POWER CONVERTERS AND CONTROLLERS

ABB Power controllers

DCT880 Thyristor power controller - Catalog

Scalability.
Reliability.
DCT880 series.

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Simplify your world
without limiting your possibilities

The DCT880 is a SCR power controller for accurate and efficient power management across a wide range of industrial heating processes for resistive heaters, inductive heaters, and infrared heaters. In applications like annealing, drying, melting, and heating in the glass, plastic, or metals industry it provides the advanced Power Optimizer, flexible load configurations, and seamless integration into automation networks. The DCT880 delivers reliable performance, consistent process quality, and optimized energy utilization.

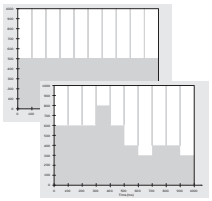
Easy-to-use
- All-compatible units/drives share the same easy-to-use user interfaces.
- Multilingual control panel with clear display.
- Graphical PC tools for engineering, commissioning, and maintenance.

Engineered-to-order cabinets (DCT880-A)
- All the essential features are built-in.
- Flexible product configurations engineered-to-order.
- Wide selection of options and variants.
- Compact design.
- Cabinet classes for different environments.

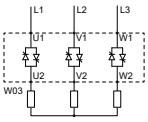
Fieldbus and Industrial ethernet solutions
- Communication with all major automation networks.
- Remote monitoring.
- Integration tools for various PLCs.

Minimized downtime
- Robust, long lifetime design for maximum reliability.
- Removable memory unit.
- Each unit is factory-tested.
- Worldwide service and support.

The DCT880 serves industries such as metals, glass, pulp and paper, chemicals, plastics, pharmaceuticals, food and beverage, oil and gas, electromobility and many more. Its precise heat control, combined with optimized load balancing and reduced peak power demand, helps customers improve product quality, enhance process consistency, and lower operational costs.



Power optimizer
- Lowering peak loads.
- Balancing and optimizing starting times of multiple consumers.
- Uses the OnBoard device-to-device link.
- Available as software (add using +S552).



All control modes
- Including all control modes and variants like: Phase angle, full-wave, and half-wave control.
- Soft-start, ramp down and starting phase angle configurable via parameters.

Premium control and programmability
- Start-up and maintenance tool.
- Adaptive Program as standard.
- Unit-based PLC programmability (IEC 61131-3) for fully customized solutions.

Extended connectivity
- In addition to the standard interfaces, the DCT880 has three built-in slots for additional I/O extension modules.

Type code

Type code: DCT880 - W03 - 1300 - 04XS + L500

Product family:
DCT880

Type:
W0 = Standard unit
A0 = Cabinets

Power part type:
2 = Two-leg anti-parallel circuit
3 = Three-leg anti-parallel circuit

Unit type:
1300 = Rated AC current (RMS) per leg,
here 1300 A per leg

Rated AC voltage:
04 = 110 ... 415 V_{AC} (IEC)/400 V_{AC} (UL)
05 = 110 ... 525 V_{AC} (IEC)/525 V_{AC} (UL)
07 = 315 ... 690 V_{AC} (IEC)/600 V_{AC} (UL)
08 = 360 ... 800 V_{AC}
10 = 450 ... 990 V_{AC}

Power connection:
X = Standard T1 ... T6
R = Mains connection and CTs on the right T8

Revision code:
0 = T1 ... T5: With SDCS-PIN-H11
T6: Standard (equipped with SDCS-CON-H01, SDCS-POW-H01, 2 x SDCS-PIN-H51, SDCS-PIN-H41 and SDCS-CMI-H02)
A = T1 ... T5: With SDCS-PIN-H11A
B = T5: New cooling fan R2E250-RE04-10
S = T6: Special design (equipped with SDCS-CON-H01, SDCS-PIN-H11A, SDCS-CMI-H02, SDCS-REB-H11 and SDCS-PIN-46)
T = T6: Special design (equipped with SDCS-CON-H01, SDCS-PIN-H11A, SDCS-CMI-H02, SDCS-REB-H11 and SDCS-PIN-46) and new cooling fan R2E250-RE04-10

Plug-in options
External options

Environmental conditions

System connection	
Voltage, 3-phase:	110 … 990 VAC acc. to IEC 60038 110 … 690 VAC acc. to UL 508
Voltage deviation:	IEC: -10 % +15 % continuous; ±20 % short time (0.5 to 30 cycles) UL: ±10 % continuous; ±15 % short time (0.5 to 30 cycles)
Rated frequency:	50 Hz or 60 Hz
Static frequency deviation:	50 Hz ±2 %; 60 Hz ±2 %
Dynamic frequency range:	50 Hz: ±5 Hz; 60 Hz: ± 5 Hz
df/dt:	17 %/s

Degree of protection	
Thyristor power controllers and options (fuses, etc.):	IEC: IP 00; acc. to IEC/EN 60529 UL: open type acc. to UL 61800-5-1
Overvoltage category (all inputs):	III acc. to IEC 60664-1
Protective class:	I acc. to IEC 61800-5-1

Paint finish	
Thyristor power controllers:	Body RAL 7012 Cover RAL 9017 & RAL 9002

Installation category	
Power network:	Installation category III up to 600 V Installation category II up to 690 V
Cooling fan supply:	230 VAC (T4, T5, T6 @ 1300 A) 400 ... 500 VAC (T6 @ 1750 A) 400 VAC (T8)

Environmental limit values	
Permissible cooling air temperature With rated AC current (forced ventilation):	0 … +40°C
With different AC current see figure below:	+30 … +55°C
For options:	0 … +40°C
Relative humidity (at 5 … +40°C):	5 … 95 %, no condensation
Relative humidity (at 0 … +5°C):	5 … 50 %, no condensation
Change of the ambient temperature:	< 0.5°C / minute
Storage temperature:	-40 … +55°C
Transport temperature:	-40 … +70°C
Pollution degree (IEC 60664-1, IEC 60439-1):	2

Site elevation	
<1000 m above mean sea level:	100 %, no current reduction
>1000 m above mean sea level:	Current reduction, see figure below
Duty cycle:	Uninterrupted duty Continuous operation
Form designation:	Form 4

Utilization categories	
AC51:	Non inductive or slightly inductive loads, resistance furnaces
AC56a:	Switching of transformers

Sound pressure level

Size	Sound pressure level L_P (1 m distance)	Vibration (EN 60068-2-6)	Short circuit withstand rating
T1	55 dBA	3 mm, 2 ... 9 Hz 1 g, 9 ... 200 Hz	The DCT880 is suitable for use in a circuit capable of delivering not more than: 65 kA rms symmetrical ampere at a maximum of 690 V_{AC}.
T2	55 dBA		
T3	60 dBA		
T4	66 ... 70 dBA, depending on fan		
T5	75 dBA	0,3 mm, 2 ... 9 Hz 0,1 g, 9 ... 200 Hz	The DCT880 is suitable for use in a circuit capable of delivering not more than: 100 kA rms symmetrical ampere.
T6	70 dBA		
T8	82 dBA		

Mean Time Between Failure (MTBF)

The **M**ean **T**ime **B**etween **F**ailure calculation for units in operation is based on standard SN 29500. All failures occurred during shipping and commissioning are excluded from the calculation. The MTBF rates are calculated considering:

- That the preventive maintenance plan is followed.
- A 40°C ambient temperature.

