

Switched mode Power supplies



Switched mode power supplies CP Range



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Special features of CP range primary switch power supplies

- Primary switch mode power supplies
 - High efficiency of approximately 90 %
 - Low power dissipation and low heating
 - Long lifetime
- Wide range of AC or DC supply voltages
 - World wide use also in high fluctuating networks and battery-powered plants
- Constant or adjustable output voltage (depending on type)
- Use in very harsh industrial environments
 - Reliable construction
 - According to EMC Directives
 - EN 61000-6-2 (Interference immunity)
 - and EN 61000-6-4 (Interference emission)
- Open-circuit, overload and short-circuit proof
- Integrated input fuse
- Safety
 - Closed construction
 - Touch-proof connecting terminals
 - Electrical isolation
- Easy and fast mounting
 - Mounting on DIN rail
- Status LED
- Example of application
 - Supply of programmable logic controllers (PLC) e. g. AC31, AC500

Primary switch mode power supplies

CP range

Overview, Conversion table

Overview

		CP-D	CP-E	CP-S	CP-C
Rated input voltage	100-240 V AC	all CP-D	all CP-E	-	-
	110-240 V AC	-	-	CP-S 24/5.0	all CP-C
	110-120 V AC / 220-240 V AC	-	-	CP-S 24/10.0 CP-S 24/20.0	-
Rated output voltage / current	5 V DC	-	3.0 A CP-E 5/3.0	-	-
	12 V DC	0.83 A (CP-D 12/0.83) 2.1 A (CP-D 12/2.1)	2.5 A (CP-E 12/2.5)	-	-
	24 V DC	0.42 A (CP-D 24/0.42) 1.3 A (CP-D 24/1.3) 2.5 A (CP-D 24/2.5) 4.2 A (CP-D 24/4.2)	0.75 A (CP-E 24/0.75) 1.25 A CP-E 24/1.25 2.5 A (CP-E 24/2.5)	5 A (CP-S 24/5.0) 10 A (CP-S 24/10.0) 20 A (CP-S 24/20.0)	5 A (CP-C 24/5.0) 10 A (CP-C 24/10.0) 20 A (CP-C 24/20.0)
	48 V DC	-	0.625 A (CP-E 48/0.62) 1.25 A (CP-E 48/1.25)	-	-
Rated output power	10 W	CP-D 12/0.83 CP-D 24/0.42	-	-	-
	15 W	-	CP-E 5/3.0	-	-
	18 W	-	CP-E 24/0.75	-	-
	30 W	CP-D 12/2.1 CP-D 24/1.3	CP-E 12/2.5 CP-E 24/1.25 CP-E 48/0.62	-	-
	60 W	CP-D 24/2.5	CP-E 24/2.5 CP-E 48/1.25	-	-
	100 W	CP-D 24/4.2	-	-	-
	120 W	-	-	CP-S 24/5.0	CP-C 24/5.0
	240 W	-	-	CP-S 24/10.0	CP-C 24/10.0
	480 W	-	-	CP-S 24/20.0	CP-C 24/20.0
Expandable	Redundancy unit (+ Control module)	-	CP-RUD	CP-A RU (+ CP-A CM)	CP-A RU (+ CP-A CM)
	Messaging module	-	-	-	CP-C MM

Conversion table: CP to CP-E, CP-S, CP-C

Type old	Order code old	Type new / alternative	Order code new / alternative
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Rated output voltage 5 V DC

CP-5/3.0	1SVR 423 418 R3000	CP-E 5/3.0	1SVR 427 033 R3000
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Rated output voltage 6 V DC

CP-6/3.0	1SVR 423 418 R4000	CP-E 5/3.0	1SVR 427 033 R3000
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Rated output voltage 12 V DC

CP-12/2.0	1SVR 423 418 R1000	CP-E 12/2.5	1SVR 427 032 R1000
CP-12/2.0 adj	1SVR 423 418 R1100	CP-E 12/2.5	1SVR 427 032 R1000

Rated output voltage 24 V DC

CP-24/0.3	1SVR 423 418 R2000	CP-E 24/0.75	1SVR 427 030 R0000
CP-24/0.5	1SVR 423 414 R0000	CP-E 24/0.75	1SVR 427 030 R0000
CP-24/1.0	1SVR 423 418 R0000	CP-E 24/1.25	1SVR 427 031 R0000
CP-24/2.0	1SVR 423 417 R0000	CP-E 24/2.5	1SVR 427 032 R0000
CP-24/2.0	1SVR 423 417 R1000	CP-E 24/2.5	1SVR 427 032 R0000

Type old	Order code old	Type new / alternative	Order code new / alternative
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Rated output voltage 24 V DC

CP-24/4.2	1SVR 423 416 R1000	CP-S 24/5.0	1SVR 427 014 R0000
CP-24/5.0	1SVR 423 416 R0000	CP-S 24/5.0	1SVR 427 014 R0000
CP-24/1.5 adj	1SVR 423 418 R5000	CP-E 24/2.5	1SVR 427 032 R0000
CP-24/2.0 adj	1SVR 423 417 R1100	CP-E 24/2.5	1SVR 427 032 R0000
CP-24/5.0 adj	1SVR 423 416 R0100	CP-C 24/5.0	1SVR 427 024 R0000
		CP-S 24/5.0	1SVR 427 014 R0000
CP-24/10 adj	1SVR 423 415 R0000	CP-C 24/10.0	1SVR 427 025 R0000
		CP-S 24/10.0	1SVR 427 015 R0100
CP-24/20 adj	1SVR 423 415 R1000	CP-C 24/20.0	1SVR 427 026 R0000
		CP-S 24/20.0	1SVR 427 016 R0100

Rated output voltage 48 V DC

CP-48/0.7	1SVR 423 418 R6000	CP-E 48/1.25 CP-E 48/0.62	1SVR 427 031 R2000 1SVR 427 030 R2000
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Primary switch mode power supplies

CP range

Approvals and marks

		CP-D						
		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
■ existing ● pending								
Approvals								
	UL 508, CAN/CSA C22.2 No.14	■ ¹⁾	■ ¹⁾		■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾
	UL 1310, CAN/CSA C22.2 No.223 (Class 2 Power Supply)	■ ¹⁾	■ ¹⁾		■ ¹⁾	■ ¹⁾	■ ¹⁾	
	UL 60950, CAN/CSA C22.2 No.60950	■ ¹⁾	■ ¹⁾		■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾
	GOST	●	●		●	●	●	●
	CCC	■ ¹⁾	■ ¹⁾		■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾
Marks								
	CE	■	■		■	■	■	■
	C-Tick	●	●		●	●	●	●

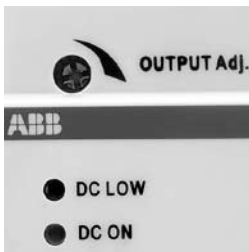
		CP-E							
		CP-E 5/3.0	CP-E 12/2.5	CP-E 24/0.75	CP-E 24/1.25	CP-E 24/2.5	CP-E 48/0.62	CP-E 48/1.25	CP-RUD
■ existing ● pending									
Approvals									
	UL 508, CAN/CSA C22.2 No.14	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	
	UL 1310, CAN/CSA C22.2 No.223 (Class 2 Power Supply)	■	■	■	■	■	■	■	
	ANSI/ISA-12.12 (Class I, Div.2, hazardous locations)	■	■	■	■	■	■	■	
	UL 60950, CAN/CSA C22.2 No.60950	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	
	GOST	■	■	■	■	■	■	■	
	CCC	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	
Marks									
	CE	■	■	■	■	■	■	■	■
	C-Tick	●	●	●	●	●	●	●	●

		CP-S			CP-C			CP-A		
		CP-S 24/5.0	CP-S 24/10.0	CP-S 24/20.0	CP-C 24/5.0	CP-C 24/10.0	CP-C 24/20.0	CP-C MMM	CP-A RU	CP-A CM
■ existing ● pending										
Approvals										
	UL 508, CAN/CSA C22.2 No.14	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	●	●	●
	UL 1604 (Class I, Div. 2, hazardous locations), CAN/CSA C22.2 No.213	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾		■	
	UL 60950, CAN/CSA C22.2 No.60950	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	■ ¹⁾	●	●	●
	GOST	■	■	■	■	■	■	■	■	■
	CB scheme	■	■	■	■	■	■	●	●	●
	CCC	■ ¹⁾			■ ¹⁾	■ ¹⁾	■ ¹⁾	●	●	●
Marks										
	CE	■	■	■	■	■	■	■	■	■
	C-Tick	■	■	■	■	■	■	■	■	●

¹⁾ Approvals refer to the rated input voltage U_{IN} .



Switched mode power supplies CP Range



Adjustable output voltage

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.



Width and structural form

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

Optimised for world-wide applications: The CP-D power supplies can be supplied with 90-264 V AC or 120-370 V DC.

