

CP-T range Product group picture

3



CP-T range

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CP-T range

Benefits and advantages

Characteristics

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



¹⁾ 480 W variants: -30...+70°C

Benefits

Signalling output ①

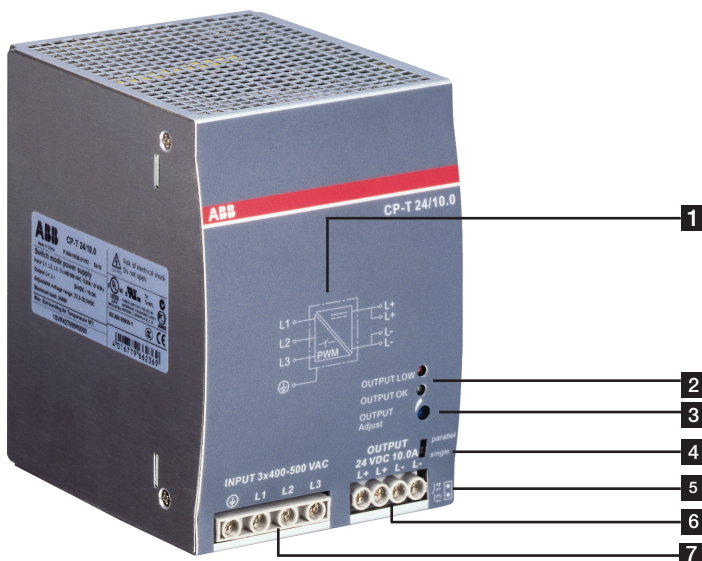
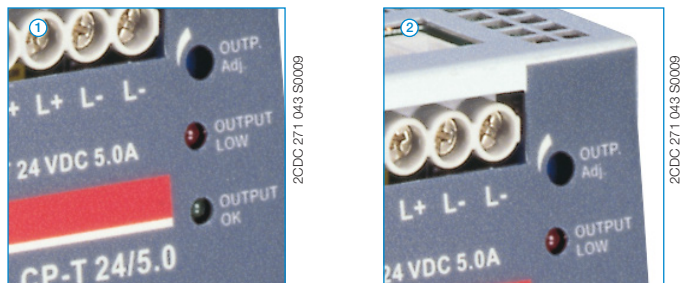
The devices of the CP-T series offer a solid state output for function monitoring and remote diagnostics.

Wide input range

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

Adjustable output voltage ②

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



1 Circuit diagram

2 Indication of operational states

DC ON: green LED - green LED - output voltage OK

DC LOW: red LED - output voltage too low

3 single/parallel: sliding switch - adjustment of single or parallel operation

4 Configuration of single or parallel operation

5 Signalling contact

OUTPUT 13-14: terminals - signalling contact

A solid-state output indicates the error-free operation of the output voltage.

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

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

CP-T range

Ordering details



2CDC 271 048 S0009

CP-T 24/5.0



2CDC 271 048 S0009

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



2CDC 271 047 S0009

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

Description

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

Ordering details

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

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
Input circuit				
L1, L2, L3				
Rated input voltage U_n	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 < 0.25 mA			
Indication of operational states				
Output voltage	OUTPUT OK: green LED		output voltage OK	
	OUTPUT LOW: red LED		output voltage too low	
Output circuit				
L+, L+, L-, L-				
Rated output voltage	24 V DC			
Tolerance of the output voltage	0...+1 %			
Adjustment range of the output voltage	22.5-28.5 V DC			
Rated output power	120 W	240 W	480 W	960 W
Rated output current I_r	$T_a \leq 60\text{ °C}$ 5 A	10 A	20 A	40 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 μF	max. 1.5 s		
Rise time	at nominal load	max. 150 ms		
	with 3500 μF	max. 500 ms		
Fall time		max. 150 ms		
Residual ripple and switching peaks	BW = 20 MHz	100 mV		80 mV
Parallel connection		not supported	configurable, to increase power, up to 2 devices, min. $0.1 I_r$ - max $0.9 I_r$	to increase power, up to 2 devices, min. $0.1 I_r$ - max. $0.9 I_r$, use active current balancing
Series connection		not supported	yes, to increase voltage, max. 2 devices	
Resistance to reverse feed		approx. 35 V		
Output circuit - No-load, overload and short-circuit behaviour				
Characteristic curve of output	combined U/I characteristic curve and hiccup mode		U/I- or Hiccup-mode adjustable	hiccup / fold back behavior
Short-circuit protection	continuous short-circuit proof			
Short-circuit behaviour	current limiting			
Overload protection	hiccup mode			
No-load protection	continuous no-load stability			
Overtemperature protection	yes, automatic recovery after temperature went down			
Starting of capacitive loads	3500 μF	7000 μF	7000 μF	7000 μF