DCT880-W0x size T1 … T5 = 34.5 years.
DCT880-W0x size T6 = 31.0 years.
DCT880-W0x size T8 = 31.0 years.

Mean Time to Repair (MTR)

The current **M**ean **T**ime to **R**epair value for the DCT880 is:
DCT880-W02 size T1 … T5 = 1.0 hours.
DCT880-W03 size T1 … T5 = 1.5 hours.
DCT880-W02 size T6 = 1.5 hours.
DCT880-W03 size T6 = 2.0 hours.
DCT880-W0x size T8 = 3.0 hours

Regulatory compliance

The thyristor power controllers 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
Low Voltage Directive		
2014/35/EU	Declaration of Conformity	EN 60947-4-3: 2014
EMC Directive		
2014/30/EU	Declaration of Conformity	EN 60947-4-3: 2014
RoHS & WEEE		
2011/65/EU & 2012/19/EU	Declaration of Conformity	

North American Standards

In North America, the system components fulfil the requirements as shown below.

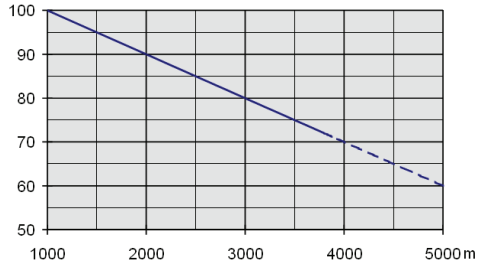
DCT880-W02/W03 units size T1... T6 up to 800 VAC		
	US	**Canada**
Standard	UL 508: 2018	CAN/CSA C22.2 No. 14-2018
Certificate no.	(TÜV-SÜD) No. U10 045204 0015 Rev. 01	
DCT880-W02/W03 units size T1... T5 up to 690 VAC		
	US	**Canada**
Standard	UL 508: 2018	CAN/CSA C22.2 No. 14-2018
Certificate no.	(UL) No. E473158	

UK Legislation - UKCA

In the UK, the system components fulfil the following regulations.

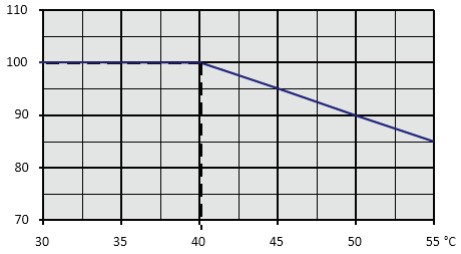
DCT880-W02/W03 units size T1... T8	
Electrical Equipment (Safety) Regulations	2016 UK Safety
Electromagnetic Compatibility Regulations 2016	2016 UK EMC
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations	2012 UK RoHS

Effect of the site elevation above mean sea level on the thyristor power controller's load capacity:



Current reduction to % of nominal thyristor power controller current.

Effect of the ambient temperature on the thyristor power controller's load capacity:



Current reduction to % of nominal thyristor power controller current.

Effect of site elevation and ambient temperature on the thyristor power controllers load capacity:

Ambient temperature	Site elevation in m above M.S.L.			
	≤ 1000 m	≤ 2000 m	≤ 3000 m	≤ 4000 m
30°C	100 %	100 %	90 %	80 %
35°C	100 %	95 %	85 %	75 %
40°C	100 %	90 %	80 %	
45°C	95 %	85 %		
50°C	90 %	80 %		
55°C	85 %			

Current reduction to % of nominal thyristor power controller current.

DCT880 SCR power controllers

General
The DCT880-W SCR power controllers have protection class IP00 and are to be mounted in a cabinet or a finger protected area. There are different sizes (T1 … T8), graduated in terms of current and voltage ranges.

All units are equipped with a control panel. It can be snapped into place on the SCR power controller itself or installed in the cabinet door by means of a mounting kit.

Accessories such as external/internal fuses, etc. are also available, to complete the controller system.

The power part of the units is available as 3 leg (W03) or 2 leg (W02) configuration. The leg configuration has an influence on the possible load configurations. W02 SCR power controllers are usable for common controlled delta (3D) or star (3S) load arrangements or in 2 phase/single phase load configurations.

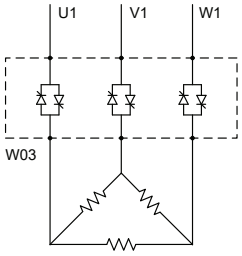
Reference variables
For the DCT880 SCR power controllers the incoming line-to-line voltage determines the required voltage class. Additionally, the required leg current determines the current class. The leg current depends on the load configuration and the power of the load.

The load configuration of the heating elements is in most applications given by the heating element supplier, e.g., in 3-phase delta or star configurations.

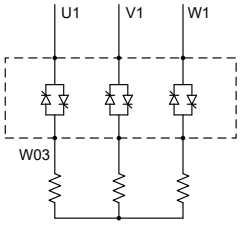
Some heating elements like molybdenum disilicate (MoSi2) or silicium carbide (SiC) often require phase angle control due to their temperature dependent resistance.
These elements should be controlled in so called independent controllable configurations, like star with neutral (4S) or open-delta (6D) load configurations. In these load configurations each heating element can be controlled individually by phase angle control in the desired close loop control.

