

DC DRIVES

# ABB industrial drives

DCS880 modules 10 Hp to 4000 Hp  
Catalog



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**Scalability.  
Reliability.  
Functional safety.  
DCS880 series.**

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# Creating a safer environment without compromising productivity

The all-compatible drives are designed to provide customers across industries and applications with unprecedented levels of compatibility and flexibility.

## DC drives

Our DCS880 industrial drives are customized to meet the precise needs of industries such as oil and gas, mining, metals, cement, non motoric, material handling, pulp and paper, rubber and plastics, marine, water and wastewater, food and beverage and automotive. They control a wide range of applications such as cranes, extruders, winches, winders, conveyors, mixers, millstands, centrifuges, test benches, elevators, electrolysis, kiln.



### DC motor control

ABB's motor control technology provides precise speed and torque control for all applications.



### Adaptive programming

Adaptive programming is ideal for creating simple control programs for various applications. It does not require expertise in programming and is offered as a standard in all-compatible drives.



### Removable memory unit

Stores all the firmware and parameter configurations in an easily replaceable and simple-to-install module.



### All typical DC configurations

DCS880 standard firmware supports all standard configurations present in DC drive applications such as 6-pulse, 12-pulse parallel, serial and serial sequential, 24-pulse, M3, M6 and field reversal.



### Remote monitoring

With a built-in web server, NETA-21 makes world-wide access easy for industry applications.



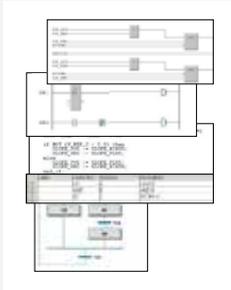
### Drive-to-drive link

Allows fast communication between drives including master-follower configurations as standard.



## Drive application programming

Customizable to meet the precise application needs based on IEC 61131-3. Uses the same programming environment and is also easy to integrate with other ABB components such as PLCs and HMIs.



## Safety

DCS880 offers safe torque off (STO) built in as a standard. It can be used in safety functions up to SIL3 /PLe enabling you to achieve every safety requirement.



## Drives going mobile

We offer several smartphone applications to ease and enhance the use of ABB drives. These tools provide a user-friendly and easy-to-use approach for the commissioning, servicing and use of ABB drives.



### Intuitive human-machine interface

User-friendly, high-contrast and high-resolution display enabling easy navigation in multiple languages. Allows USB and Bluetooth connection.



### Startup and maintenance tool

Drive composer PC tool for drive startup, configuration and daily use and process tuning. PC tool is connected to the drive via Ethernet or USB interface.



### Communication with all major automation networks

Fieldbus adapters enable connectivity with all major automation networks.



### Flexible product configurations

Drives are built to order with a wide range of options. Ready made cabinets with or without transformer are available up to 20 MW.

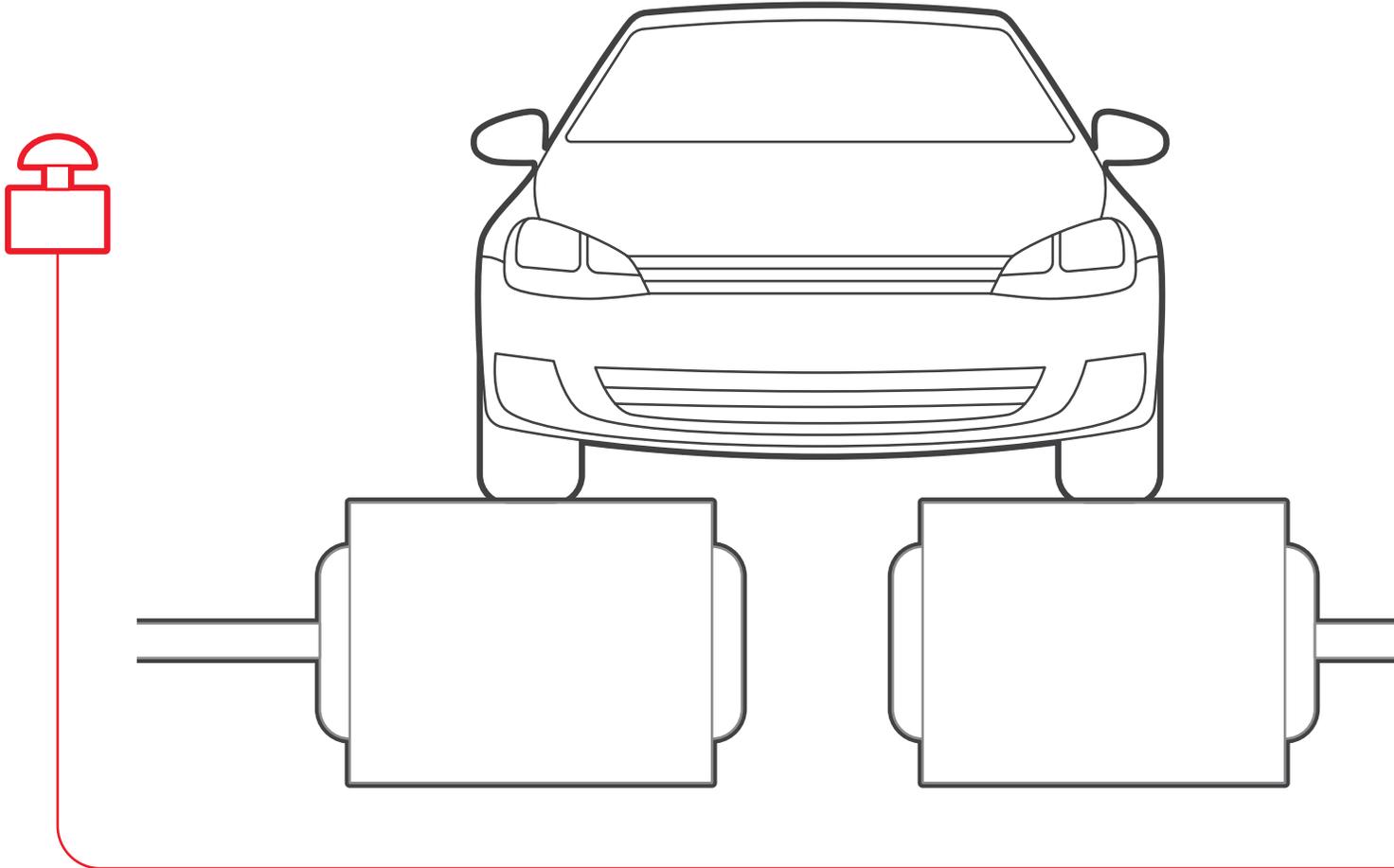


### Extended connectivity

In addition to the standard interfaces, the drive has three built-in slots for additional input/output extension modules and speed feedback interfaces.

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# What does all-compatible mean for you?



## **Business all-compatible**

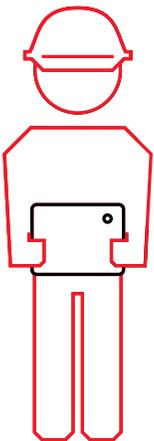
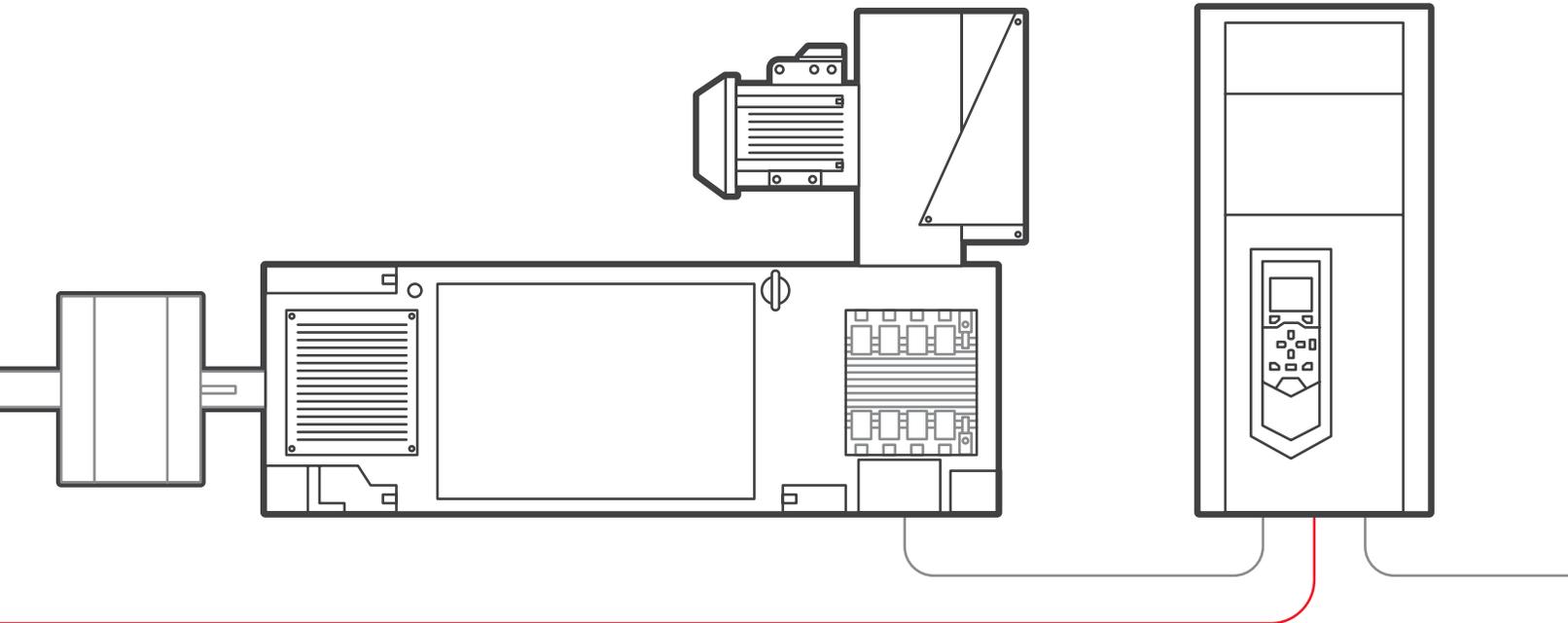
The all-compatible drives are not just equipment – they are part of your business strategy. Providing better control over your processes, our drives mean lower energy consumption, improved productivity, flexibility and ease of use. In addition to drives, we offer a wide range of products and services to support your business. With offices in over 90 countries and a global technical partner network, we are in a good position to offer technical advice and local support, worldwide.

### Process all-compatible

The drives are compatible with all kinds of processes. They control virtually any type of DC motor, provide extensive input / output connectivity and support all major fieldbus protocols. The drives cover a wide voltage and power range. Control performance is scalable from basic to demanding applications. The flexibility and scalability of the drives enable one drive platform to control virtually any application or process, making your drive selection easy.

### Environment all-compatible

There is increased demand for industries to reduce their impact on the environment. Our drives can help you reduce energy consumption in a wide range of applications. Keeping and upgrading of existing equipment reduces the impact a modernization of a production line would have in terms of use of materials and energy for production and transport of new equipment.



### Human all-compatible

All our drives share easy-to-use interfaces, saving you time during drive commissioning and maintenance. When you have learned it once, you can use it with all the drives in our all-compatible drives portfolio.

The control panel supports over 20 languages. With the PC tool, you get extensive drive monitoring capabilities and quick access to the drive settings. Integrated and certified safety features provide safety for machine operators.

To further improve the user experience, we have developed mobile apps that can be utilized in interacting with the drive. These apps give you an easy graphical interface for management, maintenance and service of your drives.

# Cost and time savings with Drive-based functional safety

DCS880 drives have a safe torque off (STO) function built in as a standard. With our DCS880 drive, you can achieve SIL3 /PLe safety level with certified safety functions modules. The safety module is easy to integrate inside the drive and offers you several safety functions. Integration with automation systems is quick and reliable using PROFIsafe connectivity.

#### **STO built in**

The SIL3 /PLe certified Safe Torque OFF (STO) functions prevents the motor from generating torque. This allows machine interaction to be performed without complete shut down of the machine.

#### **Scalable safety with PROFIsafe and safety PLC**

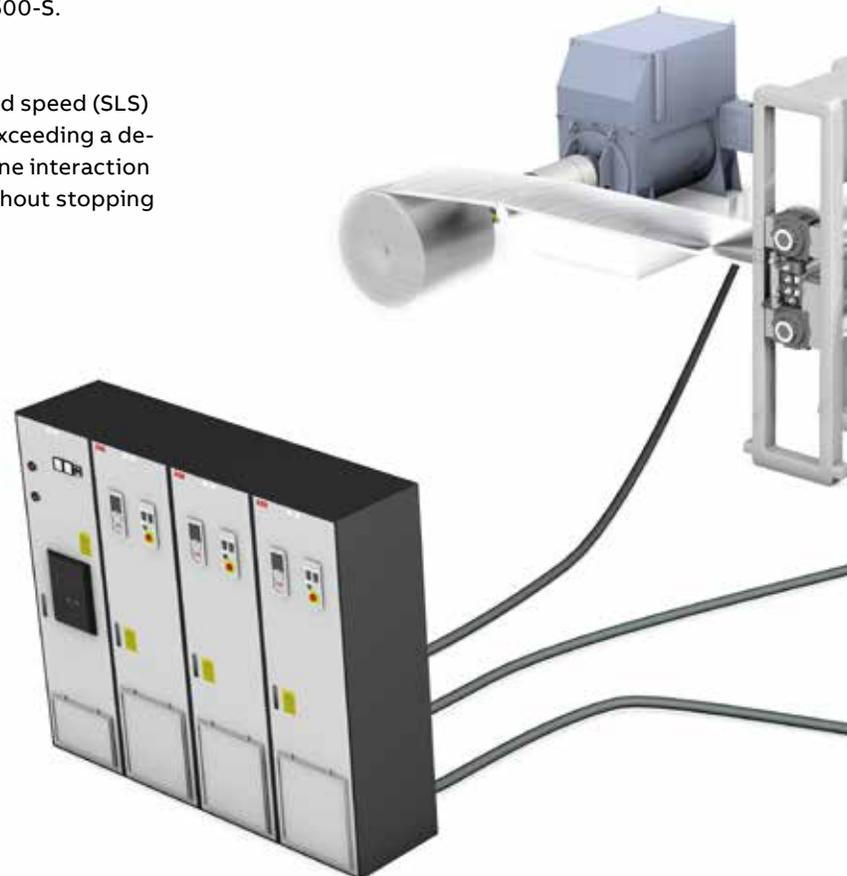
The safety functionality can be scaled to your needs. From a safety module integrated into a single relay to a complete safety system with a PROFIsafe and a safety PLC, eg, AC500-S.

#### **Safely limited speed**

The SIL3 /PLe certified safely-limited speed (SLS) function prevents the motor from exceeding a defined speed limit. This allows machine interaction to be performed at a safe speed without stopping the process.

#### **TÜV-certified safety design tool**

Functional safety design tool (FSDT-01) is used for machinery safety. It helps to increase the safety of users in the vicinity of machines. You can perform functional safety modeling, design, calculations and verification for machine functional safety.



# Flexibility to serve every application

## with Drive-based adaptive and application programming

The built in PLC capability of the DCS880 provides you a possibility to customize the drive for your application without the cost of extra hardware. As programming is based on the IEC 61131-3 standard used in AC500 PLCs and by many other PLC vendors, you do not need to re-train your staff. By decentralizing your machine control closer to the process, you achieve better control performance.

