Primary switch mode power supplies
Product group picture

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Primary switch mode power supplies

Primary switch mode power supplies
Overview

Modern power supply units are a vital component in most areas of energy management and automation technology. ABB as your global partner in these areas pays the utmost attention to the resulting requirements. Innovation is the key to a substantial enlargement of our power supply product program:

CP-D range
Distribution panel design

- Output voltages 12 and 24 V DC
- Output currents 0.42, 0.83, 1.3, 2.1, 2.5, 4.2 A
- Power range 10, 25, 30, 60, 100 W
- Wide range input 100-240 V AC (90-264 V AC, 120-375 V DC)
- High efficiency of up to 89 %
- Low power dissipation and low heating
- Extended temperature range
- Heights of only 91 mm (3.583 in)
- Distribution panel design

CP-E range up to 100 W
Economy range

- Rated output voltages 5, 12, 24 V DC, adjustable
- Output currents from 0.625 up to 10 A
- Power range from 15 up to 60 W
- High efficiency of up to 90 %
- Low power dissipation and low heating
- Extended temperature range

CP-E above 100 W Economy range
CP-T Three-phase range

- Rated output voltages 12, 24, 48 V DC, adjustable
- Output currents 5, 10, 20, 40 A
- Power range CP-E: 120, 240, 480 W CP-T: 120, 240, 480, 960 W
- High efficiency up to 90% (CP-E) / 93% (CP-T)
- Low power dissipation and low heating
- Extended temperature range

For certifications and approvals please refer to the download section on the product web pages that are referenced on the order pages.

Primary switch mode power supplies
Overview

CP-C.1 range
High-performance range

- Rated output voltage 24 V DC, adjustable
- Output current 5 A, 10 A and 20 A
- Typical efficiency of up to 94 %
- Power reserve design delivers up to 150 % of the nominal output current
- Signaling outputs for DC OK and power reserve mode
- High power density leads to very compact and small devices

CP-B range
Short time buffers

- Ultra cap based buffer modules for short time UPS systems
- Rated input voltage 24 V DC
- Rated currents 3 A, 10 A and 20 A
- Expandable with CP-B EXT.2 module
- LEDs for status indication
- High efficiency, higher than 90%
- Signaling and status outputs
- Buffering times at 100% load current from 13 s to 38 s (depending on device)

Primary switch mode power supplies
Selection table - Single-phase

		Order number	1SVR427041R1000	1SVR427043R1200	1SVR427041R0000	1SVR427043R0100	1SVR427044R0200	1SVR427045R0400	1SVR427033R3000	1SVR427032R1000	1SVR427035R1000	1SVR427030R0000	1SVR427031R0000	1SVR427032R0000	1SVR427034R0000	1SVR427035R0000	1SVR427036R0000	1SVR427030R2000	1SVR427031R2000	1SVR427034R0000	1SVR427035R2000	1SVR3605563R1001	1SVR360663R1001	1SVR360763R1001	1SVR360563R2001	1SVR360663R2001	1SVR360763R2001
			Single-phase																								
			CP-D						CP-E													CP-C.1					
Rated output voltage	5 V DC								■																		
	12 V DC		■	■						■	■																
	24 V DC				■	■	■	■				■	■	■	■	■	■					■	■	■	■	■	■
	48 V DC																	■	■	■	■						
Rated output current	0.42 A				■																						
	0.625 A																	■									
	0.75 A											■															
	0.83 A		■																								
	1.25 A												■						■								
	1.3 A					■																					
	2.1 A			■																							
	2.5 A						■			■				■													
	3 A								■																		
	4.2 A							■																			
	5 A														■					■		■		■			
	10 A										■					■					■		■			■		
	20 A																■							■			■
Rated output power	10 W		■		■																						
	15 W								■																		
	18 W											■															
	25 W			■																							
	30 W					■				■			■					■									
	60 W						■							■					■								
	100 W							■																			
	120 W										■				■							■			■		
	240 W															■				■			■			■	
	480 W																■				■			■			■
Rated input voltage	100-240 V AC		■	■	■	■	■	■	■	■		■	■	■				■	■		■	■	■	■	■	■	■
	115/230 V AC auto select										■				■	■				■								
	115-230 V AC																■				■						
DC input voltage range	90-300 V DC																					■	■	■	■	■	■
	90-375 V DC									■			■	■				■	■								
	120-375 V DC		■	■	■	■	■	■	■			■					■				■						
	210-375 V DC										■				■	■				■							
Features	Power reserve design																					■	■	■	■	■	■
	Adjustable output voltage			■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Integrated input fuse		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Short-circuit stable		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Fold forward behavior (U/I)			■		■	■	■		■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Fold back behavior (hiccup)		■		■				■			■																
	Power factor correction										pas				pas	pas	act			pas	act	act	act	act	act	act	act	act
	Extended temp. range		■	■	■	■	■	■		■	■		■	■	■	■	■	■	■	■	■				■	■	■
	Parallel connection								■	■	3	■	■	■	3	3	3	■	■	3	3	5	5	5	5	5	5
	Serial connection		■	■	■	■	■	■	■	■	2	■	■	■	2	2	2	■	■	2	2	2	2	2	2	2	2
	Coated PCBA																								■	■	■

pas = passive, act = active

Primary switch mode power supplies
Selection table - Three-phase

		Order number	1SVR427054R0000	1SVR427055R0000	1SVR427056R0000	1SVR427057R0000	1SVR427054R2000	1SVR427055R2000	1SVR427056R2000
			Three-phase						
			CP-T						
Rated output voltage	24 V DC		■	■	■	■			
	48 V DC						■	■	■
Rated output current	5 A		■				■		
	10 A			■				■	
	20 A				■				■
	40 A					■			
Rated output power	120 W		■						
	240 W			■			■		
	480 W				■			■	
	960 W					■			■
Rated input voltage	3 x 400-500 V AC		■	■	■	■	■	■	■
DC input voltage range	480-820 V DC		■	■	■	■	■	■	■
Features	Adjustable output voltage		■	■	■	■	■	■	■
	Integrated input fuse		■	■	■	■	■	■	■
	Short-circuit stable		■	■	■	■	■	■	■
	Fold forward behavior (U/I)		■	■	■		■	■	
	Fold back behavior (hiccup)		■	■	■	■	■	■	■
	Extended temp. range		■	■	■	■	■	■	■
	Parallel connection			2	2	2	2	2	2
	Serial connection			2	2	2	2	2	2

CP-D range
Product group picture

CP-D range
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CP-D range
Benefits and advantages

Characteristics
- Output voltages 12 V, 24 V DC
- Adjustable output voltages (devices > 10 W)
- Output currents 0.42 A / 0.83 A / 1.3 A / 2.1 A / 2.5 A / 4.2 A
- Power range 10 W, 25 W, 30 W, 60 W, 100 W
- Wide range input 100-240 V AC (90-264 V AC, 120-375 V DC)
- High efficiency of up to 89 %
- Low power dissipation and low heating
- Free convection cooling (no forced cooling with ventilators)
- Ambient temperature range during operation -40...+70 °C
- Open-circuit, overload and short-circuit stable
- Integrated input fuse
- LEDs for status indication
- Light-grey housing in RAL 7035
- Various approvals and marks

Benefits

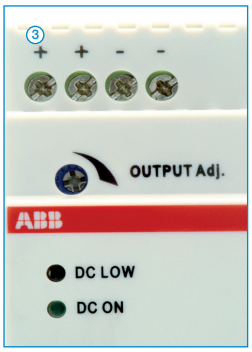
Width and structural form ①
With their width between 18 to 90 mm only, the CP-D range switch mode power supplies are ideally suited for installation in distribution panels.

Wide range input ②
Optimised for world-wide applications: The CP-D power supplies can be supplied with 90-264 V AC or 120-375 V DC.

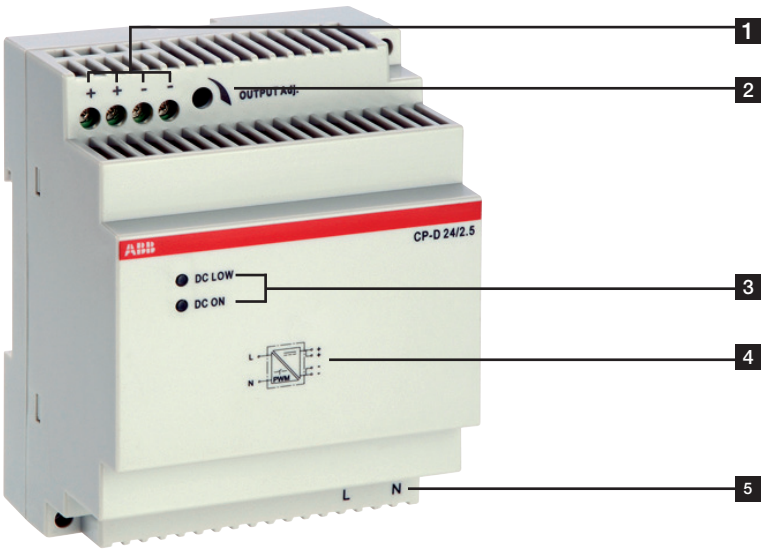
Adjustable output voltage ③
The CP-D range types > 10 W feature a continuously adjustable output voltage. Thus, they can be optimally adapted to the application, e.g. compensating the voltage drop caused by a long line length.

2CDC 271 027 F0007

2CDC 276 033 F0007



2CDC 276 032 F0007



1 **OUTPUT ++/--: terminals - output**
2 **OUTPUT Adjust: potentiometer - adjustment of output voltage**
3 **Indication of operational states**
DC ON: green LED - output voltage applied
DC LOW: red LED - output voltage too low
4 **Circuit diagram**
5 **INPUT L, N: terminals - input**

CP-D range
Ordering details

CP-D 12/0.83, CP-D 24/0.42

CP-D 12/2.1, CP-D 24/1.3

CP-D 24/2.5

Description

The CP-D range of modular power supply units in MDRC design (modular DIN rail components) is ideally suited for installation in distribution panels. This range offers devices with output voltages of 12 V DC and 24 V DC at output currents of 0.42 A to 4.2 A. Thanks to a high thermal efficiency corresponding to low power and heat dissipation, the devices can be operated without forced cooling. All power supply units in the CP-D range are approved according to all relevant international standards.

Ordering details

Input voltage range	Rated output voltage / current	Type	Order code	Price 1 pc.	Weight (1 pc.) kg (lb)
90-264 V AC/ 120-375 V DC	12 V DC / 0.83 A	CP-D 12/0.83	1SVR427041R1000		0.06 (0.13)
90-264 V AC/ 120-375 V DC	12 V DC / 2.1 A	CP-D 12/2.1	1SVR427043R1200		0.19 (0.41)
90-264 V AC/ 120-375 V DC	24 V DC / 0.42 A	CP-D 24/0.42	1SVR427041R0000		0.06 (0.13)
90-264 V AC/ 120-375 V DC	24 V DC / 1.3 A	CP-D 24/1.3	1SVR427043R0100		0.19 (0.41)
90-264 V AC/ 120-375 V DC	24 V DC / 2.5 A	CP-D 24/2.5	1SVR427044R0200		0.25 (0.56)
90-264 V AC/ 120-375 V DC	24 V DC / 4.2 A	CP-D 24/4.2	1SVR427045R0400		0.32 (0.71)

Further documentation CP-D power supplies on www.abb.com

CP-D range
Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

Type		CP-D 12/0.83	CP-D 12/2.1
Input circuit - supply circuit		L, N	
Rated input voltage U_{in}		100-240 V AC	
Input voltage range		90-264 V AC / 120-375 V DC	
Frequency range AC		47-63 Hz	
Typical input current / typical power consumption	at 115 V AC	200 mA / 12.68 W	502 mA / 31.14 W
	at 230 V AC	128.3 mA / 13.01 W	277 mA / 31.2 W
Inrush current	at 115 / 230 V AC	16 A / 32 A	25 A / 50 A
Power failure buffering time		min. 30 ms	
Internal input fuse		1 A slow-acting / 250 V AC	2 A slow-acting / 250 V AC
Power factor correction (PFC)		no	
Indication of operational states			
Output voltage	DC ON: green LED	⎍: output voltage applied	
	DC LOW: red LED	⎍: output voltage too low	
Output circuit		+, -	++, --
Rated output voltage		12 V DC	
Tolerance of the output voltage		±1 %	
Adjustment range of the output voltage		-	12-14 V DC
Rated output power		10 W	25 W
Rated output current I_r	$T_a \leq 60$ °C	0.83 A	2.1 A
Derating of the output current	60 °C < $T_a \leq$ 70 °C	2.5 %/°C	
Maximum deviation with	load change statical	max. 1 %	
	change of output voltage within the input voltage range	max. 1 %	
Control time		< 1 ms	
Starting time after applying the supply voltage	at I_r	1000 ms	
Rise time	at rated load	typ. 1 ms	
Residual ripple and switching peaks	BW = 20 MHz	50 mV	
Parallel connection		yes, using CP-D RU	
Series connection		yes, to increase voltage	
Resistance to reverse feed		18 V / 1 s	
Output circuit - No-load, overload and short-circuit behaviour			
Characteristic curve of output		hiccup-mode	U/I characteristic curve
Short-circuit protection		continuous short-circuit stability	
Short-circuit behaviour		continuation with output power limiting	
Current limiting at short circuit		typ. 1.4 A	typ. 5.9 A
Overload protection		output power limiting	
Overvoltage protection		15-16.5 V DC	
No-load protection		continuous no-load stability	
Starting of capacitive loads		unlimited	
General data			
Efficiency		typ. 78 %	typ. 82 %
Duty cycle		100 %	
Dimensions		see “Dimensional drawings”	
Material of housing		plastic	
Mounting		DIN rail (IEC/EN 60715), snap-on mounting without any tool	
Mounting position		horizontal	
Minimum distance to other units	horizontal / vertical	25 mm / 25 mm (0.98 in / 0.98 in)	
Degree of protection	housing / terminals	IP20 / IP20	
Protection class		II	

CP-D range
Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

Type			CP-D 12/0.83	CP-D 12/2.1
Electrical connection - Input circuit / Output circuit				
Connecting capacity	fine-strand with wire end ferrule		0.2-1.5 mm² (24-16 AWG)	0.2-2.5 mm² (24-14 AWG)
	rigid		0.2-2.5 mm² (26-12 AWG)	0.2-2.5 mm² (24-12 AWG)
Stripping length			4-5 mm (0.16-0.2 in)	7 mm (0.28 in)
Tightening torque			0.6 Nm (5 lb.in)	0.7 Nm (6 lb.in)
Environmental data				
Ambient temperature range		operation	-40…+70 °C	
		rated load	-40…+60 °C	
		storage	-40…+85 °C	
Altitude during operation		IEC/EN 60068-2-13	max. 4850 m	
Damp heat (cyclic) (IEC/EN 60068-2-30)			4 x 24 cycles, 40 °C, 95 % RH	
Vibration (sinusoidal) (IEC/EN 60068-2-6)			50 m/s², 10 Hz - 2 kHz	
Shock (half-sine) (IEC/EN 60068-2-27)			40 m/s², 22 ms	
Isolation data				
Rated insulation voltage U_i	input circuit / output circuit		3 kV AC	
Pollution degree			2	
Overvoltage category			II	
Standards / Directives				
Standards			IEC/EN 60950-1	
Low Voltage Directive			2014/35/EU	
EMC Directive			2014/30/EU	
RoHS Directive			2011/65/EU	
Protective low voltage			SELV (IEC/EN 60950-1)	
Electromagnetic compatibility				
Interference immunity to			IEC/EN 61000-6-2	
electrostatic discharge		IEC/EN 61000-4-2	level 4 (4 kV / 8 kV)	level 4 (4 kV / 15 kV)
radiated, radio-frequency, electromagnetic field		IEC/EN 61000-4-3	level 3 (10 V/m)	
electrical fast transient/burst		IEC/EN 61000-4-4	level 4 (4 kV)	
surge		IEC/EN 61000-4-5	level 3 (2 kV L-L)	
conducted disturbances, induced by radio-frequency fields		IEC/EN 61000-4-6	level 3 (10 V)	
Interference emission			IEC/EN 61000-6-3	
high-frequency radiated			class B	
high-frequency conducted			class B	

CP-D range
Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

Type		CP-D 24/0.42	CP-D 24/1.3	CP-D 24/2.5	CP-D 24/4.2
Input circuit - supply circuit		L, N			
Rated input voltage U_{in}		100-240 V AC			
Input voltage range		90-264 V AC /120-375 V DC			
Frequency range AC		47-63 Hz			
Typical input current / typical power consumption	at 115 V AC	184 mA / 11.62 W	600 mA / 37.92 W	1120 mA / 69.3 W	1800 mA / 117.3 W
	at 230 V AC	120.6 mA / 12 W	344 mA / 38.16 W	660 mA / 70.1 W	900 mA / 114.4 W
Inrush current	at 115 / 230 V AC	max. 16 A / 32 A	max. 25 A / 50 A	max. 30 A / 60 A	
Power failure buffering time		min. 30 ms		min. 60 ms	
Internal input fuse		1 A slow-acting / 250 V AC	2 A slow-acting / 250 V AC		3.15 A slow-acting / 250 V AC
Power factor correction (PFC)		no			
Indication of operational states					
Output voltage	DC ON: green LED	⎍: output voltage applied			
	DC LOW: red LED	⎍: output voltage too low			
Output circuit		+, -		++, --	
Rated output voltage		24 V DC			
Tolerance of the output voltage		±1 %			
Adjustment range of the output voltage		-	24-28 V DC		
Rated output power		10 W	30 W	60 W	100 W
Rated output current I_r		$T_a \leq 60$ °C: 0.42 A	$T_a \leq 60$ °C: 1.3 A	$T_a \leq 55$ °C: 2.5 A	$T_a \leq 60$ °C: 4.2 A
Derating of the output current		60 °C < $T_a \leq 70$ °C: 2.5 %/°C	60 °C < $T_a \leq 70$ °C: 2.5 %/°C	55 °C < $T_a \leq 70$ °C: 2.5 %/°C	60 °C < $T_a \leq 70$ °C: 2.5 %/°C
Maximum deviation with	load change statical	max. 1 %			
	change of output voltage within the input voltage range	max. 1 %			
Control time		< 1 ms			
Starting time after applying the supply voltage	at I_r	1000 ms			
Rise time	at rated load	typ. 1 ms			
Residual ripple and switching peaks	BW = 20 MHz	50 mV			
Parallel connection		yes, using CP-D RU			
Series connection		yes, to increase voltage			
Resistance to reverse feed		35 V / 1 s			
Output circuit - No-load, overload and short-circuit behaviour					
Characteristic curve of output		hiccup-mode	U/I characteristic curve		
Short-circuit protection		continuous short-circuit stability			
Short-circuit behaviour		continuation with output power limiting			
Current limiting at short circuit		typ. 0.78 A	typ. 4.2 A	typ. 6.05 A	typ. 11.5 A
Overload protection		output power limiting			
Overvoltage protection		30-33 V DC			
No-load protection		continuous no-load stability			
Starting of capacitive loads		unlimited			
General data					
Efficiency		typ. 80 %	typ. 83 %	typ. 86 %	typ. 89 %
Duty cycle		100 %			
Dimensions		see “Dimensional drawings”			
Material of housing		plastic			
Mounting		DIN rail (IEC/EN 60715), snap-on mounting without any tool			
Mounting position		horizontal			
Minimum distance to other units	horizontal / vertical	25 mm / 25 mm (0.98 in / 0.98 in)			
Degree of protection	housing / terminals	IP20 / IP20			
Protection class		II			

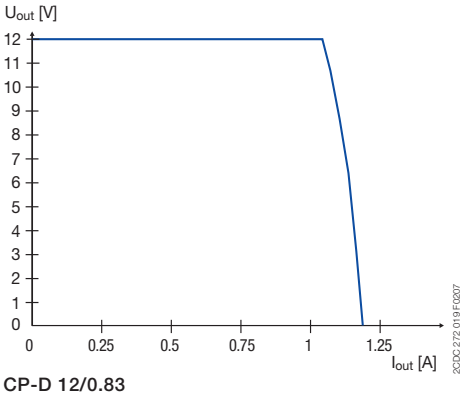
CP-D range
Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

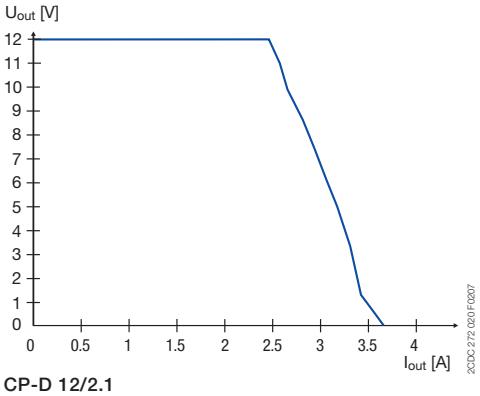
Type		CP-D 24/0.42	CP-D 24/1.3	CP-D 24/2.5	CP-D 24/4.2
Electrical connection - Input circuit / Output circuit					
Connecting capacity	fine-strand with wire end ferrule	0.2-1.5 mm² (24-16 AWG)	0.2-2.5 mm² (24-14 AWG)		
	rigid	0.2-2.5 mm² (26-12 AWG)	0.2-2.5 mm² (24-12 AWG)		
Stripping length		4-5 mm (0.16-0.2 in)		7 mm (0.28 in)	
Tightening torque		0.6 Nm (5 lb.in)		0.7 Nm (6 lb.in)	
Environmental data					
Ambient temperature range	operation	-40…+70 °C			
	rated load	-40…+60 °C		-40…+55 °C	-40…+60 °C
	storage	-40…+85 °C			
Altitude during operation	IEC/EN 60068-2-13	max. 4850 m			
Damp heat (cyclic) (IEC/EN 60068-2-30)		4 x 24 cycles, 40 °C, 95 % RH			
Vibration (sinusoidal) (IEC/EN 60068-2-6)		50 m/s², 10 Hz - 2 kHz			
Shock (half-sine) (IEC/EN 60068-2-27)		40 m/s², 22 ms			
Isolation data					
Rated insulation voltage U_i	input circuit / output circuit	3 kV AC		4 kV AC	3 kV AC
Pollution degree		2			
Overvoltage category		II			
Standards / Directives					
Standards		IEC/EN 60950-1			
Low Voltage Directive		2014/35/EU			
EMC Directive		2014/30/EU			
RoHS Directive		2011/65/EU			
Protective low voltage		SELV (IEC/EN 60950-1)			
Electromagnetic compatibility					
Interference immunity to		IEC/EN 61000-6-2			
electrostatic discharge	IEC/EN 61000-4-2	level 4 (4 kV / 8 kV)	level 4 (4 kV / 15 kV)		level 4 (4 kV / 8 kV)
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	level 3 (10 V/m)			
electrical fast transient/burst	IEC/EN 61000-4-4	level 4 (4 kV)			
surge	IEC/EN 61000-4-5	level 3 (2 kV L-L)			
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	level 3 (10 V)			
Interference emission		IEC/EN 61000-6-3			
high-frequency radiated		class B			
high-frequency conducted		class B			

CP-D range
Technical diagrams

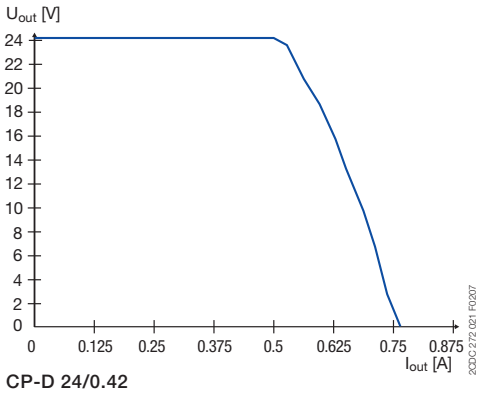
Characteristic curve of output at T_a = 25 °C