Load configurations

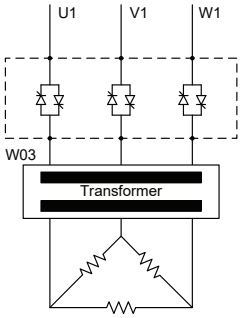
Delta (3D)



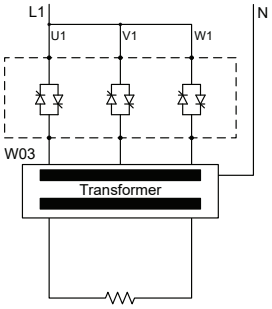
Star (3S)



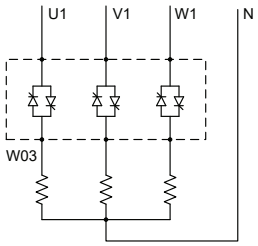
Transformer load in delta (3D)



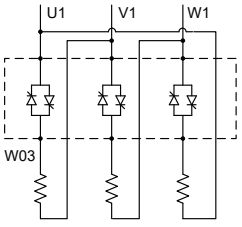
Multitap



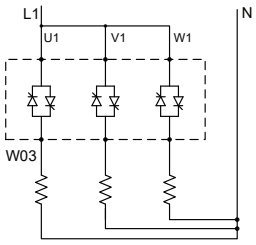
Star with neutral (4S)



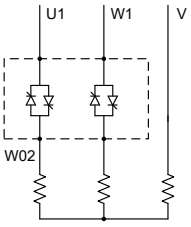
Open delta (6D)



3 x single phase



Economic (star) (3S)



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Note: Not all load configurations are possible with all units.

Ratings, types, and voltages

Current ratings, dimensions, and weights

Unit size	Rated current*	Supply voltages [V_{AC}]								Weight	Dimensions	
		W03 (3 legs)				W02 (2 legs)						
	I_{AC} [A]	400/525	690	800	990	400/525	690	800	990	[kg]	h x w x d [mm]	h x w x d [inch]
T1	20	●	-	-	-	●	-	-	-	11	370.5 x 270 x 216	14.59 x 10.63 x 8.50
	35	●	●	-	-	●	●	-	-			
	55	●	-	-	-	●	-	-	-			
	80	●	●	-	-	●	●	-	-			
	100	●	●	-	-	●	●	-	-			
	125	●	-	-	-	●	-	-	-			
T2	160	●	●	-	-	●	●	-	-	16	370.5 x 270 x 269	14.59 x 10.63 x 10.59
	200	●	-	-	-	●	●	-	-			
	245	●	-	-	-	●	-	-	-			
T3	325	●	-	-	-	●	-	-	-	25	466 x 270 x 313	18.35 x 10.63 x 12.32
	360	●	●	-	-	●	●	-	-			
	420	●	-	-	-	●	-	-	-			
T4	550	●	-	-	-	●	-	-	-	38	669 x 270 x 352	18.35 x 10.63 x 13.86
	630	-	●	-	-	-	●	-	-			
	675	●	-	-	-	●	-	-	-			
	740	●	-	-	-	●	-	-	-			
T5	890	●	●	-	-	-	-	-	-	60	771 x 270 x 368	30.35 x 10.63 x 14.49
	960	-	-	-	-	●	●	-	-			
T6	1300	●	●	●	-	●	●	●	-	125	1200 x 468 x 431	47.24 x 10.63 x 16.97
	1500	●	●	●	-	●	●	●	-			
	1750	●	●	●	-	●	●	●	-			
T8	2100	●	●	●	●	-	-	-	-	315	1750 x 995 x 559	68.90 x 37.60 x 22.01
	2700	●	●	●	●	-	-	-	-			
	3200	●	●	●	●	-	-	-	-			
	3900	-	●	●	●	-	-	-	-			
	4200	●	-	-	-	-	-	-	-			

*rated current per leg

T1, T2

T3

T4

T5

T6

T8

Current rating
W03 SCR power controllers

The current ratings for the DCT880 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.

Unit type W03 SCR power controllers	I_{AC} [A]	P_{out} [kW]	P_{out} [kW]	Fan voltage [V_{AC}]	Air volume [m ³/h]	P_{loss} [kW]	Frame Size
400/415/500/525 V		**at 400 V**	**at 500 V**				
DCT880-W03-0020-04/05	20	13	17	without fan	-	0.08	T1
DCT880-W03-0035-04/05	35	24	30		-	0.14	
DCT880-W03-0055-04/05	55	38	47	internal	170	0.24	
DCT880-W03-0080-04/05	80	55	69		170	0.32	
DCT880-W03-0100-04/05	100	69	86		170	0.36	
DCT880-W03-0125-04/05	125	86	108		170	0.45	
DCT880-W03-0160-04/05	160	110	138		170	0.61	T2
DCT880-W03-0200-04/05	200	138	173		170	0.66	
DCT880-W03-0245-04/05	245	169	212		170	0.73	
DCT880-W03-0325-04/05	325	225	281		170	0.93	T3
DCT880-W03-0360-04/05	360	249	311		170	1.06	
DCT880-W03-0420-04/05	420	291	368		255	1.28	
DCT880-W03-0550-04/05	550	381	476	230; 1~ph	390	1.53	T4
DCT880-W03-0675-04/05	675	467	584		390	1.94	
DCT880-W03-0740-04/05	740	512	640		425	2.17	
DCT880-W03-0890-04/05	890	616	770		918	2.86	T5
DCT880-W03-1300-04/05	1300	900	1125		1000	4.73	T6
DCT880-W03-1500-04/05	1500	1039	1299	400; 3~ph	1600	5.52	
DCT880-W03-1750-04/05	1750	1212	1515		1600	6.16	
DCT880-W03-2100-04/05	2100	1454	1819		4200	6.75	T8
DCT880-W03-2700-04/05	2700	1870	2338		4200	8.10	
DCT880-W03-3200-04/05	3200	2217	2771		4200	9.58	
DCT880-W03-4200-04/05	4200	2909	3637		4200	11.44	
690 V		**at 690 V**					
DCT880-W03-0035-07	35	42	-	internal	170	0.12	T1
DCT880-W03-0080-07	80	95	-		170	0.28	
DCT880-W03-0100-07	100	120	-		170	0.37	
DCT880-W03-0160-07	160	191	-		170	0.48	T2
DCT880-W03-0360-07	360	430	-		170	1.09	T3
DCT880-W03-0630-07	630	753	-	230; 1~ph	390	1.70	T4
DCT880-W03-0890-07	890	1064	-		918	2.86	T5
DCT880-W03-1300-07	1300	1553	-		1000	5.00	T6
DCT880-W03-1500-07	1500	1792	-	400; 3~ph	1600	5.89	
DCT880-W03-1750-07	1750	2091	-		1600	6.16	
DCT880-W03-2100-07	2100	2509	-		4200	7.42	T8
DCT880-W03-2700-07	2700	3226	-		4200	8.06	
DCT880-W03-3200-07	3200	3824	-		4200	9.44	
DCT880-W03-3900-07	3900	4660	-		4200	11.27	
800 V		**at 800 V**					
DCT880-W03-1300-08	1300	1801	-	230; 1~ph	1000	5.11	T6
DCT880-W03-1500-08	1500	2078	-	400; 3~ph	1600	6.03	
DCT880-W03-1750-08	1750	2424	-		1600	6.83	
DCT880-W03-2100-08	2100	2910	-		4200	7,42	T8
DCT880-W03-2700-08	2700	3741	-		4200	8.06	
DCT880-W03-3200-08	3200	4434	-		4200	9.44	
DCT880-W03-3900-08	3900	5404	-		4200	11.47	
990 V		**at 990 V**					
DCT880-W03-2100-10	2100	3601	-	400; 3~ph	4200	7.07	T8
DCT880-W03-2700-10	2700	4630	-		4200	8.94	
DCT880-W03-3200-10	3200	5487	-		4200	10.70	

