



# Primary switch mode power supplies

CP range

## Content

<b>CP range overview</b> .....	166
<b>Conversion table CP → CP-E, CP-S or CP-C</b> .....	167
<b>Approvals and marks</b> .....	168
<b>CP-D range</b> .....	169
Benefits and advantages .....	170
Ordering details .....	171
Technical data .....	172
Technical diagrams.....	176
Dimensional drawings .....	176
<b>CP-E range</b> .....	177
Benefits and advantages .....	178
Ordering details .....	179
Technical data .....	180
Technical diagrams.....	185
Wiring instruction .....	185
Dimensional drawings .....	186
<b>CP-S, CP-C and CP-A range</b> .....	187
Benefits and advantages .....	188
Ordering details .....	189
Technical data .....	190
Technical diagrams.....	196
Dimensional drawings .....	196

**NEW**  
available in  
March 2008

# Primary switch mode power supplies

## CP range

### Overview



2CDC2715 002 F0606

4

## Special features of CP range primary switch power supplies

- **Primary switch mode power supplies**
  - High efficiency of approx. 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 CP → CP-...

		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

4

## Conversion table CP → CP-E, CP-S, CP-C

Type old	Order code old	Type new / alternative	Order code new / alternative
----------	----------------	------------------------	------------------------------

### Rated output voltage 5 V DC

CP-5/3.0	1SVR 423 418 R3000	CP-E 5/3.0	1SVR 427 033 R3000
----------	--------------------	------------	--------------------

### Rated output voltage 6 V DC

CP-6/3.0	1SVR 423 418 R4000	CP-E 5/3.0	1SVR 427 033 R3000
----------	--------------------	------------	--------------------

### 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
----------	----------------	------------------------	------------------------------

### 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 CP-S 24/5.0	1SVR 427 024 R0000 1SVR 427 014 R0000
CP-24/10 adj	1SVR 423 415 R0000	CP-C 24/10.0 CP-S 24/10.0	1SVR 427 025 R0000 1SVR 427 015 R0100
CP-24/20 adj	1SVR 423 415 R1000	CP-C 24/20.0 CP-S 24/20.0	1SVR 427 026 R0000 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
-----------	--------------------	------------------------------	--

# Primary switch mode power supplies

## CP range

### Approvals and marks

■ existing □ pending		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
<b>Approvals</b>								
	UL 508, CAN/CSA C22.2 No.14	■ <sup>1)</sup>	■ <sup>1)</sup>		■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>
	UL 1310, CAN/CSA C22.2 No.223 (Class 2 Power Supply)	■ <sup>1)</sup>	■ <sup>1)</sup>		■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	
	UL 60950, CAN/CSA C22.2 No.60950	■ <sup>1)</sup>	■ <sup>1)</sup>		■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>
	GOST	□	□		□	□	□	□
	CCC	■ <sup>1)</sup>	■ <sup>1)</sup>		■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>
<b>Marks</b>								
	CE	■	■		■	■	■	■
	C-Tick	□	□		□	□	□	□

■ existing □ pending		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
<b>Approvals</b>									
	UL 508, CAN/CSA C22.2 No.14	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	
	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	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	
	GOST	■	■	■	■	■	■	■	
	CCC	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	
<b>Marks</b>									
	CE	■	■	■	■	■	■	■	■
	C-Tick	□	□	□	□	□	□	□	□

■ existing □ pending		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 MM	CP-A RU	CP-A CM
<b>Approvals</b>										
	UL 508, CAN/CSA C22.2 No.14	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	□	□	□
	UL 1604 (Class I, Div. 2, hazardous locations), CAN/CSA C22.2 No.213	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>		■	
	UL 60950, CAN/CSA C22.2 No.60950	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	□	□	□
	GOST	■	■	■	■	■	■	■	■	■
	CB scheme	■	■	■	■	■	■	□	□	□
	CCC	■ <sup>1)</sup>			■ <sup>1)</sup>	■ <sup>1)</sup>	■ <sup>1)</sup>	□	□	□
<b>Marks</b>										
	CE	■	■	■	■	■	■	■	■	■
	C-Tick	■	■	■	■	■	■	■	■	□

<sup>1)</sup> Approvals refer to the rated input voltage  $U_{IN}$ .

**NEW**  
available in  
March 2008



## Primary switch mode power supplies

CP-D range

### Content

<b>CP-D range</b> .....	169
Benefits and advantages .....	170
Ordering details .....	171
Technical data .....	172
Technical diagrams .....	176
Dimensional drawings .....	176

**NEW**  
available in  
March 2008

## Primary switch mode power supplies CP-D range

### Benefits and advantages



2CDC 275 031 F0007

- 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 behaviour at overload – no switch-off)
- LEDs for status indication
- Light-grey enclosure in RAL 7035
- Approvals / Marks  
(depending on device, partly pending):



#### 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.



2CDC 271 027 F0007

#### Wide range input

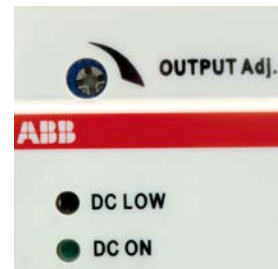
Optimised for world-wide applications: The CP-D power supplies can be supplied with 90-264 V AC or 120-370 V DC.



