DCS880

Hardware Manual
DCS880 Drives (20 to 5200 A)

Additional for safety modules

This document is valid in addition to the DCS880-hardware manual and is relevant to the functional safety modules FSPS-21, FSO-21 and FSE-31. The below mentioned changes will be implemented with the next revision of hardware manual.

List of manuals

General	Publication number	EN	DE	IT	ES	FR	PL	ZH	RU
DCS880 Quick guide	3ADW000545	EN	DE	IT	ES	FR			
Safety instructions all languages	3ADW000481	EN	DE	IT	ES	FR	PL	ZH	RU
DCS880 Manual set 	DCS880 Manual set	EN							
DCS880 Units									
DCS880 Flyer	3ADW000475	EN	DE	IT	ES	FR		ZH	RU
DCS880 Technical catalog	3ADW000465	EN	DE	IT	ES	FR	PL	ZH	RU
DCS880 Hardware manual	3ADW000462	EN	DE	IT	ES	FR	PL		RU
DCS880 Firmware manual	3ADW000474	EN	DE	IT	ES	FR	PL		RU
DCS880 Service manual	3ADW000488	EN							
DCS880 Hardparallel manual (on request only)	3ADW000530	EN							
DCS880 12-pulse manual	3ADW000533	EN							
Instructions for mounting the SDCS-CMA-2	3ADW000396	EN							
ACS-AP-x assistant control panels user's manual	3AUA0000085685	EN							
DCS Thyristor power converter – Technical guide	3ADW000163	EN							
Functional safety									
Supplement for functional safety	3ADW000452	EN		IT	ES	FR	PL		RU
Functional safety for enclosed converter									
+Q957 Prevention of unexpected Start Up	3ADW000504	EN							
+Q951 Emergency stop, category 0 with MC opening	3ADW000505	EN							
+Q952 Emergency stop, category 1 with MC opening	3ADW000506	EN							
+Q963 Emergency stop, category 0 without MC opening	3ADW000507	EN							
+Q964 Emergency stop, category 1 without MC opening	3ADW000508	EN							
Enclosed converter									
DCS880-A Installation manual	3ADW000627	EN							
DCS800-A +S880 Enclosed converters, flyer	3ADW000523	EN							
Rebuild system									
DCS880-R Selection, Installation and Start-Up Manual for Rebuild kits	3ADW000599	EN							
Door mounting kits									
DPMP-01 mounting platform for ACS-AP control panel	3AUA0000100140	EN							
DPMP-02 mounting platform for ACS-AP control panel	3AUA0000136205	EN							
Serial communication									
FCAN-01 CANopen adapter module	3AFE68615500	EN	DE						
FDNA-01 DeviceNet™ adapter module	3AFE68573360	EN							
FECA-01 EtherCAT adapter module	3AUA0000068940	EN	DE		ES				
FENA-11/-21 Ethernet adapter module	3AUA0000093568	EN						ZH	
FEPL-02 Ethernet POWERLINK adapter module	3AUA0000123527	EN	DE						
FPBA-01 PROFIBUS DP adapter module	3AFE68573271	EN	DE				PL	ZH	
FSCA-01 RS-485 adapter module	3AUA0000109533	EN						ZH	
FDCO-01/02 DDCS communication modules	3AUA0000114058	EN							
FSPS-21 PROFIsafe safety functions module	3AXD50000158638	EN							
FSO-21 Safety functions module	3AXD50000015614	EN							
Tool and maintenance manuals and guides									
Drive composer PC tool	3AUA0000094606	EN							
Drive application programming (IEC61131-3) manual	3AUA0000127808	EN							
Adaptive programming, Application guide	3AXD50000028574	EN							
NETA-21 remote monitoring tool	3AUA0000096939	EN							
NETA-21 remote monitoring tool guide	3AUA0000096881	EN							
DDCS branching unit NDBU-95 user's manual	3BFE64285513	EN							
Extension modules									
FIO-11 Analog extension module	3AFE68784930	EN	DE	IT					
FIO-01 Digital extension module	3AFE68784921	EN	DE	IT					
FAIO-01 Analog extension module	3AUA0000124968	EN	DE						
FDIO-01 Digital extension module	3AUA0000124966	EN							
FEN-01 TTL encoder interface	3AFE68784603	EN	DE	IT				ZH	
FEN-31 HTL encoder interface	3AUA0000031044	EN						ZH	
FEA-03 F series extension adapter	3AUA0000115811	EN							
Ethernet tool network for ACS880 drives appl. guide	3AUA0000125635	EN							

Technical data

Chapter overview

The technical data contain the technical specifications of the converter, e.g. the ratings, sizes and technical requirements, provisions for fulfilling the requirements for CE and other markings and warranty policy.

Environmental Conditions

System connections

Voltage, 3-phase:	100 ... 1000 V acc. to IEC 60038
	100 ... 690 V acc. to UL508c
Voltage deviation:	IEC: -10 % +15 % continuous;
	±20 % short-time (0.5 to 30 cycles)
	UL: ±10 % continuous;
	±15 % short-time (0.5 to 30 cycles)
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

Please note: Special consideration must be taken for voltage deviation in regenerative mode.

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/EN 61800-5-1)	2

The drive must be installed in clean air according to enclosure classification. Cooling air must be clean, free from corrosive materials and electrically conductive dust.

Degree of protection

Converter module and options (line chokes, fuses, field exciters, etc.):	IEC: IP 00; acc. to IEC/EN 60529 UL: open type acc. to UL 508c
Overvoltage category (all inputs):	III acc. to IEC 60664-1
Protective class:	I acc. to IEC 61800-5-1

Site elevation

< 1000 m above M.S.L.:	100 %, without current reduction
> 1000 m above M.S.L.:	with current reduction
Permissible supply systems:	IT, TN, TT (neutral earthed) IT (corner earthed) TT (corner earthed)

Paint finish

Converter module:	Body RAL 7012 Cover RAL 9017 & RAL 9002

Note:

If a FSPS-21 or FSO-21 module is used, the atmospheric pressure of the module is limited to 70 to 106 kPa. For reference, see FSPS-21 manual.

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	
H5	75 dBA	77 dBA	0,3 mm, 2 - 9 Hz 0,1 g, 9 ... 200 Hz
H6	70 dBA	78 dBA	
H7	69 dBA	67 dBA	
H8	82 dBA	80 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

XSTO: Safe torque off

OUT1	For the drive to start, both connections (OUT1 to IN1 and IN2) must be closed. By default, the terminal block has wires to close the circuit. Removing the wires will block the firing pulses. Maximum wire size 2.5 mm^2 Current consumption per channel: 55 mA (continuous)
IN1	
IN2	
	Maximum cable length if using a safety module: The cable length from the FSPS-21 module to the XSTO terminals is limited to 3 m; for a FSO-21 module it is limited to 1 m.

DCS Family

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

DCS880-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 power controller

20 ... 4,200 A_{AC}
110 ... 990 V_{AC}
IP00

- Precise power control in industrial heating applications
- Two or three phase devices
- Power optimizer for peak load reduction
- Built on ABB's all-compatible drives architecture
- Intuitive control panel and PC tool with USB connection and start up assistant
- Application control programs and drive application programming with IEC 61131 programming

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