CP-T range

Technical data

Data at $T_a = 25\text{ °C}$, $U_{in} = 3 \times 400\text{ V AC}$ 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
General data				
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			
Electrical connection - input circuit / output circuit / signalling circuit				
Wire size	fine-strand with wire end ferrule	0,2-4 mm ² (24-11 AWG)		
	fine-strand without wire end ferrule	0,2-6 mm ² (24-10 AWG)		
	rigid	0,2-6 mm ² (24-10 AWG)		
Stripping length	8 mm (0.31 in)			
Tightening torque	input / output	1 Nm (9 lb.in) / 0.6 Nm (5.5 lb.in)		1 Nm (9 lb.in) / 1.8 Nm (15.6 lb.in)
Environmental data				
Ambient temperature range	operation	-40...+70 °C	-30...+70 °C	-40...+70 °C
	rated load	-40...+60 °C	-30...+60 °C	-40...+60 °C
	storage	-40...+85 °C		
Damp heat (cyclic) (IEC/EN 60068-2-30)	95 % without condensation			
Vibration (sinusoidal) (IEC/EN 60068-2-6)	2 g, 10-500 Hz, 2G, each along X, Y, Z axes 60 min / cycle			
Shock (half-sine) (IEC/EN 60068-2-27)	15 g, 11 ms, 3 axes, 6 faces, 3 times for each face			
Isolation data				
Rated insulation voltage U_i	input circuit / output circuit	3 kV AC		
	input / PE	1.5 kV AC		
	output / PE	0.5 kV AC; 0.71 kV DC		
	signalling output / PE	0.5 kV DC		
Pollution degree	2			
Standards				
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			
Electromagnetic compatibility				
Interference immunity to	IEC/EN 61000-6-2			
electrostatic discharge	IEC/EN 61000-4-2	Level 4 (air discharge 15 kV / contact discharge 8 kV)		
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	Level 3 (10 V/m)		
electrical fast transient/burst	IEC/EN 61000-4-4	Level 4 (4 kV / 2.5 kHz)	Level 4 (4 kV / 5 kHz)	
surge	IEC/EN 61000-4-5	L-L Level 3 (2 kV) / L-PE Level 4 (4 kV)		
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	Level 3 (10 V)		
power frequency magnetic fields	IEC/EN 61000-4-8	Level 4 (30 A/m)		
voltage dips, short interruptions and voltage variations	IEC/EN 61000-4-11	dips: >95 % 0.5 ms / >30 % 0.5 ms, interruptions: >95 % 250 ms		
Interference emission	IEC/EN 61000-6-3			
high-frequency radiated	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 3/4.

