

# CP-T range

## Technical data

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

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

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Type		CP-T 24/5.0	CP-T 24/10.0	CP-T 24/20.0	CP-T 24/40.0
<b>General data</b>					
Efficiency		typ. 89 %	typ. 90 %		typ. 92 %
Duty time		100%			
Dimensions (W x H x D)		74.3 x 124 x 118.8 mm (2.92 x 4.88 x 4.68 in)	89 x 124 x 118.8 mm (3.5 x 4.88 x 4.68 in)	150 x 124 x 118.8 mm (5.91 x 4.88 x 4.68 in)	275.8 x 124 x 118.8 mm (10.86 x 4.88 x 4.68 in)
Weight		0.78 kg (1.72 lb)	1.045 kg (2.30 lb)	1.657 kg (3.653 lb)	3.275 kg (7.220 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			
<b>Electrical connection - input circuit / output circuit / signalling circuit</b>					
Wire size	fine-strand with wire end ferrule	0.2-4 mm <sup>2</sup> (24-11 AWG)			
	fine-strand without wire end ferrule	0.2-6 mm <sup>2</sup> (24-10 AWG)			
	rigid	0.2-6 mm <sup>2</sup> (24-10 AWG)			
Stripping length		8 mm (0.31 in)			
Tightening torque	input / output	1 Nm (9 lb.in) / 0.6 Nm (5.5 lb.in)			1 Nm (9 lb.in) / 1.8 Nm (15.6 lb.in)
<b>Environmental data</b>					
Ambient temperature range	operation	-40...+70 °C		-30...+70 °C	-40...+70 °C
	rated load	-40...+60 °C		-30...+60 °C	-40...+60 °C
	storage	-40...+85 °C			
Damp heat (cyclic) (IEC/EN 60068-2-30)		95 % without condensation			
Vibration (sinusoidal) (IEC/EN 60068-2-6)		2 g, 10-500 Hz, 2G, each along X, Y, Z axes 60 min / cycle			
Shock (half-sine) (IEC/EN 60068-2-27)		15 g, 11 ms, 3 axes, 6 faces, 3 times for each face			
<b>Isolation data</b>					
Rated insulation voltage $U_i$	input circuit / output circuit	3 kV AC			
	input / PE	1.5 kV AC			
	output / PE	0.5 kV AC; 0.71 kV DC			
	signalling output / PE	0.5 kV DC			
Pollution degree		2			
<b>Standards</b>					
Product standard		EN 61204-3			
Low Voltage Directive		2006/95/EC			
EMC directive		2004/108/EC			
RoHS directive		2011/65/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			
<b>Electromagnetic compatibility</b>					
Interference immunity to		IEC/EN 61000-6-2			
electrostatic discharge	IEC/EN 61000-4-2	Level 4 (air discharge 15 kV / contact discharge 8 kV)			
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	Level 3 (10 V/m)			
electrical fast transient/burst	IEC/EN 61000-4-4	Level 4 (4 kV / 2.5 kHz)	Level 4 (4 kV / 5 kHz)		
surge	IEC/EN 61000-4-5	L-L Level 3 (2 kV) / L-PE Level 4 (4 kV)			
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	Level 3 (10 V)			
power frequency magnetic fields	IEC/EN 61000-4-8	Level 4 (30 A/m)			
voltage dips, short interruptions and voltage variations	IEC/EN 61000-4-11	dips: >95 % 0.5 ms / >30 % 0.5 ms, interruptions: >95 % 250 ms			
Interference emission		IEC/EN 61000-6-3			
high-frequency radiated	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 A			