### **Adaptive programming**

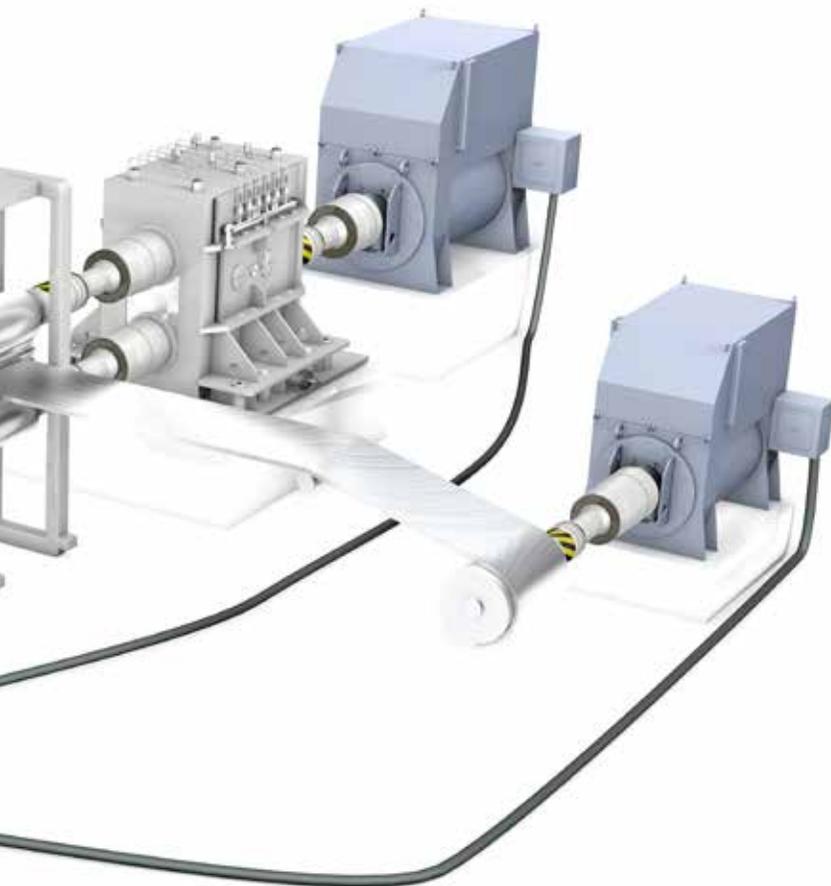
Adaptive programming is ideal for creating simple control programs for various applications. By graphical drag and drop programming it does not require expertise in programming and is offered as standard in all-compatible drives.

### **Application programming**

Application programming makes it possible for system integrators and machine builders to integrate their desired functionality and know-how directly into the drive. It utilizes standard IEC 61131-3 programming used by many PLCs like the AC500. This means that programs can be easily moved from the drive to a PLC and extended into a larger system.

### **Automation Builder**

Automation Builder is an integrated software suite for automation engineering, which makes programming industry devices such as drives, PLCs, robots and human-machine interfaces (HMIs) easy using one integrated engineering suite. Automation Builder is used both for engineering devices and entire automation projects.



# Type code



## Type code:

DCS880 - S01 - 0680 - 05 X 0 + L508

### Product family

DCS880 = DC converter

### Product type

S0 = Standard converter module  
 R0 = Rebuild kit  
 A0 = Enclosed converter  
 E0 = Panel solution

### Bridge type

1 = Single bridge (2-Q)  
 2 = 2 anti-parallel bridges (4-Q)

### Rated DC current

0680 = e.g. 680 A DC (IP00)

### Rated AC voltage

05 = 100 ... 525 V<sub>AC</sub>  
 06 = 270 ... 600 V<sub>AC</sub>  
 07 = 315 ... 690 V<sub>AC</sub>  
 08 = 360 ... 800 V<sub>AC</sub>  
 10 = 450 ... 990 V<sub>AC</sub>  
 12 = 540 ... 1200 V<sub>AC</sub>

### Power connection (H8)

X = Standard (H1 ... H7)  
 R = Right side (H8)  
 L = Left side (H8)

### Revision Code

0 = 1st generation

### Plug-in options

External options

## Environmental conditions

System connection	
Voltage, 3-phase:	100 to 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 to 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 supply unit, etc.): IP 00	
Enclosed converters:	IP 20/21/31/41/54
Paint finish	
Converter module:	Body RAL 7012; Cover RAL 9017 & RAL 9002

### Sound pressure level

Size	Sound pressure level L <sub>p</sub> (1 m distance)		Vibraciones as module
	as module	enclosed conv.	
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		0.3 mm, 2 ... 9 Hz 0.1 g, 9 ... 200 Hz
H6	73 dBA	78 dBA	
H7	75 dBA	73 dBA	
H8	82 dBA	80 dBA	

### Regulatory compliance

The converter module and enclosed converter components are designed for use in industrial environments. In EEA countries, the components fulfil the requirements of the EU directives, see table below.

European union directive	Manufacturer's assurance	Harmonized standards Converter module
<b>Machinery Directive</b>		
2006/42/EC	Declaration of Conformity	EN61800-5-2:2017 EN62061:2005 + Cor.:2010 + A1:2013 + A2:2015 EN13849-1:2015 EN60204-1:2006 + A1:2009
<b>Low Voltage Directive</b>		
2014/35/EU	Declaration of Conformity	EN61800-5-1:2007
<b>EMC Directive</b>		
2014/30/EU	Declaration of Conformity (Provided that all installation instructions concerning cable selection, cabling and EMC filters or dedicated transformer are followed.)	EN61800-3:2004 + A1:2012
<b>RoHS Directive</b>		
2011/65/EU	Declaration of Conformity	

Environmental limit values	
Permissible cooling air temperatur.	
• at converter module air inlet:	0 to +55°C
with rated DC current:	0 to +40°C
with different DC current:	+30 to +55°C
• Options:	0 to +40°C
Relative humidity (at 5 ... +40°C):	5 to 95 %, no condensation
Relative humidity (at 0 ... +5°C):	5 to 50 %, no condensation
Change of the ambient temp.:	< 0.5°C / minute
Storage temperature:	-40 to +55°C
Transport temperature:	-40 to +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

### 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 Available for converter modules certificate no. E196914 UL 508 C available for field exciter units. Types with UL mark: • see UL Listing <a href="http://www.ul.com/">www.ul.com/</a> certificate no. E196914 • or on request	UL/CSA types: on request

# DCS880 power converter modules

## General

The power converter modules DCS880-S have the protection class IP00 and are to be mounted in a cubicle or finger protected area. There are different sizes (H1 - H8), graduated in terms of current and voltage ranges.

All units are equipped with the DCS880 Control Panel. It can be snapped into place on the power converter module or installed in the switchgear cubicle door by means of a mounting kit.

Accessories such as external fuses, line reactors etc. are also available, to complete the drive system.

All converter modules up to 525 V and 1000 A (H1 ... H4) are equipped with field exciters.

The power section of the converters is available as single (2-Q) bridge or double (4-Q) bridge. 4-Q drives are required for regenerative braking. 4-Q drives can be built by:

- Double (4-Q) armature bridge or
- Single (2-Q) armature bridge plus a double (4-Q) field converter bridge

The bridge type has an influence on the maximum output voltage of the converter. See table below.

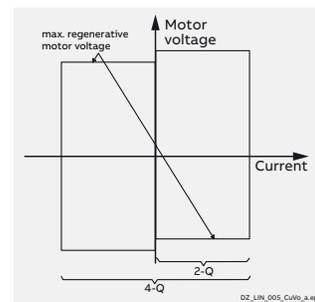
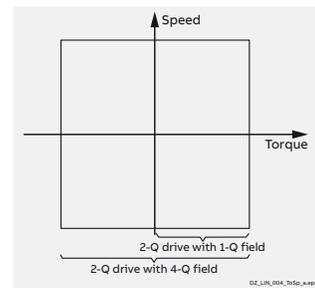
System connection voltage $U_{VN}$ [V]	DC voltage (recommended)		Ideal DC voltage without load	Recommended DCS880 voltage class
	$U_{dmax\ 2-Q}$ [V]	$U_{dmax\ 4-Q}$ [V]	$U_{dio}$ [V]	
230	265	240	310	04
380	440	395	510	04
400	465	415	540	04
415	480	430	560	04
440	510	455	590	05
460	530	480	620	05
480	555	500	640	05
500	580	520	670	05
525	610	545	700	05
575	670	600	770	06
600	700	625	810	06
660	765	685	890	07
690	800	720	930	07
800	915	820	1060	08
990	1160	1040	1350	10
1200	1380	1235	1590	12

## Reference variables

The voltage characteristics are shown in the table beside. The DC voltage characteristics have been calculated using the following assumptions:

- $U_{VN}$  = rated input terminal voltage, 3-phase
- Voltage tolerance  $\pm 10\%$
- Internal voltage drop approx. 1 %
- If a deviation or a voltage drop has to be taken into consideration in compliance with IEC and VDE standards, the output voltage or the output current must be reduced by the actual factor according to the table on the right.

If armature voltages higher than recommended are requested, please check carefully, whether your system is still working under safe conditions. The maximum output voltage of a 4-Q drive can be increased up to the level of  $U_{dmax\ 2-Q}$ . Thus the torque reversal from motoring mode to generating mode increases up to 300 ms. This lowers the dynamics of the drive and is only recommended for non-dynamic applications (e.g. E-Stop function).



## Ratings, types and voltages

### Current ratings, dimensions and weights

Unit size	2-Q rated Current DCS880-S01 $I_{dc}$ [A]	4-Q rated Current DCS880-S02 $I_{dc}$ [A]								Internal field current [A]	Weight [lb]	Dimensions	
			500/525	600	690	800	990	1190			h x w x d [inch]	h x w x d [mm]	
H1	20	25	●						6	24.25	14.56 x 10.63 x 8.46	370 x 270 x 215	
	45	50	●						12				
	65	75	●						12				
	90	100	●						12				
H2	135	150	●						18	35.27	14.56 x 10.63 x 10.67	370 x 270 x 271	
	180	200	●						18				
	225	250	●						18				
	270	300	●						18				
H3	290	320		●						55.11	18.11 x 10.63 x 12.48	460 x 270 x 317	
	315	350	●						25				
	405	450	●						25				
	470	520	●						25				
H4	590	650		●						83.77	25.39 x 10.63 x 13.86	645 x 270 x 352	
	610	680	●						30				
	740	820	●						30				
	900	1000	●						30				
H5	1190	1190	●						25 <sup>1)</sup>	121.25	29.53 x 10.63 x 14.65	750 x 270 x 372	
H6	900	900		●	●				25 <sup>1)</sup>	242.50	37.17 x 20.08 x 16.14	944 x 510 x 410	
	1200	1200	●						25 <sup>1)</sup>				
	1500	1500	●	●	●				25 <sup>1)</sup>				
	2000		●	●	●				25 <sup>1)</sup>				
		2000	●						25 <sup>1)</sup>				
H7	1900	1900				●				396.80	68.90 x 18.11 x 16.14	1750 x 460 x 410	
	2050	2050	●	●	●								
	2500	2500	●	●	●	●							
	3000	3000	●	●	●	●							
H8	2050	2050					●			694.45	68.90 x 29.92 x 22.44	1750 x 760 x 570	
	2600	2600					●	●					
	3300	3300	●	●	●	●	●	●					
	4000	4000	●	●	●	●	●	●					
	4800	4800		●	●	●							
	5200	5200	●										
										15.43	14.56 x 10.63 x 8.46	370 x 270 x 215	

<sup>1)</sup> FEX-425 internal field exciter as option. Included as standard option +S164.



# Current ratings

## 2-Q converters

The current ratings for the DCS880 with 50 Hz and 60 Hz supplies are given below. The symbols are described below the table. The characteristics are based on an ambient temperature of max. 40°C and an elevation of max. 1000 m a.s.l.

Type code Non-reversing (2-Q)	Frame Size	Input AC Current	Output DC Current Cont.	Normal Duty			Heavy Duty			Internal Field Current	DSL Included <sup>2)</sup>	Fan Voltage	Air Flow	Heat Dissipation	
				100% 10min	110% 60sec	Power	100% 15min	150% 60sec	Power						
				A <sub>rms</sub>	A <sub>DC</sub>	A <sub>ND</sub>	A <sub>ND</sub>	HP <sub>ND</sub>	A <sub>HD</sub>						A <sub>HD</sub>
<b>500 V</b>															
DCS880-S01-0020-05X0	H1	16	20	19	21	15	16	24	10	6	No-Fan	No-Fan	375		
DCS880-S01-0045-05X0		37	45	44	48	25	36	54	20	12		Internal	34	580	
DCS880-S01-0065-05X0		53	65	64	70	40	54	81	30	12		Internal	34	751	
DCS880-S01-0090-05X0		74	90	89	98	60	76	114	50	12		Internal	34	955	
DCS880-S01-0135-05X0	H2	111	135	133	146	75	105	157	60	18	Internal	100	1297		
DCS880-S01-0180-05X0		148	180	178	196	100	130	195	75	18		Internal	100	1911	
DCS880-S01-0225-05X0		185	225	222	244	125	170	255	100	18		Internal	100	2491	
DCS880-S01-0270-05X0		221	270	267	294	150	200	300	125	18		Internal	100	2798	
DCS880-S01-0315-05X0	H3	258	315	312	343	200	240	360	150	25	Internal	100	3105		
DCS880-S01-0405-05X0		332	405	393	432	250	310	465	175	25		Internal	100	3822	
DCS880-S01-0470-05X0		385	470	465	512	300	350	525	200	25		Internal	150	4504	
DCS880-S01-0610-05X0		500	610	595	655	400	455	682	250	30		230; 1-ph	230	6005	
DCS880-S01-0740-05X0	H4	607	740	733	806	500	570	855	300	30	230; 1-ph	230	7302		
DCS880-S01-0900-05X0		738	900	891	980	600	680	1020	400	30		230; 1-ph	250	9145	
DCS880-S01-1190-05X0+S164	H5	976	1190	1104	1214	700	860	1290	500	25 <sup>1)</sup>	•	230; 1-ph	540	17061	
DCS880-S01-1200-05X0+S164		984	1200	1104	1214	700	888	1332	600	25 <sup>1)</sup>		•	230; 1-ph	471	17402
DCS880-S01-1500-05X0+S164	H6	1230	1500	1485	1634	1000	1200	1800	800	25 <sup>1)</sup>	•	230; 1-ph	471	18084	
DCS880-S01-2000-05X0+S164		1640	2000	1887	2076	1100	1479	2219	900	25 <sup>1)</sup>		•	230; 1-ph	471	22520
DCS880-S01-2050-05X0	H7	1681	2050	1918	2110	1250	1550	2325	1000	-	•	400; 3-ph; 50Hz	883	27297	
DCS880-S01-2500-05X0		2050	2500	2411	2652	1500	1980	2970	1250	-		525; 3-ph; 50Hz	883	30709	
DCS880-S01-3000-05X0		2460	3000	2971	3268	1750	2350	3525	1500	-		460; 3-ph; 60Hz	883	37875	
DCS880-S01-3300-05L0/R0		2706	3300	3091	3400	2000	2416	3624	1500	-		•	2472	39922	
DCS880-S01-4000-05L0/R0	H8	3280	4000	3702	4072	2500	2977	4466	2000	-	•	400; 3-ph; 50Hz	2472	44358	
DCS880-S01-5200-05L0/R0		4264	5200	4833	5316	3250	3800	5700	2500	-		•	460; 3-ph; 60Hz	2472	64831
<b>600 V</b>															
DCS880-S01-0290-06X0	H3	238	290	287	316	200	240	360	200	-	•	Internal	100	3105	
DCS880-S01-0590-06X0	H4	484	590	587	646	500	470	705	300	-	•	230; 1-ph	230	6347	
DCS880-S01-0900-06X0+S164	H6	738	900	829	912	600	684	1026	500	25 <sup>1)</sup>	•	230; 1-ph	471	17402	
DCS880-S01-1500-06X0+S164		1230	1500	1485	1634	1100	1200	1800	900	25 <sup>1)</sup>		•	230; 1-ph	471	21496
DCS880-S01-2000-06X0+S164	H7	1640	2000	1944	2138	1500	1479	2219	1100	25 <sup>1)</sup>	•	230; 1-ph	471	27638	
DCS880-S01-2050-06X0		1681	2050	1902	2092	1500	1520	2280	1250	-		400; 3-ph; 50Hz	883	31392	
DCS880-S01-2500-06X0		2050	2500	2476	2724	1750	1940	2910	1500	-		525; 3-ph; 50Hz	883	34804	
DCS880-S01-3000-06X0		2460	3000	2971	3268	2250	2416	3624	1750	-		460; 3-ph; 60Hz	883	41628	
DCS880-S01-3300-06L0/R0	H8	2706	3300	3047	3352	2250	2530	3795	2000	-	•	400; 3-ph; 50Hz	2472	44699	
DCS880-S01-4000-06L0/R0		3280	4000	3781	4159	2500	3036	4554	2250	-		•	460; 3-ph; 60Hz	2472	51523
DCS880-S01-4800-06L0/R0		3936	4800	4449	4894	3500	3734	5601	3000	-		•	2472	66537	
<b>690 V</b>															
DCS880-S01-0900-07X0+S164	H6	738	900	829	912	700	684	1026	600	25 <sup>1)</sup>	•	230; 1-ph	471	17402	
DCS880-S01-1500-07X0+S164		1230	1500	1465	1612	1250	1200	1800	1000	25 <sup>1)</sup>		•	230; 1-ph	471	21496
DCS880-S01-2000-07X0+S164		1640	2000	1944	2138	1750	1479	2219	1250	25 <sup>1)</sup>		•	230; 1-ph	471	27638
DCS880-S01-2050-07X0	H7	1681	2050	1902	2092	1750	1520	2280	1250	-	•	400; 3-ph; 50Hz	883	31392	
DCS880-S01-2500-07X0		2050	2500	2476	2724	2250	1940	2910	1750	-		525; 3-ph; 50Hz	883	34804	
DCS880-S01-3000-07X0	H8	2460	3000	2971	3268	2500	2530	3795	2000	-	•	460; 3-ph; 60Hz	883	41628	
DCS880-S01-3300-07L0/R0		2706	3300	3047	3352	2750	2416	3624	2000	-		•	400; 3-ph; 50Hz	2472	44699
DCS880-S01-4000-07L0/R0		3280	4000	3781	4159	3500	3036	4554	2500	-		•	460; 3-ph; 60Hz	2472	51523
DCS880-S01-4800-07L0/R0		3936	4800	4449	4894	4000	3734	5601	3500	-		•	2472	66537	

