DCS880

DCS880 Quick guide

List of manuals

		Language						
	Publication number	E	D	I	ES	F	CN	RU
DCS880 Quick Guide	3ADW000480	x						
DCS880 Units								
DCS880 Flyer	*3ADW000475*	x	x					
DCS880 Technical Catalog	3ADW000465	x						
DCS880 Hardware Manual	3ADW000462	x						
DCS880 Firmware Manual	*3ADW000474*	x						
DCS880 Service Manual	3ADW000488	p						
ACS-AP-x assistant control panels user's manual	*3AUA0000085685*	x						
Adaptive programming, Application guide	*3AXD50000028574*	x						
Option manuals and guides								
SDCS-DPI-H01 panel bus adapter module	HW DCT880 0001E	x						
Door mounting kits								
DPMP-01 mounting platform for ACS-AP control panel	*3AUA0000100140*	x						
DPMP-02 mounting platform for ACS-AP control panel	*3AUA0000136205*	x						
Serial communication								
FCAN-01 CANopen adapter module	*3AFE68615500* *3AUA0000121752*	x	x					
FDNA-01 DeviceNet™ adapter module	*3AFE68573360*	x						
FECA-01 EtherCAT adapter module	*3AUA0000068940* *3AUA0000083936*	x	x					
FENA-01/-11/-21 Ethernet adapter module	*3AUA0000093568*	x						
FEPL-02 Ethernet POWERLINK adapter module	*3AUA0000123527* *3AUA0000133138*	x	x					
FPBA-01 PROFIBUS DP adapter module	*3AFE68573271* *3AFE68989078*	x	x					
FSCA-01 RS-485 adapter module	*3AUA0000109533*	x						
FDCO-01/02 DDCS communication modules	*3AUA0000114058*							
Drive (IEC61131-3) application programming manual	*3AUA0000127808*	x						
Tool and maintenance manuals and guides								
Drive composer PC tool	*3AUA0000094606*	x						
NETA-21 remote monitoring tool	*3AUA0000096939*	x						
NETA-21 remote monitoring tool installation and startup guide	*3AUA0000096881*	x						
Extension modules								
FIO-11 Analog extension module	*3AFE68784930*							
FIO-01 Digital extension modules	*3AFE68784921*							
FAIO-01 Analaog extension module	*3AUA0000124968*							
FEN-01 TTL encoder interface	*3AFE68784603*							
FEN-31 HTL encoder interface	*3AUA0000031044*							
FEA-01 F-series Extension Adapter	*3AUA0000071412*							
FEA-03 F series extension adapter	*3AUA0000115811*							
x → existing p → planned								
Status 06.2017								

DCS880 Manuals list e c.docx

DCS880

All information are available on the Internet by following links:

- DCS880 documentation

www.abb.com → Search for DCS880
Direct link: *DCS880 CD download*

- ABB Drive composer entry PC tool for parameterization, commissioning and service

www.abb.com → Search for drive composer
Direct link: *ABB Drive composer*

Table of contents

Safety instructions

What this chapter contains

This chapter contains the safety instructions which 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 DCS800-R00.

Use 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 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 discharge 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 Mohm) 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 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).
- 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 ohms) 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 mAAC or 10 mADC (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:

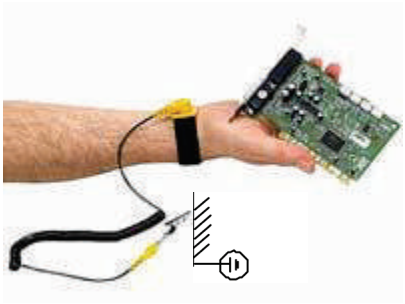


ABB order no.: 3ADV050035P0001

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 (1.4 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 mea-sures 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 .

Type code

The type code contains information on the specification and configuration of the drive. The first digits from left show the basic configuration (e.g. DCS880-S01-2000). The optional selections are given thereafter on the name plate by plus code. The main selections are described below. Not all selections are available for all types.

The drive's basic type code: DCS880-AAB-CCCC-DDEF + plus code			
Product family	DCS880		
Product type:	AA	= S0 = R0 = E0 = A0	Standard converter module Rebuild kit Panel solution Enclosed converter
Bridge type:	B	= 1 = 2	Single bridge (2-Q) 2 anti-parallel bridges (4-Q)
Module type:	CCCC	=	Rated DC current (IP00)
Rated AC voltage:	DD	= 04 = 05 = 06 = 07 = 08 = 10 = 12	100 V_{AC} - 415 V_{AC} 100 V_{AC} - 525 V_{AC} 270 V_{AC} - 600 V_{AC} 315 V_{AC} - 690 V_{AC} 360 V_{AC} - 800 V_{AC} 450 V_{AC} - 990 V_{AC} 540 V_{AC} - 1200 V_{AC}
Power connection:	E	= X = L = R	Standard H1 ... H7 Left side H8 Right side H8
Revision code:	F	= 0	1st generation
Field exciter configuration:		+0S163 +S164	H1 ... H4 without OnBoard field exciter H5 and H6 with internal field exciter, supply external (H5 and H6: 25 A, Rebuild kit: 16 A / 25 A)
Fan voltage:		 Standard +S171	**Size H4** Fan voltage: 230 V / 1-ph Fan voltage: 115 V / 1-ph
Application programming		+S551	Memory unit including drive application programming license
Current measurement:		+S175	SDCS-CMA-2 (H6 ... H8)
Voltage measurement:		+S186 +S185 +S183 +S189	120 V SDCS-SUB-4 (H1 ... H5) SDCS-PIN-H51 configured to 120 V (H6 ... H8) SDCS-PIN-H51 configured to 990 V (H6 ... H8), 12-pulse serial / serial sequential SDCS-PIN-H51 configured to galvanic isolation (H6 ... H8)
SDCS-DSL-H1x:		+S521 +S522 +S523	1 DCSLink channel, 0 channels optical power link SDCS-DSL-H10 1 DCSLink channel, 2 channels optical power link SDCS-DSL-H12 1 DCSLink channel, 4 channels optical power link SDCS-DSL-H14
Control panel:		+0J404 +J428 +J429	Without control panel daisy-chain option DPI-H01 kit Bluetooth control panel ACS-AP-W

The technical data and specifications are valid as of going to press. ABB reserves the right to make subsequent alterations.

Plus codes

Option	Option code	Description
ACS-AP-I	standard	Control panel built-in
no ACS-AP-I	0J404	No control panel
ACS-AP-W	+J429	Bluetooth control panel
DPI-H01	+J428	daisy-chain option
FDNA-01	+K451	Fieldbus DeviceNet
FPBA-01	+K454	Fieldbus PROFIBUS
FCAN-01	+K457	Fieldbus CANOpen
FSCA-01	+K458	Fieldbus Modbus
FCNA-01	+K462	Fieldbus ControlNet
FECA-01	+K469	Fieldbus EtherCat
FEPL-02	+K470	Fieldbus Ethernet POWERLINK
FENA-11	+K473	Ethernet/IP, Modbus/TCP, Profinet
FENA-21	+K475	Ethernet/IP, Modbus/TCP, Profinet
FIO-11	+L500	Analog I/O Extension (3 AI, 1 AO, 2 DIO)
FIO-01	+L501	Digital I/O Extension (4 DIO, 2 RO)
FAIO-01	+L525	Analog I/O Extension (2 AI, 2 AO)
FDIO-01	+L526	Digital I/O Extension (3 DI, 2 RO)
FPTC-01	+L536	Thermistor protection module
FEN-31	+L502	HTL Encoder Interface
FEN-21	+L516	Resolver Interface
FEN-01	+L517	TTL Encoder interface
FEN-11	+L518	Absolute Encoder Interafce
FDCO-01	+L503	DDCS communication 10/10 MBd
Application programming	+S551	Memory unit including drive application programming license

Environmental conditions

System connections	
Voltage, 3-phase:	100 ... ≤ 1000 V acc. to IEC 60038
Voltage deviation:	±10 % continuous; ±15% short-time *
Rated frequency:	50 Hz or 60 Hz
Static frequency deviation:	50 Hz ± 2 %; 60 Hz ± 2 %
Dynamic: frequency range:	50 Hz ± 5 Hz; 60 Hz ± 5 Hz
df/dt:	17 % / s
* = 0.5 ... 30 cycles	
Please note: Special consideration must be taken for voltage deviation in regenerative mode.	
Degree of protection	
Converter module and options (line chokes, fuse holder, field exciter, etc.):	IP 00
Enclosed converters:	IP 20/21/31/41
Paint finish	
Converter module:	Body RAL 7012; Cover RAL 9017 & RAL 9002
Enclosed converter:	Light grey RAL 7035

Environmental limit values	
Permissible cooling air temp.	
- at converter module air inlet:	0 ... +55°C
with rated DC current:	0 ... +40°C
with different DC current:	+30 ... +55°C
- Options:	0 ... +40°C
Relative humidity (at 5...+40°C):	5 ... 95 %, no condensation
Relative humidity (at 0...+5°C):	5 ... 50 %, no condensation
Change of the ambient temp.:	< 0.5°C / minute
Storage temperature:	-40 ... +55°C
Transport temperature:	-40 ... +70°C
Pollution degree (IEC 60664-1, IEC 60439-1).	2
Site elevation	
< 1000 m above M.S.L.:	100 %, without current reduction
> 1000 m above M.S.L.:	with current reduction,

Sound pressure level and vibration

Size	Sound pressure level L_P (1 m distance)		Vibration
	as module	enclosed conv.	as module
H1	55 dBA	68 dBA	3 mm, 2 … 9 Hz 1 g, 9 ... 200 Hz
H2	55 dBA	72 dBA	
H3	60 dBA	78 dBA	
H4	66 ... 70 dBA, depending on fan	77 dBA	

North American Standards

In North America the system components fulfil the requirements of the table below

Rated supply voltage	Standards	
	Converter module	Enclosed converter
to 990 V	UL 61800-5-1 Power Conversion Equipment CSA C 22.2 No. 274-13 Industrial Control Equipment, Industrial Products Available for converter modules including field exciter units. Types with UL mark: • see UL Listing www.ul.com / certificate no. E196914 • or on request	UL/CSA types: on request

Ratings

Current and power ratings

See the current ratings including several standard duty cycles for the DCS880 with 50 Hz and 60 Hz supplies below. The current ratings are based on an ambient temperature of maximum 40°C and an elevation of maximum 1000 m above mean sea level:

Unit type	$I_{DC\ I}$	$I_{DC\ II}$		$I_{DC\ III}$		$I_{DC\ IV}$		Size	Internal field current
2-Q converters	continuous	100 % 15 min	150 % 60 s	100 % 15 min	150 % 120 s	100 % 15 min	200 % 10 s		
400 V / 500 V / 525 V	[A]	[A]		[A]		[A]			
DCS880-S01-0020-04/05**	20	16	24	16	24	15	30	H1	0.3 ... 6 A
DCS880-S01-0045-04/05**	45	36	54	35	52	31	62		1 ... 12 A
DCS880-S01-0065-04/05**	65	54	81	52	78	49	98		
DCS880-S01-0090-04/05**	90	76	114	74	111	73	146		
DCS880-S01-0135-04/05	135	105	157	100	150	93	186	H2	1 ... 18 A
DCS880-S01-0180-04/05**	180	130	195	125	187	110	220		
DCS880-S01-0225-04/05	225	170	255	165	247	148	296		
DCS880-S01-0270-04/05	270	200	300	195	292	180	360		
DCS880-S01-0315-04/05**	315	240	360	235	352	215	430	H3	2 ... 25 A
DCS880-S01-0405-04/05**	405	310	465	300	450	270	540		
DCS880-S01-0470-04/05	470	350	525	340	510	310	620		
DCS880-S01-0610-04/05**	610	455	682	435	652	425	850	H4	2 ... 30 A
DCS880-S01-0740-04/05	740	570	855	540	810	525	1050		
DCS880-S01-0900-04/05	900	680	1020	650	975	615	1230		
600 V / 690 V									
DCS880-S01-0290-06	290	240	360	225	337	205	410	H3	-
DCS880-S01-0590-06	590	470	705	472	708	434	868	H4	-

** This unit type can be used as large field exciter. Do not forget the SDCS-DSL-H1x (+S199). A 10 % current de-rating is strongly recommended.

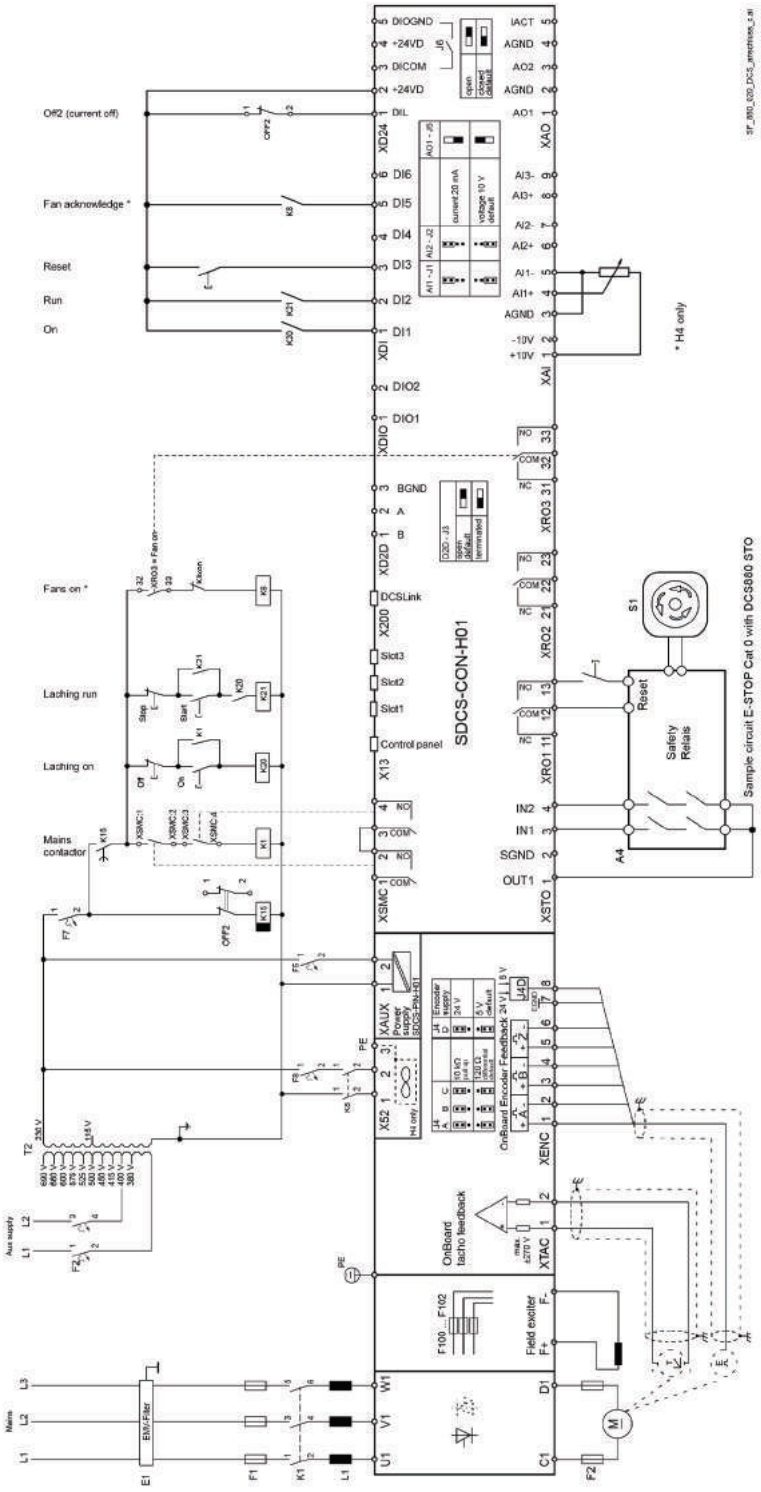
Notes:
AC current IAC = 0.82 * IDC

Unit type	$I_{DC\ I}$	$I_{DC\ II}$		$I_{DC\ III}$		$I_{DC\ IV}$		Size	Internal field current
4-Q converters	continuous	100 % 15 min	150 % 60 s	100 % 15 min	150 % 120 s	100 % 15 min	200 % 10 s		
400 V / 525 V	[A]	[A]		[A]		[A]			
DCS880-S02-0025-04/05**	25	22	33	21	31	20	40	H1	0.3 ... 6 A
DCS880-S02-0050-04/05**	50	38	57	37	55	33	66		1 ... 12 A
DCS880-S02-0075-04/05**	75	60	90	59	88	54	108		
DCS880-S02-0100-04/05**	100	85	127	83	124	80	160		
DCS880-S02-0150-04/05	150	114	171	110	165	100	200	H2	1 ... 18 A
DCS880-S02-0200-04/05**	200	145	217	140	210	115	230		
DCS880-S02-0250-04/05	250	185	277	180	270	165	330		
DCS880-S02-0300-04/05	300	225	337	220	330	200	400		
DCS880-S02-0350-04/05**	350	275	412	265	397	245	490	H3	2 ... 25 A
DCS880-S02-0450-04/05**	450	350	525	340	510	310	620		
DCS880-S02-0520-04/05	520	400	600	380	570	350	700		
DCS880-S02-0680-04/05**	680	525	787	510	765	475	950	H4	2 ... 30 A
DCS880-S02-0820-04/05	820	630	945	610	915	565	1130		
DCS880-S02-1000-04/05	1000	750	1125	725	1087	660	1320		
600 V / 690 V									
DCS880-S02-0320-06	320	256	384	246	369	235	470	H3	-
DCS880-S02-0650-06	650	514	771	508	762	462	924	H4	-

Planning the electrical installation

Converters size H1 ... H4 configuration using an OnBoard field exciter

Wiring the drive according to this diagram offers the highest degree of monitoring functions done by the drive.



Cross-sectional areas - Tightening torques

Recommended cross-sectional area to **DINVDE 0276-1000** and **DINVDE 0100-540 (PE)** trefoil arrangement, up to 50°C ambient temperature.
Armature:

Converter type	C1, D1			U1, V1, W1			PE		
	I_{DC} [A-]	1 [mm²] 	(2.) [mm²] 	Iv [A~]	1 [mm²] 	(2.) [mm²] 	[mm²] 		[Nm] 
DCS880-S0x-0025-xx	25	1 x 6	-	21	1 x 4	-	1x 4	1 x M6	6
DCS880-S0x-0050-xx	50	1 x 10	-	41	1 x 6	-	1x 6	1 x M6	6
DCS880-S0x-0075-xx	75	1 x 25	-	61	1 x 25	-	1x 16	1 x M6	6
DCS880-S0x-0100-xx	100	1 x 25	-	82	1 x 25	-	1x 16	1 x M6	6
DCS880-S0x-0150-xx	150	1 x 35	-	114	1 x 35	-	1x 16	1 x M10	25
DCS880-S0x-0200-xx	200	2 x 35	1 x 95	163	2 x 25	1 x 95	1x 25	1 x M10	25
DCS880-S0x-0250-xx	250	2 x 35	1 x 95	204	2 x 25	1 x 95	1x 25	1 x M10	25
DCS880-S0x-0300-xx	300	2 x 70	1 x 95	220	2 x 50	1 x 95	1x 50	1 x M10	25
DCS880-S0x-0320-xx	320	2 x 70	1 x 95	220	2 x 50	1 x 95	1x 50	1 x M10	25
DCS880-S0x-0350-xx	350	2 x 70	-	286	2 x 50		1x 50	1 x M10	25
DCS880-S0x-0450-xx	450	2 x 95	-	367	2 x 95	-	1x 50	1 x M10	25
DCS880-S0x-0520-xx	520	2 x 95	-	424	2 x 95	-	1x 50	1 x M10	25
DCS880-S0x-0650-xx	650	2 x 120	-	555	2 x 120	-	1x120	1 x M12	50
DCS880-S0x-0680-xx	680	2 x 120	-	555	2 x 120	-	1x120	1 x M12	50
DCS880-S0x-0820-xx	820	2 x 150	-	669	2 x 120	-	1x120	1 x M12	50
DCS880-S0x-0900-6/7	900	4 x 95	3 x 150	734	4 x 70	3 x 95	1x150	2 x M12	50
DCS880-S0x-1000-xx	1000	2 x 185	-	816	2 x 150	-	1x150	1 x M12	50

You will find instructions on how to calculate the PE conductor's cross-sectional area in VDE 0100 or in equivalent national standards. We would remind you that power converters may have a current-limiting effect.

Excitation:

Size	H1	H1	H2	H3, H5, H6	H4	
DC output current	6 A	12 A	18 A	25 A	30 A	
max. cross sectional area	6 mm²/ AWG 10	6 mm²/ AWG 10	6 mm²/ AWG 10	6 mm²/ AWG 10	6 mm²/ AWG 10	
min. cross sectional area	1 mm²/ AWG 16	2.5 mm²/ AWG 13	4 mm²/ AWG 11	6 mm²/ AWG 10	6 mm²/ AWG 10	
Tightening torque	1.5 ... 1.7 Nm					

Mechanical installation

Before installation

Install the drive in an upright position with the cooling section facing a wall. Check the installation site according to the requirements below. Refer to chapter *Dimensions and weights* in the Hardware manual for frame details.

Requirements for the installation site

See chapter *Technical data* in the Hardware manual for the allowed operation conditions of the drive.

Wall

The wall should be as close to vertical as possible, of non-flammable material and strong enough to carry the weight of the unit. Check that there is nothing on the wall to inhibit the installation.

Floor

The floor or material below the installation should be non-flammable.

Free space around the unit

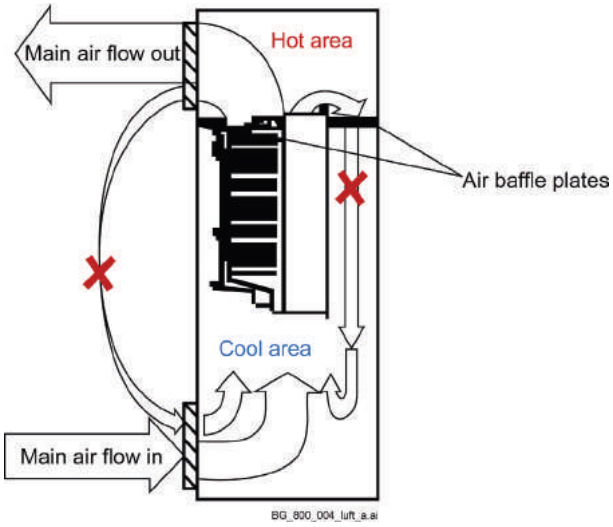
Around the unit free space is required to enable cooling airflow, service and maintenance see chapter *Dimensions and weights* in the Hardware manual.

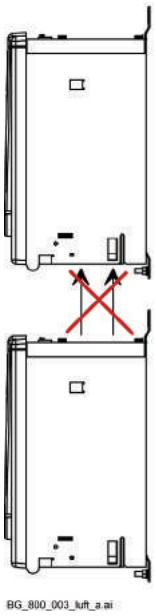
Cabinet installation

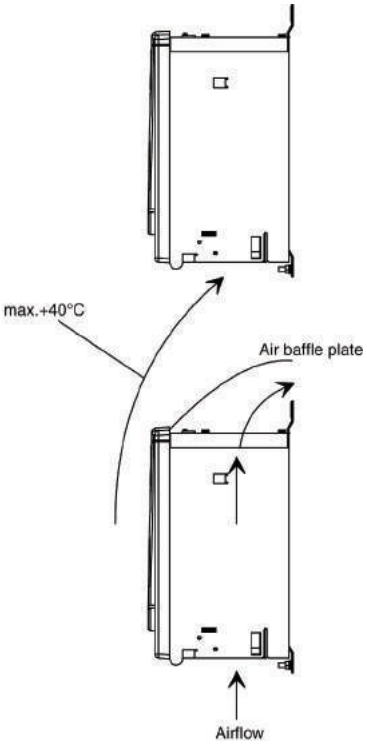
The required distance between parallel units is five millimetres (0.2 in.) in installations without the front cover. The cooling air entering the unit must not exceed +40 °C (+104 °F).

Preventing cooling air recirculation Unit above another

Prevent air recirculation inside and outside the cabinet.







Lead the exhaust cooling air away from the unit above. Distances see chapter Dimensions and weights.

Dimensioning and weights

Size	h * w * d [mm]	h * w * d [inch]	weight [kg]	weight [lbs]
H1	370*270*215	14.56*10.63*8.46	11	25
H2	370*270*271	14.56*10.63*10.67	16	36
H3	460*270*317	18.11*10.63*12.48	25	56
H4	645*270*352	25.39*10.63*13.86	38	84
H5	750*270*372	29.53*10.63*14.65	55	122

Technical data

Control circuit terminals on the SDCS-CON-H01

The control circuit terminals are common for all sizes H1 … H8.

