Switch mode power supplies
CP-E Range

Type CP-E Switch mode
Power supplies

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Characteristics

- Output voltages 5 V, 12 V, 24 V, 48 V DC
- Adjustable output voltages
- Output currents 0.625 A / 0.75 A / 1.25 A / 2.5 A / 3 A / 5 A / 10 A / 20 A
- Power range 15 W, 18 W, 30 W, 60 W, 120 W, 240 W, 480 W
- High efficiency of up to 90 %
- Low power dissipation and low heating
- Free convection cooling (no forced cooling with ventilators)
- Ambient temperature range during operation -40...+70 °C
- Open-circuit, overload and short-circuit stable
- Integrated input fuse
- U/I characteristic curve on devices > 18 W (fold-forward behavior at overload – no switch-off)
- Redundancy units offering true redundancy
- LED(s) for status indication
- Signalling output/contact for output voltage OK
- Transistor on 24 V devices > 18 W and < 120 W
- Relay on 24 V devices ≥ 120 W
- Approvals / Marks (depending on device, partly pending):

Benefits

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

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

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 units
For decoupling of parallelized power supply units m 40 V. Thus, true redundancy can be achieved.

CP-E Range

CP-E 5/3.0

CP-E 12/2.5

CP-E 24/0.75

Description

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

Of course all power supplies of the CP-E range are approved in accordance with all relevant international standards.

Ordering details

Input voltage range	Rated output voltage / current	Type	Catalog number	Weight (1 pce) kg (lb)
90-264 V AC / 120-375 V DC	5 V DC / 3 A	CP-E 5/3.0	1SVR427033R3000	0.15 (0.33)
85-264 V AC / 90-375 V DC	12 V DC / 2.5 A	CP-E 12/2.5	1SVR427032R1000	0.29 (0.64)
90-132 V AC, 180-264 V AC / 210-375 V DC	12 V DC / 10 A	CP-E 12/10.0	1SVR427035R1000	1.00 (2.20)
90-264 V AC / 120-375 V DC	24 V DC / 0.75 A	CP-E 24/0.75	1SVR427030R0000	0.15 (0.33)
85-264 V AC / 90-375 V DC	24 V DC / 1.25 A	CP-E 24/1.25	1SVR427031R0000	0.29 (0.64)
85-264 V AC / 90-375 V DC	24 V DC / 2.5 A	CP-E 24/2.5	1SVR427032R0000	0.36 (0.79)
90-132 V AC, 180-264 V AC / 210-375 V DC	24 V DC / 5 A	CP-E 24/5.0	1SVR427034R0000	1.00 (2.20)
90-132 V AC, 180-264 V AC / 210-375 V DC	24 V DC / 10 A	CP-E 24/10.0	1SVR427035R0000	1.36 (3.01)
90-264 V AC / 120-375 V DC	24 V DC / 20 A	CP-E 24/20.0	1SVR427036R0000	1.90 (4.18)
85-264 V AC / 90-375 V DC	48 V DC / 0.625 A	CP-E 48/0.62	1SVR427030R2000	0.29 (0.64)
85-264 V AC / 90-375 V DC	48 V DC / 1.25 A	CP-E 48/1.25	1SVR427031R2000	0.36 (0.79)
90-132 V AC, 180-264 V AC / 210-375 V DC	48 V DC / 5 A	CP-E 48/5.0	1SVR427034R2000	1.36 (3.01)
90-264 V AC / 120-375 V DC	48 V DC / 10 A	CP-E 48/10.0	1SVR427035R2000	1.90 (4.19)

Ordering details - Redundancy units for decoupling of two CP-E power supply units

suitable for decoupling of CP-E power supply units	Description	Type	Catalog number	Weight (1 pce) kg (lb)
≤ 35 V and < 5 A	2 inputs each up to 2.5 A and 1 output up to 5 A	CP-RUD	1SVR423418R9000	0.15 (0.33)
≤ 40 V and ≥ 5 A	2 inputs each up to 20 A and 1 output up to 40 A	CP-A RU	1SVR427071R0000	0.89 (1.96)