Note:

- 1) Plus Code +S164 is to specify an FEX-425 internal field exciter as option; three-phase or single phase, Greater than 500 Vac use auto transformer, Greater than 600 Vac Use isol. Transformer
- 2) SDCS-DSL-Hxx board included as standard

Definitions:

- Normal Duty: 110% overload for 60 seconds; then <= 100% for 10 minutes
- Heavy Duty: 150% overload for 60 seconds; then <= 100% for 15 minutes

Available Upon Request;

- 360 - 800 Vac line voltage DATA AVAILABLE UPON REQUEST
- 450 - 990 Vac line voltage DATA AVAILABLE UPON REQUEST
- 540 - 1200 Vac line voltage DATA AVAILABLE UPON REQUEST

The ratings apply at an ambient temperature of 40 °C (104 °F)

2-Quadrant drives CANNOT decelerate a load or power motors in the reverse direction

The DCS880 Drive requires a line reactor or isolation transformer

# Current ratings

## 4-Q converters

The current ratings for the DCS880 with 50 Hz and 60 Hz supplies are given below. The symbols are described below the table. The characteristics are based on an ambient temperature of max. 40°C and an elevation of max. 1000 m a.s.l.

Type code Reversing (4-Q)	Frame Size	Input AC Current	Output DC Current Cont.	Normal Duty		Heavy Duty				Internal Field Current	DSL Included <sup>2)</sup>	Fan Voltage Vac	Air Flow ft <sup>3</sup> /min	Heat Dissipation BTU/hr
				100%	110%	Power	100%	150%	Power					
				10min	60sec	HP <sub>ND</sub>	15min	60sec	HP <sub>HD</sub>					
		A <sub>rms</sub>	A <sub>DC</sub>	A <sub>ND</sub>	A <sub>ND</sub>	HP <sub>ND</sub>	A <sub>HD</sub>	A <sub>HD</sub>	HP <sub>HD</sub>	A			60 Hz ft <sup>3</sup> /min	BTU/hr
<b>500 V</b>														
DCS880-S02-0025-05X0		21	25	24	26	15	22	33	10	6		No-Fan	No-Fan	375
DCS880-S02-0050-05X0	H1	41	50	49	54	30	38	57	25	12		Internal	34	580
DCS880-S02-0075-05X0		62	75	74	81	40	60	90	30	12		Internal	34	751
DCS880-S02-0100-05X0		82	100	97	107	60	85	127	50	12		Internal	34	955
DCS880-S02-0150-05X0		123	150	147	162	75	114	171	60	18		Internal	100	1297
DCS880-S02-0200-05X0	H2	164	200	196	216	125	145	217	75	18		Internal	100	1911
DCS880-S02-0250-05X0		205	250	244	268	150	185	277	100	18		Internal	100	2491
DCS880-S02-0300-05X0		246	300	292	321	175	225	337	125	18		Internal	100	2798
DCS880-S02-0350-05X0		287	350	340	374	200	275	412	150	25		Internal	100	3105
DCS880-S02-0450-05X0	H3	369	450	429	472	250	350	525	200	25		Internal	100	3822
DCS880-S02-0520-05X0		426	520	490	539	300	400	600	250	25		Internal	150	4504
DCS880-S02-0680-05X0		558	680	673	740	400	525	787	300	30		230; 1-ph	230	6005
DCS880-S02-0820-05X0	H4	672	820	812	893	500	630	945	400	30		230; 1-ph	230	7302
DCS880-S02-1000-05X0		820	1000	990	1089	600	750	1125	450	30		230; 1-ph	250	9145
DCS880-S02-1190-05X0+S164	H5	976	1190	1165	1291	700	860	1290	500	25 <sup>1)</sup>	•	230; 1-ph	540	17061
DCS880-S02-1200-05X0+S164		984	1200	1174	1291	700	888	1332	500	25 <sup>1)</sup>	•	230; 1-ph	471	17402
DCS880-S02-1500-05X0+S164	H6	1230	1500	1428	1571	900	1200	1800	800	25 <sup>1)</sup>	•	230; 1-ph	471	18084
DCS880-S02-2000-05X0+S164		1640	2000	1887	2076	1100	1479	2219	900	25 <sup>1)</sup>	•	230; 1-ph	471	22520
DCS880-S02-2050-05X0		1681	2050	1918	2110	1250	1550	2325	1000	-	•	400; 3-ph; 50Hz	883	27297
DCS880-S02-2500-05X0	H7	2050	2500	2439	2683	1500	2000	3000	1250	-	•	525; 3-ph; 50Hz	883	30709
DCS880-S02-3000-05X0		2460	3000	2835	3119	1750	2330	3495	1500	-	•	460; 3-ph; 60Hz	883	37875
DCS880-S02-3300-05L0/R0		2706	3300	3091	3400	2000	2416	3624	1500	-	•	400; 3-ph; 50Hz	2472	39922
DCS880-S02-4000-05L0/R0	H8	3280	4000	3702	4072	2250	2977	4466	1750	-	•	400; 3-ph; 50Hz	2472	44358
DCS880-S02-5200-05L0/R0		4264	5200	4833	5316	3000	3800	5700	2500	-	•	460; 3-ph; 60Hz	2472	64831
<b>600 V</b>														
DCS880-S02-0320-06X0	H3	262	320	307	338	250	256	384	200	-	•	Internal	100	3105
DCS880-S02-0650-06X0	H4	533	650	643	707	500	514	771	400	-	•	230; 1-ph	230	6347
DCS880-S02-0900-06X0+S164	H6	738	900	829	912	600	684	1026	500	25 <sup>1)</sup>	•	230; 1-ph	471	17402
DCS880-S02-1500-06X0+S164		1230	1500	1428	1571	1100	1200	1800	900	25 <sup>1)</sup>	•		471	21496
DCS880-S02-2050-06X0		1681	2050	1902	2092	1500	1520	2280	1100	-	•	400; 3-ph; 50Hz	883	31392
DCS880-S02-2500-06X0	H7	2050	2500	2422	2664	1750	1940	2910	1500	-	•	525; 3-ph; 50Hz	883	34804
DCS880-S02-3000-06X0		2460	3000	2810	3091	2000	2270	3405	1750	-	•	460; 3-ph; 60Hz	883	41628
DCS880-S02-3300-06L0/R0		2706	3300	3047	3352	2250	2416	3624	2000	-	•		2472	44699
DCS880-S02-4000-06L0/R0	H8	3280	4000	3781	4159	2500	3036	4554	2250	-	•	400; 3-ph; 50Hz	2472	51523
DCS880-S02-4800-06L0/R0		3936	4800	4449	4894	3000	3734	5601	2500	-	•	460; 3-ph; 60Hz	2472	66537
<b>690 V</b>														
DCS880-S02-0900-07X0+S164	H6	738	900	829	912	700	684	1026	600	25 <sup>1)</sup>	•	230; 1-ph	471	17402
DCS880-S02-1500-07X0+S164		1230	1500	1465	1612	1250	1200	1800	1100	25 <sup>1)</sup>	•		471	21496
DCS880-S02-2050-07X0		1681	2050	1902	2092	1750	1520	2280	1400	-	•	400; 3-ph; 50Hz	883	31392
DCS880-S02-2500-07X0	H7	2050	2500	2422	2664	2250	1940	2910	1750	-	•	525; 3-ph; 50Hz	883	34804
DCS880-S02-3000-07X0		2460	3000	2810	3091	2500	2270	3405	2000	-	•	460; 3-ph; 60Hz	883	41628
DCS880-S02-3300-07L0/R0		2706	3300	3047	3352	2800	2416	3624	2250	-	•		2472	44699
DCS880-S02-4000-07L0/R0	H8	3280	4000	3781	4159	3500	3036	4554	2800	-	•	400; 3-ph; 50Hz	2472	51523
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- 2) SDCS-DSL-Hxx board included as standard

Definitions:

Normal Duty: 110% overload for 60 seconds; then <= 100% for 10 minutes  
 Heavy Duty: 150% overload for 60 seconds; then <= 100% for 15 minutes

Available Upon Request;

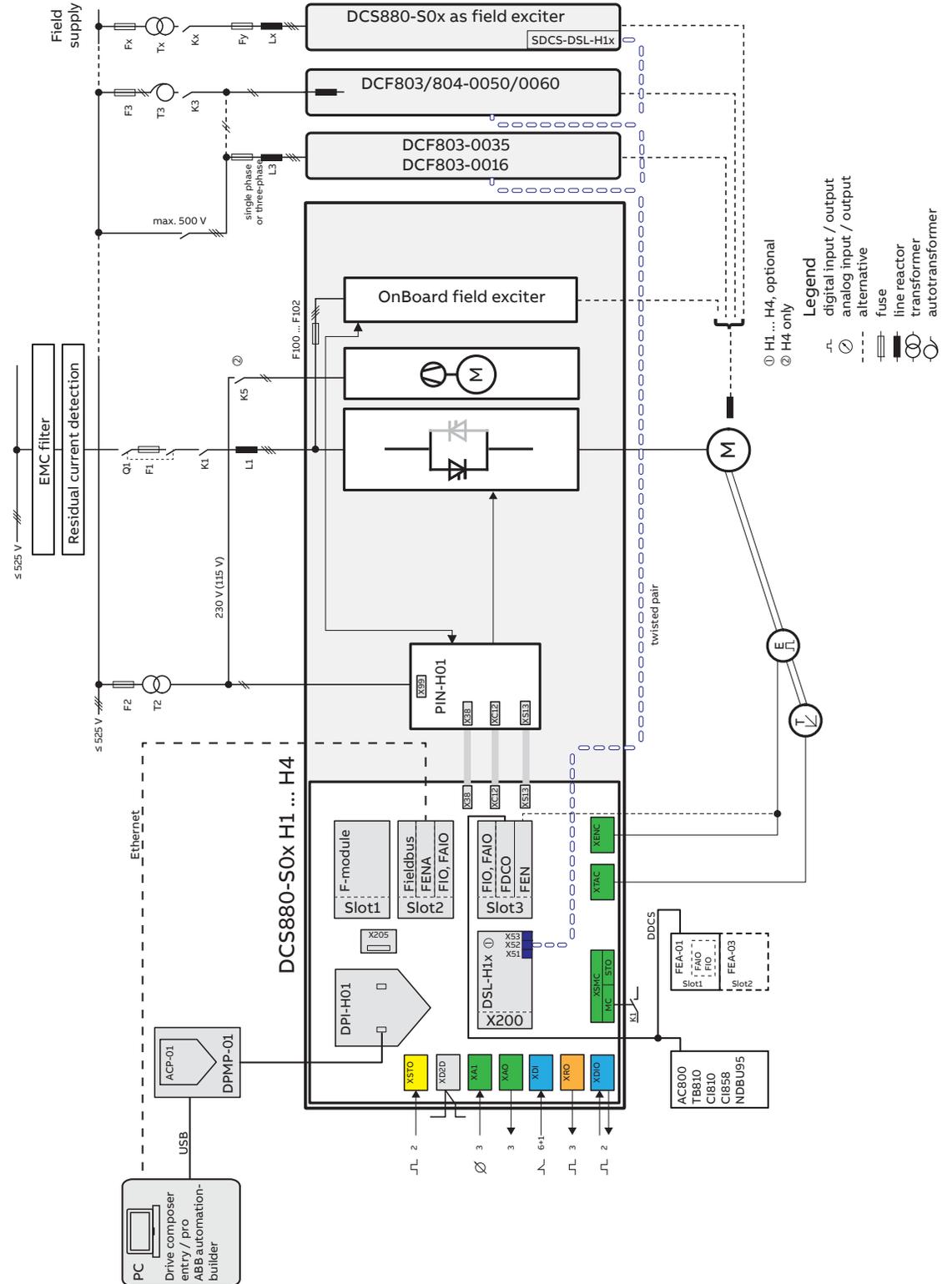
360 - 800 Vac line voltage DATA AVAILABLE UPON REQUEST  
 450 - 990 Vac line voltage DATA AVAILABLE UPON REQUEST  
 540 - 1200 Vac line voltage DATA AVAILABLE UPON REQUEST

The ratings apply at an ambient temperature of 40 °C (104 °F)

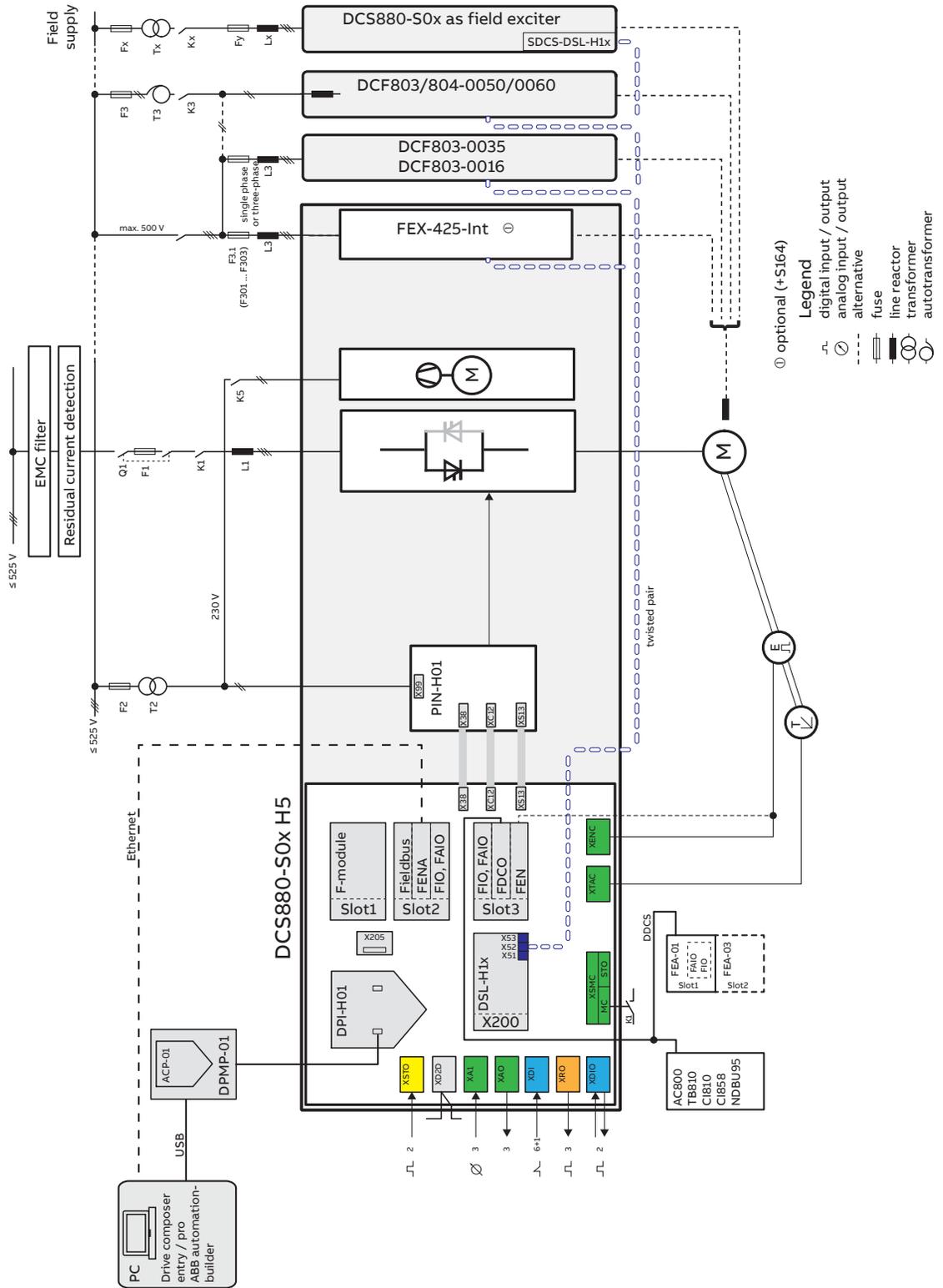
4-Quadrant drives CAN decelerate a load or power motors in the forward or reverse direction