2CDC 276 033 F0007

#### 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.



2CDC 276 032 F0007-3

**NEW**  
available in  
March 2008

## Primary switch mode power supplies CP-D range Ordering details

2CDC 271 024 F0607



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

2CDC 271 025 F0607



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

2CDC 271 028 F0607



**CP-D 24/2.5**

2CDC 271 029 F0607



**CP-D 24/4.2**

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

4

• Approvals .....168	• Technical data ..... 172	• Technical diagrams .....176
• Dimensional drawings .....176		

**NEW**  
available in  
March 2008

## Primary switch mode power supplies CP-D range Technical data

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
<b>Input circuit - supply circuit</b>	<b>L, N</b>	
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
	at 230 V AC	128.3 mA / 13.01 W
Inrush current	at 230 V AC	30 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
<b>Indication of operational states</b>		
Output voltage	DC ON: green LED	⎓: output voltage applied
	DC LOW: red LED	⎓: output voltage too low
<b>Output circuit</b>	<b>+, -</b>	<b>++, --</b>
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 $I_o$	$T_a \leq 60\text{ °C}$ 0.83 A	2.1 A
Derating of the output current	$60\text{ °C} < T_a \leq 70\text{ °C}$	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 $I_o$	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	
<b>Output circuit - No-load, overload and short-circuit behaviour</b>		
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	
<b>General data</b>		
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	

4

**NEW**  
available in  
March 2008

## Primary switch mode power supplies CP-D range Technical data

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
<b>Electrical connection - Input circuit / Output circuit</b>			
Wire size	fine-strand with wire end ferrule	0.2-2 mm <sup>2</sup> (24-14 AWG)	
	fine-strand without wire end ferrule		
	rigid		
Stripping length		6 mm (0.24 in)	
Tightening torque		0.36-0.56 Nm	
<b>Environmental data</b>			
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 <sup>2</sup> , 10 Hz - 2 kHz	
Shock (half-sine) (IEC/EN 60068-2-27)		40 m/s <sup>2</sup> , 22 ms	
<b>Isolation data</b>			
Rated insulation voltage $U_i$	input circuit / output circuit	3 kV AC	
Pollution category		2	
<b>Standards</b>			
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)	
<b>Electromagnetic compatibility</b>			
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	

4

**NEW**  
available in  
March 2008

## Primary switch mode power supplies CP-D range Technical data

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	
<b>Input circuit - supply circuit</b>	<b>L, N</b>				
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-acting / 250 V AC	
<b>Indication of operational states</b>					
Output voltage	DC ON: green LED	┌───┐: output voltage applied			
	DC LOW: red LED	┌───┐: output voltage too low			
<b>Output circuit</b>	<b>+, -</b>	<b>++, --</b>			
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 $I_o$	$T_a \leq 60\text{ °C}$				
Derating of the output current	$60\text{ °C} < T_a \leq 70\text{ °C}$				
Deviation with load change	statical				
	max. 1 %				
change of input voltage within the input voltage range	dynamical 10-90%				
	max. 1 %				
Control time	< 1 ms				
Starting time after applying the supply voltage	at $I_o$ 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				
<b>Output circuit - No-load, overload and short-circuit behaviour</b>					
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. 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				
<b>General data</b>					
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				

4

**NEW**  
available in  
March 2008

## Primary switch mode power supplies CP-D range Technical data

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
<b>Electrical connection - Input circuit / Output circuit</b>					
Wire size	fine-strand with wire end ferrule	0.2-2 mm <sup>2</sup> (24-14 AWG)			
	fine-strand without wire end ferrule				
	rigid				
Stripping length		6 mm (0.24 in)			
Tightening torque		0.36-0.56 Nm			
<b>Environmental data</b>					
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 <sup>2</sup> , 10 Hz - 2 kHz			
Shock (half-sine) (IEC/EN 60068-2-27)		40 m/s <sup>2</sup> , 22 ms			
<b>Isolation data</b>					
Rated insulation voltage $U_i$	input circuit / output circuit	3 kV AC			
Pollution category		2			
<b>Standards</b>					
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)			
<b>Electromagnetic compatibility</b>					
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			

**NEW**  
available in  
March 2008

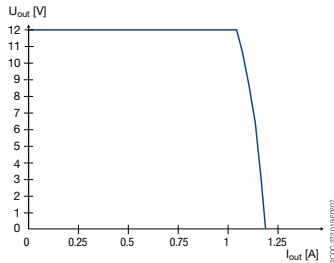
# Primary switch mode power supplies

## CP-D range

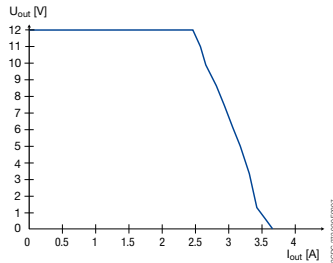
Technical diagrams, Dimensional drawings

### Technical diagrams

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

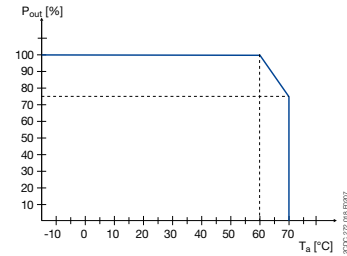


**CP-D 12/0.83**

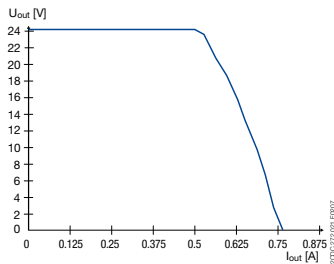


**CP-D 12/2.1**

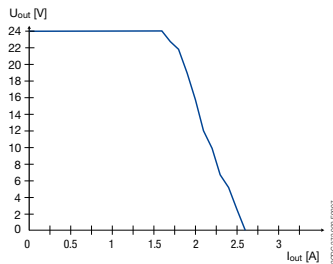
Temperature curve  
at rated output voltage