CP-E Range
Technical data

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

Type			CP-E 5/3.0	CP-E 12/2.5	CP-E 12/10.0
Input circuit				**L, N**	
Rated input voltage U_{in}				100-240 V AC	115 / 230 V AC auto select
Input voltage range			90-264 V AC / 120-375 V DC	85-264 V AC / 90-375 V DC	90-132 V AC, 180-264 V AC / 210-375 V DC
Frequency range AC				47-63 Hz	
Typical input current		at 115 V AC	335 mA	560 mA	2.2 A
		at 230 V AC	210 mA	330 mA	0.83 A
Typical power consumption			19.8 W	35.9 W	143 W
Inrush current limiting		at 115 V AC	10 A (max. 3 ms)	20 A (max. 3 ms)	24 A (max. 5 ms)
		at 230 V AC	18 A (max. 3 ms)	40 A (max. 3 ms)	48 A (max. 5 ms)
Discharge current		input / output		0.25 mA	
		input / PE		3.5 mA	
Power failure buffering time		at 115 V AC	min. 20 ms	min. 20 ms	min. 25 ms
		at 230 V AC	min. 75 ms	min. 30 ms	min. 30 ms
Internal input fuse			2 A slow-acting / 250 V AC		3.15 A slow-acting / 250 V AC
Power factor correction (PFC)			no		yes, passive, 0.7
Indication of operational states					
Output voltage		green LED	OK: ⎍: output voltage OK	OUTPUT OK: ⎍: output voltage OK	OUTPUT OK: ⎍: output voltage OK
		red LED	LOW: ⎍: output voltage too low	-	OUTPUT LOW: ⎍: output voltage too low
Output circuit			**L+,L-**	**L+, L+, L-, L-**	
Rated output voltage			5 V DC	12 V DC	
Tolerance of the output voltage				0...+1 %	
Adjustment range of the output voltage			4.5-5.75 V DC	12-14 V DC	11.4-14.5 V DC
Rated output power			15 W	30 W	120 W
Rated output current I_r		$T_a \leq 60$ °C	3.0 A	2.5 A	10 A
Derating of the output current	60 °C < $T_a \leq$ 70 °C		2.5 %/°C	2.5 %/°C	
Maximum deviation with	load change statical		±2 %	±0.5 %	±1 % (single mode) ±5 % (parallel mode)
	change of output voltage within the input voltage range		±1 %	±0.5 %	±0.5 %
Control time				< 2 ms	
Starting time after applying the supply voltage		at I_r		max. 1 s	
		with 3500 µF	-	max. 2 s	-
		with 7000 µF	max. 1.5 s	-	max. 1.5 s
Rise time		at rated load		max. 150 ms	
		with 3500 µF	-	max. 500 ms	-
		with 7000 µF	max. 500 ms	-	max. 500 ms
Fall time				max. 150 ms	
Residual ripple and switching peaks		BW = 20 MHz		50 mV	
Parallel connection			yes, to enable redundancy		configurable, to increase power, up to 3 devices, min. 0.1 I_r - max. 0.9 I_r
Series connection			yes, to increase voltage		yes, to increase voltage, max. 2 devices
Resistance to reverse feed			1 s - max. 7.5 V DC	1 s - max.18 V DC	max. 18 V DC
Output circuit - No-load, overload and short-circuit behavior					
Characteristic curve of output			Hiccup-mode	U/I characteristic curve	
Short-circuit protection				continuous short-circuit proof	
Short-circuit behavior			Hiccup-mode	continuation with output power limiting	
Overload protection				output power limiting	
No-load protection				continuous no-load stability	
Starting of capacitive loads			7000 µF	3500 µF	7000 µF
General data					
Power dissipation			typ. 5 W	typ. 5.6 W	typ. 24 W

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CP-E Range
Technical data

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

Type			CP-E 5/3.0	CP-E 12/2.5	CP-E 12/10.0
General data					
Power dissipation			typ. 5W	typ. 5.6 W	typ. 24W
Efficiency			typ. 75 %	typ. 84 %	typ. 84 %
Duty time			100 %		
Dimensions (W x H x D)			40.5 x 90 x 114 mm [1.59 x 3.54 x 4.49 in]	22.5 x 90 x 114 mm [0.89 x 3.54 x 4.49 in]	63.2 x 123.6 x 123.6 mm [2.49 x 4.87 x 4.87 in]
Weight			0.144 kg (0.33 lb)	0.287 kg (0.64 lb)	0.888 kg (2.20 lb)
Material of housing			Plastic		Metal
Mounting			DIN rail (IEC/EN 60715), snap-on mounting without any tool		
Mounting position			horizontal		
Minimum distance to other units	horizontal / vertical		25 mm / 25 mm (0.98 in / 0.98 in)		
Degree of protection	housing / terminals		IP20 / IP20		
Protection class			I		
Electrical connection - input circuit / output circuit					
Wire size	fine-strand with wire end ferrule		0.2-2.5 mm² (24-14 AWG)		0.2-4 mm² (24-11 AWG)
	fine-strand without wire end ferrule				0.2-6 mm² (24-10 AWG)
	rigid				
Stripping length			6 mm (0.24 in)		8 mm (0.31 in)
Tightening torque	input / output		0.6 Nm (5 lb.in)		1.0 Nm (9 lb.in) / 0.62 Nm (5.5 lb.in)
Environmental data					
Ambient temperature range		operation	-20…+70 °C	-40…+70 °C	-35…+70 °C
		rated load	-20...+60 °C	-40...+60 °C	-35...+60 °C
		storage	-20…+85 °C	-40…+85 °C	-40…+85 °C
Damp heat (cyclic) (IEC/EN 60068-2-30)			95 % without condensation		
Vibration (sinusoidal) (IEC/EN 60068-2-6)			10-500 Hz, 2 G, along X, Y, Z each axis, 60 min. for each axis		
Shock (half-sine) (IEC/EN 60068-2-27)			15 G, 11 ms, 3 axes, 6 faces, 3 times for each face		
Isolation data					
Rated insulation voltage U_i	input circuit / output circuit		3 kV AC		
	input / PE		1.5 kV AC		
Pollution degree			2		
Overvoltage category (UL/IEC/EN 60950-1)			II		
Standards					
Product standard			EN 61204-3		
Low Voltage Directive			2006/95/EC		
EMC directive			2004/108/EC		
RoHS directive			2002/95/EC		
Electrical safety			EN 60950-1, UL 60950-1, UL 508	EN 60950-1, UL 60950-1, UL 508, EN 61558-1, EN 61558-2-17; EN 60204-1	
Protective low voltage			SELV (EN 60950)		
Electromagnetic compatibility					
Interference immunity to			IEC/EN 61000-6-2		
electrostatic discharge	IEC/EN 61000-4-2		Level 4 (air discharge 15 kV / contact discharge 8 kV)		
radiated, radio-frequency, electromagnetic field		IEC/EN 61000-4-3	Level 3 (10 V/m)		
electrical fast transient/burst	IEC/EN 61000-4-4		Level 4 (4 kV / 2,5 kHz)	Level 4 (4 kV / 5 kHz)	
surge	IEC/EN 61000-4-5		L-L Level 3 (2 kV) / L-PE Level 4 (4 kV)		
conducted disturbances, induced by radio-frequency fields		IEC/EN 61000-4-6	Level 3 (10 Vrms)		
power frequency magnetic fields	IEC/EN 61000-4-8		Level 4 (30 A/m)		
voltage dips, short interruptions and voltag variations		IEC/EN 61000-4-11	dip: >95 % 10 ms / >30 % 500 ms interruptions: >95 % 5000 ms		
Interference emission			IEC/EN 61000-6-3		
high-frequency radiated	IEC/CISPR 22, EN 55022		Class B		
high-frequency conducted	IEC/CISPR 22, EN 55022		Class B		
limits for harmonic current emissions	IEC/EN 61000-3-2		Class D	Class A	Class D

Approvals and marks on page 11.3.