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
Input circuit			
Rated input voltage U_n	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	T 5 A / 500 V AC
Power factor correction (PFC)	yes, passive		
Discharge current	towards PE < 3.5 mA		
	input / output < 0.25 mA		
Indication of operational states			
Output voltage	OUTPUT OK: green LED OUTPUT LOW: red LED	output voltage OK output voltage too low	
Output circuit			
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	20 A
Derating of the output current	$60\text{ °C} < T_a \leq 70\text{ °C}$ 2.5 %/°C	3.5 %/°C	
Maximum deviation with	load change statical	$\pm 1\%$ (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 μF	max. 1.5 s	
Rise time	at rated load	max. 150 ms	
	with 7000 μF	max. 500 ms	
Fall time	max. 150 ms		
Residual ripple and switching peaks	BW = 20 MHz	100 mV	80 mV
Parallel connection	configurable, to increase power, up to 2 devices, min. 0.1 I_r - max 0.9 I_r)		to increase power, up to 2 devices, min. 0.1 I_r - max. 0.9 I_r use active current balancing
Series connection	yes, to increase voltage, max. 2 devices		
Resistance to reverse feed	approx. 35 V	approx. 63 V	approx. 63 V
Output circuit - No-load, overload and short-circuit behaviour			
Characteristic curve of output	combined U/I and hiccup mode	U/I or hiccup mode, configurable	hiccup mode / fold back behavior
Short-circuit protection	continuous short-circuit proof		
Short-circuit behaviour	current limiting		
Overload protection	hiccup mode		
No-load protection	continuous no-load stability		
Over temperature protection	yes, automatic recovery after temperature went down		
Starting of capacitive loads	7000 μF		

CP-T range

Technical data

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

Type		CP-T 48/5.0	CP-T 48/10.0	CP-T 48/20.0
General data				
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		
Electrical connection - input circuit / output circuit				
Wire size	fine-strand with wire end ferrule	0.2-4 mm ² (24-11 AWG)		0.2-4 mm ² (24-11 AWG) / 0.5-10 mm ² (20-8 AWG)
	fine-strand without wire end ferrule	0.2-6 mm ² (24-10 AWG)		
	rigid			
Stripping length		8 mm (0.31 in)		
Tightening torque	input / output	1 Nm (9 lb.in) / 0.6 Nm (5.5 lb.in)		1 Nm (9 lb.in) / 1.8 Nm (15.6 lb.in)
Environmental data				
Ambient temperature range	operation	-40...+70 °C	-30...+70 °C	-40...+70 °C
	rated load	-40...+60 °C	-30...+60 °C	-40...+60 °C
	storage	-40...+85 °C	-40...+85 °C	-40...+85 °C
Damp heat (cyclic) (IEC/EN 60068-2-30)		95 % without condensation		
Vibration (sinusoidal) (IEC/EN 60068-2-6)		10-500 Hz, 2G, each along X, Y, Z axes 6 min / cycle		
Shock (half-sine) (IEC/EN 60068-2-27)		15G, 11 ms, 3 axes, 6 Faces, 3 times for each face		
Isolation data				
Rated insulation voltage U_i	input circuit / output circuit	3 kV AC		
	input / PE	1.5 kV AC		
	output / PE	0.5 kV AC; 0.71 kV DC		
Pollution degree		2		
Standards				
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		
Electromagnetic compatibility				
Interference immunity to		IEC/EN 61000-6-2		
electrostatic discharge	IEC/EN 61000-4-2	Level 4 (air discharge 15 kV / contact discharge 8 kV)		
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	Level 3 (10 V/m)		
electrical fast transient/burst	IEC/EN 61000-4-4	Level 4 (4 kV / 5 kHz)		
surge	IEC/EN 61000-4-5	L-L Level 3 (2 kV) / L-PE Level 4 (4 kV)		
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	Level 3 (10 V)		
power frequency magnetic fields	IEC/EN 61000-4-8	Level 4 (30 A/m)		
voltage dips, short interruptions and voltage variations	IEC/EN 61000-4-11	dips: >95 % 0.5 ms / >30 % 0.5 ms interruptions: >95 % 250 ms IEC/EN 61000-6-3		
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 3/4.