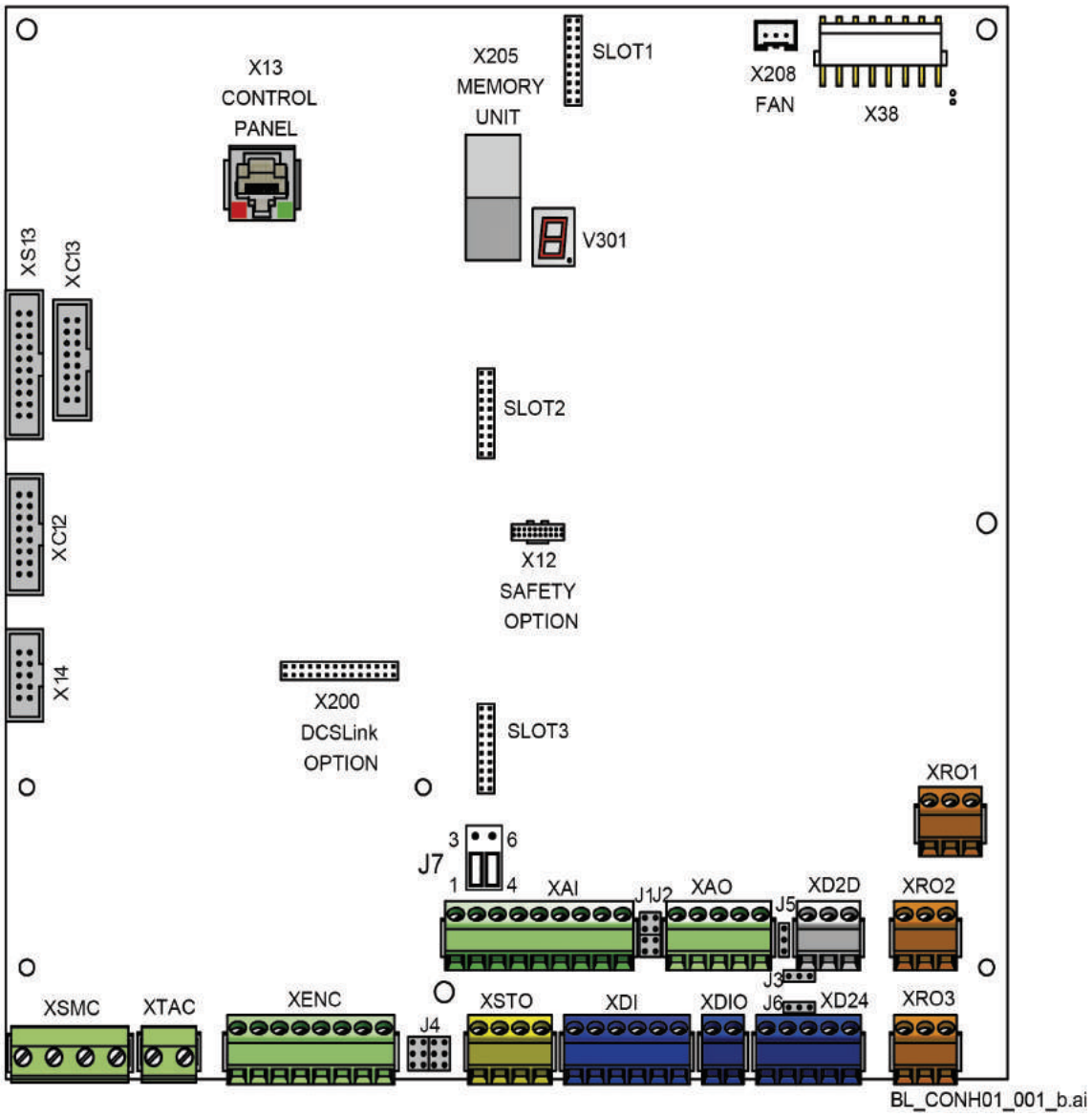
Location of the control circuit board SDCS-CON-H01

The SDCS-CON-H01 is mounted on an electronic tray. The electronic tray is attached in the housing by means of two hinges.

Recommended wire size - Tightening torques

Control cables:

Wire sizes:	Tightening torques:
0.5 … 2.5 mm2 (24 … 12 AWG)	0.5 Nm (5 lbf·in) for both stranded and solid wiring



Control circuit terminal layout

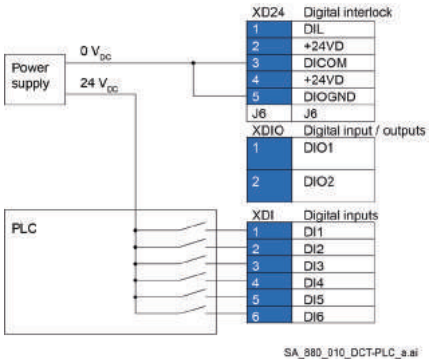
internal 24 V_{DC}	External 24 V_{DC} used

DCS880

XAI	Reference voltage and analog inputs		
1	+VREF	+10 V_{DC}	
2	-VREF	-10 V_{DC}	
3	AGND	Common ground (connected to frame)	
4	AI1+	±10 V or 0 (4) ... 20 mA depending on J1	
5	AI1-		
6	AI2+	±10 V or 0 (4) ... 20 mA depending on J2	
7	AI2-		
8	AI3+	±10 V	
9	AI3-		
J1	J1	AI1 current / voltage selection jumper	
J2	J2	AI2 current / voltage selection jumper	
XAO	Analog outputs		
1	AO1	±10 V or 0 (4) ... 20 mA depending on J5	
2	AGND	Common ground (connected to frame)	
3	AO2	±10 V	
4	AGND	Common ground (connected to frame)	
5	IACT	Connection point for a scope	
J5	J5	AO1 current / voltage selection switch	
XD2D	Drive-to-drive link		
1	B	Drive-to-drive link (master-follower or embedded fieldbus)	
2	A		
3	BGND	Isolated ground 2	
J3	J3	Drive-to-drive link termination switch	
XRO1, XRO2, XRO3	Relay outputs		
11	NC	250 V_{AC} / 30 V_{DC} 2 A	
12	COM		
13	NO		
21	NC	250 V_{AC} / 30 V_{DC} 2 A	
22	COM		
23	NO		
31	NC	250 V_{AC} / 30 V_{DC} 2 A	
32	COM		
33	NO		
XD24	Digital interlock		
1	DIL	Digital interlock	
2	+24VD	+24 V_{DC}, 200 mA	
3	DICOM	Isolated digital input ground for DI1 ... DI5 and DIL	
4	+24VD	+24 V_{DC}, 200 mA	
5	DIOGND	Isolated digital input / output ground for DI6, DIO1 and DIO2	
J6	J6	Digital ground selection switch (DIOGND and DICOM)	
XDIO	Digital inputs / outputs		
1	DIO1	Relay driver, max. +24 V_{DC}, 2k, 100n, +24 V_{DC}, DO, +3.3 V_{DC}, DIOGND, DI	
2	DIO2		
XDI	Digital inputs		
1	DI1	DI1 - DI5 and DIL: max. +24 V_{DC}, 2k, 100n, DICOM, +3.3 V_{DC}, DI	
2	DI2		
3	DI3		
4	DI4		
5	DI5		
6	DI6	DI6: max. +24 V_{DC}, 2k, 100n, DIOGND, +3.3 V_{DC}, DI	
XENC	Encoder		
1	A+	Channel A+ function depending on J4A	
2	A-	Channel A- function depending on J4A	
3	B+	Channel B+ function depending on J4B	
4	B-	Channel B- function depending on J4B	
5	Z+	Channel Z+ function depending on J4C	
6	Z-	Channel Z- function depending on J4C	
7	EGND	Common ground (connected to frame)	
8	+VENC	Encoder supply 5 V_{DC} or 24 V_{DC} depending on J4D	
J4A	J4A	Differential or single ended (10 k pull up) selection jumpers	
J4B	J4B		
J4C	J4C		
J4D	J4D	Encoder supply 5 V_{DC} or 24 V_{DC} selection jumper	
J7A	J7A	Not in use for DCS880	
J7B	J7B		
XTAC	Analog tacho		
1	AITACH+	±8 ... 270 V_{DC}	
2	AITACH-		
XSMC	Mains contactor		
1	MCCOM	250 V_{AC} / 30 V_{DC} 2 A	Fixed output for the mains contactor
2	MCNO		
3	STOCOM	250 V_{AC} / 30 V_{DC} 2 A	Fixed output for safe torque off (STO) zero current monitor
4	STONO		
XSTO	Safe torque off (STO)		
1	OUT1	24 V_{DC} for STO circuit	
2	SGND	Common ground (connected to frame)	
3	IN1	Both circuits must be closed for drive to start	
4	IN2	Open circuits block the firing pulses	
X12	Safety functions module connection		
X13	Control panel connection		
X205	Memory unit connection		

Safety relais

SA_880_005_DCS_b.ai



SA_880_010_DCT-PLC_a.ai

Using the control panel

Refer to ACS-AP-x assistant control panels user's manual (3AUA0000085685) for detailed information.

Basic operation

What this chapter contains

The chapter describes the basic operations and components of the user interface, lists common user tasks and gives short instructions on how to complete them.

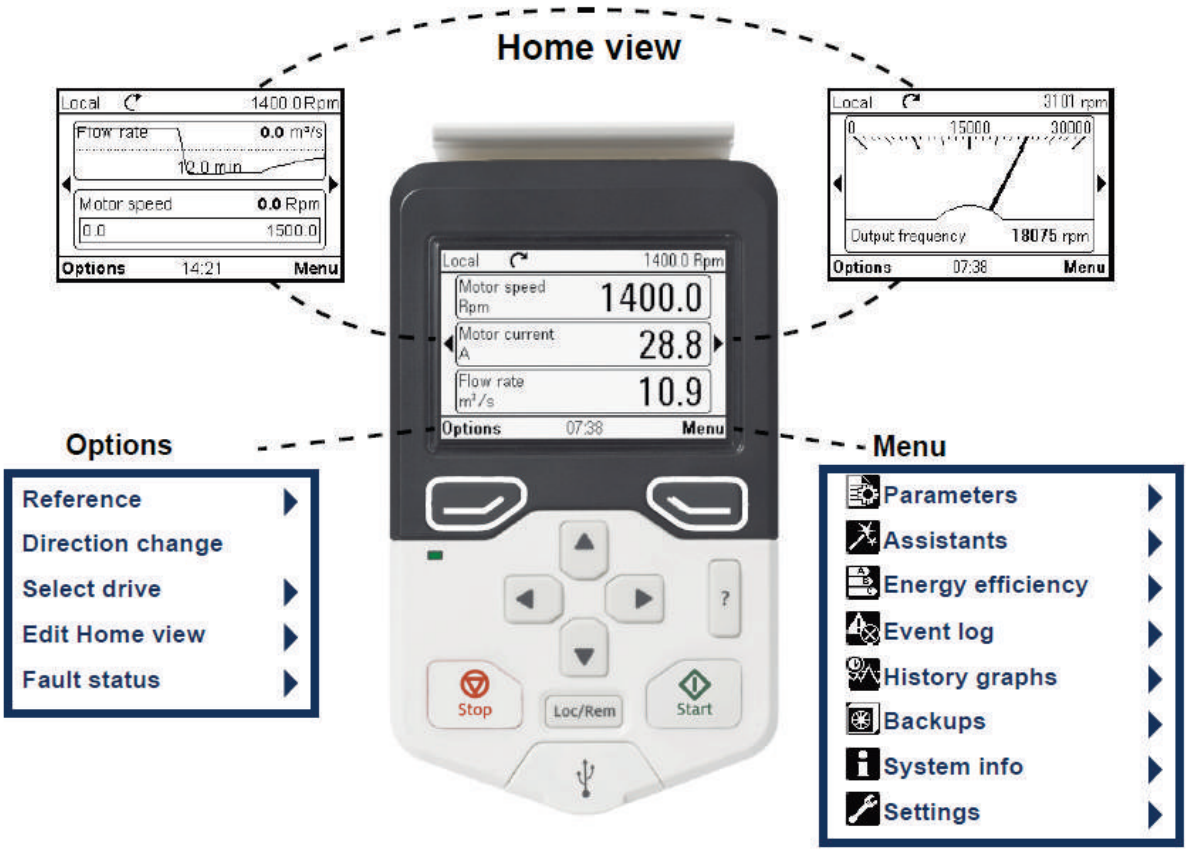
User interface overview

The user interface has the following main components:

- The Home view through which you can monitor signals.
- The main Menu through which you can access most functions of the control panel. The Menu functions are described in detail in chapter Functions in the main Menu.
- The Options menu through which you can set a reference, select the drive, edit Home view pages, and see the fault and warning status. The Options menu is described in detail in chapter Functions in the Options menu.
- The Help view which provides advice in many situations.
- Faults and warnings view which appear when the drive or the control panel experiences an error.

Control panel navigation

Use the arrow keys and softkeys for navigation. Follow the choices on the screen.



Navigation memory

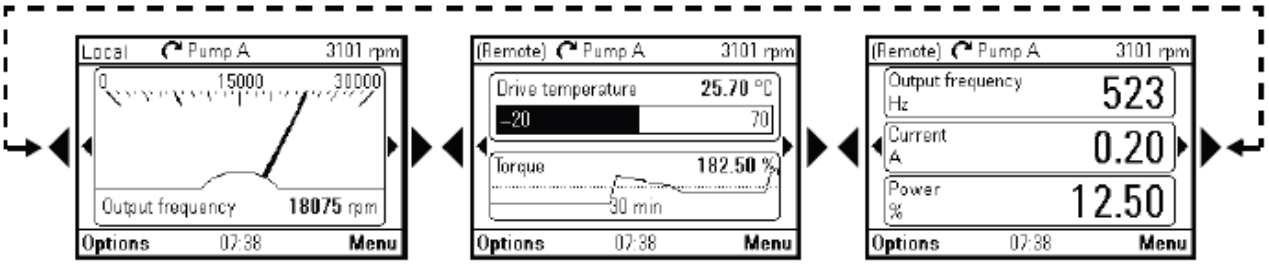
The Assistant control panel has a navigation memory that allows you to backtrack your steps through the user interface with the arrow keys. The path you have last accessed remains in the memory for 10 minutes.

- The left arrow key (◄) moves you backwards in the menu structure. If you press repeatedly, you return back to the Home view.
- The right arrow key (►) moves you forward in the menu structure. If you press repeatedly, you move forward along the path in the menu structure you had previously accessed.

Home view

The main view of the control panel is called the Home view. In the Home view, you can monitor the status of the drive, such as its speed, torque or power. The Home view has one or more pages, each of which can display up to three signals.

The number of pages and the signals shown on each page are customizable, and the Home view configuration is saved to the drive whenever you change it. The maximum total number of signals displayed varies from 9 to 21, depending on the drive. In the example below, three Home view pages are used, showing different display formats.



Each application macro and user set has a default Home view configuration. When you select an application macro or restore a user set, the Home view configuration changes accordingly. There is a default Home view configuration in each drive, which can be restored in the Settings menu.

The Home view opens automatically when you power up the drive. The Home view is also displayed from the Options menu or the main Menu if no key is pressed for 10 minutes.

Tip:

You can return to the Home view from any view except special screens by holding down the left softkey .

Navigating in the Home view

- Use and to move between the different pages of the Home view. The page numbers are shown while you scroll between pages.
- Use or to adjust the reference (visible in the top right corner).
- Press (Menu) to open the main Menu.
- Press (Options) to open the Options menu.

Help

You can open a context-sensitive help page in all menus and views by pressing.

The help page provides information on the use of the current view or menu, or on possible problems associated with it.

On the help page, you can:

Press again or (Exit) to exit.

Common user tasks

This following tables list common user tasks and describe how to complete them.
See Functions in the main Menu and Functions in the Options menu for detailed descriptions of functions in the menus.

Basic operation of the drive

Task	Actions
Start and stop the drive.	In local control, press to start the drive and to stop the drive.
Set the reference (for example, speed) in the Home view.	In local control, go to Options > Reference. Set the reference with the arrow keys.
Switch between local and remote control.	Press REM/LOC

Parameters

Task	Actions
Choose parameters displayed on the Favorites list.	Go to Menu > Parameters > Favorites > Edit.
View/edit parameters.	Go to Menu > Parameters to view parameters. Move by arrow keys and save using left soft key.
View parameters that differ from Application Macro defaults.	Go to Menu > Parameters > Modified.

System information and help

Task	Actions
How to get help.	Press to open the context-sensitive help.
View control panel version.	Go to Menu > System info > Control panel.
View drive information.	Go to Menu > System info > Drive.

Faults and warnings

Task	Actions
Hide/view an active fault.	Faults are automatically displayed. If you hide a fault by pressing (Hide), it automatically reappears after 60 seconds of no key presses. You can also view the fault through Options > Fault status.
Open help page on a fault.	Press to view the help page.
Reset an active fault.	Press (Reset) to reset an active fault.
View tripping faults.	Go to Menu > Event log > Primary faults.
Hide/view an active warning.	Warnings are automatically displayed. If you hide a warning by pressing (Hide), it automatically reappears if the warning is still active after 60 seconds of no key presses.
Open help page on a warning.	Press (How to fix) or to view the help page.
Reset an active warning.	Warnings disappear automatically once the condition that has triggered it goes away.
View past warnings and faults.	Go to Menu > Event log > Other events.

Basic settings and assistants

Task	Actions
Change language.	Go to Menu > Settings > Language.
Change time and date, and related settings.	Go to Menu > Settings > Date & time.
Launch an assistant.	Go to Menu > Assistants and select an assistant to launch.

Backups

Task	Actions
Create a backup.	Creates an backup of firmware parameters to the panel.
Restore a backup.	Restores a backup to the firmware parameters of DCT880. It is mandatory to set the unit in local mode before.

DCS880 Set up control panel assistant

General display features

Following modes are available in the MAIN MENU:

1. Parameters mode
2. Start-up assistants mode
   a. Name plate data
   b. Autotuning field current controller
   c. Autotuning armature current controller
   d. First motor tuning
   e. Speed feedback assistant
      (Tacho fine tuning not available)
   f. Autotuning speed controller
   g. Field weakening assistant
      (only used when maximum speed is higher than base speed)
   h Make a back up

Parameters entered by assistant

99.07	M1 used field exciter type
99.10	Nominal mains voltage
99.11	M1 nominal current
99.12	M1 nominal voltage
99.13	M1 nominal field current
99.14	M1 nominal base speed
30.11	M1 minimum speed
30.12	M1 maximum speed
30.19	Minimum torque 1
30.20	Maximum torque 1
30.35	M1 current limit bridge 1
30.34	M1 current limit bridge 2
31.30	M1 overspeed trip margin
31.44	Armature overcurrent level
94.23	OnBoard encoder pulses/revolution
94.24	OnBoard encoder type
94.25	OnBoard encoder speed calc type
94.07	M1 tacho type
94.08	M1 tacho voltage at 1000 rmp
90.41	M1 feedback selection
23.12	Acceleration time 1
23.13	Deceleration time 1
31.58	M1 field current low level
28.17	M1 EMF/field control mode

Set UP Procedure

Follow the procedure below for setting up the thyristor power controller

Checking prior to powering On

Check the following before powering on the thyristor power controller

(1) Check the wiring to the input terminals U1, V1 and W1 and output terminals U2, V2 and W2. Also check that the grounding wires are connected to the grounding terminals (PE).

WARNING!
Be sure to connect the grounding wires of the power controller to the ground electrodes. Otherwise, an electric shock could occur.

(2) Check the wiring to the aux. voltage supply.
(3) Check the wiring to neutral point connection for single phase or 3ph + neutral configurations connected to XN1 : 1
(4) Check the control circuit terminals and main circuit terminals for short circuit or ground faults.
(5) Check for loose terminals, connectors and screws.
(6) Make sure that all switches of devices connected to the power controller are turned OFF.
Power on the power controller with any of those switches being ON may cause unexpected behavior at load side.

Power ON and check

WARNING!
Be sure to mount the front cover before turning the power ON. Do not remove the cover when the power controller is ON.
Do not operate switches with wet hands.
Otherwise, an electric shock could occur.

Turn the aux. power ON and check the following points. The following is a case when no parameter data is changed from factory defaults.

(1) Check that the assistant control panel displays no fault and set date and time

(2) Check that the used analog and digital inputs work properly
Check signals 12.11, 12.21 and 12.31 for analog inputs
Check signals 10.1 for digital inputs
Set the inputs from voltage to current if needed

Turn on the input power and check the following points.

(1) Check following parameters
a. In case of three phase system supply
Voltage between input phases
signals 1.07, 1.08, 1.09
b. In case of single phase system supply
Voltage between phase and neutral
signals 1.01, 1.02, 1.03

PC-tool “Drive composer entry”

Drive composer entry is a free of charge startup and maintenance PC tool for ABB's common architecture industrial devices series such as ACS880, DCT880 etc.
The key functions of Drive composer entry are the following:

- Connect point-to-point to one DCS880 or DCT880 using Assistant control panel's USB port
- Show the actual status of the connected DCS880 or DCT880
- View, edit on line and search the parameters
- Show modified parameters (not at default)
- Print parameters
- Save parameters from Drive to PC and download parameters from PC to Drive
- Monitor drive signals graphically and numerically (Limited functionality)
- Local Control of a Drive
- Use of workspace and customized parameter windows
- Show event logger (faults and warnings)

Download the software from the internet: *www.abb.com* → Search for Drive composer

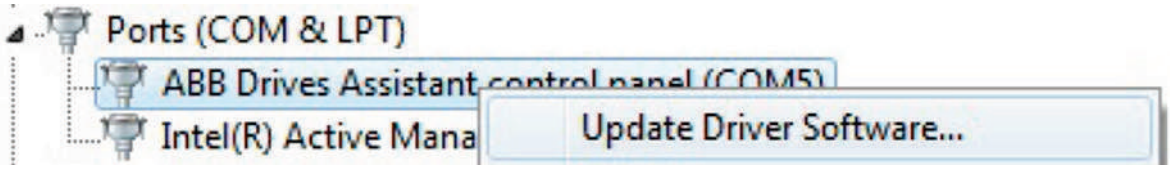
Unzip the **Drive_composer_entry.zip** file

Start the installation program **Setup.exe** of Drive composer entry and follow the instruction carefully

Connect the panel to your PC

Install the second part of drivers manually as follows

In the **Start** menu of your computer, enter *Device manager* in the search field and click **Device Manager**



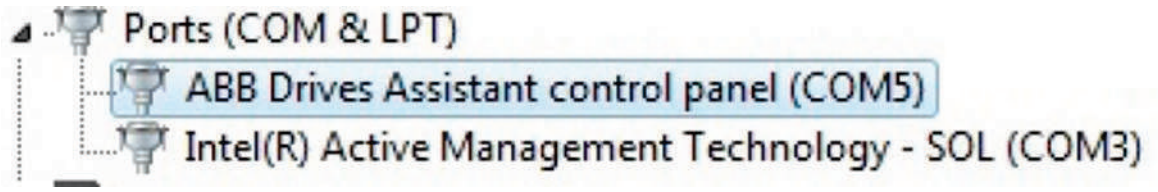
Click **Browse my computer for driver software** to search the driver software

Click **Browse** to locate the drivers and click **Next**.

In the **Windows Security** window, click **Install** to install the device software

After installation is complete, click **Close**.

The Driver software for the device is installed at given COM port



First time connect the PC-tool to the Drive

1. Connect your PC to the Assistant control panel with a USB cable.

The following text appears on the Assistant control panel screen: “USB connected”.
Note: The Assistant control panel cannot be used when it is connected to a PC.

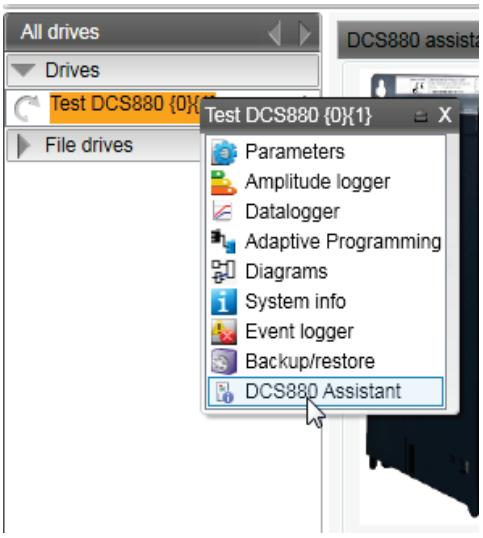
2. Launch Drive composer by double-clicking **Drive composer entry.exe**

3. Select the COM port that your Assistant control panel is using.

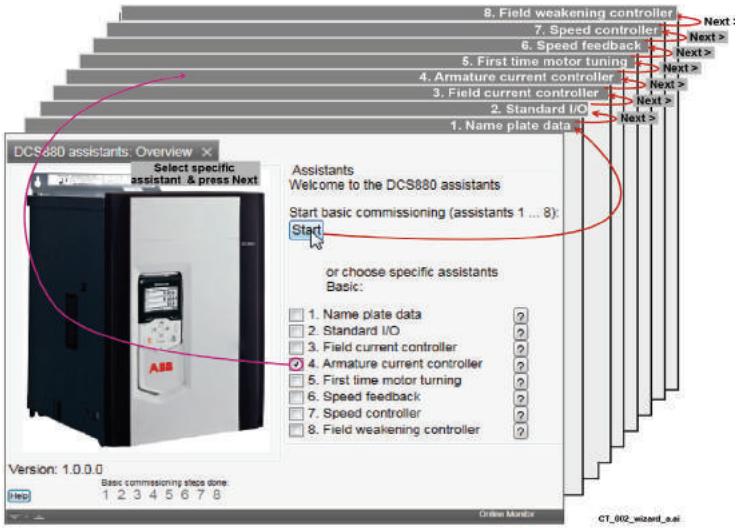
This question is asked only when the program is launched for the first time. If you want to change the COM port settings, go to **View** → **Settings** in Drive composer.

Drive composer pro DCS880 assistant

Start the wizard in drive composer



For basic commissioning press the *Start* button or select a specific assistant:



For more information about the drive composer, parameters, faults and alarms press the *Help* button!

Parameters

What this chapter contains

The chapter describes the parameters and signals of the firmware.

