

Power supply CP-C.1 24/10.0

Product revision \geq F

High-performance primary switch mode power supply

The CP-C.1 power supplies are ABB's high-performance and most advanced range. With excellent efficiency, high reliability and innovative functionality they are prepared for the most demanding industrial applications. These power supplies have a 50 % integrated power reserve and operate at an efficiency of up to 94 %. They are equipped with overheat protection and active power factor correction. Combined with a broad AC and DC input range and extensive worldwide approvals the CP-C.1 power supplies are the preferred choice for professional DC applications. Giving the power to control.



2DDC 271 001 V0015

Characteristics

- Rated output voltage 24 V DC
- Power reserve design delivers up to 150 % at $T_a \leq 40$ °C
- Output voltage adjustable via front-face rotary potentiometer "OUTPUT Adjust", 22.5-28.5 V
- Input voltage range 100-240 V AC, 90-300 V DC
- High efficiency
- Low power dissipation and low heating
- Free convection cooling (no forced cooling)
- Devices with coated PCBAs for harsh environments and with extended temperature range
- Open-circuit, overload and short-circuit stable
- Integrated input fuse
- DC OK - signaling output "13-14" (relay), power reserve signaling output " $I > I_R$ " (transistor)
- Redundancy unit CP-A RU offering true redundancy, available as accessory

Approvals



UL 508, CSA-C22.2 NO. 107.1



ANSI/ISA-12.12, CAN/CSA C22.2 No. 213 (Class I, Div. 2, hazardous locations)



UL 60950-1, CAN/CSA C22.2 No.60950-1



EAC only uncoated version



ATEX only coated version

SEMI F47

Marks



CE



RCM

Ordering details - CP-C.1

| Input voltage range | Rated output voltage / current | PCBA | Type | Order code | Weight (1 pc.) kg (lb) |
|---------------------------|--------------------------------|----------|------------------|-----------------|---------------------------|
| 100-240 V AC, 90-300 V DC | 24 V DC / 10 A | uncoated | CP-C.1 24/10.0 | 1SVR360663R1001 | 1.07 (2.36) |
| 100-240 V AC, 90-300 V DC | 24 V DC / 10 A | coated | CP-C.1 24/10.0-C | 1SVR360663R2001 | 1.09 (2.40) |

Related products

| Description | Redundancy unit | Type | Order code | Weight (1 pc.) kg (lb) |
|--|----------------------------|---------|-----------------|---------------------------|
| 2 inputs each up to 20 A and 1 output up to 40 A | ≤ 40 V and ≥ 5 A | CP-A RU | 1SVR427071R0000 | 0.89 (1.96) |

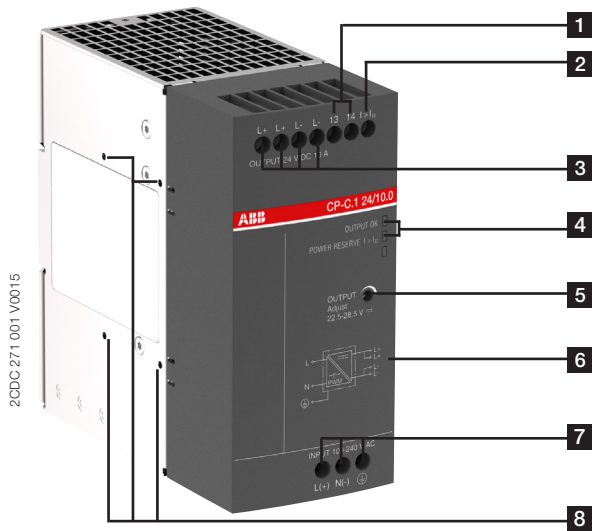
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Abbreviations

| |
|---|
| MCB - Miniature circuit breaker |
| AC - Alternating current |
| DC - Direct current |
| LED - Light emitting diode |
| L - Line |
| N - Neutral |
| PE - Protective earth |
| PLC - Programmable logic controller |
| DIN - Deutsche Industrie Norm |
| PELV - Protective extra low voltage |
| TN - Terre neutre (neutral grounded) |
| TT - Terre terre (grounded network) |
| IT - Isolé terre (isolated network) |
| VDE - Verein Deutscher Elektrotechniker |
| IP20 - international protection code |
| AWG - American wire gauge |
| IEC - International electrotechnical commission |
| UL - Underwriters laboratories |
| EN - Europäische Norm |
| SELV - Safety extra low voltage |
| EMC - Electromagnetic compatibility |
| SEMI - Semiconductor equipment materials international |
| FCC - Federal communication commission |
| CISPR - Comité international spécial des perturbations radioélectriques |
| CSA - Canadian standards association |