- Output voltages 12 V, 24 V
- 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, 30 W, 60 W, 100 W
- Wide range input 100-240 V AC (90-264 V AC, 120-370 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 -10...+70 °C
- Open-circuit, overload and short-circuit stable
- Integrated input fuse
- U/I characteristic (fold-forward behavior at overload – no switch-off)
- LEDs for status indication
- Light-grey enclosure in RAL 7035

- Approvals / Marks

CP-D range



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

Type	Rated input voltage	Rated output voltage / current	Order code	Pack. unit pieces	Weight 1 piece kg / lb
CP-D 12/0.83	100-240 V AC	12 V DC / 0.83 A	1SVR 427 041 R1000	1	0.06 / 0.13
CP-D 12/2.1	100-240 V AC	12 V DC / 2.1 A	1SVR 427 043 R1200	1	0.19 / 0.41
CP-D 24/0.42	100-240 V AC	24 V DC / 0.42 A	1SVR 427 041 R0000	1	0.06 / 0.13
CP-D 24/1.3	100-240 V AC	24 V DC / 1.3 A	1SVR 427 043 R0100	1	0.19 / 0.41
CP-D 24/2.5	100-240 V AC	24 V DC / 2.5 A	1SVR 427 044 R0200	1	0.25 / 0.55
CP-D 24/4.2	100-240 V AC	24 V DC / 4.2 A	1SVR 427 045 R0400	1	0.32 / 0.71

Technical data

CP-D range

Data at $T_a = 25\text{ °C}$, $U_{IN} = 230\text{ V AC}$ and rated values, if nothing else 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 / 120-370 V DC	
Frequency range AC		47-63 Hz	
Typical input current / typical power consumption	at 110 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 230 V AC	30 A (max. 3 ms)	50 A (max. 3 ms)
Power failure buffering		> 30 ms	
Internal input fuse		1 A slow-acting / 250 V AC	2 A slow-acting / 250 V AC
Indication of operational states			
Output voltage	DC ON: green LED	V: output voltage applied	
	DC LOW: red LED	V: 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	30 W
Rated output current I_r	T_a m 60 °C	0.83 A	2.1 A
Derating of the output current	60 °C < T_a m 70 °C	2.5 %/K	
Deviation with load change	statical	max. 1 %	
	dynamical 10-90% change of input voltage within the input voltage range	max. 1 %	
Control time		< 1 ms	
Starting time after applying the supply voltage	at I_r	1000 ms	
Response time	at rated load	typ. 1 ms	
Residual ripple and switching peaks	BW = 20 MHz	50 mV	
Parallel connection		no	
Series connection		yes, to increase voltage	
Resistance to reverse feed		18 V / 1 s	
Power factor correction (PFC)		no	
Output circuit - No-load, overload and short-circuit behaviour			
Output curve		U/I curve	
Short-circuit protection		continuous short-circuit stability	
Short-circuit behaviour		continuation with current limitation	
Current limitation at short circuit		typ. 1.4 A	typ. 5.9 A
Overload protection		current limitation	
No-load protection		continuous no-load stability	
Starting of capacitive loads		unlimited	
General data			
Efficiency		typ. 78 %	typ. 82 %
Duty time		100 %	
Dimensions (WxHxD)		18 x 91 x 57.5 mm [0.71 x 3.58 x 2.26 in]	53 x 91 x 57.5 mm [2.09 x 3.58 x 2.26 in]
Weight		0.06 kg (0.13 lb)	0.19 kg (0.41 lb)
Material of enclosure		plastic	
Mounting		DIN rail (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	enclosure / terminals	IP20 / IP20	
Protection class		II	

Technical data CP-D range

Data at $T_a = 25\text{ °C}$, $U_{IN} = 230\text{ V AC}$ and rated values, if nothing else indicated

Type		CP-D 12/0.83	CP-D 12/2.1
Electrical connection - Input circuit / Output circuit			
Wire size	fine-strand with wire end ferrule	0.2-2 mm ² (24-14 AWG)	
	fine-strand without wire end ferrule		
	rigid		
Stripping length		6 mm (0.24 in)	
Tightening torque		0.36-0.56 Nm	
Environmental data			
Ambient temperature range	operation	-25...+70 °C	
	full load	-25...+60 °C	
	storage	-25...+85 °C	
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/s ² , 10 Hz - 2 kHz	
Shock (half-sine) (IEC/EN 60068-2-27)		40 m/s ² , 22 ms	
Isolation data			
Rated insulation voltage U_i	input circuit / output circuit	3 kV AC	
Pollution category		2	
Standards			
Product standard		EN 61204	
Low Voltage Directive		2006/95/EC	
EMC Directive		2004/108/EC	
Electrical safety		UL 508, UL 60950-1, EN 60950-1	
Protective low voltage		SELV (EN 60950-1)	
Electromagnetic compatibility			
Interference immunity		EN 61000-6-2	
electrostatic discharge (ESD)	IEC/EN 61000-4-2	Level 4 (4 kV / 8 kV)	Level 4 (8 kV / 15 kV)
electromagnetic field (HF radiation resistance)	IEC/EN 61000-4-3		Level 3 (10 V/m)
fast transients (Burst)	IEC/EN 61000-4-4		Level 4 (4 kV)
powerful impulses (Surge)	IEC/EN 61000-4-5		Level 4 (2 kV L-L)
HF line emission	IEC/EN 61000-4-6		Level 3 (10 V)
Interference emission		EN 61000-6-3	
electromagnetic field (HF radiation resistance)	IEC/CISPR 22, EN 55022		Class B
HF line emission	IEC/CISPR 22, EN 55022		Class B

Technical data

CP-D range

Power
supplies

Data at $T_a = 25\text{ °C}$, $U_{IN} = 230\text{ V AC}$ and rated values, if nothing else 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	90-265 V AC / 120-370 V DC			
Frequency range AC	47-63 Hz			
Typical input current / typical power consumption	at 110 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 230 V AC 30 A (max. 3 ms)	50 A (max. 3 ms)	60 A (max. 3 ms)	
Power failure buffering	> 30 ms		> 60 ms	
Internal input fuse	1 A slow-acting / 250 V AC	2 A slow-acting / 250 V AC		3.15 A slow-act- ing / 250 V AC
Indication of operational states				
Output voltage	DC ON: green LED	V: output voltage applied		
	DC LOW: red LED	V: 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 m 60 °C 0.42 A	1.3 A	2.5 A	4.2 A
Derating of the output current	60 °C < T_a m 70 °C	2.5 %/K		
Deviation with load change	statical	max. 1 %		
	dynamical 10-90%			
	change of input voltage within the input voltage range	max. 1 %		
Control time	< 1 ms			
Starting time after applying the supply voltage	at I_r	1000 ms		
Response time	at rated load	typ. 1 ms		
Residual ripple and switching peaks	BW = 20 MHz	50 mV		
Parallel connection	no			
Series connection	yes, to increase voltage			
Resistance to reverse feed	35 V / 1 s			
Power factor correction (PFC)	no			
Output circuit - No-load, overload and short-circuit behavior				
Output curve	U/I curve			
Short-circuit protection	continuous short circuit stability			
Short-circuit behavior	continuation with current limitation			
Current limitation at short circuit	typ. 0.78 A	typ. 4.2 A	typ. 6.05 A	typ. 11.5 A
Overload protection	current limitation			
No-load protection	continuous no-load stability			
Starting of capacitive loads	unlimited			
General data				
Efficiency	typ. 80 %	typ. 83 %	typ. 75 %	typ. 89 %
Duty time	100 %			
Dimensions (WxHxD)	18 x 91 x 57.5 mm [0.71 x 3.58 x 2.26 in]	53 x 91 x 57.5 mm [2.09 x 3.58 x 2.26 in]	71 x 91 x 57.5 mm [2.80 x 3.58 x 2.26 in]	89.9 x 91 x 57,5 mm [3.54 x 3.58 x 2.26 in]
Weight	0.06 kg (0.13 lb)	0.19 kg (0.41 lb)	0.25 kg (0.55 lb)	0.32 kg / (0.72 lb)
Material of enclosure	plastic			
Mounting	DIN rail (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	enclosure / terminals	IP20 / IP20		
Protection class	II			

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Technical data CP-D range

Data at $T_a = 25\text{ °C}$, $U_{IN} = 230\text{ V AC}$ and rated values, if nothing else 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					
Wire size	fine-strand with wire end ferrule	0.2-2 mm ² (24-14 AWG)			
	fine-strand without wire end ferrule				
	rigid				
Stripping length		6 mm (0.24 in)			
Tightening torque		0.36-0.56 Nm			
Environmental data					
Ambient temperature range	operation	-25...+70 °C			
	full load	-25...+60 °C			
	storage	-25...+85 °C			
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/s ² , 10 Hz - 2 kHz			
Shock (half-sine) (IEC/EN 60068-2-27)		40 m/s ² , 22 ms			
Isolation data					
Rated insulation voltage U_i	input circuit / output circuit	3 kV AC			
Pollution category		2			
Standards					
Product standard		EN 61204			
Low Voltage Directive		2006/95/EC			
EMC Directive		2004/108/EC			
Electrical safety		UL 508, UL 60950-1, EN 60950-1			
Protective low voltage		SELV (EN 60950-1)			
Electromagnetic compatibility					
Interference immunity		EN 61000-6-2			
electrostatic discharge (ESD)	IEC/EN 61000-4-2	Level 4 (4 kV / 8 kV)	Level 4 (8 kV / 15 kV)	Level 4 (4 kV / 8 kV)	
electromagnetic field (HF radiation resistance)	IEC/EN 61000-4-3	Level 3 (10 V/m)			
fast transients (Burst)	IEC/EN 61000-4-4	Level 4 (4 kV)			
powerful impulses (Surge)	IEC/EN 61000-4-5	Level 4 (2 kV L-L)			
HF line emission	IEC/EN 61000-4-6	Level 3 (10 V)			
Interference emission		EN 61000-6-3			
electromagnetic field (HF radiation resistance)	IEC/CISPR 22, EN 55022	Class B			
HF line emission	IEC/CISPR 22, EN 55022	Class B			