Current rating
W02 SCR power controllers

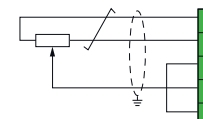
The current ratings for the DCT880 with 50 Hz and 60 Hz supplies are given below. The symbols are described below the table. The characteristics are based on an ambient temperature of max 40 °C and an elevation of max. 1000 m a.s.l.

Unit type W03 SCR power controllers	I_{AC} [A]	P_{out} [kW]	P_{out} [kW]	Fan voltage [V_{AC}]	Air volume [m^3/h]	P_{loss} [kW]	Frame Size
400/415/500/525 V		**at 400 V**	**at 500 V**				
DCT880-W02-0020-04/05	20	13	17	without fan	-	0.06	T1
DCT880-W02-0035-04/05	35	24	30		-	0.10	
DCT880-W02-0055-04/05	55	38	47	internal	170	0.17	
DCT880-W02-0080-04/05	80	55	69		170	0.22	
DCT880-W02-0100-04/05	100	69	86		170	0.24	
DCT880-W02-0125-04/05	125	86	108		170	0.30	
DCT880-W02-0160-04/05	160	110	138		170	0.42	T2
DCT880-W02-0200-04/05	200	138	173		170	0.44	
DCT880-W02-0245-04/05	245	169	212		170	0.49	
DCT880-W02-0325-04/05	325	225	281		170	0.63	T3
DCT880-W02-0360-04/05	360	249	311		170	0.71	
DCT880-W02-0420-04/05	420	291	363		255	0.86	
DCT880-W02-0550-04/05	550	381	476	230; 1~ph	390	1.05	T4
DCT880-W02-0675-04/05	675	467	584		390	1.32	
DCT880-W02-0740-04/05	740	512	640		425	1.47	
DCT880-W02-0960-04/05	960	665	830		918	2.90	T5
DCT880-W02-1300-04/05	1300	900	1125		1000	3.62	T6
DCT880-W02-1500-04/05	1500	1039	1299	400; 3~ph	1600	4.14	
DCT880-W02-1750-04/05	1750	1212	1515		1600	4.57	
690 V		**at 690 V**					
DCT880-W02-0035-07	35	42	-	internal	170	0.08	T1
DCT880-W02-0080-07	80	95	-		170	0.19	
DCT880-W02-0100-07	100	120	-		170	0.25	
DCT880-W02-0160-07	160	191	-		170	0.32	T2
DCT880-W02-0200-07	200	239	-		170	0.42	
DCT880-W02-0360-07	360	430	-		170	0.73	T3
DCT880-W02-0630-07	630	753	-	230; 1~ph	390	1.16	T4
DCT880-W02-0960-07	960	1147	-		918	2.90	T5
DCT880-W02-1300-07	1300	1553	-		1000	3.80	T6
DCT880-W02-1500-07	1500	1792	-	400; 3~ph	1600	4.39	
DCT880-W02-1750-07	1750	2091	-		1600	4.57	
800 V		**at 800 V**					
DCT880-W02-1300-08	1300	1801	-	400; 3~ph	1000	3.87	T6
DCT880-W02-1500-08	1500	2078	-		1600	4.48	
DCT880-W02-1750-08	1750	2424	-		1600	5.02	

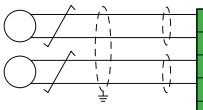
Standard interface and extensions
for comprehensive connectivity

Example of a typical SCR power controller input/out put connection diagram.

DCT880

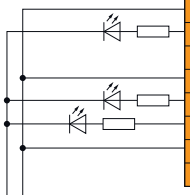


XAI	Reference voltage and analog inputs	
1	+VREF	+10 V_{DC}
2	-VREF	-10 V_{DC}
3	AGND	Common ground (connected to frame)
4	AI1+	±10 V, 0 (4) ... 20 mA or ±20 mA [R_{in} = 100 Ω] depending on J1
5	AI1-	
6	AI2+	±10 V, 0 (4) ... 20 mA or ±20 mA [R_{in} = 100 Ω] depending on J2
7	AI2-	
8	AI3+	±10 V
9	AI3-	
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	Not used
J5	J5	AO1 current/voltage selection switch

XD2D	Device-to-device link	
1	B	Device-to-device link
2	A	
3	BGND	Isolated ground 2
J3	J3	Device-to-device link termination switch



XRO1, XRO2, XRO3	Relay outputs	
11	NC	250 V_{AC} /30 V_{DC} 2 A
12	COM	
13	NO	
21	NC	250 V_{AC} /30 V_{DC} 2 A
22	COM	
23	NO	
31	NC	250 V_{AC} /30 V_{DC} 2 A
32	COM	
33	NO	

XD24	Digital interlock	
1	DIL	Digital interlock, ground: DICOM
2	+24VD	+24 V_{DC}, 200 mA, ground: DIOGND
3	DICOM	Isolated digital input ground for DI1 ... DI5 and DIL
4	+24VD	+24 V_{DC}, 200 mA, ground: DIOGND
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	max. +24 V_{DC} — 2k — 100n — Relay driver — +24 V_{DC} DO — +3.3 V_{DC} DI — DIOGND
2	DIO2	