Terms and abbreviations

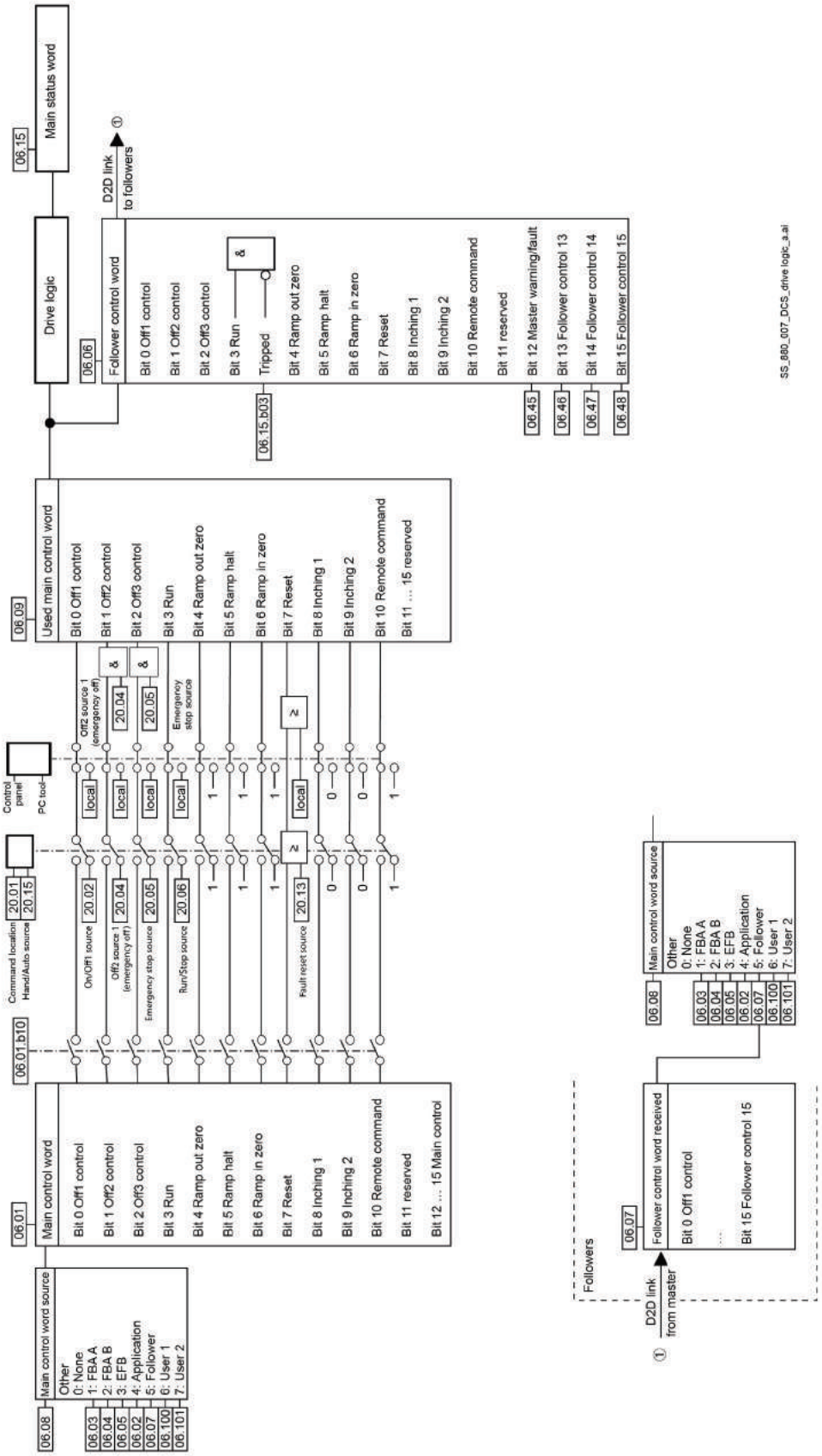
Term	Definition
Signal	Type of parameter that is the result of a measurement or calculation by the drive, or contains status information. Most signals are read-only, but some (especially counter-type signals) can be reset.
Default (def.)	The default value of a parameter.
Scale/Fbeq16	16-bit fieldbus 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

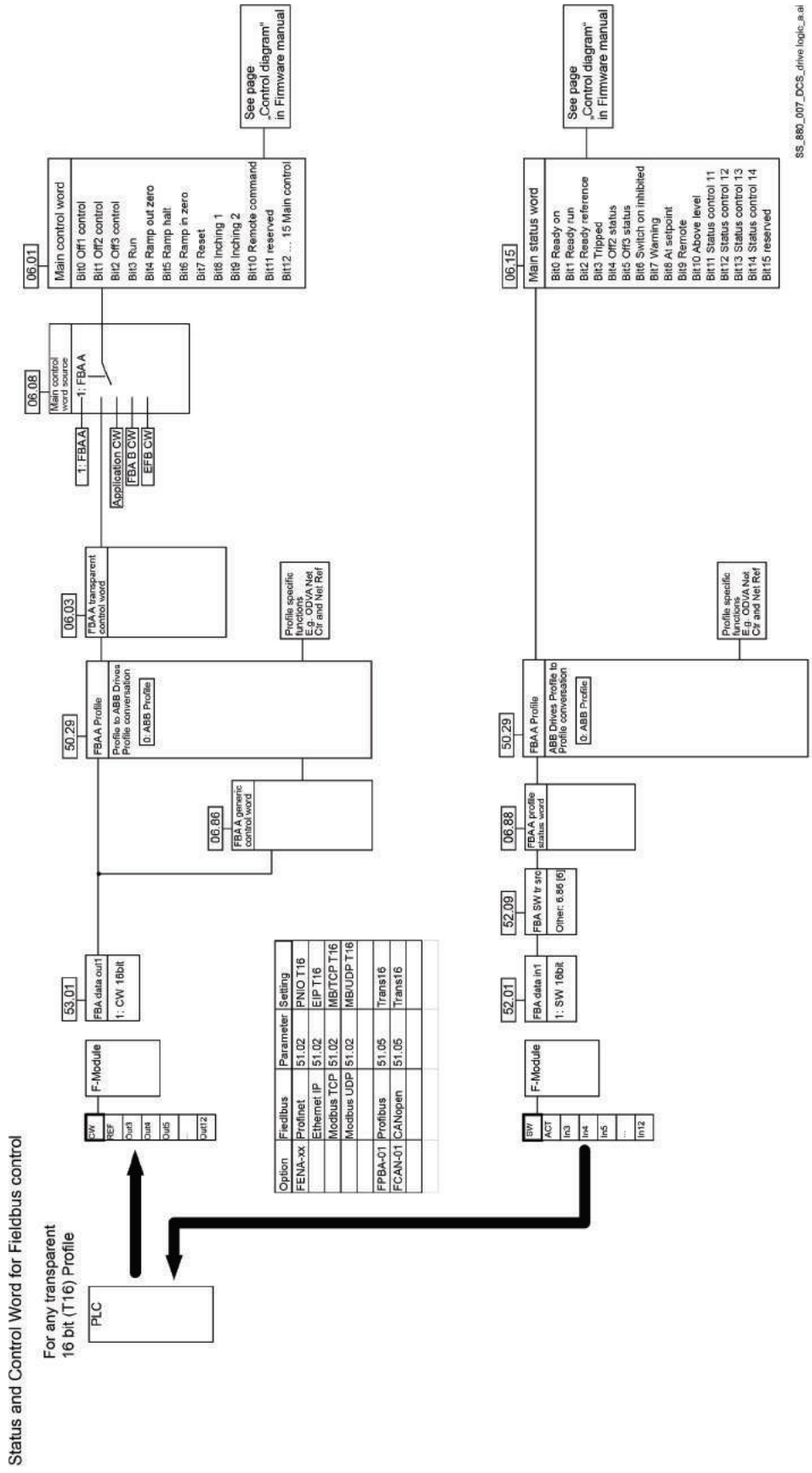
Group	Contents
01 Actual values	Basic signals for monitoring the drive.
03 Input references	Values of references received from various sources.
04 Warnings and faults	Information on warnings and faults that occurred last. For explanations of individual warning and fault codes.
05 Diagnostics	Various 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 2nd 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	Groups used for application programming.
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 configuration	Settings for analog tacho and OnBoard encoder.
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.

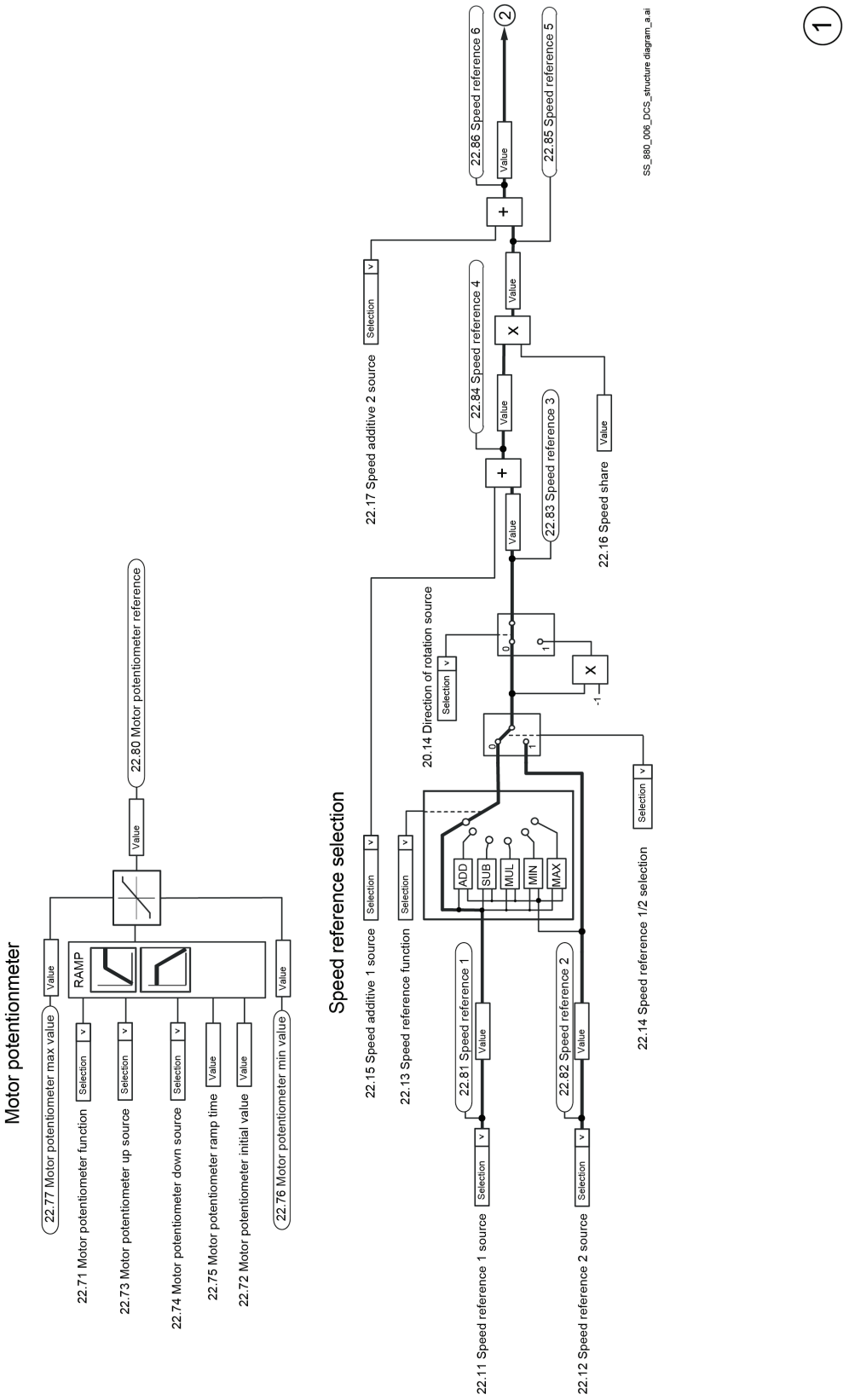
Drive logic

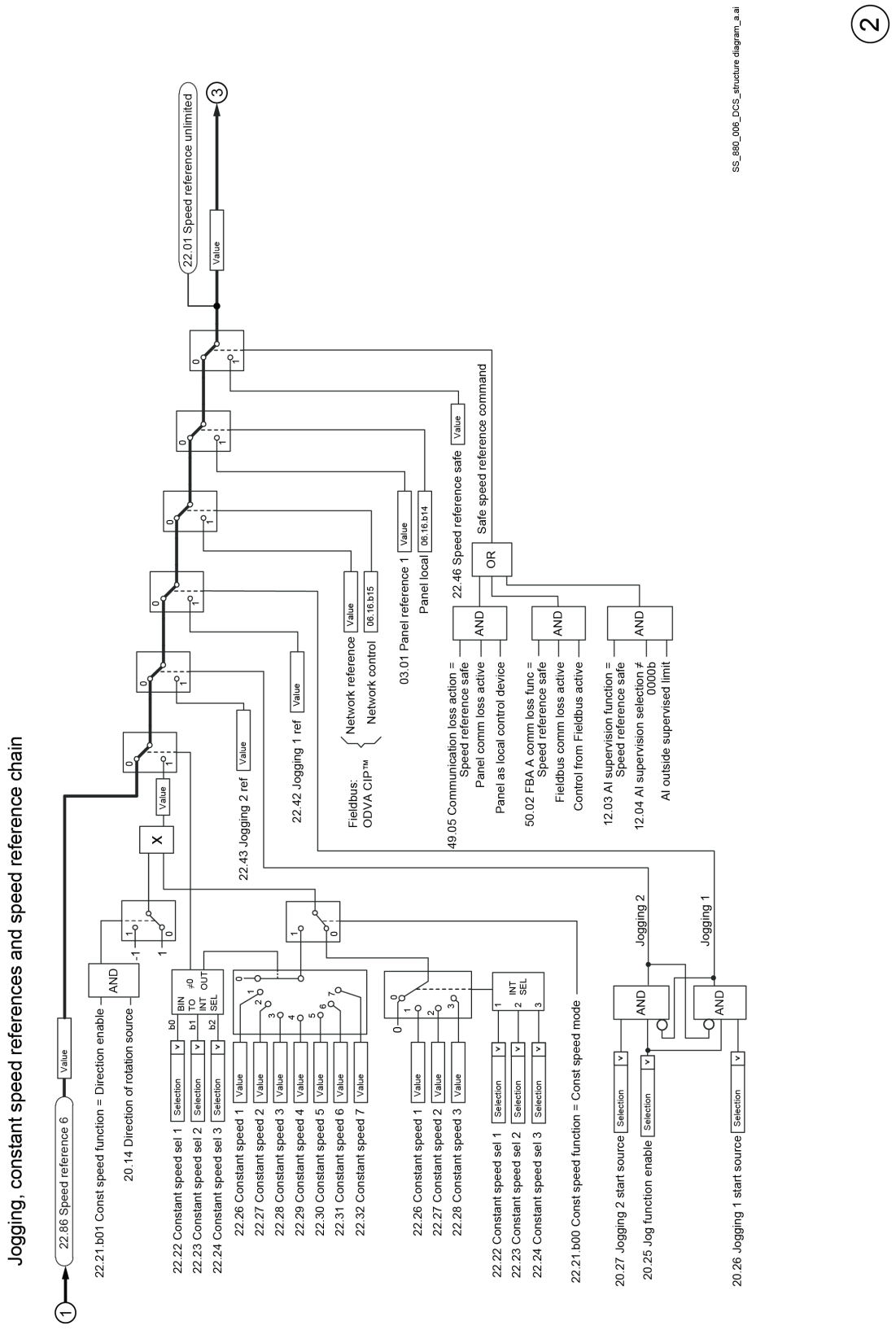

06.15
Main status word
Drive logic
D2D link to followers
06.06
Follower control word
Bit 0 Off1 control
Bit 1 Off2 control
Bit 2 Off3 control
Bit 3 Run
Tripped
Bit 4 Ramp out zero
Bit 5 Ramp halt
Bit 6 Ramp in zero
Bit 7 Reset
Bit 8 Inching 1
Bit 9 Inching 2
Bit 10 Remote command
Bit 11 reserved
Bit 12 Master warning/fault
Bit 13 Follower control 13
Bit 14 Follower control 14
Bit 15 Follower control 15
06.15.b03
06.45
06.46
06.47
06.48
06.09
Used main control word
Bit 11 ... 15 reserved
Off2 source 1 (emergency off)
Emergency stop source
Run/Stop source
Fault reset source
Control panel
PC tool
Command location Hand/Auto source
20.01
20.15
20.02
20.04
20.05
20.06
20.13
local
06.01.b10
06.01
Main control word
Bit 12 ... 15 Main control
06.08
Main control word source
Other
0: None
1: FBA A
2: FBA B
3: EFB
4: Application
5: Follower
6: User 1
7: User 2
06.03
06.04
06.05
06.02
06.07
06.100
06.101
Followers
D2D link from master
06.07
Follower control word received
Bit 0 Off1 control
Bit 15 Follower control 15
SS_880_007_DCS_drive logic_a.ai

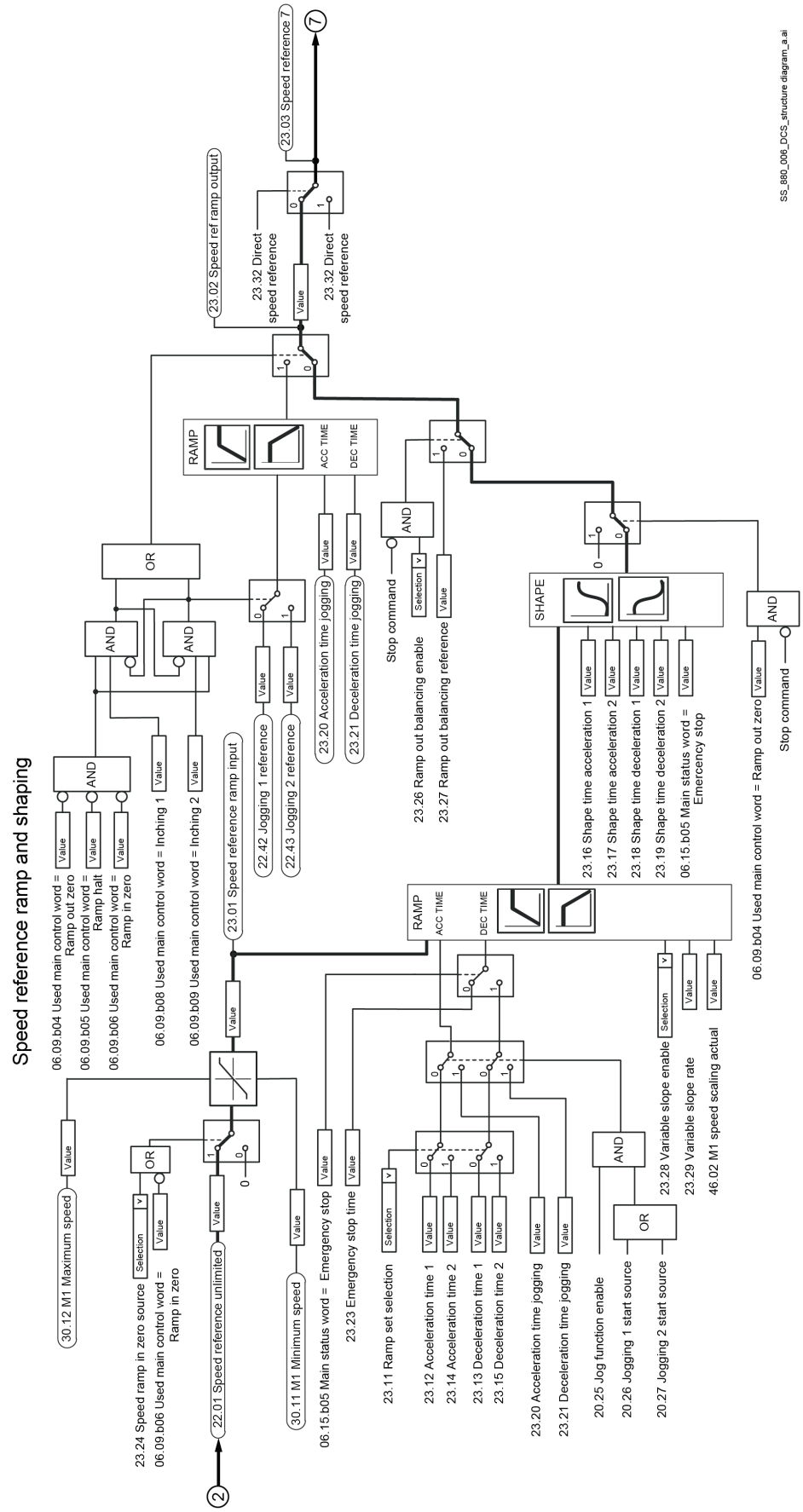
Fieldbus control

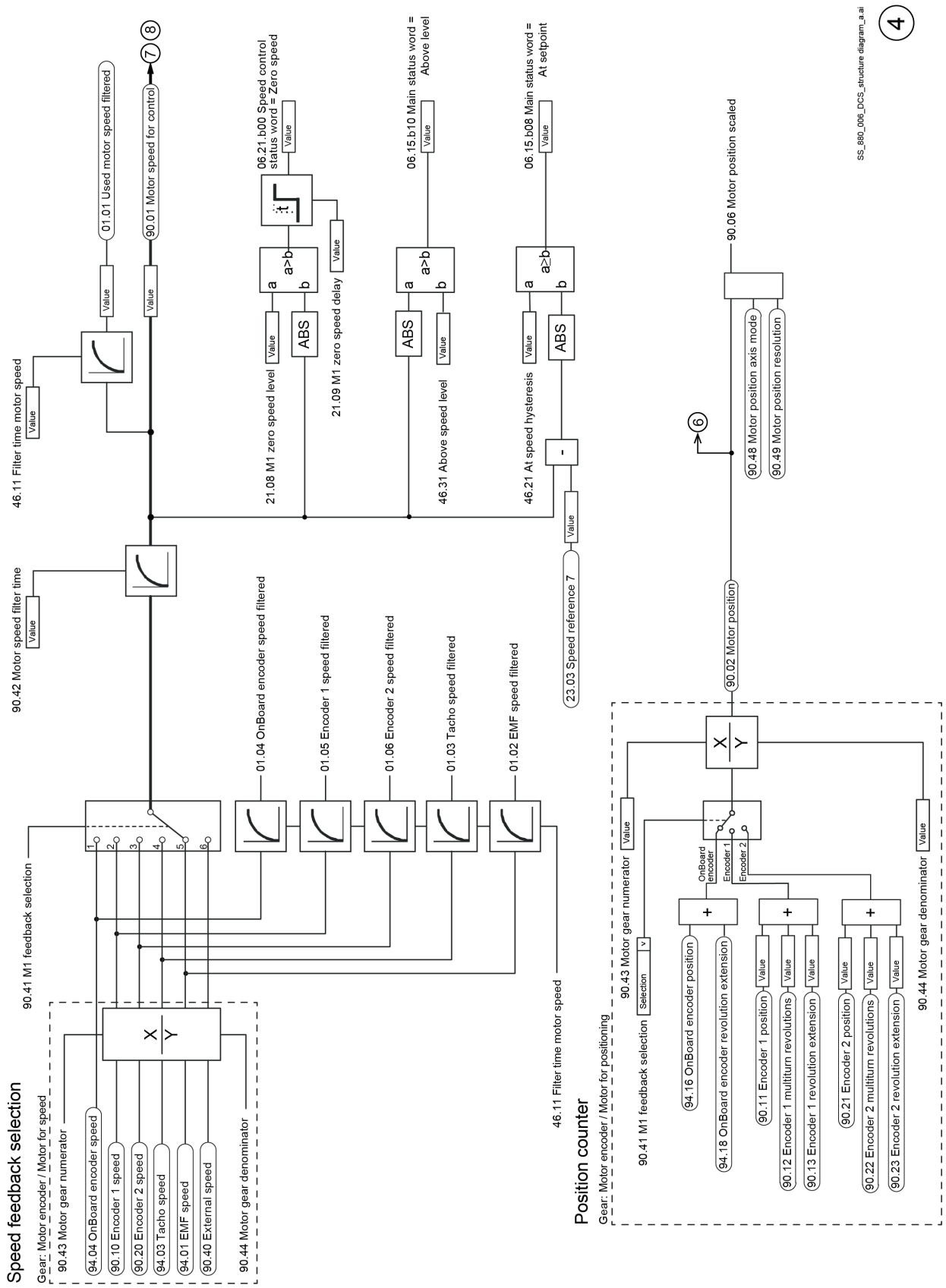


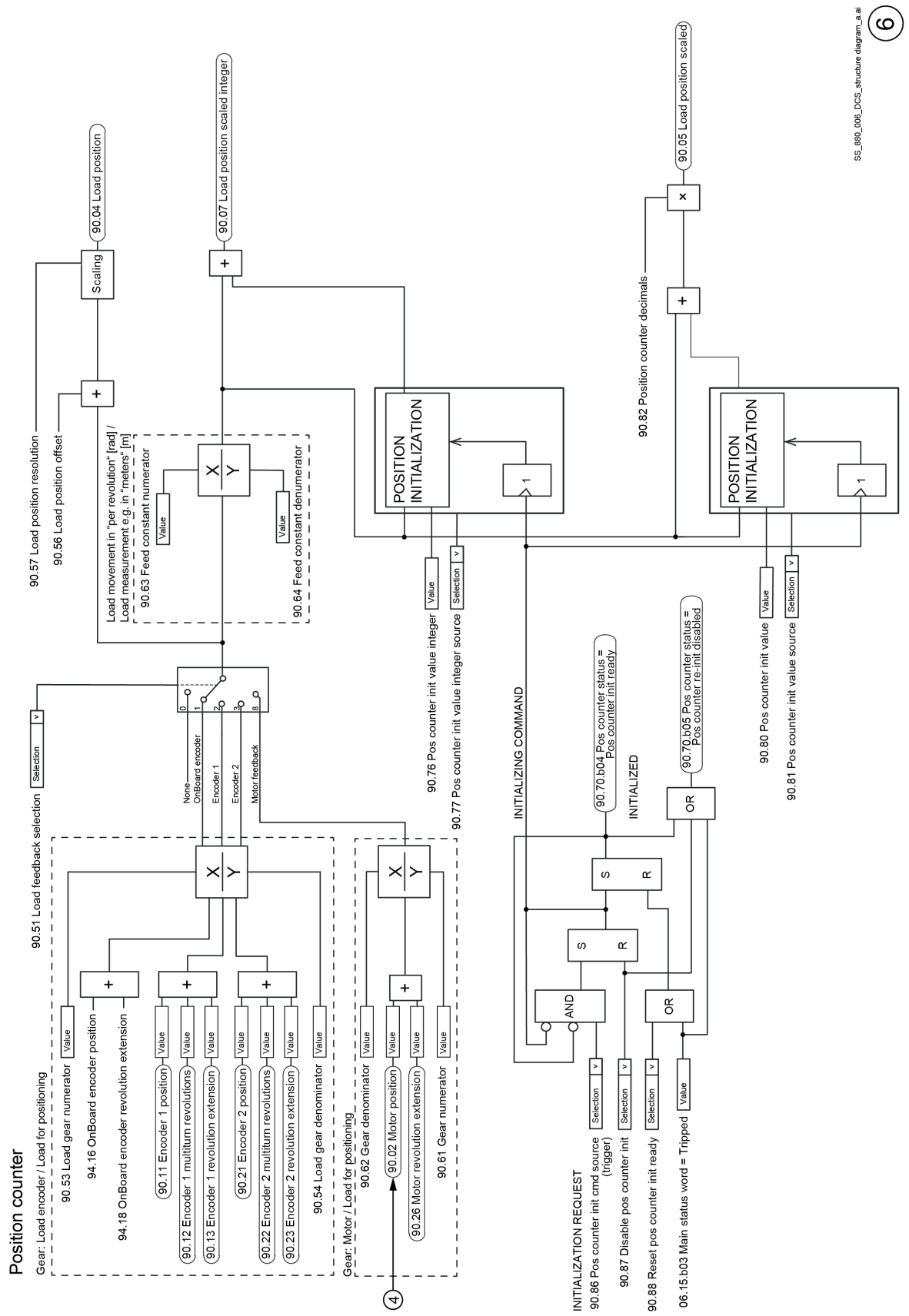
Firmware structure diagrams




Jogging, constant speed references and speed reference chain
22.86 Speed reference 6
Value
22.21.b01 Const speed function = Direction enable
20.14 Direction of rotation source
AND
X
Value
22.22 Constant speed sel 1
22.23 Constant speed sel 2
22.24 Constant speed sel 3
Selection
b0
b1
b2
BIN TO INT
≠0
OUT
SEL
22.26 Constant speed 1
22.27 Constant speed 2
22.28 Constant speed 3
22.29 Constant speed 4
22.30 Constant speed 5
22.31 Constant speed 6
22.32 Constant speed 7
22.43 Jogging 2 ref
22.42 Jogging 1 ref
Fieldbus:
ODVA CIP™
Network reference
Network control
06.16.b15
03.01 Panel reference 1
Panel local
06.16.b14
49.05 Communication loss action =
Speed reference safe
Panel comm loss active
Panel as local control device
22.46 Speed reference safe
OR
Safe speed reference command
50.02 FBA A comm loss func =
Speed reference safe
Fieldbus comm loss active
Control from Fieldbus active
12.03 AI supervision function =
Speed reference safe
12.04 AI supervision selection ≠
0000b
AI outside supervised limit
22.21.b00 Const speed function = Const speed mode
Jogging 2
Jogging 1
20.27 Jogging 2 start source
20.25 Jog function enable
20.26 Jogging 1 start source
22.01 Speed reference unlimited
INT SEL
SS_880_006_DCS_structure diagram_a.ai