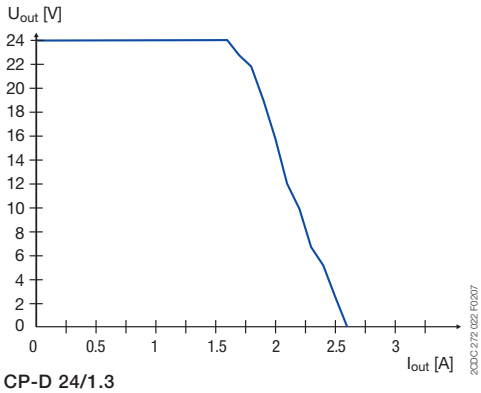
CP-D 12/0.83



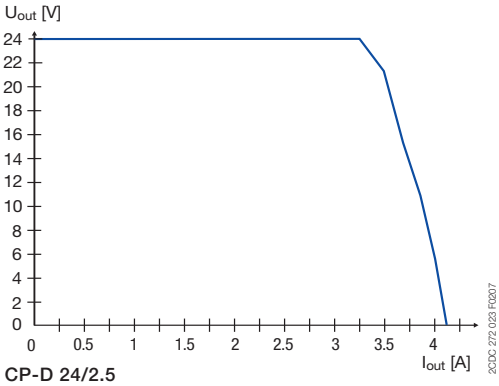
CP-D 12/2.1



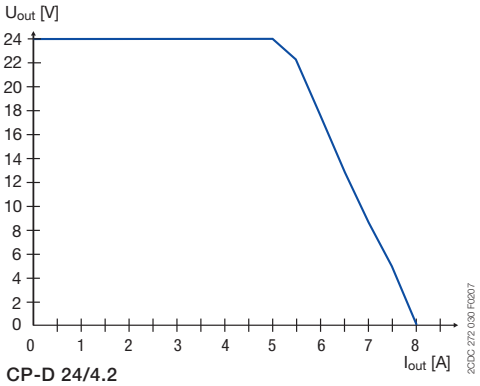
CP-D 24/0.42



CP-D 24/1.3

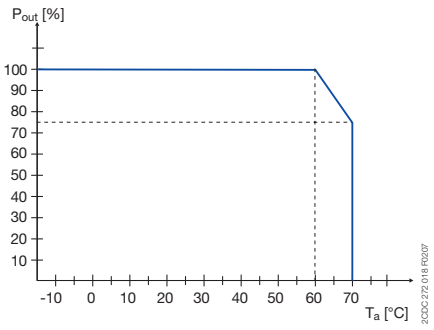


CP-D 24/2.5

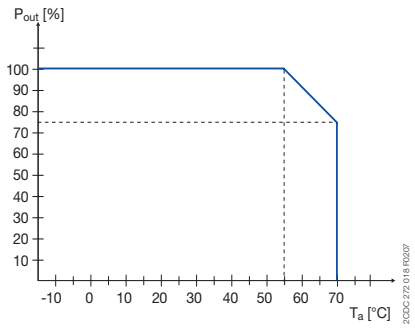


CP-D 24/4.2

Characteristic curve of temperature at rated output voltage



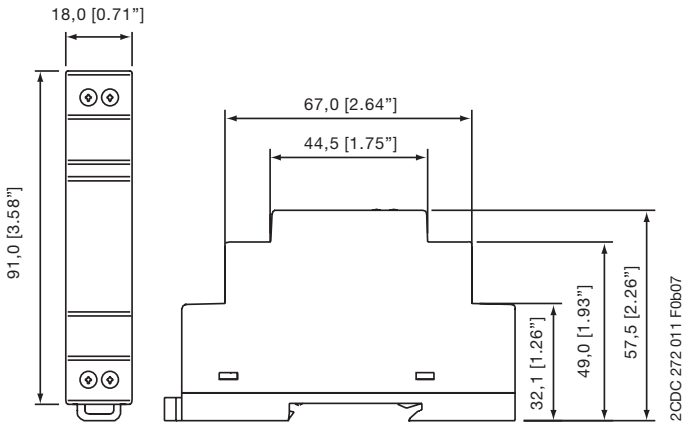
CP-D except CP-D 24/2.5



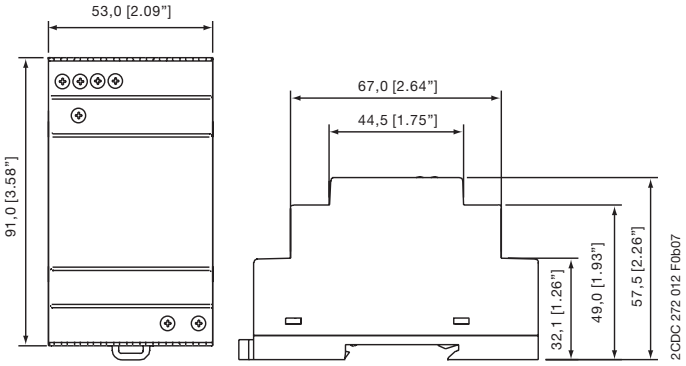
CP-D 24/2.5

CP-D range
Dimensional drawings

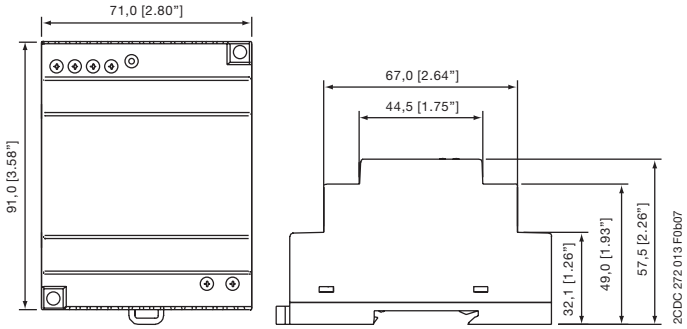
Dimensional drawings dimensions in mm



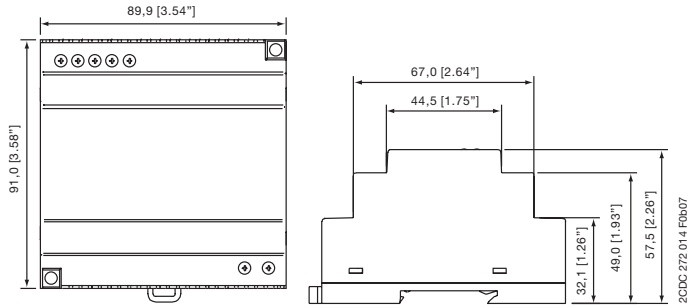
CP-D 12/0.83, CP-D 24/0.42



CP-D 12/2.1, CP-D 24/1.3



CP-D 24/2.5



CP-D 24/4.2

CP-E range
Product group picture

CP-E range
Table of contents

CP-E range

CP-E range
Benefits and advantages

Characteristics
- Output voltages 5 V, 12 V, 24 V, 48 V DC
- Adjustable output voltages
- Output currents 0.625 A / 0.75 A / 1.25 A / 2.5 A / 3 A / 5 A / 10 A / 20 A
- Power range 15 W, 18 W, 30 W, 60 W, 120 W, 240 W, 480 W
- High efficiency of up to 90 %
- Low power dissipation and low heating
- Free convection cooling (no forced cooling with ventilators)
- Open-circuit, overload and short-circuit stable
- Integrated input fuse
- U/I characteristic curve on devices > 18 W (fold-forward behaviour at overload – no switch-off)
- Redundancy units offering true redundancy
- LED(s) for status indication
- Signalling output/contact for output voltage OK
  - Transistor on 24 V devices > 18 W and < 120 W
  - Solid-state on 24 V devices ≥ 120 W
- Various approvals and marks

Benefits

Signalling output/contact ①
The CP-E range 24 V devices > 18 W offer an output/contact for monitoring of the output voltage and remote diagnosis.

Wide range input ②
Optimised for world-wide applications: The CP-E power supplies can be supplied within a wide range of AC or DC voltage.

Adjustable output voltage ③
The CP-E range types feature a continuously adjustable output voltage. Thus, they can be optimally adapted to the application, e.g. compensating the voltage drop caused by a long line length.

Redundancy units ④
For decoupling of parallelized power supply units ≤ 40 V. Thus, true redundancy can be achieved.
Further information about redundancy units on page 3/61.

1 **INPUT L, N, PE: terminals - input**
2 **Circuit diagram**
3 **single/parallel: sliding switch - adjustment of single or parallel operation**
4 **Indication of operational states**
DC ON: green LED - green LED - output voltage OK
DC LOW: red LED - output voltage too low
5 **OUTPUT L+, L+, L-, L-: terminals - output**
6 **OUTPUT Adjust: potentiometer - adjustment of output voltage**

CP-E range
Ordering details

CP-E 12/2.5

CP-E 48/5.0

Description

This range offers types with output voltages from 5 V DC to 48 V DC at output currents of 0.625 A to 20 A. The high thermal efficiency of up to 90 %, corresponding to very low power and heat dissipation, allows operation without forced cooling. The functionality has been enhanced while the number of different types has been considerably reduced.
Of course all power supplies of the CP-E range are approved in accordance with all relevant international standards.

Ordering details - CP-E < 100 W

Input voltage range	Rated output voltage / current	Type	Order code	Price 1 pc.	Weight (1 pc.) kg (lb)
90-264 V AC / 120-375 V DC	5 V DC / 3 A	CP-E 5/3.0	1SVR427033R3000		0.15 (0.33)
85-264 V AC / 90-375 V DC	12 V DC / 2.5 A	CP-E 12/2.5	1SVR427032R1000		0.29 (0.64)
90-132 V AC, 180-264 V AC / 210-375 V DC	12 V DC / 10 A	CP-E 12/10.0	1SVR427035R1000		1.00 (2.20)
90-264 V AC / 120-375 V DC	24 V DC / 0.75 A	CP-E 24/0.75	1SVR427030R0000		0.15 (0.33)
85-264 V AC / 90-375 V DC	24 V DC / 1.25 A	CP-E 24/1.25	1SVR427031R0000		0.29 (0.64)
85-264 V AC / 90-375 V DC	24 V DC / 2.5 A	CP-E 24/2.5	1SVR427032R0000		0.36 (0.79)

Ordering details - CP-E ≥ 120 W

Input voltage range	Rated output voltage / current	Type	Order code	Price 1 pc.	Weight (1 pc.) kg (lb)
90-132 V AC, 180-264 V AC / 210-375 V DC	24 V DC / 5 A	CP-E 24/5.0	1SVR427034R0000		1.00 (2.20)
90-132 V AC, 180-264 V AC / 210-375 V DC	24 V DC / 10 A	CP-E 24/10.0	1SVR427035R0000		1.36 (3.01)
90-264 V AC / 120-375 V DC	24 V DC / 20 A	CP-E 24/20.0	1SVR427036R0000		1.90 (4.18)
85-264 V AC / 90-375 V DC	48 V DC / 0.625 A	CP-E 48/0.62	1SVR427030R2000		0.29 (0.64)
85-264 V AC / 90-375 V DC	48 V DC / 1.25 A	CP-E 48/1.25	1SVR427031R2000		0.36 (0.79)
90-132 V AC, 180-264 V AC / 210-375 V DC	48 V DC / 5 A	CP-E 48/5.0	1SVR427034R2000		1.36 (3.01)
90-264 V AC / 120-375 V DC	48 V DC / 10 A	CP-E 48/10.0	1SVR427035R2000		1.90 (4.19)

Further documentation CP-E power supplies on www.abb.com

CP-E range
Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

Type		CP-E 5/3.0	CP-E 12/2.5	CP-E 12/10.0
Input circuit		L, N		
Rated input voltage U_{in}		100-240 V AC		115 / 230 V AC auto select
Input voltage range		90-264 V AC / 120-375 V DC	85-264 V AC / 90-375 V DC	90-132 V AC, 180-264 V AC / 210-375 V DC
Frequency range AC		47-63 Hz		
Typical input current	at 115 V AC	335 mA	560 mA	2.2 A
	at 230 V AC	210 mA	330 mA	0.83 A
Typical power consumption		19.8 W	35.9 W	143 W
Inrush current	at 115 V AC	10 A (max. 3 ms)	20 A (max. 3 ms)	24 A (max. 5 ms)
	at 230 V AC	18 A (max. 3 ms)	40 A (max. 3 ms)	48 A (max. 5 ms)
Discharge current	input / output	0.25 mA		
	input / PE	3.5 mA		
Power failure buffering time	at 115 V AC	min. 20 ms	min. 20 ms	min. 25 ms
	at 230 V AC	min. 75 ms	min. 30 ms	min. 30 ms
Internal input fuse		2 A slow-acting / 250 V AC		3.15 A slow-acting / 250 V AC
Power factor correction (PFC)		no		yes, passive, 0.7
Indication of operational states				
Output voltage	green LED	OK: ⎍: output voltage OK	OUTPUT OK: ⎍: output voltage OK	OUTPUT OK: ⎍: output voltage OK
	red LED	LOW: ⎍: output voltage too low	-	OUTPUT LOW: ⎍: output voltage too low
Output circuit		L+,L-	L+, L+, L-, L-	
Rated output voltage		5 V DC	12 V DC	
Tolerance of the output voltage		0...+1 %		
Adjustment range of the output voltage		4.5-5.75 V DC	12-14 V DC	11.4-14.5 V DC
Rated output power		15 W	30 W	120 W
Rated output current I_r	$T_a \leq 60$ °C	3.0 A	2.5 A	10 A
Derating of the output current	60 °C < $T_a \leq$ 70 °C	2.5 %/°C	2.5 %/°C	
Maximum deviation with	load change statical	±2 %	±0.5 %	±1 % (single mode) ±5 % (parallel mode)
	change of output voltage within the input voltage range	±1 %	±0.5 %	±0.5 %
Control time		< 2 ms		
Starting time after applying the supply voltage	at I_r	max. 1 s		
	with 3500 µF	-	max. 2 s	-
	with 7000 µF	max. 1.5 s	-	max. 1.5 s
Rise time	at rated load	max. 150 ms		
	with 3500 µF	-	max. 500 ms	-
	with 7000 µF	max. 500 ms	-	max. 500 ms
Fall time		max. 150 ms		
Residual ripple and switching peaks	BW = 20 MHz	50 mV		
Parallel connection		yes, to enable redundancy		configurable, to increase power, up to 3 devices, min. 0.1 I_r - max. 0.9 I_r
Series connection		yes, to increase voltage		yes, to increase voltage, max. 2 devices
Resistance to reverse feed		1 s - max. 7.5 V DC	1 s - max.18 V DC	max. 18 V DC
Output circuit - No-load, overload and short-circuit behaviour				
Characteristic curve of output		hiccup-mode	U/I characteristic curve	
Short-circuit protection		continuous short-circuit proof		
Short-circuit behaviour		Hiccup-mode	continuation with output power limiting	
Overload protection		output power limiting		
No-load protection		continuous no-load stability		
Starting of capacitive loads		7000 µF	3500 µF	7000 µF

CP-E range
Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

Type			CP-E 5/3.0	CP-E 12/2.5	CP-E 12/10.0
General data					
Power loss			typ. 5 W	typ. 5.6 W	typ. 24 W
Efficiency			typ. 75 %	typ. 84 %	typ. 84 %
Duty cycle			100 %		
Dimensions			see “Dimensional drawings”		
Material of housing			plastic		metal
Mounting			DIN rail (IEC/EN 60715), snap-on mounting without any tool		
Mounting position			horizontal		
Minimum distance to other units		horizontal / vertical	25 mm / 25 mm (0.98 in / 0.98 in)		
Degree of protection		housing / terminals	IP20 / IP20		
Protection class			I		
Electrical connection - input circuit / output circuit					
Connecting capacity		fine-strand with wire end ferrule	0.2-2.5 mm² (24-14 AWG)		0.2-4 mm² (24-11 AWG)
		fine-strand without wire end ferrule			0.2-6 mm² (24-10 AWG)
		rigid			
Stripping length			6 mm (0.24 in)		8 mm (0.31 in)
Tightening torque		input / output	0.6 Nm (5 lb.in)		1.0 Nm (9 lb.in) / 0.62 Nm (5.5 lb.in)
Environmental data					
Ambient temperature range		operation	-20…+70 °C	-40…+70 °C	-35…+70 °C
		rated load	-20...+60 °C	-40...+60 °C	-35...+60 °C
		storage	-20…+85 °C	-40…+85 °C	-40…+85 °C
Damp heat (cyclic) (IEC/EN 60068-2-30)			95 RH, % without condensation		
Vibration (sinusoidal) (IEC/EN 60068-2-6)			10-500 Hz, 2 G, along X, Y, Z each axis, 60 min. for each axis		
Shock (half-sine) (IEC/EN 60068-2-27)			15 G, 11 ms, 3 axes, 6 faces, 3 times for each face		
Isolation data					
Rated insulation voltage U_i		input circuit / output circuit	3 kV AC		
		input / PE	1.5 kV AC		
		output / PE	0.5 kV AC; 0.71 kV DC		
Pollution degree			2		
Overvoltage category			II		
Standards / Directives					
Standards			IEC/EN 60950-1		
Low Voltage Directive			2014/35/EU		
EMC Directive			2014/30/EU		
RoHS Directive			2011/65/EU		
Protective low voltage			SELV (IEC/EN 60950-1)		
Electromagnetic compatibility					
Interference immunity to			IEC/EN 61000-6-2		
electrostatic discharge	IEC/EN 61000-4-2		level 4 (air discharge 15 kV / contact discharge 8 kV)		
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3		level 3 (10 V/m)		
electrical fast transient/burst	IEC/EN 61000-4-4		level 4 (4 kV / 2,5 kHz)	level 4 (4 kV / 5 kHz)	
surge	IEC/EN 61000-4-5		L-L level 3 (2 kV) / L-PE level 4 (4 kV)		
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6		level 3 (10 V)		
power frequency magnetic fields	IEC/EN 61000-4-8		level 4 (30 A/m)		
voltage dips, short interruptions and voltage variations	IEC/EN 61000-4-11		dip: >95 % 10 ms / >30 % 500 ms interruptions: >95 % 5000 ms		
Interference emission			IEC/EN 61000-6-3		
high-frequency radiated			class B		
high-frequency conducted			class B		
limits for harmonic current emissions	IEC/EN 61000-3-2		class D	class A	class D

CP-E range
Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

Type		CP-E 24/0.75	CP-E 24/1.25	CP-E 24/2.5
Input circuit			L, N	
Rated input voltage U_{in}		100-240 V AC		
Input voltage range		90-264 V AC / 120-375 V DC	85-264 V AC / 90-375 V DC	
Frequency range AC		47-63 Hz		
Typical input current	at 115 V AC	335 mA	560 mA	1060 mA
	at 230 V AC	210 mA	330 mA	590 mA
Typical power consumption		22.8 W	36.7 W	69.2 W
Inrush current	at 115 V AC	10 A (max. 3 ms)	20 A (max. 3 ms)	20 A (max. 3 ms)
	at 230 V AC	18 A (max. 3 ms)	40 A (max. 3 ms)	40 A (max. 3 ms)
Discharge current	input / output	0.25 mA		
	input / PE	3.5 mA		
Power failure buffering time	at 115 V AC	min. 20 ms	min. 20 ms	
	at 230 V AC	min. 75 ms	min. 30 ms	
Internal input fuse		2 A slow-acting / 250 V AC		
Power factor correction (PFC)		no		
Indication of operational states				
Output voltage	green LED	OK: ⎍: output voltage OK	OUTPUT OK: ⎍: output voltage OK	
	red LED	LOW: ⎍: output voltage too low	-	-
Output circuit		L+,L-	L+, L+, L-, L-	
Rated output voltage		24 V DC		
Tolerance of the output voltage		0 ... +1 %		
Adjustment range of the output voltage		21.6-28.8 V DC	24-28 V DC	
Rated output power		18 W	30 W	60 W
Rated output current I_r	$T_a \leq 60$ °C	0.75 A	1.25 A	2.5 A
Derating of the output current	60 °C < $T_a \leq$ 70 °C	2.5 %/°C		
Signalling output for output voltage OK	DC OK	-	transistor	
Maximum deviation with	load change statical	±2 %	±0.5 %	
	change of output voltage within the input voltage range	±1 %	±0.5 %	
Control time		< 2 ms		
Starting time after applying the supply voltage	at I_r	max. 1 s		
	with 3500 µF	-	max. 2 s	-
	with 7000 µF	max. 1.5 s	-	max. 1.5 s
Rise time	at rated load	max. 150 ms		
	with 3500 µF	-	max. 500 ms	-
	with 7000 µF	max. 500 ms	-	max. 500 ms
Fall time		max. 150 ms		
Residual ripple and switching peaks	BW = 20 MHz	50 mV		
Parallel connection		yes, to enable redundancy		
Series connection		yes, to increase voltage		
Resistance to reverse feed		1 s - max. 35 V DC		
Output circuit - No-load, overload and short-circuit behaviour				
Characteristic curve of output		hiccup-mode	U/I characteristic curve	
Short-circuit protection		continuous short-circuit proof		
Short-circuit behaviour		hiccup-mode	continuation with output power limiting	
Overload protection		output power limiting		
No-load protection		continuous no-load stability		
Starting of capacitive loads		7000 µF	3500 µF	7000 µF

CP-E range
Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

Type			CP-E 24/0.75	CP-E 24/1.25	CP-E 24/2.5
General data					
Power loss			typ. 4.45 W	typ. 5.5 W	typ. 8.8 W
Efficiency			typ. 77 %	typ. 86 %	typ. 89 %
Duty cycle			100 %		
Dimensions			see “Dimensional drawings”		
Material of housing			plastic		
Mounting			DIN rail (IEC/EN 60715), snap-on mounting without any tool		
Mounting position			horizontal		
Minimum distance to other units		horizontal / vertical	25 mm / 25 mm (0.98 in / 0.98 in)		
Degree of protection		housing / terminals	IP20 / IP20		
Protection class			I		
Electrical connection - input circuit / output circuit					
Connecting capacity		fine-strand with wire end ferrule	0.2-2.5 mm² (24-14 AWG)		
		fine-strand without wire end ferrule			
		rigid			
Stripping length			6 mm (0.24 in)		
Tightening torque		input / output	0.6 Nm (5 lb.in)		
Environmental data					
Ambient temperature range		operation	-20…+70 °C	-40…+70 °C	
		rated load	-20…+60 °C	-40…+60 °C	
		storage	-20…+85 °C	-40…+85 °C	
Damp heat (cyclic) (IEC/EN 60068-2-30)			95 % RH, without condensation		
Vibration (sinusoidal) (IEC/EN 60068-2-6)			10-500 Hz, 2 G, along X, Y, Z each axis, 60 min. for each axis		
Shock (half-sine) (IEC/EN 60068-2-27)			15 G, 11 ms, 3 axes, 6 faces, 3 times for each face		
Isolation data					
Rated insulation voltage U_i		input circuit / output circuit	3 kV AC		
		input / PE	1.5 kV AC		
		output / PE	0.5 kV AC; 0.71 kV DC		
Pollution degree			2		
Overvoltage category			II		
Standards / Directives					
Standards			IEC/EN 60950-1		
Low Voltage Directive			2014/35/EU		
EMC Directive			2014/30/EU		
RoHS Directive			2011/65/EU		
Protective low voltage			SELV (IEC/EN 60950-1)		
Electromagnetic compatibility					
Interference immunity to			IEC/EN 61000-6-2		
electrostatic discharge		IEC/EN 61000-4-2	level 4 (air discharge 15 kV / contact discharge 8 kV)		
radiated, radio-frequency, electromagnetic field		IEC/EN 61000-4-3	level 3 (10 V/m)		
electrical fast transient/burst		IEC/EN 61000-4-4	level 4 (4 kV / 2.5 kHz)	level 4 (4 kV / 5 kHz)	
surge		IEC/EN 61000-4-5	L-L level 3 (2 kV) / L-PE level 4 (4 kV)		
conducted disturbances, induced by radio-frequency fields		IEC/EN 61000-4-6	level 3 (10 V)		
power frequency magnetic fields		IEC/EN 61000-4-8	level 4 (30 A/m)		
voltage dips, short interruptions and voltage variations		IEC/EN 61000-4-11	dip: >95 % 10 ms / >30 % 500 ms, interruptions: >95 % 5000 ms		
Interference emission			IEC/EN 61000-6-3		
high-frequency radiated			class B		
high-frequency conducted			class B		
limits for harmonic current emissions		IEC/EN 61000-3-2	class D	class A	

CP-E range
Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

Type		CP-E 24/5.0	CP-E 24/10.0	CP-E 24/20.0
Input circuit		L, N		
Rated input voltage U_{in}		115 / 230 V AC auto select		115-230 V AC
Input voltage range		90-132 V AC, 180-264 V AC / 210-375 V DC	90-132 V AC, 180-264 V AC / 210-375 V DC	90-264 V AC, 120-375 V DC
Frequency range AC		47-63 Hz		
Typical input current	at 115 V AC	2.2 A	4.0 A	4.9 A
	at 230 V AC	0.83 A	1.55 A	2.5 A
Typical power consumption		140 W	270 W	539 W
Inrush current	at 115 V AC	24 A (max. 5 ms)	30 A (max. 5 ms)	25 A (max. 5 ms)
	at 230 V AC	48 A (max. 5 ms)	60 A (max. 5 ms)	50 A (max. 5 ms)
Discharge current	input / output	0.25 mA		
	input / PE	3.5 mA		
Power failure buffering time	at 115 V AC	min. 25 ms		
	at 230 V AC	min. 30 ms		
Internal input fuse		3.15 A slow-acting / 250 V AC	6.3 A slow-acting / 250 V AC	10 A slow-acting / 250 V AC
Power factor correction (PFC)		yes, passive, 0.7	yes, passive, 0.75	yes, active 115 V AC: 0.99 230 V AC: 0.97
Indication of operational states				
Output voltage	green LED	OUTPUT OK: ⎍: output voltage OK		
	red LED	OUTPUT LOW: ⎍: output voltage too low		
Output circuit		L+, L+, L-, L-		
Rated output voltage		24 V DC		
Tolerance of the output voltage		0...+1 %		
Adjustment range of the output voltage		22.5-28.5 V DC		
Rated output power		120 W	240 W	480 W
Rated output current I_r	$T_a \leq 60$ °C	5 A	10 A	-
	$T_a \leq 55$ °C	-	-	20 A
Derating of the output current	60 °C < $T_a \leq$ 70 °C	2.5 %/°C		-
	55 °C < $T_a \leq$ 70 °C	-	-	2.5 %/°C
Signalling contact for output voltage OK	13-14	solid-state (max. 60 V DC, 0.3 A)		
Minimum fuse rating to achieve short-circuit protection	13-14	≥ 60 V DC, ≤ 0.3 A fast-acting		
Maximum deviation with	load change statical	±1 % (single mode), ±5 % (parallel mode)		
	change of output voltage within the input voltage range	±0.5 %		
Control time		< 2 ms		
Starting time after applying the supply voltage	at I_r	max. 1 s	2.5 s (at -40 °C / 90 V AC starting time >2.5 s has to be expected)	max. 1 s
	with 3500 µF	max. 1.5 s	-	-
	with 7000 µF	-	2.5 s	max. 1.5 s
Rise time	at rated load	max. 150 ms		
	with 3500 µF	max. 500 ms	-	-
	with 7000 µF	-	max. 500 ms	
Fall time		max. 150 ms		
Residual ripple and switching peaks	BW = 20 MHz	50 mV	100 mV	
Parallel connection		configurable, to increase power, up to 3 devices, min. 0.1 I_r - max. 0.9 I_r		
Series connection		yes, to increase voltage, max. 2 devices		
Resistance to reverse feed		max. 35 V DC		
Output circuit - No-load, overload and short-circuit behaviour				
Characteristic curve of output		U/I characteristic curve		
Short-circuit protection		continuous short-circuit proof		
Short-circuit behaviour		continuation with output power limiting		
Overload protection		output power limiting		
No-load protection		continuous no-load stability		
Starting of capacitive loads		3500 µF	7000 µF	