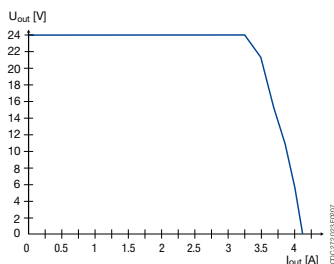
**CP-D**



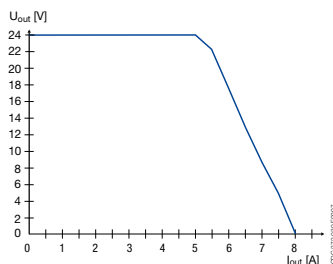
**CP-D 24/0.42**



**CP-D 24/1.3**



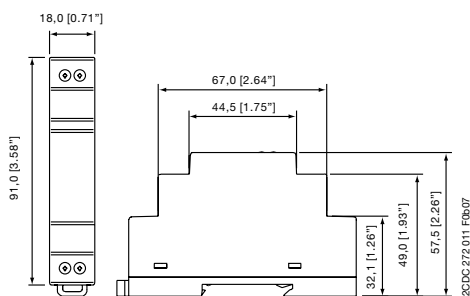
**CP-D 24/2.5**



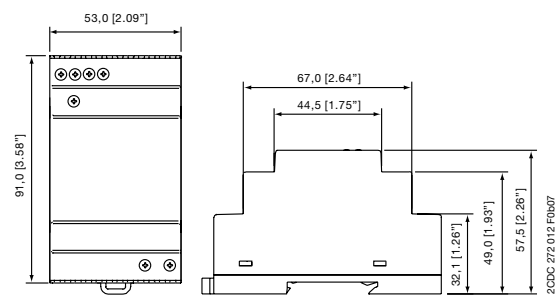
**CP-D 24/4.2**

### Dimensional drawings

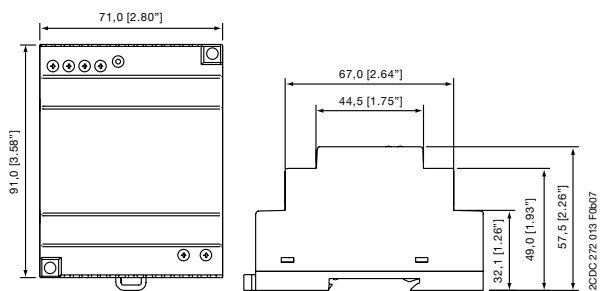
dimensions in mm



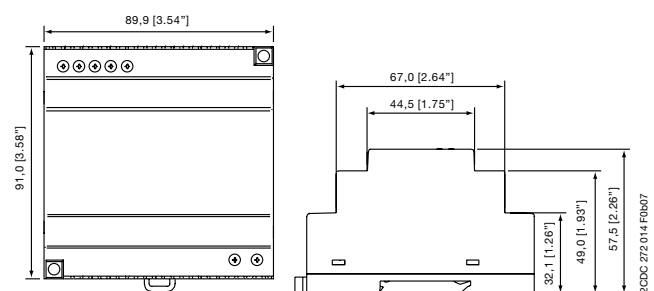
**CP-D 12/0.83, CP-D 24/0.42**



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



**CP-D 24/2.5**



**CP-D 24/4.2**



# Primary switch mode power supplies

CP-E range

## Content

<b>CP-E range</b> .....	177
Benefits and advantages .....	178
Ordering details .....	179
Technical data .....	180
Technical diagrams .....	185
Wiring instructions .....	185
Dimensional drawings .....	186

# Primary switch mode power supplies

## CP-E range

### Benefits and advantages



2CDC 275 004 F0006

#### “DC OK” output

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



2CDC 276 008 F0006

#### Wide range input

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



2CDC 276 009 F0006

#### 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.



2CDC 276 008 F0006

#### Redundancy unit CP-RUD 1SVR 423 418 R9000

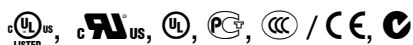
For decoupling of parallelized power supply units. Thus, true redundancy can be achieved.



2CDC 271 006 F0003

4

- 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 behaviour 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):



# Primary switch mode power supplies

## CP-E range

### Ordering details

2CDC271 017 F0b06



CP-E 5/3.0

2CDC271 013 F0b06



CP-E 12/2.5

2CDC271 015 F0b06



CP-E 24/2.5

2CDC271 011 F0b06



CP-E 48/0.62

2CDC271 006 F0b03



CP-RUD

Type	Rated input voltage	Rated output voltage / current	Order code	Pack. unit pieces	Price 1 piece	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	Price 1 piece	Weight 1 piece kg / lb
CP-RUD	Redundancy module	1SVR 423 418 R9000	1		0.15 / 0.33

• Approvals .....168	• Technical data .....180	• Technical diagrams .....185
• Wiring instructions .....185	• Dimensional drawings .....186	

# Primary switch mode power supplies

## CP-E range

### Technical data

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
<b>Input circuit</b>	<b>L, N</b>			
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. 3ms)
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			
<b>Indication of operational states</b>				
Output voltage	OK: green LED			
	LOW: red LED			
	┌───┐ output voltage too low	-	┌───┐ output voltage too low	-
<b>Output circuit</b>	<b>L+,L-</b>			
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 $I_r$	$T_a \leq 60\text{ °C}$			
	3.0 A	2.5 A	0.75 A	1.25 A
Derating of the output current	$60\text{ °C} < T_a \leq 70\text{ °C}$			
	3 %/K	2.5 %/K	3 %/K	2.5 %/K
Signalling output for output voltage OK	DC OK			-
Deviation with load change	statical			
	max. $\pm 2\%$	max. 0.5 %	max. $\pm 2\%$	max. 0.5 %
	dynamical 10-90 %			
	max. $\pm 1\%$	max. 0.5 %	max. $\pm 1\%$	max. 0.5 %
Control time	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			
<b>Output circuit - No-load, overload and short-circuit behaviour</b>				
Output curve	Hiccup-mode	U/I curve	Hiccup-mode	U/I curve
Short-circuit protection	continuous short circuit stability			
Short-circuit behaviour	Hiccup-mode	continuation with current limitation	Hiccup-mode	continuation with current limitation
Overload protection	thermal protection with switch-off and restart	current limitation	thermal protection with switch-off and restart	current limitation
No-load protection	continuous no-load stability			
Starting of capacitive loads	not possible	unlimited	not possible	unlimited