CP-T range

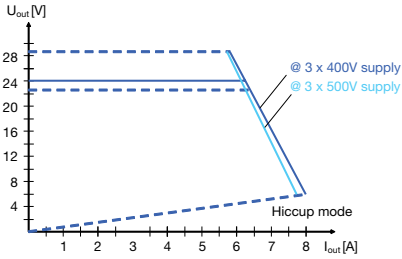
Technical diagrams, Dimensional drawings

Technical diagrams

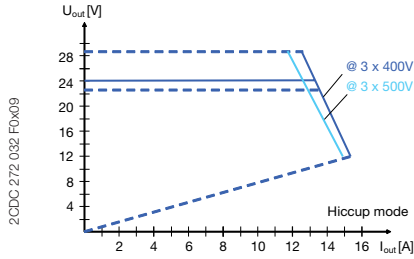
Output curve at $T_j = 25\text{ }^\circ\text{C}$

dimensions in mm

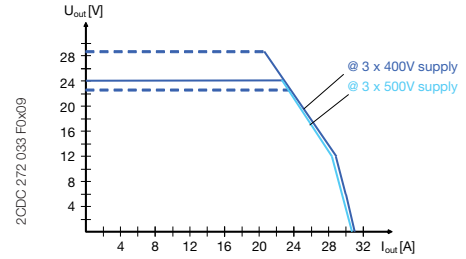
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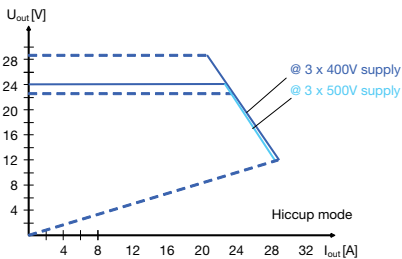
CP-T 24/5.0