XDI	Digital inputs	
1	DI1	DI1 ... DI5 und DIL: max. +24 V_{DC} — 2k — 100n — DICOM — +3.3 V_{DC} DI
2	DI2	
3	DI3	
4	DI4	
5	DI5	
6	DI6	DI6: max. +24 V_{DC} — 2k — 100n — DIOGND — +3.3 V_{DC} DI

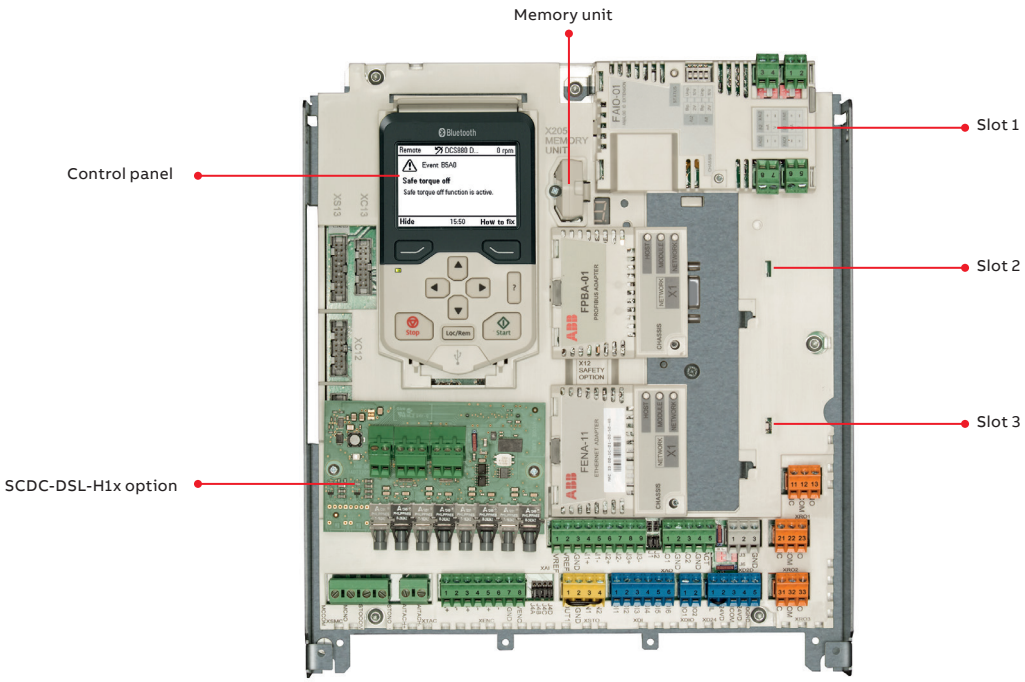
XSMC	Mains contactor		
1	MCCOM	250 V_{AC}/30 V_{DC} 2 A	Fixed output for the mains contactor
2	MCNO		
3	STOCOM	250 V_{AC}/30 V_{DC} 2 A	Not in use for DCT880
4	STONO		

X13	Control panel connection
X205	Memory unit connection

—
01 Control unit
SDCS-CON-H01

The DCT880 offers a wide range of standard interfaces. In addition, the unit has three option slots that can be used for extensions including fieldbus adapter modules and I/O extension modules.

Standard interface	Description
3 analog inputs (XAI)	Current input: –20 ... 20 mA. Voltage input: –10 ... 10 V. Resolution: 15 bit + sign bit.
2 analog outputs (XAO)	0 ... 20 mA, –10 ... 10 V
6 digital inputs (XDI)	24 V_{DC} logic level. DI6 (XDI:6) can alternatively be used as an input for a PTC.
Digital input interlock (DIIL)	24 V_{DC} logic level.
2 digital inputs/outputs (XDIO)	As input: 24 V_{DC} logic level. As output: Total output current of the 24 V_{DC} is limited to 200 mA.
3 relay outputs (XRO1, XRO2, XRO3)	250 V_{AC}/30 V_{DC}, 2 A.
Mains contactor (XSMC)	Mains contactor control.
Device-to-device link (XD2D)	Physical layer: EIA-485.
Built-in Modbus	Physical layer: EIA-485.
Assistant control panel	Connector: RJ-45.
PC tool	USB via control panel.



Control panel

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02

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05

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01
Bluetooth control panel, ACS-AP-W
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02
Control panel, ACS-AP-I
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03
Drive connectivity panel
—
04
Control panel mounting platform DPMP-01
—
05
Control panel mounting platform DPMP-02

Bluetooth control panel (ACS-AP-W) and control panel (ACS-AP-I)
The control panel comes with a clear multilingual graphical display. It can be used for parameter settings, parameter back-up, unit monitoring, unit operation, fault tracing and as USB interface for the PC tool. There are two different control panels. One with Bluetooth (ACS-AP-W) and one without Bluetooth (ACS-AP-I). Both control panels can be mounted either on the unit or on the door of the cabinet. They are compatible with any ABB all-compatible units/drives.

The control panel helps to set the essential parameters quickly and get the unit into action. Also, diagnostics are easy due to event history, clear text messages and real-time stamps.

Bluetooth control panel
The Bluetooth control panel enables easy and secure wireless connection to the unit using the Drivetune app. The PC tool Drive Composer pro/entry can be used for startup, commission and maintain the unit.

Drive connectivity panel
Control panel variant with built-in Bluetooth and mobile radio. It offers easy remote condition monitoring, plug, and play installation with secure and reliable wireless connection to the ABB Ability™ Digital Powertrain, the cloud-based condition monitoring portal for ABB Drives. Possible to connect with the Drivetune mobile app and Drive Composer pro/entry as well. Available with a renewable subscription to the ABB Ability™ Digital Powertrain.*)

Control panel mounting platform (DPMP-01)
It is for flush mountings and has IP54/UL Type 12 protection class (IP20, when control panel is not mounted). It supports daisy chaining of the control panel link.

Control panel mounting platform (DPMP-02)
It is for surface mounting and has an IP65/UL Type 12 protection class (IP20, when control panel not mounted).

Daisy chain panel interface kit (DPI-H01 kit)
It is a daisy chain panel interface for the DCT880 including a plastic cover, an SDCS-DPI-H01 adapter, a patch cable, a grounding cable plus screws and plastic stand offs.