# Primary switch mode power supplies

## CP-E range

### Technical data

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
<b>General data</b>				
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			
<b>Electrical connection - Input circuit / Output circuit</b>				
Wire size	fine-strand with wire end ferrule		0.2-2 mm <sup>2</sup> (24-14 AWG)	
	fine-strand without wire end ferrule			
	rigid			
Stripping length	6 mm (0.24 in)			
Tightening torque	0.5-0.6 Nm			
<b>Environmental data</b>				
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 <sup>2</sup> , 10...500 Hz			
Shock (half-sine) (IEC/EN 60068-2-27)	40 m/s <sup>2</sup> , 22 ms, all directions			
<b>Isolation data</b>				
Rated insulation voltage $U_i$	input circuit / output circuit		3 kV AC	
Pollution category	2			
<b>Standards</b>				
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)			
<b>Electromagnetic compatibility</b>				
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	

# Primary switch mode power supplies

## CP-E range

### Technical data

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
<b>Input circuit</b>		<b>L, N</b>		
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		
<b>Indication of operational states</b>				
Output voltage	OK: green LED	┌───┐ output voltage OK		
	LOW: LED rot	-		
<b>Output circuit</b>		<b>L+,L-</b>		
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 $I_L$	$T_a \leq 60\text{ °C}$	2.5 A	0.625 A	1.25 A
Derating of the output current	$60\text{ °C} < T_a \leq 70\text{ °C}$	2.5 %/K		
Signalling output for output voltage OK	DC OK	yes	-	
Deviation with load change	statical	max. 0.5 %		
	dynamical 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 $I_L$	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		
<b>Output circuit - No-load, overload and short-circuit behaviour</b>				
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		

4

# Primary switch mode power supplies

## CP-E range

### Technical data

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
<b>General data</b>			
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		
<b>Electrical connection - Input circuit / Output circuit</b>			
Wire size	fine-strand with wire end ferrule		
	fine-strand without wire end ferrule		
	rigid		
		0.2-2 mm <sup>2</sup> (24-14 AWG)	
Stripping length	6 mm (0.24 in)		
Tightening torque	0.5-0.6 Nm		
<b>Environmental data</b>			
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 <sup>2</sup> , 10...500 Hz		
Shock (half-sine) (IEC/EN 60068-2-27)	40 m/s <sup>2</sup> , 22 ms, all directions		
<b>Isolation data</b>			
Rated insulation voltage $U_i$	input circuit / output circuit		3 kV AC
Pollution category	2		
<b>Standards</b>			
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)		
<b>Electromagnetic compatibility</b>			
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	

# Primary switch mode power supplies

## Accessory for CP-E range

### Technical data

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

Type	CP-RUD	
<b>Input circuit - Supply circuit</b>	<b>A: U1+/-U ; B: U2+/-U</b>	
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	
<b>Output circuit</b>	<b>L+, L+, L+, L-, L-, L-</b>	
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	
<b>General data</b>		
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	
<b>Electrical connection - Input circuit / Output circuit</b>		
Wire size	fine-strand with wire end ferrule	2 x 0.75-2.5 mm <sup>2</sup> (2 x 18-14 AWG)
	fine-strand without wire end ferrule	
	rigid	2 x 0.5-4 mm <sup>2</sup> (2 x 20-12 AWG)
Stripping length	7 mm (0.28 in)	
Tightening torque	0.6-0.8 Nm	
<b>Environmental data</b>		
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)	-	
<b>Isolation data</b>		
Insulation voltage	between input / output / enclosure	-
Pollution degree (EN 50178)	2	
<b>Standards</b>		
Product standard		
Low Voltage Directive	2006/95/EC	
EMC Directive	2004/108/EC	
Electrical safety	EN 50178	
<b>Electromagnetic compatibility</b>		
Interference immunity	IEC/EN 61000-6-2	
electrostatic discharge (ESD)	IEC/EN 61000-4-2	Level 3 (air discharge $\pm 8$ kV, contact discharge $\pm 6$ 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 ( $\pm 2$ kV)
powerful impulses (Surge)	IEC/EN 61000-4-5	Level 1 ( $\pm 0.5$ 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

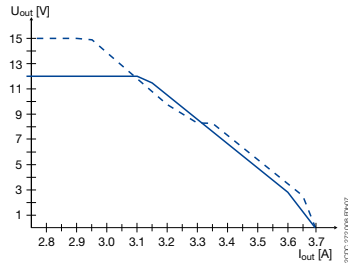
# Primary switch mode power supplies

## CP-E range

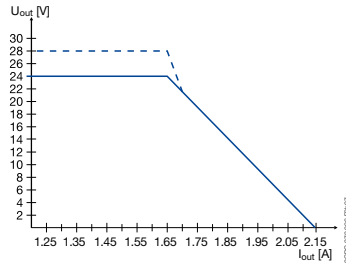
### Technical diagrams, Wiring instructions

#### Technical diagrams

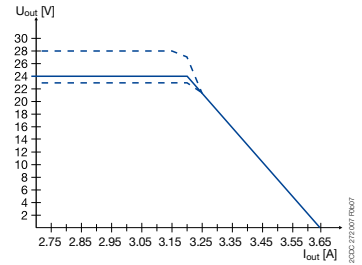
Output curve at  $T_a = 25\text{ }^\circ\text{C}$