Functions



- 1** 13-14: Relay output to signal output OK
- 2** I > I_R: Power reserve transistor output
- 3** OUTPUT L+, L-: Output terminals
- 4** Indication of operational states
OUTPUT OK: Green LED
POWER RESERVE I > I_R: Yellow LED
- 5** OUTPUT Adjust: Rotary potentiometer -
Adjustment of output voltage 22.5 - 28.5 V DC
- 6** Circuit diagram
- 7** INPUT L(+), N(-), ⊕/PE: Input terminals
- 8** Side mounting screw holes for DIN rail adapter / lateral mounting

Application

The primary switch mode power supply CP-C.1 has a wide AC or DC input voltage range. Furthermore the CP-C.1 is equipped with capacitors that ensure a hold-up time of at least 50 ms. This enables worldwide usage and permits safe operation in fluctuating networks and battery-powered applications.

The CP-C.1 power supplies with the robust metallic housing and the reliable construction are suitable for applications in industrial environments. The CP-C.1-C units, having coated PCBAs, enable usage in even harsh industrial environments.

The power reserve of up to 50 % enables trouble-free starting of heavy loads eliminating the need of usage of an oversized power supply.

Power reserve

The primary switch mode power supply CP-C.1 is equipped with a power reserve functionality to handle the start-up of particularly heavy loads (e.g. of a capacitive load or a motor). To ensure that heavy loads are started up, the CP-C.1 delivers additionally up to 50 % of the rated output current to secure the operation of the application. This status is displayed by the yellow LED labelled POWER RESERVE I > I_R.

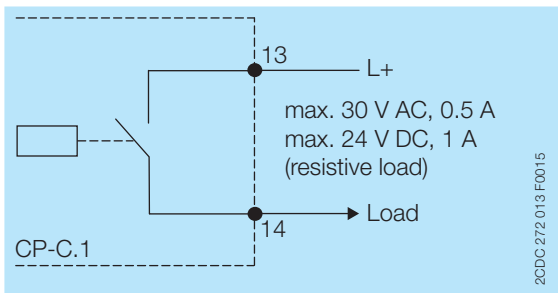
Signaling output

For the communication of the status of the power supply the CP-C.1 is equipped with a relay output to signal output OK as well as a transistor output to indicate when the power reserve is active. These signals can be used for communication to a higher level control system e.g. a PLC.

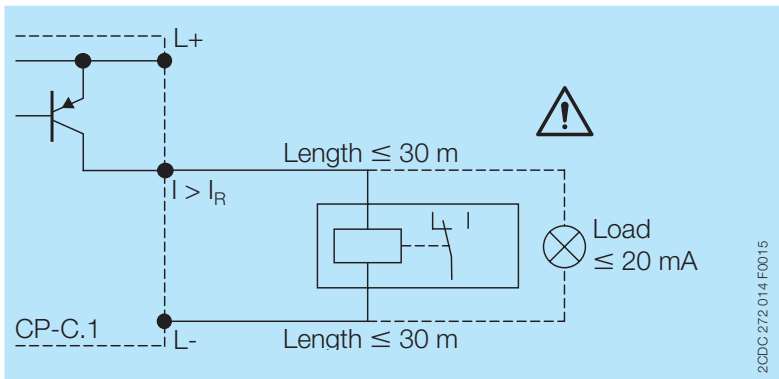
Adjustable output voltage

The CP-C range power supplies feature a continuously adjustable output voltage of 22.5 to 28.5 V DC. Thus they can be optimally adapted to the application, e.g. compensating the voltage drop caused by a long line length.