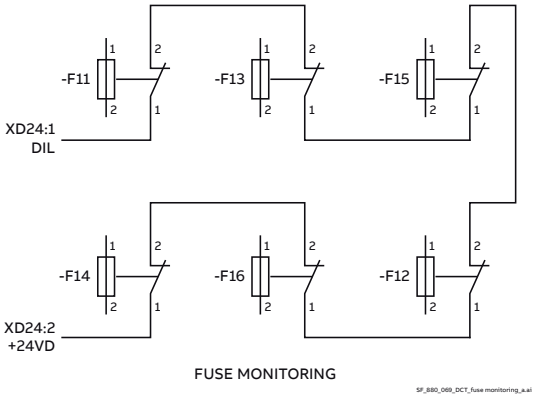
*) Please contact your local ABB office to check availability.

Control panel
A control panel (no Bluetooth) is included as standard in the delivery.

Option code	Ordering code for loose item	Description	Type
Standard	-	Control panel (no Bluetooth)	ACS-AP-I
+J429	-	Bluetooth control panel	ACS-AP-W
0J404	-	No control panel	
-	3AUA0000108878	Control panel mounting platform, flush mounted, IP54/UL Type 12 (does not include a control panel)	DPMP-01
-	3AXD50000009374	Control panel mounting platform, surface mounted, IP65/UL Type 12 (does not include a control panel)	DPMP-02
+J428	-	Daisy-chain panel interface kit	DPI-H01 Kit

Additional fusing, voltage and current measurement

Fusing
For all units size T8 a fuse monitoring is available using +G420.
The internal branch fuses are equipped with micro-switches to detect blown fuses in the power unit. The micro-switches are connected in series and must be connected to one of the DIs on the SDCS-CON-H01 of the control unit. Connect that DI by means of parameters to an external event.



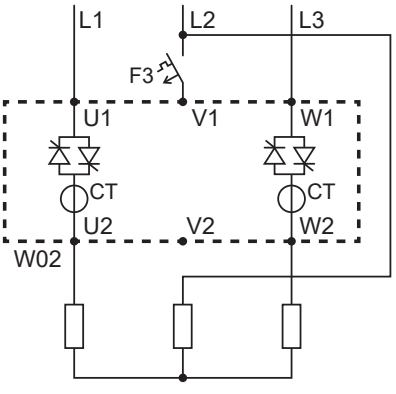
Galvanic isolated voltage measurement
For all units size T6 and T8 galvanic isolation is available (standard and multitap operation) using +S189.
The galvanic isolation is used for rated voltages ≤ 990 V_{AC}. It is used to replace the high-ohmic voltage measurement and gives the advantage of a total isolation between power part and the unit's electronics. For more details refer to the DCT880 Manual (3ADW000431) and DCT880 Multitap Control Manual (3ADW000440).

External output voltage measurement
For all units size T6 and T8 external output voltage measurement is available using +S191. The internal high ohmic output voltage measurement channels are removed and replaced by an external output voltage measurement source. For more details refer to the DCT880 Manual (3ADW000431).

Current measurement for a DCT880-W02 units
For all a DCT880-W02 units size T1 … T5 input and output terminals, including current measurement (CT), are added using +S510.

As standard phase V is not assembled for units DCT880-W02 . Using the plus code input and output terminals, including current measurement (CT), are added.

W02 Standard configuration



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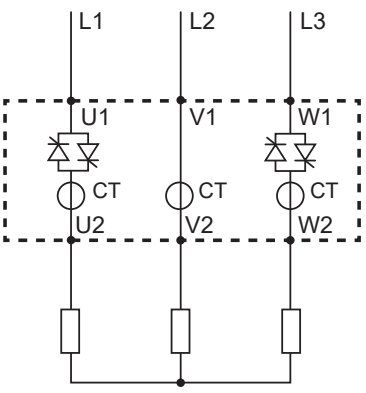
W02 with 3rd CT +S510



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Connectivity to automation systems

—
01
The DCT880 is compatible with many communication protocols
—
02
I/O extension modules

Fieldbus adapters

DCT880 SCR power controllers are compatible with a wide range of communication protocols. The unit comes with a Modbus RTU fieldbus interface as standard.

The DCT880 supports two communication connections simultaneously (same or different). Thus, it has the possibility for redundant communication. As well as up to three I/O extension modules (same or different).

Fieldbus adapters

Option code	Communication protocol	Adapter
+K451	DeviceNet™	FDNA-01
+K454	PROFIBUS DP. DPV0/DPV1	FPBA-01
+K457	CANopen®	FCAN-01
+K458	Modbus RTU	FSCA-01
+K462	ControlNet	FCNA-01
+K469	EtherCAT®	FECA-01
+K470	POWERLINK	FEPL-02
+K490	EtherNet/IP	FEIP-21
+K491	Modbus/TCP	FMBT-21
+K492	PROFINET IO	FPNO-21

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01

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02

I/O extension modules

The standard I/Os can be extended using optional analog and digital I/O extension modules. The modules are easily installed in the extension slots located on the unit.

If there are not enough slots in the unit, the FEA-03 I/O extension adapter increase the number of slots. Each FEA-03 has two additional slots for I/O extension modules.
The connection to the unit is using fiber optic cables. The FEA-03 can be mounted on a DIN rail (35 mm × 7.5 mm).

Analog and digital I/O extension modules

Option code	Description	I/O module
+L501	4 x DIO, 2 x RO	FIO-01
+L500	3 x AI (mA/V), 1 x AO (mA), 2 x DIO	FIO-11
+L515	2 I/O extension slots with I/O extension adapter	FEA-03
+L525	2 x AI (mA/V), 2 x AO (mA)	FAIO-01
+L526	3 x DI (up to 250 V_{DC} or 230 V_{AC}), 2 x RO	FDIO-01

Premium control and programmability

—
01
Adaptive Program (AP)

Power Optimizer
Industrial processes use large amounts of process heat generated by electricity.
This can be expensive, and even more if high peak loads occur.
The DCT880 can be equipped with power optimization algorithms, which mitigates the costs by reducing peak loads for applications having multiple consumers.

For industrial processes that use large amounts of process heat, ensuring the efficient distribution of electrical power in heating applications is necessary to maximize energy and cost savings. This is especially true in case of applications with high peak loads. The Power Optimizer of the DCT880 helps to save costs by reducing peak load demands using a micro time energy scheduling algorithm. This shifts the periods in which energy is consumed, without affecting the heating process.

The Power Optimizer is important for systems with multiple consumers using full wave control, such as processing lines and industrial furnaces. It reduces peak loads by optimizing the load balancing of up to 50 consumers running at the same time.
The maximum total cable length is 50 m.