Speed reference ramp and shaping
06.09.b04 Used main control word = Ramp out zero
06.09.b05 Used main control word = Ramp halt
06.09.b06 Used main control word = Ramp in zero
06.09.b08 Used main control word = Inching 1
06.09.b09 Used main control word = Inching 2
AND
OR
23.01 Speed reference ramp input
22.42 Jogging 1 reference
22.43 Jogging 2 reference
23.20 Acceleration time jogging
23.21 Deceleration time jogging
RAMP
ACC TIME
DEC TIME
23.02 Speed ref ramp output
23.32 Direct speed reference
23.03 Speed reference 7
Stop command
23.26 Ramp out balancing enable
23.27 Ramp out balancing reference
SHAPE
23.16 Shape time acceleration 1
23.17 Shape time acceleration 2
23.18 Shape time deceleration 1
23.19 Shape time deceleration 2
06.15.b05 Main status word = Emergency stop
06.09.b04 Used main control word = Ramp out zero
Stop command
30.12 M1 Maximum speed
23.24 Speed ramp in zero source
06.09.b06 Used main control word = Ramp in zero
22.01 Speed reference unlimited
30.11 M1 Minimum speed
06.15.b05 Main status word = Emergency stop
23.23 Emergency stop time
23.11 Ramp set selection
23.12 Acceleration time 1
23.14 Acceleration time 2
23.13 Deceleration time 1
23.15 Deceleration time 2
23.20 Acceleration time jogging
23.21 Deceleration time jogging
20.25 Jog function enable
20.26 Jogging 1 start source
20.27 Jogging 2 start source
23.28 Variable slope enable
23.29 Variable slope rate
46.02 M1 speed scaling actual
SS_880_006_DCS_structure diagram_a.ai
2
7
3


Speed feedback selection
Gear: Motor encoder / Motor for speed
90.43 Motor gear numerator
94.04 OnBoard encoder speed
90.10 Encoder 1 speed
90.20 Encoder 2 speed
94.03 Tacho speed
94.01 EMF speed
90.40 External speed
90.44 Motor gear denominator
90.41 M1 feedback selection
90.42 Motor speed filter time
46.11 Filter time motor speed
01.04 OnBoard encoder speed filtered
01.05 Encoder 1 speed filtered
01.06 Encoder 2 speed filtered
01.03 Tacho speed filtered
01.02 EMF speed filtered
01.01 Used motor speed filtered
90.01 Motor speed for control
21.08 M1 zero speed level
21.09 M1 zero speed delay
06.21.b00 Speed control status word = Zero speed
46.31 Above speed level
06.15.b10 Main status word = Above level
46.21 At speed hysteresis
06.15.b08 Main status word = At setpoint
23.03 Speed reference 7
46.11 Filter time motor speed
Position counter
Gear: Motor encoder / Motor for positioning
90.43 Motor gear numerator
90.41 M1 feedback selection
94.16 OnBoard encoder position
94.18 OnBoard encoder revolution extension
90.11 Encoder 1 position
90.12 Encoder 1 multiturn revolutions
90.13 Encoder 1 revolution extension
90.21 Encoder 2 position
90.22 Encoder 2 multiturn revolutions
90.23 Encoder 2 revolution extension
90.44 Motor gear denominator
90.02 Motor position
90.06 Motor position scaled
90.48 Motor position axis mode
90.49 Motor position resolution
OnBoard encoder
Encoder 1
Encoder 2
SS_880_006_DCS_structure diagram_a.ai


Position counter
Gear: Load encoder / Load for positioning
90.51 Load feedback selection
Selection
90.53 Load gear numerator
94.16 OnBoard encoder position
94.18 OnBoard encoder revolution extension
90.11 Encoder 1 position
90.12 Encoder 1 multiturn revolutions
90.13 Encoder 1 revolution extension
90.21 Encoder 2 position
90.22 Encoder 2 multiturn revolutions
90.23 Encoder 2 revolution extension
90.54 Load gear denominator
Gear: Motor / Load for positioning
90.62 Gear denominator
90.02 Motor position
90.26 Motor revolution extension
90.61 Gear numerator
None
OnBoard encoder
Encoder 1
Encoder 2
Motor feedback
90.57 Load position resolution
90.56 Load position offset
Scaling
90.04 Load position
90.07 Load position scaled integer
Load movement in "per revolution" [rad] / Load measurement e.g. in "meters" [m]
90.63 Feed constant numerator
90.64 Feed constant denumerator
90.76 Pos counter init value integer
90.77 Pos counter init value integer source
POSITION INITIALIZATION
INITIALIZING COMMAND
INITIALIZATION REQUEST
90.86 Pos counter init cmd source (trigger)
90.87 Disable pos counter init
90.88 Reset pos counter init ready
06.15.b03 Main status word = Tripped
90.70.b04 Pos counter status = Pos counter init ready
INITIALIZED
90.70.b05 Pos counter status = Pos counter re-init disabled
90.82 Position counter decimals
90.05 Load position scaled
90.80 Pos counter init value
90.81 Pos counter init value source
SS_880_006_DCS_structure diagram_a.ai
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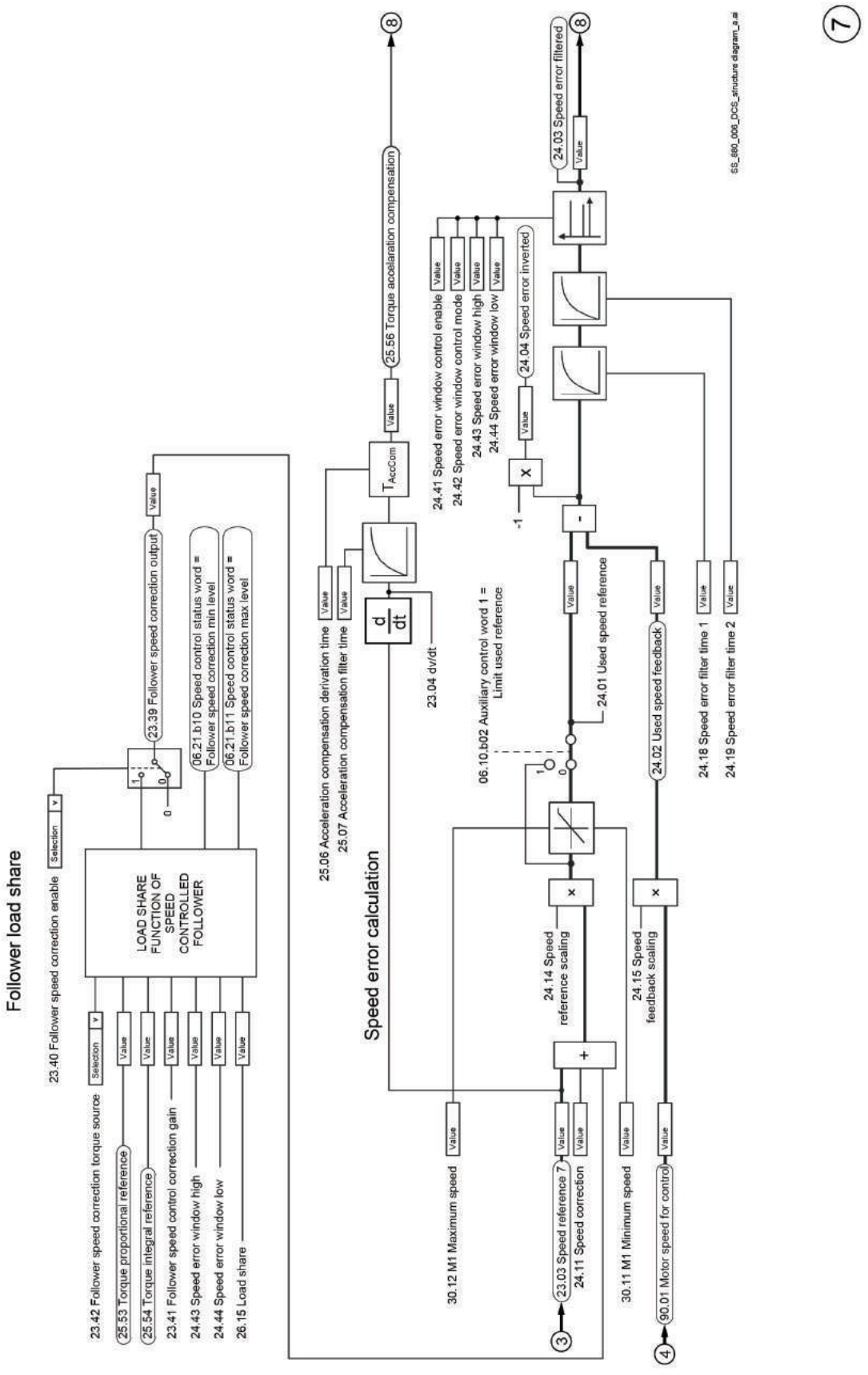
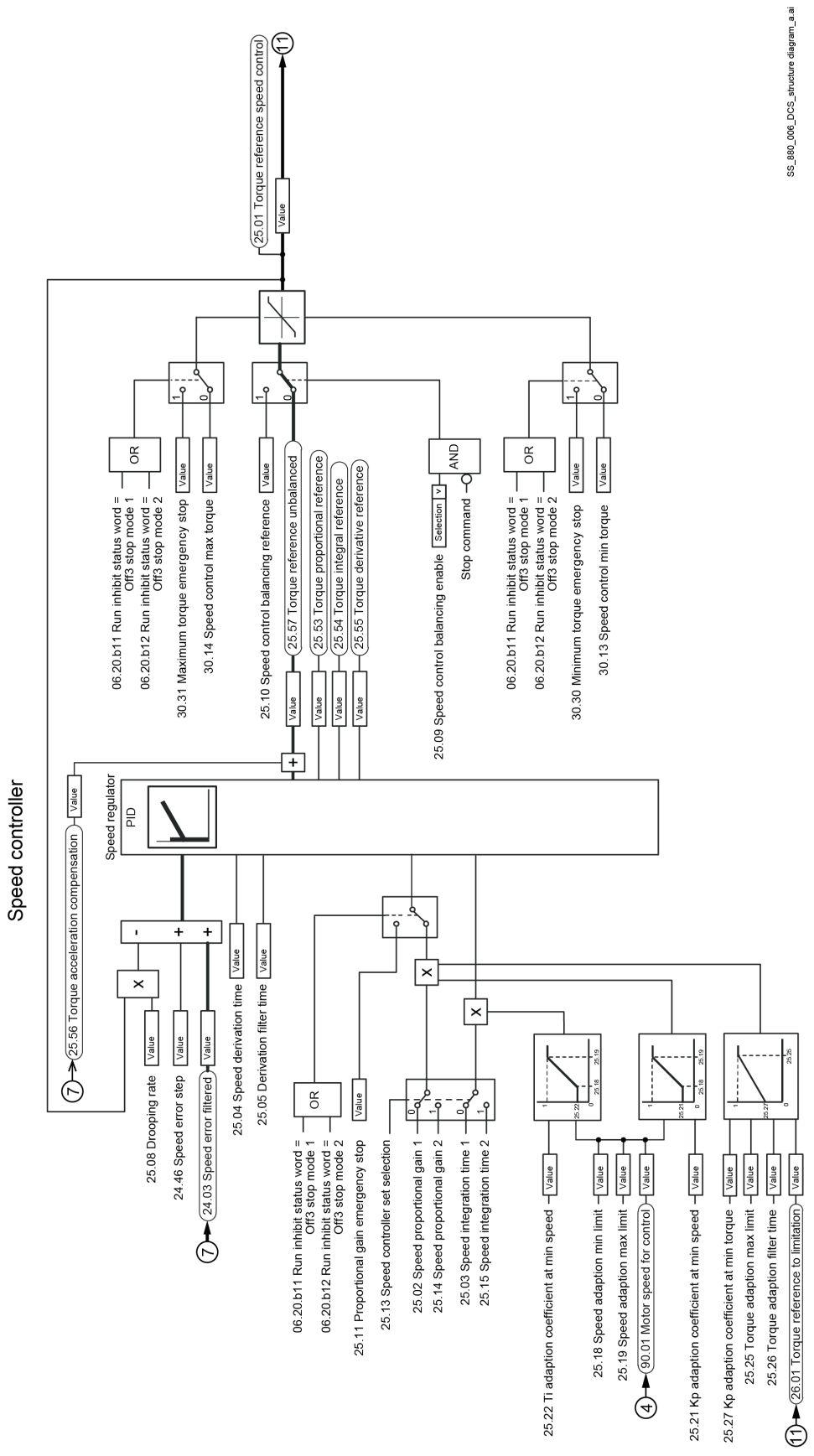
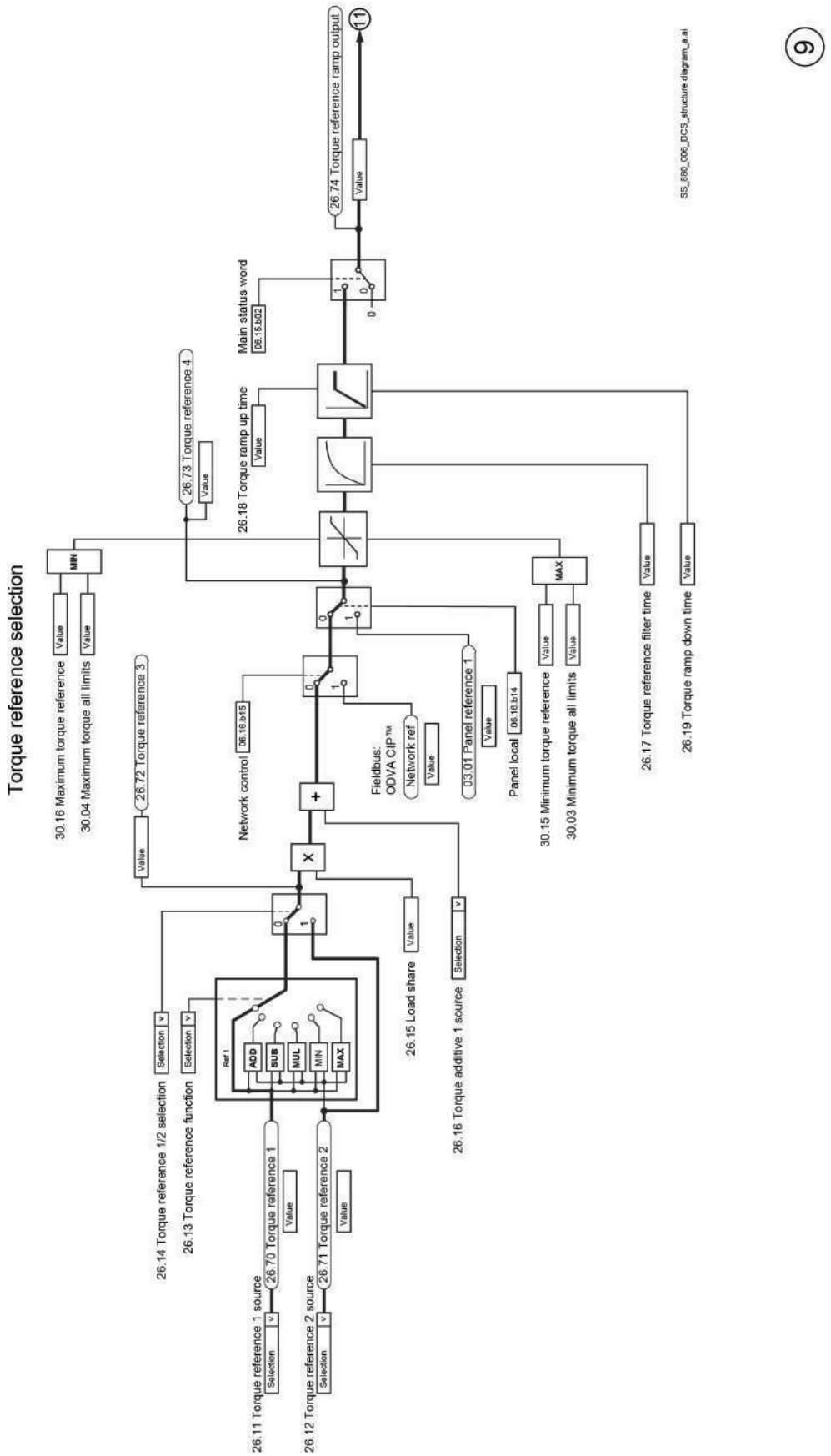

Follower load share
23.40 Follower speed correction enable
Selection
LOAD SHARE FUNCTION OF SPEED CONTROLLED FOLLOWER
23.42 Follower speed correction torque source
25.53 Torque proportional reference
25.54 Torque integral reference
23.41 Follower speed control correction gain
24.43 Speed error window high
24.44 Speed error window low
26.15 Load share
23.39 Follower speed correction output
06.21.b10 Speed control status word = Follower speed correction min level
06.21.b11 Speed control status word = Follower speed correction max level
Speed error calculation
25.06 Acceleration compensation derivation time
25.07 Acceleration compensation filter time
23.04 dv/dt
TAccCom
25.56 Torque accelaration compensation
24.41 Speed error window control enable
24.42 Speed error window control mode
24.43 Speed error window high
24.44 Speed error window low
24.04 Speed error inverted
24.03 Speed error filtered
06.10.b02 Auxiliary control word 1 = Limit used reference
24.01 Used speed reference
24.02 Used speed feedback
24.18 Speed error filter time 1
24.19 Speed error filter time 2
30.12 M1 Maximum speed
30.11 M1 Minimum speed
24.14 Speed reference scaling
24.15 Speed feedback scaling
23.03 Speed reference 7
24.11 Speed correction
90.01 Motor speed for control
SS_860_006_DCS_structure diagram_a.ai


Speed controller
SS_880_006_DCS_structure diagram_a.ai
8
25.01 Torque reference speed control
11
Value
06.20.b11 Run inhibit status word = Off3 stop mode 1
06.20.b12 Run inhibit status word = Off3 stop mode 2
OR
30.31 Maximum torque emergency stop
30.14 Speed control max torque
25.10 Speed control balancing reference
25.57 Torque reference unbalanced
25.53 Torque proportional reference
25.54 Torque integral reference
25.55 Torque derivative reference
25.09 Speed control balancing enable
Selection
AND
Stop command
30.30 Minimum torque emergency stop
30.13 Speed control min torque
25.56 Torque acceleration compensation
Speed regulator
PID
25.08 Drooping rate
24.46 Speed error step
24.03 Speed error filtered
25.04 Speed derivation time
25.05 Derivation filter time
25.11 Proportional gain emergency stop
25.13 Speed controller set selection
25.02 Speed proportional gain 1
25.14 Speed proportional gain 2
25.03 Speed integration time 1
25.15 Speed integration time 2
25.22 Ti adaption coefficient at min speed
25.18 Speed adaption min limit
25.19 Speed adaption max limit
90.01 Motor speed for control
25.21 Kp adaption coefficient at min speed
25.27 Kp adaption coefficient at min torque
25.25 Torque adaption max limit
25.26 Torque adaption filter time
26.01 Torque reference to limitation
7
4


Torque reference selection
30.16 Maximum torque reference
30.04 Maximum torque all limits
MIN
Value
26.72 Torque reference 3
26.73 Torque reference 4
Main status word
06.16.b02
26.74 Torque reference ramp output
11
26.18 Torque ramp up time
Network control
06.16.b15
Fieldbus:
ODVA CIP™
Network ref
03.01 Panel reference 1
Panel local
06.16.b14
30.15 Minimum torque reference
30.03 Minimum torque all limits
MAX
26.17 Torque reference filter time
26.19 Torque ramp down time
26.14 Torque reference 1/2 selection
26.13 Torque reference function
Selection
Ref 1
ADD
SUB
MUL
MIN
MAX
26.15 Load share
26.16 Torque additive 1 source
26.11 Torque reference 1 source
26.70 Torque reference 1
26.12 Torque reference 2 source
26.71 Torque reference 2
SS_880_006_DCS_structure diagram_a.ai
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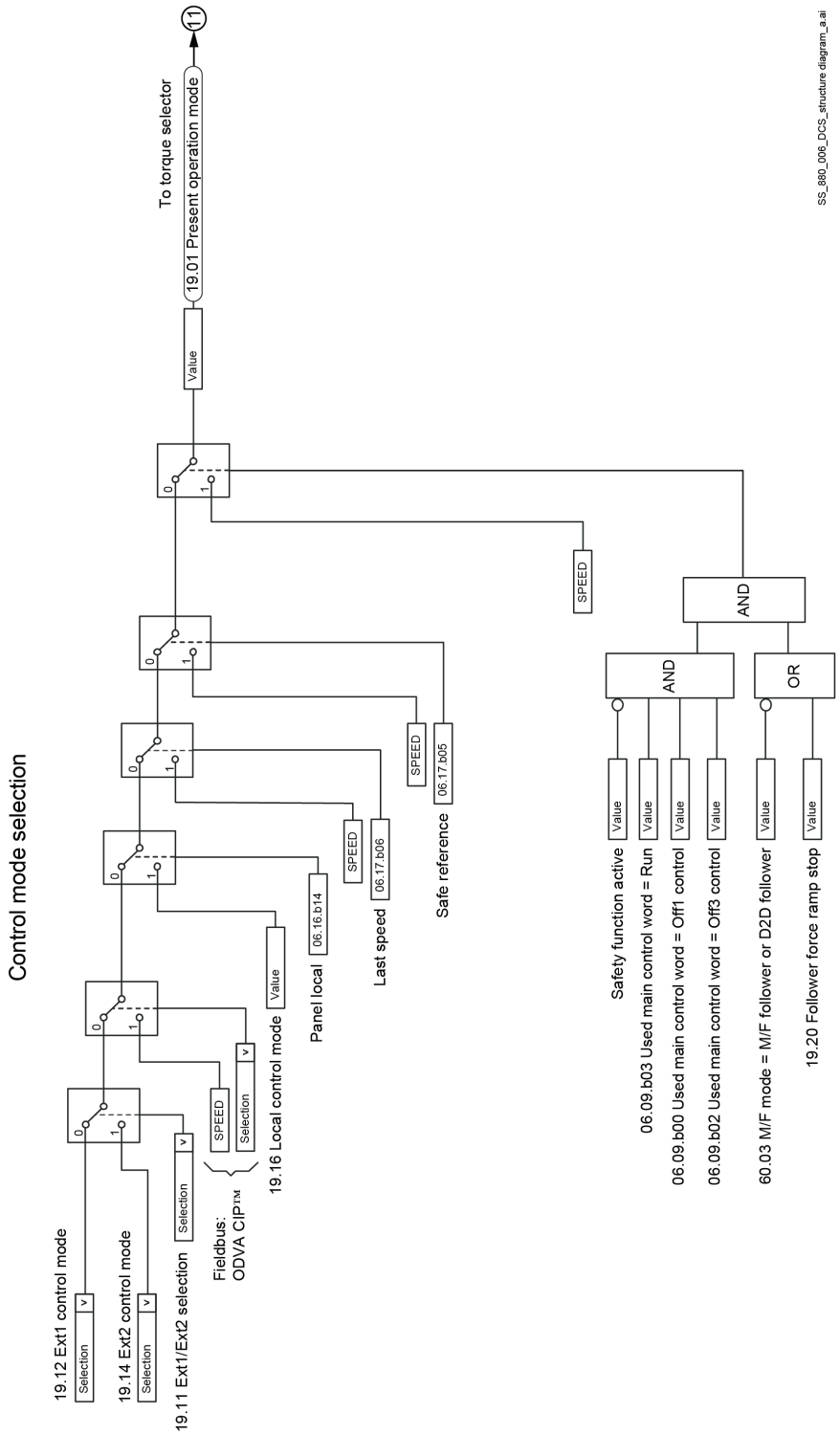
Control mode selection
19.12 Ext1 control mode
Selection
19.14 Ext2 control mode
Selection
19.11 Ext1/Ext2 selection
Selection
Fieldbus:
ODVA CIP™
SPEED
Selection
19.16 Local control mode
Value
Panel local
06.16.b14
SPEED
Last speed
06.17.b06
SPEED
Safe reference
06.17.b05
SPEED
Safety function active
Value
06.09.b03 Used main control word = Run
Value
06.09.b00 Used main control word = Off1 control
Value
06.09.b02 Used main control word = Off3 control
Value
AND
60.03 M/F mode = M/F follower or D2D follower
Value
19.20 Follower force ramp stop
Value
OR
AND
Value
To torque selector
19.01 Present operation mode
11
SS_880_006_DCS_structure diagram_a.ai