LED and relay state table



Output OK - relay output



Power reserve - transistor output

LEDs and signaling outputs

| | | | |
|----------------|---|---------------------------|----------------------|
| Output voltage | $\geq 92 \% \text{ of } U_{\text{out}}$ | Output OK: LED green | Relay 13-14 |
| | $< 90 \% \text{ of } U_{\text{out}}$ | | |
| Output current | $I \leq I_R$ | Power reserve: LED yellow | Transistor $I > I_R$ |
| | $I > I_R$ | OFF | ON (closed) |
| | | | OFF (open) |

It is possible to use the messaging and signaling functionality with power supplies connected in parallel. The parallel operation has no influence on the function.

Operating mode

Parallel operation

There are two main reasons for a parallel connection of power supplies:

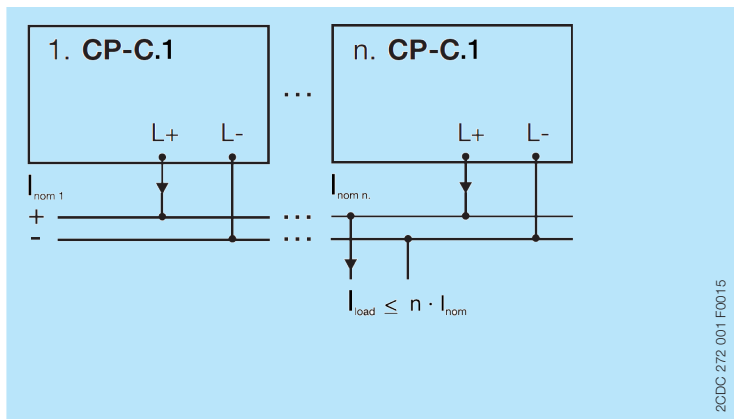
- Increase of power
- Redundancy

Up to 5 devices of the same type can be connected in parallel. For safe and reliable operation it is important to follow the recommendations given in the following section.

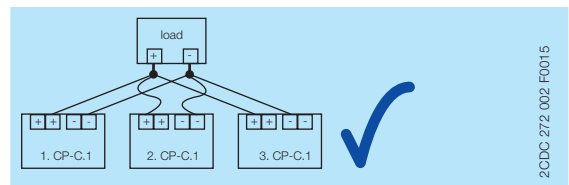
Parallel connection of power supplies for increased power

If the current required by the load is higher than a single power supply can deliver, for example after the expansion of an existing installation, an increase of the output power can be obtained by connecting power supplies in parallel. The following prerequisites have to be fulfilled when connecting power supplies in parallel for the purpose of increased power:

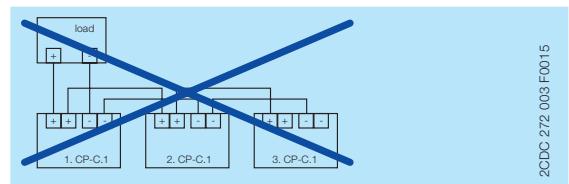
- The paralleled devices must be of the identical type.
- Repeated voltage drops on the supply lines or at the terminals would lead to unbalanced load at the common connection point. To prevent this, you have to observe the following when connecting the power supply units:
 - Identical lengths of the load supply lines.
 - Identical conductor cross sections of the load supply lines.
 - Terminal screws have to be fastened with the same torque to guarantee equal contact resistances.
 - The output voltages of the power supplies must not differ by more than 50 mV. Otherwise, safe operation is not possible.



Installation for increased power



Correct wiring for increased power



Incorrect wiring for increased power

Important:

The devices must not be connected directly to each other! This could lead to an overload of the terminals since the terminals are dimensioned for the maximum output current of a single power supply only. Always use a common connection point!