Customer benefits of the Power Optimizer
- Reduced peak load demand.
- Easy to add option by memory unit (+S552).
- Possibility for active load management.
- Easy-to-use, no parameters with complicated tuning procedures.
- Automated master switching in case of a master consumer failure.

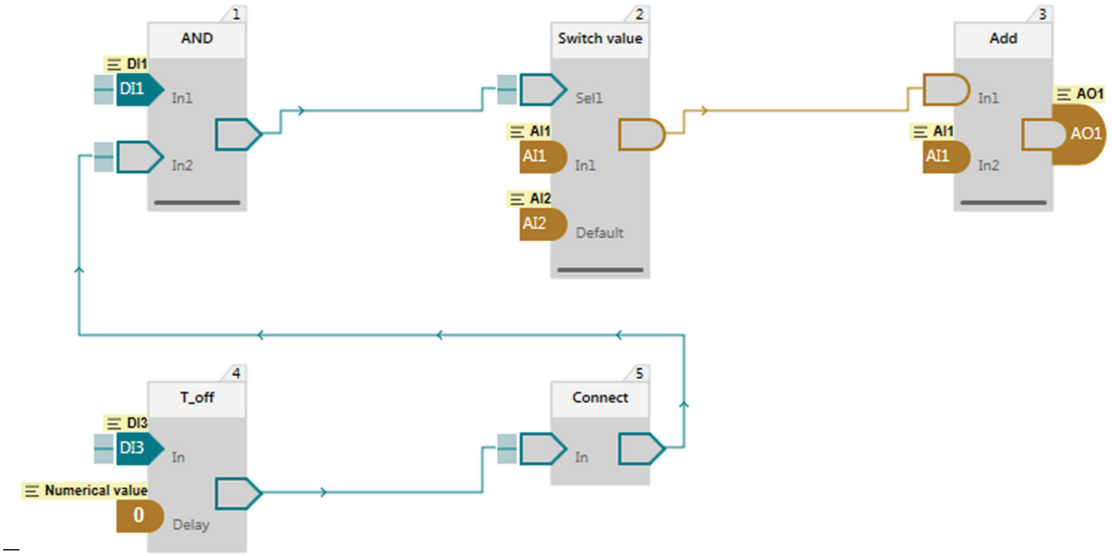
Adaptive Program (AP)
AP is an easy-to-use programming tool, which allows flexible adjustments to the DCT880 firmware. It is an integral part of Drive Composer pro/entry.

IEC programming
Is based on the IEC 61131 standard for full scale PLC programmability. The license on the DCT880 memory unit is available with option code +S551*.

* For more advanced functions, the PC tool Drive Application Builder must be ordered separately.

IEC programming and Power Optimizer

Option	Option code
IEC 61131 License key	+S551
Power Optimizer	+S552



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01

PC tool for easy startup and maintenance

The PC tool Drive composer pro/entry offers a fast and harmonized setup, commissioning and monitoring for the whole ABB drives and SCR power controllers portfolio.

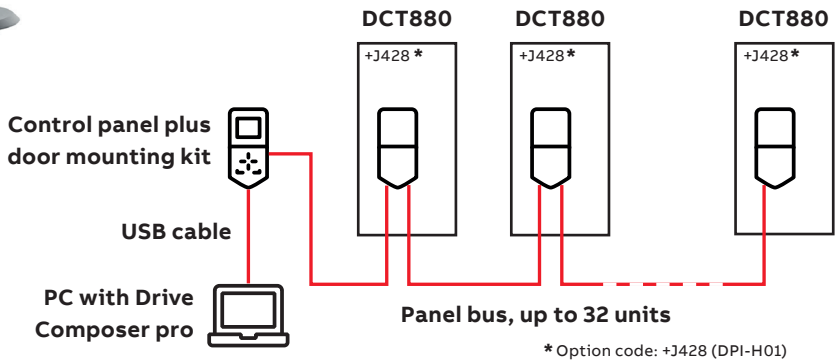
The free version of the tool provides:
- One on one connection (USB via control panel).
- Startup capabilities.
- Online parameter setup.
- Adaptive Program (AP).
- Monitoring (100 ms cycle time).
- Saving parameter files.
- Support package (contains parameters and loggers).

Support package
All unit information such as parameter files and loggers (event- and dataloggers) are gathered into a support package with a single mouse click.

This provides faster fault tracing, shortens downtime, and minimizes operational and maintenance costs.