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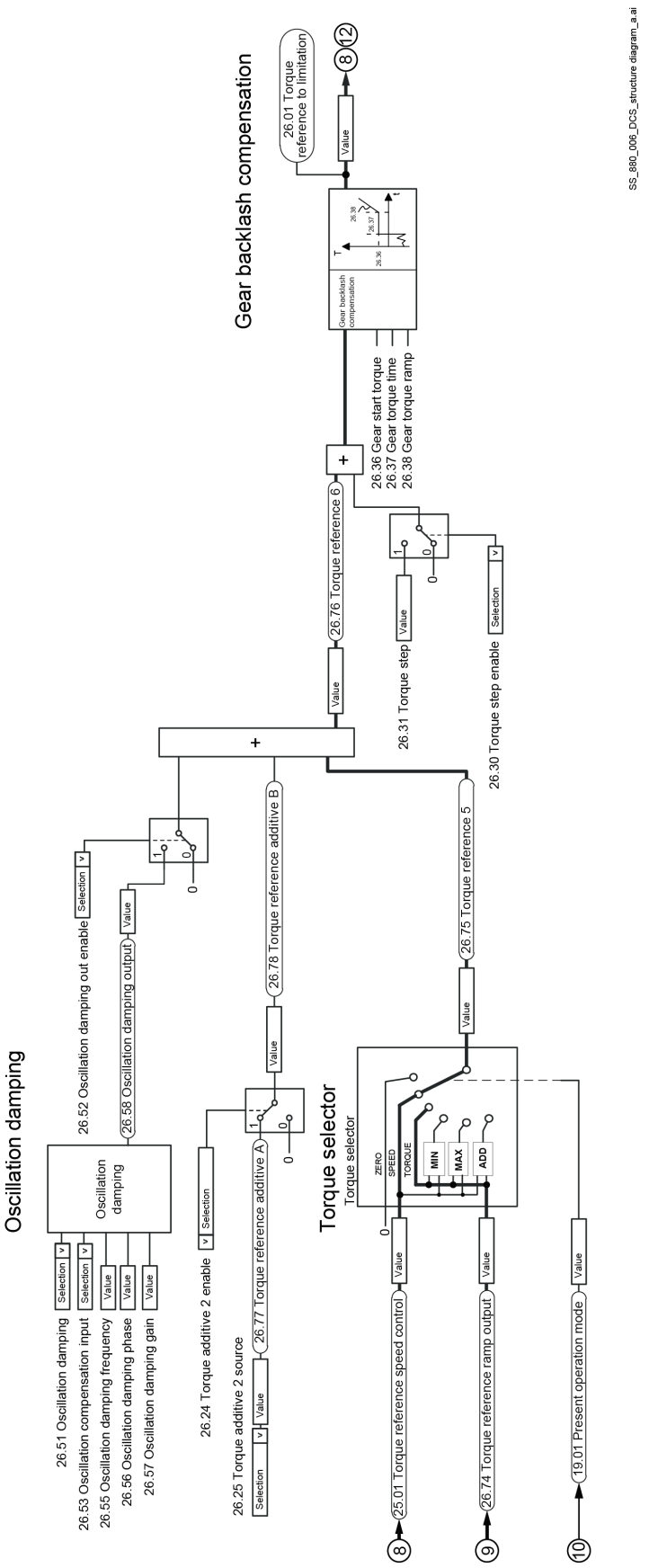
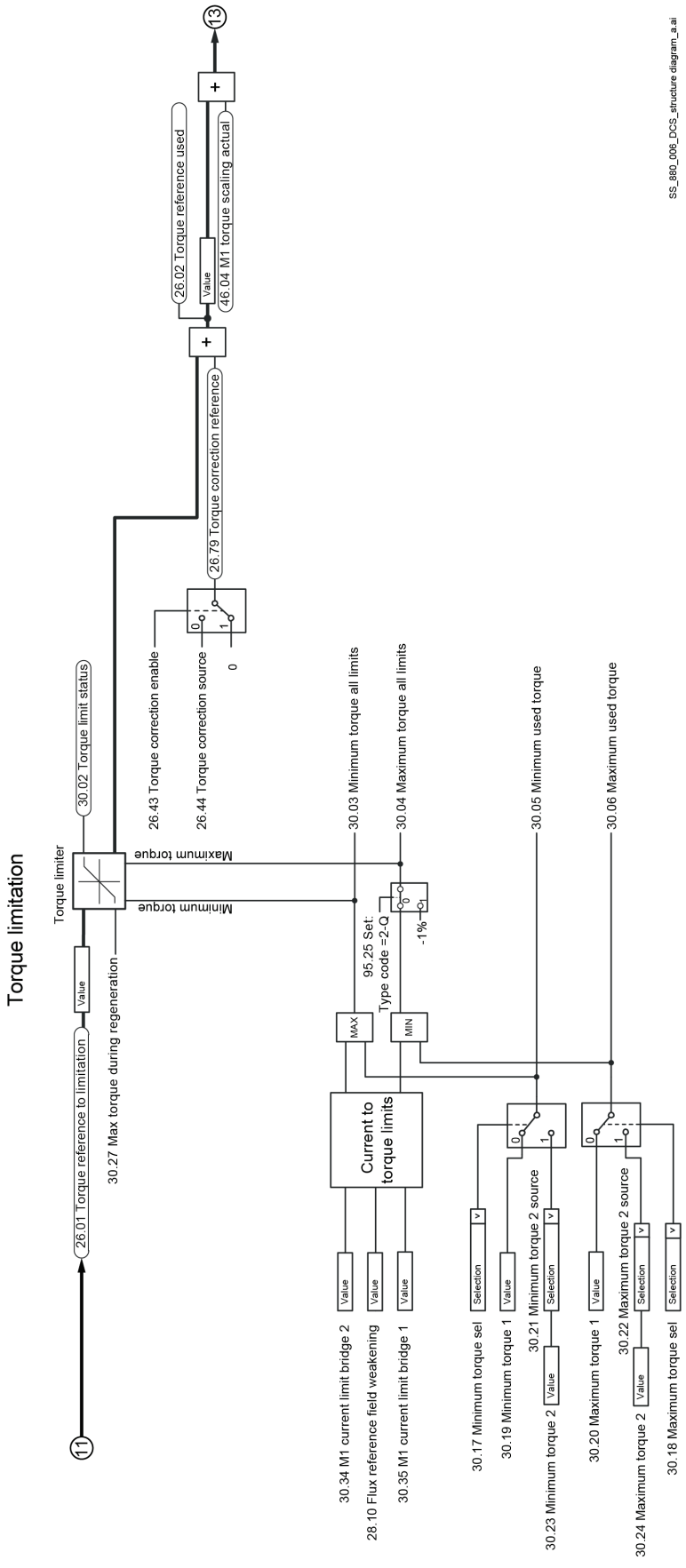
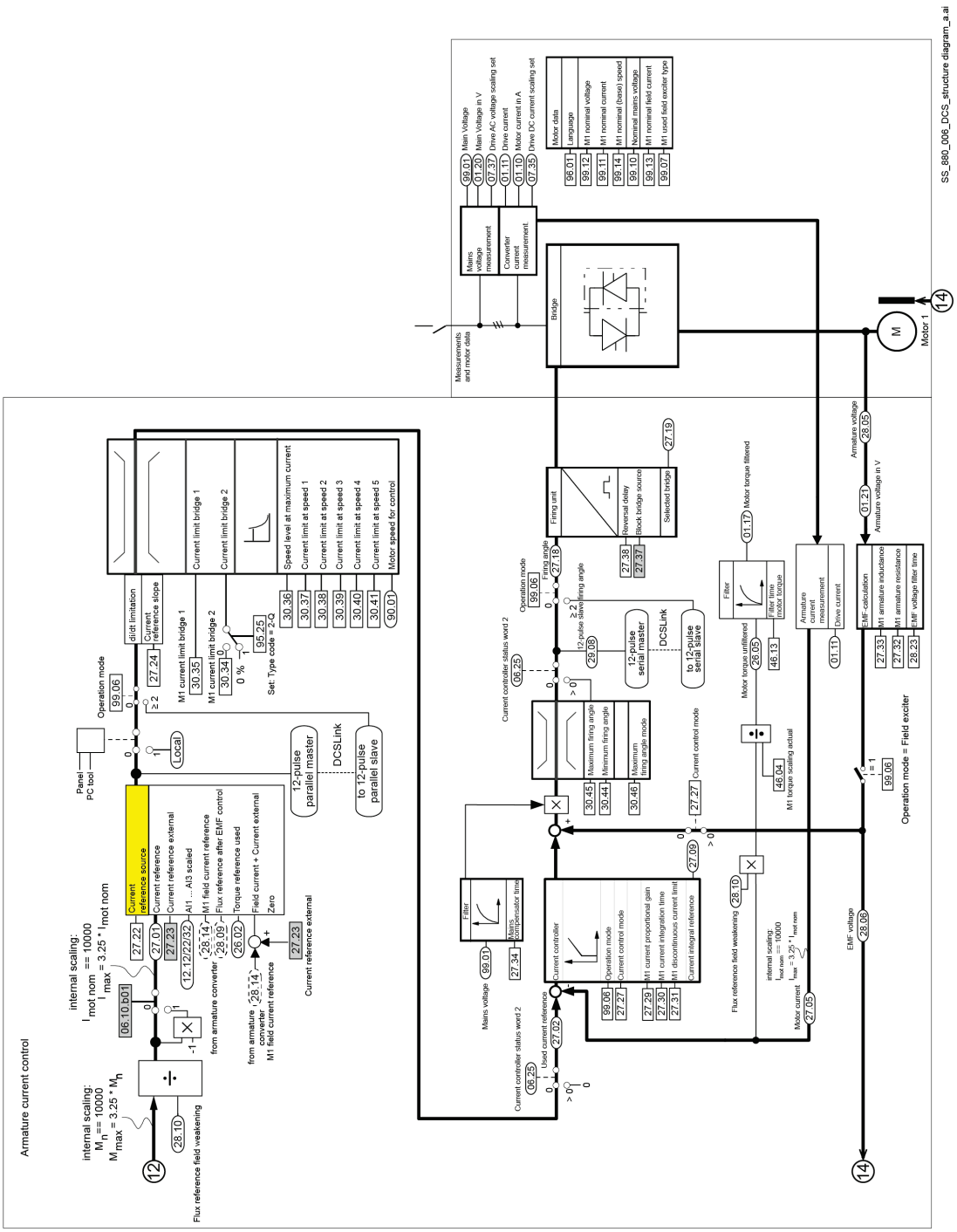
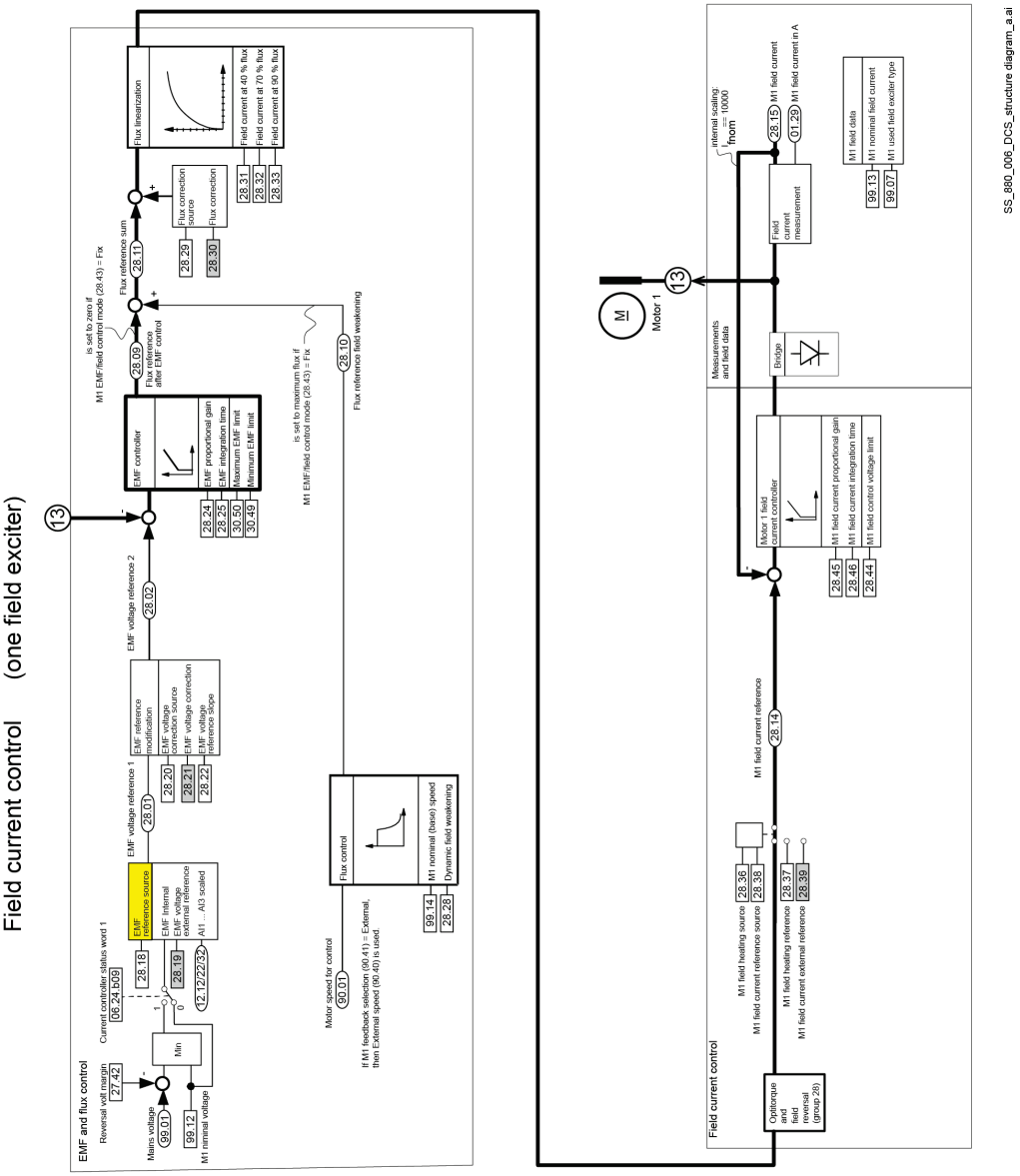

Oscillation damping
Oscillation damping
26.51 Oscillation damping
26.53 Oscillation compensation input
26.55 Oscillation damping frequency
26.56 Oscillation damping phase
26.57 Oscillation damping gain
26.52 Oscillation damping out enable
26.58 Oscillation damping output
26.24 Torque additive 2 enable
26.25 Torque additive 2 source
26.77 Torque reference additive A
26.78 Torque reference additive B
Torque selector
Torque selector
ZERO
SPEED
TORQUE
MIN
MAX
ADD
26.75 Torque reference 5
26.30 Torque step enable
26.31 Torque step
26.76 Torque reference 6
Gear backlash compensation
26.36 Gear start torque
26.37 Gear torque time
26.38 Gear torque ramp
26.01 Torque reference to limitation
25.01 Torque reference speed control
26.74 Torque reference ramp output
19.01 Present operation mode
SS_880_006_DCS_structure diagram_a.ai


Torque limitation
Torque limiter
Maximum torque
Minimum torque
26.01 Torque reference to limitation
Value
30.27 Max torque during regeneration
30.02 Torque limit status
26.43 Torque correction enable
26.44 Torque correction source
26.79 Torque correction reference
26.02 Torque reference used
46.04 M1 torque scaling actual
30.03 Minimum torque all limits
30.04 Maximum torque all limits
95.25 Set: Type code =2-Q
-1%
MAX
MIN
Current to torque limits
30.34 M1 current limit bridge 2
28.10 Flux reference field weakening
30.35 M1 current limit bridge 1
30.17 Minimum torque sel
30.19 Minimum torque 1
30.21 Minimum torque 2 source
30.23 Minimum torque 2
30.05 Minimum used torque
30.20 Maximum torque 1
30.22 Maximum torque 2 source
30.24 Maximum torque 2
30.18 Maximum torque sel
30.06 Maximum used torque
Selection
11
12
13
SS_880_006_DCS_structure diagram_a.ai

Armature current control




Field current control (one field exciter)
EMF and flux control
Reversal volt margin
27.42
Current controller status word 1
06.24 b09
Mains voltage
99.01
M1 nominal voltage
99.12
Min
28.18
28.19
12.12/22/32
EMF reference source
EMF internal
EMF voltage external reference
AI1 ... AI3 scaled
EMF voltage reference 1
28.01
EMF reference modification
EMF voltage correction source
EMF voltage reference slope
28.20
28.21
28.22
EMF voltage reference 2
28.02
Motor speed for control
90.01
If M1 feedback selection (90.41) = External, then External speed (90.40) is used.
Flux control
M1 nominal (base) speed
Dynamic field weakening
99.14
28.28
(13)
EMF controller
EMF proportional gain
EMF integration time
Maximum EMF limit
Minimum EMF limit
28.24
28.25
30.50
30.49
M1 EMF/field control mode (28.43) = Fix
is set to maximum flux if
28.10
Flux reference field weakening
M1 EMF/field control mode (28.43) = Fix
is set to zero if
28.09
Flux reference after EMF control
Flux reference sum
28.11
Flux correction source
Flux correction
28.29
28.30
Flux linearization
Field current at 40 % flux
Field current at 70 % flux
Field current at 90 % flux
28.31
28.32
28.33
(14)
Field current control
Optitorque and field reversal (group 28)
M1 field heating source
M1 field current reference source
28.36
28.38
M1 field heating reference
M1 field current external reference
28.37
28.39
M1 field current reference
28.14
Motor 1 field current controller
M1 field current proportional gain
M1 field current integration time
M1 field control voltage limit
28.45
28.46
28.44
Bridge
Field current measurement
Measurements and field data
Internal scaling
from 10000
28.15
M1 field current
01.29
M1 field current in A
M1 field data
99.13
M1 nominal field current
99.07
M1 used field exciter type
M
Motor 1
(13)
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English / Safety instructions

This document contains safety instructions. Obey the instructions. If you ignore them, injury or death, or damage to the equipment can occur. See the product manuals for more instructions and information.

WARNING! Safety in installation and maintenance:

- Check the data on the type designation labe l. Do not install the DC drive/converter (DC drive) if the electrical power network, motor/generator, or environmental conditions do not agree with the DC drive data.
- Obey the cable selection rules (shield, temperature, voltage, current, etc.). See the hardware manual.
- Protect the DC drive with the fuses specified in the hardware manual.
- If you are not a qualified electrician, do not do electrical installation or maintenance work.
- Use the required personal protective equipment.
- Keep the DC drive in its package until you install it. After unpacking, protect the DC drive from dust, debris and moisture.
- Make sure that the floor below and the wall behind the DC drive are non-flammable.
- Lift the DC drive with a lifting device. Use the lifting eyes/bars.
- Do not tilt the DC drive. It overturns easily.
- Ground the DC drive. Connect the DC drive PE terminal to the protective earth.
- Tighten the cable connections to the torque specified in the hardware manual.
- Before you connect voltage, make sure that the covers/doors are closed. Keep them closed during operation.
- Do not work on the equipment or cabling when it is powered:
  - Disconnect all voltage sources including external control voltages, and motor or generator.
  - Make sure that reconnection is not possible (lock and tag).
  - Wait for 5 minutes for capacitors to discharge.
  - Measure that the installation is de-energized.
  - Install temporary grounding as required by the local regulations.
  - Beware of hot surfaces. Some parts remain hot for a while after the disconnection of input power.

WARNING! Safety in start-up and operation:

- Keep the covers/doors closed during the operation and when voltage is connected.
- Before you activate any automatic fault reset functions, make sure that no dangerous situations can occur.
- Before you change any operation limit, make sure that no dangerous situations can occur.
- DC drives with the control panel: If you change the control location to Remote, you cannot stop the DC drive with the stop key on the control panel.

Български / Инструкции за безопасност

Този документ съдържа инструкции за безопасност. Спазвайте инструкциите. Ако ги пренебрегнете, може да се случи нараняване или смърт, или повреда на оборудването. Вижте наръчниците на изделията за повече инструкции и информация.

ВНИМАНИЕ! Безопасност при монтаж и поддръжка:

- Проверете данните върху типовия обозначителен етикет. Не монтирайте задвижване/конвертор/инвертор (по-късно конвертор), ако електрозахранващата мрежа, двигателят/генераторът или условията на околната среда не съответстват на данните за конвертора.
- Спазвайте правилата за избор на кабел (екран, температура, напрежение, ток и др.). Вижте наръчника на хардуера.
- Защитете конвертора с предпазителите, определени в наръчника на хардуера.
- Ако не сте квалифициран електротехник, не извършвайте работа по електрически монтаж или поддръжка.
- Използвайте необходимите лични предпазни средства.
- Съхранявайте конвертора в неговата опаковка, докато не го монтирате. След разопаковане, защитете конвертора от прах, отпадъци и влага.
- Уверете се, че подът под и стената зад конвертора са незапалими.
- Повдигнете конвертора с подемно устройство. Използвайте халките/прътите за повдигане.
- Не накланяйте конвертора. Лесно се преобръща.
- Заземете конвертора. Свържете клемата за защитно заземяване на конвертора към защитното заземяване.
- Затегнете кабелните връзки до усукващия момент, определен в наръчника на хардуера.
- Преди да свържете напрежение, уверете се, че капаците/вратите са затворени. Дръжте ги затворени по време на работа.
- Не работете по оборудването или окабеляването, когато е под напрежение:
  - Изключете всички източници на напрежение, включително външни управляващи напрежения и двигател или генератор.
  - Уверете се, че не е възможно повторно свързване (блокирайте и поставете етикет).
  - Изчакайте 5 минути кондензаторите да се разредят.
  - Измерете, че инсталацията не е под напрежение.
  - Монтирайте временно заземяване, както се изисква от местните правила.
  - Пазете се от горещи повърхности. Някои части остават горещи за известно време, след изключване на входната мощност.

ВНИМАНИЕ! Безопасност при пускане и експлоатация:

- Дръжте капаците/вратите затворени по време на експлоатация и когато е включено напрежение.
- Преди да активирате някакви автоматични функции за връщане в изходно положение на неизправност, уверете се, че не могат да възникнат опасни ситуации.
- Преди да промените някаква работна граница, уверете се, че не могат да възникнат опасни ситуации.
- Конвертори с панелите за управление: Ако промените мястото за управление на дистанционно, не може да спрете конвертора със стоп ключа на панела за управление.

Čeština / Bezpečnostní pokyny

Tento dokument obsahuje bezpečnostní pokyny. Řiďte se těmito pokyny. Pokud je budete ignorovat, může dojít k poranění, úmrtí či škodách na vybavení. Další pokyny a informace naleznete v příručkách k produktu.

POZOR! Bezpečnost při instalaci a údržbě:

- Zkontrolujte data na štítku s označením typu. Neinstalujte pohon/měnič frekvence/invertor , pokud elektrická síť, motor/generátor nebo podmínky prostředí nesouhlasí s údaji na štítku frekvenčního měniče.
- Řiďte se pravidly pro výběr kabelu (stínění, teplota, napětí, proud atd.). Viz hardwarový manual.
- Chraňte měnič frekvence pomocí pojistek určených v příručce k hardwaru.
- Pokud nejste kvalifikovaný elektrotechnik, neprovádějte elektroinstalaci ani údržbu.
- Používejte povinné osobní ochranné vybavení.
- Až do instalace uchovávejte měnič frekvence v balení. Po vybalení chraňte měnič frekvence před prachem, nečistotami a vlhkostí.
- Ujistěte se, že podlaha pod měničem frekvence a stěna za ním jsou nehořlavé.
- Ke zvedání měniče frekvence používejte zvedací zařízení. Používejte závěsné tyče/oka.
- Měnič frekvence nenaklánějte. Snadno by se mohl převrhnout.
- Uzemněte měnič frekvence. Připojte koncovku PE měniče frekvence k ochrannému uzemnění.
- Utáhněte kabelová spojení na krouticí moment určený v příručce k hardwaru.
- Před připojením napětí se ujistěte, že jsou zavřeny kryty/dveře. Během provozu je nechejte zavřené.
- Nepracujte na vybavení nebo kabeláži, když jsou zapojeny:
  - Odpojte všechny zdroje napětí včetně externího řídicího napětí a motoru nebo generátoru.
  - Ujistěte se, že není možné opětovné připojení (zajistit a upevnit).
  - Počkejte 5 minut na vybití kondenzátorů.
  - Změřte, zda je instalace odpojena od zdroje energie.
  - Nainstalujte dočasné uzemnění dle místních předpisů.
  - Dávejte pozor na horké povrchy. Některé části zůstávají horké ještě nějakou dobu po odpojení energie.

POZOR! Bezpečnost při spuštění a během provozu:

- Udržujte kryty/dveře zavřené během provozu a v době, kdy je připojeno napětí.
- Před aktivací jakýchkoli funkcí automatického resetování při závadě se ujistěte, že nemohou nastat žádné nebezpečné situace.
- Před změnou jakýchkoli limitů provozu se ujistěte, že nemohou nastat žádné nebezpečné situace.
- Měniče frekvence s ovládacím panelem: Pokud změníte umístění ovládání na Dálkové, nebude možné měnič frekvence zastavit pomocí tlačítka zastavení na ovládacím panelu.

Dansk / Sikkerhedsinstruktioner

Dette dokument indeholder sikkerhedsinstruktioner. Følg instruktionerne. Hvis de ignoreres, kan det resultere i personskader, dødsfald eller skade på udstyret. Læs produktmanualen for at få yderligere instruktioner og oplysninger.