CP-E range
Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

Type		CP-E 24/5.0	CP-E 24/10.0	CP-E 24/20.0
General data				
Power loss		typ. 20 W	typ. 35 W	typ. 63 W
Efficiency		typ. 86 %	typ. 89 %	typ. 89 %
Duty cycle		100 %		
Dimensions		see “Dimensional drawings”		
Material of housing		metal		
Mounting		DIN rail (IEC/EN 60715), snap-on mounting without any tool		
Mounting position		horizontal		
Minimum distance to other units	horizontal / vertical	25 mm / 25 mm (0.98 in / 0.98 in)		
Degree of protection	housing / terminals	IP20 / IP20		
Protection class		I		
Electrical connection - input circuit / output circuit				
Connecting capacity	fine-strand with wire end ferrule	0.2-4 mm² (24-11 AWG)		
	fine-strand without wire end ferrule	0.2-6 mm² (24-10 AWG)		
	rigid			
Stripping length		8 mm (0.31 in)		
Tightening torque	input / output	1.0 Nm (9 lb.in) / 0.62 Nm (5.5 lb.in)		
Environmental data				
Ambient temperature range	operation	-35…+70 °C	-40…+70 °C	
	rated load	-35…+60 °C	-40…+60 °C	-40…+55 °C
	storage	-40…+85 °C	-40…+85 °C	
Damp heat (cyclic) (IEC/EN 60068-2-30)		95 %RH, without condensation		
Vibration (sinusoidal) (IEC/EN 60068-2-6)		10-500 Hz, 2 G, along X, Y, Z each axis, 60 min. for each axis		
Shock (half-sine) (IEC/EN 60068-2-27)		15 G, 11 ms, 3 axes, 6 faces, 3 times for each face		
Isolation data				
Rated insulation voltage U_i	input circuit / output circuit	3 kV AC		
	input / PE	1.5 kV AC		
	output / PE	0.5 kV AC; 0.71 kV DC		
	signalling contact / PE	0.5 kV DC		
Pollution degree		2		
Overvoltage category		II		
Standards / Directives				
Standards		IEC/EN 60950-1		
Low Voltage Directive		2014/35/EU		
EMC Directive		2014/30/EU		
RoHS Directive		2011/65/EU		
Protective low voltage		SELV (IEC/EN 60950-1)		
Electromagnetic compatibility				
Interference immunity to		IEC/EN 61000-6-2		
electrostatic discharge	IEC/EN 61000-4-2	level 4 (air discharge 15 kV / contact discharge 8 kV)		
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	level 3 (10 V/m)		
electrical fast transient/burst	IEC/EN 61000-4-4	level 4 (4 kV / 5 kHz)	level 4 (4 kV / 2.5 kHz)	
surge	IEC/EN 61000-4-5	L-L level 3 (2 kV) / L-PE	level 4 (4 kV)	
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	evel 3 (10 V)		
power frequency magnetic fields	IEC/EN 61000-4-8	level 4 (30 A/m)		
voltage dips, short interruptions and voltage variations	IEC/EN 61000-4-11	dip: >95 % 10 ms / >30 % 500 ms interruptions: >95 % 5000 ms		
Interference emission		IEC/EN 61000-6-3		
high-frequency radiated		class B		
high-frequency conducted		class B		
limits for harmonic current emissions		class D		

CP-E range
Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

Type		CP-E 48/0.62	CP-E 48/1.25	CP-E 48/5.0	CP-E 48/10.0
Input circuit		L, N			
Rated input voltage U_{in}		100-240 V AC		115 / 230 V AC auto select	115-230 V AC
Input voltage range		85-264 V AC / 90-375 V DC		90-132 V AC, 180-264 V AC / 210-375 V DC	90-264 V AC, 120-375 V DC
Frequency range AC		47-63 Hz			
Typical input current	at 115 V AC	560 mA	1060 mA	4.0 A	4.9 A
	at 230 V AC	330 mA	590 mA	1.55 A	2.5 A
Typical power consumption		35.7 W	69.0 W	267 W	528 W
Inrush current	at 115 V AC	20 A (max. 3 ms)	20 A (max. 3 ms)	30 A (max. 5 ms)	25 A (max. 5 ms)
	at 230 V AC	40 A (max. 3 ms)	40 A (max. 3 ms)	60 A (max. 5 ms)	50 A (max. 5 ms)
Discharge current	input / output	0.25 mA			
	input / PE	3.5 mA			
Power failure buffering time	at 115 V AC	min. 20 ms		min. 25 ms	min. 25 ms
	at 230 V AC	min. 30 ms			
Internal input fuse		2 A slow-acting / 250 V AC		6.3 A slow-acting / 250 V AC	10 A slow-acting / 250 V AC
Power factor correction (PFC)		no		yes, passive, 0.7	yes, active 115 V AC: 0.99 230 V AC: 0.97
Indication of operational states					
Output voltage	green LED	OUTPUT OK: ⎍: output voltage OK			
	red LED	-	-	OUTPUT LOW: ⎍: output voltage too low	
Output circuit		L+, L+, L-, L-			
Rated output voltage		48 V DC			
Tolerance of the output voltage		0...+1 %			
Adjustment range of the output voltage		48-55 V DC		47-56 V DC	
Rated output power		30 W	60 W	240 W	480 W
Rated output current I_r	$T_a \leq 60$ °C	0.625 A	1.25 A	5 A	-
	$T_a \leq 55$ °C	-	-	-	10 A
Derating of the output current	60 °C < $T_a \leq 70$ °C	2.5 %/°C			-
	55 °C < $T_a \leq 70$ °C	-	-	-	2.5 %/°C
Signalling output for output voltage OK	DC OK	-	-	-	-
Maximum deviation with	load change statical	±0.5 %		±1 % (single mode) ±5 % (parallel mode)	
	change of output voltage within the input voltage range	±0.5 %		±0.5 %	
Control time		< 2 ms			
Starting time after applying the supply voltage	at I_r	max. 1 s			
	with 3500 µF	max. 2 s	-	-	-
	with 7000 µF	-	max. 1.5 s	max. 1.5 s	
Rise time	at rated load	max. 150 ms			
	with 3500 µF	max. 500 ms	-	-	-
	with 7000 µF	-	max. 500 ms	max. 500 ms	
Fall time		max. 150 ms			
Residual ripple and switching peaks	BW = 20 MHz	50 mV		100 mV	
Parallel connection		yes, to enable redundancy		configurable, to increase power, up to 3 devices, min. 0.1 I_r - max. 0.9 I_r	
Series connection		yes, to increase voltage		yes, to increase voltage, max. 2 devices	
Resistance to reverse feed		1 s - max. 63 V DC			
Output circuit - No-load, overload and short-circuit behaviour					
Characteristic curve of output		U/I characteristic curve			
Short-circuit protection		continuous short-circuit proof			
Short-circuit behaviour		continuation with output power limiting			
Overload protection		output power limiting			
No-load protection		continuous no-load stability			
Starting of capacitive loads		3500 µF	7000 µF	unlimited	7000 µF

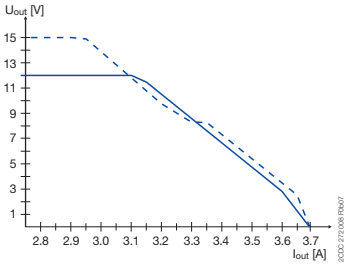
CP-E range
Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

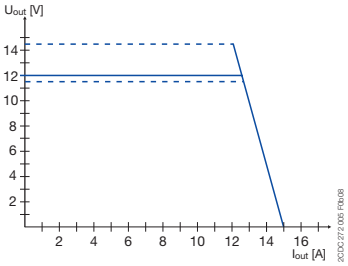
Type			CP-E 48/0.62	CP-E 48/1.25	CP-E 48/5.0	CP-E 48/10.0
General data						
Power loss			typ. 4.9 W	typ. 7.8 W	typ. 32 W	typ. 60 W
Efficiency			typ. 86 %	typ. 89 %	typ. 90 %	
Duty cycle			100 %			
Dimensions			see “Dimensional drawings”			
Material of housing			pPlastic		metal	
Mounting			DIN rail (IEC/EN 60715), snap-on mounting without any tool			
Mounting position			horizontal			
Minimum distance to other units		horizontal / vertical	25 mm / 25 mm (0.98 in / 0.98 in)			
Degree of protection		housing / terminals	IP/20 / IP20			
Protection class			I			
Electrical connection - input circuit / output circuit						
Connecting capacity		fine-strand with wire end ferrule	0.2-2.5 mm² (24-14 AWG)		0.2-4 mm² (24-11 AWG)	
		fine-strand without wire end ferrule			0.2-6 mm² (24-10 AWG)	
		rigid				
Stripping length			6 mm (0.24 in)		8 mm (0.31 in)	
Tightening torque		input / output	0.6 Nm (5 lb.in)		1.0 Nm (9 lb.in) / 0.62 Nm (5.5 lb.in)	
Environmental data						
Ambient temperature range		operation	-40…+70 °C			
		rated load	-40…+60 °C			-40…+55 °C
		storage	-40…+85 °C			
Damp heat (cyclic) (IEC/EN 60068-2-30)			95 % RH, without condensation			
Vibration (sinusoidal) (IEC/EN 60068-2-6)			10-500 Hz, 2 G, along X, Y, Z each axis, 60 min. for each axis			
Shock (half-sine) (IEC/EN 60068-2-27)			15 G, 11 ms, 3 axes, 6 faces, 3 times for each face			
Isolation data						
Rated insulation voltage U_i		input circuit / output circuit	3 kV AC			
		input / PE	1.5 kV AC			
		output / PE	0.5 kV AC; 0.71 kV DC			
Pollution degree			2			
Overvoltage category			II			
Standards / Directives						
Standards			EN 61204-3			
Low Voltage Directive			2014/35/EU			
EMC Directive			2014/30/EU			
RoHS Directive			2011/65/EU			
Protective low voltage			SELV (IEC/EN 60950-1)			
Electromagnetic compatibility						
Interference immunity to			IEC/EN 61000-6-2			
electrostatic discharge	IEC/EN 61000-4-2		level 4 (air discharge 15 kV / contact discharge 8 kV)			
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3		level 3 (10 V/m)			
electrical fast transient/burst	IEC/EN 61000-4-4		level 4 (4 kV / 5 kHz)		level 4 (4 kV / 2.5 kHz)	
surge	IEC/EN 61000-4-5		L-L level 3 (2 kV) / L-PE level 4 (4 kV)			
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6		level 3 (10 V/m)			
power frequency magnetic fields	IEC/EN 61000-4-8		level 4 (30 A/m)			
voltage dips, short interruptions and voltage variations	IEC/EN 61000-4-11		dip: >95 % 10 ms / >30 % 500 ms, interruptions: >95 % 5000 ms			
Interference emission			IEC/EN 61000-6-3			
high-frequency radiated			class B			
high-frequency conducted			class B			
limits for harmonic current emissions			class A		class D	

CP-E range
Technical diagrams, Wiring instructions

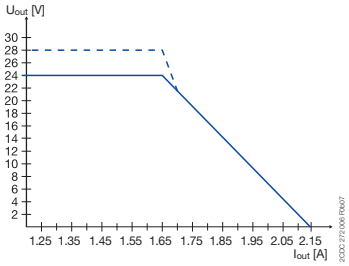
Output curve at T_a = 25 °C



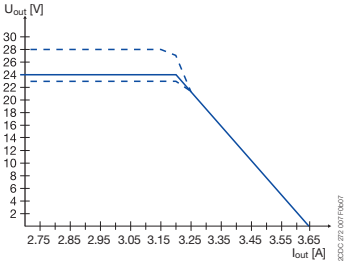
CP-E 12/2.5



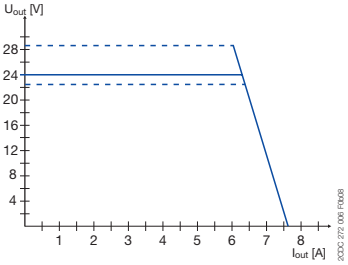
CP-E 12/10.0



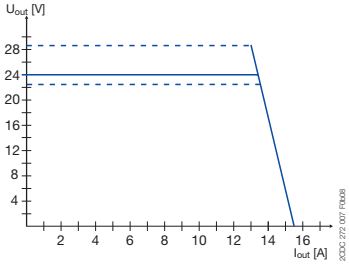
CP-E 24/1.25



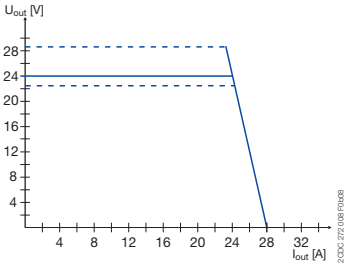
CP-E 24/2.5



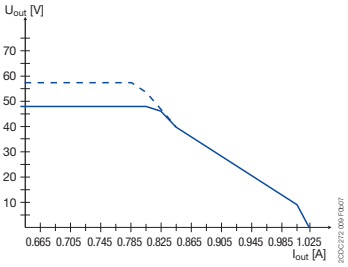
CP-E 24/5.0



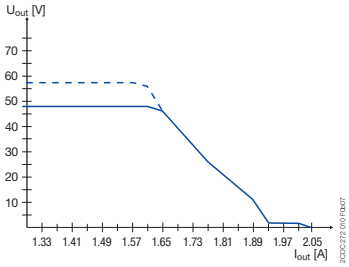
CP-E 24/10.0



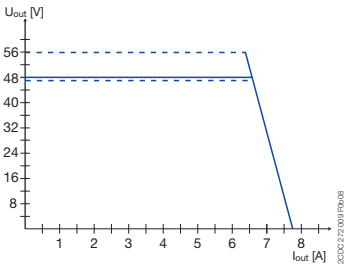
CP-E 24/20.0



CP-E 48/0.62



CP-E 48/1.25



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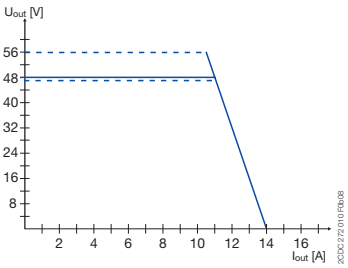
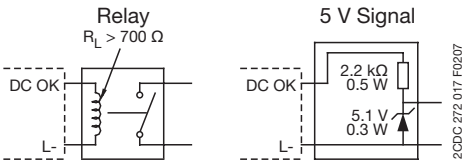


CP-E 48/10.0

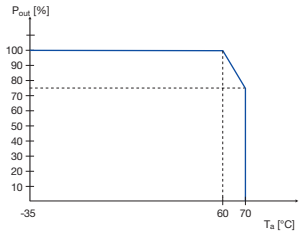
Wiring instructions



CP-E 24/1.25, CP-E 24/2.5

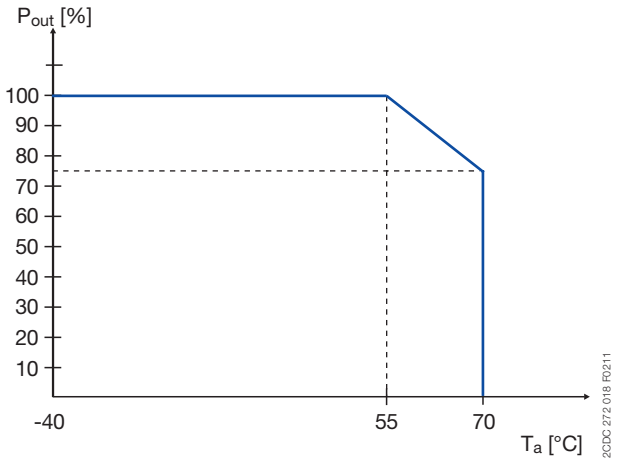
CP-E range
Technical diagrams, Dimensional drawings

Temperature behaviour at T_a = 25 °C



2CDC 272 015 F0211

CP-E 12/10.0, CP-E 24/5.0



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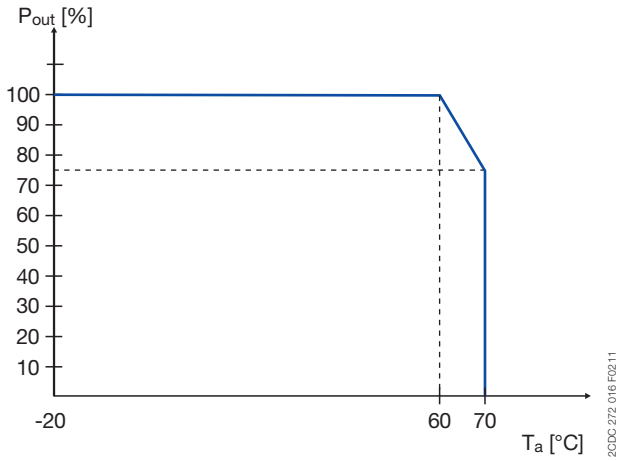
CP-E 24/20.0, CP-E 48/10.0



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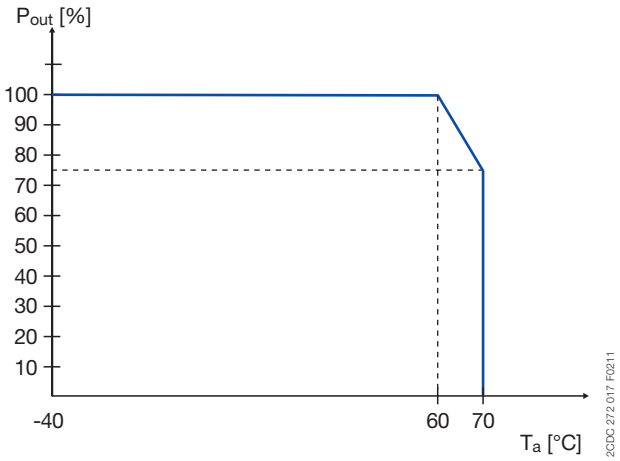
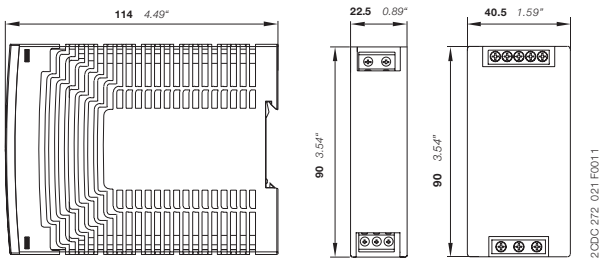
CP-E 5/3.0, CP-E 24/0.75



2CDC 272 017 F0211

CP-E 12/2.5, CP-E 24/1.25, CP-E 48/0.62,
CP-E 24/2.5, CP-E 48/1.25, CP-E 24/10.0, CP-E 48/5.0

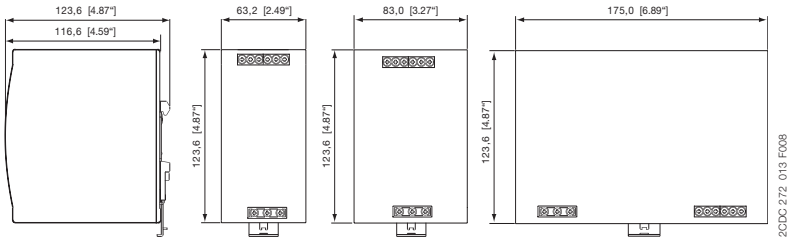
Dimensional drawings dimensions in mm



2CDC 272 021 F0011

CP-E 5/3.0,
CP-E 24/0.75

CP-E 12/2.5,
CP-E 24/1.25,
CP-E 24/2.5,
CP-E 48/0.62,
CP-E 48/1.25



2CDC 272 013 F008

CP-E 12/10.0,
CP-E 24/5.0

CP-E 24/10.0,
CP-E 48/5.0

CP-E 24/20.0,
CP-E 48/10.0

CP-T range
Product group picture

CP-T range
Table of contents

CP-T range
Benefits and advantages

Characteristics
- Rated output voltages 24 V, 48 V DC
- Output voltage adjustable via front-face rotary potentiometer “OUTPUT Adjust”
- Rated output currents 5 A, 10 A, 20 A, 40 A
- Rated output powers 120 W, 240 W, 480 W, 960 W
- Three-phase operation (see derating note)
- Two-phase operation (25 % derating possible, see derating note)
- Supply range 3 x 400–500 V AC (3 x 340–575 V AC, 480–820 V DC)
- Typical efficiency of 93 %
- Low power dissipation and low heating
- Free convection cooling (no forced cooling with ventilators)
- Ambient temperature range during operation -40...+70 °C [1)]
- Open-circuit, overload and short-circuit stable
- Integrated input fuse
- Redundancy unit CP-A RU offering true redundancy, available as accessory
- LEDs for status indication
- Signalling contact "13-14" (solid-state) for output voltage OK on 24 V devices
- Various approvals and marks

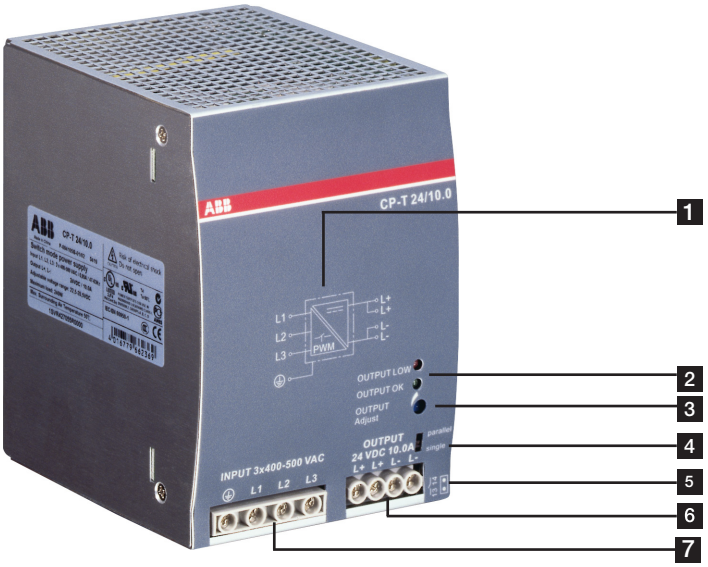
[1)] 480 W variants: -30...+70°C

Benefits

Signalling output ①
The devices of the CP-T series offer a solid state output for function monitoring and remote diagnostics.

Wide input range
Wide range input optimized for world-wide applications: The CP-T power supplies can be used in 340 - 575 V AC or 480 - 820 V DC supply systems.

Adjustable output voltage ②
The CP-T range feature a continuously adjustable output voltage. Thus, they can be optimally adapted to the application, e.g. compensating the voltage drop caused by a long line length.



1 **Circuit diagram**

2 **Indication of operational states**
DC ON: green LED - green LED - output voltage OK
DC LOW: red LED - output voltage too low

3 **OUTPUT Adjust: potentiometer - adjustment of output voltage**

4 **single/parallel: sliding switch - adjustment of single or parallel operation**

5 **Signalling contact**
OUTPUT 13-14: terminals - signalling contact
A solid-state output indicates the error-free operation of the output voltage.

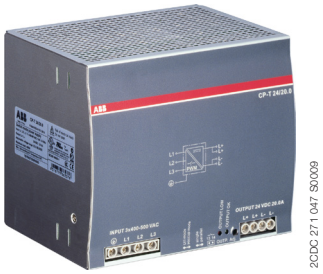
6 **OUTPUT L+, L+, L-, L-: terminals - output**

7 **INPUT L1, L2, L3, PE: terminals - input**

CP-T range
Ordering details

CP-T 24/5.0

CP-T 24/10.0, CP-T 48/5.0



CP-T 24/20.0, CP-T 48/10.0

Description

The CP-T range of three-phase power supply units is the youngest member of ABB's power supply family. In terms of design and functionality, the new range perfectly supplements the existing products and extends the range appropriately. The devices can be supplied with a three-phase voltage as well as with two-phase mains. Here, ABB offers power supply units with 24 V DC and 48 V DC outputs with 5 A, 10 A, 20 A and 40 A and efficiency of up to 92 %. As in the case of all products, they are designed for an ambient temperature of up to 70 °C. All products can be supplied within an AC supply voltage range between 340 to 575 V AC and a DC supply voltage range between 480 to 820 V DC.