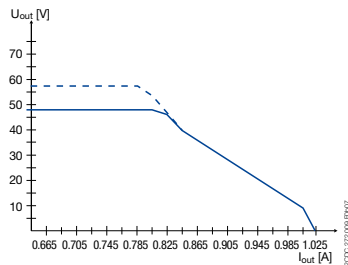
CP-E 12/2.5



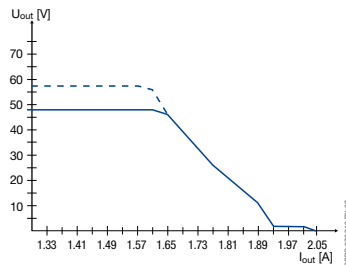
CP-E 24/1.25



CP-E 24/2.5

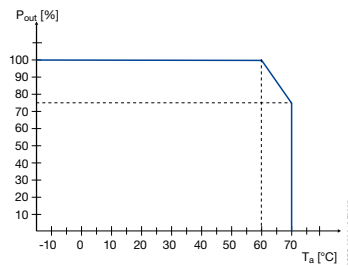


CP-E 48/0.62



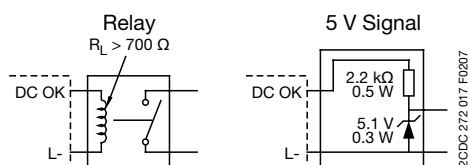
CP-E 48/1.25

#### Temperature curve at rated output voltage



CP-E

#### Wiring instructions



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



# Primary switch mode power supplies

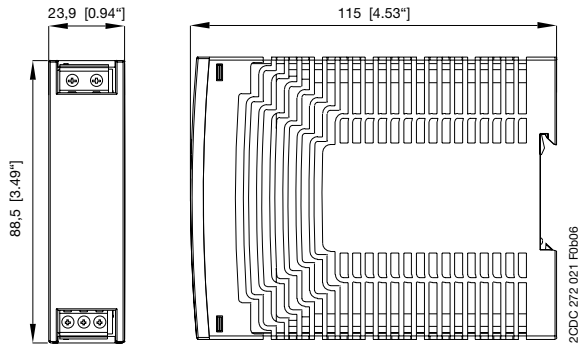
## CP-E range

### Dimensional drawings

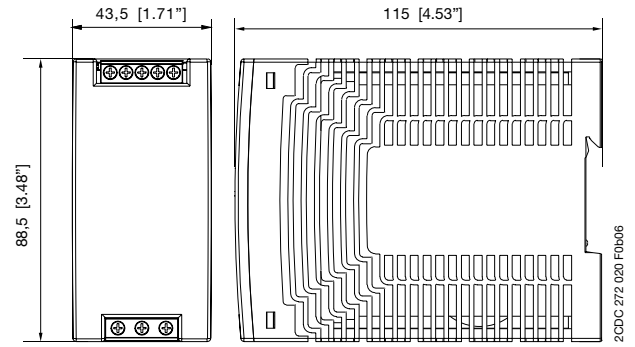
#### Dimensional drawings

dimensions in mm

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

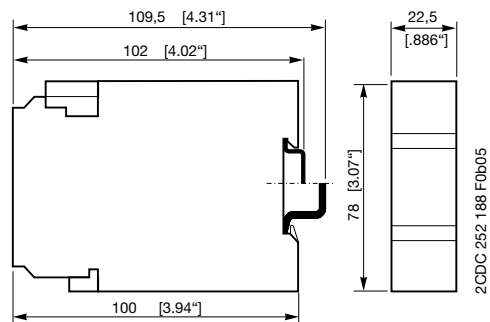


CP-E 12/2.5, CP-E 24/1.25, CP-E 24/2.5,  
CP-E 48/0.62, CP-E 48/1.25



4

CP-RUD





## Primary switch mode power supplies

CP-S, CP-C, CP-A range

### Content

<b>CP-S, CP-C and CP-A range</b> .....	187
Benefits and advantages .....	188
Ordering details .....	189
Technical data .....	190
Technical diagrams.....	196
Dimensional drawings .....	196

# Primary switch mode power supplies CP-S, CP-C and CP-A range

## Benefits and advantages



2CDC275 015 F0004

### 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

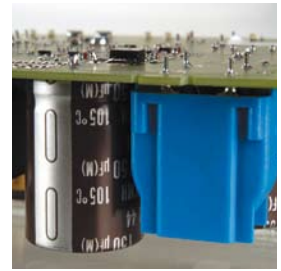
- Redundancy unit with 2 inputs / channels for decoupling of 2 CP-S or 2 CP-C power supplies
- up to 20 A per input / channel and output up to 40 A
- True redundancy by 100 % decoupling with 2 integrated diodes

#### 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

### 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.



2CDC 273 056 F0004

### Pluggable connecting terminals

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



2CDC 273 057 F0004

### 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.



2CDC 273 046 F0004

### 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.



2CDC 273 058 F0004

2CDC 271 003 F0005



CP-A RU + CP-A CM

# Primary switch mode power supplies CP-S, CP-C and CP-A range

## Ordering details

2CDC 271 061 F0004



**CP-S 24/5.0**

2CDC 271 065 F0004



**CP-C 24/10.0**

2CDC 271 063 F0004



**CP-S 24/20.0**

2CDC 271 010 F0006



**CP-A RU**

2CDC 271 032 F0005



**CP-A CM**

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

### CP-S range

<b>CP-S 24/5.0</b>	110-240 V AC	24 V DC / 5 A	<b>1SVR 427 014 R0000</b>	1		0.96 / 2.11
--------------------	--------------	---------------	---------------------------	---	--	-------------

<b>CP-S 24/10.0</b>	110-120 V AC / 220-240 V AC	24 V DC / 10 A	<b>1SVR 427 015 R0100</b>	1		1.07 / 2.35
---------------------	-----------------------------	----------------	---------------------------	---	--	-------------