ADVARSEL! Sikkerhed ved installation og vedligeholdelse:

- Kontrollér data på typebetegnelsesmærkatet. Undlad at installere frekvensomformeren/ omformeren/inverteren (DC drevet), hvis det elektriske netværk, motoren/generatoren eller miljøforholdene ikke opfylder data for omformeren.
- Følg anvisningerne til kabelvalg (skærm, temperatur, spænding, strøm o.s.v.). Se hardwaremanualen.
- Beskyt omformeren med de sikringer, der er angivet i hardwaremanualen.
- Elektrisk installations- eller vedligeholdelsesarbejde må kun udføres af uddannede elektrikere.
- Anvend det krævede personlige beskyttelsesudstyr.
- Behold omformeren indpakket, indtil du installerer den. Når den er udpakket, skal du beskytte omformeren mod støv, snavs og fugtighed.
- Sørg for, at gulvet under og væggen bagved omformeren ikke er brændbare.
- Løft omformeren op med en løfteanordning. Brug løfteøjer/-beslag
- Omformeren må ikke vippes. Den vælter let.
- Jord omformeren. Tilslut omformerens PE-terminal til jordbeskyttelsen.
- Stram kabeltilslutningerne til det moment, som er angivet i hardwaremanualen.
- Kontroller, at dæksler/døre er lukkede, inden der tilsluttes spænding. Hold dem lukket under driften.
- Undlad at arbejde på udstyret eller kabling, når der er tilsluttet spænding:
  - Frakobl alle spændingskilder, herunder også de eksterne styrespændinger samt motor og generator.
  - Sørg for, at gentilkobling ikke er mulig (lås og luk).
  - Vent i 5 minutter mens kondensatorerne aflades.
  - Kontrollér, at installationen ikke er strømførende.
  - Installer midlertidig jordforbindelse som påkrævet i henhold til lokale bestemmelser.
  - Vær opmærksom på varme overflader. Visse dele vil være varme et stykke tid efter, at de er frakoblet netspændingen.

ADVARSEL! Sikkerhed ved opstart og drift:

- Hold dæksler/døre lukkede under driften og mens spænding er tilsluttet.
- Før du aktiverer en af de automatiske funktioner til nulstilling af fejl, skal du sikre dig, at der ikke kan opstå farlige situationer.
- Før du ændrer en af funktionerne, skal du sikre dig, at der ikke kan opstå farlige situationer.
- Omformere med betjeningspanel: Hvis du ændrer styrestedet til Fjern, kan du ikke stoppe omformeren med stoptasten i betjeningspanelet.

Deutsch / Sicherheitsvorschriften

Dieses Dokument enthält Sicherheitsvorschriften. Befolgen Sie diese Vorschriften. Wenn diese nicht befolgt werden, können Verletzungen, tödliche Unfälle oder Schäden an den Geräten auftreten. Weitere Anweisungen und Informationen enthalten die Produkthandbücher.

WARNUNG! Sicherheit bei Installation und Wartung:

- Prüfen Sie die Daten auf dem Typenschild. Der Stromricher/Antrieb/Gleichstromantrieb (nachfolgend als Gleichstromantrieb bezeichnet) darf nicht installiert werden, wenn die Daten des elektrischen Netzes, des Motors/Generators oder der Umgebungsbedingungen nicht die Anforderungen, die sich aus den Gleichstromantriebdaten ergeben, erfüllen.
- Beachten Sie die Regeln für die Kabelauswahl (Kabelschirm, Temperatur, Spannung, Strom usw.). Weitere Informationen enthält das entsprechende Hardware- Handbuch.
- Schützen Sie den Gleichstromantrieb mit den Sicherungen, die im Hardware-Handbuch spezifiziert sind.
- Elektrische Installations- und Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal durchgeführt werden.
- Benutzen Sie die erforderliche persönliche Schutzausrüstung.
- Lassen Sie den Gleichstromantrieb in seiner Verpackung bis Sie ihn installieren. Schützen Sie den Gleichstromantrieb nach dem Auspacken vor Staub, anderen Verschmutzungen und Feuchtigkeit.
- Stellen Sie sicher, dass der Boden unterhalb des Gleichstromantriebs und die Wand, an der der Gleichstromantrieb montiert wird, aus nicht brennbarem Material bestehen.
- Heben Sie den Gleichstromantrieb nur mit einer geeigneten Hebevorrichtung an. Benutzen Sie dabei die Hebeösen/-schienen.
- Der Gleichstromantrieb darf nicht gekippt werden. Er kann leicht umfallen.
- Schließen Sie den Gleichstromantrieb an Schutzerde an. Verbinden Sie den PE-Anschluss des Gleichstromantriebs mit dem Schutzerde-Anschluss der Installation/Anlage.
- Ziehen Sie die Kabelanschlüsse mit den im Hardware-Handbuch angegebenen Anzugsmomenten fest.
- Stellen Sie sicher, dass alle Abdeckungen montiert und die Schaltschranktüren geschlossen sind, bevor Sie die Spannungsversorgung einschalten. Sie müssen während des Betriebs geschlossen bleiben.
- Führen Sie keine Arbeiten an der Einrichtung oder den Kabeln durch, wenn der Gleichstromantrieb an die Spannungsversorgung angeschlossen ist:
  - Trennen Sie alle Spannungsquellen einschließlich der externen Steuerspannungen und der Motor- oder Generatoranschlüsse.
  - Stellen Sie sicher, dass ein erneutes Herstellen der Spannungsversorgung und - rückspeisung nicht möglich ist (Verriegeln und Kennzeichnen).
  - Warten Sie mindestens 5 Minuten, bis die internen Kondensatoren entladen sind.
  - Stellen Sie durch Messungen sicher, dass die gesamte Installation spannungsfrei ist.
  - Installieren Sie für die Dauer der Arbeiten eine Erdung, die nach den örtlichen Vorschriften erforderlich ist.
  - Berühren Sie keine heißen Oberflächen. Einige Komponenten bleiben nach der Trennung von der Spannungsversorgung noch längere Zeit heiß.

WARNUNG! Sicherheit bei Inbetriebnahme und Betrieb.

- Während des Betriebs und wenn die Spannungsversorgung angeschlossen ist müssen alle Abdeckungen montiert und die Schaltschranktüren geschlossen bleiben.
- Stellen Sie vor dem Aktivieren der Funktion ‚Automatische Störungsquittierung' sicher, dass keine gefährlichen Situationen eintreten können.
- Stellen Sie vor der Änderung von Grenzwert-Einstellungen für den Betrieb sicher, dass keine gefährlichen Situationen eintreten können.
- Gleichstromantrieb mit Bedienpanel: Wenn Sie von der Lokalsteuerung (Local) auf Fernsteuerung (Remote) wechseln, können Sie den Gleichstromantrieb nicht mit der Stopptaste des Bedienpanels stoppen.

Ελληνικά / Οδηγίες για την ασφάλεια

Αυτό το έγγραφο περιέχει οδηγίες για την ασφάλεια. Τηρείτε αυτές τις οδηγίες. Αν τις παραβλέψετε, μπορεί να προκύψει τραυματισμός ή θάνατος, ή βλάβη στον εξοπλισμό. Για περισσότερες οδηγίες και πληροφορίες, ανατρέξτε στα εγχειρίδια του προϊόντος.

ΠΡΟΕΙΔΟΠΟΙΗΣΗ! Ασφάλεια κατά την εγκατάσταση και τη συντήρηση:

- Ελέγξτε τα δεδομένα στην ετικέτα καθορισμού του τύπου. Μην εγκαθιστάτε τον οδηγό/μετατροπέα/αντιστροφέα (στο εξής μετατροπέας) αν το δίκτυο ηλεκτρικού ρεύματος, ο κινητήρας/γεννήτρια ή οι περιβαλλοντικές συνθήκες δεν συμφωνούν με τα δεδομένα του μετατροπέα.
- Τηρείτε τους κανόνες επιλογής καλωδίων (περίβλημα, θερμοκρασία, τάση, ρεύμα κ.λπ.) Ανατρέξτε στο εγχειρίδιο του μετατροπέα.
- Προστατεύεστε τον μετατροπέα με τις ασφάλειες που καθορίζονται στο εγχειρίδιο του μετατροπέα.
- Αν δεν είστε πιστοποιημένος ηλεκτρολόγος, μην εκτελείτε εργασίες ηλεκτρικής εγκατάστασης ή συντήρησης.
- Χρησιμοποιείτε τα απαιτούμενα μέσα ατομικής προστασίας.
- Διατηρείτε τον μετατροπέα στη συσκευασία του έως ότου τον εγκαταστήσετε. Μετά την αφαίρεση από τη συσκευασία, προστατεύστε τον μετατροπέα από σκόνη, υπολείμματα και υγρασία.
- Βεβαιωθείτε ότι το δάπεδο κάτω από τον μετατροπέα και ο τοίχος από πίσω του είναι από μη εύφλεκτο υλικό.
- Φροντίστε να ανασηκώνετε τον μετατροπέα με διάταξη ανύψωσης. Χρησιμοποιείτε κρίκους/ράβδους ανύψωσης.
- Μην γέρνετε τον μετατροπέα. Αναποδογυρίζει εύκολα.
- Γειώστε τον μετατροπέα. Συνδέστε τον ακροδέκτη γείωσης του μετατροπέα σε γείωση προστασίας PE.
- Σφίξτε τις συνδέσεις των καλωδίων στη ροπή που καθορίζεται στο εγχειρίδιο του υλικού.
- Προτού συνδέσετε την τάση, βεβαιωθείτε ότι τα καλύμματα/οι θύρες είναι κλειστά. Διατηρήστε τα κλειστά κατά τη διάρκεια της λειτουργίας.
- Μην εκτελείτε εργασίες στον εξοπλισμό ή την καλωδίωση όταν ο εξοπλισμός είναι συνδεδεμένος στο ρεύμα:
  - Αποσυνδέστε όλες τις πηγές τάσης, μεταξύ των οποίων οι εξωτερικές τάσεις ελέγχου και ο κινητήρας ή η γεννήτρια.
  - Βεβαιωθείτε ότι δεν είναι εφικτό να γίνει επανασύνδεση (διαδικασία ασφάλισης και σήμανσης εξοπλισμού σε ανενεργή κατάσταση)
  - Περιμένετε 5 λεπτά για να αποφορτιστούν οι πυκνωτές.
  - Μετρήστε ότι η εγκατάσταση έχει απενεργοποιηθεί.
  - Εγκαταστήστε προσωρινές γειώσεις όπως απαιτείται από τους τοπικούς κανονισμούς.
  - Προσέξτε τις θερμές επιφάνειες. Ορισμένα μέρη παραμένουν ζεστά για μεγάλο χρονικό διάστημα μετά την αποσύνδεση της τροφοδοσίας ρεύματος.

ΠΡΟΕΙΔΟΠΟΙΗΣΗ! Ασφάλεια κατά την εκκίνηση και τη λειτουργία:

- Διατηρείτε τα καλύμματα/τις θύρες κλειστές κατά τη διάρκεια της λειτουργίας και όταν η τάση είναι συνδεδεμένη.
- Προτού ενεργοποιήσετε οποιαδήποτε λειτουργία αυτόματης επαναφοράς σφάλματος, βεβαιωθείτε ότι δεν μπορούν να προκύψουν επικίνδυνες καταστάσεις.
- Προτού αλλάξετε οποιοδήποτε όριο λειτουργίας, βεβαιωθείτε ότι δεν μπορούν να προκύψουν επικίνδυνες καταστάσεις.
- Μετατροπείς με πίνακα ελέγχου: Αν αλλάξετε τη θέση του ελέγχου σε Remote (Απομακρυσμένη), δεν μπορείτε να διακόψετε τη λειτουργία του μετατροπέα με το πλήκτρο διακοπής στον πίνακα ελέγχου.

Español / Instrucciones de seguridad

Este documento contiene instrucciones de seguridad. Siga estas instrucciones. Si no se tienen en cuenta las instrucciones, pueden producirse lesiones físicas, muertes o daños en el equipo. Consulte los manuales de producto para obtener más instrucciones e información.

ADVERTENCIA: Seguridad durante la instalación y el mantenimiento:

- Compruebe los datos de la etiqueta de designación de tipo. No instale el convertidor/ inversor (en adelante, convertidor) si la red de alimentación, el motor/generador o las condiciones ambientales no son conformes con los datos del convertidor.
- Siga las normas de selección de cables (apantallamiento, temperatura, tensión, intensidad, etc.) Véase el manual de hardware.
- Proteja el convertidor con los fusibles especificados en el manual de hardware.
- Si usted no es electricista cualificado, no realice trabajos de instalación o mantenimiento.
- Utilice el equipo de protección individual requerido.
- Mantenga el convertidor en su embalaje hasta el momento de la instalación. Tras su desembalaje, proteja el convertidor frente a polvo, residuos y humedad.
- Asegúrese de que el suelo donde se apoya el convertidor y la pared situada detrás son ignífugos.
- Levante el convertidor con un dispositivo de izado. Utilice los cáncamos/las barras de elevación.
- No incline la unidad. Vuelca con facilidad.
- Conecte a tierra el convertidor. Conecte a tierra el terminal de protección a tierra (PE) del convertidor.
- Apriete las conexiones de los cables según los pares de apriete especificados en el manual de hardware.
- Antes de alimentar el convertidor, asegúrese de que las cubiertas/puertas están cerradas. Manténgalas cerradas durante el funcionamiento.
- No realice trabajos en el equipo o el cableado si el convertidor recibe alimentación:
  - Desconecte todas las fuentes de tensión, incluyendo tensiones de control externas, el motor o el generador.
  - Asegúrese de que la reconexión no es posible (bloqueo y etiquetado).
  - Espere 5 minutos hasta que se descarguen los condensadores.
  - Compruebe que la instalación está desenergizada.
  - Instale una conexión a tierra temporal de conformidad con la normativa local.
  - Cuidado con las superficies calientes. Algunas piezas permanecen calientes un tiempo tras desconectar la potencia de entrada.

ADVERTENCIA: Seguridad en la puesta en marcha y el funcionamiento:

- Mantenga las cubiertas/puertas cerradas durante el funcionamiento y cuando el convertidor reciba tensión.
- Antes de activar cualquier función de restauración automática de fallos, asegúrese de que no se pueden producir situaciones peligrosas.
- Antes de modificar cualquier límite de funcionamiento, asegúrese de que no se pueden producir situaciones peligrosas.
- Convertidores con panel de control: Si cambia el lugar de control a Remoto, no es posible detener el convertidor con el botón de paro del panel de control.

Eesti / Tööohutusjuhend

See dokument sisaldab tööohutusalaseid juhiseid. Järgige juhiseid. Juhiste eiramine võib kaasa tuua surmavaid vigastusi või kahjustusi varustusele. Täiendavate juhiste ja informatsiooni saamiseks tutvuge toote kasutusjuhenditega.

HOIATUS! Ohutus paigaldamisel ja hooldamisel:

- Kontrollige andmeid toote nimesildil. Ärge paigaldage ajamit/konverterit/invertert (edaspidi konverter) kui elektrivõrk, mootor/generaator või keskkonnatingimused ei ole kooskõlas konverteri andmetega.
- Järgige kaabli valimisel selleks ette antud juhiseid (varjestus, temperatuur, pinge, vool jne). Tutvuge riistvara kasutusjuhendiga.
- Kasutage konverteri kaitsmiseks riistvara kasutusjuhendis ette nähtud sulavkaitsmeid.
- Kui te ei ole kvalifitseeritud elektrik, siis ärge paigaldage või hooldage elektriseadmeid.
- Kasutage nõuetekohaseid isikukaitsevahendeid.
- Hoidke konverterit kuni selle paigaldamiseni pakendis. Pärast pakendi eemaldamist konverterit tolmu, mustuse ja niiskuse eest.
- Veenduge, et konverteri all asetsev põrandapind ja konverteri taga olev sein on mittesüttivast materjalist.
- Kasutage konverteri tõstmiseks tõstevahendit. Kasutage tõsteaasasid/latte.
- Ärge kallutage konverterit. See läheb kergesti ümber.
- Maandage konverter. Ühendage konverteri PE terminal kaitsejuhiga.
- Pingutage kaabliühendused riistvara kasutusjuhendis ette nähtud pöördemomendini.
- Enne pinge sisselülitamist veenduge, et katted/uksed on suletud. Töötamise ajal hoidke need suletuna.
- Ärge töötage seadmetega või kaablitega, kui need on pingestatud:
  - Ühendage lahti kõik pingeallikad, sealhulgas välised pingeallikad ja mootor või generaator.
  - Veenduge, et taasühenduse tekkimine ei ole võimalik (lukustage ja tähistage)
  - Oodake 5 minutit, kuni kondensaatorid on tühjenenud.
  - Mõõdistage veendumaks, et seadeldis on pingetu.
  - Paigaldage kohalikele nõuetele vastavalt ajutine maandus.
  - Olge ettevaatlik, pinnad on kuumad. Mõned osad püsivad pärast väljalülitamist mõnda aega kuumana.

HOIATUS! Ohutus käivitamisel ja töötamisel:

- Hoidke katted/uksed seadmega töötamise ajal suletuna. Samuti hoidke katted/uksed suletuna, kui seade on ühendatud vooluvõrku.
- Enne automaatse vealähtestamise funktsioonide aktiveerimist veenduge tegevuse turvalisuses.
- Enne töösätete piirväärtuste muutmist veenduge tegevuse turvalisuses.
- Juhtpaneeliga konverterid: Kui lülitate juhtimise ümber kaugjuhtimisele, ei saa te konverterit juhtpaneelil asuva stop-nupu abil peatada.

Suomi / Turvaohjeet

Tämä asiakirja sisältää turvallisuuteen liittyviä ohjeita. Noudata ohjeita. Ohjeiden laiminlyönti voi johtaa fyysiseen vammaan tai hengenvaaraan tai vaurioittaa laitteistoa. Lisäohjeita ja -tietoja on tuotteen oppaissa.

VAROITUS! Asennus- ja huoltotöiden turvallisuus:

- Tarkista tyyppikilven tiedot. Älä asenna käyttöä/taajuusmuuttajaa/vaihtosuuntaajaa (jäljempänä: taajuusmuuttaja), jos sähköverkko, moottori/generaattori tai käyttöympäristö ei ole yhteensopiva taajuusmuuttajan kanssa.
- Noudata kaapelien valintaohjeita (suojaus, lämpötila, jännite, virta jne.). Lisätietoja on laiteoppaassa.
- Suojaa taajuusmuuttaja laiteoppaan ohjeiden mukaisilla varokkeilla.
- Sähköasennus- ja huoltotöitä saa tehdä vain pätevä sähköalan ammattilainen.
- Käytä tarvittavia henkilönsuojaimia.
- Pidä taajuusmuuttaja pakkauksessaan asennukseen asti. Kun pakkaus on avattu, taajuusmuuttaja on suojattava pölyltä, roskilta ja kosteudelta.
- Varmista, että lattia taajuusmuuttajan alla ja seinä sen takana ovat syttymättömiä.
- Nosta taajuusmuuttajaa nostolaitteella. Käytä nostokorvakkeita tai -tankoja.
- Älä kallista taajuusmuuttajaa. Se kaatuu helposti.
- Maadoita taajuusmuuttaja. Kytke taajuusmuuttajan PE-liitäntä suojamaaliitäntään.
- Kiristä kaapeliliitännät laiteoppaassa annettuihin momentteihin.
- Varmista ennen jännitteen kytkemistä, että kaikki kannet tai ovet ovat kiinni. Pidä ne suljettuina käytön aikana.
- Älä käsittele laitetta tai kaapeleita virran ollessa kytkettynä.
  - Irrota kaikki jännitelähteet, myös ulkoiset ohjausjännitteet, sekä moottori tai generaattori.
  - Varmista, että uudelleenkytkeytyminen ei ole mahdollinen (kytkennän lukitus ja turvamerkintä).
  - Odota viisi minuuttia, jotta kondensaattorien jännite purkautuu.
  - Varmista mittauksilla, että järjestelmä on jännitteetön.
  - Asenna paikallisten määräysten mukainen työmaadoitus.
  - Varo kuumia pintoja. Jotkin laitteiston pinnat voivat olla kuumia vielä jonkin aikaa syöttötehon katkaisemisen jälkeen.

VAROITUS! Käyttöönottotöiden ja käytön turvallisuus:

- Pidä kannet/ovet suljettuina käytön aikana ja aina, kun jännite on kytkettynä.
- Varmista ennen automaattisten viankuittaustoimintojen aktivointia, että ne eivät voi johtaa vaaratilanteisiin.
- Varmista ennen käyttöön liittyvien raja-arvojen muuttamista, että uudet arvot eivät voi johtaa vaaratilanteisiin.
- Taajuusmuuttajat, joissa on ohjauspaneeli: Jos ohjauspaikaksi valitaan kauko-ohjaus, taajuusmuuttajaa ei voi pysäyttää ohjauspaneelin pysäytyspainikkeella.

Français / Consignes de sécurité

Ce document contient les consignes de sécurité que vous devez absolument respecter. Leur non-respect est susceptible de provoquer des blessures graves, voire mortelles, ou des dégâts matériels. Cf. manuels du produit pour des détails et des consignes supplémentaires.

ATTENTION ! Sécurité lors des opérations d'Installation et de maintenance :

- Vérifiez les données de la plaque signalétique. Il est interdit d'installer le variateur/ convertisseur/onduleur (ci-après, «le variateur») si le réseau électrique, le moteur/générateur ou les conditions ambiantes ne sont pas appropriées.
- Respectez les règles de sélection des câbles (blindage, température, tension, courant, etc.). Cf. manuel d'installation.
- Utilisez les fusibles spécifiés dans le Manuel d'installation pour protéger le variateur.
- Seul un électricien qualifié est autorisé à effectuer le montage ou la maintenance du variateur.
- Utilisez un équipement de protection individuelle adéquat.
- Stockez le variateur dans son emballage jusqu'à son installation. Une fois déballé, protégez-le de la poussière, des débris et de l'humidité.
- Assurez-vous que le sol sous le variateur ainsi que la paroi derrière sont en matériaux non inflammables (ignifuges).
- Pour soulever le variateur, utilisez un appareil de levage ainsi que les barres/anneaux de levage.
- N'inclinez pas le variateur car il bascule facilement.
- Mettez le variateur à la terre. Raccordez la borne PE du variateur à la terre de protection.
- Serrez les fixations des câbles aux couples spécifiés dans le Manuel d'installation.
- Avant de mettre le variateur sous tension, assurez-vous que les portes et capots sont bien fermés. Gardez-les fermés lorsque l'appareil est en marche.
- N'intervenez jamais sur l'appareil ou des câbles sous tension :
  - Sectionnez toutes les sources de tension, y compris les tensions de commande externes et le moteur ou le générateur.
  - Vérifiez qu'aucune reconnexion n'est possible (bloquez et marquez).
  - Attendez 5 minutes que les condensateurs internes soient déchargés.
  - Vérifiez par une mesure l'absence de tension dans l'installation.
  - Procédez à la mise à la terre temporaire conformément à la réglementation locale.
  - Attention aux surfaces chaudes. La température de certaines zones reste élevée pendant un certain temps après sectionnement de l'alimentation.

ATTENTION ! Exploitation et mise en route :

- Les portes et capots doivent être fermés en permanence lorsque l'appareil est sous tension ou en fonctionnement.
- Assurez-vous que tout danger est écarté avant d'activer une fonction de réarmement automatique des défauts.
- Assurez-vous que tout danger est écarté avant de changer une limite d'exploitation.
- Variateur avec microconsole : si l'appareil est en mode commande à distance (externe), un appui sur la touche Stop de la microconsole ne l'arrêtera pas.

Gaeilge / Treoracha sábháilteachtaND

Tá sa cháipéis seo treoracha sábháilteachta. Cloígh leis na treoracha. Má thugann tú neamhaird orthu, d'fhéadfadh sé go dtarlódh gortú nó bás, nó go ndéanfaí dochar don trealamh. Féach na lámhleabhair atá ag gabháil leis na táirgí le haghaidh tuilleadh treoracha agus faisnéise.

RABHADH! Sábháilteacht feistithe agus cothabhála:

- Seiceáil na sonraí ar an lipéad cineáil. Ná shuiteáil an feachtas DC / tiontaire (DC tiomáint) más rud é nach bhfuil an líonra leictreachais cumhachta, mótair / gineadóir, nó coinníollacha comhshaoil aontú leis na sonraí tiomáint DC.
- Cloígh leis na rialacha um roghnú cáblaí (sciath, teocht, voltas, sruth, srl.). Féach an lámhleabhar crua-earraí.
- Cosain an feachtas DC leis na fiúsanna a shonraítear sa lámhleabhar crua-earraí.
- Mura leictreoir cáilithe thú, ná déan obair feistithe ná cothabhála leictrí.
- Úsáid an trealamh cosanta pearsanta is gá.
- Coinnigh an feachtas DC ina bpacáiste go dtí shuiteáil tú é. Tar éis díphacáil, a chosaint ar an feachtas DC ó deannaigh, smionagar agus taise.
- Bí cinnte go bhfuil an t-urlár thíos agus an balla taobh thiar an feachtas DC neamh-inlasta.
- Ardaigh an feachtas DC le gléas ardaithe. Bain úsáid as na súile ardaithe / barraí.
- Ná tilt an tiomáint DC. overturns sé go héasca.
- Ground an tiomáint DC. Ceangail an DC tiomáint Corpoideachais críochfort chun an domhain cosanta.
- Fáisc na nascóirí cábla chun an toirc atá sonraithe sa lámhleabhar crua-earraí.
- Roimh duit voltas a nascadh, déan cinnte de go bhfuil na clúdaigh/doirse dúnta. Coinnigh dúnta iad le linn feidhmiú.
- Ná hoibrigh leis an trealamh ná leis an gcáblú agus iad faoi chumhacht:
  - Dínasc gach foinse voltais lena n-áirítear voltais rialaithe sheachtraigh, agus an mótar nó an gineadóir.
  - Déan cinnte de nach féidir é a athnascadh (cuir faoi ghlas agus clibeáil é).
  - Fan go ceann 5 nóiméad go dtí go ndíluchtóidh na toilleoirí.
  - Seiceáil go bhfuil an fearas gan fhuinneamh.
  - Feistigh talmhú sealadach de réir na rialacha áitiúla.
  - Seachain dromchlaí teo. Fanfaidh comhpháirteanna áirithe te go ceann tamaill tar éis dhínascadh na cumhachta ionchuir.

