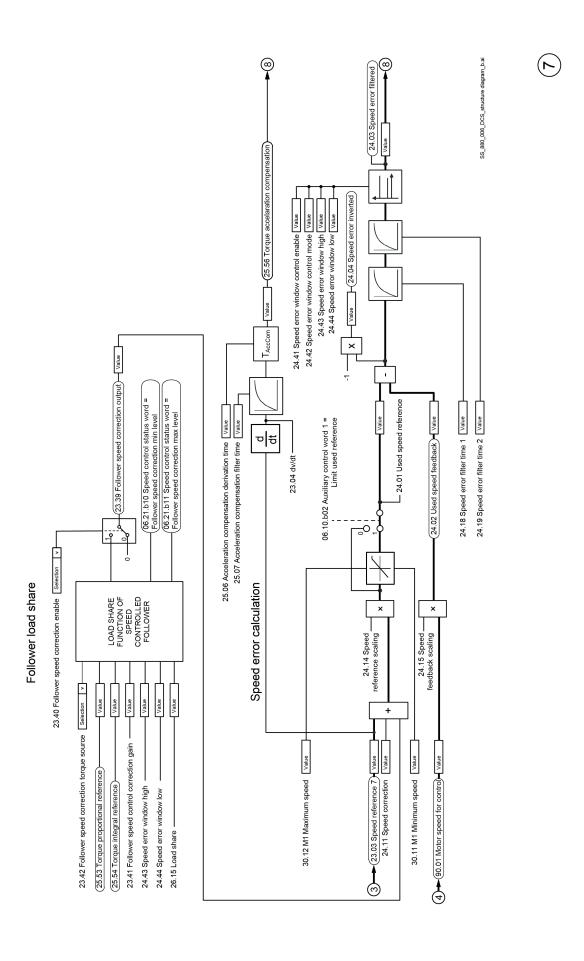


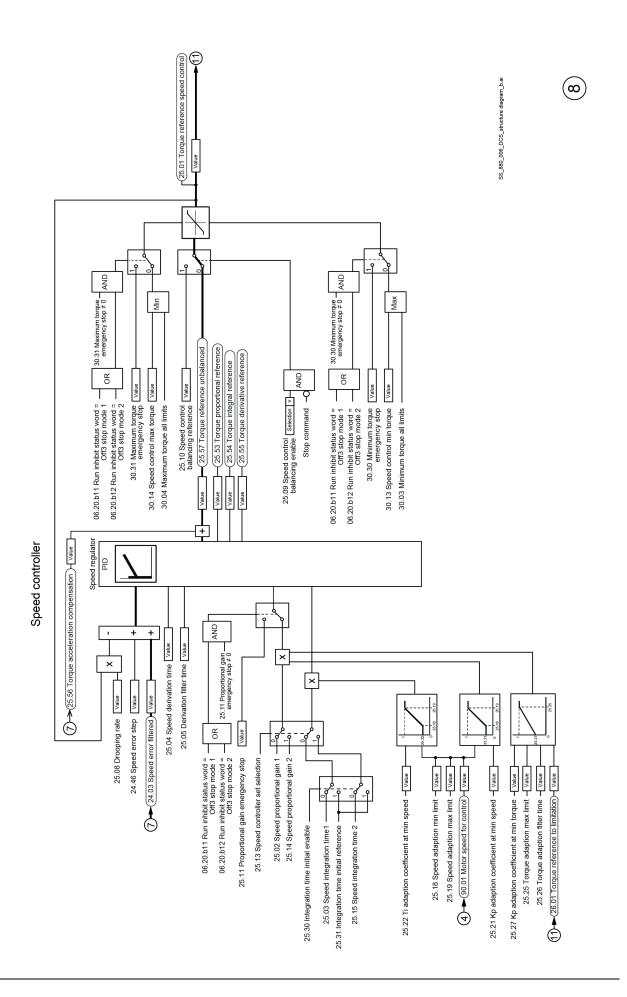


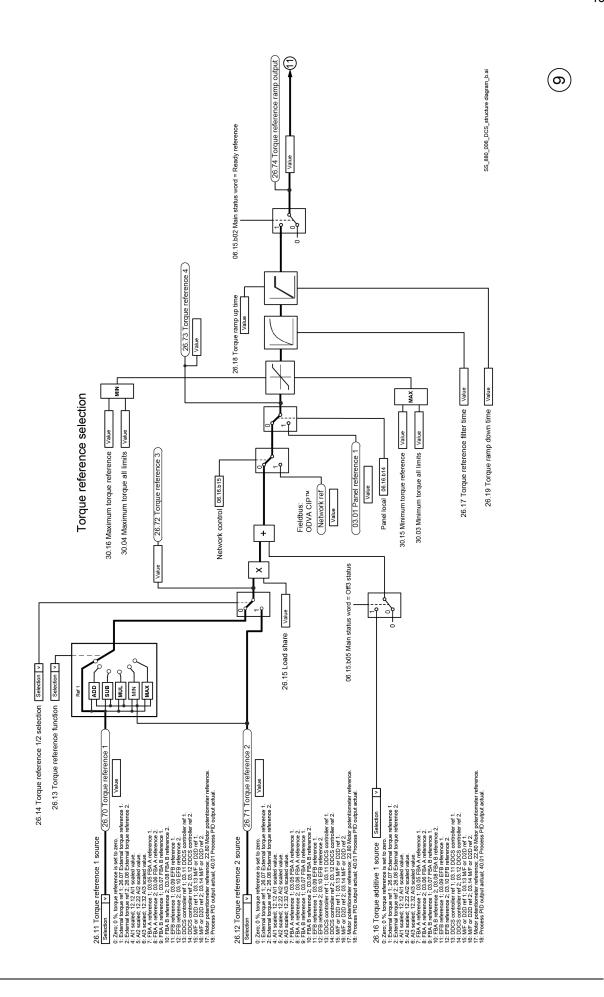


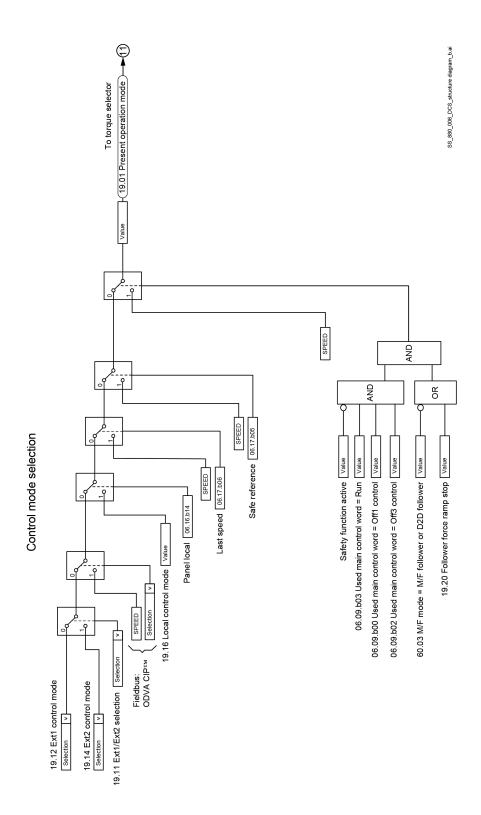


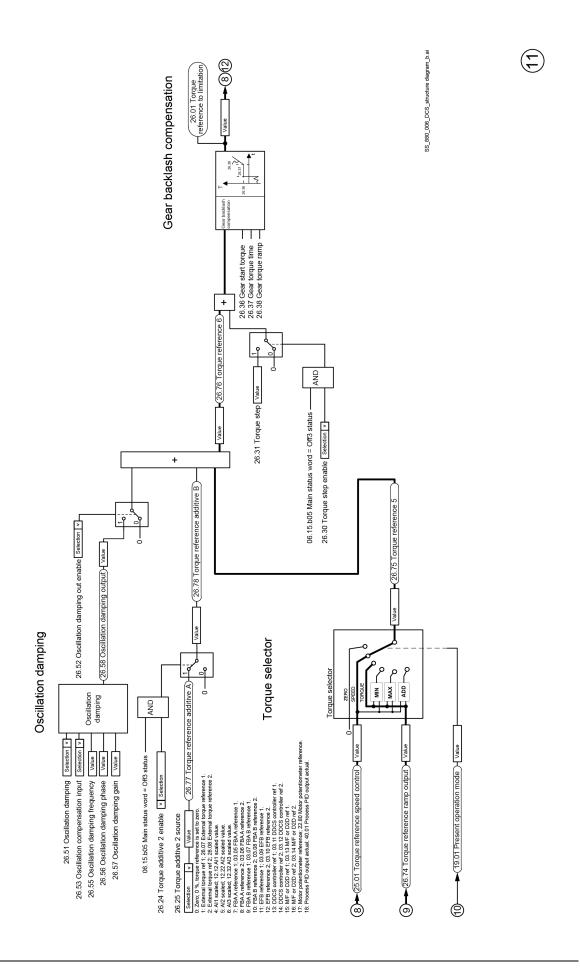


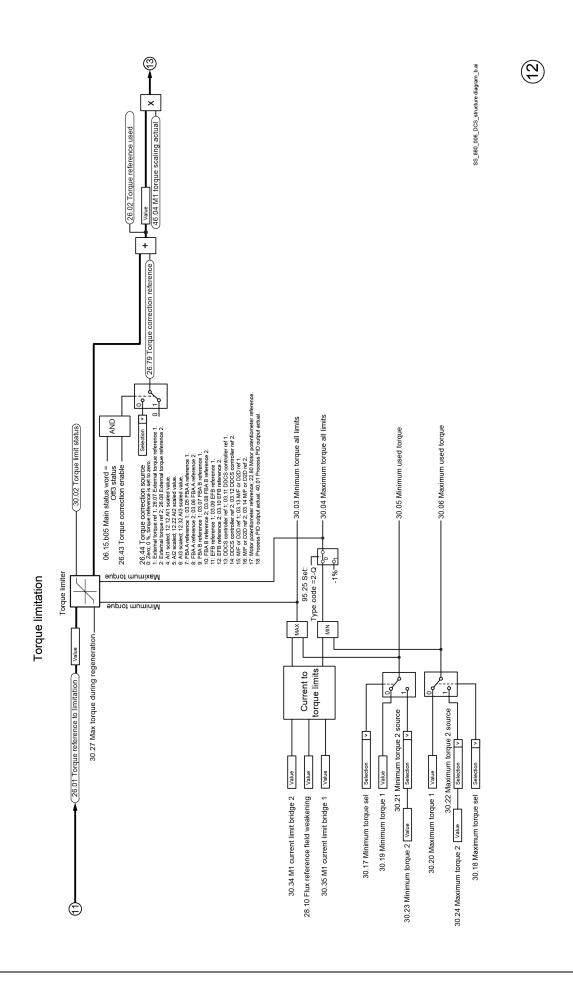




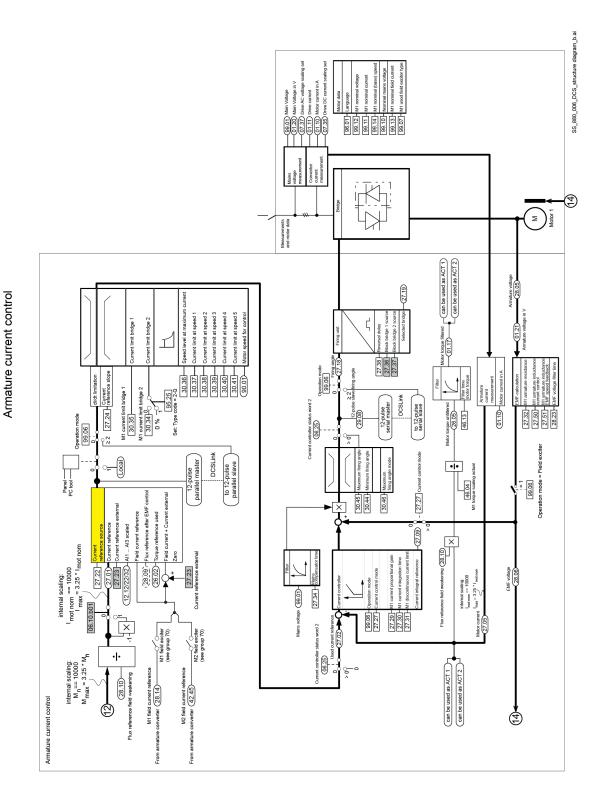


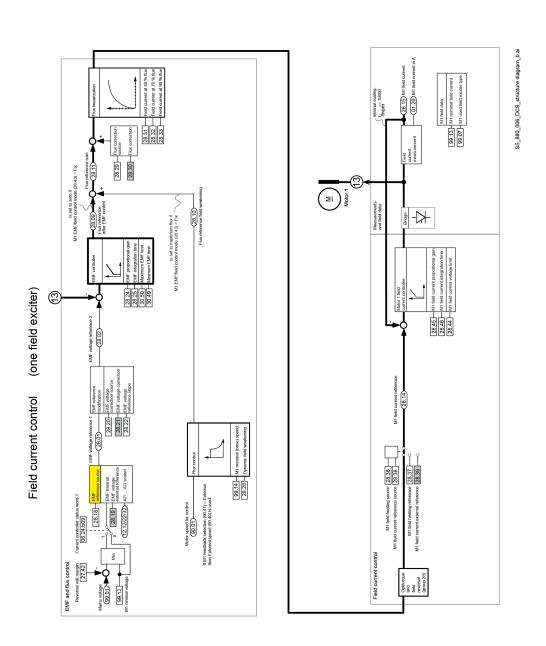












DCS Family



DCS550-S modules The compact drive for machinery application

 $\begin{array}{ccccc} 20 & \dots & 1,000 \; A_{DC} \\ 0 & \dots & 610 \; V_{DC} \\ 230 & \dots & 525 \; V_{AC} \\ IP00 & & & \end{array}$