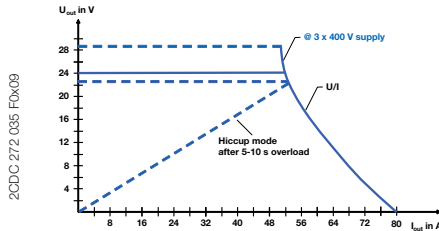
CP-T 24/10.0



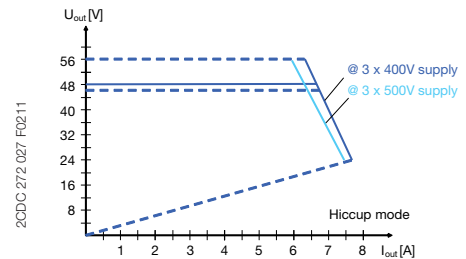
CP-T 24/20.0 U/I curve



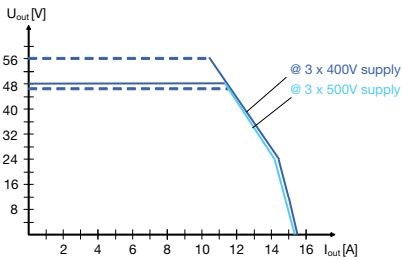
CP-T 24/20.0 Hiccup mode



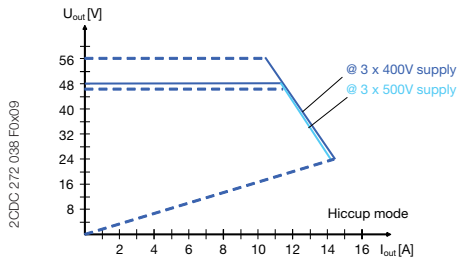
CP-T 24/40.0



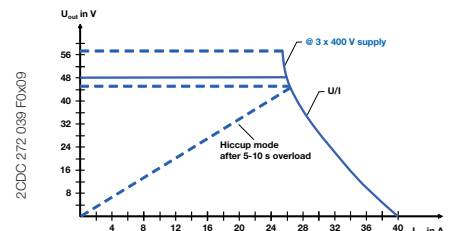
CP-T 48/5.0



CP-T 48/10.0 U/I curve



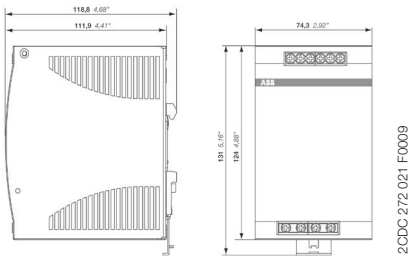
CP-T 48/10.0 Hiccup mode



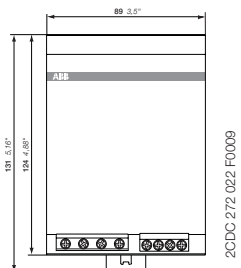
CP-T 48/20.0

Dimensional drawings

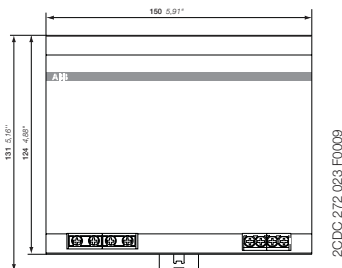
dimensions in mm



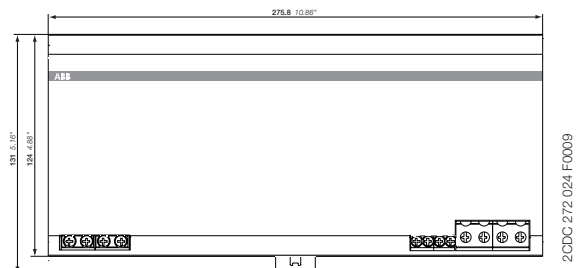
CP-T 24/5.0



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



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

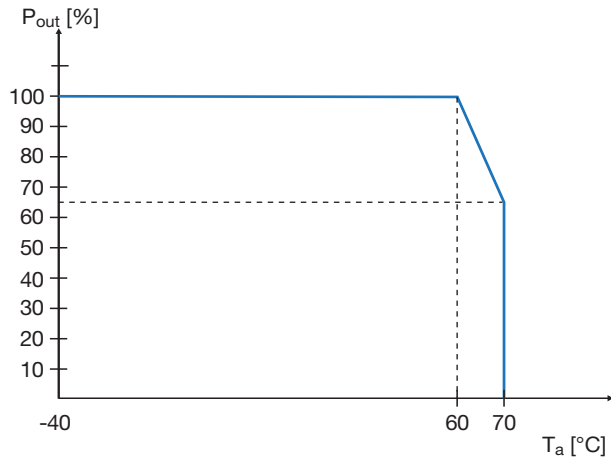


CP-T 24/40.0, CP-T 48/20.0

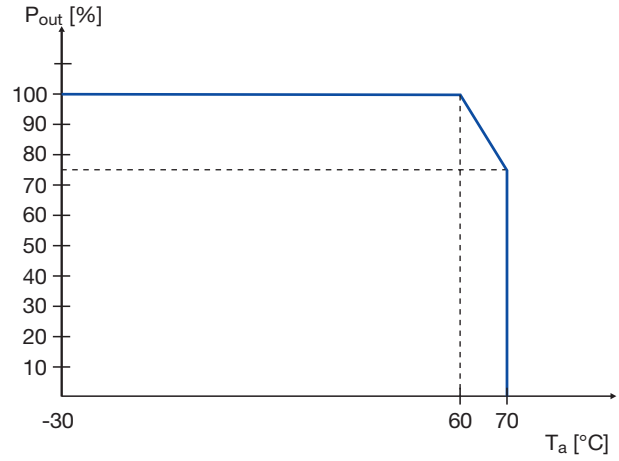
CP-T range

Technical diagrams

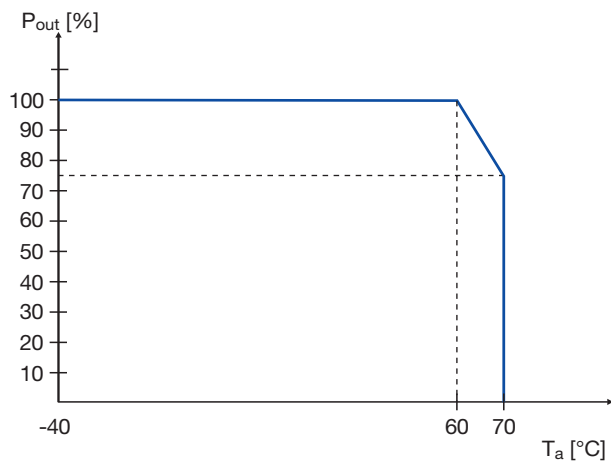
Temperature curve at rated load



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