CP-E Range
Technical data

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

Type			CP-E 24/0.75	CP-E 24/1.25	CP-E 24/2.5
Input circuit				L, N	
Rated input voltage U_{in}				100-240 V AC	
Input voltage range			90-264 V AC / 120-375 V DC	85-264 V AC / 90-375 V DC	
Frequency range AC				47-63 Hz	
Typical input current		at 115 V AC	335 mA	560 mA	1060 mA
		at 230 V AC	210 mA	330 mA	590 mA
Typical power consumption			22.8 W	36.7 W	69.2 W
Inrush current limiting		at 115 V AC	10 A (max. 3 ms)	20 A (max. 3 ms)	20 A (max. 3 ms)
		at 230 V AC	18 A (max. 3 ms)	40 A (max. 3 ms)	40 A (max. 3 ms)
Discharge current		input / output		0.25 mA	
		input / PE		3.5 mA	
Power failure buffering time		at 115 V AC	min. 20 ms	min. 20 ms	
		at 230 V AC	min. 75 ms	min. 30 ms	
Internal input fuse				2 A slow-acting / 250 V AC	
Power factor correction (PFC)				no	
Indication of operational states					
Output voltage		green LED	OK: ⎍: output voltage OK	OUTPUT OK: ⎍: output voltage OK	
		red LED	LOW: ⎍: output voltage too low	-	-
Output circuit			**L+,L-**	**L+, L+, L-, L-**	
Rated output voltage				24 V DC	
Tolerance of the output voltage				0 ... +1 %	
Adjustment range of the output voltage			21.6-28.8 V DC	24-28 V DC	
Rated output power			18 W	30 W	60 W
Rated output current I_r		$T_a \leq 60$ °C	0.75 A	1.25 A	2.5 A
Derating of the output current	60 °C < $T_a \leq$ 70 °C		3 %/°C	2.5 %/°C	
Signalling output for output voltage OK		DC OK	-	Transistor	
Maximum deviation with	load change statical		±2 %	±0.5 %	
	change of output voltage within the input voltage range		±1 %	±0.5 %	
Control time				< 2 ms	
Starting time after applying the supply voltage		at I_r		max. 1 s	
		with 3500 µF	-	max. 2 s	-
		with 7000 µF	max. 1.5 s	-	max. 1.5 s
Rise time		at rated load		max. 150 ms	
		with 3500 µF	-	max. 500 ms	-
		with 7000 µF	max. 500 ms	-	max. 500 ms
Fall time				max. 150 ms	
Residual ripple and switching peaks		BW = 20 MHz		50 mV	
Parallel connection				yes, to enable redundancy	
Series connection				yes, to increase voltage	
Resistance to reverse feed				1 s - max. 35 V DC	
Output circuit - No-load, overload and short-circuit behavior					
Characteristic curve of output			Hiccup-mode	U/I characteristic curve	
Short-circuit protection				continuous short-circuit proof	
Short-circuit behavior			Hiccup-mode	continuation with output power limiting	
Overload protection				output power limiting	
No-load protection				continuous no-load stability	
Starting of capacitive loads			7000 µF	3500 µF	7000 µF
General data					
Power dissipation			typ. 4.45 W	typ. 5.5 W	typ. 8.8 W
Efficiency			typ. 77 %	typ. 86 %	typ. 89 %
Duty time				100 %	
Dimensions (W x H x D)			22.5 x 90 x 114 mm [0.89 x 3.54 x 4.49 in]	40.5 x 90 x 114 mm [1.59 x 3.54 x 4.49 in]	
Weight			0.143 kg (0.33 lb)	0.270 kg (0.64 lb)	0.331 kg (0.79 lb)
Material of housing				Plastic	

CP-E Range
Technical data

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

Type			CP-E 24/0.75	CP-E 24/1.25	CP-E 24/2.5
			22.5 x 90 x 114 mm [0.89 x 3.54 x 4.49 in]	22.5 x 90 x 114 mm [0.89 x 3.54 x 4.49 in]	
Weight			0.143 kg (0.33 lb)	0.270 kg (0.64 lb)	0.331 kg (0.79 lb)
Mounting			DIN rail (IEC/EN 60715), snap-on mounting without any tool		
Mounting position			horizontal		
Minimum distance to other units	horizontal / vertical		25 mm / 25 mm (0.98 in / 0.98 in)		
Degree of protection	housing / terminals		IP20 / IP20		
Protection class			I		
Electrical connection - input circuit / output circuit					
Wire size	fine-strand with wire end ferrule		0.2-2.5 mm2 (24-14 AWG)		
	fine-strand without wire end ferrule				
	rigid				
Stripping length			6 mm (0.24 in)		
Tightening torque	input / output		0.6 Nm (5 lb.in)		
Environmental data					
Ambient temperature range		operation	-20…+70 °C	-40…+70 °C	
		rated load	-20…+60 °C	-40…+60 °C	
		storage	-20…+85 °C	-40…+85 °C	
Damp heat (cyclic) (IEC/EN 60068-2-30)			95 % without condensation		
Vibration (sinusoidal) (IEC/EN 60068-2-6)			10-500 Hz, 2 G, along X, Y, Z each axis, 60 min. for each axis		
Shock (half-sine) (IEC/EN 60068-2-27)			15 G, 11 ms, 3 axes, 6 faces, 3 times for each face		
Isolation data					
Rated insulation voltage U_i	input circuit / output circuit		3 kV AC		
	input / PE		1.5 kV AC		
Pollution degree			2		
Overvoltage category (UL/IEC/EN 60950-1)			II		
Standards					
Product standard			EN 61204-3		
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	EN 60950-1, UL 60950-1, UL 508, EN 61558-1, EN 61558-2-17; EN 60204-1	
Protective low voltage			SELV (EN 60950)		
Electromagnetic compatibility					
Interference immunity to			IEC/EN 61000-6-2		
electrostatic discharge	IEC/EN 61000-4-2		Level 4 (air discharge 15 kV / contact discharge 8 kV)		
radiated, radio-frequency, electromagnetic field		IEC/EN 61000-4-3	Level 3 (10 V/m)		
electrical fast transient/burst	IEC/EN 61000-4-4		Level 4 (4 kV / 2.5 kHz)	Level 4 (4 kV / 5 kHz)	
surge	IEC/EN 61000-4-5		L-L Level 3 (2 kV) / L-PE Level 4 (4 kV)		
conducted disturbances, induced by radio-frequency fields		IEC/EN 61000-4-6	Level 3 (10 Vrms)		
power frequency magnetic fields	IEC/EN 61000-4-8		Level 4 (30 A/m)		
voltage dips, short interruptions and voltag variations		IEC/EN 61000-4-11	dip: >95 % 10 ms / >30 % 500 ms interruptions: >95 % 5000 ms		
Interference emission			IEC/EN 61000-6-3		
high-frequency radiated	IEC/CISPR 22, EN 55022		Class B		
high-frequency conducted	IEC/CISPR 22, EN 55022		Class B		
limits for harmonic current emissions	IEC/EN 61000-3-2		Class D	Class A	

