ABB INDUSTRIAL DRIVES

ABB DC power supplies

DCS880, 20 A to 5200 A / 19600 A

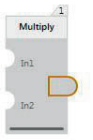
Simplifying your world
without limiting your possibilities!

Thyristor DC converters

With the DC power supplies ABB offers its customers thyristor based controllers for precise current and voltage control of electrolysis processes like hydrogen generation (power to gas), water treatment and many more.

Benefits

- Ideal to control electrolysis processes
- Suitable for electrolysis technologies for chlorine
- Suitable for electrolysis technologies for hydrogen including
  - PEM
  - Alkaline
  - Solid Oxide
- Up to 1190 V_{AC}
- Up to 1500 V_{DC}
- Up to 5200 A_{DC} / 19600 A_{DC} in 12-pulse configuration
- Controllable DC voltage and DC current using thyristors / SCR's
- Large variety of supervision and protective functions could be implemented
  - overcurrent
  - overvoltage
  - temperature supervision
  - current slope
  - etc.
- User-friendly and flexible
- Customized solutions in terms of
  - optimized reactive power
  - harmonics (THDi)
  - DC current ripple



Adaptive programming
Adaptive programming is ideal for creating simple control programs for various applications. It does not require expertise in programming is standard in all-compatible DC power-supplies.

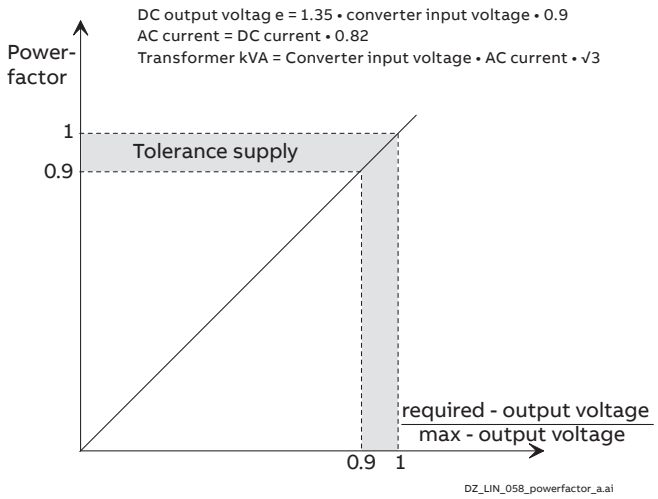
Removable memory unit
Stores all the firmware and parameter configurations in an easily replaceable and simple-to-install module.

All typical DC configurations
DCS880 standard firmware supports all standard configurations present in DC power-supply applications such as 6-pulse, 12-pulse parallel, serial and serial sequential, 24-pulse, M3, M6.

Remote monitoring
With a built-in web server, NETA-21 makes worldwide access easy.

Drive-to-drive link (D2D)
Allows fast communication between DC power-supplies including master-follower configurations as standard.

Selection of supply voltage



Engineering support

- Harmonics can be reduced by appropriate selection of supply transformer (i.e. 12-, 18- and 24-pulse configuration).

	5th	7th	11th	13th	THD_cur
6-pulse	21 %	14 %	9 %	7 %	36 %
12-pulse	1 %	1 %	8 %	2 %	11 %
24-pulse	4 %	3 %	1 %	1 %	6 %

- DC current ripple depends on load current, supply voltage, DC choke and configuration (6-pulse, 12-pulse, etc.)
  i.e. 6-pulse, 400 V, 4000 A, 0.6 mH, 10 % current ripple,
  12-pulse, 400 V, 4000 A, 0.15 mH, 10 % current ripple.
- Power factor is dependent on dimensioning of supply transformer and converter supply voltage in relation to DC output voltage, thus depends on the system not the DC power-supply only.

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 DC power-supply startup, configuration and daily use and process tuning. PC tool is connected to the DC power-supply via Ethernet or USB interface.

Communication with all major automation networks
Fieldbus adapters enable connectivity with all major automation networks.

Flexible product configurations
DC power-supplies are built to order with a wide range of options. Ready made cabinets with or without transformer are available up to 20 MW. Containerized solutions available upon request.

Extended connectivity
In addition to the standard interfaces, the DC power-supplies has three built-in slots for additional input/output extension modules.

