



Switch mode power supplies CP-T Range



Type CP-T Switch mode Power supplies

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):



Benefits

Signalling output

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

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⁾ 480 W variants: -30...+70°C

CP-T Range

Ordering details

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 a AC supply voltage range between 340 to 575 V AC and an DC supply voltage range between 480 to 820VDC.



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

Ordering details

Input voltage range	Rated output voltage / current	Type	Catalog number	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-T 48/5.0	1SVR427054R2000	1.05 (2.31)
340-575 V AC / 480-820 V DC	48 V DC / 10 A	CP-T 48/10.0	1SVR427055R2000	1.75 (3.86)
340-575 V AC / 480-820 V DC	48 V DC / 20 A	CP-T 48/20.0	1SVR427056R2000	3.40 (7.50)

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

suitable for decoupling of two CP-24 V DC power supply units	Description	Type	Catalog number	Weight (1 pce) kg (lb)
≤ 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-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		T3.15 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	
Indication of operational states				
Output voltage	OUTPUT OK: green LED OUTPUT LOW: red LED		output voltage OK 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	$T_a \leq 60\text{ °C}$ 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	
Signalling contact for output voltage OK	13-14 Threshold	solid state (max. 60 V DC, 0.3 A)		17.6-19.4 V
Minimum fuse rating to achieve short-circuit protection	13-14		500 V DC	
Maximum deviation with load change statical	$\pm 1\%$	$\geq 60\text{ V DC}$, $\leq 0.3\text{ A}$ fast-acting		$\pm 1\%$ (single mode) $\pm 5\%$ (parallel mode)
Control time at nominal load	change of output voltage within the input voltage range		$\pm 0.5\%$	
Starting time after applying the supply voltage	with 3500 μF		< 2 ms	
Rise time at nominal load with 3500 μF	at I_r		max. 1 s	
Fall time	with 3500 μF		max. 1.5 s	
Residual ripple and switching peaks	BW = 20 MHz		max. 150 ms	
Parallel connection	not supported	100 mV configurable, to increase power, up to 2 devices, reduction: (number of devices x I) x 0.9		80 mV to increase power, up to 2 devices, reduction: (number of devices x I) x 0.9, 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 behavior				
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 behavior	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
General data				
Efficiency	typ. 89 %		typ. 90 %	
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)	

CP-T Range

Technical data

Data at $T_a = 25\text{ °C}$, $U_n = 3 \times 400\text{ V AC}$ 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
Degree of protection	housing / terminals			
Protection class	IP20 / IP20			
Electrical connection - input circuit / output circuit				
Wire size				Input circuit L1, L2, L3: 0.2-4 mm ² (24-11 AWG) Output circuit L+, L+, L-, L-: 0.5-10 mm ² (20-8 AWG) Signalling circuit: 0.2-4 mm ² (24-11 AWG)
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)		Input circuit L1, L2, L3: 0.2-6 mm ² (24-11 AWG) Output circuit L+, L+, L-, L-: 0.5-16 mm ² (20-6 AWG) Signalling circuit: 0.2-6 mm ² (24-10 AWG)
rigid		0.2-6 mm ² (24-10 AWG)		Input circuit L1, L2, L3: 0.2-6 mm ² (24-11 AWG) Output circuit L+, L+, L-, L-: 0.5-16 mm ² (20-6 AWG) Signalling circuit: 0.2-6 mm ² (24-10 AWG)
Stripping length	8 mm (0.31 in)			
Tightening torque	input / output	1 Nm / 0.6 Nm		1 Nm / 1.8 Nm

Environmental data

Ambient temperature range	operation	-40...+70 °C	-30...+70 °C	-40...+70 °C
	rated load	-40...+70 °C	-30...+70 °C	-40...+70 °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, 2G, each along X, Y, Z axes 6 min / cycle			
Shock (half-sine) (IEC/EN 60068-2-27)	Half sine wave, 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
Pollution degree	input / PE	1.5 kV AC 2

Standards

Product standard	EN 61204-3
Low Voltage Directive	2006/95/EN
EMC directive	2004/108/EN
RoHS directive	2002/95/EN
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 electrostatic discharge	IEC/EN 61000-4-2	IEC/EN 61000-6-2 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 11.3.