Ordering details

Input voltage range	Rated output voltage / current	Type	Order code	Price 1 pc.	Weight (1 pc.) kg (lb)
340-575 V AC / 480-820 V DC	24 V DC / 5 A	CP-T 24/5.0	1SVR427054R0000		0.80 (1.77)
340-575 V AC / 480-820 V DC	24 V DC / 10 A	CP-T 24/10.0	1SVR427055R0000		1.05 (2.31)
340-575 V AC / 480-820 V DC	24 V DC / 20 A	CP-T 24/20.0	1SVR427056R0000		1.75 (3.86)
340-575 V AC / 480-820 V DC	24 V DC / 40 A	CP-T 24/40.0	1SVR427057R0000		3.20 (7.05)
340-575 V AC / 480-820 V DC	48 V DC / 5 A	CP-T 48/5.0	1SVR427054R2000		1.05 (2.31)
340-575 V AC / 480-820 V DC	48 V DC / 10 A	CP-T 48/10.0	1SVR427055R2000		1.75 (3.86)
340-575 V AC / 480-820 V DC	48 V DC / 20 A	CP-T 48/20.0	1SVR427056R2000		3.40 (7.50)

Further documentation CP-T power supplies on www.abb.com

CP-T range
Technical data

Data at T_a = 25 °C, U_{in} = 3 x 400 V AC and rated values, unless otherwise indicated

Type		CP-T 24/5.0	CP-T 24/10.0	CP-T 24/20.0	CP-T 24/40.0
Input circuit		L1, L2, L3			
Rated input voltage U_{in}		3 x 400-500 V AC			
Input voltage range		340-575 V AC			
		480-820 V DC			
Frequency range AC		47-63 Hz			
Typical input current		0.36 A	0.65 A	1.1 A	1.72 A
Typical power consumption		135 W	270 W	538 W	1058 W
Inrush current	typ.	10 A	20 A		30 A
Power failure buffering time		min. 20 ms			min. 15 ms
Internal input fuse	per phase	2 A / 600 V AC		T 3.15 A / 500 V AC	T 5 A / 500 V AC
Recommended backup fuse		3 pole miniature circuit breaker ABB Type S203			
Power factor correction (PFC)		yes, passive			
Discharge current	towards PE	< 3.5 mA			
	input / output	< 0.25 mA			
Indication of operational states					
Output voltage	OUTPUT OK: green LED	output voltage OK			
	OUTPUT LOW: red LED	output voltage too low			
Output circuit		L+, L+, L-, L-			
Rated output voltage		24 V DC			
Tolerance of the output voltage		0...+1 %			
Adjustment range of the output voltage		22.5-28.5 V DC			
Rated output power		120 W	240 W	480 W	960 W
Rated output current I_r	$T_a \leq 60$ °C	5 A	10 A	20 A	40 A
Derating of the output current	60 °C < $T_a \leq$ 70 °C	2.5 %/°C			3.5 %/°C
Signalling contact for output voltage OK	13-14	solid-state (max. 60 V DC, 0.3 A)			
	Threshold	17.6-19.4 V			
	Insulation voltage	500 V DC			
Mininum fuse rating to achieve short-circuit protection	13-14	≥ 60 V DC, ≤ 0.3 A fast-acting			
Maximum deviation with	load change statical	±1 %	±1 % (single mode)		
		-	±5 % (parallel mode)		
	change of output voltage within the input voltage range	± 0.5 %			
Control time	at nominal load	< 2 ms			
Starting time after applying the supply voltage	at I_r	max. 1 s			
	with 3500 µF	max. 1.5 s			
Rise time	at nominal load	max. 150 ms			
	with 3500 µF	max. 500 ms			
Fall time		max. 150 ms			
Residual ripple and switching peaks	BW = 20 MHz	100 mV			80 mV
Parallel connection		not supported	configurable, to increase power, up to 2 devices, min. 0.1 I_r - max 0.9 I_r)		to increase power, up to 2 devices, min. 0.1 I_r - max. 0.9 I_r use active current balancing
Series connection		not supported	yes, to increase voltage, max. 2 devices		
Resistance to reverse feed		approx. 35 V			
Output circuit - No-load, overload and short-circuit behaviour					
Characteristic curve of output		combined U/I characteristic curve and hiccup mode		U/I- or hiccup-mode adjustable	hiccup / fold back behavior
Short-circuit protection		continuous short-circuit proof			
Short-circuit behaviour		current limiting			
Overload protection		hiccup mode			
No-load protection		continuous no-load stability			
Overtemperature protection		yes, automatic recovery after temperature went down			
Starting of capacitive loads		3500 µF	7000 µF	7000 µF	7000 µF

CP-T range
Technical data

Data at T_a = 25 °C, U_{in} = 3 x 400 V AC and rated values, unless otherwise indicated

Type			CP-T 24/5.0	CP-T 24/10.0	CP-T 24/20.0	CP-T 24/40.0
General data						
Efficiency			typ. 89 %	typ. 90 %		typ. 92 %
Duty cycle			100%			
Dimensions			see “Dimensional drawings”			
Material of housing			metal			
Mounting			DIN rail (IEC/EN 60715), snap-on mounting without any tool			
Mounting position			horizontal			
Minimum distance to other units		horizontal / vertical	25 mm / 25 mm (0.98 in / 0.98 in)			
Degree of protection		housing / terminals	IP20 / IP20			
Protection class			I			
Electrical connection - input circuit / output circuit / signalling circuit						
Connecting capacity		fine-strand with wire end ferrule	0.2-4 mm² (24-11 AWG)			
		fine-strand without wire end ferrule	0.2-6 mm² (24-10 AWG)			
		rigid	0.2-6 mm² (24-10 AWG)			
Stripping length			8 mm (0.31 in)			
Tightening torque		input / output	1 Nm (9 lb.in) / 0.6 Nm (5.5 lb.in)			1 Nm (9 lb.in) / 1.8 Nm (15.6 lb.in)
Environmental data						
Ambient temperature range		operation	-40...+70 °C		-30…+70 °C	-40...+70 °C
		rated load	-40...+60 °C		-30…+60 °C	-40...+60 °C
		storage	-40…+85 °C			
Altitude during operation		IEC/EN 60068-2-13	max. 5000 m			
Damp heat (cyclic) (IEC/EN 60068-2-30)			95 % without condensation			
Vibration (sinusoidal) (IEC/EN 60068-2-6)			2 g, 10-500 Hz, 2G, each along X, Y, Z axes 60 min / cycle			
Shock (half-sine) (IEC/EN 60068-2-27)			15 g, 11 ms, 3 axes, 6 faces, 3 times for each face			
Isolation data						
Rated insulation voltage U_i		input circuit / output circuit	3 kV AC			
		input / PE	1.5 kV AC			
		output / PE	0.5 kV AC; 0.71 kV DC			
		signalling output / PE	0.5 kV DC			
Pollution degree			2			
Standards / Directives						
Standards			IEC/EN 60950-1			
Low Voltage Directive			2014/35/EU			
EMC Directive			2014/30/EU			
RoHS Directive			2011/65/EU			
Protective low voltage			SELV (IEC/EN 60950-1)			
Electromagnetic compatibility						
Interference immunity to			IEC/EN 61000-6-2			
electrostatic discharge		IEC/EN 61000-4-2	level 4 (air discharge 15 kV / contact discharge 8 kV)			
radiated, radio-frequency, electromagnetic field		IEC/EN 61000-4-3	level 3 (10 V/m)			
electrical fast transient/burst		IEC/EN 61000-4-4	level 4 (4 kV / 2.5 kHz)	level 4 (4 kV / 5 kHz)		
surge		IEC/EN 61000-4-5	L-L level 3 (2 kV) / L-PE level 4 (4 kV)			
conducted disturbances, induced by radio-frequency fields		IEC/EN 61000-4-6	level 3 (10 V)			
power frequency magnetic fields		IEC/EN 61000-4-8	level 4 (30 A/m)			
voltage dips, short interruptions and voltage variations		IEC/EN 61000-4-11	dips: >95 % 0.5 ms / >30 % 0.5 ms, interruptions: >95 % 250 ms			
Interference emission			IEC/EN 61000-6-3			
high-frequency radiated			class B			
high-frequency conducted			class B			
limits for harmonic current emissions		IEC/EN 61000-3-2	class A			

CP-T range
Technical data

Data at T_a = 25 °C, U_{in} = 3 x 400 V AC and rated values, unless otherwise indicated

Type			CP-T 48/5.0	CP-T 48/10.0	CP-T 48/20.0
Input circuit				L1, L2, L3	
Rated input voltage U_{in}			3 x 400-500 V AC		
Input voltage range			340-575 V AC		
			480-820 V DC		
Frequency range AC			47-63 Hz		
Typical input current			0.65 A	1.1 A	1.72 A
Typical power consumption			264 W	535 W	1050 W
Inrush current		typ.	20 A		30 A
Power failure buffering time			min. 20 ms		min. 15 ms
Internal input fuse		per phase	2 A / 600 V AC	T3.15 A / 500 V AC	T 5 A / 500 V AC
Power factor correction (PFC)			yes, passive		
Discharge current		towards PE	< 3.5 mA		
		input / output	< 0.25 mA		
Indication of operational states					
Output voltage	OUTPUT OK: green LED		output voltage OK		
	OUTPUT LOW: red LED		output voltage too low		
Output circuit				L+, L+, L-, L-	
Rated output voltage			48 V DC		
Tolerance of the output voltage			0...+1 %		
Adjustment range of the output voltage			47-56 V DC		
Rated output power			240 W	480 W	960 W
Rated output current I_r		$T_a \leq 60$ °C	5 A	10 A	20 A
Derating of the output current		60 °C < $T_a \leq$ 70 °C	2.5 %/°C		3.5 %/°C
Maximum deviation with	load change statical		±1 % (single mode)		
			± 5 % (parallel mode)		
	change of output voltage within the input voltage range		±0.5 %		
Control time		at rated load	< 2 ms		
Starting time after applying the supply voltage		at I_r	max. 1 s		
		with 7000 µF	max. 1.5 s		
Rise time		at rated load	max. 150 ms		
		with 7000 µF	max. 500 ms		
Fall time			max. 150 ms		
Residual ripple and switching peaks		BW = 20 MHz	100 mV		80 mV
Parallel connection			configurable, to increase power, up to 2 devices, min. 0.1 I_r - max 0.9 I_r)		to increase power, up to 2 devices, min. 0.1 I_r - max. 0.9 I_r use active current balancing
Series connection			yes, to increase voltage, max. 2 devices		
Resistance to reverse feed			approx. 35 V	approx. 63 V	approx. 63 V
Output circuit - No-load, overload and short-circuit behaviour					
Characteristic curve of output			combined U/I and hiccup mode	U/I or hiccup mode, configurable	hiccup mode / fold back behavior
Short-circuit protection			continuous short-circuit proof		
Short-circuit behaviour			current limiting		
Overload protection			hiccup mode		
No-load protection			continuous no-load stability		
Over temperature protection			yes, automatic recovery after temperature went down		
Starting of capacitive loads			7000 µF		

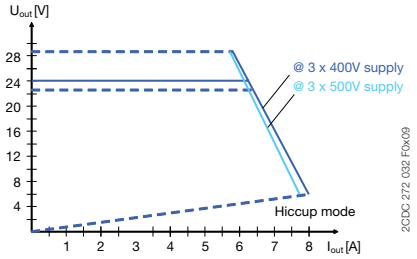
CP-T range
Technical data

Data at T_a = 25 °C, U_{in} = 3 x 400 V AC and rated values, unless otherwise indicated

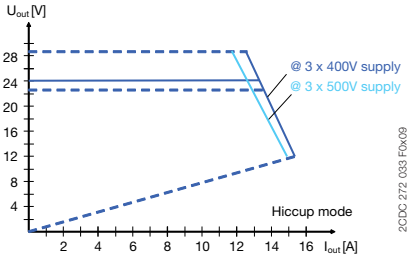
Type			CP-T 48/5.0	CP-T 48/10.0	CP-T 48/20.0
General data					
Efficiency			typ. 91 %		typ. 93 %
Duty cycle			100%		
Dimensions			see “Dimensional drawings”		
Material of housing			Metal		
Mounting			DIN rail (IEC/EN 60715), snap-on mounting without any tool		
Mounting position			horizontal		
Minimum distance to other units		horizontal / vertical	25 mm / 25 mm (0.98 in / 0.98 in)		
Degree of protection		housing / terminals	IP20 / IP20		
Protection class			I		
Electrical connection - input circuit / output circuit					
Connecting capacity		fine-strand with wire end ferrule	0.2-4 mm² (24-11 AWG)		0.2-4 mm² (24-11 AWG) / 0.5-10 mm² (20-8 AWG)
		fine-strand without wire end ferrule	0.2-6 mm² (24-10 AWG)		
		rigid			
Stripping length			8 mm (0.31 in)		
Tightening torque		input / output	1 Nm (9 lb.in) / 0.6 Nm (5.5 lb.in)		1 Nm (9 lb.in) / 1.8 Nm (15.6 lb.in)
Environmental data					
Ambient temperature range		operation	-40…+70 °C	-30…+70 °C	-40…+70 °C
		rated load	-40…+60 °C	-30…+60 °C	-40…+60 °C
		storage	-40…+85 °C	-40…+85 °C	-40…+85 °C
Altitude during operation		IEC/EN 60068-2-13	max. 5000 m		
Damp heat (cyclic) (IEC/EN 60068-2-30)			95 % without condensation		
Vibration (sinusoidal) (IEC/EN 60068-2-6)			10-500 Hz, 2G, each along X, Y, Z axes 6 min / cycle		
Shock (half-sine) (IEC/EN 60068-2-27)			15G, 11 ms, 3 axes, 6 Faces, 3 times for each face		
Isolation data					
Rated insulation voltage U_i		input circuit / output circuit	3 kV AC		
		input / PE	1.5 kV AC		
		output / PE	0.5 kV AC; 0.71 kV DC		
Pollution degree			2		
Standards / Directives					
Standards			IEC/EN 60950-1		
Low Voltage Directive			2014/35/EU		
EMC Directive			2014/30/EU		
RoHS Directive			2011/65/EU		
Protective low voltage			SELV (IEC/EN 60950-1)		
Electromagnetic compatibility					
Interference immunity to			IEC/EN 61000-6-2		
electrostatic discharge		IEC/EN 61000-4-2	level 4 (air discharge 15 kV / contact discharge 8 kV)		
radiated, radio-frequency, electromagnetic field		IEC/EN 61000-4-3	level 3 (10 V/m)		
electrical fast transient/burst		IEC/EN 61000-4-4	level 4 (4 kV / 5 kHz)		
surge		IEC/EN 61000-4-5	L-L level 3 (2 kV) / L-PE level 4 (4 kV)		
conducted disturbances, induced by radio-frequency fields		IEC/EN 61000-4-6	level 3 (10 V)		
power frequency magnetic fields		IEC/EN 61000-4-8	level 4 (30 A/m)		
voltage dips, short interruptions and voltage variations		IEC/EN 61000-4-11	dips: >95 % 0.5 ms / >30 % 0.5 ms interruptions: >95 % 250 ms		
Interference emission			IEC/EN 61000-6-3		
high-frequency radiated			class B		
high-frequency conducted			class B		
limits for harmonic current emissions		IEC/EN 61000-3-2	class A		

CP-T range
Technical diagrams

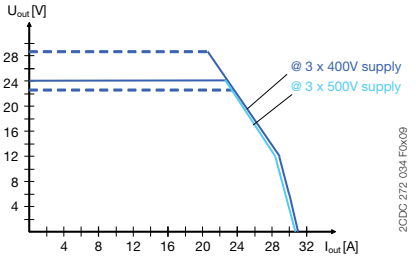
Output curves at T_a = 25 °C



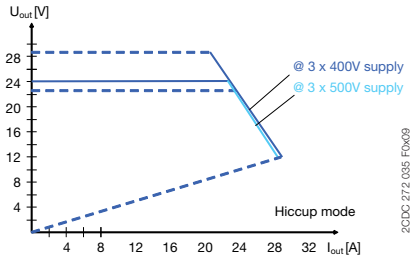
CP-T 24/5.0



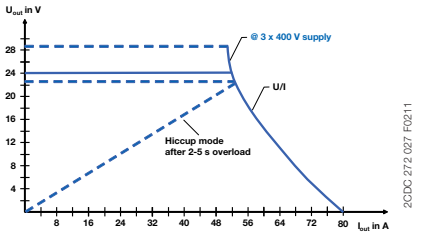
CP-T 24/10.0



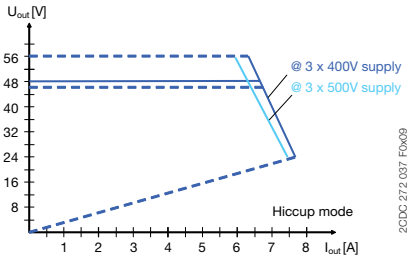
CP-T 24/20.0 U/I curve



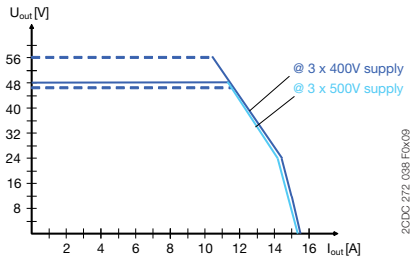
CP-T 24/20.0 Hiccup mode



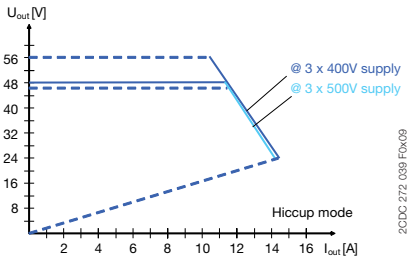
CP-T 24/40.0



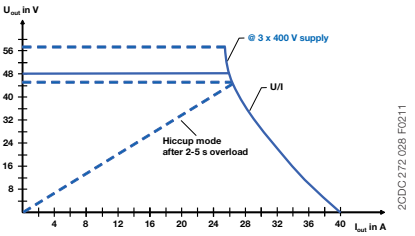
CP-T 48/5.0



CP-T 48/10.0 U/I curve

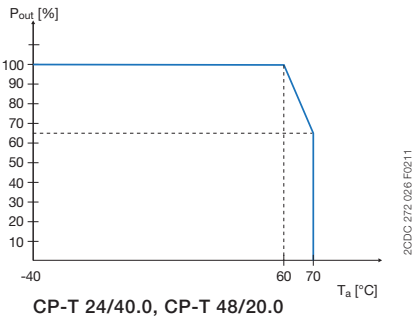


CP-T 48/10.0 Hiccup mode

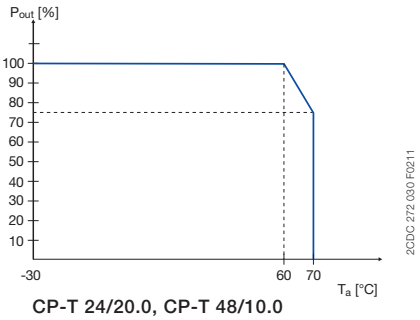


CP-T 48/20.0

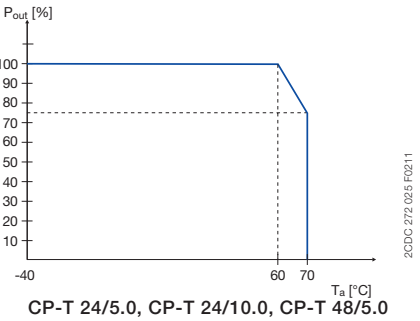
Temperature curves at rated load



CP-T 24/40.0, CP-T 48/20.0



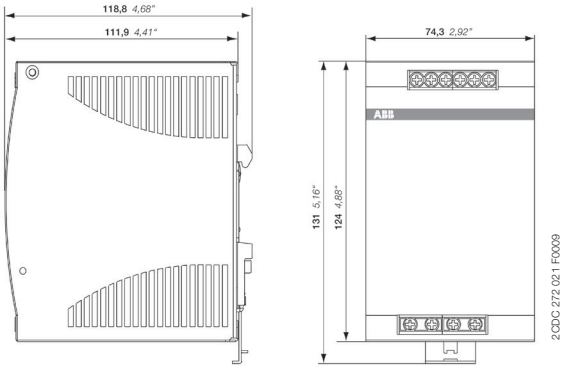
CP-T 24/20.0, CP-T 48/10.0



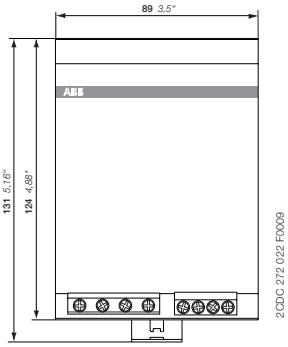
CP-T 24/5.0, CP-T 24/10.0, CP-T 48/5.0

CP-T range
Dimensional drawings

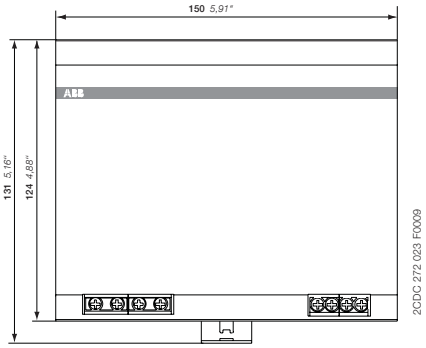
Dimensions in mm



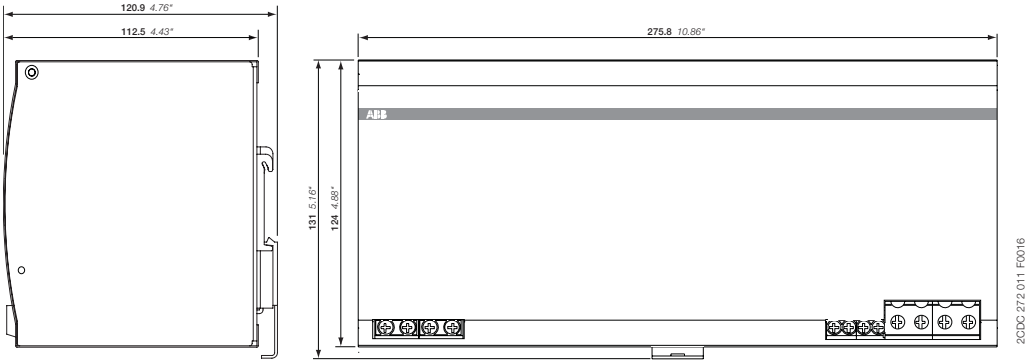
CP-T 24/5.0



CP-T 24/10.0, CP-T 48/5.0



CP-T 24/20.0, CP-T 48/10.0



CP-T 24/40.0, CP-T 48/20.0

CP-C.1 range
Product group picture

CP-C.1 range
Table of contents

CP-C.1 range
Benefits and advantages

Characteristics
- Rated output voltage 24 V DC
- Power reserve design delivers up to 150 % at $T_a \leq 40$ °C
- Output voltage adjustable via front-face rotary potentiometer “OUTPUT Adjust”, 22.5-28.5 V
- High efficiency
- Low power dissipation and low heating
- Free convection cooling (no forced cooling)
- Devices with coated PCBAs for harsh environments and with extended temperature range
- Open-circuit, overload and short-circuit stable
- Integrated input fuse
- DC OK - signaling output “13-14” (relay), Power reserve signaling output “$I > I_R$ (transistor)
- Redundancy unit offers true redundancy, available as accessory
- Various approvals and marks

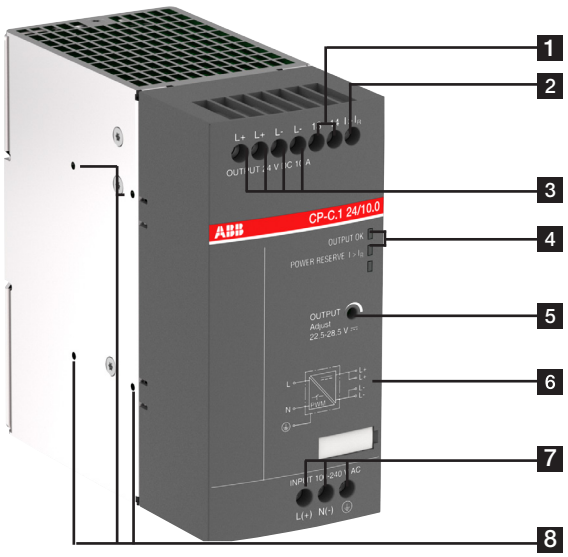
Benefits
The primary switch mode power supply CP-C.1 has a wide AC or DC input voltage range. Furthermore the CP-C.1 is equipped with capacitors that ensure a hold-up time of at least 50 ms. This enables worldwide usage and permits safe operation in fluctuating networks and battery-powered applications.
The CP-C.1 power supplies with the robust metallic housing and the reliable construction are suitable for applications in industrial environments. The CP-C.1-C units, having coated PCBAs, enable usage in even harsh industrial environments.
The power reserve of up to 50 % enables trouble-free starting of heavy loads eliminating the need of usage of an oversized power supply.

Signaling output
For the communication of the status of the power supply the CP-C.1 is equipped with a relay output to signal output OK as well as a transistor output to indicate when the power reserve is active. These signals can be used for communication to a higher level control system e.g. a PLC.
Depending on the logic of the higher level control system an appropriate action is initiated by forwarding the signal. The receptor of this signal could be a contactor, a signal tower or an interface relay.

Continuous operation
- Power reserve design to allow performance with up to 50 % more current
- Redundancy setup of the application possible to allow parallel operation
- Long lifetime
- High peak currents for switching on capacitive loads are supported

Project cost reduction
- Up to 94 % efficiency saves money for energy during operation
- Less need for external cooling in the cabinet
- Small size to reduce space needed in panel

Harsh environment
- CP-C.1-C is applicable in environments from -40 to +70°C
- High MTBF values



1 **13-14: Relay output to signal output OK**
2 **$I > I_R$: Power reserve transistor output**
3 **OUTPUT L+, L-: Output terminals**
4 **Indication of operational states**
OUTPUT OK: Green LED
POWER RESERVE $I > I_R$: Yellow LED
5 **OUTPUT Adjust: Rotary potentiometer - Adjustment of output voltage 22.5-28.5 V DC**
6 **Circuit diagram**
7 **INPUT L(+), N(-), o/PE: Input terminals**
8 **Side mounting screw holes for DIN rail adapter / lateral mounting**

CP-C.1 range
Ordering details

CP-C.1 24/5.0
CP-C.1 24/5.0-C

CP-C.1 24/10.0
CP-C.1 24/10.0-C

CP-C.1 24/20.0
CP-C.1 24/20.0-C

Description

The CP-C.1 power supplies are ABB's high-performance and most advanced range. With excellent efficiency, high reliability and innovative functionality it is prepared for the most demanding industrial applications. These power supplies have up to 50 % integrated power reserve and operate at an efficiency of up to 94 %. They are equipped with overheat protection and active power factor correction. Combined with a broad AC and DC input range and extensive worldwide approvals the CP-C.1 power supplies are the preferred choice for professional DC applications.