Parallel connection of power supplies for redundancy

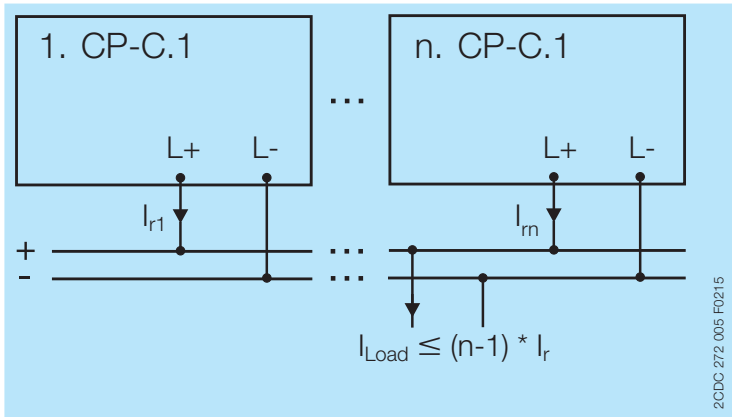
Several power supplies are connected in parallel in order to guarantee continuous operation of the system if one power supply fails. CP-C.1 can be used in two different redundancy modes depending on what type of redundancy is required:

- Simple redundancy, n+1
- True redundancy

Simple redundancy, n+1 redundancy

For simple or n+1 redundancy, the power supplies are connected in parallel like for the increase of capacity. To achieve redundancy the current required by the load must not exceed the maximum output power of one single power supply (in case of "1+1 redundancy") or n power supplies (where n is max. 4).

We recommend connecting the primary sides of the power supplies to different phases of the mains in order to obtain continuous operation of the system if one phase fails.



Simple redundancy or n+1 setup

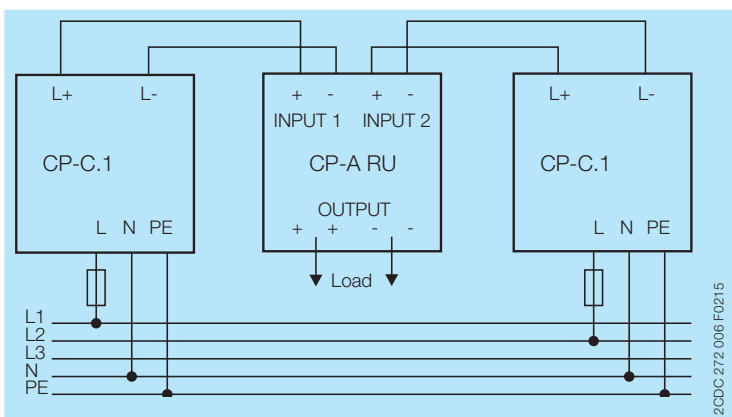
True redundancy

True redundancy gives higher system availability compared to simple or n+1 redundancy.

In a true redundancy setup the power supplies are decoupled from each other with decoupling diodes. This protects the individual power supplies from affecting each other in case of failure of one unit or short circuit on the secondary side or in the wiring.

For two inputs of up to 20 A and one output up to 40 A the ABB redundancy unit CP-A RU (available as an accessory) can be used.

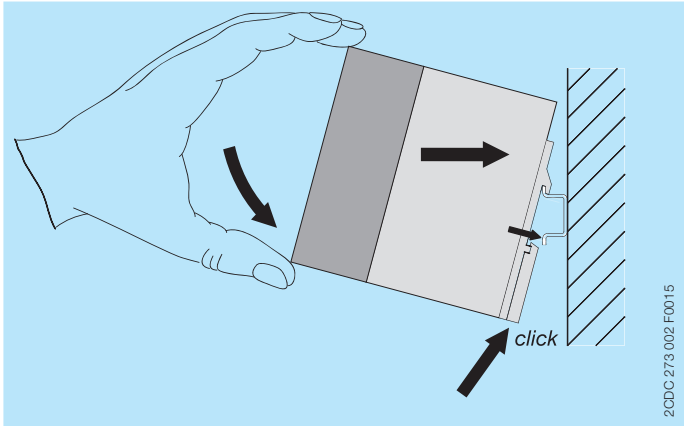
The inputs of these units are connected to the terminals L+ and L- of the power supplies. The loads are supplied directly from the outputs of the redundancy unit.