"Approvals and marks" on page 182

# CP-T range

## Technical data

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

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

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Type		CP-T 48/5.0	CP-T 48/10.0	CP-T 48/20.0
<b>General data</b>				
Efficiency		typ. 91 %		typ. 93 %
Duty time		100%		
Dimensions (W x H x D)		89 x 124 x 118.8 mm (3.5 x 4.88 x 4.68 in)	150 x 124 x 118.8 mm (5.91 x 4.88 x 4.68 in)	275.8 x 124 x 118.8 mm (10.86 x 4.88 x 4.68 in)
Weight		1.045 kg (2.30 lb)	1.657 kg (3.653 lb)	3.275 kg (7.22 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		
<b>Electrical connection - input circuit / output circuit</b>				
Wire size	fine-strand with wire end ferrule	0.2-4 mm <sup>2</sup> (24-11 AWG)		0.2-4 mm <sup>2</sup> (24-11 AWG) / 0.5-10 mm <sup>2</sup> (20-8 AWG)
	fine-strand without wire end ferrule rigid	0.2-6 mm <sup>2</sup> (24-10 AWG)		
Stripping length		8 mm (0.31 in)		
Tightening torque	input / output	1 Nm (9 lb.in) / 0.6 Nm (5.5 lb.in)		1 Nm (9 lb.in) / 1.8 Nm (15.6 lb.in)
<b>Environmental data</b>				
Ambient temperature range	operation	-40...+70 °C	-30...+70 °C	-40...+70 °C
	rated load	-40...+60 °C	-30...+60 °C	-40...+60 °C
	storage	-40...+85 °C	-40...+85 °C	-40...+85 °C
Damp heat (cyclic) (IEC/EN 60068-2-30)		95 % without condensation		
Vibration (sinusoidal) (IEC/EN 60068-2-6)		10-500 Hz, 2G, each along X, Y, Z axes 6 min / cycle		
Shock (half-sine) (IEC/EN 60068-2-27)		15G, 11 ms, 3 axes, 6 Faces, 3 times for each face		
<b>Isolation data</b>				
Rated insulation voltage $U_i$	input circuit / output circuit	3 kV AC		
	input / PE	1.5 kV AC		
	output / PE	0.5 kV AC; 0.71 kV DC		
Pollution degree		2		
<b>Standards</b>				
Product standard		EN 61204-3		
Low Voltage Directive		2006/95/EC		
EMC directive		2004/108/EC		
RoHS directive		2011/65/EC		
Electrical safety		EN 60950-1, UL 60950-1, UL 508, EN 61558-1, EN 61558-2-16; EN 60204-1		
Protective low voltage		SELV		
<b>Electromagnetic compatibility</b>				
Interference immunity to		IEC/EN 61000-6-2		
electrostatic discharge	IEC/EN 61000-4-2	Level 4 (air discharge 15 kV / contact discharge 8 kV)		
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	Level 3 (10 V/m)		
electrical fast transient/burst	IEC/EN 61000-4-4	Level 4 (4 kV / 5 kHz)		
surge	IEC/EN 61000-4-5	L-L Level 3 (2 kV) / L-PE Level 4 (4 kV)		
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	Level 3 (10 V)		
power frequency magnetic fields	IEC/EN 61000-4-8	Level 4 (30 A/m)		
voltage dips, short interruptions and voltage variations	IEC/EN 61000-4-11	dips: >95 % 0.5 ms / >30 % 0.5 ms interruptions: >95 % 250 ms IEC/EN 61000-6-3		
Interference emission				
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 A		

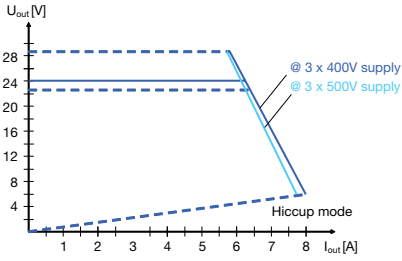
"Approvals and marks" on page 182

# CP-T range

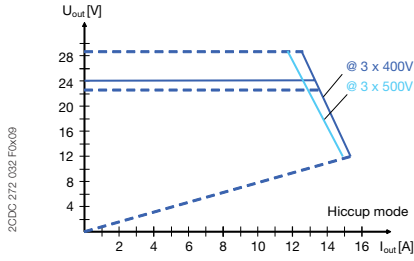
## Technical diagrams, Dimensional drawings