Ordering details - CP-C.1

Input voltage range	Rated output voltage / current	PCBA	Type	Order code	Price 1 pc.	Weight (1 pc.) kg (lb)
85-264 V AC, 90-300 V DC	24 V DC / 5 A	uncoated	CP-C.1 24/5.0	1SVR360563R1001		0.87
	24 V DC / 10 A		CP-C.1 24/10.0	1SVR360663R1001		1.21
	24 V DC / 20 A		CP-C.1 24/20.0	1SVR360763R1001		1.70
	24 V DC / 5 A	coated	CP-C.1 24/5.0-C	1SVR360563R2001		0.87
	24 V DC / 10 A		CP-C.1 24/10.0-C	1SVR360663R2001		1.24
	24 V DC / 20 A		CP-C.1 24/20.0-C	1SVR360763R2001		1.70

Further documentation CP-C.1 power supplies on www.abb.com

CP-C.1 range
Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

Input circuit - Supply circuit

		CP-C.1 24/5.0	CP-C.1 24/5.0-C
		L (+), N (-)	
Rated input voltage U_{in}		100-240 V AC, 90-300 V DC	
Input voltage range	AC	85-264 V AC	
	DC	90-300 V DC	
Typical input current	at 115 V AC	1.1 A	
	at 230 V AC	0.6 A	
Typical power consumption	at 230 V AC	132 W	
Rated frequency		DC, 50/60 Hz	
Frequency range	AC	45-65 Hz	
Inrush current, cold state		< 8 A	
Let-through energy I^2t , cold state	at 230 V AC	< 1 A^2s	
Discharge current towards PE		< 3.5 mA	
Hold-up time	at 115 V AC	min. 50 ms	
	at 230 V AC	min. 50 ms	
Internal input fuse		T4.0 A, not exchangeable	
Recommended backup fuse for wire protection at 1.5 mm^2		1 pole miniature circuit breaker ABB type S 200	
	characteristic	B or C	
	max. rating	16 A	
Power factor correction (PFC)		yes, active	
Transient overvoltage protection		yes, varistor	

User interface

Indication of operational states			
Output voltage	LED 'OUTPUT OK ' (green)	ON	92 % adjusted U_{out}
		flashing	90 % adjusted U_{out}
Power reserve	LED 'I > I_R' (yellow)	OFF	I ≤ I_R
		ON	I > I_R

Output circuit - Power output

		L+, L-	
Rated output voltage		24 V DC	
Tolerance of the output voltage		± 1 %	
Adjustment range of the output voltage		22.5-28.5 V DC	
Rated output power		120 W	
Rated output current I_R	- 25 °C ≤ T_a ≤ 60 °C	5.0 A	-
	- 40 °C ≤ T_a ≤ 60 °C	-	5.0 A
Reserve output current	- 25 °C ≤ T_a ≤ 40 °C	7.5 A continuously	-
	- 40 °C ≤ T_a ≤ 40 °C	-	7.5 A continuously
Short-circuit current limiting		7.6 A	
Derating of the output current	60 °C < T_a ≤ 70 °C	2.5 %/°C	
Deviation width of output voltage	static output voltage deviaton 25-100 %	< 1%, class C	
	dynamical 0-100 %	< 2%, class A	
	change of input voltage within the rated input voltage	< 1 ms, class A	
Control time		< 0.1 %, class A	
Starting time after applying the supply voltage		< 500 ms, class C	
Rise time		< 10 ms	
Fall time		< 20 ms	
Residual ripple and switching peaks	BW = 20 MHz	< 120 mVpp, class A	
Parallel connection		yes, up to 5 devices, to enable redundancy and to increase power, current not symmetrical	
Series connection		yes, max. 2 devices to increase voltage	

CP-C.1 range
Technical data

		CP-C.1 24/5.0	CP-C.1 24/5.0-C
No-load, overload and short-circuit behavior			
Characteristic curve of output		U/I characteristic curve with power reserve	
Short-circuit protection		continuous short-circuit stability	
Short-circuit behavior		current limiting	
Resistance to reverse feed		≤ 35 V DC	
Overload protection		constant current limitation	
Overtemperature protection		protection by switch off in case of overtemperature (thermal protection), automatic restart	
No-load protection		continuous no-load stability	
Starting of capacitive loads		yes	

Signaling outputs

OUTPUT OK signaling output		
Type of output	13-14	relay, n/o contact
ON (contact closed)		92 % adjusted U_{out}
OFF (contact open)		90 % adjusted U_{out}
Contact ratings	max. switching voltage / current	30 V AC - 0.5 A / 24 V DC - 1 A (resistive load)
	min. switching voltage / current	5 V DC / 1 mA

POWER RESERVE signaling output		
Type of output	$I > I_R$	transistor, short-circuit proof
Active / ON (closed)		$I > I_R$
Inactive / OFF (open)		$I \leq I_R$
Ratings	voltage/current	24 V DC / ≤ 20 mA

General data

Efficiency	at rated output power	up to 93 %
Power loss	at rated output power	12 W
	at 50% of rated output power	8 W
	at no load	< 3.6 W
Duty cycle		100 %
MTBF	acc. to MIL 217 HDBK	on request
Dimensions		see “Dimensional drawings”
Material of housing	cover	zinc-coated sheet-steel
	housing shell	aluminium
	front	plastic, PA6, V-0
Mounting		DIN rail (IEC/EN 60715), snap-on mounting
Mounting position		1 and 7
Minimum distance to other units	horizontal	25 mm (0.98 in)
	vertical	25 mm (0.98 in)
Degree of protection (IEC/EN 60529)	housing / terminals	IP20 / IP20
Protection class (IEC/EN 61140)		I

Electrical connection

Input circuits (L(+), N(-), PE)		
Connecting capacity	rigid	0.5-4.0 mm² (20-10 AWG)
	fine-strand with(out) wire end ferrule	0.5-2.5 mm² (20-12 AWG)
Stripping length		8 mm (0.315 in)
Tightening torque		0.5 Nm (4.4 lb.in)
Recommended screw driver		PH1 / Ø 4.0 x 0.8 mm

Output circuits (L+, L+, L-, L-)		
Connecting capacity	rigid	0.5-4.0 mm² (20-10 AWG)
	fine-strand with(out) wire end ferrule	0.5-2.5 mm² (20-12 AWG)
Stripping length		8 mm (0.315 in)
Tightening torque		0.5 Nm (4.4 lb.in)
Recommended screw driver		PH1 / Ø 4.0 x 0.8 mm

CP-C.1 range
Technical data

		CP-C.1 24/5.0	CP-C.1 24/5.0-C
Signaling output (13-14, I > I_R)			
Connecting capacity	rigid	0.5-4.0 mm² (20-10 AWG)	
	fine-strand with(out) wire end ferrule	0.5-2.5 mm² (20-12 AWG)	
Stripping length		8 mm (0.315 in)	
Tightening torque		0.5 Nm (4.4 lb.in)	
Recommended screw driver		PH1 / Ø 4.0 x 0.8 mm	
Maximum cable length (applicable for I>I_R)		30 m	

Environmental data

Ambient temperature range	operation	-25…+70 °C (-13... +158 °F)	-40…+70 °C (-40...+158 °F)
	rated output power	-25...+60 °C (-13... +140 °F)	-40...+60 °C (-40...+140 °F)
	storage	-40…+85 °C (-40...+185 °F)	
	transportation	-40…+85 °C (-40...+185 °F)	
Climatic class (IEC/EN 60721-3-1)	storage	1K2 (-40...+85 °C / -40...+185 °F)	
Climatic class (IEC/EN 60721-3-2)	transportation	2K2 (-40…+85 °C / -40...+185 °F)	
Climatic class (IEC/EN 60721-3-3)	operation	3K3 (-25…+70 °C / -13...+158 °F)	3K3 (-40…+70 °C / -40...+158 °F)
Damp heat, cyclic (IEC/EN 60068-2-30)		test Db: 55°C, 2 cycles	
Vibration (IEC/EN 60068-2-6)		test Fc: 10-58 Hz, amplitude ±0.15 mm, 58-150 Hz, 2 g, 10 sweep cycles each axis	
Shock, half-sine (IEC/EN 60068-2-27)		test Ea: 30 g, 6 ms, 3 pulses each axis; bump 20 g, 11 ms, 100 pulses each axis	
Coated PCBA		no	yes
Gaseous corrosive environment withstand test (IEC/EN 60068-2-60)		-	testing method: 4 testing period: 21 days ambient conditions: 25 °C, 75 % r.h. air/volume change rate per hour: 3-6 sample not energized during exposure gas concentrations acc. ISA-S71.04.2013 Harsh Group A, G3 IEC 60721-3.3 acc. 3C2/3C3 - $H_2S \geq 100 \pm 10$ ppb - $SO_2/SO_3 \geq 300 \pm 20$ ppb - $Cl_2 \geq 100 \pm 10$ ppb - $NO_x \geq 1250 \pm 20$ ppb

Isolation data

Rated impulse withstand voltage U_{imp} (EN 50178)	input circuit / output circuit	4 kV (1.2/50 µs)
	input circuit / PE	4 kV (1.2/50 µs)
	input circuit / relay contact	4 kV (1.2/50 µs)
	output circuit / relay contact	0.5 kV (1.2/50 µs)
	relay contact / PE	0.5 kV (1.2/50 µs)
	output circuit / PE	0.5 kV (1.2/50 µs)
Rated insulation voltage U_i (EN 50178)	input circuit / output circuit	300 V
	input circuit / PE	300 V
	input circuit / relay contact	300 V
	output circuit / relay contact	50 V
	relay contact / PE	50 V
	output circuit / PE	50 V
Overvoltage category (EN 50178)	< 2000 m	III
	2000…5000 m	II
Overvoltage category (IEC/EN 60950-1)	< 2000 m	II
	2000…5000 m	I
Pollution degree		2
Protective separation (IEC/EN 60950-1)	input circuit / output circuit	yes
	input circuit / relay contact	yes

CP-C.1 range
Technical data

	CP-C.1 24/5.0	CP-C.1 24/5.0-C

Standards / Directives

Standards	IEC/EN 61204
Low Voltage Directive	2014/35/EU
EMC Directive	2014/30/EU
ATEX Directive	- / 2014/34/EU
RoHS Directive	2011/65/EU
Electrical safety	IEC/EN 60950-1
Industrial control equipment	UL 508 / CSA 22.2 No 107.1
Electronic equipment for use in power installations	EN 50178
Protective extra low voltage	PELV (EN 50178)
Safety extra low voltage	SELV (IEC/EN 60950-1)
Limitation of harmonic line currents	IEC/EN 61000-3-2

Electromagnetic compatibility

Low-voltage power supplies, d.c. output – Part 3: Electromagnetic compatibility (EMC)		IEC/EN 61204-3
Interference immunity to		IEC/EN 61000-6-2
electrostatic discharge (ESD)	IEC/EN 61000-4-2	level 4, 8 kV / 15 kV (criterion A)
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	level 3, 10 V/m (criterion A)
electrical fast transient / burst	IEC/EN 61000-4-4	level 4, 4 kV / 2 kV (criterion A)
surge	IEC/EN 61000-4-5	level 4, L/N 2 kV (criterion A) level 4, L,N/PE 4 kV (criterion A)
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	level 3, 10 V (criterion A)
voltage dips, short interruptions and voltage variations	IEC/EN 61000-4-11	class 3
harmonics and interharmonics	IEC/EN 61000-4-13	class 3 (criterion A)
conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz	IEC/EN 61000-4-16	level 3, 10 V
Interference emission		IEC/EN 61000-6-3
limits for harmonic current emissions	IEC/EN 61000-3-2	class A
limitation of voltage changes etc.	IEC/EN 61000-3-3	compliant
Information technology equipment radio disturbance characteristics limits and methods of measurement	IEC/CISPR 22, EN 55022	class B
Industrial scientific and medical (ISM) radio-frequency equipment electromagnetic disturbance characteristics limits and methods of measurement	IEC/CISPR 11, EN 55011	class B
Voltage sags	SEMI F47	passed
Federal Communications Commission	FCC15	compliant

CP-C.1 range
Technical data

Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

Input circuit - Supply circuit

		CP-C.1 24/10.0	CP-C.1 24/10.0-C
		L (+), N (-)	
Rated input voltage U_{in}		100-240 V AC, 90-300 V DC	
Input voltage range	AC	85-264 V AC	
	DC	90-300 V DC	
Typical input current	at 115 V AC	2.3 A	
	at 230 V AC	1.2 A	
Typical power consumption	at 230 V AC	256 W	
Rated frequency		DC, 50/60 Hz	
Frequency range	AC	45-65 Hz	
Inrush current, cold state		< 11 A	
Let-through energy I^2t , cold state	at 230 V AC	< 1,5 A^2s	
Discharge current towards PE		< 3.5 mA	
Hold-up time	at 115 V AC	min. 40 ms	
	at 230 V AC	min. 40 ms	
Internal input fuse		T6.3 A, not exchangeable	
Recommended backup fuse for wire protection at 1.5 mm^2		1 pole miniature circuit breaker ABB type S 200	
	characteristic	B or C	
	max. rating	16 A	
Power factor correction (PFC)		yes, active	
Transient overvoltage protection		yes, varistor	

User interface

Indication of operational states			
Output voltage	LED 'OUTPUT OK ' (green)	ON	92 % adjusted U_{out}
		flashing	90 % adjusted U_{out}
Power reserve	LED 'I > I_R' (yellow)	OFF	I ≤ I_R
		ON	I > I_R

Output circuit - Power output

		L+, L-	
Rated output voltage		24 V DC	
Tolerance of the output voltage		±1 %	
Adjustment range of the output voltage		22.5-28.5 V DC	
Rated output power		240 W	
Rated output current I_R	- 25 °C ≤ T_a ≤ 60 °C	10.0 A	-
	- 40 °C ≤ T_a ≤ 60 °C	-	10.0 A
Reserve output current	- 25 °C ≤ T_a ≤ 40 °C	15.0 A continuously	-
	- 40 °C ≤ T_a ≤ 60 °C	-	15.0 A continuously
Short-circuit current limiting		15.5 A	
Derating of the output current	60 °C < T_a ≤ 70 °C	2.5 %/°C	
Deviation width of output voltage	static output voltage deviaton 25-100 %	< 1%, class C	
	dynamical 0-100 %	< 5 %, class B	
	change of input voltage within the rated input voltage	< 1 ms, class A	
Control time		< 0.1 %, class A	
Starting time after applying the supply voltage		< 500 ms, class C	
Rise time		< 10 ms	
Fall time		< 20 ms	
Residual ripple and switching peaks	BW = 20 MHz	< 120 mVpp, class A	
Parallel connection		yes, up to 5 devices, to enable redundancy and to increase power, current not symmetrical	
Series connection		yes, max. 2 devices to increase voltage	

CP-C.1 range
Technical data

		CP-C.1 24/10.0	CP-C.1 24/10.0-C
No-load, overload and short-circuit behavior			
Characteristic curve of output		U/I characteristic curve with power reserve	
Short-circuit protection		continuous short-circuit stability	
Short-circuit behavior		current limiting	
Resistance to reverse feed		≤ 35 V DC	
Overload protection		constant current limitation	
Overtemperature protection		protection by switch off in case of overtemperature (thermal protection), automatic restart	
No-load protection		continuous no-load stability	
Starting of capacitive loads		yes	

Signaling outputs

OUTPUT OK signaling output		
Type of output	13-14	relay, n/o contact
ON (contact closed)		92 % adjusted U_{out}
OFF (contact open)		90 % adjusted U_{out}
Contact ratings	max. switching voltage / current	30 V AC - 0.5 A / 24 V DC - 1 A (resistive load)
	min. switching voltage / current	5 V DC / 1 mA

POWER RESERVE signaling output		
Type of output	$I > I_R$	transistor, short-circuit proof
Active / ON (closed)		$I > I_R$
Inactive / OFF (open)		$I \leq I_R$
Ratings	voltage/current	24 V DC / ≤ 20 mA

General data

Efficiency	at rated output power	up to 94 %
Power loss	at rated output power	16 W
	at 50% of rated output power	12 W
	at no load	< 3.6 W
Duty cycle		100 %
MTBF	acc. to MIL 217 HDBK	on request
Dimensions		see “Dimensional drawings”
Material of housing	cover	zinc-coated sheet-steel
	housing shell	aluminium
	front	plastic, PA6, V-0
Mounting		DIN rail (IEC/EN 60715), snap-on mounting
Mounting position		1 and 7
Minimum distance to other units	horizontal	25 mm (0.98 in)
	vertical	25 mm (0.98 in)
Degree of protection (IEC/EN 60529)	housing / terminals	IP20 / IP20
Protection class (IEC/EN 61140)		I

Electrical connection

Input circuits (L(+), N(-), PE)		
Connecting capacity	rigid	0.5-4.0 mm² (20-10 AWG)
	fine-strand with(out) wire end ferrule	0.5-2.5 mm² (20-12 AWG)
Stripping length		8 mm (0.315 in)
Tightening torque		0.5 Nm (4.4 lb.in)
Recommended screw driver		PH1 / Ø 4.0 x 0.8 mm

Output circuits (L+, L+, L-, L-)		
Connecting capacity	rigid	0.5-4.0 mm² (20-10 AWG)
	fine-strand with(out) wire end ferrule	0.5-2.5 mm² (20-12 AWG)
Stripping length		8 mm (0.315 in)
Tightening torque		0.5 Nm (4.4 lb.in)
Recommended screw driver		PH1 / Ø 4.0 x 0.8 mm

CP-C.1 range
Technical data

		CP-C.1 24/10.0	CP-C.1 24/10.0-C
Signaling output (13-14, I > I_R)			
Connecting capacity	rigid	0.5-4.0 mm² (20-10 AWG)	
	fine-strand with(out) wire end ferrule	0.5-2.5 mm² (20-12 AWG)	
Stripping length		8 mm (0.315 in)	
Tightening torque		0.5 Nm (4.4 lb.in)	
Recommended screw driver		PH1 / Ø 4.0 x 0.8 mm	
Maximum cable length (applicable for I>I_R)		30 m	

Environmental data

Ambient temperature range	operation	-25…+70 °C (-13...+158 °F)	-40…+70 °C (-40...+158 °F)
	rated output power	-25...+60 °C (-13...+140 °F)	-40...+60 °C (-40...+140 °F)
	storage	-40…+85 °C (-40...+185 °F)	
	transportation	-40…+85 °C (-40...+185 °F)	
Climatic class (IEC/EN 60721-3-1)	storage	1K2 (-40...+85 °C / -40...+185 °F)	
Climatic class (IEC/EN 60721-3-2)	transportation	2K2 (-40…+85 °C / -40...+185 °F)	
Climatic class (IEC/EN 60721-3-3)	operation	3K3 (-25…+70 °C / -13...+158 °F)	3K3 (-40…+70 °C / -40...+158 °F)
Damp heat, cyclic (IEC/EN 60068-2-30)		test Db: 55°C, 2 cycles	
Vibration (IEC/EN 60068-2-6)		test Fc: 10-58 Hz, amplitude ±0.15 mm, 58-150 Hz, 2 g, 10 sweep cycles each axis	
Shock, half-sine (IEC/EN 60068-2-27)		test Ea: 30 g, 6 ms, 3 pulses each axis; bump 20 g, 11 ms, 100 pulses each axis	
Coated PCBA		no	yes
Gaseous corrosive environment withstand test (IEC/EN 60068-2-60)		-	testing method: 4 testing period: 21 days ambient conditions: 25 °C, 75 % r.h. air/volume change rate per hour: 3-6 sample not energized during exposure gas concentrations acc. ISA-S71.04.2013 Harsh Group A, G3 IEC 60721-3.3 acc. 3C2/3C3 - H_2S ≥ 100 ± 10 ppb - SO_2/SO_3 ≥ 300 ± 20 ppb - Cl_2 ≥ 100 ± 10 ppb - NO_x ≥ 1250 ± 20 ppb

Isolation data

Rated impulse withstand voltage U_{imp} (EN 50178)	input circuit / output circuit	4 kV (1.2/50 µs)
	input circuit / PE	4 kV (1.2/50 µs)
	input circuit / relay contact	4 kV (1.2/50 µs)
	output circuit / relay contact	0.5 kV (1.2/50 µs)
	relay contact / PE	0.5 kV (1.2/50 µs)
	output circuit / PE	0.5 kV (1.2/50 µs)
Rated insulation voltage U_i (EN 50178)	input circuit / output circuit	300 V
	input circuit / PE	300 V
	input circuit / relay contact	300 V
	output circuit / relay contact	50 V
	relay contact / PE	50 V
	output circuit / PE	50 V
Overvoltage category (EN 50178)	< 2000 m	III
	2000…5000 m	II
Overvoltage category (IEC/EN 60950-1)	< 2000 m	II
	2000…5000 m	I
Pollution degree		2
Protective separation (IEC/EN 60950-1)	input circuit / output circuit	yes
	input circuit / relay contact	yes

CP-C.1 range
Technical data

	CP-C.1 24/10.0	CP-C.1 24/10.0-C

Standards / Directives

Standards	IEC/EN 61204	
Low Voltage Directive	2014/35/EU	
EMC Directive	2014/30/EU	
ATEX Directive	-	2014/34/EU
RoHS Directive	2011/65/EU	
Electrical safety	IEC/EN 60950-1	
Industrial control equipment / General Use Power Supplies	UL 508 / CSA 22.2 No 107.1	
Electronic equipment for use in power installations	EN 50178	
Protective extra low voltage	PELV (EN 50178)	
Safety extra low voltage	SELV (IEC/EN 60950-1)	
Limitation of harmonic line currents	IEC/EN 61000-3-2	

Electromagnetic compatibility

Low-voltage power supplies, d.c. output – Part 3: Electromagnetic compatibility (EMC)		IEC/EN 61204-3
Interference immunity to		IEC/EN 61000-6-2
electrostatic discharge (ESD)	IEC/EN 61000-4-2	level 4, 8 kV / 15 kV (criterion A)
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	level 3, 10 V/m (criterion A)
electrical fast transient / burst	IEC/EN 61000-4-4	level 4, 4 kV / 2 kV (criterion A)
surge	IEC/EN 61000-4-5	level 4, L/N 2 kV (criterion A) level 4, L,N/PE 4 kV (criterion A)
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	level 3, 10 V (criterion A)
voltage dips, short interruptions and voltage variations	IEC/EN 61000-4-11	class 3
harmonics and interharmonics	IEC/EN 61000-4-13	class 3 (Criterion A)
conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz	IEC/EN 61000-4-16	level 3, 10 V
Interference emission		IEC/EN 61000-6-3
limits for harmonic current emissions	IEC/EN 61000-3-2	class A
limitation of voltage changes etc.	IEC/EN 61000-3-3	compliant
Information technology equipment radio disturbance characteristics limits and methods of measurement	IEC/CISPR 22, EN 55022	class B
Industrial scientific and medical (ISM) radio-frequency equipment electromagnetic disturbance characteristics limits and methods of measurement	IEC/CISPR 11, EN 55011	class B
Voltage sags	SEMI F47	passed
Federal Communications Commission	FCC15	compliant

CP-C.1 range
Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

Input circuit - Supply circuit

		CP-C.1 24/20.0	CP-C.1 24/20.0-C
		L (+), N (-)	
Rated input voltage U_{in}		100-240 V AC, 90-300 V DC	
Input voltage range	AC	85-264 V AC	
	DC	90-300 V DC	
Typical input current	at 115 V AC	4.6 A	
	at 230 V AC	2.3 A	
Typical power consumption	at 230 V AC	508 W	
Rated frequency		DC, 50/60 Hz	
Frequency range	AC	45-65 Hz	
Inrush current, cold state		< 11 A	
Let-through energy I^2t , cold state	at 230 V AC	< 3 A^2s	
Discharge current towards PE		< 3.5 mA	
Hold-up time	at 115 V AC	min. 40 ms	
	at 230 V AC	min. 40 ms	
Internal input fuse		T12 A, not exchangeable	
Recommended backup fuse for wire protection at 1.5 mm^2		1 pole miniature circuit breaker ABB type S 200	
	characteristic	B or C	
	max. rating	16 A	
Power factor correction (PFC)		yes, active	
Transient overvoltage protection		yes, varistor	

User interface

Indication of operational states			
Output voltage	LED 'OUTPUT OK ' (green)	ON	92 % adjusted U_{out}
		flashing	90 % adjusted U_{out}
Power reserve	LED 'I > I_R' (yellow)	OFF	I ≤ I_R
		ON	I > I_R

Output circuit - Power output

		L+, L-	
Rated output voltage		24 V DC	
Tolerance of the output voltage		± 1 %	
Adjustment range of the output voltage		22.5-28.5 V DC	
Rated output power		480 W	
Rated output current I_R	- 25 °C ≤ T_a ≤ 60 °C	20 A	-
	- 40 °C ≤ T_a ≤ 60 °C	-	20 A
Reserve output current	- 25 °C ≤ T_a ≤ 40 °C	26.0 A continuously	-
	- 40 °C ≤ T_a ≤ 60 °C	-	26.0 A continuously
Short-circuit current limiting		27.7 A	
Derating of the output current	60 °C < T_a ≤ 70 °C	2.5 %/°C	
Deviation width of output voltage	static output voltage deviaton 25-100 %	< 1 %, class C	
	dynamical 0-100 %	< 5 %, class B	
	change of input voltage within the rated input voltage	< 5 ms, class B	
Control time		< 0.1 %, class A	
Starting time after applying the supply voltage		< 500 ms, class C	
Rise time		< 10 ms	
Fall time		< 20 ms	
Residual ripple and switching peaks	BW = 20 MHz	< 120 mVpp	
Parallel connection		yes, up to 5 devices, to enable redundancy and to increase power, current not symmetrical	
Series connection		yes, max. 2 devices to increase voltage	

CP-C.1 range
Technical data

	CP-C.1 24/20.0	CP-C.1 24/20.0-C
No-load, overload and short-circuit behavior		
Characteristic curve of output	U/I characteristic curve with power reserve	
Short-circuit protection	continuous short-circuit stability	
Short-circuit behavior	current limiting	
Resistance to reverse feed	≤ 35 V DC	
Overload protection	constant current limitation	
Overtemperature protection	protection by switch off in case of overtemperature (thermal protection), automatic restart	
No-load protection	continuous no-load stability	
Starting of capacitive loads	yes	