Approvals and marks on page 11.3.

CP-E Range
Technical data

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

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

CP-E Range
Technical data

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

Type			CP-E 24/5.0	CP-E 24/10.0	CP-E 24/20.0
General data					
Power dissipation			typ. 20 W	typ. 35 W	typ. 63 W
Efficiency			typ. 86 %	typ. 89 %	typ. 89 %
Duty time			100 %		
Dimensions (W x H x D)			63.2 x 123.6 x 123.6 mm [2.49 x 4.87 x 4.87 in]	83 x 123.6 x 123.6 mm [3.27 x 4.87 x 4.87 in]	175 x 123.6 x 123.6 mm [6.89 x 4.87 x 4.87 in]
Weight			0.882 kg (2.20 lb)	1.334 kg (3.01 lb)	1.850 kg (4.19 lb)
Material of housing			Metal		
Mounting			DIN rail (IEC/EN 60715), snap-on mounting without any tool		
Mounting position			horizontal		
Minimum distance to other units	horizontal / vertical		25 mm / 25 mm (0.98 in / 0.98 in)		
Degree of protection	housing / terminals		IP20 / IP20		
Protection class			I		
Electrical connection - input circuit / output circuit					
Wire size	fine-strand with wire end ferrule		0.2-4 mm² (24-11 AWG)		
	fine-strand without wire end ferrule		0.2-6 mm² (24-10 AWG)		
	rigid				
Stripping length			8 mm (0.31 in)		
Tightening torque	input / output		1.0 Nm (9 lb.in) / 0.62 Nm (5.5 lb.in)		
Environmental data					
Ambient temperature range		operation	-35…+70 °C	-40…+70 °C	
		rated load	-35…+60 °C	-40…+60 °C	-40…+55 °C
		storage	-40…+85 °C	-40…+85 °C	
Damp heat (cyclic) (IEC/EN 60068-2-30)			95 % without condensation		
Vibration (sinusoidal) (IEC/EN 60068-2-6)			10-500 Hz, 2 G, along X, Y, Z each axis, 60 min. for each axis		
Shock (half-sine) (IEC/EN 60068-2-27)			15 G, 11 ms, 3 axes, 6 faces, 3 times for each face		
Isolation data					
Rated insulation voltage U_i	input circuit / output circuit		3 kV AC		
	input / PE		1.5 kV AC		
Pollution degree			2		
Overvoltage category (UL/IEC/EN 60950-1)			II		
Standards					
Product standard			EN 61204-3		
Low Voltage Directive			2006/95/EC		
EMC directive			2004/108/EC		
RoHS directive			2002/95/EC		
Electrical safety			EN 60950-1, UL 60950-1, UL 508, EN 61558-1, EN 61558-2-17; EN 60204-1		
Protective low voltage			SELV (EN 60950)		
Electromagnetic compatibility					
Interference immunity to			IEC/EN 61000-6-2		
electrostatic discharge	IEC/EN 61000-4-2		Level 4 (air discharge 15 kV / contact discharge 8 kV)		
radiated, radio-frequency, electromagnetic field		IEC/EN 61000-4-3	Level 3 (10 V/m)		
electrical fast transient/burst	IEC/EN 61000-4-4		Level 4 (4 kV / 5 kHz)	Level 4 (4 kV / 2.5 kHz)	Level 4 (4 kV / 5 kHz)
surge	IEC/EN 61000-4-5		L-L Level 3 (2 kV) / L-PE Level 4 (4 kV)		
conducted disturbances, induced by radio-frequency fields		IEC/EN 61000-4-6	Level 3 (10 Vrms)		
power frequency magnetic fields	IEC/EN 61000-4-6		Level 4 (30 A/m)		
voltage dips, short interruptions and voltag variations		IEC/EN 61000-4-6	dip: >95 % 10 ms / >30 % 500 ms interruptions: >95 % 5000 ms		
Interference emission			IEC/EN 61000-6-3		
high-frequency radiated	IEC/CISPR 22, EN 55022		Class B		
high-frequency conducted	IEC/CISPR 22, EN 55022		Class B		
limits for harmonic current emissions			Class D		

Approvals and marks on page 11.3.