<b>CP-S 24/20.0</b>	110-120 V AC / 220-240 V AC	24 V DC / 20 A	<b>1SVR 427 016 R0100</b>	1		2.83 / 6.23
---------------------	-----------------------------	----------------	---------------------------	---	--	-------------

### CP-C range

<b>CP-C 24/5.0</b>	110-240 V AC	24 V DC / 5 A	<b>1SVR 427 024 R0000</b>	1		0.96 / 2.11
--------------------	--------------	---------------	---------------------------	---	--	-------------

<b>CP-C 24/10.0</b>	110-240 V AC	24 V DC / 10 A	<b>1SVR 427 025 R0000</b>	1		1.34 / 2.95
---------------------	--------------	----------------	---------------------------	---	--	-------------

<b>CP-C 24/20.0</b>	110-240 V AC	24 V DC / 20 A	<b>1SVR 427 026 R0000</b>	1		3.15 / 6.94
---------------------	--------------	----------------	---------------------------	---	--	-------------

Type	Description	Order code	Pack. unit pieces	Price 1 piece	Weight 1 piece kg / lb
------	-------------	------------	-------------------	---------------	------------------------

### Accessories for CP-C range

<b>CP-C MM</b>	Messaging module	<b>1SVR 427 081 R0000</b>	1		0.065 / 0.14
----------------	------------------	---------------------------	---	--	--------------

### Accessories for CP-S and C range

<b>CP-A RU</b>	Redundancy unit	<b>1SVR 427 071 R0000</b>	1		0.89 / 1.96
----------------	-----------------	---------------------------	---	--	-------------

<b>CP-A CM</b>	Control module	<b>1SVR 427 075 R0000</b>	1		0.063 / 0.14
----------------	----------------	---------------------------	---	--	--------------

- Approvals .....168
- Dimensional drawings .....196
- Technical data ..... 190
- Technical diagrams .....196



# Primary switch mode power supplies CP-S and CP-C range

## Technical data

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
<b>Input circuit - supply circuit</b>		<b>L, N</b>		
Rated input voltage $U_{IN}$	CP-C	110-240 V AC		
	CP-S	110-240 V AC	110-120 V AC	
	switch position 115		220-240 V AC	
	switch position 230			
Input voltage range	CP-C	85-264 V AC / 100-350 V DC <sup>1)</sup>		
	CP-S	85-264 V AC / 100-350 V DC <sup>1)</sup>	85-132 V AC	
	switch position 115		184-264 V AC / 220-350 V DC <sup>1)</sup>	
	switch position 230			
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 <sup>2</sup> s	< 33 A / approx. 0.2 A <sup>2</sup> s	< 40 A / approx. 1.9 A <sup>2</sup> s
	CP-S		< 40 A / approx. 1.8 A <sup>2</sup> s	< 70 A / approx. 8 A <sup>2</sup> 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)
<b>Indication of operational states</b>				
Output voltage	OUTPUT OK: green LED	┌───┐ : output voltage OK		
<b>Output circuit</b>		<b>L+, L+, L-, L- : short-circuit, no-load and overload proof</b>		
Rated output voltage		24 V DC		
Tolerance of the output voltage	CP-C	±1 %		
	CP-S	-1...+5 %		
Adjustment range of the output voltage	CP-C	22-28 V DC, default setting 24 V ±0.5 %		
	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. ≤ 7.25 A	typ. ≤ 12.25 A	typ. ≤ 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. < ±0.05 %	
	CP-S	load change statical	typ. < ±0.1 %	
		load change dynamical 10-90 %	typ. < ±3 %	
		change of the input voltage of ±10 %	typ. < ±0.05 %	
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 <sub>pp</sub>		
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		
<b>Output circuit - No-load, overload and short-circuit behaviour</b>		<b>see also U/I and I/T curves</b>		
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		
<b>General data</b>				
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 <sup>2)</sup> x 130 x 137 mm [2.22 (2.36 <sup>2)</sup> x 5.12 x 5.39 in]	90 (93.5 <sup>2)</sup> x 130x 137 mm [3.54 (3.68 <sup>2)</sup> x 5.12 x 5.39 in]	200 (203.5 <sup>2)</sup> x 130 x 137 mm [7.87 (8.01 <sup>2)</sup> x 5.12 x 5.39 in]

# Primary switch mode power supplies CP-S and CP-C range

## Technical data

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		
<b>Electrical connection - Input circuit</b>		3)	3)	-
Wire size	fine-strand with wire end ferrule	0.2-2.5 mm <sup>2</sup> (24-14 AWG)		2.5-10 mm <sup>2</sup> (14-8 AWG)
	fine-strand without wire end ferrule			0.5-10 mm <sup>2</sup> (20-8 AWG)
	rigid			0.5-16 mm <sup>2</sup> (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
<b>Electrical connection - Output circuit</b>		3)	3)	-
Wire size	fine-strand with wire end ferrule	0.12-2.5 mm <sup>2</sup> (26-14 AWG)		2.5-10 mm <sup>2</sup> (14-8 AWG)
	fine-strand without wire end ferrule			0.5-10 mm <sup>2</sup> (20-8 AWG)
	rigid			0.5-16 mm <sup>2</sup> (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
<b>Environmental data</b>				
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)				
<b>Isolation data</b>				
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		
<b>Standards</b>				
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)		
<b>Electromagnetic compatibility</b>				
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 symmetrical, level 3 - 3 kV asymmetrical)		
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		