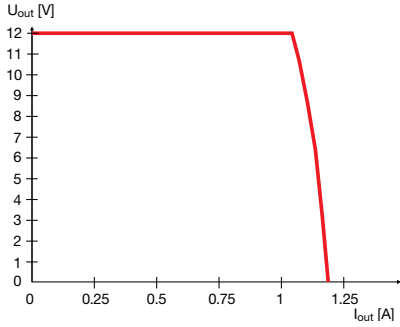
Technical diagrams

CP-D range

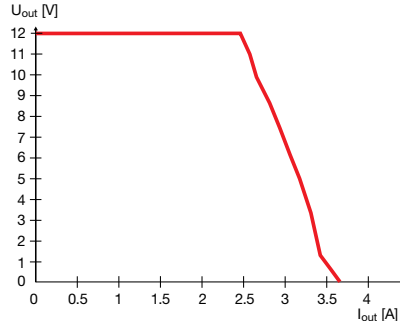


Technical diagrams

Output curve at $T_a = 25^\circ\text{C}$

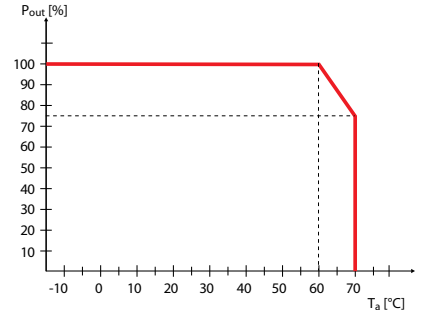


CP-D 12/0.83

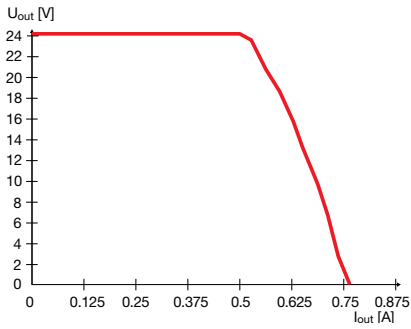


CP-D 12/2.1

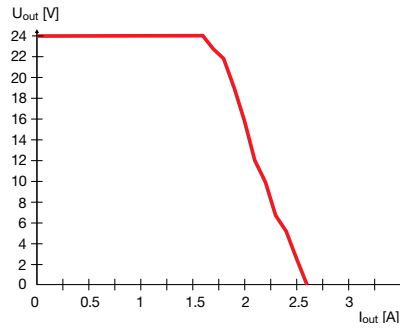
Temperature curve at rated output voltage



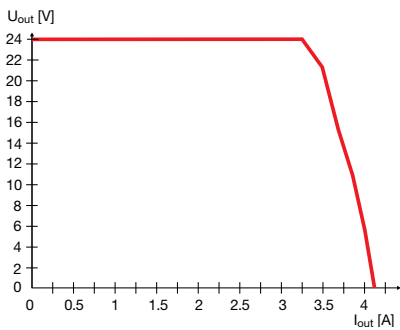
CP-D



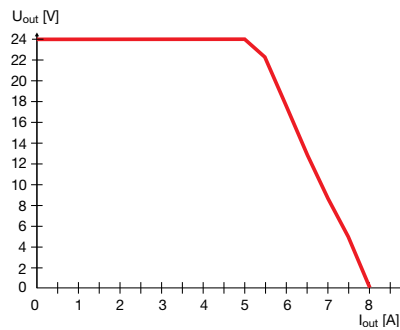
CP-D 24/0.42



CP-D 24/1.3



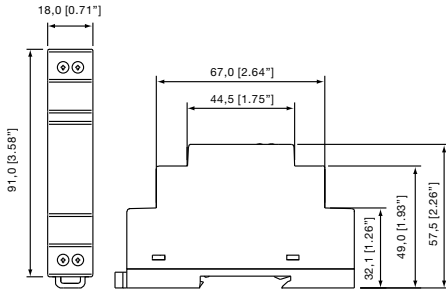
CP-D 24/2.5



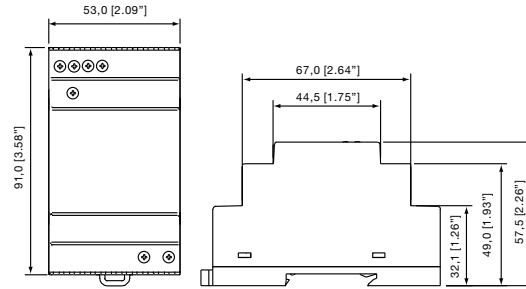
CP-D 24/4.2

Approximate dimensions CP-D range

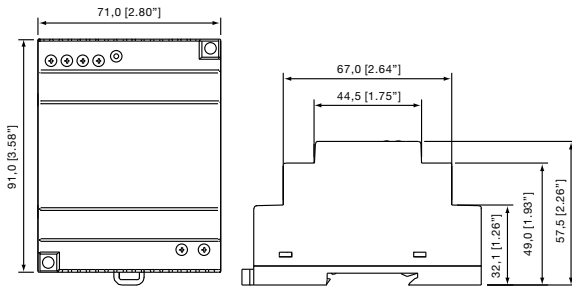
dimensions in mm



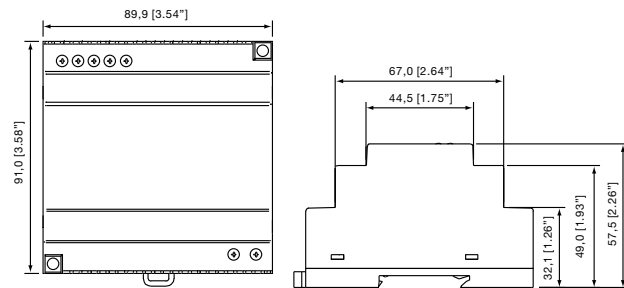
CP-D 12/0.83, CP-D 24/0.42



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



CP-D 24/2.5



CP-D 24/4.2



Switched mode power supplies CP-E Range



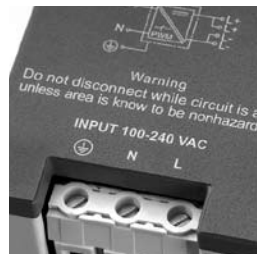
“DC OK” output

The CP-E range 24 V devices > 18 W offer a semiconductor output for function monitoring and remote diagnosis.



Wide range input

Optimized for world-wide applications: The CP-E power supplies can be supplied with 85-265 V AC or 90-375 V DC.



Adjustable output voltage

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.

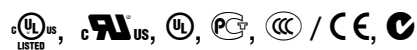


Redundancy unit CP-RUD 1SVR 423 418 R9000

For decoupling of paralleled power supply units. Thus, true redundancy can be achieved.



- 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
- Power range 15 W, 18 W, 30 W, 60 W
- Wide range input 100-240 V AC
(90-265 V AC / 120-370 V DC, 85-265 V AC / 90-375 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 -10...+70 °C
- Open-circuit, overload and short-circuit stable
- Integrated input fuse
- U/I characteristic curve for devices > 18 W
(fold-forward behavior at overload – no switch-off)
- Redundancy unit CP-RUD offering true redundancy
- LED(s) for status indication
- Signalling output (transistor) for output voltage OK on 24 V devices > 18 W
- Approvals / Marks
(depending on device, partly pending):



CP-E Range



CP-E 5/3.0



CP-E 12/2.5



CP-E 24/2.5



CP-E 24/2.5



CP-E 48/0.62

Type	Rated input voltage	Rated output voltage / current	Order code	Pack. unit pieces	Weight 1 piece kg / lb
CP-E 5/3.0	100-240 V AC	5 V DC / 3.0 A	1SVR 427 033 R3000	1	0.15 / 0.33
CP-E 12/2.5	100-240 V AC	12 V DC / 2.5 A	1SVR 427 032 R1000	1	0.29 / 0.64
CP-E 24/0.75	100-240 V AC	24 V DC / 0.75 A	1SVR 427 030 R0000	1	0.15 / 0.33
CP-E 24/1.25	100-240 V AC	24 V DC / 1.25 A	1SVR 427 031 R0000	1	0.29 / 0.64
CP-E 24/2.5	100-240 V AC	24 V DC / 2.5 A	1SVR 427 032 R0000	1	0.36 / 0.79
CP-E 48/0.62	100-240 V AC	48 V DC / 0.625 A	1SVR 427 030 R2000	1	0.29 / 0.64
CP-E 48/1.25	100-240 V AC	48 V DC / 1.25 A	1SVR 427 031 R2000	1	0.36 / 0.79

Redundancy module

The CP-RUD monitors two CP-E range power supplies with an output current of up to 5 A each. If one power supply fails, CP-RUD automatically switches to the alternate supply without interruption of the load current. Max. voltage 40 V.