The DCS880 Drive requires a line reactor or isolation transformer

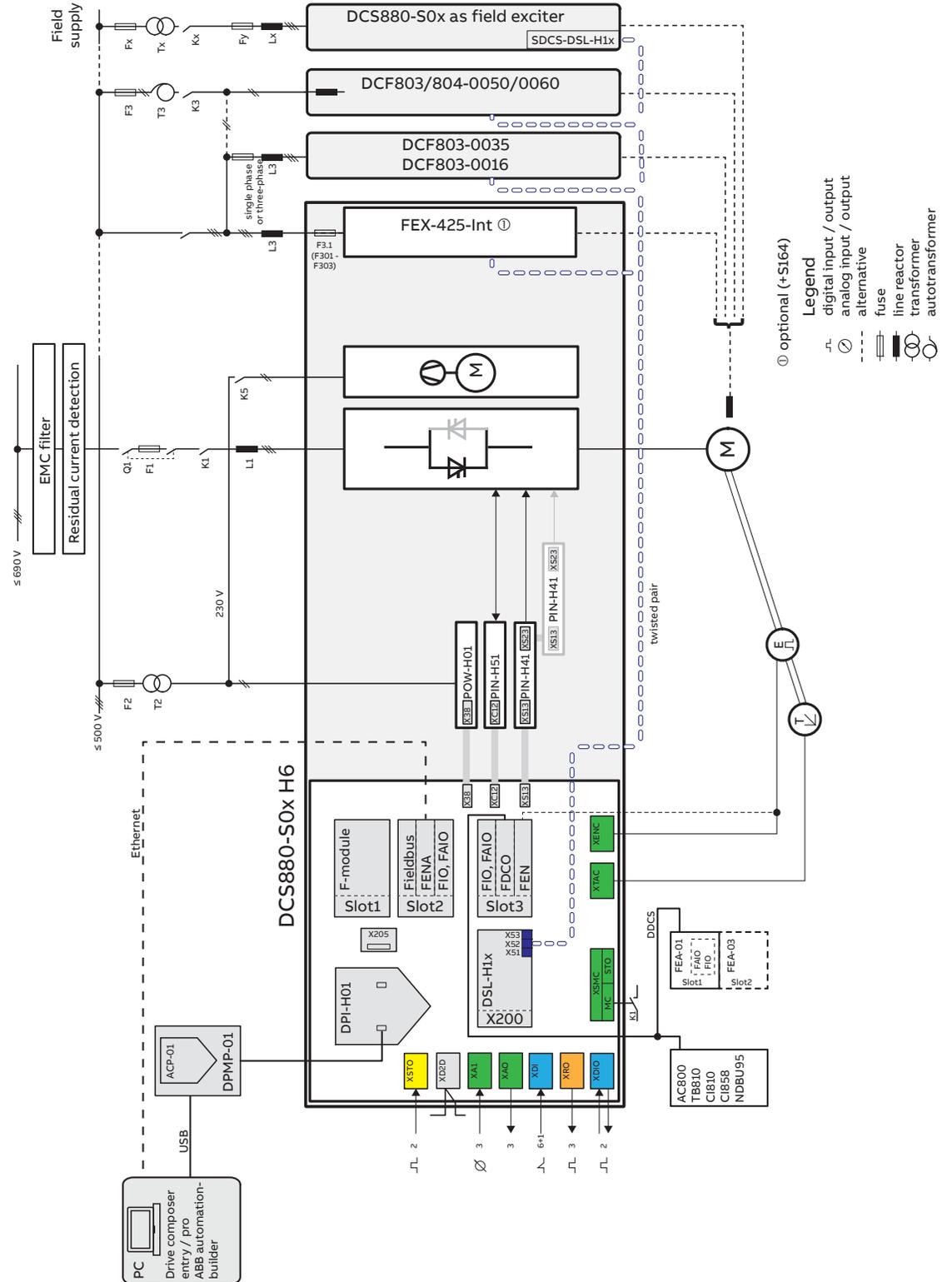
# Components overview of converter size H1 ... H4



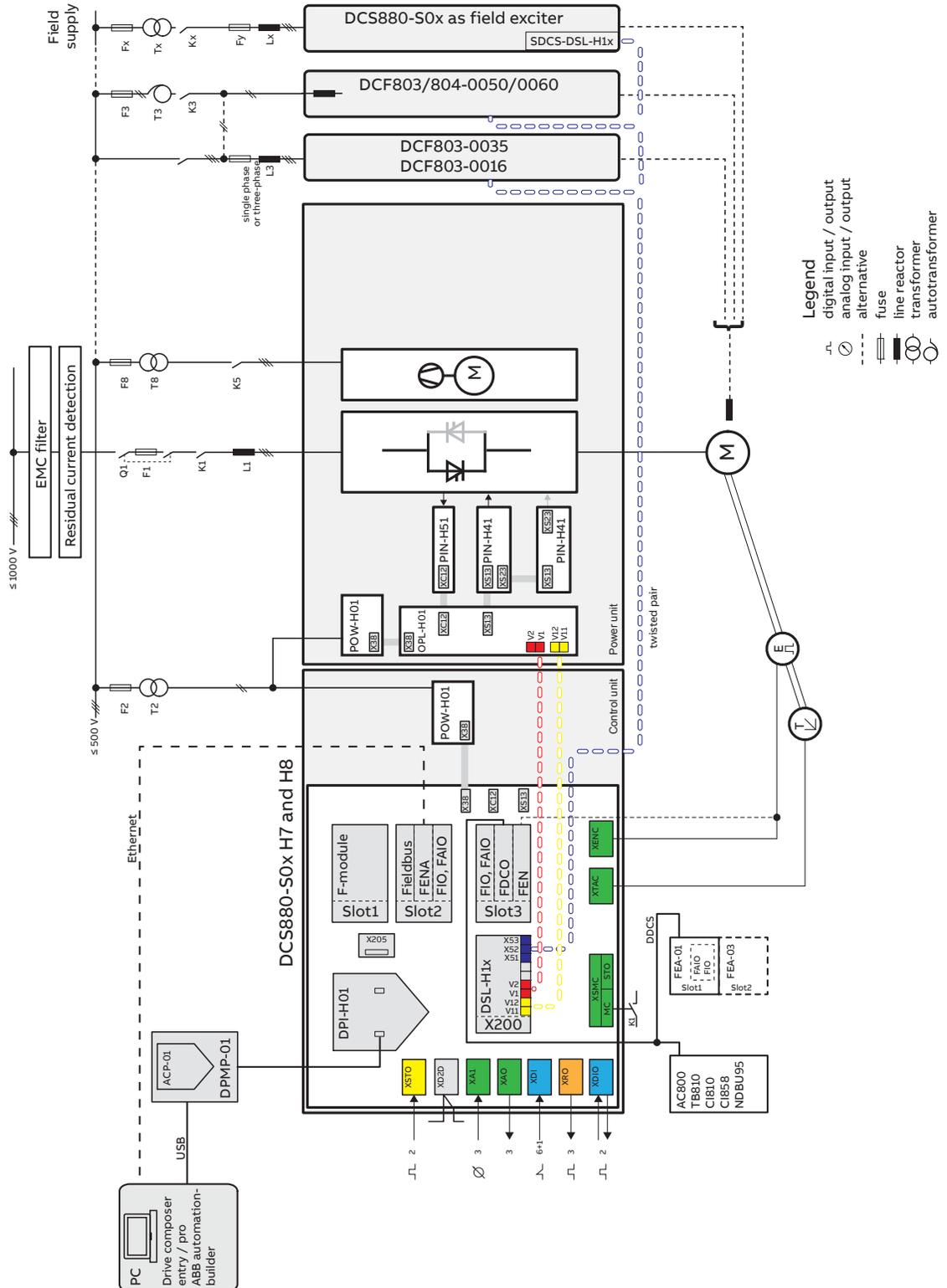
# Components overview of converter size H5



# Components overview of converter size H6



# Components overview of converter size H7 ... H8 with external control unit



# Standard interface and extensions for comprehensive connectivity

Example of a typical single drives input/output connection diagram.

## DCS880

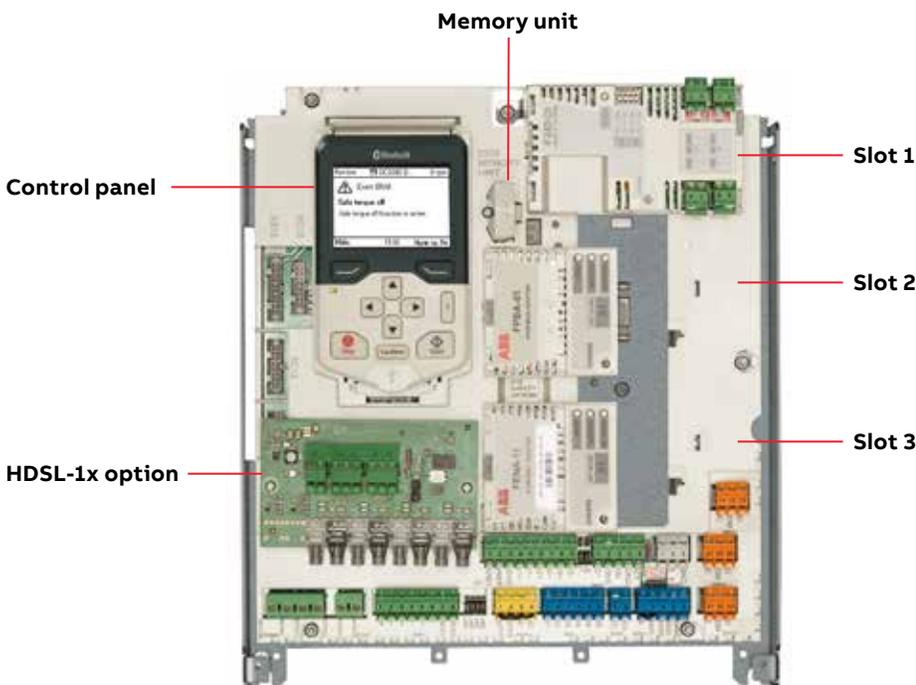
XAI Reference voltage and analog inputs		
1	+VREF	+10 V <sub>DC</sub>
2	-VREF	-10 V <sub>DC</sub>
3	AGND	Common ground (connected to frame)
4	AI1+	±10 V or 0 (4) ... 20 mA depending on J1
5	AI1-	
6	AI2+	±10 V or 0 (4) ... 20 mA depending on J2
7	AI2-	
8	AI3+	±10 V
9	AI3-	
J1	J1	AI1 current / voltage 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
2	A	(master-follower or embedded fieldbus)
3	BGND	Isolated ground 2
J3	J3	Drive-to-drive link termination switch
XRO1, XRO2, XRO3 Relay outputs		
11	NC	
12	COM	250 V <sub>AC</sub> / 30 V <sub>DC</sub>
13	NO	2 A
21	NC	
22	COM	250 V <sub>AC</sub> / 30 V <sub>DC</sub>
23	NO	2 A
31	NC	
32	COM	250 V <sub>AC</sub> / 30 V <sub>DC</sub>
33	NO	2 A
XD24 Digital interlock		
1	DIL	Digital interlock
2	+24VD	+24 V <sub>DC</sub> , 200 mA
3	DICOM	Isolated digital input ground for DI1 ... DI5 and DIL
4	+24VD	+24 V <sub>DC</sub> , 200 mA
5	DIOGND	Isolated digital input / output ground for DI6, DIO1, DIO2
J6	J6	Digital ground selection switch (DIOGND and DICOM)
XDIO Digital inputs / outputs		
1	DIO1	
2	DIO2	
XDI Digital inputs		
1	DI1	
2	DI2	
3	DI3	
4	DI4	
5	DI5	
6	DI6	
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 <sub>DC</sub> or 24 V <sub>DC</sub> 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 <sub>DC</sub> or 24 V <sub>DC</sub> selection jumper
J7A	J7A	Not in use for DCS880
J7B	J7B	
XTAC Analog tacho		
1	AITACH+	±8 ... 270 V <sub>DC</sub>
2	AITACH-	
XSMC Mains contactor		
1	MCCOM	250 V <sub>AC</sub> / 30 V <sub>DC</sub> Fixed output for the mains contactor
2	MCNO	2 A
3	STOCOM	250 V <sub>AC</sub> / 30 V <sub>DC</sub> Fixed output for safe torque off (STO) zero current monitor
4	STONO	2 A
XSTO Safe torque off (STO)		
1	OUT1	24 V <sub>DC</sub> 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

—  
01 Control unit  
SDCS-CON-H01

The DCS880 single drives offers a wide range of standard interfaces. In addition the drive has three option slots that can be used for extensions

including fieldbus adapter modules, input/output extension modules, feedback modules and a safety functions module.

Standard interface	Description
3 analog inputs (XAI)	Current input: -20 ... 20 mA, Voltage input: -10 ... 10 V, Resolution: 11 bit + sign bit
2 analog outputs (XAO)	0 to 20 mA, 0 ... 10 V
6 digital inputs (XDI)	Input type: Source / Sink (DI1 ... DI5), Source (DI6) DI6 (XDI:6) can alternatively be used as an input for a PTC thermistor.
Digital input interlock (DIIL)	Input type: Source / Sink
2 digital inputs/outputs (XDIO)	As input: 24 V logic level As output: Total output current from 24 V <sub>DC</sub> is limited to 200 mA Can be set as pulse train input and output
3 relay outputs (XRO1, XRO2, XRO3)	250 V <sub>AC</sub> / 30 V <sub>DC</sub> , 2 A
Safe torque off (XSTO)	For the drive to start, both connections must be closed
Main contactor (XSMC)	Main contactor control, fault shut-down circuit
Drive-to-drive link (XD2D)	Physical layer: EIA-485
Built-in Modbus	Physical layer: EIA-485
Assistant control panel/	Connector: RJ-45
PC tool connection	USB via control panel
Encoder	5 V / 24 V, Differential or single ended
Tacho	±8 ... 270 V <sub>DC</sub>



# Interface option modules

## Input/output extension modules for increased connectivity

Standard input and output can be extended by using optional analog and digital input/output extension modules. The modules are easily installed in the extension slots located on the control unit.