RABHADH! Sábháilteacht tosaithe agus feidhmithe:

- Coinnigh na clúdaigh/doirse dúnta le linn feidhmiú agus nuair atá voltas nasctha leis.
- Roimh duit aon fheidhmeanna uathoibríocha athshocraithe ar fhabht a chur i ngníomh, déan cinnte de nach dtarlóidh aon ní dainséarach.
- Roimh duit aon teorainn oibríochta a athrú, déan cinnte de nach dtarlóidh aon ní dainséarach.
- DC thiomáineann leis an bpainéal rialú: Má athraíonn tú an suíomh rialú cianda, ní féidir leat a stop a chur leis feachtas DC leis an príomh-stad ar an bpainéal rialú.

Hrvatski / Sigurnosne upute

Ovaj dokument sadrži sigurnosne upute. Trebate se pridržavati uputa. Ako ih zanemarite, može doći do ozljeda, smrti ili pak oštećenja opreme. Dodatne upute i informacije potražite u priručnicima proizvoda.

UPOZORENJE! Sigurnost pri postavljanju i održavanju:

- Provjerite podatke na natpisnoj pločici. Nemojte ugrađivati DC pretvarač/konverter (kasnije DC konverter) ako mreža za električno napajanje, motor/generator ili uvjeti okoline ne odgovaraju podacima DC konvertera.
- Pridržavajte se pravila za odabir kabela (oplet, temperatura, napon, struja itd.) Pogledajte priručnik hardvera.
- Zaštitite DC konverter osiguračima koji su navedeni u priručniku hardvera.
- Ako niste ovlašteni električar, nemojte vršiti radove električnog postavljanja ili održavanja.
- Koristite se propisanom osobnom zaštitnom opremom.
- Čuvajte DC konverter u pakiranju sve do postavljanja. Nakon što konverter izvadite iz pakiranja, zaštitite ga od prašine, čvrstog taloga i vlage.
- Osigurajte da pod ispod i zid iza DC konvertera nisu zapaljivi.
- Podignite DC konverter uz pomoć uređaja za podizanje. Koristite se očicama/šipkama za podizanje.
- Nemojte naginjati DC konverter. Može se lako prevrnuti.
- Uzemljite DC konverter. Spojite PE terminal DC konvertera na zaštitno uzemljenje.
- Stegnite kabelske spojeve u skladu s okretnim momentom koji je naveden u priručniku hardvera.
- Prije spajanja napona osigurajte da su zatvoreni svi poklopci odnosno sva vrata. Držite ih zatvorenima tijekom rada.
- Nemojte rukovati opremom ili kabelima kad su pod naponom:
  - Odvojite sve izvore napona uključujući vanjske upravljačke napone te motor ili generator.
  - Osigurajte da nije moguće ponovno spajanje (zaključajte i stavite upozorenje).
  - Pričekajte 5 minuta da se isprazne električni kondenzatori.
  - Izmjerite da na postrojenju nema napona.
  - Postavite privremeno uzemljenje sukladno zahtjevima lokalnih propisa.
  - Pripazite na vruće površine. Neki dijelovi ostaju vrući neko vrijeme nakon odvajanja ulaznog napajanja.

UPOZORENJE! Sigurnost pri pokretanju i radu:

- Poklopce odnosno vrata držite zatvorenima za vrijeme rada i pri spojenom naponu.
- Prije aktiviranja bilo koje automatske funkcije vraćanja smetnje osigurajte da ne mogu nastupiti nikakve opasne situacije.
- Prije mijenjanja bilo kojeg ograničenja rada osigurajte da ne mogu nastupiti nikakve opasne situacije.
- DC konverteri s upravljačkom pločom: Ako promijenite mjesto upravljanja na Daljinsko, više ne možete zaustaviti konverter upotrebom tipke za zaustavljanje na upravljačkoj ploči.

Magyar / Biztonsági előírások

Ez a dokumentum biztonsági előírásokat tartalmaz. Ezeket be kell tartani. A figyelmen kívül hagyásuk sérülést vagy halált, illetve a berendezés károsodását okozhatja. További utasításokért és információkért lásd a termékek kézikönyvét.

FIGYELEM! Telepítési és karbantartási biztonság:

- Ellenőrizze a típusmegjelölési címke adatait. Ne telepítse a hajtást/átalakítót/invertert (a továbbiakban: átalakító), ha az elektromos hálózat, a motor/generátor vagy a környezeti körülmények nem felelnek meg az átalakító adatainak.
- Tartsa szem előtt a kábelek kiválasztására vonatkozó szabályokat (árnyékolás, hőmérséklet, feszültség, áram stb.). Lapozza fel a hardver kézikönyvét.
- Védje az átalakítót a hardver kézikönyvében megjelölt biztosítókkal.
- Ha Ön nem képzett villanyszerelő, akkor ne végezzen elektromos telepítési és karbantartási munkát.
- Használja a szükséges egyéni védőeszközöket.
- Az átalakítót mindaddig a csomagolásában tartsa, amíg nem telepíti. A kicsomagolt átalakítót védje a portól, a szennyeződéstől és a nedvességtől.
- Gondoskodjon arról, hogy a padló az átalakító alatt és a fal az átalakító mellett ne legyen éghető.
- Az átalakítót emelőszerkezettel emelje. Használja az emelőfüleket, illetve -rudakat.
- Ne billentse meg az átalakítót, mert könnyen felborul.
- Földelje az átalakítót. Csatlakoztassa az átalakító PE- (védőföldelő) kapcsát a védőföldeléshez.
- A kábelcsatlakozásokat a hardver kézikönyvében megadott nyomatékkal húzza meg.
- A feszültség csatlakoztatása előtt győződjön meg arról, hogy a burkolatok és ajtók be vannak zárva. Üzemelés közben tartsa zárva őket.
- Ne végezzen munkát a berendezésen és a kábelezésen, amikor azok feszültség alatt állnak:
  - Válasszon le minden feszültségforrást, a külső vezérlőfeszültséget is beleértve, valamint a motort vagy generátort.
  - Gondoskodjon az újracsatlakoztatás lehetőségének kizárásáról (lezárással és megjelöléssel).
  - Várjon 5 percig, hogy a kondenzátorok kisüljenek.
  - Méréssel győződjön meg a berendezés feszültségmentességéről.
  - Amennyiben a helyi szabályozás megköveteli, telepítsen ideiglenes földelést.
  - Ügyeljen a forró felületekre. Egyes részek a táp lekapcsolása után is forrók maradnak egy ideig.

FIGYELEM! Üzembehelyezési és üzemeltetési biztonság:

- Üzemeltetéskor, illetve amikor a berendezés feszültség alatt áll, tartsa zárva a burkolatokat és az ajtókat.
- Az automatikus hibatörlés funkció aktiválása előtt gondoskodjon arról, hogy ne alakulhasson ki veszélyes helyzet.
- Mielőtt megváltoztatna egy üzemi határértéket, gondoskodjon arról, hogy ne alakulhasson ki veszélyes helyzet.
- Vezérlőpulttal rendelkező átalakítók: Ha a Távoli lehetőséget választja ki vezérlés helyként, akkor az átalakító nem állítható le a vezérlőpult leállítógombjával.

Italiano / Norme di sicurezza

Il presente documento contiene norme di sicurezza. È importante rispettare tali norme. Ignorarle può mettere a repentaglio l'incolumità delle persone, con pericolo di morte, o danneggiare le apparecchiature. Per maggiori istruzioni e informazioni, consultare i manuali del prodotto.

AVVERTENZA! Norme di sicurezza da seguire durante l'installazione e la manutenzione:

- Verificare i dati indicati sull'etichetta identificativa. Non installare il convertitore CC (convertitore) se la rete elettrica, il motore/generatore o le condizioni ambientali non sono conformi ai dati del convertitore.
- Rispettare le istruzioni relative alla scelta dei cavi (schermatura, temperatura, tensione, corrente, ecc.). Vedere il manuale hardware.
- Proteggere il convertitore con i fusibili specificati nel manuale hardware.
- Gli interventi di installazione e manutenzione devono essere eseguiti solo da personale elettrico qualificato.
- Utilizzare i dispositivi di protezione individuale richiesti.
- Fino al momento dell'installazione, tenere il convertitore nella confezione originaria. Una volta rimosso l'imballaggio, proteggere il convertitore da polvere, detriti e umidità.
- Assicurarsi che la parete dietro il convertitore e il pavimento sottostante non siano infiammabili.
- Sollevare il convertitore con un dispositivo di sollevamento. Utilizzare i

golfari/le barre di sollevamento.
- Non inclinare il convertitore. Può ribaltarsi facilmente.
- Mettere a terra il convertitore. Collegare il morsetto PE del convertitore alla protezione di terra.
- Serrare i collegamenti dei cavi alle coppie indicate nel manuale hardware.
- Prima di applicare la tensione, accertarsi che sportelli e coperchi siano chiusi. Tenerli chiusi durante il funzionamento.
- Non effettuare alcun intervento sul dispositivo o sui cavi quando l'alimentazione è collegata:
  - Scollegare tutte le sorgenti di tensione, incluse le tensioni di controllo esterne e il motore o il generatore.
  - Assicurarsi che non sia possibile il ricollegamento (procedura LOTO, Lock Out/Tag Out).
  - Attendere 5 minuti per consentire ai condensatori di scaricarsi.
  - Verificare che l'installazione sia diseccitata.
  - Eseguire una messa a terra temporanea in conformità alle normative locali.
  - Prestare attenzione alle superfici calde. Dopo aver scollegato l'alimentazione, alcune parti rimangono calde per un breve intervallo di tempo.

AVVERTENZA! Norme di sicurezza da seguire durante l'avviamento e il funzionamento:
- Tenere chiusi sportelli e coperchi durante il funzionamento e quando l'alimentazione è collegata.
- Prima di attivare eventuali funzioni di reset automatico dei guasti, accertarsi che non possano verificarsi situazioni di pericolo.
- Prima di modificare qualsivoglia limite operativo, accertarsi che non possano verificarsi situazioni di pericolo.
- Convertitori con pannello di controllo: quando si posiziona il controllo su Remoto, non è possibile arrestare il convertitore tramite il tasto di arresto sul pannello di controllo.

Lietuviškai / Saugos instrukcijos

Šiame dokumente yra pateiktos saugos instrukcijos. Laikykitės šių instrukcijų. Jų ignoravimas gali sužeisti, tapti mirties priežastimi arba pažeisti įrangą. Išsamesnės instrukcijos ir informacija yra pateikta produkto vartojimo instrukcijose.

ĮSPĖJIMAS! Saugus diegimas ir priežiūra
- Patikrinkite duomenis, nurodytus tipo žymėjimo etiketėje. Nemontuokite DC pavaros/keitiklio (DC pavaros), jei elektros tinklo, variklio (generatoriaus) arba aplinkos sąlygos neatitinka DC pavaros reikalavimų.
- Laikykitės kabelių pasirinkimo taisyklių (ekranavimo, temperatūros, įtampos, srovės ir pan.). Perskaitykite produkto vartojimo instrukciją.
- Apsaugokite DC pavarą įdiegę saugiklius, nurodytus produkto vartojimo instrukcijoje.
- Jei nesate kvalifikuotas elektrikas, neatlikinėkite elektros instaliacijos arba priežiūros darbų.
- Naudokite reikalaujamas asmens apsaugos priemones.
- Iki diegimo laikykite DC pavarą pakuotėje. Išpakavę saugokite DC pavarą nuo dulkių, nuolaužų ir drėgmės.
- Užtikrinkite, kad grindys po DC pavara ir už jo esanti siena yra atsparios ugniai.
- DC pavarą kelkite su kėlimo įranga. Naudokite kėlimo kilpas (rankenas).
- Nekraipykite DC pavaros. Ją lengva apversti.
- Įžeminkite DC pavarą. DC pavaros PE gnybtą prijunkite prie įžeminimo.
- Laido jungtis priveržkite iki techninės įrangos vadove nurodyto sukimo momento.
- Prieš jungdami įtampą įsitikinkite, kad visi dangčiai ir durelės yra uždaryti. Laikykite juos uždarytus naudojimo metu.
- Netvarkykite įrangos ar laidų, jei įrenginys yra įjungtas
  - Atjunkite visus įtampos šaltinius, įskaitant išorinio valdymo įtampas ir variklį arba generatorių.
  - Užtikrinkite, kad pakartotinis įjungimas nebūtų galimas (užrakinkite ir paženklinkite).
  - Palaukite 5 minutes, kol kondensatoriai išsikraus.
  - Patikrinkite, ar instaliacija yra atjungta.
  - Laikinai įžeminkite, kaip to reikalauja vietos reglamentas.
  - Saugokitės karštų paviršių. Kai kurios dalys lieka karštos net ir atjungus maitinimą.

ĮSPĖJIMAS! Paleidimo ir naudojimo sauga
- Dangčius ir dureles laikykite uždarytas naudojimo metu ir kai yra prijungta įtampa.
- Prieš suaktyvindami automatines gedimų atstatymo funkcijas įsitikinkite, kad jos nesukels pavojaus.
- Prieš keisdami veikimo ribas įsitikinkite, kad tai nesukels pavojaus.
- DC pavara su valdymo pulteliu: Pakeitę valdymo vietą į „nuotolinė" nepavyks sustabdyti DC pavaros paspaudus stop mygtuką, esantį valdymo pultelyje.

Latviešu valoda / Drošības norādījumi

Šajā dokumentā ir iekļauti drošības norādījumi. Lūdzam tos ievērot. To ignorēšana var izraisīt traumas vai nāvi, vai iekārtas bojājumus. Citi norādījumi un informācija atrodama produkta lietošanas instrukcijā.

BRĪDINĀJUMS! Drošība uzstādīšanas un apkopes laikā:
- pārbaudiet informāciju uz tipa marķējuma. Neuzstādiet pārvadu / invertoru / pārveidotāju, ja elektrotīkls, motors / ģenerators vai apkārtējās vides apstākļi neatbilst pārveidotāja datiem.
- Ievērojiet kabeļa izvēles prasības (aizsardzība, temperatūra, spriegums, strāva u. c.) Sk. ierīces lietošanas instrukciju.
- Pārveidotāja aizsardzībai izmantojiet sveces, kas norādītas ierīces lietošanas instrukcijā.
- Ja jūs neesat kvalificēts elektriķis, neveiciet elektroinstalācijas vai apkopes darbu.
- Izmantojiet nepieciešamos individuālās aizsardzības līdzekļus.
- Kamēr pārveidotājs nav uzstādīts, glabājiet to iepakojumā. Pēc izsaiņošanas sargājiet pārveidotāju no putekļiem, būvgružiem un mitruma.
- Pārliecinieties, ka grīda zem pārveidotāja un siena aiz tā ir ugunsdroša.
- Paceliet pārveidotāju ar celšanas ierīci. Izmantojiet celšanas cilpas / stieņus.
- Nesasveriet pārveidotāju. To var ļoti viegli apgāzt.
- Zemējiet pārveidotāju. Savienojiet pārveidotāja aizsargzemējuma spaili ar aizsargzemējumu.
- Savelciet kabeļa savienojumus ar griezes momentu, kas norādīts ierīces lietošanas instrukcijā.
- Pirms pieslēdzat strāvu, pārliecinieties, ka pārsegi / atveres ir aizvērtas. Ekspluatācijas laikā turiet tās ciet.
- Nestrādājiet ar aprīkojumu vai vadiem, kad ierīce ir pieslēgta pie strāvas:
  - atvienojiet visus strāvas avotus, tostarp ārējo vadības strāvu un motoru vai ģeneratoru.
  - Pārliecinieties, ka elektrisko savienojumu nav iespējams atjaunot (nobloķējiet un nomarķējiet).
  - Pagaidiet 5 minūtes, līdz kondensatori izlādējas.
  - Pārbaudiet, vai ierīce ir atslēgta no strāvas avota.
  - Izveidojiet pagaidu zemējumu saskaņā ar vietējiem noteikumiem.
  - Uzmanieties no karstām virsmām. Dažas detaļas ir karstas arī kādu laiku pēc ierīces atvienošanas no strāvas.

BRĪDINĀJUMS! Drošība darba sākumā un ekspluatācijas laikā:
- darbināšanas laikā un, kad ierīce ir pievienota strāvas avotam, turiet pārsegus / atveres ciet.
- Pirms aktivizējat automātisko kļūdu atiestatīšanas funkciju, pārliecinieties, ka nevar rasties bīstamas situācijas.
- Pirms maināt darbības ierobežojumus, pārliecinieties, ka nevar rasties bīstamas situācijas.
- Pārveidotāji ar vadības paneli Ja maināt vadības veidu uz tālvadību, pārveidotāju nevar apturēt ar „Stop" pogu uz vadības paneļa.

Malti / Struzzjonijiet ta' sikurezza

Dan id-dokument fih struzzjonijiet ta' sikurezza. Obdi l-istruzzjonijiet. Jekk tinjorahom, tista' twassal għal korriment jew mewt, jew tagħmel ħsara lit-tagħmir. Ara l-manwali tal-prodott għal aktar struzzjonijiet u informazzjoni.

TWISSIJA! Sikurezza fl-installazzjoni u l-manutenzjoni:
- Jivverifika d-data fuq it-tikketta deżinjazzjoni tat-tip. Ma tinstalla l-DC sewqan / converter (DC sewqan) jekk in-netwerk elettriku enerġija, mutur / ġeneratur, jew il-kondizzjonijiet ambjentali ma jaqblux mad-data drive DC.
- Obdi r-regoli ta' selezzjoni tal-kejbil (skrin, temperatura, vultaġġ, kurrent, eċċ.). Ara l-manwal tal-ħardwer.
- Ipproteġi l-sewqan DC mal-fjusis speċifikati fil-manwal-hardware.
- Jekk m'intix elektrixin ikkwalifikat, twettaqx installazzjoni elettrika jew xogħol ta' manutenzjoni.
- Uża t-tagħmir protettiv personali meħtieġ.
- Żomm il-sewqan DC fil-pakkett tagħha sakemm inti jinstallaw dan. Wara ispakkjar, jipproteġu l-sewqan DC mit-trab, debris u umdità.
- Kun żgur li l-art hawn taħt u l-ħajt wara l-sewqan DC huma mhux fjammabbli.
- Tneħħi l-sewqan DC b'apparat ta 'rfigħ. Uża l-għajnejn irfigħ / vireg.
- Ma mejjel il-sewqan DC. Hija jinqaleb faċilment.
- Ground-sewqan DC. Qabbad il-DC sewqan PE terminali lejn l-art protettiv.
- Issikka l-konnessjonijiet tal-kejbil sat-torque speċifikat fil-manwal tal-ħardwer.
- Qabel tqabbad il-vultaġġ, kun żgur li l-kavers/il-bibien ikunu magħluqa. Żommhom magħluqa matul l-operazzjoni.
- Twettaqx xogħol fuq it-tagħmir jew il-kejbils meta dan ikun mixgħul:
  - Aqla' s-sorsi kollha ta' vultaġġ inkluż vultaġġi ta' kontroll estern, u l-mutur jew il-ġeneratur.
  - Kun żgur li l-konnessjoni mill-ġdid ma tkunx possibbli (illokkja u qiegħed tikketta).
  - Stenna għal ħames minuti għall-iskariku tal-kapasiters.
  - Qis li l-installazzjoni tkun skonnettjata minn mal-elettriku.
  - Installa ert temporanju kif mitlub mir-regolamenti lokali.
  - Oqgħod attent minn superfiċji jaħarqu. Xi partijiet jibqgħu jaħarqu għal xi ħin wara l-iskonnessjoni tal-potenza ta' input.

TWISSIJA! Sikurezza fl-istartjar u t-tħaddim:
- Żomm il-kavers/il-bibien magħluqa waqt it-tħaddim u meta l-vultaġġ ikun imqabbad.
- Qabel tattiva kwalunkwe funzjoni ta' risettjar ta' ħsara awtomatika, kun żgur li ma tista' sseħħ l-ebda sitwazzjoni perikoluża.
- Qabel tibdel kwalunkwe limitu ta' operazzjoni, kun żgur li ma tista' sseħħ l-ebda sitwazzjoni perikoluża.
- DC drives bil-pannell tal-kontroll: Jekk tibdel il-post ta 'kontroll li Remote, inti ma tistax twaqqaf l-sewqan DC bil-ċavetta waqfien fuq il-pannell tal-kontroll.

Nederlands / Veiligheidsvoorschriften

Dit document bevat veiligheidsinstructies. Volg de instructies. Als u ze negeert, kan dit leiden tot ernstig of dodelijk letsel of schade aan de apparatuur. Zie de product-handleidingen voor verdere instructies en informatie.

WAARSCHUWING! Veiligheid bij installatie en onderhoud:
- Controleer de gegevens op het typeplaatje. Installeer de omvormer/dc regelaar convertor/ inverter (later omvormer) niet indien het elektrisch vermogensnetwerk, motor/generator, of omgevingscondities niet overeenkomen met de omvormergegevens.
- Volg de regels voor kabelselectie (afscherming, temperatuur, spanning, stroom, etc.). Zie de hardwarehandleiding.
- Beveilig de omvormer met de zekeringen die gespecificeerd zijn in de hardwarehandleiding.
- Als u geen gekwalificeerd elektricien bent, mag u geen elektrisch installatie- of onderhoudswerk verrichten.
- Gebruik de vereiste persoonlijke beschermingsmiddelen.
- Houd de omvormer in de verpakking totdat u deze installeert. Bescherm de omvormer na het uitpakken tegen stof, afvalresten en vocht.
- Zorg er voor dat de vloer onder de omvormer en de wand achter de omvormer onbrandbaar is.
- Til de omvormer op met een hijstoestel. Gebruik de hijsogen/-stangen.
- Kantel de omvormer niet. Deze kantelt makkelijk om.
- Aard de omvormer. Sluit de PE-klem van de omvormer aan op de veiligheidsaarde.
- Zet de kabelaansluitingen vast tot het aanhaalmoment dat gespecificeerd is in de hardwarehandleiding.
- Let op dat de kastdeuren/kappen gesloten zijn voordat u de spanning aansluit. Houd deze gesloten tijdens bedrijf.
- Werk niet aan de apparatuur of bekabeling wanneer deze onder spanning staat:
  - Ontkoppel alle spanningsbronnen inclusief externe besturingsspanningen, en motor of generator.
  - Zorg er voor dat heraansluiten niet mogelijk is (vergrendel en markeer).
  - Wacht 5 minuten zodat condensatoren zich kunnen ontladen.
  - Meet dat er geen spanning op de installatie staat.
  - Installeer tijdelijke aarding zoals vereist volgens plaatselijke regelgeving.
  - Pas op voor hete oppervlakken. Sommige onderdelen blijven nadat de voeding ontkoppelt is nog een tijdje heet.

WAARSCHUWING! Veiligheid bij opstarten en bedrijf:
- Houd de kappen/deuren gesloten tijdens bedrijf en wanneer de spanning aangesloten is.
- Zorg er voor, voordat u enige automatische foutreset-functie activeert, dat er geen gevaarlijke situaties kunnen ontstaan.
- Zorg er voor, voordat u enige bedrijfslimiet wijzigt, dat er geen gevaarlijke situaties kunnen ontstaan.
- Omvormers met het bedieningspaneel: Indien u de bedieningsplaats wijzigt naar Afstand, kunt u de omvormer niet stoppen met de stoptoets op het bedieningspaneel.

Język polski / Instrukcje bezpieczeństwa

Ten dokument zawiera instrukcje bezpieczeństwa. Należy przestrzegać tych instrukcji. Nieprzestrzeganie instrukcji może skutkować obrażeniami, śmiercią lub uszkodzeniem urządzenia. Więcej instrukcji i informacji zawierają podręczniki produktu.

OSTRZEŻENIE! Bezpieczeństwo podczas instalacji i konserwacji:
- Sprawdzić dane na tabliczce znamionowej. Nie instalować przemiennika częstotliwości/ przemiennika/inwertera (dalej nazywanego przemiennikiem), jeśli sieć elektroenergetyczna, silnik/generator lub warunki środowiskowe nie są zgodne z danymi przemiennika.
- Przestrzegać reguł dotyczących doboru kabli (ekranowanie, temperatura, napięcie, prąd itp.). Więcej informacji znajduje się w podręczniku użytkownika.
- Chronić przemiennik, używając bezpieczników wskazanych w podręczniku użytkownika.
- Wszelkie elektryczne prace instalacyjne i konserwacyjne powinny być wykonywane tylko przez wykwalifikowanych elektryków.
- Używać wymaganego osobistego wyposażenia ochronnego.
- Do czasu montażu przechowywać przemiennik w opakowaniu. Po rozpakowaniu chronić przemiennik przed kurzem, pyłem i wilgocią.
- Upewnić się, że podłoga pod i ściana za przemiennikiem są niepalne.
- Przemiennik podnosić tylko za pomocą podnośnika. Używać uchwytów/ prętów do podnoszenia.
- Nie przechylać przemiennika. Łatwo się wywraca.
- Uziemić przemiennik. Podłączyć zacisk PE przemiennika do przewodu uziomowego.
- Dokręcić połączenia kablowe z momentem podanym w podręczniku użytkownika.
- Przed podłączeniem zasilania upewnić się, że pokrywy/drzwi są zamknięte. Nie otwierać ich podczas pracy urządzenia.
- Nie pracować przy wyposażeniu ani okablowaniu, gdy jest pod napięciem:
  - Odłączyć wszystkie źródła zasilania, w tym zewnętrznego zasilania sterowania, oraz silnik lub generator.
  - Upewnić się, że ponowne podłączenie nie jest możliwe (zablokować i wywiesić ostrzeżenie).
  - Zaczekać 5 minut na rozładowanie kondensatorów.
  - Zmierzyć, czy instalacja nie jest zasilana.
  - Zainstalować tymczasowe uziemienie zgodnie z wymogami przepisów lokalnych.
  - Uważać na gorące powierzchnie. Niektóre części pozostają gorące przez dłuższy czas od odłączenia zasilania.