Signaling outputs

OUTPUT OK signaling output		
Type of output	13-14	relay, n/o contact
ON (contact closed)		92 % adjusted U_{out}
OFF (contact open)		90 % adjusted U_{out}
Contact ratings	max. switching voltage / current	30 V AC - 0.5 A / 24 V DC - 1 A (resistive load)
	min. switching voltage / current	5 V DC / 1 mA

POWER RESERVE signaling output		
Type of output	$I > I_R$	transistor, short-circuit proof
Active / ON (closed)		$I > I_R$
Inactive / OFF (open)		$I \leq I_R$
Ratings	voltage/current	24 V DC / ≤ 20 mA

General data

Efficiency	at rated output power	up to 94 %
Power loss	at rated output power	28 W
	at 50 % of rated output power	17 W
	at no load	< 3.6 W
Duty cycle		100 %
MTBF	acc. to MIL 217 HDBK	on request
Dimensions		see “Dimensional drawings”
Material of housing	cover	zinc-coated sheet-steel
	housing shell	aluminium
	front	plastic, PA6, V-0
Mounting		DIN rail (IEC/EN 60715), snap-on mounting
Mounting position		1 and 7
Minimum distance to other units	horizontal	25 mm (0.98 in)
	vertical	25 mm (0.98 in)
Degree of protection (IEC/EN 60529)	housing / terminals	IP20 / IP20
Protection class (IEC/EN 61140)		I

Electrical connection

Input circuits (L(+), N(-), PE)		
Connecting capacity	rigid	0.5-4.0 mm² (20-10 AWG)
	fine-strand with(out) wire end ferrule	0.5-2.5 mm² (20-12 AWG)
Stripping length		8 mm (0.315 in)
Tightening torque		0.5 Nm (4.4 lb.in)
Recommended screw driver		PH1 / Ø 4.0 x 0.8 mm

		CP-C.1 24/20.0	CP-C.1 24/20.0-C
Output circuits (L+, L+, L-, L-)			
Connecting capacity	rigid	2.5-16.0 mm² (12-6 AWG)	
	fine-strand with(out) wire end ferrule	2.5-10 mm² (12-8 AWG)	
Stripping length		10 mm (0.394 in)	
Tightening torque		1.2 Nm (10.5 lb-in)	
Recommended screw driver		PH1 / Ø 4.0 x 0.8 mm	

CP-C.1 range
Technical data

		CP-C.1 24/20.0	CP-C.1 24/20.0-C
Signaling output (13-14, I > I_R)			
Connecting capacity	rigid	0.5-4.0 mm² (20-10 AWG)	
	fine-strand with(out) wire end ferrule	0.5-2.5 mm² (20-12 AWG)	
Stripping length		8 mm (0.315 in)	
Tightening torque		0.5 Nm (4.4 lb.in)	
Recommended screw driver		PH1 / Ø 4.0 x 0.8 mm	
Maximum cable length (applicable for I>I_R)		30 m	

Environmental data

Ambient temperature range	operation	-25…+70 °C (-13...+158 °F)	-40…+70 °C (-40...+158 °F)
	rated output power	-25...+60 °C (-13...+140 °F)	-40...+60 °C (-40...+140 °F)
	storage	-40…+85 °C (-40...+185 °F)	
	transportation	-40…+85 °C (-40...+185 °F)	
Climatic class (IEC/EN 60721-3-1)	storage	1K2 (-40...+85 °C / -40...+185 °F)	
Climatic class (IEC/EN 60721-3-2)	transportation	2K2 (-40...+85 °C / -40...+185 °F)	
Climatic class (IEC/EN 60721-3-3)	operation	3K3 (-25…+70 °C / -13...+158 °F)	3K3 (-40…+70 °C / -40... +158 °F)
Damp heat, cyclic (IEC/EN 60068-2-30)		test Db: 55°C, 2 cycles	
Vibration (IEC/EN 60068-2-6)		test Fc: 10-58 Hz, amplitude ±0.15 mm, 58-150 Hz, 2 g, 10 sweep cycles each axis	
Shock, half-sine (IEC/EN 60068-2-27)		test Ea: 30 g, 6 ms, 3 pulses each axis; bump 20 g, 11 ms, 100 pulses each axis	
Coated PCBA		no	yes
Gaseous corrosive environment withstand test (IEC/EN 60068-2-60)		-	testing method: 4 testing period: 21 days ambient conditions: 25 °C, 75 % r.h. air/volume change rate per hour: 3-6 sample not energized during exposure gas concentrations acc. ISA-S71.04.2013 Harsh Group A, G3 IEC 60721-3.3 acc. 3C2/3C3 - H_2S ≥ 100 ± 10 ppb - SO_2/SO_3 ≥ 300 ± 20 ppb - Cl_2 ≥ 100 ± 10 ppb - NO_x ≥ 1250 ± 20 ppb

Isolation data

Rated impulse withstand voltage U_{imp} (EN 50178)	input circuit / output circuit	4 kV (1.2/50 µs)
	input circuit / PE	4 kV (1.2/50 µs)
	input circuit / relay contact	4 kV (1.2/50 µs)
	output circuit / relay contact	0.5 kV (1.2/50 µs)
	relay contact / PE	0.5 kV (1.2/50 µs)
	output circuit / PE	0.5 kV (1.2/50 µs)
Rated insulation voltage U_i (EN 50178)	input circuit / output circuit	300 V
	input circuit / PE	300 V
	input circuit / relay contact	300 V
	output circuit / relay contact	50 V
	relay contact / PE	50 V
	output circuit / PE	50 V
Overvoltage category (EN 50178)	< 2000 m	III
	2000…5000 m	II
Overvoltage category (IEC/EN 60950-1)	< 2000 m	II
	2000…5000 m	I
Pollution degree		2
Protective separation (IEC/EN 60950-1)	input circuit / output circuit	yes
	input circuit / relay contact	yes

CP-C.1 range
Technical data

	CP-C.1 24/20.0	CP-C.1 24/20.0-C

Standards / Directives

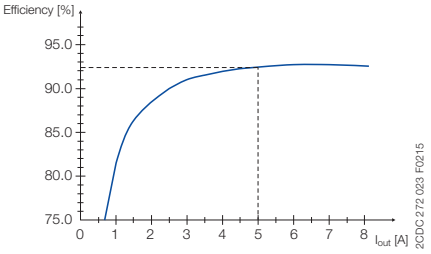
Standards	IEC/EN 61204	
Low Voltage Directive	2014/35/EU	
EMC Directive	2014/30/EU	
ATEX Directive	-	2014/34/EU
RoHS Directive	2011/65/EU	
Electrical safety	IEC/EN 60950-1	
Industrial control equipment / General Use Power Supplies	UL 508 / CSA 22.2 No 107.1	
Electronic equipment for use in power installations	EN 50178	
Protective extra low voltage	PELV (EN 50178)	
Safety extra low voltage	SELV (IEC/EN 60950-1)	
Limitation of harmonic line currents	IEC/EN 61000-3-2	

Electromagnetic compatibility

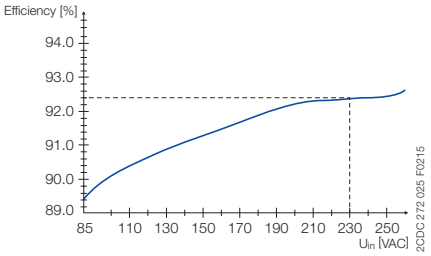
Low-voltage power supplies, d.c. output – Part 3: Electromagnetic compatibility (EMC)		IEC/EN 61204-3
Interference immunity to		IEC/EN 61000-6-2
electrostatic discharge (ESD)	IEC/EN 61000-4-2	level 4, 8 kV / 15 kV (criterion A)
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	level 3, 10 V/m (criterion A)
electrical fast transient / burst	IEC/EN 61000-4-4	level 4, 4 kV / 2 kV (criterion A)
surge	IEC/EN 61000-4-5	level 4, L/N 2 kV (criterion A) level 4, L,N/PE 4 kV (criterion A)
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	level 3, 10 V (criterion A)
voltage dips, short interruptions and voltage variations	IEC/EN 61000-4-11	class 3
harmonics and interharmonics	IEC/EN 61000-4-13	class 3 (Criterion A)
conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz	IEC/EN 61000-4-16	level 3, 10 V
Interference emission		IEC/EN 61000-6-3
limits for harmonic current emissions	IEC/EN 61000-3-2	class A
limitation of voltage changes etc.	IEC/EN 61000-3-3	compliant
Information technology equipment radio disturbance characteristics limits and methods of measurement	IEC/CISPR 22, EN 55022	class B
Industrial scientific and medical (ISM) radio-frequency equipment electromagnetic disturbance characteristics limits and methods of measurement	IEC/CISPR 11, EN 55011	class B
Voltage sags	SEMI F47	passed
Federal Communications Commission	FCC15	compliant

CP-C.1 range
Technical diagrams

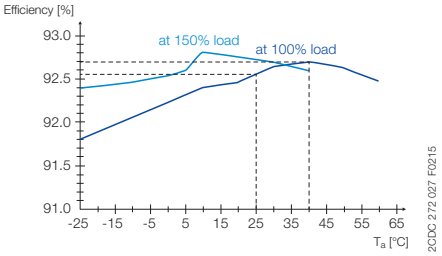
CP-C.1 24/5.0 and CP-C.1 24/5.0-C



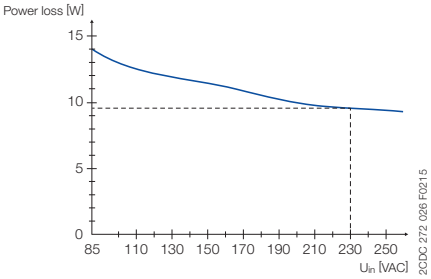
Typical efficiency over output current



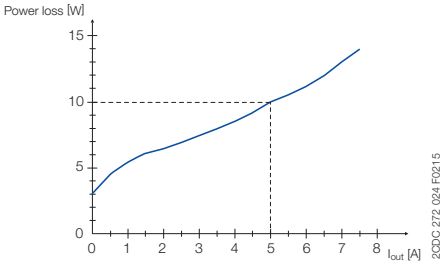
Typical efficiency over AC input voltage



Typical efficiency over ambient temperature

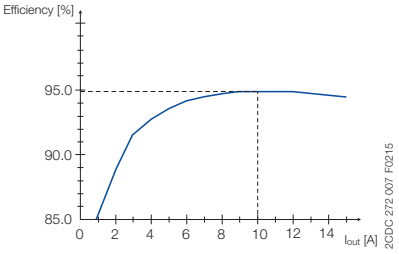


Typical power loss over AC input voltage

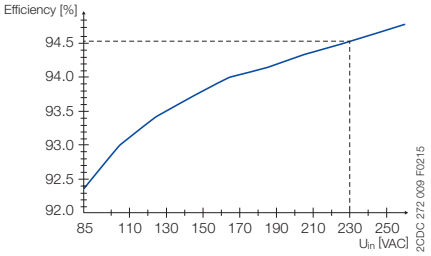


Typical power loss over output current

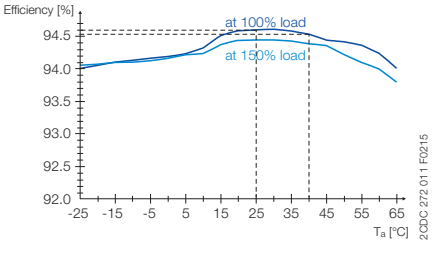
CP-C.1 24/10.0 and CP-C.1 24/10.0-C



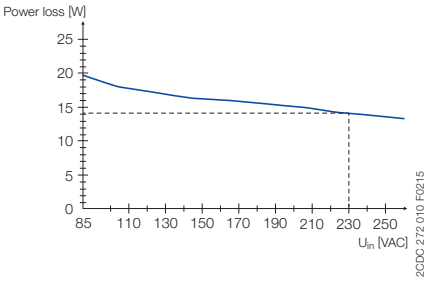
Typical efficiency over output current



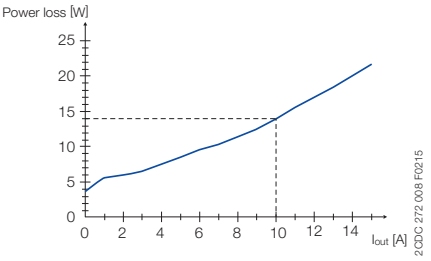
Typical efficiency over AC input voltage



Typical efficiency over ambient temperature



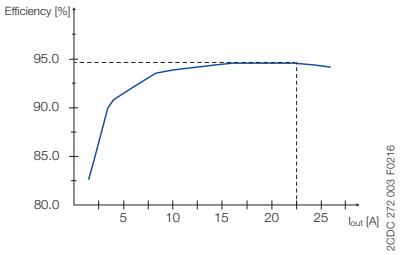
Typical power loss over AC input voltage



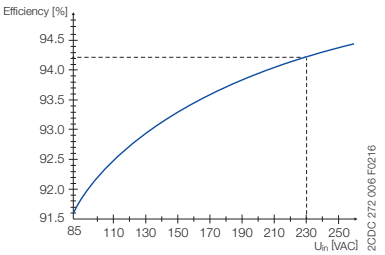
Typical power loss over output current

CP-C.1 range
Technical diagrams

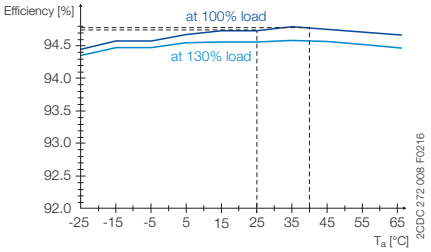
CP-C.1 24/20.0 and CP-C.1 24/20.0-C



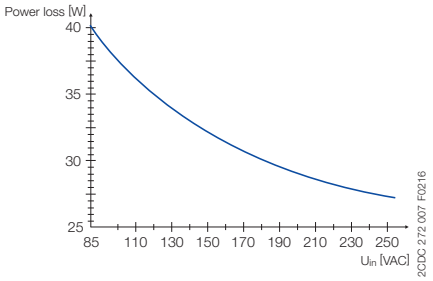
Typical efficiency over output current



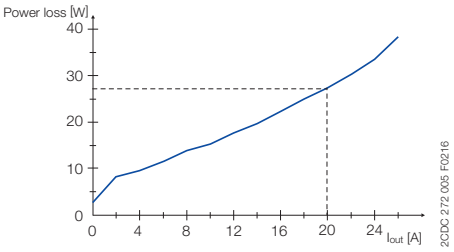
Typical efficiency over AC input voltage



Typical efficiency over ambient temperature



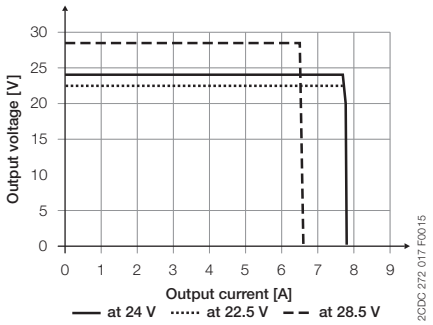
Typical power loss over AC input voltage



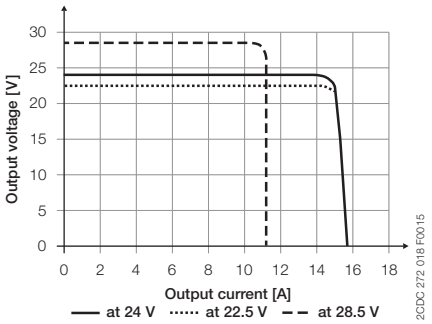
Typical power loss over output current

CP-C.1 range
Technical diagrams

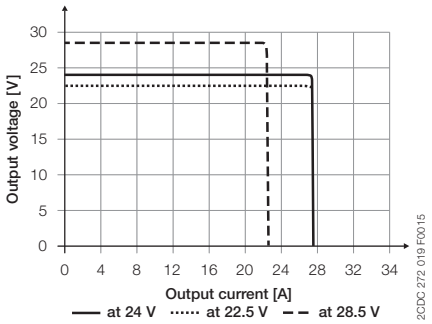
Characteristic curve of output at T_a = 25 °C



CP-C.1 24/5.0
CP-C.1 24/5.0-C

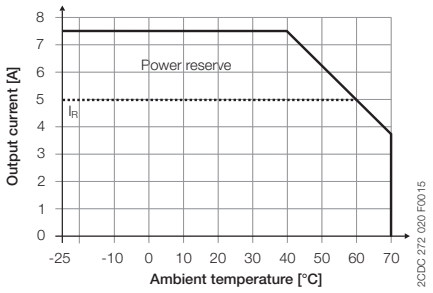


CP-C.1 24/10.0
CP-C.1 24/10.0-C

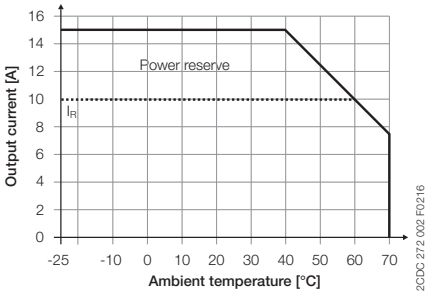


CP-C.1 24/20.0
CP-C.1 24/20.0-C

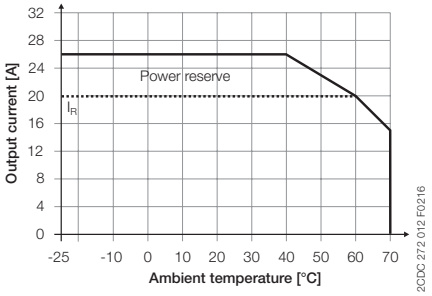
Characteristic curve of temperature at U_{out} = 24 V, mounting position 1



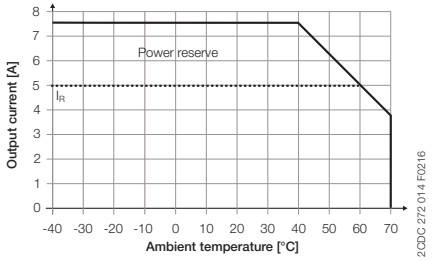
CP-C.1 24/5.0



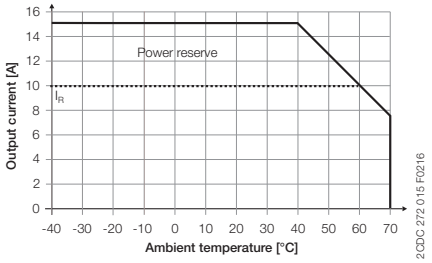
CP-C.1 24/10.0



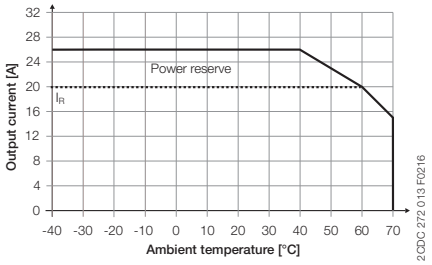
CP-C.1 24/20.0



CP-C.1 24/5.0-C



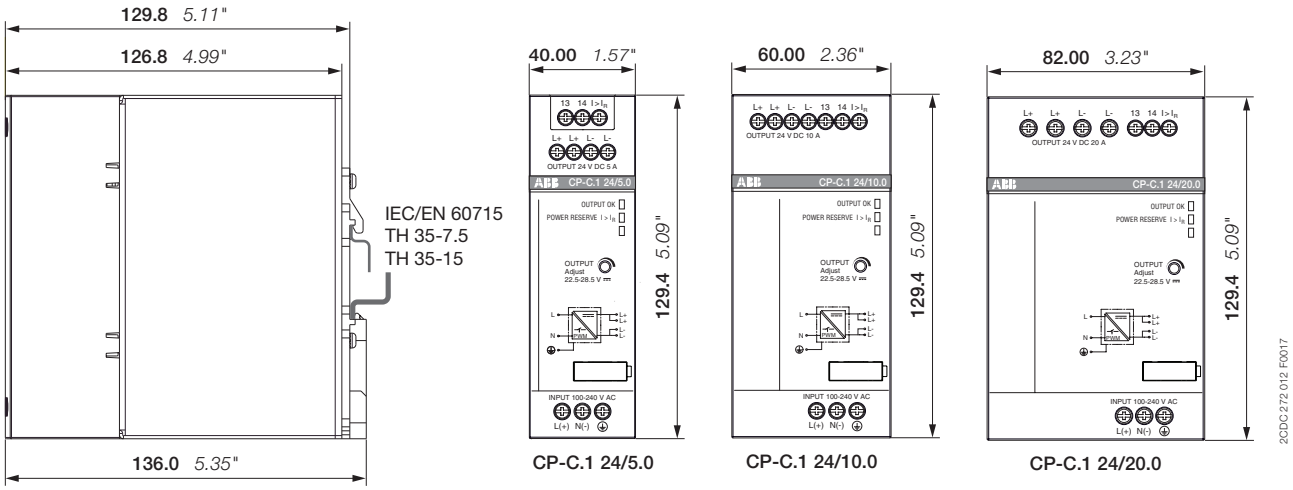
CP-C.1 24/10.0-C



CP-C.1 24/20.0-C

CP-C.1 range
Dimensional drawings

Dimensions in mm



Redundancy units
Ordering details

CP-C.1-A-RU

CP-RUD

CP-D RU

Description

Whenever the highest availability and reliability are the key requirement a true redundancy setup of two power supplies is the solution which means two power supplies are connected to a redundancy unit. In case one power supply fails, the other one keeps supplying the load. Furthermore, even short circuit in one power supply will not affect the other one which keeps supplying the load. The CP-C.1-A-RU is also available with coated PCBA (CP-C.1-A-RU-C) for harsh environments.

Ordering details

Description	Suitable for decoupling of two 24 V DC power supply units	PCBA	Type	Order code	Price 1 pc.	Weight (1 pc.) kg (lb)
2 inputs each up to 20 A and 1 output up to 40 A	≤ 28.5 V and ≤ 40 A	uncoated	CP-C.1-A-RU	1SVR360060R1001		1.04 (2.29)
		coated	CP-C.1-A-RU-C	1SVR360060R2001		1.04 (2.29)
2 inputs each up to 2.5 A and 1 output up to 5 A	≤ 35 V and < 5 A	uncoated	CP-RUD	1SVR423418R9000		0.15 (0.33)

Ordering details - CP-D RU for decoupling of two CP-D power supply units

Input voltage range	Rated input current	Rated output voltage / current	Type	Order code	Price	Weight (1 pc.) kg (lb)
9-35 V DC	2 x 5 A	24 V DC / 1 x 10 A	CP-D RU	1SVR427049R0000		0.075 (0.165)

Further documentation of redundancy units on www.abb.com

Redundancy units
Technical data

Data at T_a = 25 °C, U_{in} = 230 V AC and rated values, unless otherwise indicated

Type		CP-C.1-A-RU	CP-C.1-A-RU-C
Input circuit - Supply circuit		(+/+, -/-)	
Rated input voltage U_{in}		24 V DC	
Input voltage range		10-28.5 V DC	
Rated input current I_{in} per channel	-25 °C ≤ T_a ≤ 60 °C	20 A	
Maximum input current per channel	-25 °C ≤ T_a ≤ 40 °C	30 A	
	-40 °C ≤ T_a ≤ 40 °C	-	30 A
Transient overvoltage protection		yes, varistor	
Output circuit		(++/--)	
Rated output voltage U_{out}		24 V DC	
Voltage drop input/output		typ. 0.6 V, max. 0.9 V	
Rated output current I_r	-25 °C ≤ T_a ≤ 60 °C	2 x 20 A or 1 x 40 A	
Max. output current (Power reserve)	-25 °C ≤ T_a ≤ 40 °C	2 x 30 A or 1 x 60 A	
	-40 °C ≤ T_a ≤ 40 °C	-	2 x 30 A or 1 x 60 A
Derating of the output current	60 °C < T_a ≤ 70 °C	2.5 % per Kelvin temperature increase	
Resistance to reverse feed		< 60 V	
General data			
Power loss	input 2 x 20 A	23.0 W	
	input 2 x 10 A	9.4 W	
	input 2 x 5 A	4.1 W	
MTBF	acc. to MIL 217 HDBK	on request	
Dimensions		see "Dimensional drawings"	
Material of housing	cover / housing shell / front	aluminium / zinc-coated sheet steel / plastic	
Mounting		DIN rail (IEC/EN 60715), snap-on mounting	
Mounting position		1 and 7	
Minimum distance to other units	horizontal / vertical	25 mm (0.98 in) / 25 mm (0.98 in)	
Degree of protection (IEC/EN 60529)	housing / terminals	IP20 / IP20	
Protection class (IEC/EN 61140)		III	
Electrical connection - Input circuit / Output circuit			
Connecting capacity	fine-strand with(out) wire end ferrule	2.5-10 mm² (12-8 AWG)	
	rigid	2.5-16 mm² (12-6 AWG)	
Stripping length		10 mm (0.39 in)	
Tightening torque		1.2 Nm (10.5 lb.in)	
Recommended screw driver		PH1 / Ø 4.0 x 0.8 mm (0.16 x 0.03 in)	
Environmental data			
Ambient temperature range	operation	-25…+70 °C (-13... +158 °F)	-40…+70 °C (-40...+158 °F)
	rated load	-25...+60 °C (-13... +140 °F)	-40...+60 °C (-40...+140 °F)
	storage	-40…+85 °C (-40...+185 °F)	
	transportation	-40…+85 °C (-40...+185 °F)	
Climatic class (IEC/EN 60721-3-1)	storage	1K2 (-40...+85 °C / -40...+185 °F)	
Climatic class (IEC/EN 60721-3-2)	transportation	2K2 (-40…+85 °C / -40...+185 °F)	
Climatic class (IEC/EN 60721-3-3)	operation	3K3 (-25…+70 °C / -13...+158 °F)	3K3 (-40…+70 °C / -40...+158 °F)
Damp heat, cyclic (IEC/EN 60068-2-30)		test Db: 55°C, 2 cycles	
Vibration (IEC/EN 60068-2-6)		test Fc: 10-58 Hz, amplitude ±0.15 mm, 58-150 Hz, 2 g, 10 sweep cycles each axis	
Shock, half-sine (IEC/EN 60068-2-27)		test Ea: 30 g, 6 ms, 3 pulses each axis; bump 20 g, 11 ms, 100 pulses each axis	