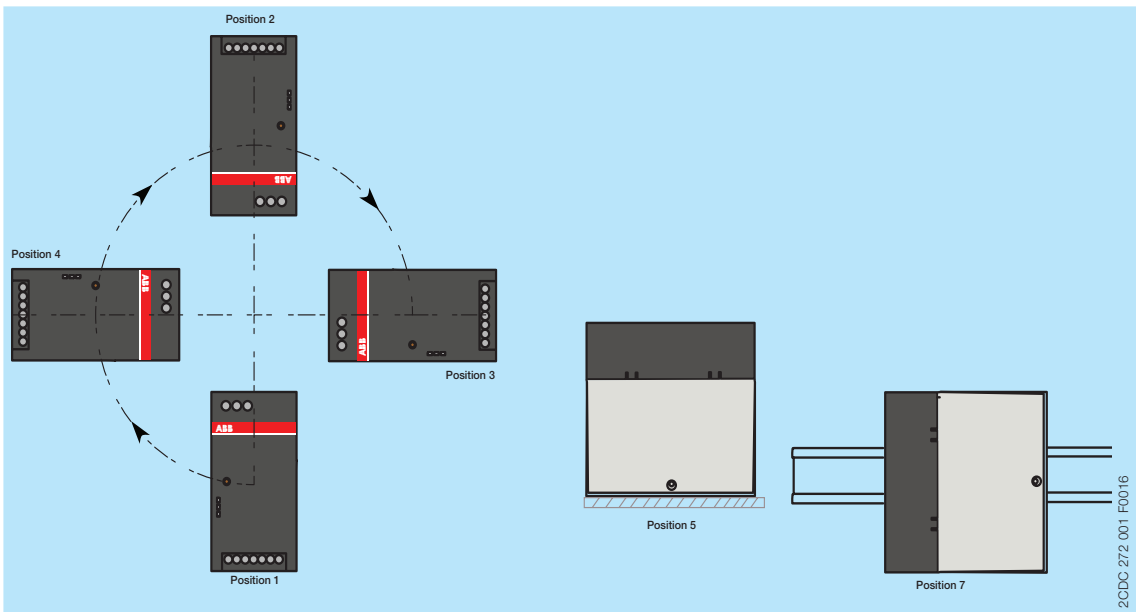
True redundancy using a CP-A RU redundancy unit

Mounting

To mount the power supply place the upper edge of the DIN rail adapter on the upper edge of the DIN rail holding the unit slightly tilted upwards as shown in the illustration. Then tilt the unit down until the latch snaps onto the DIN rail.

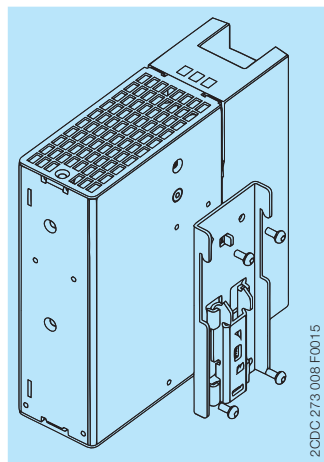
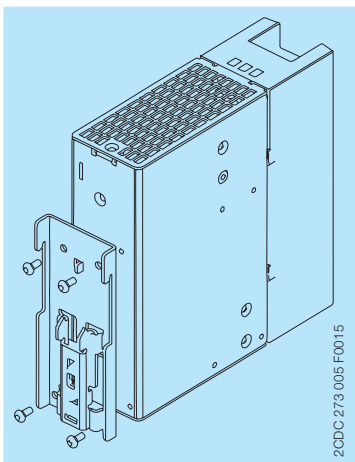


Mounting positions



In order to ensure a sufficient convection in mounting position 1, the minimum distance to other modules must not be less than 25 mm in vertical direction and 25 mm in horizontal direction. For the derating of the output current, see the characteristic curve of temperature. Details for other mounting positions on request.

Mounting CP-C.1 in position 7



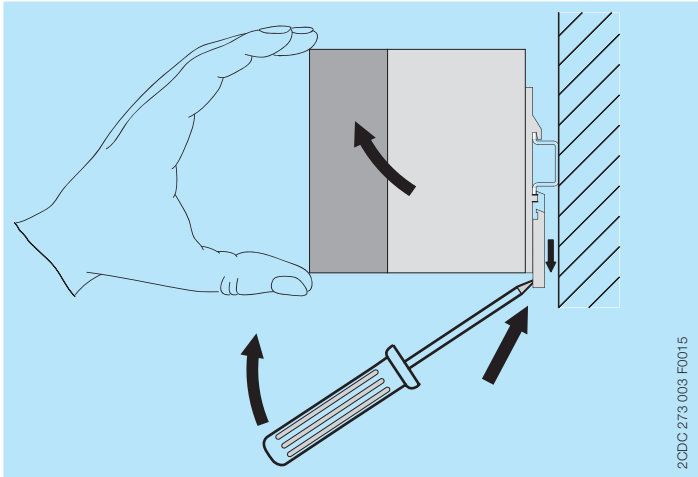
To mount the power supply in position 7 remove the DIN rail adapter that is fastened with 4 screws and attach it on the side of the power supply.