Type	Description	Order code	Pack. unit pieces	Weight 1 piece kg / lb
CP-RUD	Redundancy module	1SVR 423 418 R9000	1	0.15 / 0.33

Technical data

CP-E Range

Power
supplies

Data at $T_a = 25\text{ °C}$, $U_{IN} = 230\text{ V AC}$ and rated values, if nothing else indicated

Type	CP-E 5/3.0	CP-E 12/2.5	CP-E 24/0.75	CP-E 24/1.25	
Input circuit	L, N				
Rated input voltage U_{IN}	100-240 V AC				
Input voltage range	90-265 V AC / 120-370 V DC	85-264 V AC / 90-375 V DC	90-265 V AC / 120-370 V DC	85-264 V AC / 90-375 V DC	
Frequency range AC	47-63 Hz				
Typical input current / power consumption	at 110 V AC	310 mA / 19.65 W	580 mA / 35.18 W	336 mA / 22.6 W	568 mA / 36.38 W
	at 230 V AC	183.2 mA / 19.85 W	328 mA / 36.6 W	197.4 mA / 23.0 W	326.6 mA / 37.05 W
Inrush current	18 A (max. 3 ms)	40 A (max. 3 ms)	18 A (max. 3 ms)	40 A (max. 3 ms)	
Power failure buffering	min. 75 ms	min. 30 ms	min. 75 ms	min. 30 ms	
Internal input fuse	2 A slow-acting / 250 V AC				
Indication of operational states					
Output voltage	OK: green LED	V: output voltage OK			
	LOW: red LED	V: output voltage too low	-	V: output voltage too low	-
Output circuit	L+,L-				
Rated output voltage	5 V DC	12 V DC	24 V DC		
Tolerance of the output voltage	$\pm 1\%$				
Adjustment range of the output voltage	4.7-6 V DC	12-15 V DC	21.6-28.8 V DC	24-28 V DC	
Rated output power	15 W	30 W	18 W	30 W	
Rated output current I_r	T_a m 60 °C 3.0 A	2.5 A	0.75 A	1.25 A	
Derating of the output current	60 °C < T_a m 70 °C 3 %/K	2.5 %/K	3 %/K	2.5 %/K	
Signalling output for output voltage OK	DC OK	-		yes	
Deviation with load change	statical	max. $\pm 2\%$	max. 0.5 %	max. $\pm 2\%$	max. 0.5 %
	dynamic 10-90 % change of input voltage within the input voltage range	max. $\pm 1\%$	max. 0.5 %	max. $\pm 1\%$	max. 0.5 %
Control time	< 2 ms				
Starting time after applying the supply voltage	at I_r	max. 1 s			
Response time	at rated load	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	approx. 9 V DC	approx. 18 V DC	approx. 35 V DC		
Power factor correction (PFC)	no				
Output circuit - No-load, overload and short-circuit behavior					
Output curve	Hiccup-mode	U/I curve	Hiccup-mode	U/I curve	
Short-circuit protection	continuous short circuit stability				
Short-circuit behavior	Hiccup-mode	continuation with current limitation	Hiccup-mode	continuation with current limitation	
Overload protection	thermal protec- tion with switch-off and restart	current limitation	thermal protec- tion with switch-off and restart	current limitation	
No-load protection	continuous no-load stability				
Starting of capacitive loads	not possible	unlimited	not possible	unlimited	

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Technical data CP-E Range

Data at $T_a = 25\text{ °C}$, $U_{IN} = 230\text{ V AC}$ and rated values, if nothing else indicated

Type	CP-E 5/3.0	CP-E 12/2.5	CP-E 24/0.75	CP-E 24/1.25
General data				
Efficiency	typ. 75 %	typ. 84 %	typ. 77 %	typ. 86 %
Duty time	100 %			
Dimensions (W x H x D)	23.9 x 88.5 x 115 mm [0.94 x 3.48 x 4.53 in]	43.5 x 88.5 x 115 mm [1.71 x 3.48 x 4.53 in]	23.9 x 88.5 x 115 mm [0.94 x 3.48 x 4.53 in]	43.5 x 88.5 x 115 mm [1.71 x 3.48 x 4.53 in]
Weight	0.15 kg (0.33 lb)	0.29 kg (0.64 lb)	0.15 kg (0.33 lb)	0.29 kg (0.64 lb)
Material of enclosure	plastic			
Mounting	DIN rail (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	enclosure / terminals	IP20 / IP20		
Protection class	I			
Electrical connection - Input circuit / Output circuit				
Wire size	fine-strand with wire end ferrule fine-strand without wire end ferrule rigid	0.2-2 mm ² (24-14 AWG)		
Stripping length	6 mm (0.24 in)			
Tightening torque	0.5-0.6 Nm			
Environmental data				
Ambient temperature range	operation	-10...+70 °C		
	full load	-10...+60 °C		
	storage	-25...+85 °C		
Damp heat (cyclic) (IEC/EN 60068-2-30)	4 x 24 cycle, 40 °C, 95 % RH			
Vibration (sinusoidal) (IEC/EN 60068-2-6)	10 m/s ² , 10...500 Hz			
Shock (half-sine) (IEC/EN 60068-2-27)	40 m/s ² , 22 ms, all directions			
Isolation data				
Rated insulation voltage U_i	input circuit / output circuit	3 kV AC		
Pollution category	2			
Standards				
Product standard	EN 61204			
Low Voltage Directive	2006/95/EC			
EMC Directive	2004/108/EC			
RoHS Directive	2002/95/EC			
Electrical safety	EN 50178, EN 60950-1, UL 60950-1, UL 508			
Protective low voltage	SELV (EN 60950)			
Electromagnetic compatibility				
Interference immunity	IEC/EN 61000-6-2			
electrostatic discharge (ESD)	IEC/EN 61000-4-2	Level 4 (8 kV / 15 kV)		
electromagnetic field (HF radiation resistance)	IEC/EN 61000-4-3	Level 3 (10 V/m)		
fast transients (Burst)	IEC/EN 61000-4-4	Level 4 (4 kV)		
powerful impulses (Surge)	IEC/EN 61000-4-5	Level 4 (2 kV / 4 kV)		
HF line emission	IEC/EN 61000-4-6	Level 3 (10 V)		
Interference emission	IEC/EN 61000-6-3			
electromagnetic field (HF radiation resistance)	IEC/CISPR 22, EN 55022	Class B		
HF line emission	IEC/CISPR 22, EN 55022	Class B		

Technical data

CP-E Range

Data at $T_a = 25\text{ °C}$, $U_{IN} = 230\text{ V AC}$ and rated values, if nothing else indicated

Type	CP-E 24/2.5	CP-E 48/0.62	CP-E 48/1.25	
Input circuit	L, N			
Rated input voltage U_{IN}	100-240 V AC			
Input voltage range	85-264 V AC / 90-375 V DC			
Frequency range AC	47-63 Hz			
Typical input current / power consumption	at 110 V AC	1080 mA / 69.4 W	566 mA / 35.34 W	1080 mA / 69.2 W
	at 230 V AC	570 mA / 69.0 W	320 mA / 36 W	573 mA / 68.8 W
Inrush current	60 A (max. 3 ms)	40 A (max. 3 ms)	60 A (max. 3 ms)	
Power failure buffering	min. 30 ms			
Internal input fuse	2 A slow-acting / 250 V AC			
Indication of operational states				
Output voltage	OK: green LED	V: output voltage OK		
	LOW: LED rot	-		
Output circuit	L+,L-			
Rated output voltage	24 V DC	48 V DC	48 V DC	
Tolerance of the output voltage	±1 %			
Adjustment range of the output voltage	24-28 V DC	48-55 V DC		
Rated output power	60 W	30 W	60 W	
Rated output current I_r	T_a m 60 °C	2.5 A	0.625 A	1.25 A
Derating of the output current	60 °C < T_a m 70 °C	2.5 %/K		
Signalling output for output voltage OK	DC OK	yes	-	
Deviation with load change	statical	max. 0.5 %		
	dynamic 10-90 % change of input voltage within the input voltage range	max. ±1 %	max. 0.5 %	max. ±1 %
Control time	< 2 ms			
Starting time after applying the supply voltage	at I_r	max. 1 s		
Response time	at rated load	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	approx. 35 V DC			
Power factor correction (PFC)	no			
Output circuit - No-load, overload and short-circuit behaviour				
Output curve	U/I curve			
Short-circuit protection	continuous short circuit proof			
Short-circuit behaviour	continuation with current limitation			
Overload protection	current limitation			
No-load protection	continuous no-load stability			
Starting of capacitive loads	unlimited			

Technical data CP-E Range

Data at $T_a = 25\text{ °C}$, $U_{IN} = 230\text{ V AC}$ and rated values, if nothing else indicated

Type	CP-E 24/2.5	CP-E 48/0.62	CP-E 48/1.25
General data			
Efficiency	typ. 89 %	typ. 86 %	typ. 89 %
Duty time	100 %		
Dimensions (W x H x D)	43.5 x 88.5 x 115 mm (1.71 x 3.48 x 4.53 in)		
Weight	0.36 kg (0.79 lb)	0.29 kg (0.64 lb)	0.36 kg (0.79 lb)
Material of enclosure	plastic		
Mounting	DIN rail (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	enclosure / terminals	IP20 / IP20	
Protection class	I		
Electrical connection - Input circuit / Output circuit			
Wire size	fine-strand with wire end ferrule fine-strand without wire end ferrule rigid	0.2-2 mm ² (24-14 AWG)	
Stripping length	6 mm (0.24 in)		
Tightening torque	0.5-0.6 Nm		
Environmental data			
Ambient temperature range	operation	-10...+70 °C	
	full load	-10...+60 °C	
	storage	-25...+85 °C	
Damp heat (cyclic) (IEC/EN 60068-2-30)	4 x 24 cycle, 40 °C, 95 % RH		
Vibration (sinusoidal) (IEC/EN 60068-2-6)	10 m/s ² , 10...500 Hz		
Shock (half-sine) (IEC/EN 60068-2-27)	40 m/s ² , 22 ms, all directions		
Isolation data			
Rated insulation voltage U_i	input circuit / output circuit	3 kV AC	
Pollution category	2		
Standards			
Product standard	EN 61204		
Low Voltage Directive	2006/95/EC		
EMC Directive	2004/108/EC		
RoHS Directive	2002/95/EC		
Electrical safety	EN 50178, EN 60950-1, UL 60950-1, UL 508		
Protective low voltage	SELV (EN 60950)		
Electromagnetic compatibility			
Interference immunity	IEC/EN 61000-6-2		
electrostatic discharge (ESD)	IEC/EN 61000-4-2	Level 4 (8 kV / 15 kV)	
electromagnetic field (HF radiation resistance)	IEC/EN 61000-4-3	Level 3 (10 V/m)	
fast transients (Burst)	IEC/EN 61000-4-4	Level 4 (4 kV)	
powerful impulses (Surge)	IEC/EN 61000-4-5	Level 4 (2 kV / 4 kV)	
HF line emission	IEC/EN 61000-4-6	Level 3 (10 V)	
Interference emission	IEC/EN 61000-6-3		
electromagnetic field (HF radiation resistance)	IEC/CISPR 22, EN 55022	Class B	
HF line emission	IEC/CISPR 22, EN 55022	Class B	