### Analog and digital input/output extension modules

Option	Option code	Connections
FIO-01	+L501	4×DIO (24 V), 2×RO
FIO-11	+L500	3×AI (mA/V), 1×AO (mA), 2×DIO
FAIO-01	+L525	2×AI(mA/V), 2×AO(mA)
FDIO-01	+L526	3×DI (24 V, 115 V, 230 V), 2×RO

## Speed feedback interfaces for precise process control

DCS880 drives can be connected to various feedback devices, such as HTL pulse encoder, TTL pulse encoder, absolute encoder and resolver. The optional feedback module is installed in the option slot on the drive. It is possible to use two feedback modules at the same time, either of the same type or different type.

### Feedback interface modules

Option	Option code	Connections
FEN-01	+L517	2 inputs (TTL pulse encoder), 1 output
FEN-11	+L518	2 inputs (SinCos absolute, TTL pulse encoder), 1 output
FEN-21	+L516	2 inputs (Resolver, TTL pulse encoder), 1 output
FEN-31	+L502	1 input (HTL pulse encoder), 1 output

## I/O option extension adapter

For additional I/O option slots the FEA-03 is suitable for this use. An analog and digital input/output extension and speed feedback interface can be installed on the FEA-03. Two extension modules can be installed on each I/O extension slot. The connection to the control unit is via an fiber optic link. The adapter can be mounted on an DIN rail (35 x 7.5 mm). Extension adapter requires FDCO option module

### I/O extension adapter

Option	Description	Ordering code
FEA-03	2 x F-type option extension slots	3ADT200067R0001

# Communication option modules

## DDCS communication option modules

The FDCO-0X optical DDCS communication options are add-on modules on the DCS880 industrial drives control unit. The modules include connectors for two fiber optic DDCS channels. The FDCO-0X modules make it possible to perform master-follower and AC800 M communication.

### DDCS communication option modules

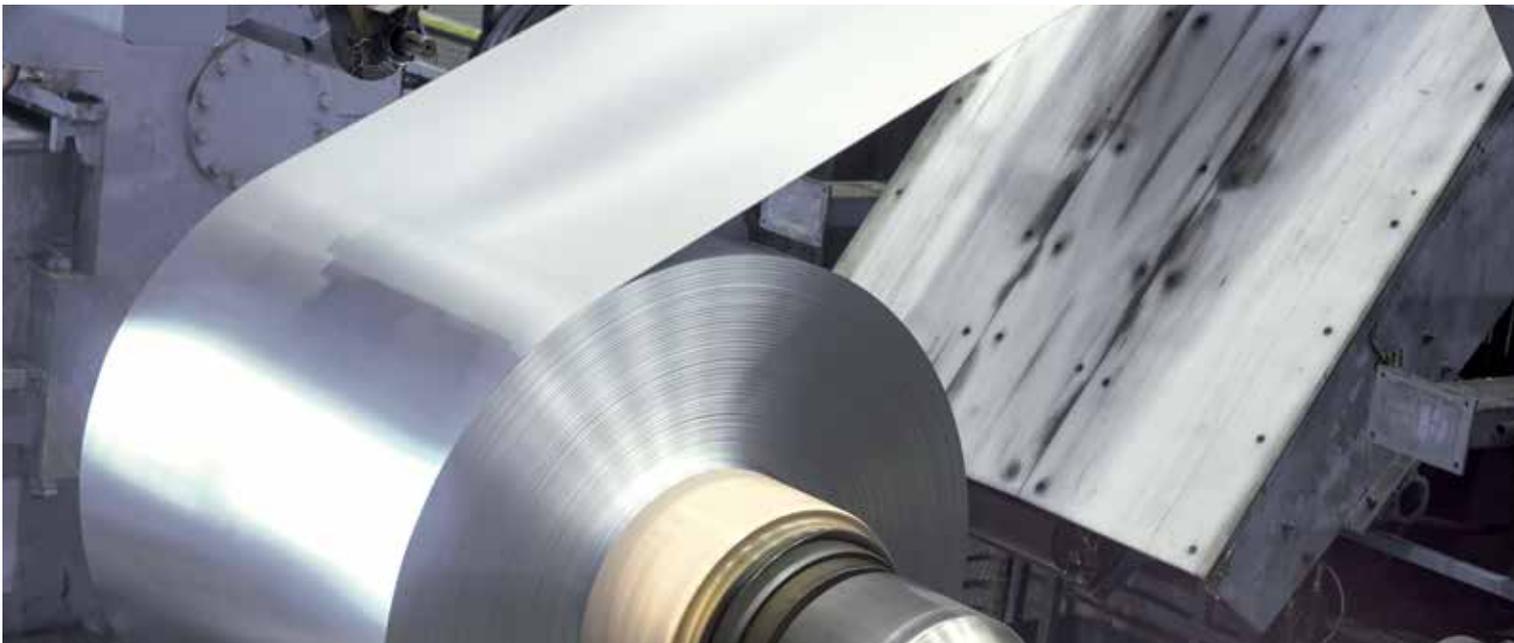
Option	Option code	Connections
FDCO-01	+L503	Optical DDCS (10 Mbd/10 Mbd)
FDCO-02	+L508	Optical DDCS (10 Mbd/5 Mbd)

## DCSLink communication option modules

The SDCS-DSL-Hxx DCSLink communication options are add-on modules on the DCS880 industrial drives control unit. The option include connectors for DCSLink communication as well as up to 4 fiber optics channels for optical power link communication. DCSLink is used to control external field exciters and also used for 12- and higher pulse operation as well as Master-follower applications. The optical power link communications enable remote control of a power unit as well as parallel operation of up to four power units.

### DCSLink communication option modules

Option	Option code	Connections
SDCS-DSL-H10	+S521	1 DCSLink channel, 0 channels optical power link
SDCS-DSL-H12	+S522	1 DCSLink channel, 2 channels optical power link
SDCS-DSL-H14	+S523	1 DCSLink channel, 4 channels optical power link



# Flexible connectivity to automation networks



—  
01 F-type fieldbus adapters  
—  
02 NETA-21

Our fieldbus adapter modules enable communication between drives, systems, devices and software. Our industrial drives are compatible with a wide range of fieldbus protocols.

The plug-in fieldbus adapter module can easily be mounted inside the drive. Other benefits include reduced wiring costs when compared with traditional input/output connections. Fieldbus systems are also less complex than conventional systems, resulting in less overall maintenance.

**Multiple fieldbus connections for flexible control**  
DCS880 supports two fieldbus connections simultaneously. The user has flexibility of choice for control modes by being able to select one protocol for control and one for monitoring. Also redundant fieldbus connection is possible.

## Drive monitoring

A set of drive parameters and/or actual signals, such as torque, speed, current, etc., can be selected for cyclic data transfer, providing fast data access.

## Drive diagnostics

Accurate and reliable diagnostic information can be obtained through the alarm, limit and fault words.

## Drive parameter handling

The Ethernet fieldbus adapter module allows users to build an Ethernet network for drive monitoring and diagnostic and parameter handling purposes.

## Remote monitoring access worldwide

The remote monitoring tool, NETA-21, gives easy access to the drive via the Internet or local Ethernet network. NETA-21 comes with a built-in web server. Through the interface the user can configure drive parameters, monitor drive log data and follow up load levels, run time and I/O data.

The user can access the remote monitoring tool web page using 3G modem from anywhere with a standard PC, tablet or a mobile phone. The remote monitoring tool allows personnel to monitor or perform maintenance for unmanned or manned applications and enables access for multiple users from several locations.

## Enhanced monitoring functions

Values of process variables or drives actual values can be logged to NETA-21's SD memory card or sent forward to a centralized database.

## Cabling

Substituting the large amount of conventional drive control cabling and wiring with a single cable reduces costs and increases system reliability and flexibility.

## Design

The use of fieldbus control reduces engineering time at installation due to the modular structure of the hardware and firmware and the simplicity of the connections to the drives.

## Commissioning and assembly

The modular machine configuration allows pre-commissioning of single machine sections and provides easy and fast assembly of the complete installation.

## Universal communication with ABB fieldbus adapters

The DCS880 supports the following fieldbus protocols:

### Fieldbus adapter modules

Option	Option code	Fieldbus protocol
FPBA-01	+K454	PROFIBUS DP, DPV0/DPV1
FCAN-01	+K457	CANopen®
FDNA-01	+K451	DeviceNet™
FENA-11	+K473	1 port EtherNet/IP™, Modbus TCP, PROFINET IO
FENA-21	+K475	2 port EtherNet/IP™, Modbus TCP, PROFINET IO, PROFIsafe <sup>1)</sup>
FECA-01	+K469	EtherCAT®
FSCA-01	+K458	Modbus RTU
FEPL-02	+K470	PowerLink
FCNA-01	+K462	ControlNet™

<sup>1)</sup> For the PROFIsafe to work the PROFINET fieldbus adapter module (FENA-21) and the safety functions module are required.

# Integrated safety simplifies configuration

—  
03 FSO-21, FSE-31

Integrated safety reduces the need for external safety components, simplifying configuration and reducing installation space. The safety functionality is a built-in feature of the DCS880, with safe torque off (STO) as standard. Additional safety functions can be commissioned with the optional and compact safety functions module. The drives' functional safety is designed in accordance with EN/IEC 61800-5-2 and complies with the requirements of the European Union Machinery Directive 2006/42/EC.

## Safe torque off as standard

Safe torque off (STO) is used to prevent unexpected startup and in stopping-related functions, enabling safe machine maintenance and operation. With safe torque off activated, the drive will not provide a rotational field. This prevents the motor from generating torque on the shaft. This function corresponds to an uncontrolled stop in accordance with stop category 0 of EN 60204-1.

## The safety functions module

The easy to connect and configure safety functions module (FSO) offers a wide range of safety functions and a self diagnostic function that meets current safety requirements and standards, all in one compact module. Compared to using external safety components, the safety functions module comes with the supported functions seamlessly integrated with the drive functionality, reducing the implementation of safety function connections and configuration. Installation of the module results in less need for cabling and provides a cost-effective solution.

Commissioning and configuration of the safety functions module is done with the Drive composer pro PC tool. Larger safety systems can be built using PROFIsafe over Profinet connection between a safety PLC (such as AC500-S) and the DCS880 drive. The connection is achieved using the FENA-21 fieldbus adapter module plus the safety functions module FSO-21+FSE-31.

The safety functions module can also be ordered as a spare part kit and installed afterwards to the drive. The kit includes most common assembly accessories for DCS880 drives.

The module supports the following safety functions (which achieve up to SIL3 or PLe (Cat. 3) safety level):

- Safe stop 1 (SS1) brings the machine to a stop (STO) using a monitored deceleration ramp. It is typically used in applications where the machinery motion needs to be brought to a stop (stop category 1) in a controlled way before switching over to the no-torque state.
- Safe stop emergency (SSE) can be configured to, upon request, either activate STO instantly (category 0 stop), or first initiate motor deceleration and then, once the motor has stopped, activate the STO (category 1 stop).
- Safe brake control (SBC) provides a safe output for controlling the motor's external (mechanical) brakes, together with STO.
- Safely-limited speed (SLS) ensures that the specified speed limit of the motor is not exceeded. This allows machine interaction to be performed at slow speed without stopping the drive. The safety function module comes with four individual SLS settings for speed monitoring.
- Safe maximum speed (SMS) monitors that the speed of the motor does not exceed the configured speed limit.
- Prevention of unexpected startup (POUS) ensures that the machine remains stopped when people are in a danger area.
- Safe direction (SDI) ensures that rotation is allowed only to the selected direction.
- Safe speed monitor (SSM) provides information that speed is within the configured limits.



## Safety functions module

Option	Ordering code
FSO-21+FSE-31	+Q972+L521 <sup>1)</sup>

<sup>1)</sup> For availability please check with your local ABB

# Common features throughout the whole DCS880 product family



## Standard DCS880 features

### DCS880 basic firmware

DCS880 firmware includes the basic function of speed control, armature current, field current and motor voltage. The flexible design for command location enables field bus control or master-follower control or control from hardware signals as well as a mixed structure. The design of drive logic enables a drive reaction defined by Profibus standard but can also be configured to adapt classic command structures.

### Integrated safe torque off (STO)

- Safe torque off for implementing safe machinery
- SIL 3, PL e

### Extensive I/O connections

- The DCS880 features extensive I/O connections for flexible configuration in various applications
- Colored terminals for easy configuration

### Assistant control panel and primary settings

- The ACS-AP-I assistant control panel speaks 16 different languages
- USB interface for PC and tool connection
- Help button for problem-solving

### Commissioning Assistants

DCS880 includes an eight step assistant to set up the drive. The assistant is available via control panel and Drive Composer Pro PC-tool.

Following commissioning steps are covered:

- Name plate data
- Standard I/O
- Field current controller with auto tuning
- Armature current controller with auto tuning
- First motor turning
- Speed feedback selection with autodetect of speed feedback device
- Speed controller with auto tuning
- Field weakening with auto tuning



## Shared features of the ABB all-compatible drives portfolio

### Adaptive programming

- DCS880 firmware includes an easy-to-use and visual adaptive programming feature.
- Adaptive programming can be used to add logical functions and conditions for process fine-tuning.

### Same PC tools for ABB all-compatible drives

- Free Drive Composer entry available at [www.abb.com](http://www.abb.com).
- Same parameter structure makes the all-compatible platform easy to use.

### Removable memory unit

The removable memory unit stores the firmware that includes user settings, parameter settings and motor data. Situated on the control unit, the memory unit can easily be removed for maintenance, update or replacement purposes.

### Connectivity

- The DCS880 supports F-series fieldbus adapters used in the ABB all-compatible platform.
- Mobile phone connectivity via the optional Bluetooth assistant control panel.

# Standard DCS880 drives software with versatile features

**Save commissioning and learning time** with the assistant control panel's clear and intuitive user interface and different assistants.

**Support for 12-pulse systems** to reduce line harmonics, reduce motor noise level, enlarge output current or voltage of the converter system.

**Same product for non-motoric applications** enables to cover applications such as: water treatment, chlorination, electrolysis, galvanization, magnet, arc furnace and testing.

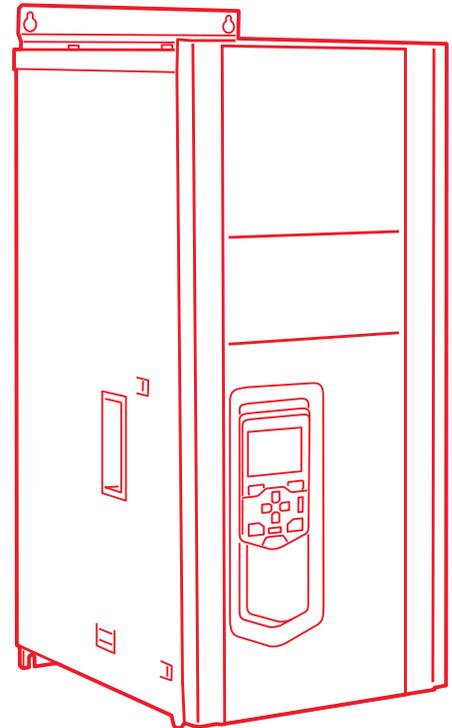
**Adapt and customize** using flexible IEC61131-3 programming, making it easy to adapt to any application need.

**Built-in Drive-to-Drink link** to cover all the master follower applications where motors run with the same speed / torque connected to the same shaft or gearbox.

**Scale up and customize** the drive to your application's requirements with flexible parameter pointers or adaptive programming.

**Protect and supervise** your motor by powerful supervision functions such as stall protection, thermistor motor protection, armature current ripple, minimum field current and many more.

**Analyze and resolve issues** with the control panel's diagnostics menu. You can quickly analyze why the drive is performing as it is; running, stopped or running at the present speed.



# The all-compatible DCS880 series

## The first choice for any application

### Replacement of existing DC Drives

In many installations DC drives are in reliable operation since decades. While the DC motors can often be operated for many more years, the DC drive however might experience lack of support and spare parts and maybe even reliability. A replacement of the old DC drive with a DCS880 can extend the lifetime of the equipment by some more decades at very low costs. Additionally it can easily get upgraded to the newest safety requirements by using STO without the need of adding or replacing breakers or contactors. Since existing drive installations from the past decades may comprise many different configurations, the DCS880 is prepared for any challenges with its unique flexibility and programmability.