Screwdriver: Torx T10

Tightening torque: 0.7 ± 0.1 Nm

Demounting

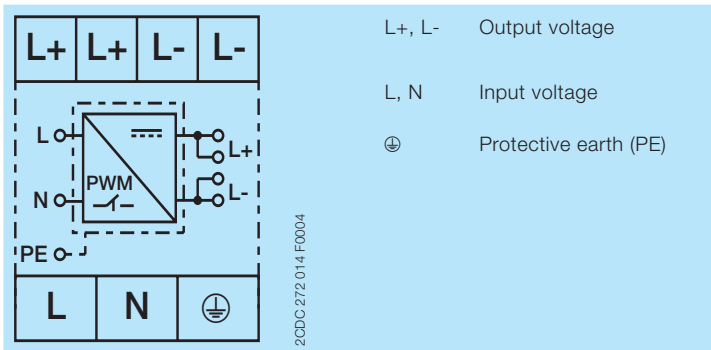
To release the power supply pull the latching lever downwards with a screwdriver and press the upper side of the the latching lever down. The device can be unhinged from the DIN rail and removed.



Electrical connection

Connect the input terminals "L" to line and "N" to neutral conductor or to + and - with DC supply "+" to "L" and "-" to "N". The protective earth conductor PE must be connected before putting the device into operation. The installation must be executed acc. to EN 60950. Provide a suitable disconnecting device (e. g. line protection switch, MCB or fuse) in the supply line. The input side of the power supply is protected by an internal input fuse.

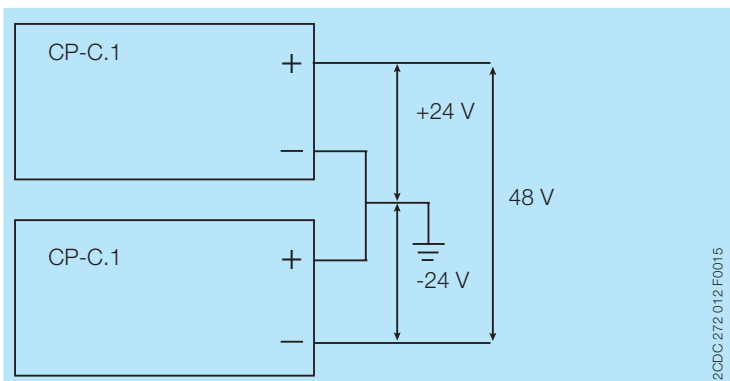
The wiring, cable choice and their protection shall comply to the local electrical standard. We recommend choosing the conductor cross-section as large as possible in order to minimize voltage drops. Check the polarity. The device is overload, short-circuit and open-circuit proof. The secondary side of the power supply is electrically isolated from the input and internally not earthed (SELV) and can be earthed for PELV.



Connection diagram

24 and 48 V DC connection

The connection diagram below shows how to setup two power supplies for +/-24 or 48 V DC output voltage.

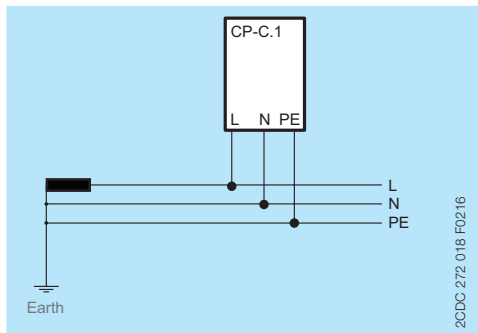


Connection diagram for +/-24 or 48 V DC output voltage

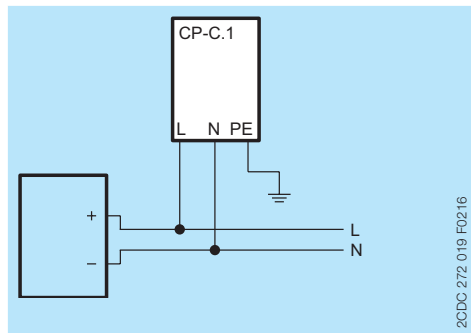
Connection to TN, TT networks

The user must refer to and the installation comply with local electrical codes.