CP-E Range
Technical data

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

Type			CP-E 48/0.62	CP-E 48/1.25	CP-E 48/5.0	CP-E 48/10.0
Input circuit				**L, N**		
Rated input voltage U_{in}			100-240 V AC		115 / 230 V AC auto select	115-230 V AC
Input voltage range			85-264 V AC / 90-375 V DC		90-132 V AC, 180-264 V AC / 210-375 V DC	90-264 V AC, 120-375 V DC
Frequency range AC			47-63 Hz			
Typical input current		at 115 V AC	560 mA	1060 mA	4.0 A	4.9 A
		at 230 V AC	330 mA	590 mA	1.55 A	2.5 A
Typical power consumption			35.7 W	69.0 W	267 W	528 W
Inrush current limiting		at 115 V AC	20 A (max. 3 ms)	20 A (max. 3 ms)	30 A (max. 5 ms)	25 A (max. 5 ms)
		at 230 V AC	40 A (max. 3 ms)	40 A (max. 3 ms)	60 A (max. 5 ms)	50 A (max. 5 ms)
Discharge current		input / output	0.25 mA			
		input / PE	3.5 mA			
Power failure buffering time		at 115 V AC	min. 20 ms		min. 25 ms	min. 25 ms
		at 230 V AC	min. 30 ms			
Internal input fuse			2 A slow-acting / 250 V AC		6.3 A slow-acting / 250 V AC	10 A slow-acting / 250 V AC
Power factor correction (PFC)			no		yes, passive, 0.7	yes, active 115 V AC: 0.99 230 V AC: 0.97
Indication of operational states						
Output voltage		green LED	OUTPUT OK: ⎍: output voltage OK			
		red LED	-	-	OUTPUT LOW: ⎍: output voltage too low	
Output circuit				**L+, L+, L-, L-**		
Rated output voltage			48 V DC			
Tolerance of the output voltage			0...+1 %			
Adjustment range of the output voltage			48-55 V DC		47-56 V DC	
Rated output power			30 W	60 W	240 W	480 W
Rated output current I_r		$T_a \leq 60$ °C	0.625 A	1.25 A	5 A	-
		$T_a \leq 55$ °C	-	-	-	10 A
Derating of the output current	60 °C < $T_a \leq$ 70 °C		2.5 %/°C			-
	55 °C < $T_a \leq$ 70 °C		-	-	-	2.5 %/°C
Signalling output for output voltage OK		DC OK	-	-	-	-
Maximum deviation with	load change statical		±0.5 %		±1 % (single mode) ±5 % (parallel mode)	
	change of output voltage within the input voltage range		±0.5 %		±0.5 %	
Control time			< 2 ms			
Starting time after applying the supply voltage		at I_r	max. 1 s			
		with 3500 µF	max. 2 s	-	-	-
		with 7000 µF	-	max. 1.5 s	max. 1.5 s	
Rise time		at rated load	max. 150 ms			
		with 3500 µF	max. 500 ms	-	-	-
		with 7000 µF	-	max. 500 ms	max. 500 ms	
Fall time			max. 150 ms			
Residual ripple and switching peaks		BW = 20 MHz	50 mV		100 mV	
Parallel connection			yes, to enable redundancy		configurable, to increase power, up to 3 devices, min. 0.1 I_r - max. 0.9 I_r	
Series connection			yes, to increase voltage		yes, to increase voltage, max. 2 devices	
Resistance to reverse feed			1 s - max. 63 V DC			
Output circuit - No-load, overload and short-circuit behavior						
Characteristic curve of output			U/I characteristic curve			
Short-circuit protection			continuous short-circuit proof			
Short-circuit behavior			continuation with output power limiting			
Overload protection			output power limiting			
No-load protection			continuous no-load stability			
Starting of capacitive loads			3500 µF	7000 µF		
General data						
Power dissipation			typ. 4.9 W	typ. 7.8 W	typ. 32 W	typ. 60 W