OSTRZEŻENIE! Bezpieczeństwo podczas rozruchu i eksploatacji:
- Pilnować, by pokrywy/drzwi były zamknięte podczas pracy i gdy podłączone jest zasilanie.
- Przed aktywacją jakichkolwiek funkcji automatycznego resetowania błędów upewnić się, że nie spowoduje to wystąpienia niebezpiecznych sytuacji.
- Przed zmianą jakichkolwiek limitów pracy upewnić się, że nie spowoduje to wystąpienia niebezpiecznych sytuacji.
- Przemienniki z panelem sterowania: Jeśli lokalizacja sterowania zostanie zmieniona na zdalną, nie można zatrzymać przemiennika przyciskiem zatrzymywania na panelu sterowania.

Português / Instruções de segurança

Este documento contém instruções de segurança. Cumpra estas instruções. Se ignorar as mesmas, podem ocorrer ferimentos ou morte, ou danos no equipamento. Consulte os manuais de produto para mais instruções e informações.

AVISO! Segurança na instalação e manutenção
- Verifique os dados na etiqueta de designação de tipo. Não instale o acionamento/ conversor/inversor se a rede de alimentação elétrica, motor/gerador, ou as condições ambientais não correspondem aos dados do conversor.
- Cumpra as regras de seleção de cabos (blindagem, temperatura, tensão, corrente, etc.). Consulte o manual de hardware.
- Proteja o conversor com os fusíveis especificados no manual de hardware.
- Se não é um eletricista qualificado, não execute qualquer trabalho de instalação elétrica ou de manutenção.
- Use o equipamento de proteção individual requerido.
- Mantenha o conversor na embalagem até ser instalado. Depois de o desembalar, proteja o conversor da poeira, resíduos e humidade.
- Certifique-se de que o piso, bem como a parede atrás do conversor, não são inflamáveis.
- Levante o conversor com um dispositivo de elevação. Use os olhais/ barras de elevação.
- Não incline o conversor. O mesmo pode tombar com facilidade.
- Ligue à terra o conversor. Ligue o terminal PE do conversor à terra de proteção.
- Aperte as ligações dos cabos no binário especificado no manual de hardware.
- Antes de ligar a tensão, certifique-se de que as tampas/portas estão fechadas. Mantenha as mesmas fechadas durante a operação.
- Não trabalhe no equipamento ou cablagem quanto está alimentado:
  - Desligue todas as fontes de tensão, incluindo as tensões de controlo externas, e o motor ou gerador.
  - Certifique-se de que não é possível ocorrer uma ligação (bloquear e marcar).
  - Espere durante 5 minutos para que os condensadores descarreguem.
  - Verifique que a aplicação está desligada.
  - Instale uma ligação à terra temporária como requerido pelas normas locais.
  - Cuidado com as superfícies quentes. Algumas partes permanecem quentes durante algum tempo depois de ter sido desligada a alimentação de entrada.

AVISO! Segurança no arranque e operação:
- Mantenha as tampas/portas fechadas durante a operação e quando a tensão é desligada.
- Antes de ativar qualquer função automática de rearme de falhas, confirme se não podem ocorrer situações perigosas.
- Antes de alterar qualquer limite operacional, confirme se não podem ocorrer situações perigosas.
- Conversores com a consola de programação. Se alterar o local de controlo para Remoto, não pode parar o conversor com a tecla stop na consola de programação.

Română / Instrucţiuni de siguranţă

Acest document conţine instrucţiuni de siguranţă. Respectaţi instrucţiunile. În caz contrar, se pot produce răniri, decese sau avarierea echipamentului. Consultaţi manualele produsului pentru alte instrucţiuni şi informaţii.

AVERTIZARE! Siguranţa la instalare şi întreţinere:
- Consultaţi datele de pe eticheta de indicare a tipului. Nu instalaţi unitatea de acţionare/convertorul/invertorul (denumit în continuare „convertor") dacă reţeaua de alimentare electrică, motorul/generatorul sau condiţiile ambiante nu corespund datelor convertorului.
- Respectaţi regulile de selectare a cablurilor (ecranare, temperatură, tensiune, putere etc.). Consultaţi manualul hardware.
- Protejaţi convertorul cu ajutorul siguranţelor specificate în manualul hardware.
- Dacă nu sunteţi electrician calificat, nu efectuaţi lucrări electrice sau de întreţinere.
- Utilizaţi echipamentul individual de protecţie necesar.
- Păstraţi convertorul în ambalaj până la instalare. După scoaterea din ambalaj, protejaţi convertorul de praf, resturi şi umezeală.
- Asiguraţi-vă că podeaua de dedesubtul convertorului şi peretele din spatele său nu sunt inflamabile.
- Ridicaţi convertorul cu ajutorul unui dispozitiv de ridicare. Folosiţi ocheţii/barele de ridicare.
- Nu înclinaţi convertorul. Acesta se răstoarnă foarte uşor.
- Împământaţi convertorul. Conectaţi borna PE a convertorului la împământarea de protecţie.
- Strângeţi conexiunile cablurilor la cuplul specificat în manualul hardware.
- Înainte de a conecta tensiunea, asiguraţi-vă că sunt închise capacele/ uşile. Menţineţi-le închise în timpul funcţionării.
- Nu interveniţi asupra echipamentului sau cablurilor când se află sub tensiune:
  - Deconectaţi toate sursele de tensiune, inclusiv tensiunile de comandă externe, precum şi cele de la motor sau generator.
  - Asiguraţi-vă că nu este posibilă reconectarea (blocare şi etichetare de siguranţă).
  - Aşteptaţi 5 minute să se descarce condensatorii.
  - Asiguraţi-vă prin măsurare că instalaţia este scoasă de sub tensiune.
  - Instalaţi împământare temporară, conform reglementărilor locale.
  - Aveţi grijă la suprafeţele încinse. Unele componente rămân încinse câtva timp după deconectarea alimentării.

AVERTIZARE! Siguranţa la pornire şi în funcţionare:
Menţineţi capacele/uşileânchise în timpul funcţionării şi când tensiunea este conectată.
Înainte de a activa funcţiile de resetare automată a erorilor, asiguraţi-vă că nu pot apărea situaţii periculoase.
Înainte de a modifica o limită de funcţionare, asiguraţi-vă că nu pot apărea situaţii periculoase.
Convertoare cu panou de comandă: Dacă modificaţi punctul de comandă pe Extern, nu puteţi opri convertorul folosind cheia de oprire de pe panoul de comandă.

Русский / Указания по технике безопасности

Этот документ содержит инструкции по технике безопасности. Неукоснительно следуйте данным указаниям. Несоблюдение данных указаний может повлечь за собой получение травм людьми вплоть до летального исхода, а также повреждение оборудования. Дополнительные инструкции и информация приведены в руководствах по изделиям.

ПРЕДУПРЕЖДЕНИЕ! Техника безопасности при монтаже и техническом обслуживании:
- Проверьте данные на табличке с обозначением типа. Не устанавливайте привод/преобразователь/инвертор (далее: преобразователь), если сеть электропитания, двигатель/генератор или условия окружающей среды не соответствуют данным, приведенным для преобразователя.
- Соблюдайте правила выбора кабелей (экранирование, температура, напряжение, ток и т. д.). См. руководство по монтажу и эксплуатации.
- Защитите преобразователь предохранителями, указанными в руководстве по монтажу и эксплуатации.
- Работы по монтажу или техническому обслуживанию электротехнического оборудования должны выполняться только квалифицированным электриком.
- Используйте надлежащие средства индивидуальной защиты.
- Храните преобразователь в упаковке до момента монтажа. После распаковки защитите преобразователь от пыли, мусора и влаги.
- Убедитесь, что пол под преобразователем и стена позади него выполнены из негорючего материала.
- Поднимайте преобразователь с помощью подъемного устройства. Используйте подъемные проушины/траверсы.
- Не наклоняйте преобразователь. Он легко переворачивается.
- Заземлите преобразователь. Подсоедините клемму защитного заземления (PE) преобразователя к соответствующей шине.
- Затяните кабельные соединения с крутящим моментом, указанным в руководстве по по монтажу и эксплуатации.
- Перед подачей напряжения убедитесь, что крышки/двери закрыты. Не открывайте их во время работы.
- Не работайте на оборудовании или кабелях, находящихся под напряжением:
  - Отсоедините все источники напряжения, включая внешние управляющие напряжения, а также двигатель или генератор.
  - Убедитесь, что повторное подключение невозможно (заблокируйте и установите предупреждающие таблички).
  - Подождите пять минут, чтобы разрядились конденсаторы.
  - Убедитесь, что оборудование полностью обесточено.
  - Организуйте временное заземление в соответствии с местными нормами и правилами.
  - Берегитесь горячих поверхностей. Определенные компоненты остаются горячими в течение некоторого времени после отсоединения входного питания.

ПРЕДУПРЕЖДЕНИЕ! Техника безопасности при запуске и эксплуатации:
- Крышки/двери должны быть закрыты во время работы и когда подано напряжение.
- Перед включением функций автоматического сброса отказов убедитесь, что это не приведет к возникновению опасной ситуации.
- Перед изменением любого рабочего значения убедитесь, что это не приведет к возникновению опасной ситуации.
- Преобразователи с панелью управления: при выборе дистанционного управления привод будет невозможно остановить с помощью кнопки останова на панели управления.

Slovenčina / Bezpečnostné pokyny

V tomto dokumente sú uvedené bezpečnostné pokyny. Dodržiavajte tieto pokyny. Ak ich budete ignorovať, hrozí zranenie, usmrtenie alebo poškodenie zariadenia. Ďalšie pokyny a informácie nájdete v návodoch pre konkrétne produkty.

UPOZORNENIE! Bezpečnosť pri inštalácii a údržbe:
- Skontrolujte údaje na štítku s typovým označením. Neinštalujte pohon/ menič (ďalej len menič), ak sa elektrická napájacia sieť, motor/ generátor alebo podmienky prostredia nezhodujú s údajmi meniča.
- Dodržiavajte pravidlá na výber káblov (tienenie, teplota, napätie, prúd atď.). Pozrite si návod k hardvéru.
- Zabezpečte menič pomocou poistiek uvedených v návode k hardvéru.
- Ak nie ste kvalifikovaný elektrikár, nevykonávajte elektrickú inštaláciu ani údržbové práce.
- Používajte potrebné osobné ochranné prostriedky.
- Menič nechajte až do momentu inštalácie v originálnom balení. Po vybalení chráňte menič pred prachom, nečistotami a vlhkosťou.
- Uistite sa, že podklad pod meničom a stena za ním sú nehorľavé.
- Zdvíhajte menič pomocou zdvíhacieho zariadenia. Použite zdvíhacie oká/tyče.
- Menič nenakláňajte. Môže sa ľahko prevrátiť.
- Menič uzemnite. Pripojte uzemňovaciu svorku meniča na ochranné uzemnenie.
- Upevnite pripojenia káblov doťahovacím momentom uvedeným v návode k hardvéru.
- Pred pripojením napätia sa uistite, že kryty/dvierka sú zatvorené. Počas prevádzky ich nechajte zatvorené.
- Na zariadení alebo kabeláži nepracujte, keď sú pod napätím:
  - Odpojte všetky zdroje napätia vrátane externého riadiaceho napätia, motora a generátora.
  - Uistite sa, že nie je možné ich opätovné zapojenie (zámok a štítok).
  - Počkajte 5 minút, kým sa kondenzátory vybijú.
  - Odmerajte, či je inštalácia bez napájania.
  - Nainštalujte dočasné uzemnenie v súlade s miestnymi predpismi.
  - Zabráňte kontaktu s horúcimi povrchmi. Niektoré diely sú po odpojení vstupného napájania nejaký čas horúce.

UPOZORNENIE! Bezpečnosť pri spúšťaní a prevádzkovaní:
- Počas prevádzky a pri pripojenom napätí nechajte kryty/dvierka zatvorené.
- Pred aktiváciou akýchkoľvek automatických funkcií na vynulovanie porúch sa uistite, že nemôže nastať žiadna nebezpečná situácia.
- Pred zmenou akejkoľvek prevádzkovej medze sa uistite, že nemôže nastať žiadna nebezpečná situácia.
- Meniče s ovládacím panelom: Ak zmeníte miesto ovládania na diaľkové, nebude možné vypnúť menič pomocou tlačidla stop na ovládacom paneli.

Slovensko / Varnostna navodila

Ta dokument vsebuje varnostna navodila. Upoštevajte navodila. Če jih ne boste upoštevali, lahko pride do škode na opremi, poškodb ali celo smrti. Za dodatna navodila in informacije glejte priročnike za izdelke.

OPOZORILO! Varnost pri montaži in vzdrževanju:
- Preverite podatke na tipski oznaki. Ne montirajte pogona/pretvornika/ inverterja (v nadaljevanju pretvornik), če se električno omrežje, motor/ generator ali okoljski pogoji ne ujemajo s podatki pretvornika.
- Upoštevajte pravila za izbiro kablov (zaščita, temperatura, napetost, tok itn.). Glejte priročnik za uporabo opreme.
- Zaščitite pretvornik z varovalkami, navedenimi v priročniku za uporabo opreme.
- Če niste usposobljen električar, ne izvajajte elektroinštalacijskih ali vzdrževalnih del.
- Nosite zahtevano osebno zaščitno opremo.
- Embalaže pretvornika ne odpirajte, dokler ga ne nameravate montirati. Po odstranitvi embalaže zaščitite pretvornik pred prahom, umazanijo in vlago.
- Poskrbite, da so tla in stena za pretvornikom nevnetljivi.
- Pretvornik dvignite z dvigalno napravo. Pri tem uporabite dvižna ušesca/drogove.
- Ne nagibajte pretvornika. Hitro se lahko prevrne.
- Ozemljite pretvornik. Priključite terminal pretvornika (PE) na zaščitno ozemljitev.
- Privijte kabelske povezave z navorom, ki je naveden v priročniku za uporabo opreme.
- Preden priključite napetost, poskrbite, da so pokrovi/vrata zaprta. Ti naj bodo med delovanjem zaprti.
- Če je oprema pod napetostjo, na njej ne izvajajte del.
  - Izklopite vse vire napetosti, vključno z zunanjo krmilno napetostjo in motorjem ali generatorjem.
  - Poskrbite, da ponovni vklop ni mogoč (izklopite in zaplombirajte).
  - Počakajte 5 minut, da se kondenzatorji razelektrijo.
  - Preverite, da med montažo ni pod napetostjo.
  - V skladu z lokalnimi predpisi namestite začasno ozemljitev.
  - Bodite pozorni na vroče površine. Nekateri delo ostanejo vroči še nekaj časa po izklopu vhodne moči.

OPOZORILO! Varnost pri zagonu in delovanju:
- Med delovanjem in po vklopu napetosti morajo biti pokrovi/vrata zaprti.
- Pred aktiviranjem kakršne koli funkcije za samodejno ponastavitev po napaki se morate prepričati, da ne more priti do nevarnih situacij.
- Pred spremembo vklopnih omejitev se morate prepričati, da ne more priti do nevarnih situacij.
- Pretvorniki z nadzorno ploščo: Če vrsto nadzora spremenite v Na daljavo (Remote), pretvornika ni mogoče zaustaviti s tipko za zaustavitev na nadzorni plošči.

Svenska / Säkerhetsinstruktioner

Detta dokument innehåller säkerhetsinstruktioner. Följ dessa instruktioner. Underlåtenhet att följa instruktionerna kan medföra personskador och dödsfall samt skador på utrustning. Se produkthandledningarna för fler instruktioner och mer information.

VARNING! Säkerhet vid installation och underhåll:
- Kontrollera data på märkskylten. Installera inte frekvensomriktaren/ växelriktaren (senare omriktare) om det elektriska matningsnätet, motorn/generatorn eller miljövillkoren inte överensstämmer med omriktarens data.
- Följ riktlinjerna för kabelval (skärm, temperatur, spänning, ström osv.). Se hårdvaruhandledningen.
- Skydda omriktaren med de säkringar som anges i hårdvaruhandledningen.
- Elektriskt installationsarbete och underhållsarbete får endast utföras av kvalificerad elektriker.
- Använd nödvändig skyddsutrustning.
- Förvara omriktaren i förpackningen tills den ska installeras. När omriktaren har packats upp, skydda den mot damm, småpartiklar och fukt.
- Var noga med att golvet under omriktaren och väggen där den ska installeras är av icke brännbart material.
- Lyft omriktaren med ett lyftdon. Använd lyftöglorna/-balkarna.
- Luta inte omriktaren. Den välter lätt.
- Jorda omriktaren. Anslut omriktarens jordanslutning till skyddsjordledaren.
- Dra åt kabelanslutningarna till de åtdragningsmoment som anges i hårdvaruhandledningen.
- Se till att kåpor är monterade och dörrar stängda innan spänning ansluts till omriktaren. Håll dem stängda under drift.
- Arbeta inte på utrustning eller kablar när omriktaren är spänningssatt:
  - Frånskilj alla spänningskällor inklusive extern styrspänning samt motor eller generator.
  - Se till att återanslutning inte är möjlig (bryt och lås).
  - Vänta i fem minuter tills kondensatorerna laddats ur.
  - Kontrollera att installationen är spänningslös.
  - Anbringa vid behov arbetsplatsjordning (enligt lokala föreskrifter)
  - Var försiktig med heta ytor. Vissa delar förblir heta en stund efter det att matningsspänningen har kopplats bort.

VARNING! För säker idrifttagning och drift:
- Behåll kåpor monterade och dörrar stängda under drift och när spänning är ansluten.
- Innan funktioner för automatisk felåterställning aktiveras, se till att inga farliga situationer kan uppstå.
- Innan driftgränser ändras, se till att inga farliga situationer kan uppstå.
- Omriktare med manöverpanel: Om styrplatsen ändras till Remote (Fjärr) kan omriktaren inte stoppas med stoppknappen på manöverpanelen.

Türkçe / Güvenlik talimatları

Bu belgede güvenlik talimatları yer almaktadır. Talimatlara uyun. Bunlara uymamanız halinde ölüm ya da yaralanma söz konusu olabilir veya ekipman zarar görebilir. Diğer talimatlar ve bilgiler için ürün kılavuzlarına bakın.

UYARI! Kurulum ve bakım güvenliği:
- Tip tanımı etiketindeki verileri kontrol edin. Elektrik şebekesi, motor/ jeneratör ya da çevre koşulları, konvertör verileriyle uyumlu değilse sürücüyü/konvertörü (DC Sürücü) kurmayın.
- Kablo seçim kurallarına uyun (blendaj, sıcaklık, gerilim, akım vb.). Donanım el kitabına bakın.
- Konvertörü, donanım el kitabında belirtilen sigortalarla koruyun.
- Kalifiye bir elektrikçi değilseniz elektrik kurulumu ve bakım işlerini yapmayın.
- Gerekli kişisel koruyucu ekipmanın kullanın.
- Kurulumu yapana kadar konvertörü paketinden çıkarmayın. Paketten çıkardıktan sonra konvertörü toz, kalıntı ve nemden koruyun.
- Konvertörün altındaki zeminin ve arkasındaki duvarın yanıcı olmadığından emin olun.
- Konvertörü bir kaldırma cihazıyla kaldırın. Kaldırma gözlerini/çubuklarını kullanın.
- Konvertörü yana yatırmayın. Kolayca devrilir.
- Konvertörü topraklayın. Konvertör PE terminalini koruyucu topraklamaya bağlayın.
- Kablo bağlantılarını donanım el kitabında belirtilen tork değerinde sıkın.
- Gerilim bağlantısını kurmadan önce, kapakların/kapıların kapalı olduğundan emin olun. Çalışma sırasında bunları kapalı tutun.
- Enerji altında ekipman ya da kablolar üzerinde çalışmayın:
  - Harici kontrol gerilimleri dahil tüm gerilim kaynaklarının ve motor veya jeneratörün bağlantısını kesin.
  - Yeniden bağlanmalarının mümkün olmadığından emin olun (kilitleme ve etiketleme).
  - Kondansatörlerin yükü boşaltmaları için 5 dakika bekleyin.
  - Tesisatta enerjinin bulunmadığını görmek için ölçüm yapın.
  - Yerel düzenlemelerce gerekli kılınan şekilde geçici topraklama kurun.
  - Sıcak yüzeylere dikkat edin. Giriş gücü bağlantısı kesildikten sonra bazı parçalar sıcak kalabilir.

UYARI! Devreye alma ve çalıştırma güvenliği:
- Çalışırken ve gerilim bağlıyken kapakları/kapıları kapalı tutun.
- Bir otomatik arıza sıfırlama fonksiyonunu etkinleştirmeden önce tehlikeli durumların oluşmayacağından emin olun.
- Bir çalışma limitini değiştirmeden önce, tehlikeli durumların oluşmayacağından emin olun.
- Kontrol panelli konvertörler: Kontrol konumunu, Remote (Uzaktan) olarak değiştirdiğinizde konvertörü kontrol paneli üzerinde yer alan stop (durdurma) butonuyla durduramazsınız.

中文 / 安全须知

本文件包含安全须知。请遵循这些指导。如果您忽略指导，可能会导致受伤、死亡或设备损坏。请参阅产品手册了解更多说明与信息。

警告！ 安装和维护中的安全：
- 检查产品型号标签上的技术数据。如果电网、电机/ 发电机或环境条件不符合直流调速器的技术数据，切勿安装传动/ 直流调速器/ 逆变器（下称直流调速器）。
- 遵循电缆选择规则（屏蔽、温度、电压、电流等）。请参阅硬件手册。
- 使用硬件手册中指定的熔断器保护直流调速器。
- 如果您不是具有资质的电工，请勿进行电气安装或维护工作。
- 使用相应的个人防护用品。
- 直到需要安装时方可从包装中取出直流调速器。拆封后，避免灰尘、碎屑和湿气侵入直流调速器
- 确保直流调速器下方的地面和后方的墙面是阻燃的。
- 用起重设备吊起直流调速器。使用吊耳/ 吊杆。
- 不要将直流调速器倾斜。否则很容易翻倒。
- 将直流调速器接地。将将直流调速器的保护接地（PE）端子连接到保护接地。
- 按照硬件手册中指定的力矩紧固电缆连接。
- 将电源接入前，请确保盖板/ 柜门关闭。运行时请保持其关闭。
- 切勿带电操作设备或电路：
  - 断开所有电源，包括外部控制电源、电机或发电机。
  - 确保不会重新连接电源（上锁和加标签）。
  - 等待 5 分钟，让电容放电。
  - 测量确定设备不带电。
  - 按当地规范要求安装临时接地。
  - 注意高温表面。部分部件在断开输入电源后仍会保持一段时间的高温。

警告！ 起动和运行中的安全：
- 当连接了电源时，在运行期间保持盖板/ 柜门关闭。
- 开启任何故障自动复位功能前，请确保不会危险。
- 修改任何运行限制前，请确保不会发生危险。
- 带有控制面板的直流调速器： 如果您将控制位置修改为 Remote （远程），则将无法使用控制面板上的停止按键来停止直流调速器。

Declaration of Conformity

(Directive 2011/65/EU [RoHS II Directive])

Document code: 3ADW000483R0101

We,

ABB Automation Products GmbH
Wallstadter Str. 59
D-68526 Ladenburg, Germany

herewith declare under our sole responsibility, that the product series

DCS 880 Converter Module

to which this declaration relates, do not contain substances which are restricted by Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in EEE (RoHS II).

This declaration is given based on and subject to declarations of RoHS II conformity received by ABB Automation Products GmbH from its component suppliers. ABB Automation Products GmbH shall not assume any liability whatsoever for RoHS II non-compliance of the product as a result of or in connection with any faulty or misleading declaration of RoHS II conformity issued to ABB Automation Products GmbH by a supplier.

The product referred in this Declaration of Conformity fulfil the relevant provisions of other European Union Directives which are notified in Single EU Declaration of Conformity, see 3ADW00484.

Year of CE-marking: 2016

Ladenburg, 21.10.2016

i.V.
Holger Kröhler
Local Division IMS Manager
Wallstadter Str.59, D-68526 Ladenburg

i.V. B. Schmalenberger
Bernd Schmalenberger
Local Operation Manager
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This declaration does not express any assurance of characteristics.
Installation and safety instructions mentioned in our installation manual must be obeyed.
The conformity was tested in a typical configuration.

Declaration of Conformity

(DIRECTIVE 2014/35/EU [Low Voltage Directive])
(DIRECTIVE 2014/30/EU [EMC Directive])

Document code: 3ADW000478R0101

We, ABB Automation Products GmbH
Wallstadter Str. 59
D-68526 Ladenburg, Germany

herewith declare under our sole responsibility, that the product series

DCS 880 Converter Module

to which this declaration relates, is a BDM / CDM according EN 61800-1:1998 [IEC 61800-1:1997].

It is in conformity with the Low Voltage Directive (LVD) 2014/35/EU and the EMC Directive (EMCD) 2014/30/EU, provided that the equipment is selected, installed and used according our instructions.

Following European standards have been applied:

- EN 61800-5-1:2007 [IEC 61800-5-1:2007]
  Adjustable speed electrical power drive systems –
  Part 5-1: Safety requirements – Electrical, thermal and energy

- EN 61800-3:2004 + A1:2012 [IEC 61800-3:2004 + A1:2011]
  Adjustable speed electrical power drive systems –
  Part 3: EMC requirements and specific test methods

Year of CE-marking: 2016

This declaration is based on Technical Construction File, code 3ADT061070. It is provided, that instructions for installation, operation and maintenance are according the product documentation.
The product referred in this Declaration of Conformity fulfil the relevant provisions of other European Union Directives which are notified in Single EU Declaration of Conformity, see 3ADW000484.

Ladenburg, 21.10.2016

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DCS Familie

DCS550-S modules
The compact drive for machinery application

20 ... 1,000 A_{DC}
0 ... 610 V_{DC}
230 ... 525 V_{AC}
IP00

- 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}
IP00

- Safe torque off (STO) built in as standard
- Compact and robust
- Single drives, 20 A to 5,200 A, up to 1,600 V_{DC}
- 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

20 ... 20,000 A_{DC}
0 ... 1,500 V_{DC}
230 ... 1,200 V_{AC}
IP21 – IP54

- 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 61131-3 programming

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