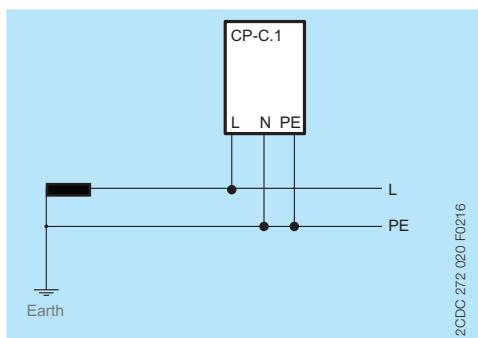
The power supply can be connected to electrical supply systems with various earthing systems according to the diagrams below.



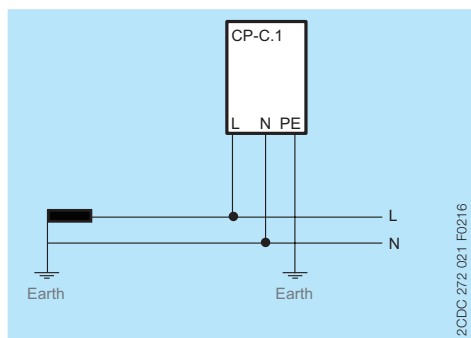
TN-S 1-phase



DC source, e.g. battery



TN-C 1-phase



TT 1-phase

In AC networks the input voltage range is defined by $-15\% \dots +10\%$ of the rated input voltage. However, in DC networks the rated input voltage is equal to the input voltage range.



Safety instructions and warnings

In operation pay attention to:

- Do not modify the installation (primary and secondary side)! High current! Risk of electric arcs and electric shock (danger to life)!
- Risk of burns: Depending on the operation conditions the housing can become hot.
- The device contains no user serviceable parts. In any case of device malfunction please send the unit back to manufacturer.

The device must be installed by qualified persons only and in accordance with the specific national regulations (e. g. VDE, etc.).

The CP-C.1 is a chassis-mounted unit. It is maintenance-free and does not contain any integral setting elements and should therefore not be opened.

Before any installation, maintenance or modification work:

- Read the operating and installation instructions carefully and completely!
- Disconnect the system from the supply network and protect against switching on!



Before start of operation the following must be ensured:

- Connection to mains or DC supply according to the specific national regulations for class of protection I.
- Power supply cables and unit must be sufficiently fused. A disconnecting device has to be provided for the end product to disengage unit and supply cables from supply mains if required.
- The protective earth conductor must be connected to the terminal PE.
- Rate the output lines for the output current of the power supply and connect them with the correct polarity.
- In order to ensure sufficient convection the distance to the other devices has to be considered.

Attention! Improper installation/operation may impair safety of personnel and cause operational difficulties or destruction of the unit.

Attention! Danger to life!

Disconnect the system from the supply network before executing any works at the device and protect against switching on! The power supply contains components with high stored energy and circuits with high voltage! Do not introduce any objects into the unit and do not open the unit.

With some units of this range the output is capable of providing hazardous energy. Ensure that the service personnel is protected against inadvertent contact with parts carrying energy.

If the internal fuse is blown most probably the device is defect. In this case an examination of the device by the manufacturer is necessary.