Technical diagrams, dimensions in mm  
Output curve at  $T_a = 25\text{ }^\circ\text{C}$

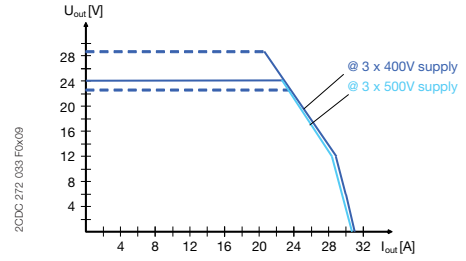
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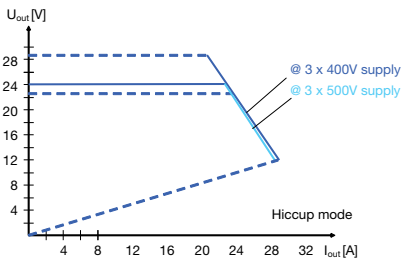
CP-T 24/5.0



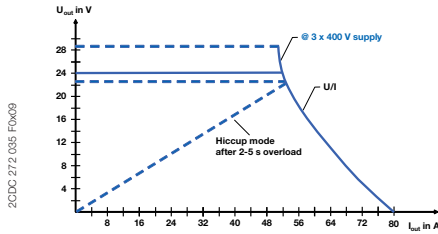
CP-T 24/10.0



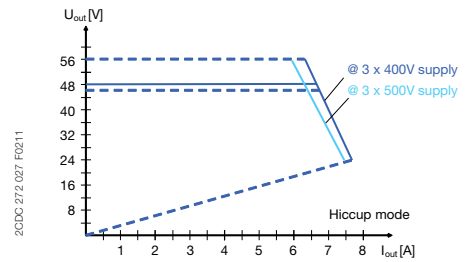
CP-T 24/20.0 U/I curve



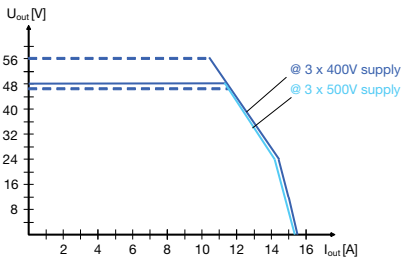
CP-T 24/20.0 Hiccup mode



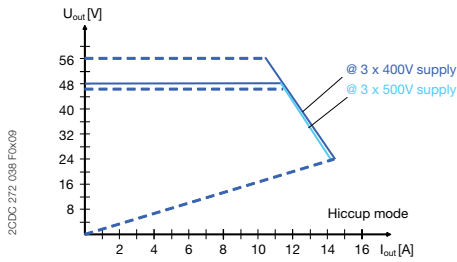
CP-T 24/40.0



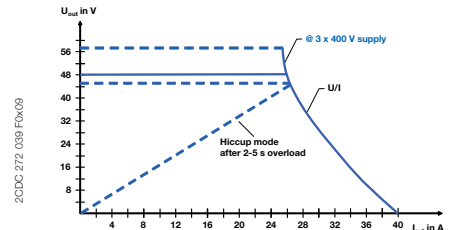
CP-T 48/5.0



CP-T 48/10.0 U/I curve

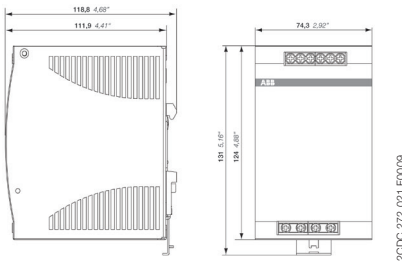


CP-T 48/10.0 Hiccup mode

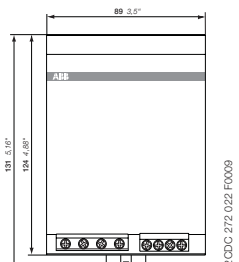


CP-T 48/20.0

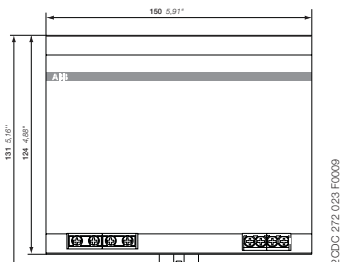
## Dimensional drawings dimensions in mm