- Compact
- Robust design
- Adaptive and winder program
- High field exciter current



DCS880 modules For safe productivity

20 ... 5,200 A_{DC} 0 ... 1,600 V_{DC} 230 ... 1,000 V_{AC} IPO0

- Safe torque off (STO) built in as standard
- Compact and robust
- Single drives, 20 A to 5,200 A, up to 1,600 $V_{\rm pc}$
- IEC 61131 programmable
- Intuitive control panel and PC tool with USB connection and start up assistant
- Wide range of options to serve any DC motor application



DCS800-A enclosed converters Complete drive solutions

 $\begin{array}{cccc} 20 & \dots & 20,000 \; A_{DC} \\ 0 & \dots & 1,500 \; V_{DC} \\ 230 & \dots & 1,200 \; V_{AC} \\ IP21 - IP54 \end{array}$

- Individually adaptable to customer requirements
- User-defined accessories like external PLC or automation systems can be included
- High power solutions in 6- and 12-pulse up to 20,000 A, 1,500 V
- In accordance to usual standards
- Individually factory load tested
- Detailed documentation



DCT880 modules Thyristor controller

16 ... 4,200 A_{DC} 110 ... 190 V_{DC} IP00

- Precise power control in industrial heating applications
- Two or three phase devices
- Power optimizer for peak load reduction
- Built on ABB's all-compatible drives architecture
- Intuitive control panel and PC tool with USB connection and start up assistant
- Application control programs and drive application programming with IEC 61131 programming

ABB Automation Products

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