Redundancy units
Technical data

Type		CP-C.1-A-RU	CP-C.1-A-RU-C
Coated PCBA		no	yes
Gaseous corrosive environment withstand test (IEC/EN 60068-2-60)		-	testing method: 4 testing period: 21 days ambient conditions: 25 °C, 75 % r.h. air/volume change rate per hour: 3-6 sample not energized during exposure gas concentrations acc. ISA-S71.04.2013 Harsh Group A, G3 IEC 60721-3.3 acc. 3C2/3C3 - H2S ≥ 100 ± 10 ppb - SO2/SO3 ≥ 300 ± 20 ppb - Cl2 ≥ 100 ± 10 ppb - NOx ≥ 1250 ± 20 ppb
Isolation data			
Rated impulse withstand voltage U_{imp} (EN 50178)	input / housing	1.5 kV (1.2/50 µs)	
	output / housing	1.5 kV (1.2/50 µs)	
Pollution degree		2	
Standards / Directives			
Standards		IEC/EN 61204	
EMC Directive		2014/30/EU	
ATEX Directive		-	2014/34/EU
RoHS Directive		2011/65/EU	
Electrical safety		IEC/EN 60950-1	
Industrial control equipment / General Use Power Supplies		UL 508 / CSA 22.2 No 107.1	
Electromagnetic compatibility			
Interference immunity to			
electrostatic discharge	IEC/EN 61000-4-2	Level 4, contact discharge ±8 kV, air discharge ±15 kV (criterion B)	
electrical fast transient / burst	IEC/EN 61000-4-4	Level 3, DC mains inputs and output ±2 kV (criterion B)	
surge	IEC/EN 61000-4-5	Level 1, DC mains inputs and output ±0.5 kV, input and output vs. PE ±1 kV (criterion B)	

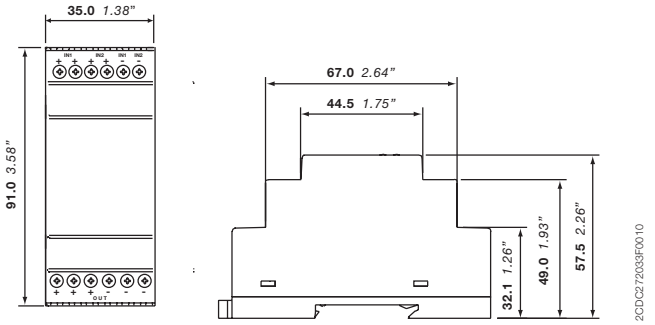
Redundancy units
Technical data

Type		CP-RUD
Input circuit - Supply circuit		**A: U1+/-U ; B: U2+/-U**
Rated input voltage U_{in}		24 V DC
Input voltage range		5-35 V DC
Rated input current I_{in} per channel		0.5-2.5 A
Maximum input current per channel		10 A for 300 s
Transient overvoltage protection		no
Output circuit		**L+, L+, L+, L-, L-, L-**
Rated output voltage U_{out}		24 V DC
Voltage drop		typ. 0.6 V, max. 0.7 V
Rated output current I_{out}		0.5-5 A
Peak output current		20 A for 150 s
Resistance to reverse feed		< 35 V
General data		
Dimensions		see “Dimensional drawings”
Minimum distance to other units	horizontal / vertical	10 mm / 10 mm (0.39 in / 0.39 in)
Degree of protection	housing / terminals	IP20 / IP20
Material of housing	housing shell / cover	plastic / plastic
Protection class		-
Mounting		DIN rail (IEC/EN 60715)
Mounting position		horizontal
Electrical connection - Input circuit / Output circuit		
Connecting capacity	fine-strand with wire end ferrule	2 x 0.75-2.5 mm² (2 x 18-14 AWG)
	fine-strand without wire end ferrule	
	rigid	2 x 0.5-4 mm² (2 x 20-12 AWG)
Stripping length		7 mm (0.28 in)
Tightening torque		0.6-0.8 Nm
Environmental data		
Ambient temperature range	operation	-20...+60 °C
	rated load	-20...+60 °C
	storage	-40...+85 °C
Damp heat (IEC/EN 60068-2-3)		93 % at 40 °C, no condensation
Isolation data		
Insulation voltage	input / output / housing	-
Pollution degree (EN 50178)		2
Standards / Directives		
Electrical safety		EN 50178
RoHS Directive		2011/65/EU
Electromagnetic compatibility		
Interference immunity to		IEC/EN 61000-6-2
electrostatic discharge	IEC/EN 61000-4-2	level 3 (air discharge ±8 kV, contact discharge ±6 kV)
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	level 3 (10 V/m)
electrical fast transient/burst	IEC/EN 61000-4-4	level 3 (±2 kV)
surge	IEC/EN 61000-4-5	level 1 (±0.5 kV)
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	level 3 (10 V)
Interference emission		IEC/EN 61000-6-3
high-frequency radiated		class B
high-frequency conducted		class B

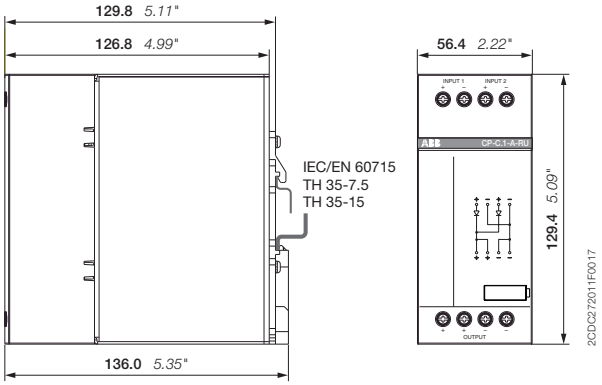
Redundancy units
Technical data

Type			CP-D RU
Input circuit - Supply circuit			**IN 1 + + -, IN 2 + + -**
Rated input voltage U_{in}			24 V DC
Input voltage range			9-35 V DC
Rated input current I_{in} per channel			5 A
Maximum input current per channel			10 A for 300 s
Transient overvoltage protection			no
Output circuit			**OUT + + +, - - -**
Rated output voltage U_{out}			24 V DC
Voltage drop			typ. 0.5 V
Rated output current I_{out}			10 A
Resistance to reverse feed			< 35 V
General data			
MTBF			on request
Duty cycle			100 %
Dimensions			see “Dimensional drawings”
Material of housing			plastic
Mounting			DIN rail, snap-on mounting without any tool
Mounting position			1, 7
Minimum distance to other units		horizontal / vertical	25 mm (0.98 in) / 25 mm (0.98 in)
Electrical connection - Input circuit / Output circuit			
Connecting capacity	fine-strand with (out)wire end ferrule		0.2-2.5 mm² (24-14 AWG)
		rigid	0.2-2.5 mm² (24-12 AWG)
Stripping length			7.0 mm (0.28 in)
Tightening torque			0.67 Nm (6 lb.in)
Environmental data			
Ambient temperature range		operation	-40...+70 °C
		storage	-40...+85 °C
Relative humidity		RH at 40 °C	20-95 %, no condensation
Vibration (IEC/EN 60068-2-6)			mounting by rail: 10-500 Hz, 2 G, along X, Y, Z each axis, 60 min for each axis
Shock (IEC/EN 60068-2-27)			15 G, 11 ms, 3 axis, 6 faces, 3 times for each face
Standards / Directives			
Standards			IEC/EN 61204-3, IEC/EN 60950-1
RoHS Directive			2011/65/EU
Electromagnetic compatibility			
Interference immunity to			EN 55024
electrostatic discharge		IEC/EN 61000-4-2	level 3, air discharge 8 kV, contact discharge 4 kV
radiated, radio-frequency, electromagnetic field		IEC/EN 61000-4-3	level 3, 10 V/m
electrical fast transient/burst		IEC/EN 61000-4-4	level 3, 2 kV / 5 kHz
conducted disturbances, induced by radio-frequency fields		IEC/EN 61000-4-6	level 3, 10 V
Interference emission			EN 55022
high-frequency radiated		IEC/CISPR 22 / EN 55022	class B
high-frequency conducted		IEC/CISPR 22 / EN 55022	class B

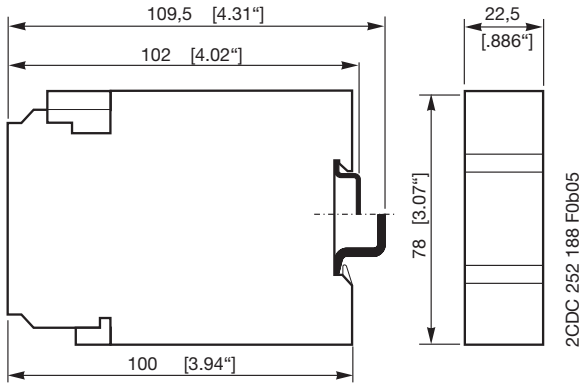
Redundancy units
Dimensional drawings



CP-D RU



CP-C.1-A-RU
CP-C.1-A-RU-C



CP-RUD

CP-B range
Product group picture

3

CP-B range
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CP-B range
Benefits and advantages

3

Power supply systems have to be highly reliable in most areas of energy management and automation technology.
Often batteries are used for supporting the supply system in case of mains failures. Batteries have limited lifetimes depending on environmental parameters and have to be maintained regularly, which causes efforts and costs.

Using the latest ultra-capacitor technology, ABB offers an innovative and completely maintenance free new product for buffering the 24 V DC supply in case of interrupted mains on the primary side of the switch mode power supply.

The CP-B range is an ultra-capacitor buffer energy storage for power supply units which ensures a short term uninterrupted power supply system. In case of a power loss, the energy stored in the capacitor guarantees that the load is continually provided up to several hundred seconds depending on the load current.

Characteristics
- 3 buffer modules for buffering 24 V DC:
  CP-B 24/3.0 (3 A / 1 kWs[1])
  CP-B 24/10.0 (10 A / 10 kWs[1])
  CP-B 24/20.0 (20 A / 8 kWs[1])
- CP-B 24/3.0 and CP-B 24/20.0 expandable with additional extension module(s) CP-B EXT.2 (2 kWs[1])
- LEDs for status indication
- Relay contacts for status messaging
- Very high backup times (e.g. with CP-B 24/10.0 up to 8 minutes at 1 A load current)
- Short charging times
- High efficiency, higher than 90%
- Wide temperature range
- DIN rail mountable, compact housing
- Extended temperature range -40...60 °C

Advantages in comparison to battery buffers:
- Maintenance free
- No deep discharge
- Temperature resistant
- Various approvals and marks

[1] internal energy buffer

		CP-B 24/3.0	CP-B 24/10.0	CP-B 24/20.0	CP-B EXT.2
Order code		1SVR427060R0300	1SVR427060R1000	1SVR427060R2000	1SVR427065R0000
Rated input voltage		24 V DC	24 V DC	24 V DC	–
Rated current		3 A DC	10 A DC	20 A DC	3 A DC
Energy storage (min.)		1.000 Ws	10.000 Ws	8.000 Ws	2.000 Ws
Typical charging time at load current	100 %	65 s	134 s	135 s	
	0 %	56 s	82 s	62 s	
Typical buffering time[1] at load current	100 %	13 s	38 s	15 s	
	50 %	28 s	76 s	30 s	
	25 %	66 s	140 s	60 s	
	10 %	148 s	380 s	150 s	

[1] buffering time ≈ $\frac{\text{energy storage x 0.9}}{\text{current x output voltage}}$

1 Input terminals
SHUT-DOWN+, SHUT-DOWN-: Input signal terminals
INPUT OK, BUFFER STATUS, FAILURE: Signalling contact – terminals
$L+_{IN}$, $L-_{IN}$: Input voltage terminals

2 Indication of operational states
OPERATION: Buffer module in operation (standby or buffering)
INPUT OK: Input voltage applied

3 Output terminals
$L+_{OUT}$, $L-_{OUT}$, $L-_{OUT}$: Output voltage terminals

CP-B range
Ordering details

CP-B 24/3.0

CP-B 24/10.0

CP-B 24/20.0

Description

Ultra capacitor based buffer units of the CP-B range offer highest reliability also in harsh enivronment. Due to the ultra-cap based technology the units are maintenance free, there will be no deep discharge and these products offer a very wide operational ambient temperature range.
CP-B range buffer units are an excellent solution to avoid voltage drops, for example in solar applications.

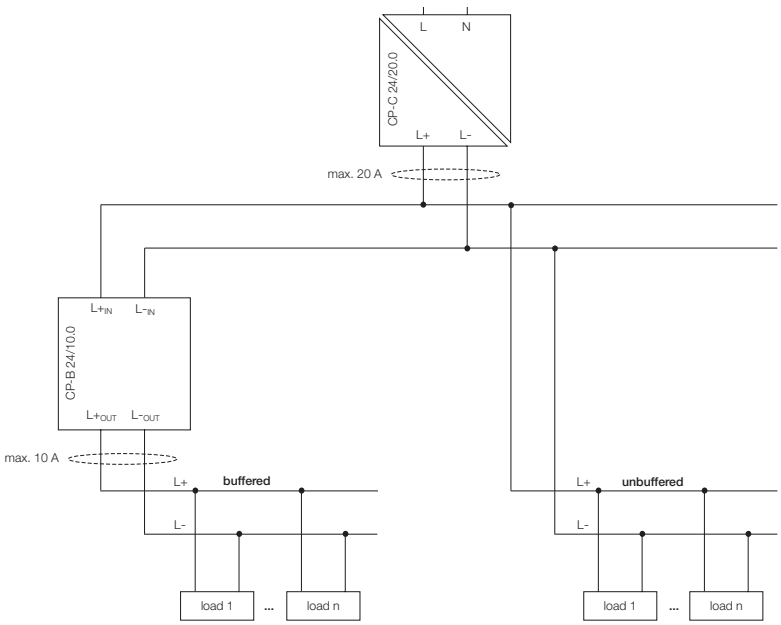
Ordering details

Rated input voltage	Rated current	Type	Order code	Price 1 pc.	Weight (1 pc.) kg (lb)
24 V DC	3 A DC	CP-B 24/3.0	1SVR427060R0300		0.59 (1.31)
	10 A DC	CP-B 24/10.0	1SVR427060R1000		2.10 (4.63)
	20 A DC	CP-B 24/20.0	1SVR427060R2000		2.20 (4.85)

Ordering details - Extension unit for CP-B 24/3.0 and CP-B 24/20.0

Rated voltage	Voltage range	Type	Order code	Price 1 pc.	Weight (1 pc.) kg (lb)
24 V DC	0-26.4 V DC	CP-B EXT.2	1SVR427065R0000		1.04 (2.30)

Example of application



Further documentation CP-B power supplies on www.abb.com

CP-B range
Technical data

3

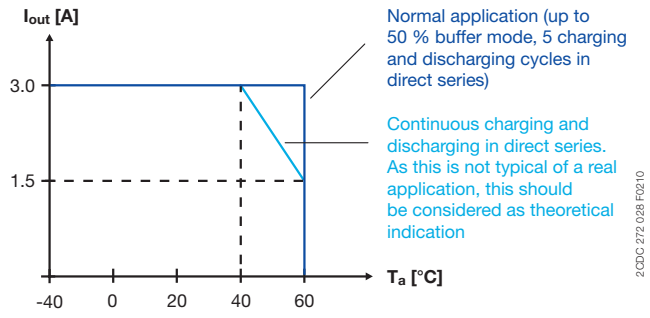
Type		CP-B 24/3.0	CP-B 24/10.0	CP-B 24/20.0
Input circuit - Supply circuit		$L+_{IN}$ $L-_{IN}$		
Rated input voltage U_{in}		24 V DC		
Input voltage range		23.7-26.4 V DC	23.9-27 V DC	23.4-29 V DC
Minimum charging potential		23.7 V DC	23.9 V DC	23.4 V DC
Rated input current		3 A DC	10 A DC	20 A DC
Inrush current limiting		50 A / 1 ms	35 A / 2 ms	35 A / 2 ms
Transient overvoltage protection		suppressor diode	varistor / suppressor diode	varistor / suppressor diode
Internal input fuse (apparatus protection, not accessible)		4 A slow acting	15 A (FK2)	30 A (FK2)
Internal fuse capacitors circuit (not accessible)			25 A (FK2)	
Kind of input	SHUT-DOWN	-	control input	control input
	rated voltage	-	24 V DC	24 V DC
	voltage range	-	6-45 V DC	6-45 V DC
Output circuit		$L+_{OUT}$ $L-_{OUT}$ $L-_{OUT}$		
Rated output power		69 W	240 W	480 W
Rated output voltage U_{out}		24 V DC		
Output voltage (buffer mode)		23.0 V DC	23.2 V DC	23.2 V DC
Tolerance of the output voltage		+2...-10 %		
Rated output current I_r	$T_a \leq 60$ °C	3 A DC	10 A DC	20 A DC
Peak output current (fully loaded capacitors required)	$T_a \leq 60$ °C	6 A DC (min. 1.5 s)	20 A DC (10 A power supply + 10 A CP-B, min. 1.5 s)	40 A DC (min. 1.5 s)
Control of limiting current		-	10.3 A DC ±0.1A	-
Shut-down if limiting current is exceeded		-	after 1.5 s	-
Short-circuit protection (only via external fuse)		no continuous short-circuit stability		
Internal output fuse (not accessible)		-	15 A (FK2)	-
Required external fuse		3.15 A slow acting	10 A slow acting	25 A slow acting
Current limiting at output circuit		-	1.05...1.2 x I_r	-
Breaking capacity of output circuit	t= 2.5 ms	-	24 V DC, 10 A	-
Power failure buffering time [1]		load-dependent, min. 13 s at 100 % load	load-dependent, min. 38 s at 100 % load	load-dependent, min. 15 s at 100 % load
Overload protection		thermal protection		
Kind of output	INPUT OK	n/o contact		
	BUFFER STATUS	-	n/o contact	
	FAILURE	-	c/o contact	
Contact material		Ag + Au-clad		
Minimum switching voltage / Minimum switching current		5 V DC / 1 mA		
Maximum switching voltage / Maximum switching current		50 V AC / 1.0 A, 30 V DC / 0.5 A		
Mechanical lifetime		5 x 10^6 switching cycles		
Electrical lifetime		0.1 x 10^6 switching cycles		
Maximum fuse rating to achieve short-circuit protection	n/o or n/c contact	1.0 A AC / 0.5 A DC		
General data				
Maximum internal power consumption		7 W	20 W	40 W
Power consumption with unloaded output		0.75 W	3 W	1.6 W
Energy storage (min.)		1000 Ws	10000 Ws	8000 Ws
Typical charging time at load current	100 %	65 s	134 s	135 s
	0 %	56 s	82 s	62 s
Typical buffering time at load current[1]	100 %	13 s	38 s	15 s
	50 %	28 s	76 s	30 s
	25 %	66 s	140 s	60 s
	10 %	148 s	380 s	150 s
Efficiency		> 90 %		
Dimensions		see “Dimensional drawings”		
Material	cover / housing shell	steel sheet powdered		
Mounting		DIN rail (IEC/EN 60715), snap-on mounting		
Mounting position		horizontal		
Minimum distance to other units	horizontal	not necessary		
	vertical	40 mm (1.58 in)		80 mm (3.15 in)
Pollution degree		2		
Degree of protection	housing / terminal	IP20		
Protection class (IEC/EN 61140)		III SELV / PELV (condition: power supply fulfills class III)		
Electrical connection - Input circuit / Output circuit		**pull spring terminals**	**pull spring terminals**	pluggable screw type terminals
Connecting capacity	fine-strand with(out) wire end ferrule	0.08-1.0 mm² (28-18 AWG)	0.08-1.5 mm² (28-18 AWG)	0.2-4.0 mm² (24-12 AWG)
	rigid	0.08-1.5 mm² (28-16 AWG)	0.08-4.0 mm² (28-16 AWG)	0.2-6.0 mm² (24-10 AWG)
Stripping length		6.0 mm (0.24 in)		7.0 mm (0.28 in)

CP-B range
Technical data, Technical diagrams

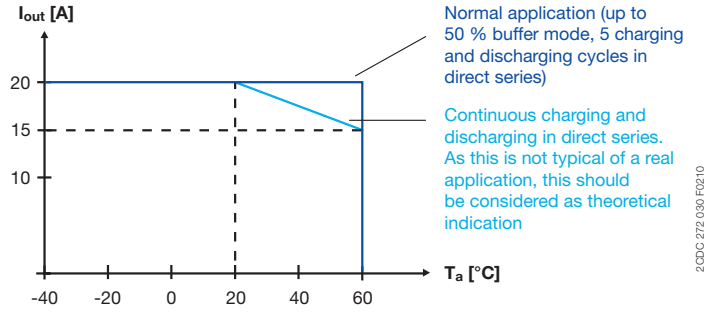
Type		CP-B 24/3.0	CP-B 24/10.0	CP-B 24/20.0
Signaling circuit				
Connecting capacity	fine-strand with(out) wire end ferrule	0.08-1.0 mm² (28-18 AWG)		0.14-1.0 mm² (26-16 AWG)
	rigid	0.08-1.5 mm² (28-16 AWG)		0.14-1.5 mm² (28-16 AWG)
Stripping length		6.0 mm (0.24 in)		7.0 mm (0.28 in)
Environmental data				
Ambient temperature	operation	-40...+60 °C		
	storage	-40...+60 °C		
Standards / Directives				
Standards		EN 50178, IEC/EN 60950-1, IEC/EN 62040-2		
Low Voltage Directive		2014/35/EU		
EMC Directive		2014/30/EU		
RoHS Directive		2011/65/EC		
Electromagnetic compatibility				
Interference immunity to		IEC/EN 61000-6-2		
electrostatic discharge	IEC/EN 61000-4-2	level 3, 6 kV / 8 kV		
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	level 3, 10 V/m (27-1000 MHz) / level 2, 3 V/m (1400-2700 MHz)		
electrical fast transient/burst	IEC/EN 61000-4-4	level 3, 2(1) kV / 5 kHz		
surge	IEC/EN 61000-4-5	level 1, 0.5 kV		
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	level 3, 10 V (150 kHz-80 MHz)		
voltage dips, short interruptions and voltage variations	IEC/EN 61000-4-11	buffered by ultra-capacitors		
Interference emission		EN 61000-6-4		
high-frequency radiated	DIN EN 55011	B/C1		
high-frequency conducted	DIN EN 55011	B/C1		

[1] buffering time ≈ $\frac{\text{energy storage x 0.9}}{\text{load current x output voltage}}$

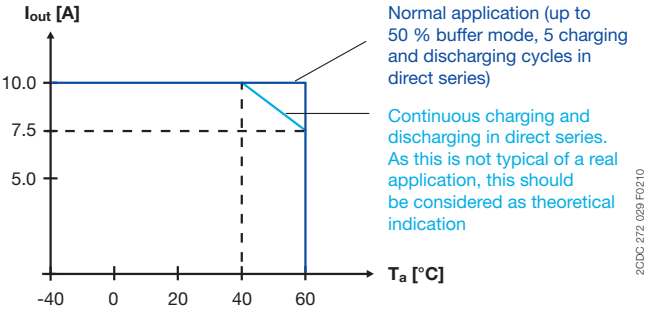
Technical diagrams



CP-B 24/3.0

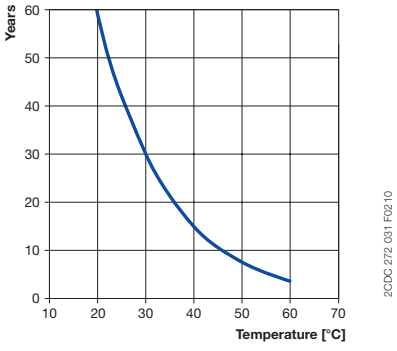


CP-B 24/20.0



CP-B 24/10.0

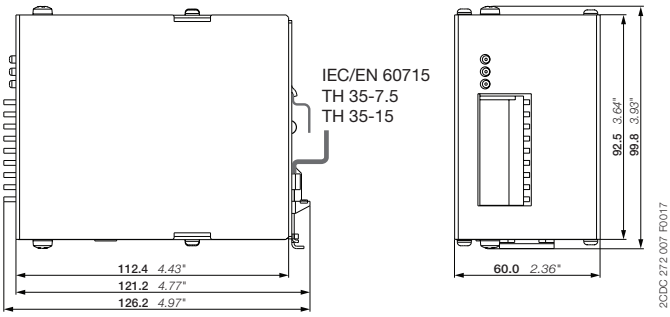
Caracteristic curve of the temperature at rated load