ABB DC converter

Overview

- cabinet solutions individually adaptable to customer requirements (cable connection, color, protection class, etc.)
- protection of stacks can be realized by programming features of DCS880
- user-defined accessories like separate connection to PLC or automation systems via fieldbus available
- transformer and/or T-reactor/ DC choke can be included
- wide range of switches and protection devices available
- good cos phi / low harmonics (THDi) in 12-pulse configuration

Ratings, types and voltages

DCS880-A - 6-pulse / 12-pulse parallel /12-pulse serial

Unit size	Bridge type	Module type	Rated current IP21	Supply voltage [V_{AC}]						
	2-Q		I_{DC} [A]	400	500/525	600	690	800	990	1190
H3	●	290	220			●				
	●	315	285	●	●					
	●	405	360	●	●					
	●	470	410	●	●					
H4	●	590	370			●				
	●	610	540	●	●					
	●	740	670	●	●					
	●	900	810	●	●					
H6	●	900	855			●	●			
	●	1200	1140	●④	●					
	●	1500	1425	●④	●	●	●			
	●	2000	1850	●④	●	●	●			
H7	●	1900 ③	1900 ③					●		
	●	2050 ③	1950 ③		●④	●④	●			
	●	2500 ③	2450 ③	●④	●④	●④	●			
	●	2500 ③	2500 ③					●		
	●	3000 ③	3000 ③	●④	●④	●④	●	●		
H8	●	2050 ③	2050 ③						●	
	●	2600 ③	2600 ③						●	●
	●	3300 ③	3300 ③	●④	●④	●④	●	●	●	●
	●	4000 ③	3800 ③							●
	●	4000 ③	4000 ③	●④	●④	●④	●	●	●	
	●	4800 ③	4700 ③			●④	●	●		
	①	4830 ③	4800 ③						●	
	●	5200 ③	5100 ③	●④	●④					
	①	5230 ③	5200 ③		●④		●	●		
H8P②	●	5200 ③	4900 ③						●	
	●	6600 ③	6200 ③	●④	●④	●④	●	●	●	
	●	8000 ③	7600 ③	●④	●④	●④	●	●	●	
	●	9600 ③	9000 ③			●④	●	●		
	●	9999 ③	9800 ③	●④	●④	●④				

① 1-Q solution only

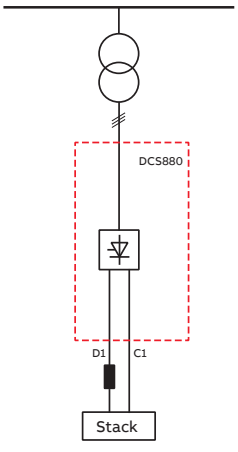
② I_{DC} values for 2 x hard parallel solution

③ DCS880-A enclosed 12-pulse parallel configurations are available:
12-pulse parallel (2 x I_{DC} (6-pulse) e.g. H8; 5.1 kA_{DC} @ 400 V_{AC}: 10.2 kA_{DC}).
Combinations are possible:
e.g. 2 x H8P = 12-pulse 9.8 kA_{DC} @ 400 V_{AC}: 9.8 kA_{DC} x 2 = 19.6 kA_{DC}

④ DCS880-A enclosed 12-pulse serial configurations are available:
12-pulse serial (2 x I_{DC} (6-pulse) e.g. H8; 5.1 kA_{DC} @ 400 V_{AC}: 5.1 kA_{DC} @ 2 x 400 V_{AC}).

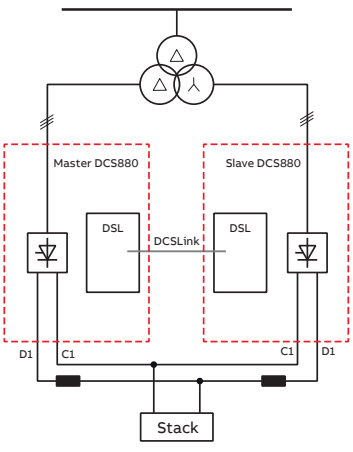
Configurations

6-pulse thyristor



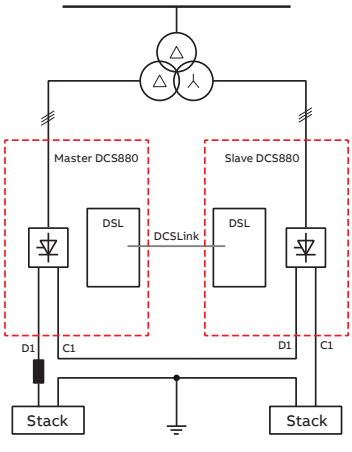
6-pulse
(i.e. 500 V / 5,000 A)

12-pulse parallel thyristor



12-pulse parallel
(i.e. 500 V / 10,000 A)

12-pulse serial thyristor



12-pulse serial
(i.e. 1,000 V / 5,000 A)

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