CP-E Range
Technical data

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

Type			CP-E 48/0.62	CP-E 48/1.25	CP-E 48/5.0	CP-E 48/10.0
Efficiency			typ. 86 %	typ. 89 %	typ. 90 %	typ. 89 %
Duty time			100 %			
Dimensions (W x H x D)			40.5 x 90 x 114 mm [1.59 x 3.54 x 4.49 in]		83 x 123.6 x 123.6 mm [3.27 x 4.87 x 4.87 in]	175 x 123.6 x 123.6 mm [6.89 x 4.87 x 4.87 in]
Weight			0.264 kg (0.58 lb)	0.316 kg (0.70 lb)	1.322 kg (2.91 lb)	1.839 kg (4.05 lb)
Material of housing			Plastic		Metal	
Mounting			DIN rail (IEC/EN 60715), snap-on mounting without any tool			
Mounting position			horizontal			
Minimum distance to other units	horizontal / vertical		25 mm / 25 mm (0.98 in / 0.98 in)			
Degree of protection	housing / terminals		IP/20 / IP20			
Protection class			I			
Electrical connection - input circuit / output circuit						
Wire size	fine-strand with wire end ferrule		0.2-2.5 mm² (24-14 AWG)		0.2-4 mm² (24-11 AWG)	
	fine-strand without wire end ferrule				0.2-6 mm² (24-10 AWG)	
	rigid					
Stripping length			6 mm (0.24 in)		8 mm (0.31 in)	
Tightening torque	input / output		0.6 Nm (5 lb.in)		1.0 Nm (9 lb.in) / 0.62 Nm (5.5 lb.in)	
Environmental data						
Ambient temperature range		operation	-40…+70 °C			
		rated load	-40…+60 °C			-40…+55 °C
		storage	-40…+85 °C			
Damp heat (cyclic) (IEC/EN 60068-2-30)			95 % without condensation			
Vibration (sinusoidal) (IEC/EN 60068-2-6)			10-500 Hz, 2 G, along X, Y, Z each axis, 60 min. for each axis			
Shock (half-sine) (IEC/EN 60068-2-27)			15 G, 11 ms, 3 axes, 6 faces, 3 times for each face			
Isolation data						
Rated insulation voltage U_i	input circuit / output circuit		3 kV AC			
	input / PE		1.5 kV AC			
Pollution degree			2			
Overvoltage category (UL/IEC/EN 60950-1)			II			
Standards						
Product standard			EN 61204-3			
Low Voltage Directive			2006/95/EC			
EMC directive			2004/108/EC			
RoHS directive			2002/95/EC			
Electrical safety			EN 60950-1, UL 60950-1, UL 508, EN 61558-1, EN 61558-2-17; EN 60204-1			
Protective low voltage			SELV (EN 60950)			
Electromagnetic compatibility						
Interference immunity to			IEC/EN 61000-6-2			
electrostatic discharge	IEC/EN 61000-4-2		Level 4 (air discharge 15 kV / contact discharge 8 kV)			
radiated, radio-frequency, electromagnetic field		IEC/EN 61000-4-3	Level 3 (10 V/m)			
electrical fast transient/burst	IEC/EN 61000-4-4		Level 4 (4 kV / 5 kHz)		Level 4 (4 kV / 2.5 kHz)	
surge	IEC/EN 61000-4-5		L-L Level 3 (2 kV) / L-PE Level 4 (4 kV)			
conducted disturbances, induced by radio-frequency fields		IEC/EN 61000-4-6	Level 3 (10 V/m)			
power frequency magnetic fields	IEC/EN 61000-4-6		Level 4 (30 A/m)			
voltage dips, short interruptions and voltag variations		IEC/EN 61000-4-6	dip: >95 % 10 ms / >30 % 500 ms interruptions: >95 % 5000 ms			
Interference emission			IEC/EN 61000-6-3			
high-frequency radiated	IEC/CISPR 22, EN 55022		Class B			
high-frequency conducted	IEC/CISPR 22, EN 55022		Class B			
limits for harmonic current emissions			Class A		Class D	

Approvals and marks on page 11.3.

CP-E Range
Technical data

Data at T_a = 25 °C, unless otherwise indicated

Type			CP-RUD	CP- A RU
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	10-40 V DC
Rated input current I_{in} per channel			0.5-2.5 A	1-20 A
Maximum input current per channel			10 A for 300 s	30 A for 300 s
Transient overvoltage protection			no	yes
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	typ. 0.6 V, max. 0.9 V
Rated output current I_{out}			0.5-5 A	1-40 A
Peak output current			20 A for 150 s	60 A for 300 s
Resistance to reverse feed			< 35 V	< 40 V
General data				
Dimensions (W x H x D)			22.5 x 78 x 100 mm (0.89 x 3.07 x 4.02 in)	56.5 (60 [1]) x 130 x 135.5 mm (2.22 (2.36 [1]) x 5.12 x 5.39 in)
Weight			0.135 kg (0.30 lb)	0.89 kg (1.96 lb)
Minimum distance to other units		horizontal / vertical	10 mm / 10 mm (0.39 in / 0.39 in)	10 mm / 50 mm (0.39 in / 1.97 in)
Degree of protection	housing / terminals		IP20 / IP20	
Material of housing	housing shell / cover		plastic / plastic	aluminium / zinc-coated sheet steel
Protection class			-	III [2]
Mounting			DIN rail (IEC/EN 60715)	
Mounting position			horizontal	
Electrical connection - Input circuit / Output circuit				
Wire size	fine-strand with wire end ferrule		2 x 0.75-2.5 mm² (2 x 18-14 AWG)	2.5-10 mm² (14-8 AWG)
	fine-strand without wire end ferrule			0.5-10 mm² (20-8 AWG)
	rigid		2 x 0.5-4 mm² (2 x 20-12 AWG)	0.5-16 mm² (20-6 AWG)
Stripping length			7 mm (0.28 in)	12 mm (0.47 in)
Tightening torque			0.6-0.8 Nm	1.2-1.5 Nm
Environmental data				
Ambient temperature range		operation	-20...+60 °C	-25...+70 °C
		rated load	-20...+60 °C	-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 / housing		-	500 V AC (routine test)
Pollution degree (EN 50178)			2	
Standards				
Product standard				IEC/EN 61204
Low Voltage Directive			2006/95/EG	
EMC Directive			2004/108/EG	
Electrical safety			EN 50178	EN 50178, EN 60950, UL 60950, UL 508
Electromagnetic compatibility				
Interference immunity to			IEC/EN 61000-6-2	
electrostatic discharge		IEC/EN 61000-4-2	Level 3 (air discharge ±8 kV, contact discharge ±6 kV)	
radiated, radio-frequency, electromagnetic field		IEC/EN 61000-4-3	Level 3 (10 V/m)	
electrical fast transient/burst		IEC/EN 61000-4-4	Level 3 (±2 kV)	
surge		IEC/EN 61000-4-5	Level 1 (w0.5 kV)	
conducted disturbances, induced by radio-frequency fields		IEC/EN 61000-4-6	Level 3 (10 V)	
Interference emission			IEC/EN 61000-6-3	
high-frequency radiated		IEC/CISPR 22 / EN 55022	Class B	
high-frequency conducted		IEC/CISPR 22 / EN 55022	Class B	

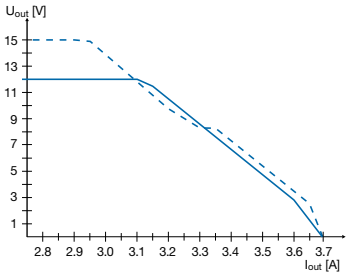
1) incl. lateral screw

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 housing (protection class I).