### Ships and offshore

On ships and offshore outstanding robustness and reliability is a must when driving winches, drills, mud pumps or propulsions. On top, the DCS880 offers various marine certifications.

### Test equipment

For testing powertrains, materials or any rotating equipment customers can rely on the DCS880's high accuracy speed and torque control, its high dynamic control and the wide field weakening range.

### Plastic and rubber

When used in extruders, mixers, kneaders, or calendars the DCS880 convinces with high starting torque and overloadability as well as various protecting functions to protect motor and equipment.

### Metals

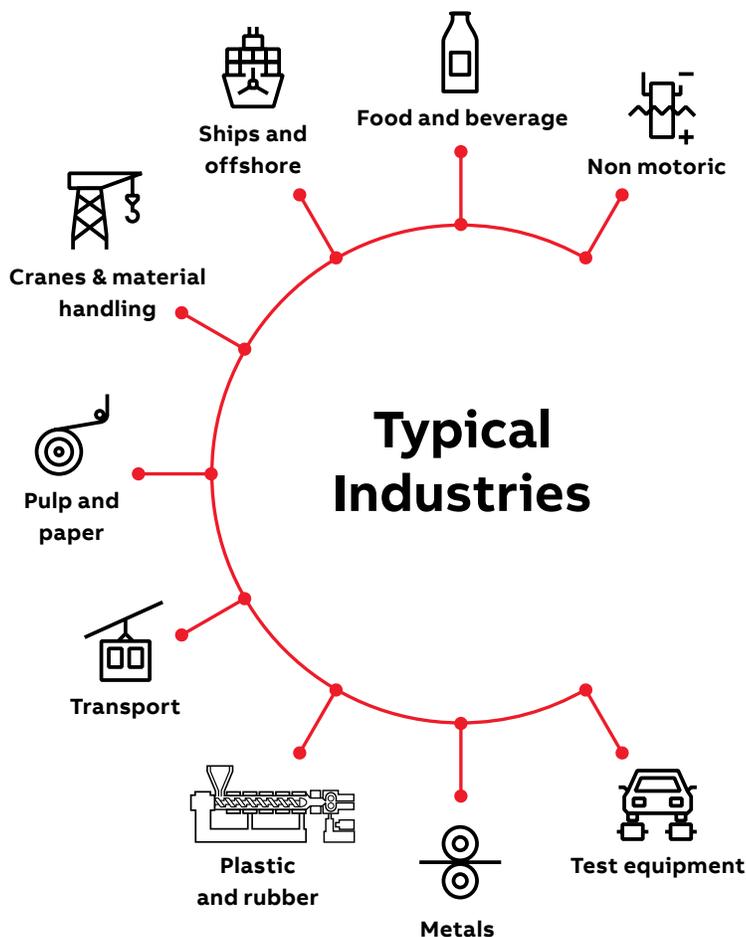
Rolling or tube mills often combine very high motor power with extremely fast load changes. Consequently, the DCS880 offers both – a proven high dynamic torque control and flexible high power configurations up to 20,000 A /1,500 V<sub>DC</sub> in 6-pulse, 12-pulse or 24-pulse with high overloadability. Other applications in metals fabrication like roller tables, wire drawing or processing lines benefit from safe operation with STO and the DCS880's robustness in harsh environment.

### Pulp and paper

With the DCS880 replacements of old DC drives in an existing paper machine can be executed in very short downtimes as low as eight hours. And thanks to the integrated STO the machine can be upgraded to the newest safety requirements without installing or replacing additional contactors or breakers.

### Food and beverage

Sugar centrifuges or meat processing equipment benefit from the compact size - even with regenerative braking - and low losses combined with high reliability.



# Drive programming

## Application programming based on IEC 61131-3

Automation Builder makes it possible for system integrators and machine builders to integrate their desired functionality and know-how directly into DCS880 drives. This is possible as DCS880 drives come with programming capability embedded inside the drive. Designing an application program in the drive makes the end user application run more efficiently, even without a separate programmable controller. It also brings higher end-product quality and requires less need for installation space and wiring.

Automation Builder lets you extend the standard functionality of parameter functions for DCS880 drives. This makes the DCS880 drives very flexible to meet exact requirements set for end user appli-

cations. The library management functionality in Automation Builder shortens engineering time as reuse of existing program code is possible. Additional features include the ability to select and use one of five different programming languages, effective program debugging and user password protection.

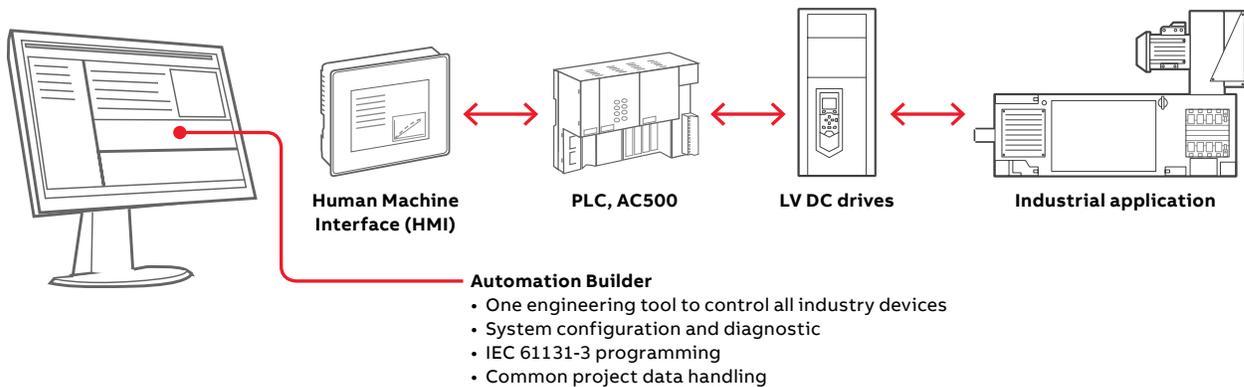
The drive application programming license should be ordered together with the drive.

### Drive application programmability

Option	Option code
License key	+S551

Automation Builder Basic: free of charge [www.abb.com](http://www.abb.com)

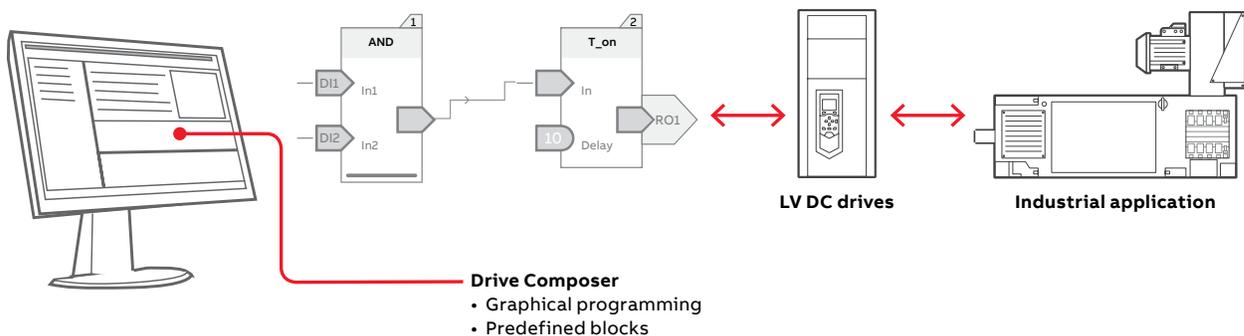
For more and advanced functions the Automation Builder tools must be ordered separately. For further information please contact your local ABB.



## Adaptive programming

Adaptive programming is used to customize the operation of a drive in case the drive parameter setting is not sufficient. The adaptive program is

built with standard function blocks included in the drive firmware elements.



# Intuitive human-machine interface



The assistant control panel features intuitive use and easy navigation. High resolution display enables visual guidance. The panel saves on commissioning and learning time by means of different assistants, making the drive simple to set up and use.

It is possible to organize parameters in different ways and store essential parameters for different configurations for any specialized application needed. The menus and messages can be customized for specific terminology so that each application can be set up and configured to its optimum performance. This makes the drive easier to use with information that is familiar to users. With the panel's text editor, users can also add information, customize text and label the drive. Powerful backup and restore functions are supported as well as different language versions. The help key provides context sensitive guidance. Faults or warnings can be resolved quickly since the help key provides troubleshooting instructions.

One control panel can be connected to several drives via DPI-H01 simultaneously using the panel network feature. The user can also select the drive to operate in the panel network. The PC tool can be easily connected to the drive through the USB connector on the control panel. There are also control panel mounting platforms, DPMP-01 and DPMP-02, available for cabinet door mounting with IP55 or IP65 protection class.

## Assistant control panel

Option	Option code	Description
ACS-AP-I	standard	built-in
no ACS-AP-I	0J404	no panel
ACS-AP-W	+J429	Bluetooth panel
DPI-H01	+J428	daisy-chain option

Option	Description	Ordering code
DPMP-01	Panel flush mounting kit	3AUA0000108878
DPMP-02	+Panel surface mounting kit	3AXD5000009374



# PC tool for easy startup and maintenance

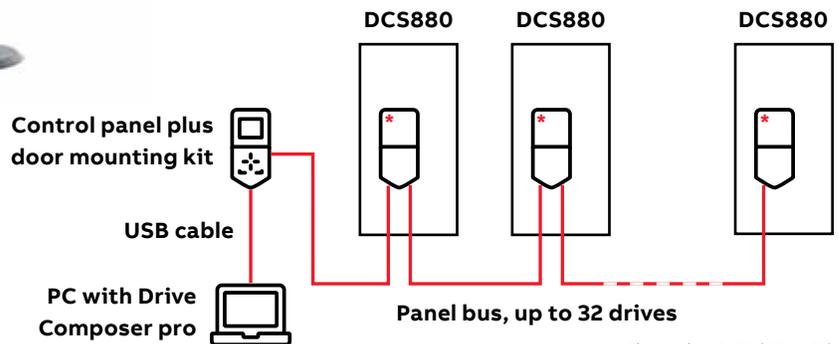
The Drive composer PC tool offers fast and harmonized setup, commissioning and monitoring for the whole drives portfolio. The free version of the tool provides startup and maintenance capabilities, while the professional version provides additional features such as custom parameter windows, control diagrams of the drive's configuration and safety settings.

The Drive composer tool is connected to the drive using an Ethernet connection or through the USB connection on the assistant control panel. All drive information such as parameter loggers, faults, backups and event lists are gathered into a support diagnostics file with a single mouse click. This provides faster fault tracking, shortens downtime and minimizes operational and maintenance costs.

## Drive composer pro

Drive composer pro provides basic functionality, including parameter settings, downloading and uploading files and search parameters. Advanced features such as graphical control diagrams and various displays are also available. The control diagrams save users from browsing long lists of parameters and help to set the drive's logic quickly and easily. The tool has fast monitoring capabilities of multiple signals from several drives in a PC tool network. Full backup and restore functions are also included. Safety settings and adaptive programming programs can be configured with Drive composer pro.

Item	Description	Ordering code
Drive composer entry	free of charge	www.abb.com
Drive composer pro tool	single licence	3AUA0000108087
Drive composer pro tool	10 user licence	3AUA0000145150
Drive composer pro tool	20 user licence	3AUA0000145151
USB cable	5 m USB A – USB Mini B	3ADT693714P0001



# External field supply

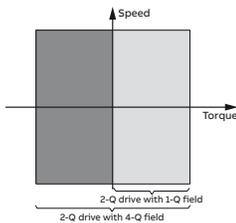
—  
01 DCF803-0035

## General data

- Currents from 0.3 to 520 A
- Minimum field current monitor
- Integrated external field power converter or completely separate switchgear cubicle
- single-phase or 3-phase model
- Controlled by serial communication via DCSSLink

All field converters are controlled by the armature converter via a serial interface (SDCS-DSL-Hxx board). This interface serves to parameterize, control and diagnose the field converter and thus provides exact control.

We recommend integrating an autotransformer in the field power converter's supply circuit to adjust the AC input voltage to the field voltage and for reducing the voltage ripple in the field circuit for single-phase operation.



## Field reversal

Field reversal is basic firmware function of DCS880. Required hardware configuration is a 2-Q (single) armature bridge plus a 4-Q (double bridge) field exciter.

Field reversal offers low dynamic torque reversal which can be used for e.g. propulsion Drive to change speed direction or E-Stop function for unidirectional mills.

## Field converter types DCF803-0035 and DCF803-0016

- Half-controlled thyristor/diode bridge (1-Q)
- Three-phase or single-phase operation
- Microprocessor control, with the electronic system being supplied by the armature circuit converter (24 V).
- Construction and components have been designed for an insulation voltage of  $600 V_{AC}$ .
- Fast-response excitation is possible with an appropriate voltage reserve; de-excitation takes place by field time constant.
- Field Output voltage  $U_A$  (single-phase operation):

$$U_A \leq U_V * \left( \frac{100\% + TOL}{100\%} \right) * 0.9$$

TOL = tolerance of line voltage in %  
 $U_V$  = Line voltage,  $U_A$  = Field voltage

- Recommendation (single-phase operation):  
 $U_A = 0.6$  to  $0.8 * U_V$  or  $U_V = 1.25$  to  $1.7 * U_A$
- Field Output voltage  $U_A$  (three-phase operation):

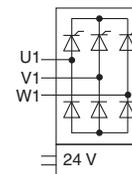
$$U_A \leq U_V * \left( \frac{100\% + TOL}{100\%} \right) * 1.35$$

TOL = tolerance of line voltage in %  
 $U_V$  = Line voltage,  $U_A$  = Field voltage

**Note:** Calculation valid also for FEX-425 internal



—  
01



**Table of field converter units**

Unit type	Output current $I_{CC}$	AC field supply voltage	auxiliary supply voltage	Remarks
DCF803-0016	0.3 ... 16 A	110 V -15 % ... 500 V / 1-ph +10 % single-phase or three-phase		external fuse L3 line choke for 3-phase operation use:
DCF803-0035	0.3 ... 35 A	110 V -15 % ... 500 V / 1-ph +10 % single-phase or three-phase	24 V <sub>DC</sub> 200 mA	KLR21CTB ≤ 16 A KLR45CTB > 16 A for 1-phase operation use: ND30 ≤ 16 A KLR45CTB > 16 A
DCF803-0050	0.3 ... 50 A	110 V -15 % ... 500 V / 1-ph +10 %		if necessary via matching autotransformer; fuse external; Dimensions HxWxD: 370x125x342 [mm]
DCF804-0050	0.3 ... 50 A	110 V -15 % ... 500 V / 1-ph +10 %	115 or 230 V	
DCF803-0060	0.3 ... 60 A	110 V -15 % ... 500 V / 1-ph +10 %		
DCF804-0060	0.3 ... 60 A	110 V -15 % ... 500 V / 1-ph +10 %		
DCS880-S0x-xxxx-05		200 V ... 500 V / 3-ph		additional hardware components (DCF 506)

- 02 DCF804-0050
- 03 DCS880-S0
- 04 DCF506-140-51

## Single-phase field supply

### DCF803-0050 and DCF803-0060

- Single-phase power stack
- Half-controlled thyristor/diode bridge (1-Q).
- Built-in line chokes.
- Microprocessor control with the control electronics being supplied separately (115 ... 230 V/1-ph).
- Construction and components have been designed for an insulation voltage of 690 V<sub>AC</sub>.
- Field output voltage U<sub>A</sub>:

$$U_A \leq U_V * \left( \frac{100\% + TOL}{100\%} \right) * 0.9$$

TOL = tolerance of line voltage in %  
 U<sub>V</sub> = Line voltage, U<sub>A</sub> = Field voltage

- Recommendation:  
 U<sub>A</sub> = 0.6 to 0.8 \* U<sub>V</sub> or U<sub>V</sub> = 1.25 to 1.7 \* U<sub>A</sub>

### DCF804-0050 and DCF804-0060

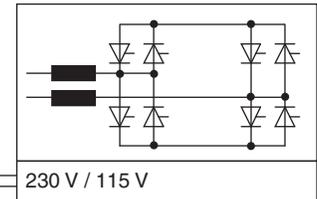
- Single-phase power stack
- Fully-controlled antiparallel thyristor bridges (4-Q)
- This unit offers field reversal as well as fast-response excitation / de-excitation.
- In the steady-state condition, the fully-controlled bridge runs in half-controlled mode so as to keep the voltage ripple as low as possible. With a quickly alternating field current, the bridge runs in fully-controlled mode.
- Same design as DCF803-0050.
- Built-in line chokes.