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

<sup>2)</sup> with lateral screw




<sup>3)</sup> pluggable connecting terminals, actuate only when power is off

# Primary switch mode power supplies

## Accessory for CP-C range

### Technical data

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

Typ	CP-C MM		
<b>Input circuit - Supply circuit</b>			
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		
<b>Input circuit - Control circuit</b>			
Kind of triggering	volt-free triggering		
Control input, control function	Remote OFF	remote off	
Threshold "Switching-off power supply unit"	$R \leq 1\text{ k}\Omega$		
Threshold "Switching-on power supply unit"	$R \geq 10\text{ k}\Omega$		
Input current	typ. 1 mA (200 mA for 200 $\mu$ s)		
Maximum cable length to the control input	25 m		
<b>Measuring circuit - INPUT</b>			
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		
<b>Measuring circuit - OUTPUT</b>			
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	$\pm 1\%$		
Maximum measuring cycle	typ. < 10 ms		
<b>Indication of operational states</b>			
Remote off	REMOTE OFF: green LED	 : „REMOTE OFF“ input $R \leq 1\text{ k}\Omega$	
Status of power supply input	Input OK: green LED	 : relay „INPUT OK“ energized	
Status of power supply output	OUTPUT OK: green LED	 : relay „OUTPUT OK“ energized	
<b>Output circuits</b>			
<b>11-12/14, 21-22/24</b>			
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 $I_o$ (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 <sup>6</sup> switching cycles		
Electrical lifetime	0.1 x 10 <sup>6</sup> switching cycles		
Short circuit proof, maximum fuse rating	n/c contact	2 A, gL	
	n/o contact	2 A, gL	
<b>General data</b>			
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		
<b>Electrical connection</b>			
Wire size	fine-strand with wire end ferrule	0.2-2.5 mm <sup>2</sup> (24-14 AWG)	
	fine-strand without wire end ferrule		
	rigid	0.2-4 mm <sup>2</sup> (24-12 AWG)	
Stripping length	7.5 mm (0.3 inch)		
Tightening torque	0.4-0.6 Nm		

# Primary switch mode power supplies

## Accessory for CP-C range

### Technical data

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

Typ		CP-C MM
<b>Environmental data</b>		
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)		
<b>Isolation data</b>		
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 $\mu$ s
Test voltage between all circuits (type test)		2.5 kV AC
Pollution degree (EN 60950)		2
Overvoltage category (EN 60950)		II
<b>Standards</b>		
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
<b>Elektromagnetic compatibility</b>		
Inference immunity		IEC/EN 61000-6-2
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		IEC/EN 61000-6-3
HF line emission	IEC/CISPR 22 / EN 55022	Class B
electromagnetic field (HF radiation resistance)	IEC/CISPR 22 / EN 55022	Class B

# Primary switch mode power supplies

## Accessory for CP-S and CP-C range: CP-A range

### Technical data

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

Type		CP-A RU
<b>Input circuit - Supply circuit</b>		<b>(+/-, +/-)</b>
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
<b>Output circuit</b>		<b>(+/-)</b>
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
<b>General data</b>		
Dimensions (W x H x D)		56.5 (60 <sup>1)</sup> x 130 x 137 mm (2.22 (2.36 <sup>1)</sup> ) 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 <sup>2)</sup>
Mounting		DIN rail
Mounting position		horizontal
<b>Electrical connection - Input circuit / Output circuit</b>		
Wire size	fine-strand with wire end ferrule	2.5-10 mm <sup>2</sup> (14-8 AWG)
	fine-strand without wire end ferrule	0.5-10 mm <sup>2</sup> (20-8 AWG)
	rigid	0.5-16 mm <sup>2</sup> (20-6 AWG)
Stripping length		12 mm (0.47 in)
Tightening torque		1.2-1.5 Nm
<b>Environmental data</b>		
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)		
<b>Isolation data</b>		
Insulation voltage		between input / output / enclosure 500 V AC (routine test)
Pollution degree (EN 50178)		2
<b>Standards</b>		
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
<b>Electromagnetic compatibility</b>		
Interference immunity		IEC/EN 61000-6-2
electrostatic discharge (ESD)	IEC/EN 61000-4-2	Level 3 (air discharge $\pm 8$ kV, contact discharge $\pm 6$ 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 ( $\pm 2$ kV)
powerful impulses (Surge)	IEC/EN 61000-4-5	Level 1 ( $\pm 0.5$ 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

<sup>1)</sup> incl. lateral screw

<sup>2)</sup> 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).

# Primary switch mode power supplies

## Accessory for CP-S and CP-C range: CP-A range

### Technical data

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

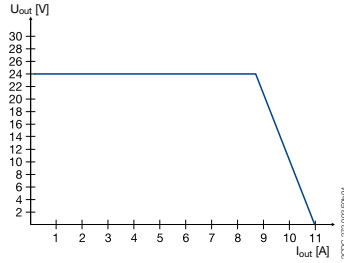
Type	CP-A CM	
<b>Input circuit - Supply circuit</b>		
Rated input voltage $U_{IN}$	24 V DC	
Input voltage range	13-30 V DC	
Power consumption	at 24 V DC	approx. 1 W
<b>Measuring circuit</b>		
Monitoring function	11-12/14, 21-22/24	
Measuring voltage	undervoltage monitoring	
Thresholds	rated operational voltage	
Hysteresis, related to the threshold value	14-28 V	
Accuracy, tolerance	3-5 % fixed	
Maximum measuring cycle	10 % of full-scale value	
<b>Indication of operational states</b>		
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
<b>Output circuit</b>		
Kind of output	+, +, -	
Contact material	relays, 2 x 1 c/o contact	
Operating principle	AgNi	
Rated operational voltage $U_o$ (IEC/EN 60947-1, VDE 0110)	closed-circuit principle	
Minimum switching voltage / Minimum switching current	250 V	
Maximum switching voltage / Maximum switching current	24 V / 10 mA	
Rated operational current $I_o$ (IEC/EN 60947-5-1)	AC12 (resistive) 230 V	250 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 <sup>6</sup> switching cycles	
Electrical lifetime	0.1 x 10 <sup>6</sup> switching cycles	
Short-circuit proof, maximum fuse rating	n/c contact	2 A, gL
	n/o contact	2 A, gL
<b>General data</b>		
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	
<b>Electrical connection</b>		
Wire size	fine-strand with wire end ferrule	0.2-2.5 mm <sup>2</sup> (24-14 AWG)
	fine-strand without wire end ferrule	
	rigid	0.2-4 mm <sup>2</sup> (24-12 AWG)
Stripping length	7.5 mm (0.3 in)	
Tightening torque	0.4-0.6 Nm	
<b>Isolation data</b>		
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	
<b>Environmental data</b>		
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)		