Technical data

CP-E Range

Power
supplies

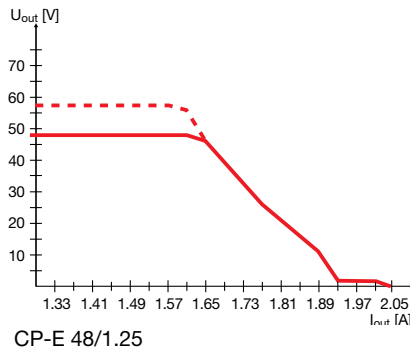
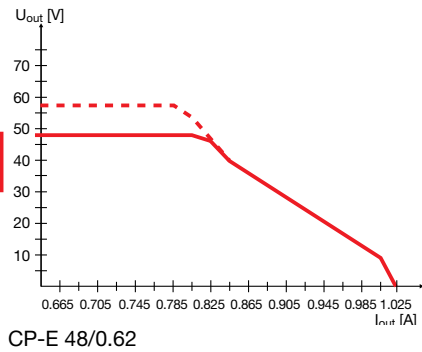
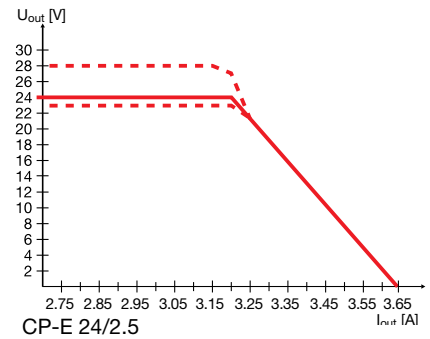
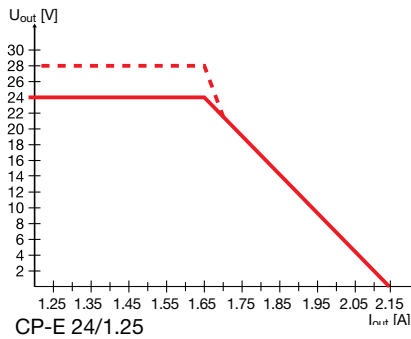
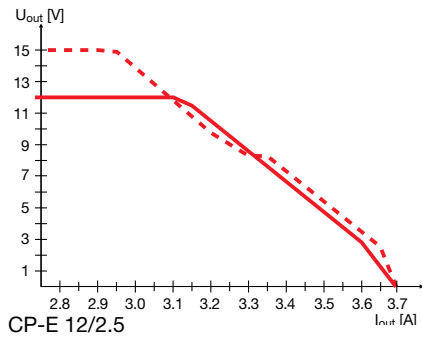
Data at $T_a = 25\text{ °C}$, if nothing else indicated

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 (W x H x D)		22.5 mm x 78 mm x 102 mm (0.89 x 3.07 x 4.02 in)
Weight		0.135 kg (0.30 lb)
Minimum distance to other units	horizontal / vertical	10 mm / 10 mm (0.39 in / 0.39 in)
Degree of protection	enclosure / terminals	IP20 / IP20
Material of enclosure	enclosure shell / cover	plastic / plastic
Protection class		-
Mounting		DIN rail
Mounting position		horizontal
Electrical connection - Input circuit / Output circuit		
Wire size	fine-strand with wire end ferrule	2 x 0.75-2.5 mm ² (2 x 18-14 AWG)
	fine-strand without wire end ferrule	
	rigid	
Stripping length		7 mm (0.28 in)
Tightening torque		0.6-0.8 Nm
Environmental data		
Ambient temperature range	operation	-20...+60 °C
	full load	-20...+60 °C
	storage	-40...+85 °C
Damp heat (IEC/EN 60068-2-3)		93 % at 40 °C, no condensation
Climatic category (IEC/EN 60721)		-
Vibration (IEC/EN 60068-2-6)		
Shock (IEC/EN 60068-2-27)		
Isolation data		
Insulation voltage	between input / output / enclosure	-
Pollution degree (EN 50178)		2
Standards		
Product standard		
Low Voltage Directive		2006/95/EC
EMC Directive		2004/108/EC
Electrical safety		EN 50178
Electromagnetic compatibility		
Interference immunity		
electrostatic discharge (ESD)	IEC/EN 61000-4-2	Level 3 (air discharge w8 kV, contact discharge w6 kV)
electromagnetic field (HF radiation resistance)	IEC/EN 61000-4-3	Level 3 (10 V/m)
fast transients (Burst)	IEC/EN 61000-4-4	Level 3 (w2 kV)
powerful impulses (Surge)	IEC/EN 61000-4-5	Level 1 (w0.5 kV)
HF line emission	IEC/EN 61000-4-6	Level 3 (10 V)
Interference emission		
electromagnetic field (HF radiation resistance)	IEC/CISPR 22 / EN 55022	Class B
HF line emission	IEC/CISPR 22 / EN 55022	Class B

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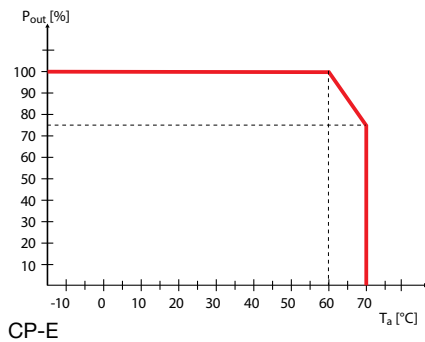
Technical diagrams

Output curve at $T_a = 25^\circ\text{C}$

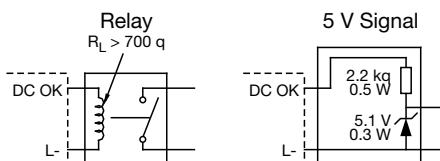


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Temperature curve at rated output voltage



Wiring instructions

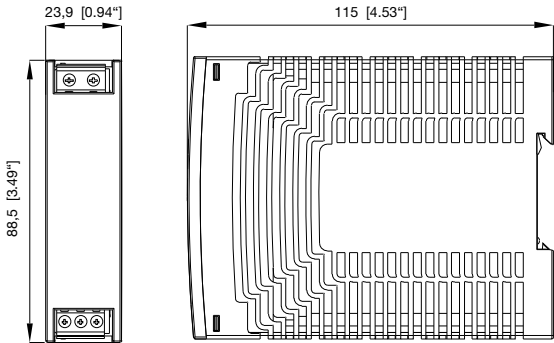


CP-E 24/1.25, CP-E 24/2.5

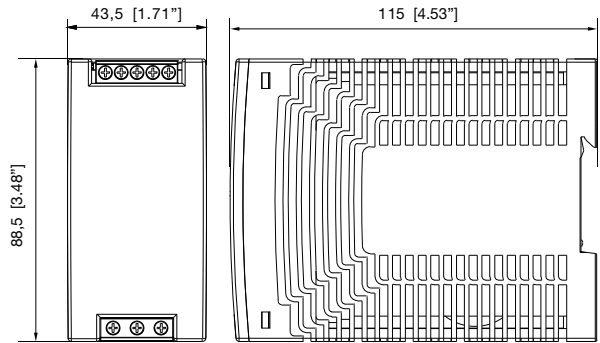
Approximate dimensions CP-E Range



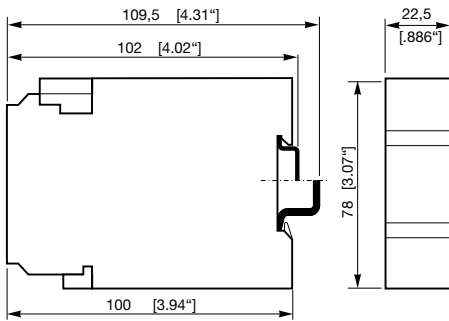
CP-E 5/3.0, CP-E 24/0.75



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



CP-RUD





Switched mode power supplies CP-S, CP-C & CP-A Range



CP-S and CP-C range

- Output current 5 A, 10 A and 20 A
- Integrated power reserve of up to 50 %
- 5 A and 10 A devices with pluggable connecting terminals
- Approvals / marks (depending on device, partly pending)



CP-S range

- 10 A and 20 A devices with front-face selector switch to adjust rated input voltage range: 110-120 V AC or 220-240 V AC
- Output voltage fixed at 24 V DC
- Parallel operation for redundancy

CP-C range

- Wide range input 110-240 V AC (85-264 V AC, 100-350 V DC)
- Output voltage adjustable in a range of 22-28 V DC
- Parallel operation for increased capacity and redundancy
- Power factor correction (PFC) acc. to EN 61000-3-2
- Function module pluggable onto the front side

Messaging module CP-C MM:

- LED for status indication
- Relay outputs "Input OK" and "Output OK"
- REMOTE ON/OFF function to switch on and off the power supply externally
- Output voltage monitoring is only possible in decoupled parallel operation

CP-A range

Redundancy unit CP-A RU

- Redundancy unit with 2 inputs / channels for decoupling of 2 CP-S or 2 CP-C power supplies
- Up to 20 A per input / channel and output up to 40 A
- True redundancy by 100 % decoupling with 2 integrated diodes

Control module CP-A CM

- Pluggable onto redundancy unit CP-A RU
- One relay output per monitored input / channel
- Threshold values adjustable (14-28 V)
- Indicates the presence of both input voltages (of the CP-A RU) via LEDs and energized output relays



CP-A RU + CP-A CM

Integrated power reserve

The new CP-S and CP-C range power supplies feature an integrated power reserve of up to 50 %. No oversized electricity supply is needed, especially under heavy load conditions.