### Autotransformer for single-phase field supply.

for field current I <sub>f</sub>	Autotransformer type 50/60 Hz	DCF803-0016 DCF803-0035 FEX-425 Int	DCF803-0050 DCF804-0050 DCF803-0060 DCF804-0060
----------------------------------	-------------------------------	---	--

U <sub>prim</sub> = ≤ 500 V			
≤ 6 A	T 3.01	x **	x
≤ 12 A	T 3.02	x **	x
≤ 16 A	T 3.03	x **	x
≤ 30 A	T 3.04	x *	x
≤ 50 A	T 3.05		x
≤ 60 A	on request		x
U <sub>prim</sub> = ≤ 600 V			
≤ 6 A	T 3.11	x **	x
≤ 12 A	T 3.12	x **	x
≤ 16 A	T 3.13	x **	x
U <sub>prim</sub> = ≤ 690 V			
≤ 30 A	T 3.14		x
≤ 50 A	T 3.15		x
≤ 60 A	on request		x

\* three-phase operation recommended  
 \*\* requires line choke ND 30, ND402, or KLR45CTB



02

## DCS880 exciter modules

### DCS880-S01, DCS880-S02

This converter can also be used for field exciter operation, an additional overvoltage protection unit is required. It provides field currents from 20 A up to 520 A unipolar (2-Q) and bipolar (4-Q) for field reversal function.

- Field output voltage U<sub>A</sub> respectively U<sub>dmax 2-Q</sub> :  
 see table on page 13
- Recommendation:  
 U<sub>A</sub> = 0.5 to 1.1 \* U<sub>V</sub> or U<sub>V</sub> = 0.9 to 2.0 \* U<sub>A</sub>
- The large field supply converters DCS880-S01/S02 need a separate active overvoltage protection unit DCF506 for protecting the power part against inadmissibly high voltages.  
 The overvoltage protection unit DCF506 is suitable for 2-Q converters DCS880-S01 and for 4-Q converters DCS880-S02.
- DCSLink communication board +S521 required.

### Assignment of field supply converter to overvoltage protection unit

Field supply converter for motor fields	Overvoltage protection
DCS880-S0x-0020-51	
...	DCF506-0140-51
DCS880-S0x-0140-51	
DCS880-S0x-0200-51	
...	DCF506-0520-51
DCS880-S0x-0520-51 *	

\* max field current 520 A



03

04

# Fuse connections

Recommended fuse connections see tables below.

## Semiconductor type F1 fuses and fuse holders for AC and DC power lines (DCS880-S01 / DCS880-S02)

The converter units are subdivided into two groups:

- Unit sizes H1, H2, H3 and H4 with rated currents up to 1000 A require external line fuses.
- In unit sizes H5, H6, H7 and H8 with rated currents of 900 A to 5200 A, the semiconductor fuses are installed internally (no additional external semiconductor fuses are needed).

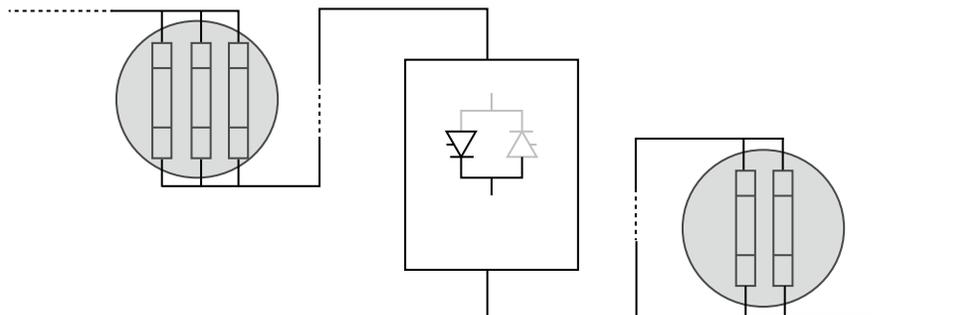
The table assigns the AC fuse types to the converter types. In case the converter should be equipped with DC fuses according to the hints use the same type of fuse used on the AC side now in the plus and minus line (only for sizes H1 ... H4). Blade type fuses are used for all the converters of construction type H1 ... H4 except the converters (610 A, 680 A, 740 A, 820 A, 900 A, 1000 A)

Type of converter	Type	Fuse holder	Type	Fuse holder
2-Q Converter	4-Q Converter	North America	Worldwide	
DCS880-S01-0020-05	DCS880-S02-0025-05	FWP-50B	1BS101	50A 660V UR OFAX 00 S3L
DCS880-S01-0045-05	DCS880-S02-0050-05	FWP-80B	1BS101	80A 660V UR OFAX 00 S3L
DCS880-S01-0065-05	DCS880-S02-0075-05	FWP-125A	1BS103	125A 660V UR OFAX 00 S3L
DCS880-S01-0090-05	DCS880-S02-0100-05	FWP-125A	1BS103	125A 660V UR OFAX 00 S3L
DCS880-S01-0135-05	DCS880-S02-0150-05	FWP-200A	1BS103	200A 660V UR OFAX 1 S3
DCS880-S01-0180-05	DCS880-S02-0200-05	FWP-250A	1BS103	250A 660V UR OFAX 1 S3
DCS880-S01-0225-05	DCS880-S02-0250-05	FWP-300A	1BS103	315A 660V UR OFAX 2 S3
DCS880-S01-0270-05	DCS880-S02-0300-05	FWP-500A	1BS104	500A 660V UR OFAX 3 S3
DCS880-S01-0315-05	DCS880-S02-0350-05	FWP-500A	1BS104	500A 660V UR OFAX 3 S3
DCS880-S01-0405-05	DCS880-S02-0450-05	FWP-700A	See Note 1	700A 660V UR OFAX 3 S3
DCS880-S01-0470-05	DCS880-S02-0520-05	FWP-700A	See Note 1	700A 660V UR OFAX 3 S3
DCS880-S01-0610-05	DCS880-S02-0680-05	FWP-900A	See Note 1	900A 660V UR 3 x 170H 3006
DCS880-S01-0740-05	DCS880-S02-0820-05	FWP-900A	See Note 1	900A 660V UR 3 x 170H 3006
DCS880-S01-0900-05	DCS880-S02-1000-05	FWP-1200A	See Note 1	1250A 660V UR 3 x 170H 3006
DCS880-S01-0290-06	DCS880-S02-0320-06	FWP-500A	1BS104	500A 660V UR OFAX 3 S3
DCS880-S01-0590-06	DCS880-S02-0650-06	FWP-900A	See Note 1	900A 660V UR 3 x 170H 3006

Fuses and fuse holders (details see Technical Data)

Fuses are available directly from Bussmann. For information, see their web site at [www.bussmann.com](http://www.bussmann.com).

Recommended fuses are semiconductor type fuses. See hardware manual for more information.

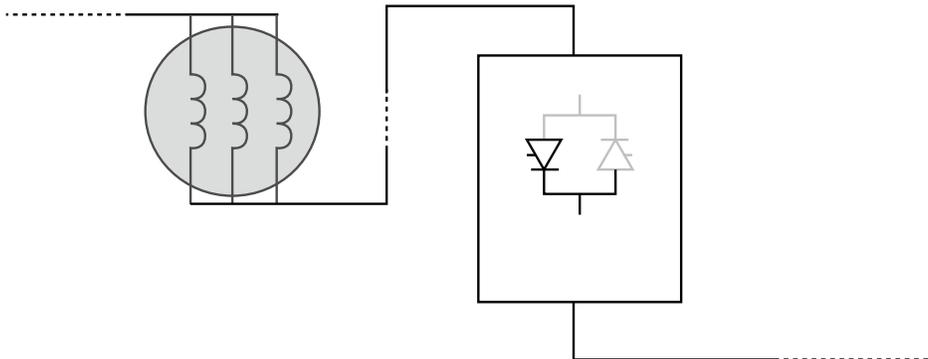


# Line reactors L1

Unit Type		KLR 1.5% impedance	KLR 3% impedance	KLR 5% impedance
2-Q Converter	4-Q Converter			
<b>500 Vdc</b>				
DCS880-S01-0020-05	DCS880-S02-0025-05	KLR21BTB	KLR21ATB	KLR21CTB
DCS880-S01-0045-05	DCS880-S02-0050-05	KLR45BTB	KLR45ATB	KLR45CTB
DCS880-S01-0065-05	DCS880-S02-0075-05	KLR80BCB	KLR80ACB	KLR80CCB
DCS880-S01-0090-05	DCS880-S02-0100-05	KLR110BCB	KLR110ACB	KLR110CCB
DCS880-S01-0135-05	DCS880-S02-0150-05	KLR160BCB	KLR160ACB	KLR160CCB
DCS880-S01-0180-05	DCS880-S02-0200-05	KLR200BCB	KLR200ACB	KLR200CCB
DCS880-S01-0225-05	--	KLR200BCB	KLR200ACB	KLR200CCB
--	DCS880-S02-0250-05	KLR250BCB	KLR250ACB	KLR250CCB
DCS880-S01-0270-05	DCS880-S02-0300-05	KLR300BCB	KLR300ACB	KLR300CCB
DCS880-S01-0315-05	DCS880-S02-0350-05	KLR360BCB	KLR360ACB	KLR360CCB
DCS880-S01-0405-05	--	KLR360BCB	KLR360ACB	KLR360CCB
DCS880-S01-0470-05	DCS880-S02-0450-05	KLR420BCB	KLR420ACB	KLR420CCB
--	DCS880-S02-0520-05	KLR480BCB	KLR480ACB	KLR480CCB
DCS880-S01-0610-05	DCS880-S02-0680-05	KLR600BCB	KLR600ACB	KLR600CCB
DCS880-S01-0740-05	DCS880-S02-0820-05	KLR750BCB	KLR750ACB	KLR750CCB
DCS880-S01-0900-05	DCS880-S02-1000-05	KLR850BCB	KLR850ACB	KLR850CCB
DCS880-S01-1190-05	DCS880-S02-1190-05	KLR1100BCB	KLR1100ACB	KLR1100CCB
DCS880-S01-1200-05	DCS880-S02-1200-05	KLR1100BCB	KLR1100ACB	KLR1100CCB
DCS880-S01-1500-05	DCS880-S02-1500-05	KLR1250BCB	KLR1250ACB	KLR1250CCB
<b>600 Vdc</b>				
DCS880-S01-0290-06	--	KLR250BCB	KLR250DCB	KLR250ECB
--	DCS880-S02-0320-06	KLR300BCB	KLR300DCB	KLR300ECB
DCS880-S01-0590-06	DCS880-S02-0650-06	KLR600BCB	KLR600DCB	KLR600ECB
DCS880-S01-0900-06	DCS880-S02-0900-06	KLR750BCB	KLR750DCB	KLR750ECB
DCS880-S01-1500-06	DCS880-S02-1500-06	KLR1250BCB	KLR1250DCB	KLR1250ECB

\* with forced cooling

Recommended AC Line Reactors are available directly from TCI. For information, see their web page [www.transcoil.com](http://www.transcoil.com). Line reactor selection is determined by the drive power and system requirements. A minimum impedance of 1% is required unless an input isolation transformer is provided for each drive (1 to 5% impedance).



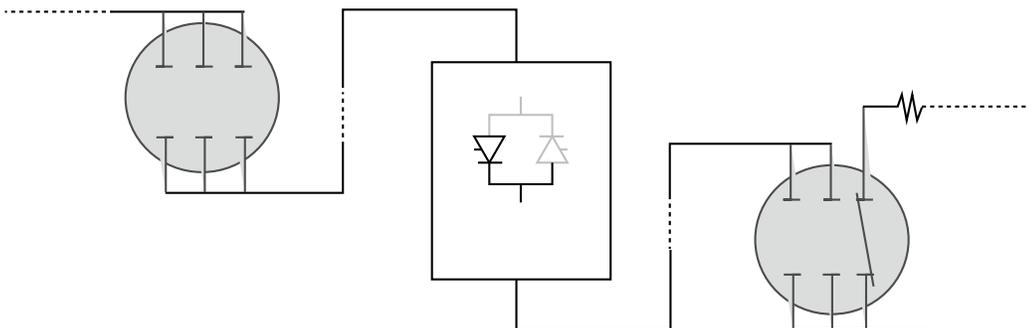
# Contactors

Unit Type		AC Input Contactors 3-Pol (NO)	DC Output Contactors 2-Pol (NO)	Dynamic Brake Contactors 2-NO & 1-NC
<b>2-Q Converter</b>	<b>4-Q Converter</b>			
<b>500 Vdc</b>				
DCS880-S01-0020-05	DCS880-S02-0025-05	A12-30-11-84	DA75-20-11-84	DA75-21-21-84
DCS880-S01-0045-05	DCS880-S02-0050-05	A30-30-11-84	DA75-20-11-84	DA75-21-21-84
DCS880-S01-0065-05	DCS880-S02-0075-05	A50-30-11-84	EHDB220C2P-1L	EHDB220C-1L
DCS880-S01-0090-05	DCS880-S02-0100-05	A75-30-11-84	EHDB220C2P-1L	EHDB220C-1L
DCS880-S01-0135-05	DCS880-S02-0150-05	A110-30-11-84	EHDB220C2P-1L	EHDB220C-1L
DCS880-S01-0180-05	DCS880-S02-0200-05	A145-30-11-84	EHDB220C2P-1L	EHDB220C-1L
DCS880-S01-0225-05	DCS880-S02-0250-05	A210-30-11-84	EHDB280C2P-1L	EHDB280C-1L
DCS880-S01-0270-05		A210-30-11-84	EHDB280C2P-1L	EHDB280C-1L
	DCS880-S02-0300-05	A260-30-11-84	EHDB360C2P-1L	EHDB360C-1L
DCS880-S01-0315-05	DCS880-S02-0350-05	A260-30-11-84	EHDB360C2P-1L	EHDB360C-1L
DCS880-S01-0405-05	--	AF400-30-11-70	EHDB520C2P-1L	EHDB520C-1L
DCS880-S01-0470-05	DCS880-S02-0450-05	AF400-30-11-70	EHDB520C2P-1L	EHDB520C-1L
--	DCS880-S02-0520-05	AF400-30-11-70	EHDB520C2P-1L	EHDB520C-1L
DCS880-S01-0610-05		AF580-30-11-70	EHDB650C2P-1L	EHDB650C-1L
	DCS880-S02-0680-05	AF580-30-11-70	EHDB800C2P-1L	EHDB800C-1L
DCS880-S01-0740-05		AF750-30-11-70	EHDB800C2P-1L	EHDB800C-1L
	DCS880-S02-0820-05	AF750-30-11-70	EHDB960C2P-1L	EHDB960C-1L
DCS880-S01-0900-05		AF1350-30-11-70	EHDB960C2P-1L	EHDB960C-1L
	DCS880-S02-1000-05	AF1350-30-11-70	Bar	Bar
DCS880-S01-1190-05	DCS880-S02-1190-05	AF1350-30-11-70	Bar	Bar
DCS880-S01-1200-05	DCS880-S02-1200-05	AF1350-30-11-70	Bar	Bar
DCS880-S01-1500-05	DCS880-S02-1500-05	AF1650-30-11-70	Bar	Bar
<b>600 Vdc</b>				
DCS880-S01-0290-06	DCS880-S02-0320-06	A260-30-11-84	EHDB360C2P-1L	EHDB360C-1L
DCS880-S01-0590-06	DCS880-S02-0650-06	AF460-30-11-70	EHDB680C2P-1L	EHDB680C-1L
DCS880-S01-0900-06	DCS880-S02-0900-06	AF750-30-11-70	EHDB960C2P-1L	EHDB960C-1L
DCS880-S01-1500-06	DCS880-S02-1500-06	AF1650-30-11-70	Bar	Bar

AC Input Contactors: Contactors have 120Vac / 50-60Hz coil with 1-NO and 1-NC aux. contact.