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		L1, L2, L3	
Rated input voltage U_n		3 x 400-500 V AC	
Input voltage ranget		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	T 3.15 A / 500 V AC
Power factor correction (PFC)			yes, passive
Discharge current	towards PE input / output		< 3.5 mA < 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		L+, L+, L-, L-	
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 _n	$T_a \leq 60\text{ °C}$ 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	±1 % (single mode) ±5 % (parallel mode)	
	change of output voltage within the input voltage range at rated load	±0.5 %	
Control time		< 2 ms	
Starting time after applying the supply voltage	at I _n with 7000 µF	max. 1 s max. 1.5 s	
Rise time	at rated load with 7000 µF	max. 150 ms 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, reduction: (number of devices x I _n) x 0.9	to increase power, up to 2 devices, reduction: (number of devices x I _n) x 0.9, 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 behavior			
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 behavior		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	
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	

CP-T Range

Technical data

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

Type		CP-T 48/5.0	CP-T 48/10.0	CP-T 48/20.0
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 (20-6 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 / 0.6 Nm		1 Nm / 1.8 Nm

Environmental data

Ambient temperature range	operation	-40...+70 °C	-30...+70 °C	-40...+70 °C
	rated load	-40...+70 °C	-30...+60 °C	-40...+70 °C
	storage	-40...+70 °C	-40...+85 °C	-40...+70 °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)		Half sine wave, 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		
Pollution degree		2		

Standards

Product standard	IEC/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		
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 11.3.

CP-T Range

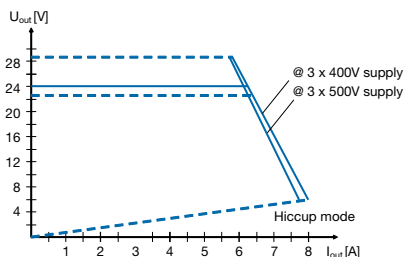
Technical diagrams

Approximate dimensions

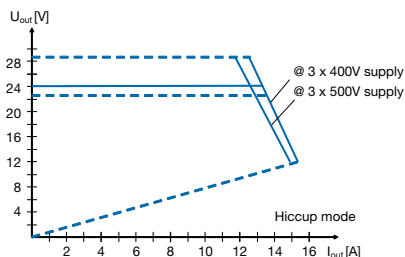
Technical diagrams

dimensions in mm

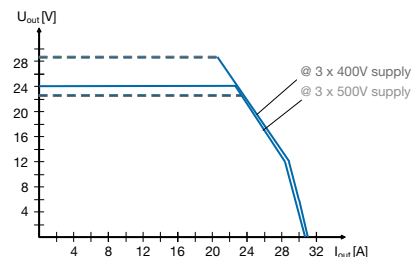
Output curve at $T_{ij} = 25\text{ }^{\circ}\text{C}$