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Pluggable connecting terminals

Extended flexibility in operation due to pluggable connecting terminals (this feature is not offered on all devices).



Adjustable output voltage

The CP-C range types feature a continuously adjustable output voltage from 22 to 28 V. Thus, they can be optimally adapted to the application, e.g. compensating the voltage drop caused by long line length.



Pluggable function modules

The CP-C range power supplies can be equipped with pluggable modules to add additional functions (e.g. messaging module). Thus, the power supplies can be ideally adapted to the relevant application.



CP-S, CP-C & CP-A Range



CP-S 24/5.0



CP-C 24/10.0



CP-S 24/20.0



CP-A RU



CP-A CM

Type	Rated input voltage	Rated output voltage / current	Order code	Pack. unit pieces	Weight 1 piece kg / lb
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CP-S range

CP-S 24/5.0	110-240 V AC	24 V DC / 5 A	1SVR 427 014 R0000	1	0.96 / 2.11
CP-S 24/10.0	110-120 V AC / 220-240 V AC	24 V DC / 10 A	1SVR 427 015 R0100	1	1.07 / 2.35
CP-S 24/20.0	110-120 V AC / 220-240 V AC	24 V DC / 20 A	1SVR 427 016 R0100	1	2.83 / 6.23

CP-C range

CP-C 24/5.0	110-240 V AC	24 V DC / 5 A	1SVR 427 024 R0000	1	0.96 / 2.11
CP-C 24/10.0	110-240 V AC	24 V DC / 10 A	1SVR 427 025 R0000	1	1.34 / 2.95
CP-C 24/20.0	110-240 V AC	24 V DC / 20 A	1SVR 427 026 R0000	1	3.15 / 6.94

Type	Description	Order code	Pack. unit pieces	Weight 1 piece kg / lb
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Accessories for CP-C range

CP-C MM	Messaging module	1SVR 427 081 R0000	1	0.065 / 0.14
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Accessories for CP-S and C range

CP-A RU	Redundancy unit	1SVR 427 071 R0000	1	0.89 / 1.96
CP-A CM	Control module	1SVR 427 075 R0000	1	0.063 / 0.14

Technical data

CP-S, CP-C & CP-A Range

Power
supplies

Data at $T_a = 25\text{ °C}$, $U_{IN} = 230\text{ V AC}$ and rated values, if nothing else indicated

Type		CP-C 24/5.0 CP-S 24/5.0	CP-C 24/10.0 CP-S 24/10.0	CP-C 24/20.0 CP-S 24/20.0
Input circuit - supply circuit		L, N		
Rated input voltage U_{IN}	CP-C	110-240 V AC		
	CP-S	110-240 V AC	switch position 115 110-120 V AC	
			switch position 230 220-240 V AC	
Input voltage range	CP-C	85-264 V AC / 100-350 V DC ¹⁾		
	CP-S	85-264 V AC / 100-350 V DC ¹⁾	switch position 115 85-132 V AC	
			switch position 230 184-264 V AC / 220-350 V DC ¹⁾	
Frequency range AC		47-63 Hz		
Current consumption		at 110-240 V AC	approx. 2.2-1.2 A	approx. 3.5-1.6 A
		at 110-120 V AC	-	approx. 4.2-4.0 A
		at 220-240 V AC	-	approx. 2.4-2.2 A
Power consumption		typ. 135 W	typ. 269 W	typ. 538 W
Inrush current / I^2t (cold start)	CP-C	< 23 A / approx. 0.9 A ² s	< 33 A / approx. 0.2 A ² s	< 40 A / approx. 1.9 A ² s
	CP-S		< 40 A / approx. 1.8 A ² s	< 70 A / approx. 8 A ² s
Power failure buffering at rated load	CP-C	> 100 ms	> 40 ms	typ. > 40 ms
	CP-S		> 50 ms	typ. > 50 ms
Transient overvoltage protection		varistors		
Internal input fuse (apparatus protection, not accessible)		4 A (slow-acting)	6.3 A (slow-acting)	12 A (fast-acting)
Indication of operational states		OUTPUT OK: green LED		
Output voltage		V: output voltage OK		
Output circuit		L+, L+, L-, L- : short-circuit, no-load and overload proof		
Rated output voltage		24 V DC		
Tolerance of the output voltage	CP-C	w1 %		
	CP-S	-1...+5 %		
Adjustment range of the output voltage	CP-C	22-28 V DC, default setting 24 V w0.5 %		
	CP-S	fixed		
Rated output power		120 W	240 W	480 W
Rated output current		$T_a < 60\text{ °C}$ 5 A	10 A	20 A
Peak output current (power reserve)		$T_a < 40\text{ °C}$ typ. m 7.25 A	typ. m 12.25 A	typ. m 22.5 A
Derating		$60\text{ °C} < T_a < 70\text{ °C}$ 2.5 % per Kelvin temperature increase		
Deviation with	CP-C	load change statical	typ. < w0.05 %	
	CP-S	load change statical	typ. < w0.1 %	
		load change dynamical 10-90 %	typ. < w3 %	
		change of the input voltage of w10 %	typ. < w0,05 %	
Control time		typ. < 1 ms		
Starting time after applying supply voltage	CP-C	< 100 ms	< 5 ms	typ. < 370 ms
	CP-S		< 10 ms	typ. < 20 ms
Response time 10-90 %	CP-C	typ. < 30 ms	typ. < 4 ms	typ. < 12 ms
	CP-S		typ. < 5 ms	typ. < 15 ms
Residual ripple and switching peaks		20 MHz	typ. < 50 mV _{pp}	
Parallel connection		yes, up to 5 devices, to enable redundancy and to increase capacity, current not symmetrical (CP-S only redundancy)		
Series connection		yes, to increase voltage		
Resistance to reverse feed		approx. 35 V DC		
Power factor correction (PFC)	CP-C	yes		
	CP-S	no		
Output circuit - No-load, overload and short-circuit behaviour		see also U/I and I/T curves		
Output curve		U/I curve with power reserve		
Current limitation at short circuit		approx. 11 A	approx. 19 A	approx. 25 A
Short-circuit protection		continuous short-circuit stability		
Overload protection		thermal protection		
Starting of capacitive loads		unlimited		
General data				
Power dissipation		typ. < 15 W	typ. < 29 W	typ. < 58 W
Efficiency		typ. 88-89 %		
Discharge current for PE		< 3.5 mA		
MTBF	CP-C	500.000 h		
	CP-S	350.000 h		
Dimensions (W x H x D)		56.5 (60 ²⁾) x 130 x 137 mm [2.22 (2.36 ²⁾) x 5.12 x 5.39 in]	90 (93.5 ²⁾) x 130x 137 mm [3.54 (3.68 ²⁾) x 5.12 x 5.39 in]	200 (203.5 ²⁾) x 130 x 137 mm [7.87 (8.01 ²⁾) x 5.12 x 5.39 in]

Technical data CP-S, CP-C & CP-A Range

Data at $T_a = 25\text{ °C}$, $U_{IN} = 230\text{ V AC}$ and rated values, if nothing else indicated

Type		CP-C 24/5.0 CP-S 24/5.0	CP-C 24/10.0 CP-S 24/10.0	CP-C 24/20.0 CP-S 24/20.0
Weight	CP-C	approx. 0.96 kg (2.12 lb)	approx. 1.34 kg (2.95 lb)	approx. 3.15 kg (6.94 lb)
	CP-S		approx. 1.07 kg (2.36 lb)	approx. 2.83 kg (6.23 lb)
Minimum distance to other units	horizontal / vertical	10 mm / 80 mm (0.39 in / 3.15 in)		
Degree of protection	enclosure / terminals	IP20 / IP20		
Material of enclosure	enclosure shell / cover	aluminium / zinc-coated sheet steel		
Protection class (EN 61140)		I		
Mounting		DIN rail (EN 50022), snap-on mounting		
Mounting position		horizontal		
Electrical connection - Input circuit		3)	3)	-
Wire size	fine-strand with wire end ferrule	0.2-2.5 mm ² (24-14 AWG)		2.5-10 mm ² (14-8 AWG)
	fine-strand without wire end ferrule			0.5-10 mm ² (20-8 AWG)
	rigid			0.5-16 mm ² (20-6 AWG)
Stripping length		7 mm (0.28 in)	12 mm (0.47 in)	
Tightening torque		0.4 Nm		1.2-1.5 Nm
Electrical connection - Output circuit		3)	3)	-
Wire size	fine-strand with wire end ferrule	0.12-2.5 mm ² (26-14 AWG)		2.5-10 mm ² (14-8 AWG)
	fine-strand without wire end ferrule			0.5-10 mm ² (20-8 AWG)
	rigid			0.5-16 mm ² (20-6 AWG)
Stripping length		8 mm (0.31 in)	12 mm (0.47 in)	
Tightening torque		0.4 Nm		1.2-1.5 Nm
Environmental data				
Ambient temperature range	operation	-25...+70 °C		
	full load	0...+60 °C (without derating)		
	storage	-40...+85 °C		
Damp heat (IEC/EN 60068-2-3)		93 % at +40 °C, no condensation		
Climatic category (IEC/EN 60721)		3K3		
Vibration (IEC/EN 60068-2-6)				
Shock (IEC/EN 60068-2-27)				
Isolation data				
Rated impulse withstand voltage U_{imp} (type test)	input / output	3 kV AC		
	input / PE	1.5 kV AC		
Power-frequency withstand voltage test (routine test)	input / output	1.2 kV AC		
	input / PE	1.2 kV AC		
	output / PE	350 V AC		
Pollution degree (EN 50178)		2		
Standards				
Product standard		IEC/EN 61204		
Low Voltage Directive		2006/95/EC		
EMC Directive		2004/108/EC		
Electrical safety		EN 50178, EN 60950, UL 60950, UL 508		
Protective low voltage		SELV (EN 60950)		
Electromagnetic compatibility				
Interference immunity				
electrostatic discharge (ESD)	IEC/EN 61000-4-2	IEC/EN 61000-6-2 Level 4 (8 kV / 15 kV)		
electromagnetic field (HF radiation resistance)	IEC/EN 61000-4-3	Level 3 (10 V/m)		
fast transients (Burst)	IEC/EN 61000-4-4	Level 4 (4 kV)		
powerful impulses (Surge)	IEC/EN 61000-4-5	Level 4 (2 kV symmetrical, level 3 - 3 kV asymmetrical)		
HF line emission	IEC/EN 61000-4-6	Level 3 (10 V)		
Interference emission				
electromagnetic field (HF radiation resistance)	IEC/CISPR 22, EN 55022	IEC/EN 61000-6-3 Class B		
HF line emission	IEC/CISPR 22, EN 55022	Class B		