DC Output and Dynamic Brake Contactors: Contactors have 120Vac / 60Hz coil with 1-NO and 1-NC aux. contact.

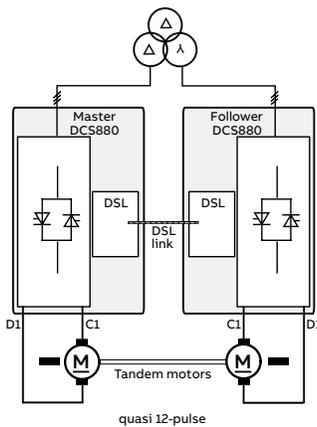
Either an AC or DC contactor is required, but not both.



# High power configurations

Converters generate harmonics at the mains. To reduce it is possible to use 12-pulse configuration. Low current harmonic level (THD\_cur) results in a minimum voltage distortion (THD\_volt) at the PCC.

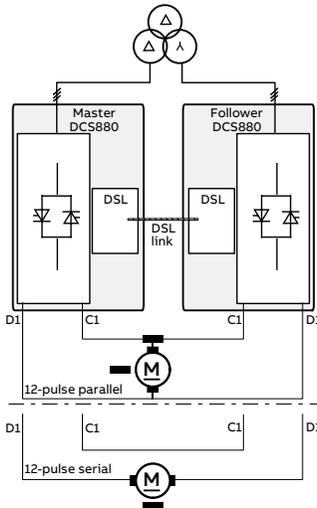
	5th	7th	11th	13th	THD_cur
<b>6-pulse</b>	21 %	14 %	9 %	7 %	36 %
<b>12-pulse</b>	1 %	1%	6%	7 %	11 %



### Quasi 12-pulse Master-Follower configuration

The converters are fed by a 12-pulse transformer with separated secondary windings whose phase positions differ by 30°el.

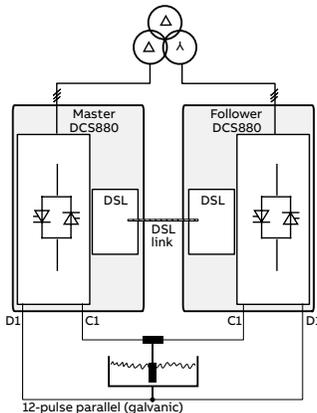
This configuration delivers the same advantages concerning harmonics to the network as a standard 12-pulse application (see next item), but no T-reactor is needed.



### 12-pulse parallel, serial or sequential configuration

12-pulse systems are used for reduced line harmonics, reduced motor noise level, enlarged output current or voltage of converter system. Only the 11th and 13th, the 23rd and 25th, the 35th a.s.o. are existing. The harmonics on the DC side are reduced too, which gives a higher efficiency. It is not possible to connect two 12-pulse systems (2 converters, T-reactor and 1 motor) to one 12-pulse transformer.

For more information, please see manual 12-pulse operation.



### Non motoric, high pulse, high current low output voltage configurations.

DCS880 also supports 6-, 12-, 18- and 24-pulse configurations.

Low output voltages with optimized power factory are realized by dedicated transformers.

### Quasi 12-pulse

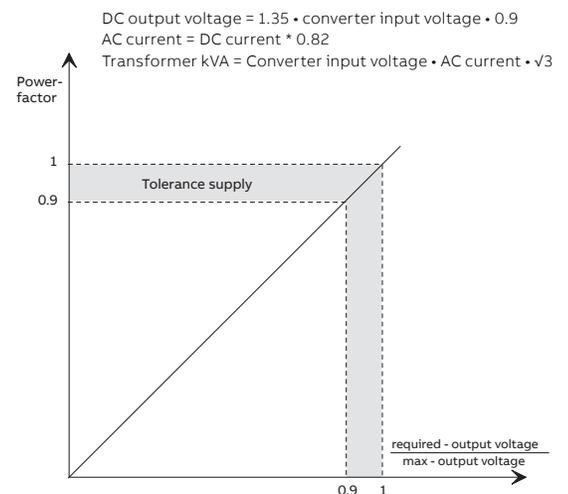
Frame size	H1 ~ H5	H6	H7	H8
<b>max AC voltage</b>	525 V	690 V	800 V	1190 V
<b>typical DC voltage 2Q / 4Q</b>	610 V / 545 V	800 V / 720 V	915 V / 820 V	1380 V / 1235 V

### 12-pulse parallel

Frame size	H1 ~ H5	H6	H7	H8
<b>max AC voltage</b>	525 V	690 V	800 V	1190 V
<b>typical DC voltage 2Q / 4Q</b>	610 V / 545 V	800 V / 720 V	915 V / 820 V	1380 V / 1235 V

### 12-pulse serial/sequential

Frame size	H1 ~ H5	H6	H7	H8
<b>max AC voltage</b>	not usable	2 x 350 V	2 x 600 V	2 x 750 V
<b>typical DC voltage 2Q / 4Q</b>	not usable	800 V / 720 V	1380 V / 1235 V	1500 V / 1700 V



# A lifetime of peak performance

You're in control of every life cycle phase of your drives. At the heart of drive services is a four-phase product life cycle management model. This model defines the services recommended and available throughout drives lifespan.

Now it's easy for you to see the exact service and maintenance available for your drives.

## ABB drives life cycle phases explained:



	Active	Classic	Limited	Obsolete
	Full range of life cycle services and support		Limited range of life cycle services and support	Replacement and end-of-life services
<b>Product</b>	Product is in active sales and manufacturing phase.	Serial production has ceased. Product may be available for plant extensions, as a spare part or for installed base renewal.	Product is no longer available.	Product is no longer available.
<b>Services</b>	Full range of life cycle services is available.	Full range of life cycle services is available. Product enhancements may be available through upgrade and retrofit solutions.	Limited range of life cycle services is available. Spare parts availability is limited to available stock.	Replacement and end-of-life services are available.

### Keeping you informed

We notify you every step of the way using life cycle status statements and announcements.

Your benefit is clear information about your drives' status and precise services available. It helps you plan the preferred service actions ahead of time and make sure that continuous support is always available.

### Step 1

#### Life Cycle Status Announcement

Provides early information about the upcoming life cycle phase change and how it affects the availability of services.

### Step 2

#### Life Cycle Status Statement

Provides information about the drive's current life cycle status, availability of product and services, life cycle plan and recommended actions.





# Services to match your needs

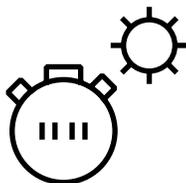
Your service needs depend on your operation, life cycle of your equipment and business priorities. We have identified our customers' four most common needs and defined service options to satisfy them. What is your choice to keep your drives at peak performance?

Is uptime your priority?

Keep your drives running with precisely planned and executed maintenance.

**Example services include:**

- Life Cycle Assessment
- Installation and Commissioning
- Spare Parts
- Preventive Maintenance
- Reconditioning
- ABB Drive Care agreement
- Drive Exchange



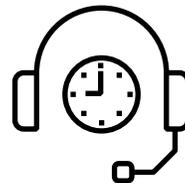
**Operational efficiency**

Is rapid response a key consideration?

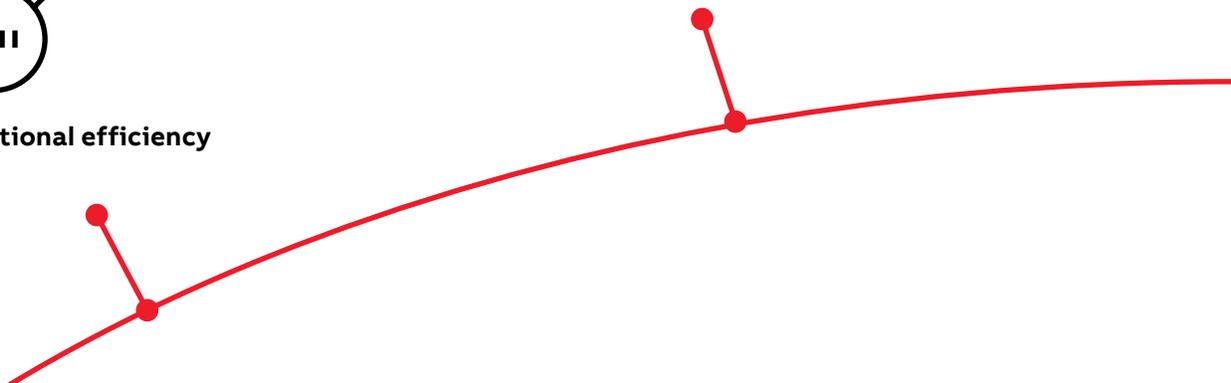
If your drives require immediate action, our global network is at your service.

**Example services include:**

- Technical Support
- On-site Repair
- Remote Support
- Response time agreements
- Training



**Rapid response**



# Drives service

## Your choice, your future

### The future of your drives depends on the service you choose.

Whatever you choose, it should be a well-informed decision. No guesswork. We have the expertise and experience to help you find and implement the right service for your drive equipment. You can start by asking yourself these two critical questions:

- Why should my drive be serviced?
- What would my optimal service options be?

From here, you have our guidance and full support along the course you take, throughout the entire lifetime of your drives.

### Your choice, your business efficiency

ABB Drive Care agreement lets you focus on your core business. A selection of predefined service options matching your needs provides optimal, more reliable performance, extended drive lifetime and improved cost control. So you can reduce the risk of unplanned downtime and find it easier to budget for maintenance.

### We can help you more by knowing where you are!

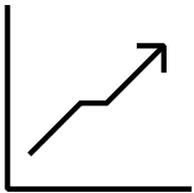
Register your drive at [www.abb.com/drivereg](http://www.abb.com/drivereg) for extended warranty options and other benefits.

## Need to extend your assets' lifetime?

Maximize your drive's lifetime with our services.

### Example services include:

- Life Cycle Assessment
- Upgrades, Retrofits and Modernization
- Replacement, Disposal and Recycling



Life cycle management

## Is performance most critical to your operation?

Get optimal performance out of your machinery and systems.

### Example services include:

- Advanced services
- Engineering and Consulting
- Inspection and Diagnostics
- Upgrades, Retrofits and Modernization
- Workshop Repair
- Tailored services



Performance improvement



# ABB Automation products



## DCS550

ABB offers the machine building industry a DC drive which combines state-of-the-art drive technology with proven DC technology. The new converter series is suited both for new installations and retrofitting, due to its robust technology and compact design.

Integrated "Winder", programmability and a powerful field converter provide machine manufacturers with a maximum of flexibility in terms of machine integration.



## AC500

ABB's powerful flagship PLC offering provides wide range of performance levels and scalability within a single simple concept where most competitors require multiple product ranges to deliver similar functionality.

## Programmability

Automation Builder integrates the engineering and maintenance for PLC, drives, motion, HMI and robotics. It complies with the IEC 61131-3 standard offering all five IEC programming languages for PLC and drive configuration. Automation Builder supports a number of languages and comes with new libraries, FTP functions, SMTP, SNTP, smart diagnostics and debugging capabilities.



## DC motors

ABB's DMI generation of DC motors turns many ingrained concepts upside down.

Thanks to creative innovations and state-of-the-art computerized optimization of technical solutions that earlier were considered to have reached the "design limits", a completely new generation of DC motors has evolved.

The DMI generation of DC motors offers completely new opportunities for improving productivity as a result of the substantially faster speed control. At the same time, the investment costs are lowered. Thanks to the precise optimization of the electrical and mechanical characteristics and the wide speed range, oversizing of motor drives to achieve the desired speed range is unnecessary.

## DCT880

ABB's DCT880 offers their customers a thyristor power controller for the accurate control of ohmic or inductive heating elements and infrared radiators in glass, plastic, annealing, drying, melting or heating applications. DCT880 controllers are available in eight compact sizes, ranging from 20 A to 4,200 A.

The integrated three-phase current measurement allows for implementing all load configurations from star, delta, single- and two-phase all the way to reactive-power optimized transformer control.

## DCS880-R

The DCS880-R Rebuild Kit replaces the control electronics of an existing DC drive. All power components, including the thyristors, are retained. The DCS880-R Rebuild Kit is suitable for almost all existing drives from different manufacturers. In addition, ABB has developed specifically tailored solutions for some existing types of converter: this is a cost-efficient option for DC Drive revamping

## ACS500-S

A PLC based modular automation solution that makes it easier than before to mix and match standard and safety I/O modules to expertly meet your safety requirements in all functional safety applications. "Extreme conditions" version is also offered.

## All-compatible drives portfolio

The all-compatible drives share the same architecture; firmware platform, tools, user interfaces and options. Yet, there is an optimal drive from the smallest water pump to the biggest cement kiln, and everything in the between. When you have learned to use one drive it is easy use the other drives in the portfolio.

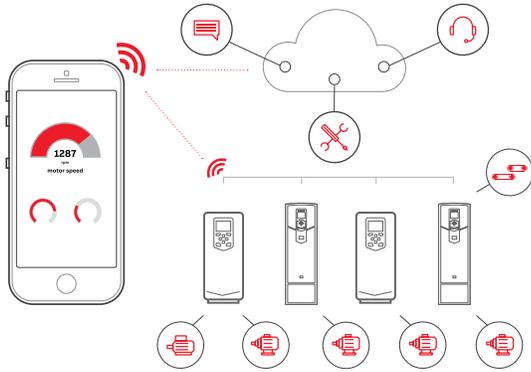
## Jokab safety products

ABB Jokab Safety offers an extensive range of innovative products and solutions for machine safety systems. It is represented in standardization organisations for machine safety and works daily with the practical application of safety requirements in combination with production requirements.



# Save time, ease troubleshooting and improve drive performance with ABB smartphone apps

## Better connectivity and user experience with Drivetune



Easy and fast access to product information and support

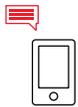
## Manage your drives and the process lines and machines they control



Easy access to cloud-based drive and process information from anywhere via an online connection



Start up, commission and tune your drive and application

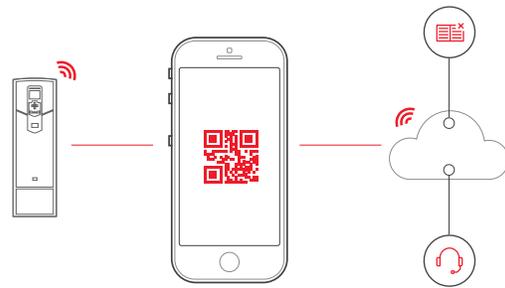


Simplified user guidance with instant access to drive status and configuration



Performance optimization via drive troubleshooting features and fast support

## Services and support on the go with Drivebase



Search for support documents and contacts

## Maintain and service all your installed drives on one or multiple sites



Get 6 months extra warranty for free by registering your drive with the Drivebase app



Access your product and service information in the cloud from anywhere



Access your drive's diagnostics data



Push notifications for critical product and service updates

## Access information anywhere

Download the apps using the QR codes below or directly from the app stores



## Plus codes

Option	Option code	Description
ACS-AP-I	standard	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
FIO-01	+L501	Digital I/O Extension
FAIO-01	+L525	Analog I/O Extension 2,
FDIO-01	+L526	Digital I/O Extension 2,
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 Interface
FDCO-01	+L503	DDCS communication 10/10 MBd
FDCO-02	+L508	DDCS communication 5/10 MBd
Application programming	+S551	Memory unit including drive application programming license
no OnBoard field exciter	0S163	Excludes OnBoard field exciter (H1 ... H4)
FEX-425 int	+S164	H5 and H6 internal 25 A exciter
SDCS-DSL-H10	+S521	1 DCSTLink channel, 0 channels optical power link
SDCS-DSL-H12	+S522	1 DCSTLink channel, 2 channels optical power link
SDCS-DSL-H14	+S523	1 DCSTLink channel, 4 channels optical power link
FSO-21	+Q972	Functional Safety Option
FSE-31	+L521	Functional Safety Encoder

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**Notes**

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## Notes

**Additional information**

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[www.abb.com/dc-drives](http://www.abb.com/dc-drives)