# Primary switch mode power supplies CP-S, CP-C and CP-A range

## Technical diagrams, Dimensional drawings

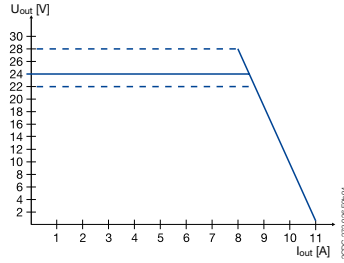
### Technical diagrams

Output curve at 25 °C



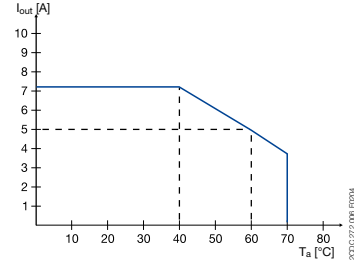
CP-S 24/5.0

Output curve at 25 °C

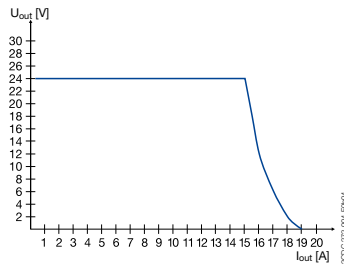


CP-C 24/5.0

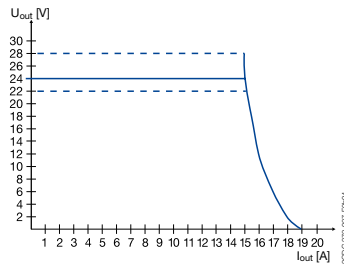
Temperature curve at  $U_{out} = 24$  V DC



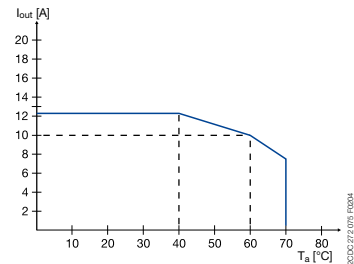
CP-S 24/5.0, CP-C 24/5.0



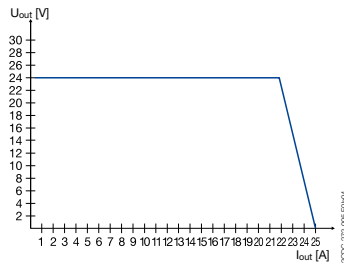
CP-S 24/10.0



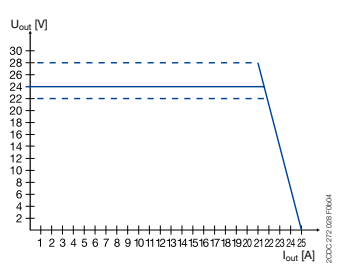
CP-C 24/10.0



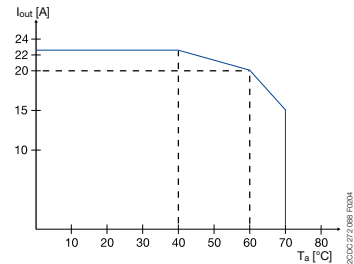
CP-S 24/10.0, CP-C 24/10.0



CP-S 24/20.0



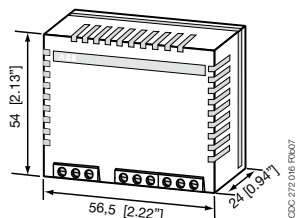
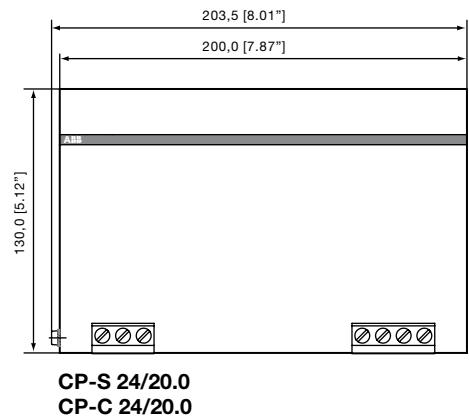
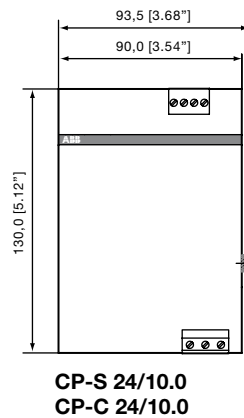
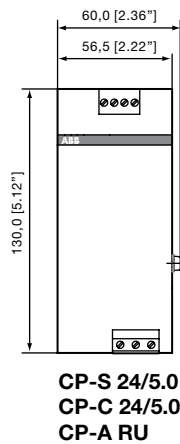
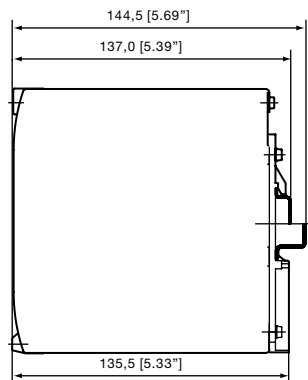
CP-C 24/20.0



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

### Dimensional drawings

dimensions in mm



CP-C MM  
CP-A CM