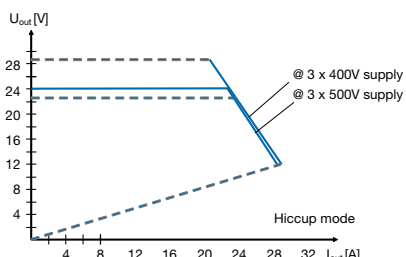
CP-T 24/5.0



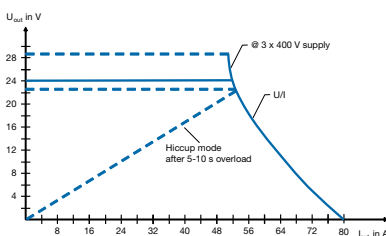
CP-T 24/10.0



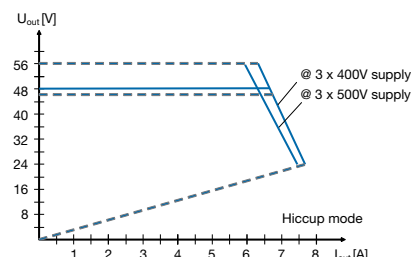
CP-T 24/20.0 U/I curve



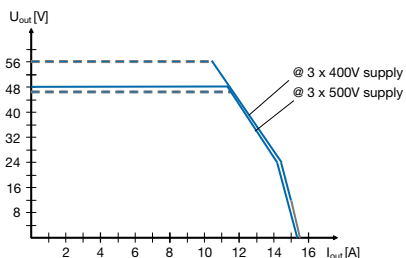
CP-T 24/20.0 Hiccup mode



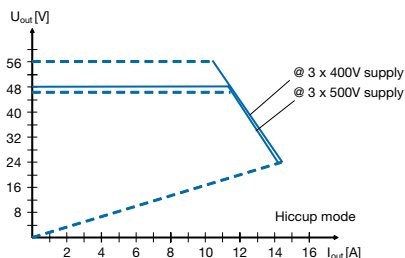
CP-T 24/40.0



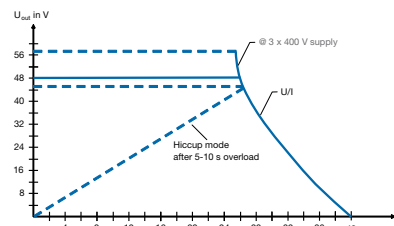
CP-T 48/5.0



CP-T 48/10.0 U/I curve



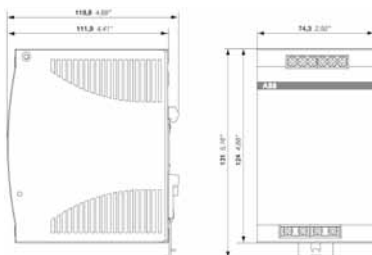
CP-T 48/10.0 Hiccup mode



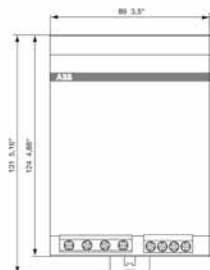
CP-T 48/20.0

Approximate dimensions

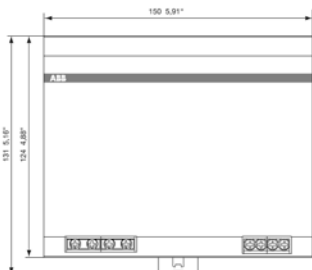
dimensions in mm



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

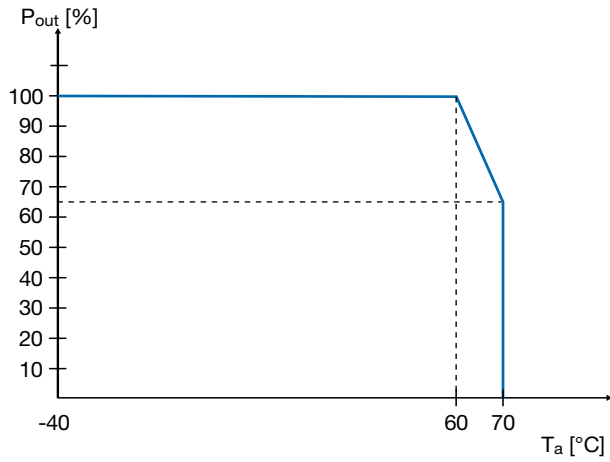


CP-T 24/40.0, CP-T 48/20.0

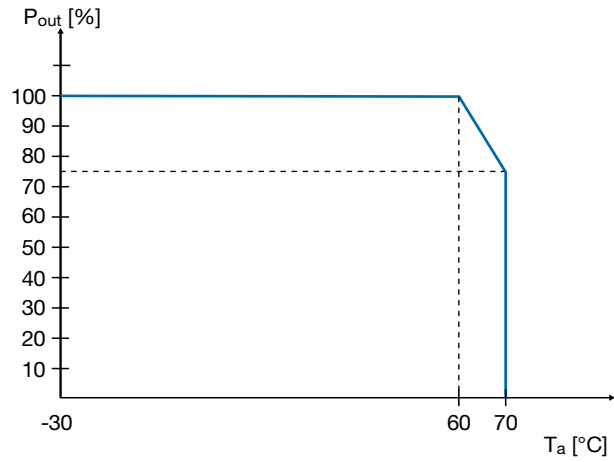
CP-T Range

Technical diagrams

Temperature curve at rated load

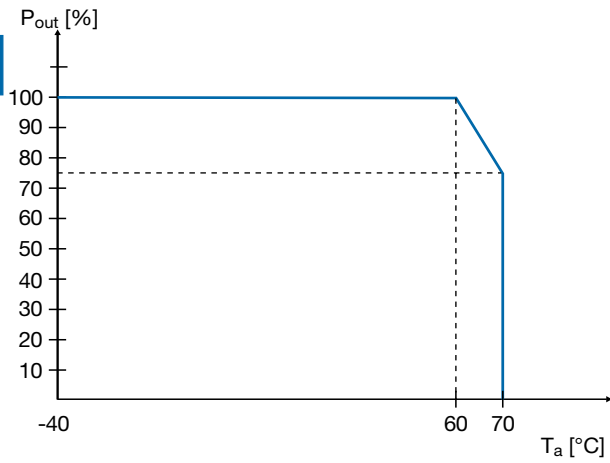


CP-T 24/40.0, CP-T 48/20.0



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

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