

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

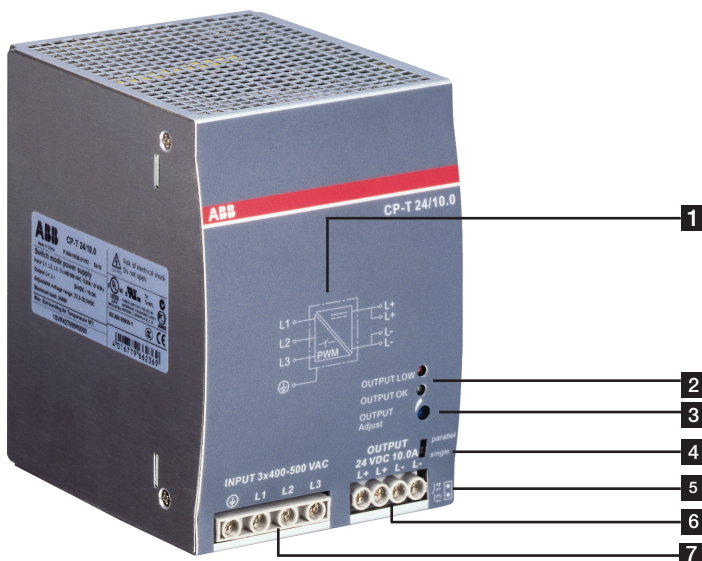
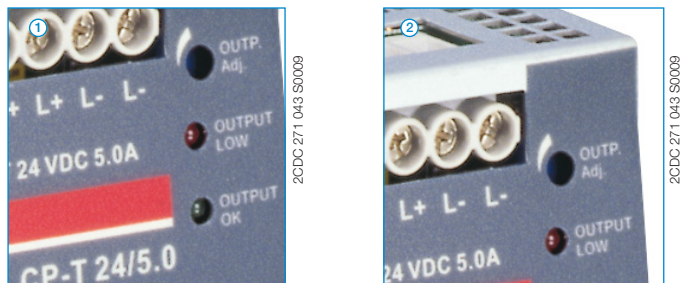
The devices of the CP-T series offer a solid state output for function monitoring and remote diagnostics.

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

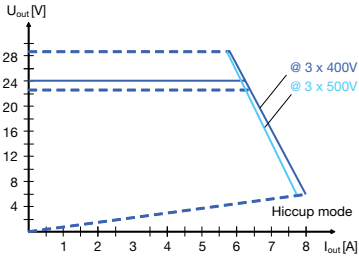
Technical diagrams, Dimensional drawings

Technical diagrams

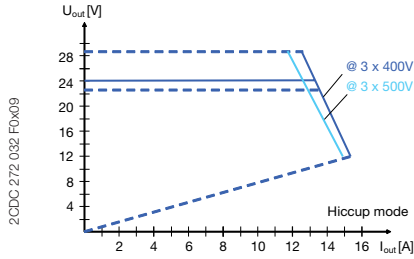
Output curve at $T_j = 25\text{ }^\circ\text{C}$

dimensions in mm

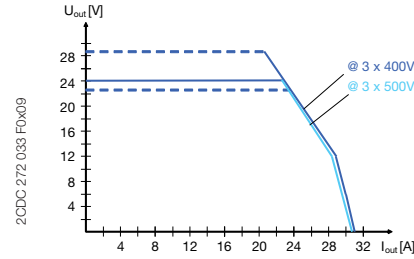
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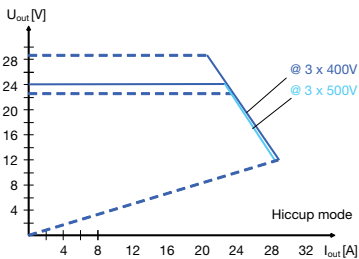
CP-T 24/5.0