1) at $U > 264\text{ V}$ use additionally an appropriate external fuse

2) with lateral screw

3) pluggable connecting terminals, actuate only when power is off

Technical data

CP-S, CP-C & CP-A Range

Data at $T_a = 25\text{ °C}$, $U_{IN} = 230\text{ V AC}$ and rated values, if nothing else indicated

Type	CP-C MM		
Input circuit - Supply circuit			
Rated input voltage U_{IN}	powered by the input circuit of the power supply		
Input voltage range	70-264 V AC / 80-350 V DC		
Power consumption	2.5 VA / 1.5 W		
Input circuit - Control circuit			
Kind of triggering	volt-free triggering		
Control input, control function	Remote OFF	remote off	
Threshold "Switching-off power supply unit"	R m 1 kq		
Threshold "Switching-on power supply unit"	R M 10 kq		
Input current	typ. 1 mA (200 mA for 200 μ s)		
Maximum cable length to the control input	25 m		
Measuring circuit - INPUT			
Monitoring function	undervoltage monitoring of input voltage of the power supply unit		
Thresholds	85 V AC / 90 V DC		
Hysteresis, related to the threshold value	AC: typ. -8 % / DC -30 %		
Accuracy, tolerance	-5 % at AC and DC		
Maximum measuring cycle	typ. < 50 ms		
Measuring circuit - OUTPUT			
Monitoring function	undervoltage monitoring of output voltage of the power supply unit		
Thresholds	20 V DC		
Hysteresis, related to the threshold value	typ. 5 %		
Accuracy, tolerance	w1 %		
Maximum measuring cycle	typ. < 10 ms		
Indication of operational states			
Remote off	REMOTE OFF: green LED	V: „REMOTE OFF“ input R m 1kq	
Status of power supply input	Input OK: green LED	V: relay „INPUT OK“ energized	
Status of power supply output	OUTPUT OK: green LED	V: relay „OUTPUT OK“ energized	
Output circuits	11-12/14, 21-22/24		
Kind of output	relays, 2 x 1 c/o contacts		
Operating principle	closed-circuit principle		
Contact material	AgNi		
Rated voltage (VDE 0110, IEC/EN 60947-1)	250 V		
Minimum switching voltage / Minimum switching current	24 V / 10 mA		
Maximum switching voltage / Maximum switching current	250 V / 1 A		
Rated operating current I_b (IEC/EN 60947-1)	AC12 (resistive)	230 V	1 A
	AC15 (inductive)	230 V	1 A
	DC12 (resistive)	24 V	1 A
	DC13 (inductive)	24 V	1 A
Mechanical lifetime	30 x 10 ⁶ switching cycles		
Electrical lifetime	0.1 x 10 ⁶ switching cycles		
Short circuit proof, maximum fuse rating	n/c contact	2 A, gL	
	n/o contact	2 A, gL	
General data			
Duty time	100 %		
Dimensions (W x H x D, when mounted)	56.5 x 54 x 24 mm (2.22 x 2.13 x 0.94 in)		
Weight	0.065 kg (0.14 lb)		
Degree of protection	enclosure / terminals	IP20 / IP20	
Material of enclosure	UL94V0		
Protection class (EN 61140)	II		
Mounting	snap-on mounting, without any tool		
Mounting position	plugged onto the power supply unit		
Electrical connection			
Wire size	fine-strand with wire end ferrule		0.2-2.5 mm ² (24-14 AWG)
	fine-strand without wire end ferrule		
	rigid		0.2-4 mm ² (24-12 AWG)
Stripping length	7.5 mm (0.3 inch)		
Tightening torque	0.4-0.6 Nm		

Technical data

CP-S, CP-C & CP-A Range

Data at $T_a = 25\text{ °C}$, $U_{IN} = 230\text{ V AC}$ and rated values, if nothing else indicated

Type		CP-C MM
Environmental data		
Ambient temperature range	operation	-25...+70 °C
	storage	-40...+85 °C
Damp heat (IEC/EN 60068-2-3)		93 % at +40 °C, no condensation
Climatic category (IEC/EN 60721)		3K3
Vibration (IEC/EN 60068-2-6)		
Shock (IEC/EN 60068-2-27)		
Isolation data		
Rated insulation voltage U_i (IEC/EN 60974-1, EN 50178, VDE 0160)		250 V
Protective separation (EN 50178, EN 60950) supply / measuring circuits / relay outputs		yes
Rated impulse withstand voltage U_{imp} between all isolated circuits (IEC 664, VDE 0110)		4 kV; 1.2/50 μ s
Test voltage between all circuits (type test)		2.5 kV AC
Pollution degree (EN 60950)		2
Overvoltage category (EN 60950)		II
Standards		
Product standard		IEC/EN 61204
Low Voltage Directive		2006/95/EC
EMC Directive		2004/108/EC
Electrical safety		EN 50178, EN 60950, UL 60950, UL 508
11 Elektromagnetic compatibility		
Interference immunity		
electrostatic discharge (ESD)	IEC/EN 61000-4-2	Level 3 and 4 (6 kV / 8 kV)
electromagnetic field (HF radiation resistance)	IEC/EN 61000-4-3	Level 3 (10 V/m)
fast transients (Burst)	IEC/EN 61000-4-4	Level 4 and 2 (4 kV power input / 1 kV control input)
powerful impulses (Surge)	IEC/EN 61000-4-5	Level 3 and 2 (4 kV symmetrical power input / 1 kV control input)
HF line emission	IEC/EN 61000-4-6	Level (10 V)
Interference emission		
HF line emission	IEC/CISPR 22 / EN 55022	Class B
electromagnetic field (HF radiation resistance)	IEC/CISPR 22 / EN 55022	Class B

Technical data

CP-S, CP-C & CP-A Range

Data at $T_a = 25\text{ °C}$, if nothing else indicated




Type		CP-A RU
Input circuit - Supply circuit		(+/-, +/-)
Rated input voltage U_{IN}		24 V DC
Input voltage range		10-40 V DC
Rated input current I_{IN} per channel		1-20 A
Maximum input current per channel		30 A for 300 s
Transient overvoltage protection		yes
Output circuit		(+/-)
Rated output voltage		24 V DC
Voltage drop		typ. 0.6 V, max. 0.9 V
Rated output current		1-40 A
Peak output current		60 A for 300 s
Resistance to reverse feed		< 40 V
General data		
Dimensions (W x H x D)		56.5 (60 ¹⁾) x 130 x 137 mm (2.22 (2.36 ¹⁾) x 5.12 x 5.39 in)
Weight		0.89 kg (1.96 lb)
Minimum distance to other units	horizontal / vertical	10 mm / 50 mm (0.39 in / 1.97 in)
Degree of protection	enclosure / terminals	IP20 / IP20
Material of enclosure	enclosure shell / cover	aluminium / zinc-coated sheet steel
Protection class		III 2)
Mounting		DIN rail
Mounting position		horizontal
Electrical connection - Input circuit / Output circuit		
Wire size	fine-strand with wire end ferrule	2.5-10 mm ² (14-8 AWG)
	fine-strand without wire end ferrule	0.5-10 mm ² (20-8 AWG)
	rigid	0.5-16 mm ² (20-6 AWG)
Stripping length		12 mm (0.47 in)
Tightening torque		1.2-1.5 Nm
Environmental data		
Ambient temperature range	operation	-25...+70 °C
	full load	-25...+60 °C (without derating)
	storage	-40...+85 °C
Damp heat (IEC/EN 60068-2-3)		93 % at 40 °C, no condensation
Climatic category (IEC/EN 60721)		3K3
Vibration (IEC/EN 60068-2-6)		
Shock (IEC/EN 60068-2-27)		
Isolation data		
Insulation voltage	between input / output / enclosure	500 V AC (routine test)
Pollution degree (EN 50178)		2
Standards		
Product standard		IEC/EN 61204
Low Voltage Directive		2006/95/EC
EMC Directive		2004/108/EC
Electrical safety		EN 50178, EN 60950, UL 60950, UL 508
Electromagnetic compatibility		
Interference immunity		
electrostatic discharge (ESD)	IEC/EN 61000-4-2	Level 3 (air discharge w8 kV, contact discharge w6 kV)
electromagnetic field (HF radiation resistance)	IEC/EN 61000-4-3	Level 3 (10 V/m)
fast transients (Burst)	IEC/EN 61000-4-4	Level 3 (w2 kV)
powerful impulses (Surge)	IEC/EN 61000-4-5	Level 1 (w0.5 kV)
HF line emission	IEC/EN 61000-4-6	Level 3 (10 V)
Interference emission		
electromagnetic field (HF radiation resistance)	IEC/CISPR 22 / EN 55022	Class B
HF line emission	IEC/CISPR 22 / EN 55022	Class B

1) includes lateral screw

2) This device is designed for connection to a safety extra-low voltage source. If no safety extra-low voltage is used at the input side, the lateral screw can be used for grounding of the enclosure (protection class I).