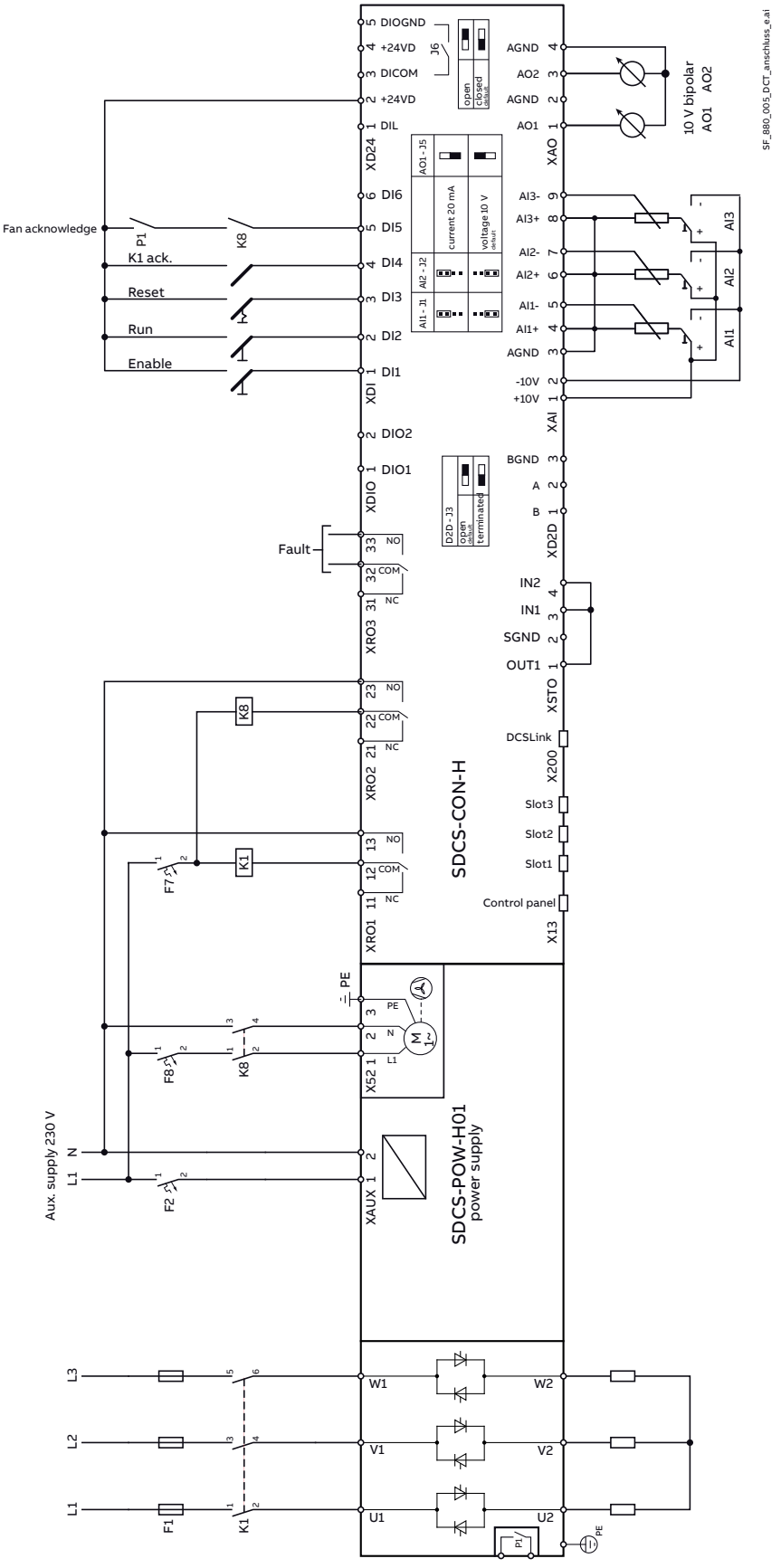
Drive Composer pro
Drive Composer pro provides the basic functionality of the Drive Composer entry plus advanced features such as:
- Multiple connections possible (USB via control panels or ethernet via fieldbus modules).
- Offline parameter setup.
- Search parameters.
- Downloading and uploading files.
- Full backup and restore functions.
- Fast monitoring capabilities of multiple signals from several units in the PC tool network.
- Control diagrams of the unit's firmware. The control diagrams save users from browsing long lists of parameters and help to set the SCR power controller's logic quickly and easily.

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



* Option code: +J428 (DPI-H01)

DCT880 basic circuit diagram



Selection guide

Project name		**Unit name**	
SCR power controller type DCT880-W0			
U1, V1, W1 - Mains voltage	V	U_{AUX} - Auxiliary supply voltage	V
U2, V2, W2 - Load voltage	V	I2 - Load current	A

Description	Option code	
Fieldbus adapter (max 2)		
FCAN-01 CANopen	+K457	☐
FDNA-01 DeviceNet	+K451	☐
FECA-01 EtherCAT	+K469	☐
Two-Port EtherNet/IP	+K490	☐
FMBT-21 Two-Port Modbus/TCP	+K491	☐
FPNO-21 Two-Port PROFINET IO	+K492	☐
FEPL-02 Ethernet POWERLINK	+K470	☐
FPBA-01 PROFIBUS DP-Vx	+K454	☐
FSCA-01 Modbus RTU	+K458	☐
I/O extension modules and DDCS communication		
FIO-01: 4 x DIO, 2 x RO	+L501	☐
FIO-11 3 x AI; 1 x AO, 2 x DIO	+L500	☐
FAIO-01: 2 x AI, 2 x AO	+L525	☐
FDIO-01: 3 x DI + 2 x RO	+L526	☐
FDCO-01 optical DDCS communication 2 x 10 MBd	+L503	☐
Additional fusing, voltage, and current measurement		
Fuse monitoring (T8 only)	+G420	☐
Galvanic isolation or multitap voltage measurement (T6 and T8 only)	+S189	☐
External output voltage measurement (T6 and T8 only)	+S191	☐
Phase V: Input and output terminals (T1 … T5 only)	+S510	☐
Memory unit		
Memory unit including IEC programming license. **Note:** Not available in combination with other application software (e.g., Power Optimizer).	+S551	☐
Memory unit including Power Optimizer. **Note:** Not available in combination with an IEC programming license.	+S552	☐
Miscellaneous		
Extended warranty. 24 months from commissioning or 30 months from delivery, whichever occurs first.	+P904	☐
Extended warranty. 30 months from commissioning or 42 months from delivery, whichever occurs first.	+P909	☐
Seaworthy packing for T8	+P912	☐

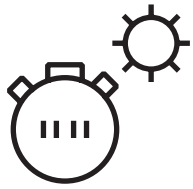
Services to match your needs

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 SCR power controller at peak performance?

Is uptime your priority?

Keep your unit running with precisely planned and executed maintenance.

Example services include:
- Life cycle assessment.
- Installation and commissioning.
- Spare parts.
- Preventive maintenance.
- Preventive maintenance.
- ABB Drive Care agreement.
- Unit exchange.



Operational efficiency

Is rapid response a key consideration?

If your SCR power controllers 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

Unit service
Your choice, your future

The future of your SCR power controller 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 equipment. You can start by asking yourself these two critical questions:

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

From here, you have our guidance and full support throughout the course you take, throughout the entire lifetime of your SCR power controllers.

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 unit 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 SCR power controller for extended warranty options and other benefits.

Need to extend your assets' lifetime?

Maximize your unit's lifetime with our services.

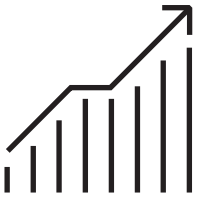
Example services include:
- Life cycle assessment.
- Upgrades, retrofits, and modernization.
- Replacement, disposal, and recycling.

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

A lifetime of peak performance

You are in control of every life cycle phase of your SCR power controllers. At the heart of our services is a four-phase product life cycle management model.
This model defines the services recommended and available throughout units lifespan.

Now it is easy for you to see the exact service and maintenance available for your SCR power controllers.

ABB life cycle phases explained:

	Full range of life cycle services and support		Limited range of life cycle services and support	Replacement and end-of-life services
Product	The product is in active sales and manufacturing phase.	Serial production has ceased. The product may be available for plant extensions, as spare part or for installed base renewal.	The product is no longer available.	The product is no longer available.
Services	The full range of life cycle services is available.	The full range of life cycle services is available. Product enhancements may be available through upgrade and retrofit solutions.	A 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 the status of your units 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 current life cycle status, availability of products and services, life cycle plan and recommended actions for the units.

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