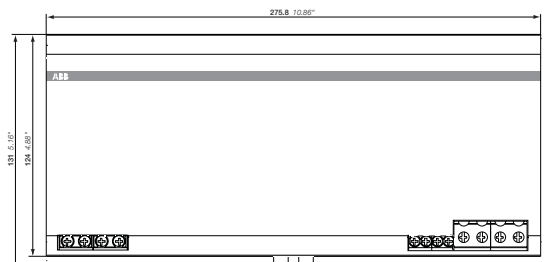
CP-T 24/5.0



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



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

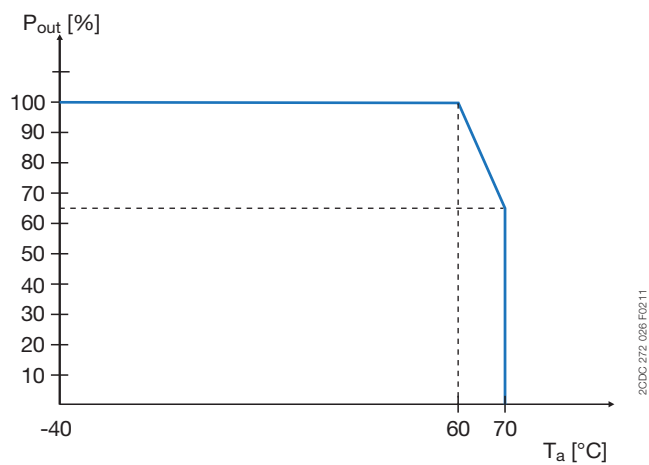


CP-T 24/40.0, CP-T 48/20.0

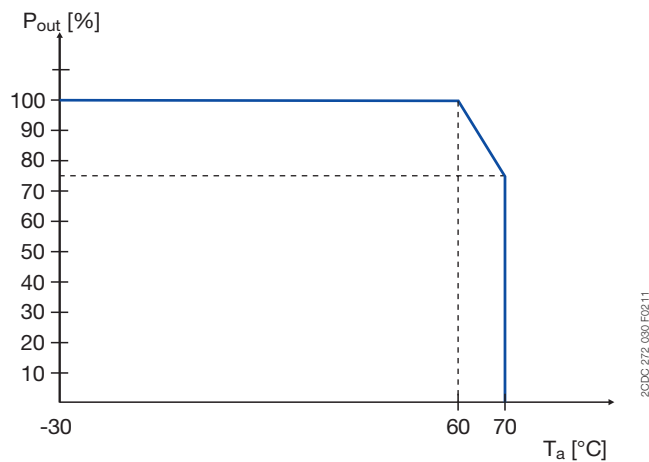
# CP-T range

## Technical diagrams

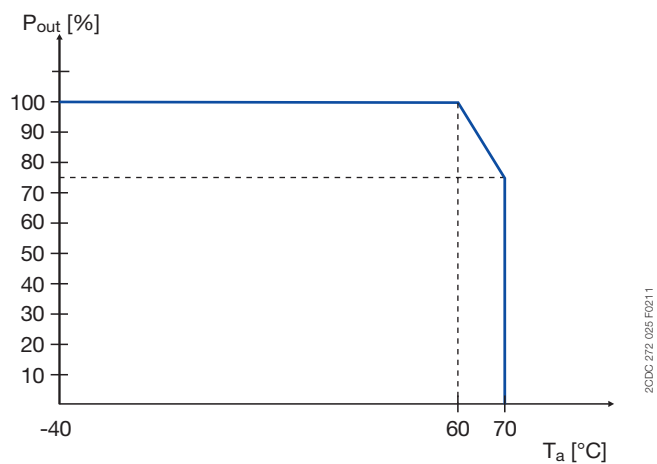
### Temperature curve at rated load



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



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



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