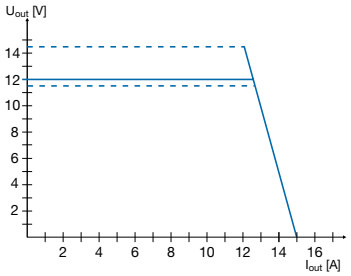
CP-E Range
Technical diagrams
Wiring schematics

Technical diagrams

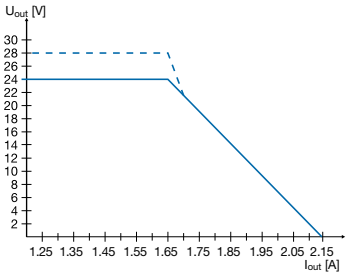
Output curve at T_a = 25 °C



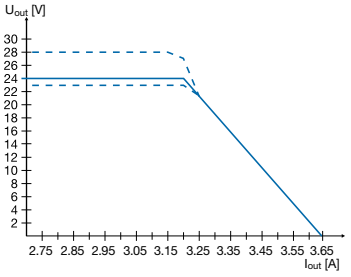
CP-E 12/2.5



CP-E 12/10.0



CP-E 24/1.25



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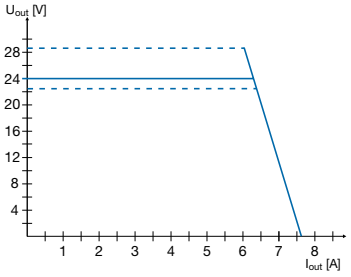

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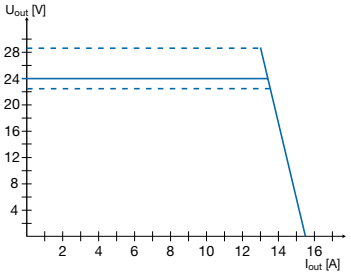

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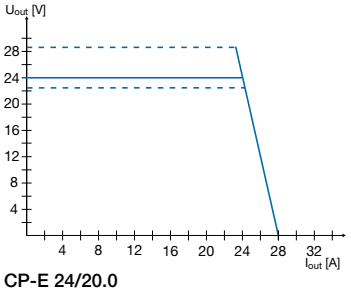
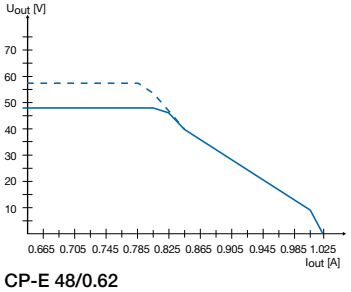
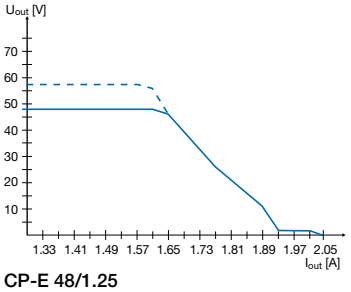