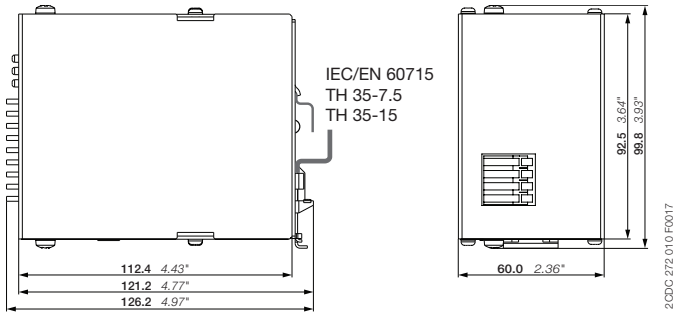
Capacitor's life span over temperature

CP-B range
Dimensional drawings

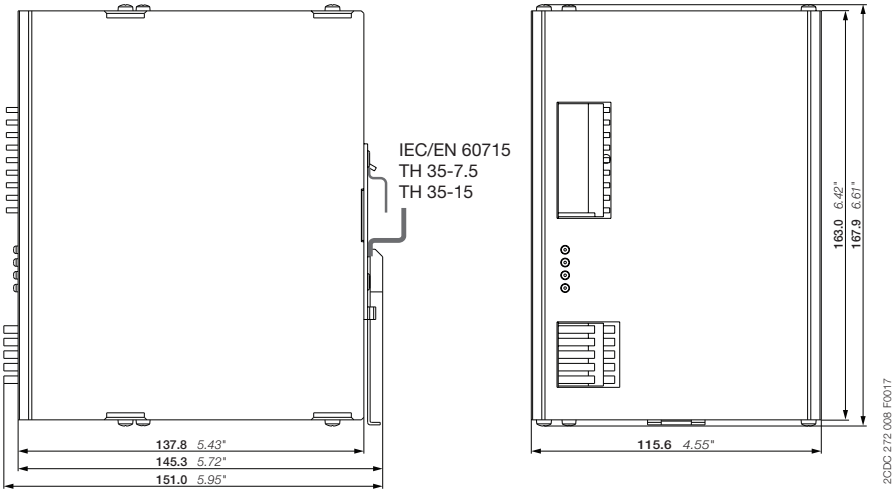
Dimensions in mm and inches



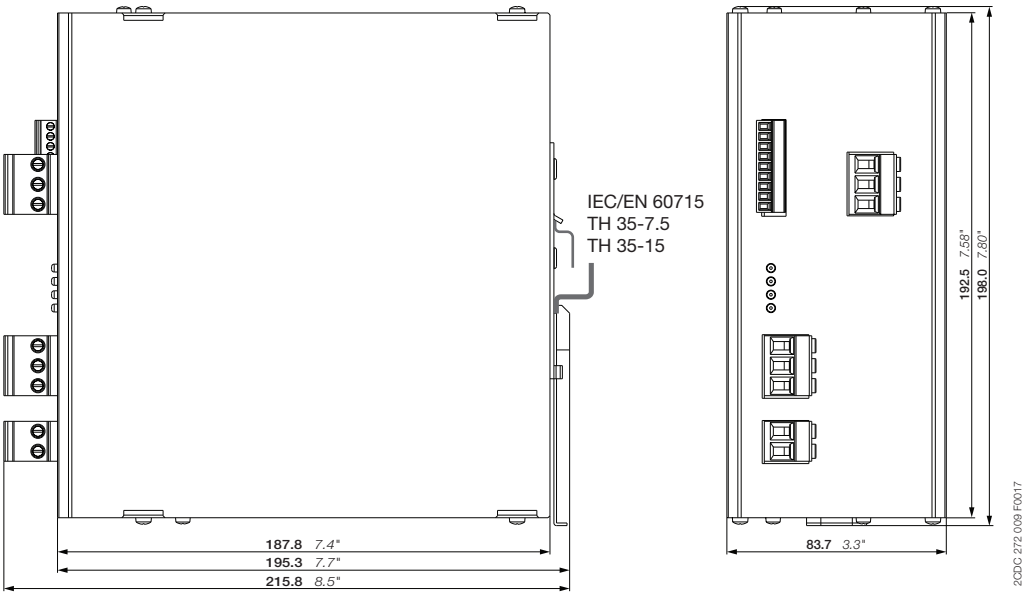
CP-B 24/3.0



CP-B EXT.2



CP-B 24/10.0



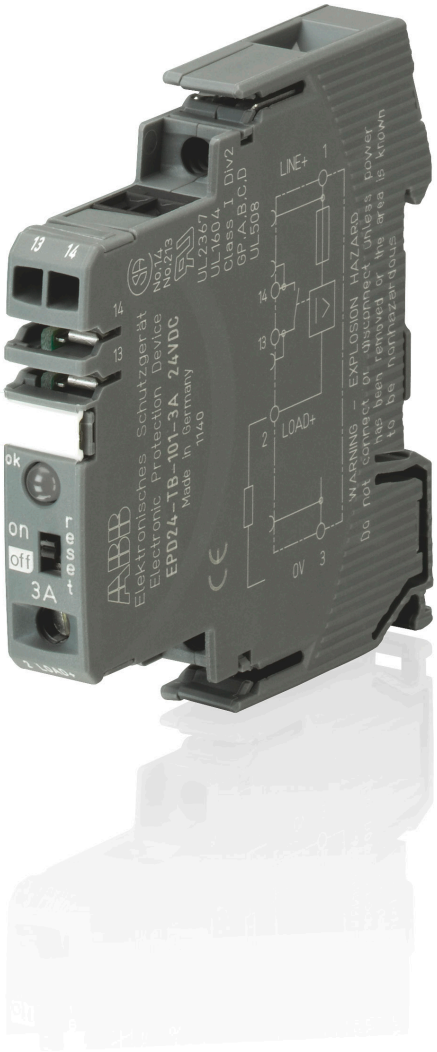
CP-B 24/20.0

CP-B range
Technical data

Data at T_a = 25 °C and rated values, unless otherwise indicated

Type		CP-B EXT 2.0
Extension circuit		EXT+ EXT+ EXT- EXT-
Rated voltage		24 V DC
Voltage range		0-26.4 V DC
Rated current		3 A DC
Internal input fuse (apparatus protection, not accessible)		4 A slow acting (PTC)
Short-circuit protection		via internal 3 A fuse
Overload protection		only in combination with CP-B 24/3.0 or CP-B 24/20.0
Indication of operational states		
		status information and fault messages of the buffer module apply
General data		
Power consumption without load		0.5 W
Energy storage (min.)		2000 Ws
Material	cover / housing shell	steel sheet powdered
Mounting		DIN rail (IEC/EN 60715), snap-on mounting
Mounting position		horizontal
Minimum distance to other units	horizontal	not necessary
	vertical	40 mm (1.58 in)
Pollution degree		2
Degree of protection	housing / terminal	IP20
Protection class (IEC/EN 61140)		III SELV / PELV (condition: power supply fulfills class III)
Electrical connection - Extension circuit		**pull spring terminals**
Connecting capacity	fine-strand with(out) wire end ferrule	0.08-1.0 mm² (28-18 AWG)
	rigid	0.08-1.5 mm² (28-16 AWG)
Stripping length		6.0 mm (0.24 in)
Environmental data		
Ambient temperature	operation	-40...+60 °C
	storage	-40...+60 °C
Vibration, sinusoidal	IEC/EN 60068-2-6	1.5 mm, 3-57.55 Hz; 2 g, 57.55-500 Hz, 10 cycles
Shock, half-sine	IEC/EN 60068-2-27	15 g, 11 ms, 3 axes, 6 faces, 3 times for each face
Standards / Directives		
Standards		EN 50178, IEC/EN 60950-1, IEC/EN 62040-2
Low Voltage Directive		2014/35/EU
EMC Directive		2014/30/EU
RoHS Directive		2011/65/EU
Electromagnetic compatibility		
Interference immunity to		IEC/EN 61000-6-2
electrostatic discharge	IEC/EN 61000-4-2	level 3, 6 kV / 8 kV
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	level 3, 10 V/m (27-1000 MHz) / level 2, 3 V/m (1400-2700 MHz)
electrical fast transient/burst	IEC/EN 61000-4-4	level 3, 2(1) kV / 5 kHz
surge	IEC/EN 61000-4-5	level 1, 0.5 kV
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	level 3, 10 V (150 kHz-80 MHz)
voltage dips, short interruptions and voltage variations	IEC/EN 61000-4-11	buffered by ultra-capacitors
Interference emission		EN 61000-6-4
high-frequency radiated	DIN EN 55011	B/C1
high-frequency conducted	DIN EN 55011	B/C1

Electronic protection devices EPD24
Product group picture



Electronic protection devices EPD24
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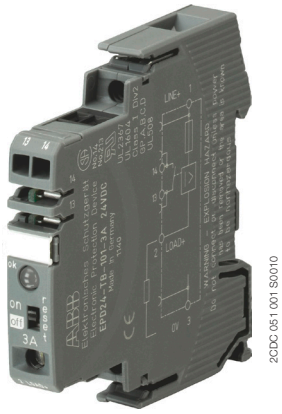
Electronic protection devices EPD24
Ordering details



EPD24-TB-101-3A

The protection devices EPD24 extend the ABB product range of Modular DIN rail components by electronic overcurrent protection modules for selective protection of 24 V DC load circuits.
This protection is achieved by a combination of active electronic current limitation in the case of a short circuit and an overload deactivation from 1.1 x I_n upwards.
If a fault occurs in a load circuit, the protection device EPD24 will detect this rapidly and reliably, disable the power output transistor and hence interrupt the current flow in the defective circuit. The maximum possible overcurrent is always limited to 1.3…1.8 times the selected rated current. An activation of capacitive loads up to 20,000 µF is possible, deactivation only occurring in the case of overloads or short circuits. Selective deactivation of the defective current circuit means undefined error states and a complete system stop are prevented.

Features
- Selective load protection, one electronic tripping characteristic.
- Active current limitation for safe connection of capacitive loads up to 20,000 µF and on overload/short circuit.
- Current ratings 0.5...12 A.
- Reliable overload disconnection with 1.1 x I_N
- Manual ON/OFF button
- Clear status and failure indication through LED and integrated auxiliary contact.
- Integral fail-safe element adjusted to current rating.
- Width per unit only 12.5 mm.
- Rail mounting
- Ease of wiring through busbar LINE+ and 0 V as well as signal bars.
- UL- and CSA-approvals allow international use of the devices.

Ordering details

Rated current I_N A	bbn 40 16779 EAN	Type	Order code	Price	Pkg qty	Weight (1 pc.) kg (lb)
0.5	829960	EPD24-TB-101-0.5A	2CDE601101R2905		4	0.065 (1.433)
1	829984	EPD24-TB-101-1A	2CDE601101R2001		4	0.065 (1.433)
2	830003	EPD24-TB-101-2A	2CDE601101R2002		4	0.065 (1.433)
3	830027	EPD24-TB-101-3A	2CDE601101R2003		4	0.065 (1.433)
4	830041	EPD24-TB-101-4A	2CDE601101R2004		4	0.065 (1.433)
6	830065	EPD24-TB-101-6A	2CDE601101R2006		4	0.065 (1.433)
8	830089	EPD24-TB-101-8A	2CDE601101R2008		4	0.065 (1.433)
10	830102	EPD24-TB-101-10A	2CDE601101R2010		4	0.065 (1.433)
12	830126	EPD24-TB-101-12A	2CDE601101R2012		4	0.065 (1.433)

Ordering details

Description	bbn 40 16779 EAN	Type	Order code	Price	Pkg qty	Weight (1 pc.) kg (lb)
Busbars for LINE+ and 0 V, grey insulation, length 500 mm [1]	830140	EPD-BB500	2CDE605100R0500		10	0.2 (0.441)
Signal bars for aux. contacts, grey insulation, length 21 mm	830164	EPD-SB21	2CDE605200R0021		10	0.4 (0.882)

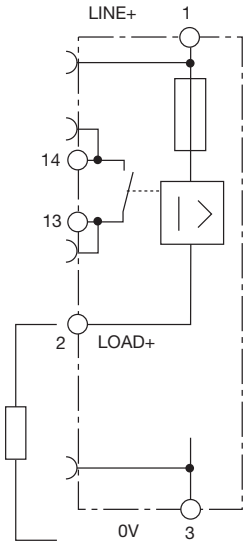
[1] Max. load with one line entry I_{max} = 50 A (recommended: mid line entry)
Max. load with two line entries I_{max} = 63 A

Electronic protection devices EPD24
Technical data

Wiring diagramm

EPD24-TB-101
without signal input
with signal output F
(Single signal, N/O)

Operating condition: 13-14 closed
Fault condition: 13-14 open



Operating data	
Operating voltage U_B	24 V DC (18...32 V)
Current rating I_N	fixed current ratings: 0.5, 1, 2, 3, 4, 6, 8, 10, 12 A
Closed current I_0	ON condition: typically 20...30 mA depending on signal output
Staus indication by means of	Green: unit is ON load circuit / Power-MOSFET is switched on
	Orange: in the event of overload or short circuit until electronic disconnection
	Red: unit electronically disconnected load circuit/Power-MOSFET OFF undervoltage (U_B < 8 V) after switch-on till the end of the delay period
	OFF: manually switched off or device is dead
	potential-free auxiliary contact F
	ON/OFF/ condition of switch
Load circuit	
Load output	Power-MOSFET switching output (high slide switch)
Overload disconnection	typically 1.1 x I_N (1.05...1.35 x I_N)
Short-circuit current I_K	active current limitation
Trip time	see time/current characteristics
For electronic disconnection	typically 3 s at I_{Load} > 1.1 x I_N typically 100 ms...3 s at I_{Load} > 1.8 x I_N (or 1.5 x I_N/1.3 x I_N,)
Temperature disconnection	internal temperature monitoring with electronic disconnection
Low voltage monitoring load output	with hysteresis, no reset required: load »OFF« at U_B< 8 V
Starting delay t_{Start}	typically 0.5 sec after every switch-on and after applying U_B
Disconnection of load circuit	electronic disconnection
Free-wheeling circuit	suitable external free-wheeling circuit to be used with inductive load
Several load outputs must not be connected in parallel	
Signal output	
Electrical data	potential-free auxiliary contact max. 30 V DC/0.5 A, min. 10 V DC/10 mA
ON condition LED green	voltage U_B applied, switch is in ON position no overload, no short circuit
OFF condition LED off	device switched off (switch is in OFF position) no voltage U_B applied
Fault condition LED orange	overload condition > 1.1 x I_N up to electronic disconnection
Fault condition LED red	electronic disconnection upon overload or short circuit Device switched off with control signal (switch is in ON position)
Aux. contact	single signal, make contact contact open, terminal 13-14
Fault	signal output fault conditions no operating voltage U_B ON/OFF switch is in OFF position red LED lighted (electronic disconnection)

Electronic protection devices EPD24
Technical data

General data	
Fail-Safe element	backup fuse for EPD24 not required because of the integral redundant fail-safe element
Housing material	moulded
Mounting	symmetrical rail to EN 50022-35x7.5
Ambient temperature	0...+50 °C (without condensation, see EN 60204-1)
Storage temperature	-20...+70 °C
Humidity	96 hrs/95 % RH/40 °C to IEC 60068-2-78, test Cab. climate class 3K3 to EN 60721
Vibration	3 g, test to IEC 60068-2-6 test Fc
Degree of protection	housing: IP20 DIN 40050 terminals: IP20 DIN 40050
EMC (EMC directive, CE logo)	emission: EN 61000-6-3 susceptibility: EN 61000-6-2
Isolations coordination (IEC 60934)	0.5 kV/pollution degree 2 reinforced insulation in operating area
Dielectric strength	max. 32 V DC (load circuit)
Isolation resistance (OFF condition)	n/a, only electronic disconnection
Approvals/Declarations of conformity	UL 2367 Solid State Overcurrent Protectors UL 1604, (class I, division 2, groups A, B, C, D) UL 508 CSA C22.2 No. 213 (class I, division 2) CSA C22.2 No. 142 CE logo
Dimensions (B x H x T)	12.5 x 80 x 83 mm
Weight	approx. 65 g
Terminals	**Line+/LOAD+/0V**
Screw terminals	M4
Max. cable cross section flexible with wire end ferrule w/wo plastic sleeve	0.5 – 10 mm^2
Multi-lead connection (2 identical cables) rigid/flexible	0.5 – 4 mm^2
Flexible with wire end ferrule without plastic sleeve	0.5 – 2.5 mm^2
Flexible with TWIN wire end ferrule with plastic sleeve	0.5 – 6 mm^2
Wire stripping length	10 mm
Tightening torque (EN 60934)	1.5 – 1.8 Nm
Terminals	**aux. contacts**
Screw terminals	M3
Max. cable cross section flexible with wire end ferrule w/wo plastic sleeve	0.25 - 2.5 mm^2
Wire stripping length	8 mm
Tightening torque (EN 60934)	0.5 Nm

Table 1: voltage drop, current limitation, max. load current

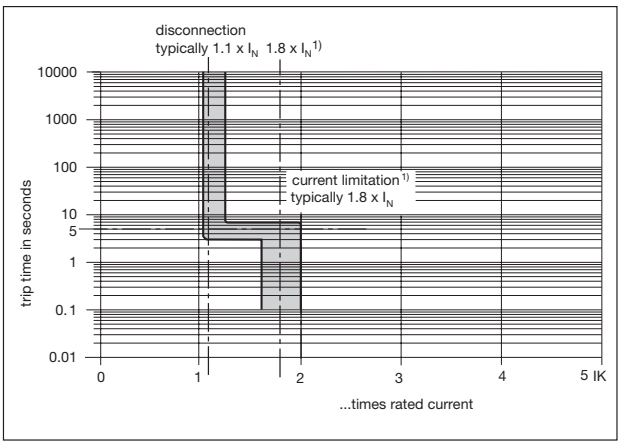
current rating	typically voltage drop	active current	max. load current at 100 % ON duty	
I_N	U_{ON} at I_N	limitation (typically)	$T_{ambient}$ = 40 °C	$T_{ambient}$ = 40 °C
0.5 A	70 mV	1.8 x I_N	0.5 A	0.5 A
1 A	80 mV	1.8 x I_N	1 A	1 A
2 A	130 mV	1.8 x I_N	2 A	2 A
3 A	80 mV	1.8 x I_N	3 A	3 A
4 A	100 mV	1.8 x I_N	4 A	4 A
6 A	130 mV	1.8 x I_N	6 A	5 A
8 A	120 mV	1.5 x I_N	8 A	7 A
10 A	150 mV	1.5 x I_N	10 A	9 A
12 A	180 mV	1.3 x I_N	12 A	10.8 A

Attention: when mounted side-by-side without convection the ERD24 should not carry more than 80 % of its rated load with 100 % ON duty due to thermal effects.

Electronic protection devices EPD24
Technical information

Time/Current characteristic curve (Tambient = 25 °C)

The trip time is typically 3 s in the range between 1.1 and 1.8 x I_N [1].
Electronic current limitation occurs at typically 1.8 x I_N [1] which means that under all overload conditions (independent of the power supply and the resistance of the load circuit) the max. overload before disconnection will not exceed 1.8 x I_N [1] times the current rating. Trip time is between 100 ms and 3 sec (depending on overload or at short circuit).
Without this current limitation a considerably higher overload current would flow in the event of an overload or short circuit.



[1] Current limitation typically 1.8 x I_N at I_N = 0.5 A...6 A
Current limitation typically 1.5 x I_N at I_N = 8 A or 10 A
Current limitation typically 1.3 x I_N at I_N = 12 A

Maximum cable lenghts
EPD24 reliably trips from 0 Ω up to max. circuit resistance R_{max}.

Calculation of R_{max}

Selected rating I_N (A)	3	6
Operating voltage U_S (V DC) (= 80 % of 24 V) [2]	19.2	19.2
Trip current I_{ab} = 1.25 x I_N (A) (EPD24 trips after 3 s)	3.75	7.50
R_{max} (Ω) = (U_B/I_{ab}) -0.050	5.07	2.51

[2] Voltage drop of EPD24 and tolerance of trip point (typically 1.1 x I_N = 1.05 ... 1.35 x I_N) have been taken into account

Selection table for the incoming cable lengths with different cable cross-sections

Cable cross section A (mm²)	0.14	0.25	0.34	0.5	0.75	1.00	1.50
Cable length L (m) (= single length)	cable resistance (Ω) = (ρ_0 x 2 x L) / A [3]						
5	1.27	0.71	0.52	0.36	0.24	0.18	0.12
10	2.54	1.42	1.05	0.71	0.47	0.36	0.24
15	3.81	2.14	1.57	1.07	0.71	0.53	0.36
20	5.09	2.85	2.09	1.42	0.95	0.71	0.47
25	6.36	3.56	2.62	1.78	1.19	0.89	0.59
30	7.63	4.27	3.14	2.14	1.42	1.07	0.71
35	8.90	4.98	3.66	2.49	1.66	1.25	0.83
40	10.17	5.70	4.19	2.85	1.90	1.42	0.95
45	11.44	6.41	4.71	3.20	2.14	1.60	1.07
50	12.71	7.12	5.24	3.56	2.37	1.78	1.19
75	19.07	10.68	7.85	5.34	3.56	2.67	1.78
100	25.34	14.24	10.47	7.12	4.75	3.56	2.37
125	31.79	17.80	13.09	8.90	5.93	4.45	2.97
150	38.14	21.36	15.71	10.68	7.12	5.34	3.56
175	44.50	24.92	18.32	12.46	8.31	6.23	4.15
200	50.86	28.48	20.94	14.24	9.49	7.12	4.75
225	57.21	32.04	23.56	16.02	10.68	8.01	5.34
250	63.57	35.60	26.18	17.80	11.87	8.90	5.93

[3] Resistivity of copper $\rho 0$ = 0.0178 (Ω x mm²)/m
Example 1: max. length for 1.5 mm2 and 3 A: 214 m
Example 2: max. length for 1.5 mm2 and 6 A: 106 m

Example 3: mixed wiring: (Control cabinet --- sensor/actuator level)
R1 = 40 m for 1.5 mm² and R2 = 5 m for 0.25 mm²:
R1 = 0.95 Ω, R2 = 0.71 Ω, total (R1 + R2) = 1.66 Ω

Electronic protection devices EPD24
Approvals, Safety instructions

Please note

The user must ensure that the cable cross sections of the relevant load circuit are suitable for the current rating of the EPD24 used. Automatic start-up of machinery after shut down must be prevented (Machinery Directive 2006/42/EU and IEC/EN 60204-1).
In the event of a short circuit or overload the load circuit will be disconnected electronically by the EPD24.

Information on UL approvals/CSA approvals

UL1604
UL File # E 339238

CSA C22.2 No. 213 (Class I, Division 2)
CSA File # 2305929

Operating Temperature Code T5

– This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D or non-hazardous locations only

WARNING:

– Exposure to some chemicals may degrade the sealing properties of materials used in the following device: relay Sealant Material:
  – Generic Name: Modified diglycidyl ether of bisphenol A
  – Supplier: Fine Polymers Corporation
  – Type: Epi Fine 4616L-160PK
– Casing Material:
  – Generic Name: Liquid Crystal Polymer
  – Supplier: Sumitomo Chemical
  – Type: E4008, E4009, or E6008

RECOMMENDATION:

– Periodically inspect the device named above for any degradation of properties and replace if degradation is found

WARNING – EXPLOSION HAZARD:

– Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous
– Substitution of any components may impair suitability for Class I, Division 2

UL2367
Non-hazardous use - UL File # E 339236

UL 508
Non-hazardous use - UL File # E 149922

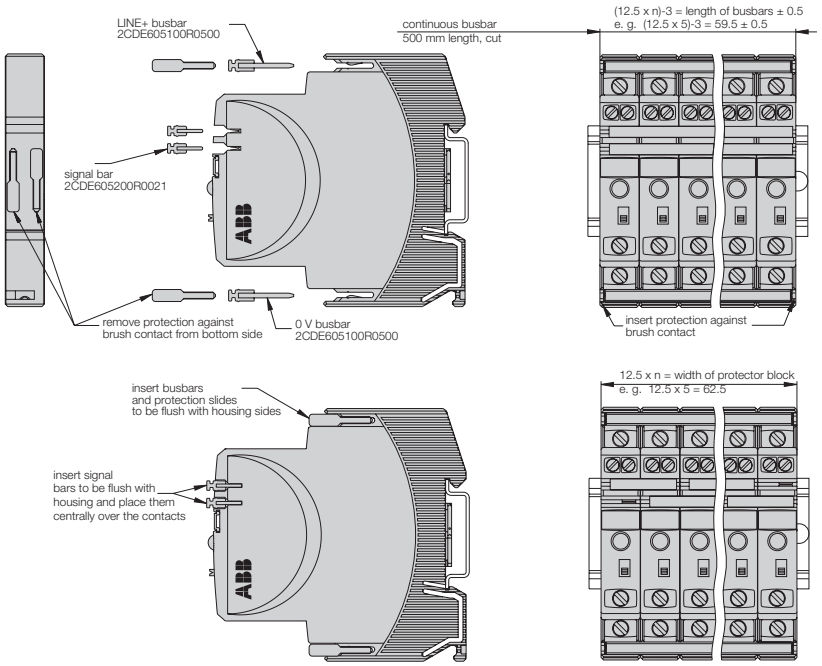
CSA C22.2 No. 14
CSA C22.2 No. 142 - CSA File # E 2305929

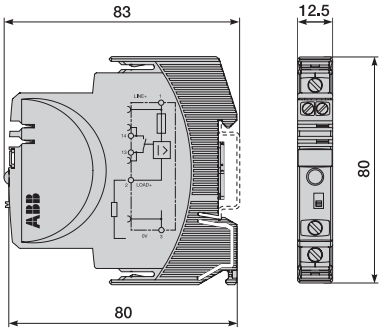
Class 2
Meets requirement for Class 2 current limitation (EPD24 ... -0,5 A/1 A/2 A/3 A)

Electronic protection devices EPD24
Installation guidelines

The EPD24 features an integral power distribution system.
The following wiring modes are possible with various pluggable current and signal busbars:

– LINE+ (24 V DC)
– 0 V
  Caution: The electronic devices EPD24 require a 0 V connection
– Auxiliary contacts





Mounting procedure

Before wiring insert busbars into protector block. A maximum of 10 connection cycles are permissible using connecting busbars.

Recommendation

After 10 units the busbars should be interrupted and receive a new entry live.

Table of length for busbars

(Order code 2CDE605100R0500)

No. of units	2	3	4	5	6	7	8	9	10
Length of busbar (mm) ± 0.5 mm	22	34.5	47	59.5	72	84.5	97	109.5	122