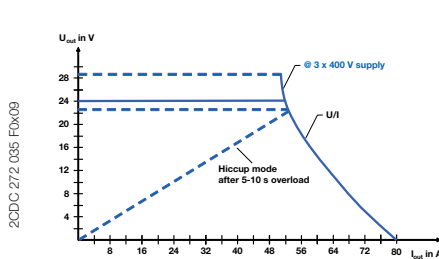
CP-T 24/10.0



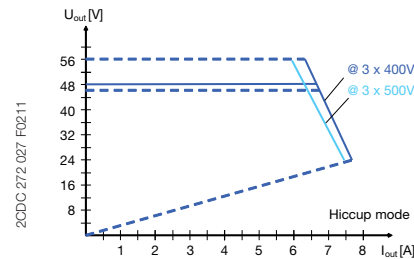
CP-T 24/20.0 U/I curve



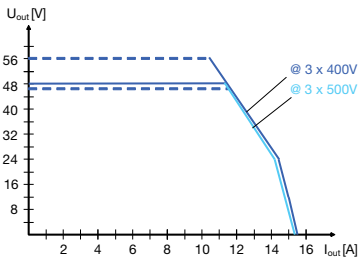
CP-T 24/20.0 Hiccup mode



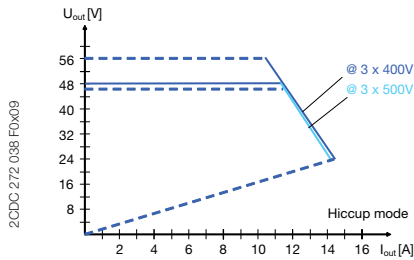
CP-T 24/40.0



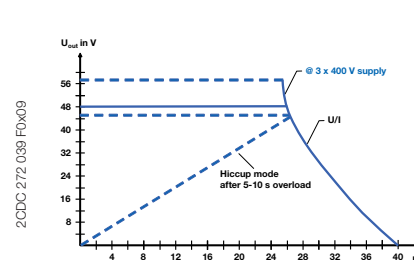
CP-T 48/5.0



CP-T 48/10.0 U/I curve



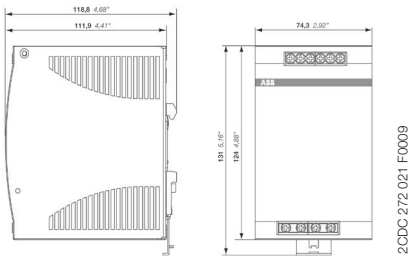
CP-T 48/10.0 Hiccup mode



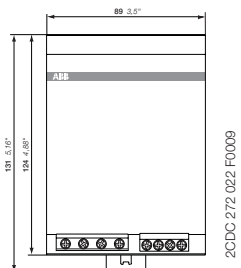
CP-T 48/20.0

Dimensional drawings

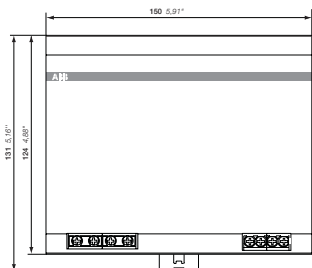
dimensions in mm



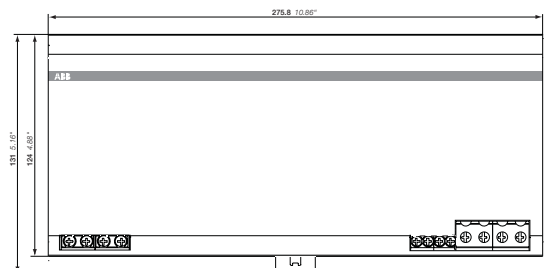
CP-T 24/5.0



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



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

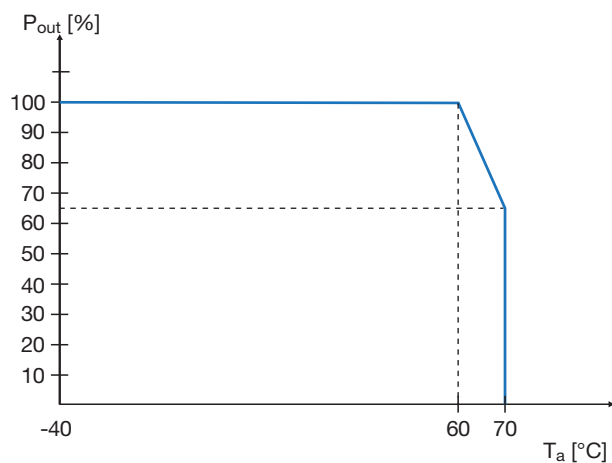


CP-T 24/40.0, CP-T 48/20.0

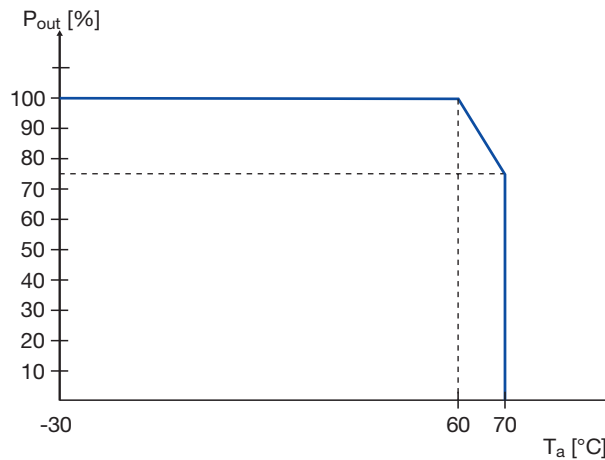
CP-T range

Technical diagrams

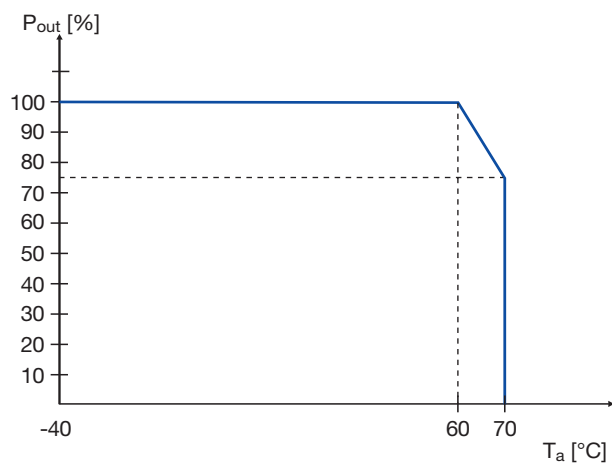
Temperature curve at rated load



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



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