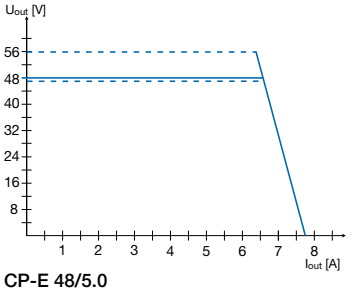
CP-E 24/20.0



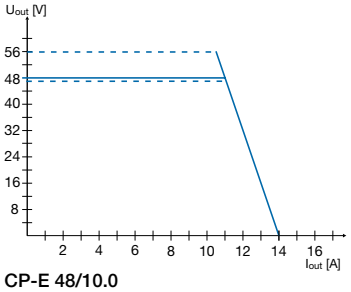
CP-E 48/0.62



CP-E 48/1.25

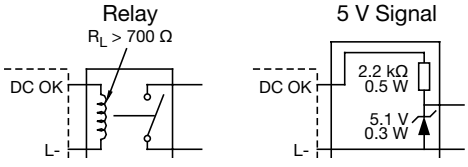


CP-E 48/5.0



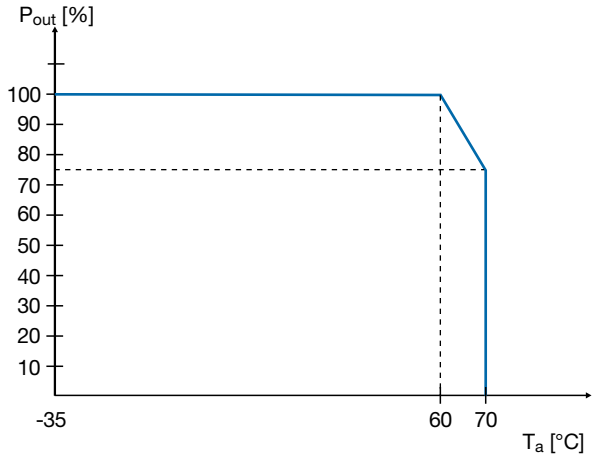
CP-E 48/10.0

Wiring schematics



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

CP-E Range
Technical diagrams



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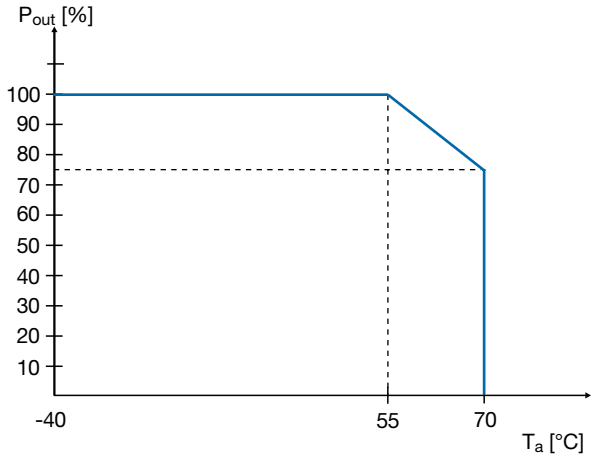
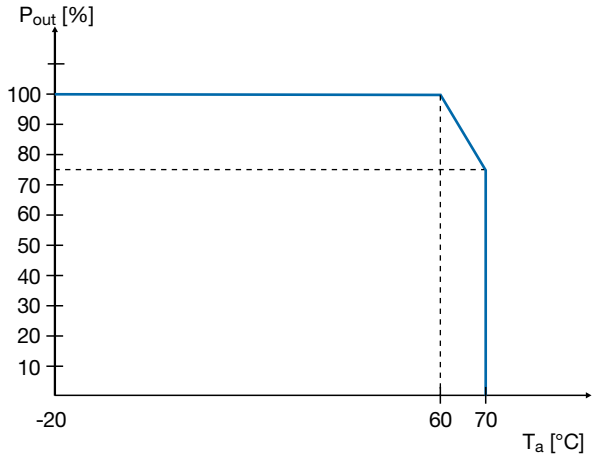


CP-E 24/20.0, CP-E 48/10.0



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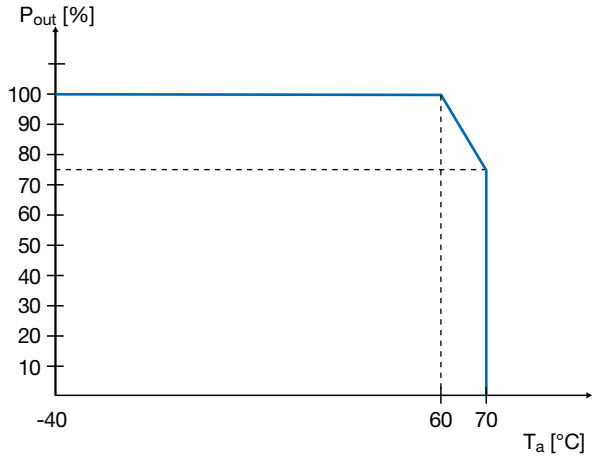

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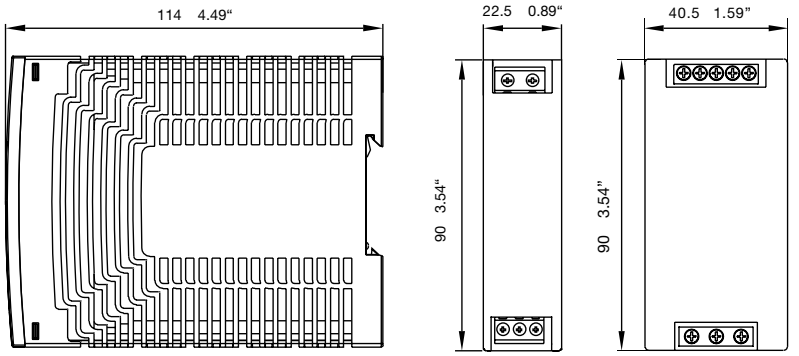
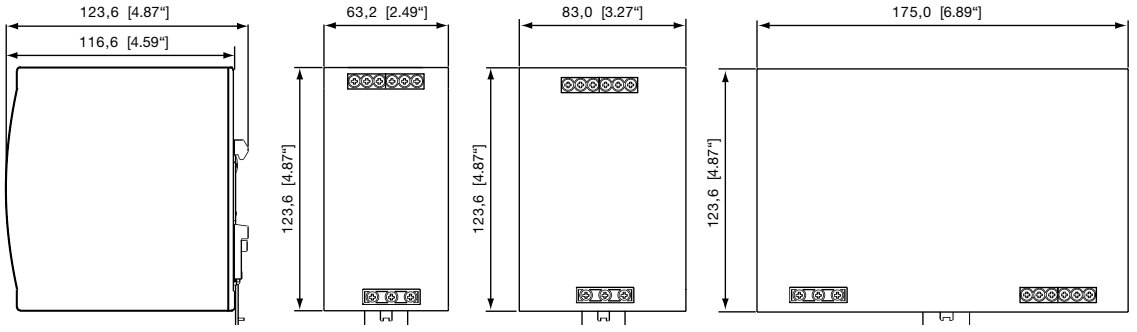
CP-E Range
Approximate dimensions



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

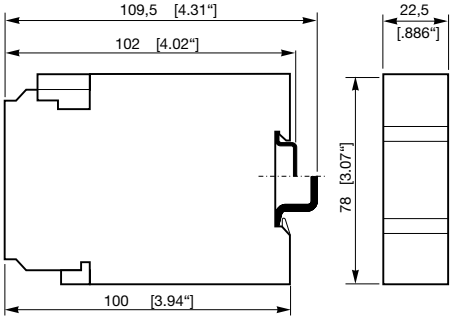
CP-E 12/2.5, CP-E 24/1.25, CP-E 24/2.5, CP-E 48/0.62, CP-E 48/1.25



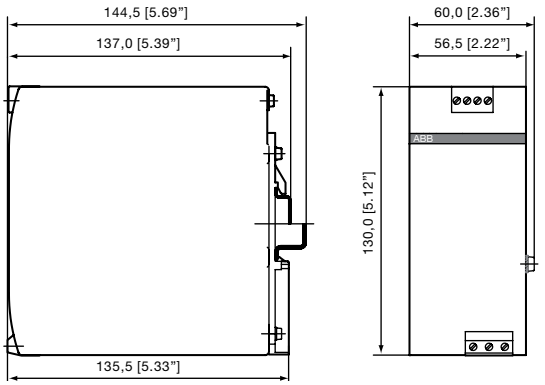
CP-E 12/10.0, CP-E 24/5.0

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

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



CP-RUD



CP-A RU