Technical data CP-S, CP-C & CP-A Range

Data at $T_a = 25\text{ °C}$, if noting else indicated

Type			CP-A CM
Input circuit - Supply circuit			24 V DC
Rated input voltage U_{IN}			13-30 V DC
Input voltage range			approx. 1 W
Power consumption	at 24 V DC		11-12/14, 21-22/24
Measuring circuit			undervoltage monitoring
Monitoring function			rated operational voltage
Measuring voltage			14-28 V
Thresholds			3-5 % fixed
Hysteresis, related to the threshold value			10 % of full-scale value
Accuracy, tolerance			6 ms
Maximum measuring cycle			
Indication of operational states			
Status of input 1	IN 1: green LED		L: voltage at input 1 > than threshold 1 = no faults present
Status of input 2	IN 2: green LED		L: voltage at input 2 > than threshold 2 = no faults present
Output status	OUT: green LED		L: $U_{OUT} > 3\text{ V}$ = no faults present
Output circuit			+, +, -
Kind of output			relays, 2 x 1 c/o contact
Contact material			AgNi
Operating principle			closed-circuit principle
Rated operational voltage U_e (IEC/EN 60947-1, VDE 0110)			250 V
Minimum switching voltage / Minimum switching current			24 V / 10 mA
Maximum switching voltage / Maximum switching current			250 V / 1 A
Rated operational current I_e (IEC/EN 60947-5-1)	AC12 (resistive)	230 V	1 A
	AC15 (inductive)	230 V	1 A
	DC12 (resistive)	24 V	1 A
	DC13 (inductive)	24 V	1 A
Mechanical lifetime			30 x 10 ⁶ switching cycles
Electrical lifetime			0.1 x 10 ⁶ switching cycles
Short-circuit proof, maximum fuse rating	n/c contact		2 A, gL
	n/o contact		2 A, gL
General data			
Duty time			100 %
Dimensions (W x H x D, when mounted)			56.5 x 54 x 24 mm (2.22 x 2.13 x 0.94 in)
Weight			0.063 kg (0.14 lb)
Degree of protection	enclosure / terminals		IP20 / IP20
Material of enclosure			UL94V0
Protection class			II
Mounting			snap-on mounting, without any tool
Mounting position			plugged onto the redundancy unit CP-A RU
Electrical connection			
Wire size	fine-strand with wire end ferrule		0.2-2.5 mm ² (24-14 AWG)
	fine-strand without wire end ferrule		
	rigid		
Stripping length			7.5 mm (0.3 in)
Tightening torque			0.4-0.6 Nm
Isolation data			
Rated insulation voltage U_i (IEC/EN 60947-1, EN 50178, VDE 0160)			250 V
Rated impulse withstand voltage U_{imp} (type test) between all circuits (IEC 664, VDE 0110)			2.5 kV
Power-frequency withstand voltage test (routine test) between all circuits			1.2 kV AC
Protective separation (EN 50178) between input and output			yes
Pollution degree			2
Overvoltage category			II
Environmental data			
Ambient temperature range	operation		-25...+70 °C
	storage		-40...+85 °C
Damp heat (IEC/EN 60068-2-3)			93 % at 40 °C, no condensation
Climatic category (IEC/EN 60721)			3K3
Vibration (IEC/EN 60068-2-6)			
Shock (IEC/EN 60068-2-27)			

Technical diagrams

CP-S, CP-C & CP-A Range



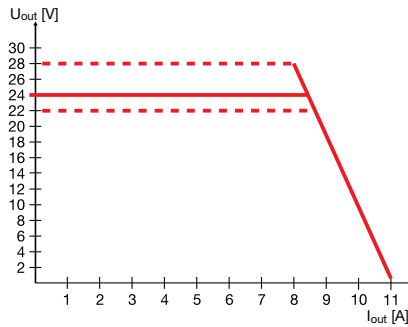
Technical diagrams

Output curve at 25 °C



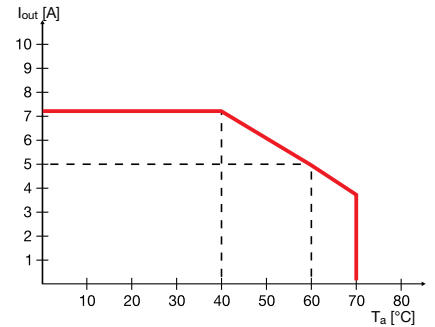
CP-S 24/5.0

Output curve at 25 °C

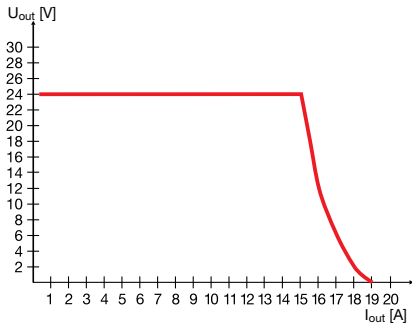


CP-C 24/5.0

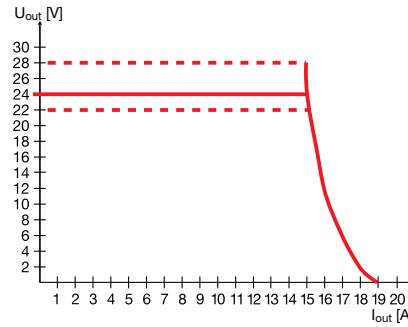
Temperature curve at $U_{out} = 24$ V DC



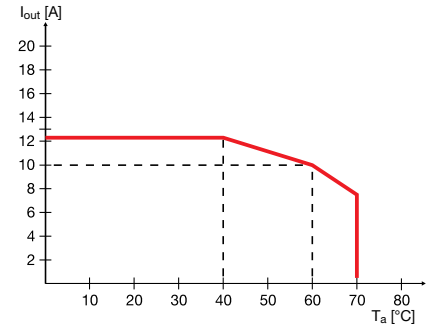
CP-S 24/5.0, CP-C 24/5.0



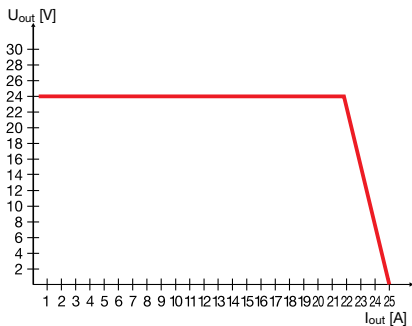
CP-S 24/10.0



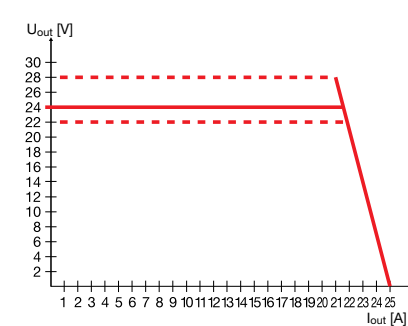
CP-C 24/10.0



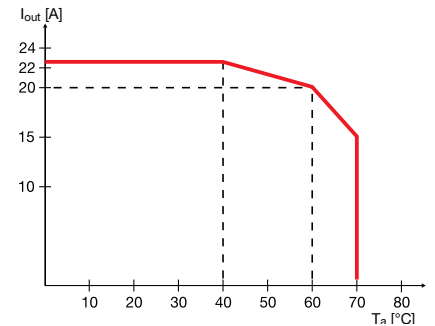
CP-S 24/10.0, CP-C 24/10.0



CP-S 24/20.0



CP-C 24/20.0



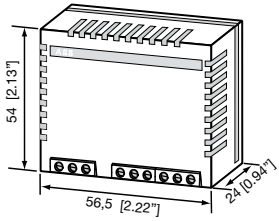
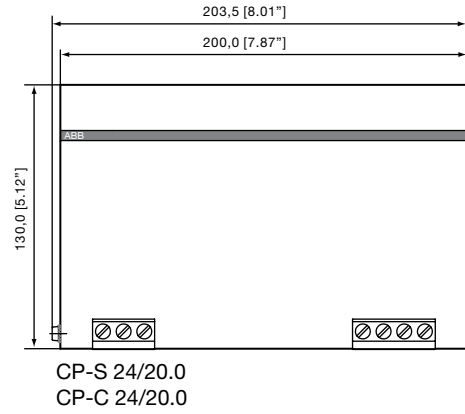
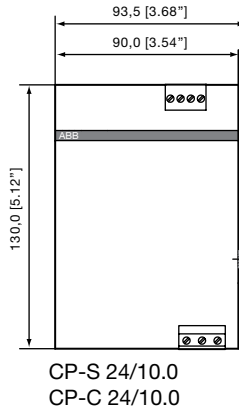
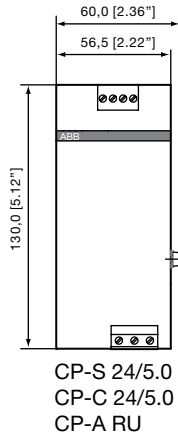
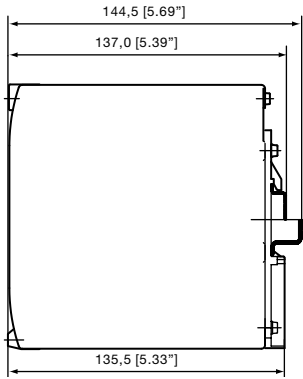
CP-S 24/20.0, CP-C 24/20.0

11

Approximate dimensions CP-S, CP-C & CP-A Range

Dimensional drawings

dimensions in mm



CP-C MM
CP-A CM