Technical data

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

Input circuit - Supply circuit

| | CP-C.1 24/10.0 | CP-C.1 24/10.0-C |
|--|---------------------------|------------------------|
| | L (+), N (-) | |
| Rated input voltage U_{in} | 100-240 V AC, 90-300 V DC | |
| Input voltage range | AC | 85-264 V AC |
| | DC | 90-300 V DC |
| Typical input current | at 115 V AC | 2.3 A |
| | at 230 V AC | 1.2 A |
| Typical power consumption | at 230 V AC | 256 W |
| Rated frequency | DC, 50/60 Hz | |
| Frequency range | AC | 45-65 Hz |
| Inrush current limiting, cold state | < 20 A | |
| Let-through energy I^2t , cold state | at 230 V AC | < 1,5 A ² s |
| Discharge current towards PE | < 3.5 mA | |
| Hold-up time | at 115 V AC | min. 40 ms |
| | at 230 V AC | min. 40 ms |
| Internal input fuse | T6.3 A, not exchangeable | |
| Recommended backup fuse for wire protection at 1.5 mm ² | characteristic | B or C |
| | max. rating | 16 A |
| Power factor correction (PFC) | yes, active | |
| Transient overvoltage protection | yes, varistor | |

User interface

| Indication of operational states | | | |
|----------------------------------|------------------------------------|----------|-------------------------|
| Output voltage | LED 'OUTPUT OK' (green) | ON | 92 % adjusted U_{out} |
| | | Flashing | 90 % adjusted U_{out} |
| Power reserve | LED 'I > I _R ' (yellow) | OFF | $I \leq I_R$ |
| | | ON | $I > I_R$ |

Output circuit - Power output

| | | L+, L- |
|---|--|---|
| Rated output voltage | | 24 V DC |
| Tolerance of the output voltage | | ±1 % |
| Adjustment range of the output voltage | | 22.5-28.5 V DC |
| Rated output power | | 240 W |
| Rated output current I_R | - 25 °C ≤ T_a ≤ 60 °C | 10.0 A |
| | - 40 °C ≤ T_a ≤ 60 °C | - |
| Reserve output current | - 25 °C ≤ T_a ≤ 40 °C | 15.0 A continuously |
| | - 40 °C ≤ T_a ≤ 40 °C | - |
| Short-circuit current limiting | | 15.5 A |
| Derating of the output current | 60 °C < T_a ≤ 70 °C | 2.5 %/°C |
| Deviation width of output voltage | static output voltage deviation 25-100 % | < 1%, class C acc. to IEC/EN 61204 |
| | dynamical 0-100 % | < 5 %, class B acc. to IEC/EN 61204 |
| | change of input voltage within the rated input voltage | < 1 ms, class A acc. to IEC/EN 61204 |
| Control time | at rated load | < 0.1 %, class A acc. to IEC/EN61204 |
| Starting time after applying the supply voltage | at rated load | < 500 ms, class C acc. to IEC/EN 61204 |
| | with 3500 µF | |
| Rise time | at rated load | < 10 ms |
| | with 3500 µF | |
| Fall time | | < 20 ms |
| Residual ripple and switching peaks | BW = 20 MHz | < 120 mVpp, class A acc. to IEC/EN 61204 |
| Parallel connection | | yes, up to 5 devices, to enable redundancy and to increase power, current not symmetrical |
| Series connection | | yes, max. 2 devices to increase voltage |

| | CP-C.1 24/10.0 | CP-C.1 24/10.0-C |
|---|----------------|---|
| No-load, overload and short-circuit behavior | | |
| Characteristic curve of output | | U/I characteristic curve with power reserve |
| Short-circuit protection | | continuous short-circuit stability |
| Short-circuit behavior | | current limiting |
| Resistance to reverse feed | | ≤ 35 V DC |
| Overload protection | | constant current limitation |
| Overtemperature protection | | protection by switch off in case of overtemperature (thermal protection), automatic restart |
| No-load protection | | continuous no-load stability |
| Starting of capacitive loads | | yes |

Signaling outputs

| | | |
|---------------------------------------|----------------------------------|--|
| OUTPUT OK signaling output | | |
| Type of output | 13-14 | relay, n/o contact |
| ON (contact closed) | | 92 % adjusted U_{out} |
| OFF (contact open) | | 90 % adjusted U_{out} |
| Contact ratings | max. switching voltage / current | 30 V AC - 0.5 A / 24 V DC - 1 A (resistive load) |
| | min. switching voltage / current | 5 V DC / 1 mA |
| POWER RESERVE signaling output | | |
| Type of output | $I > I_R$ | transistor, short-circuit proof |
| Active / ON (closed) | | $I > I_R$ |
| Inactive / OFF (open) | | $I \leq I_R$ |
| Ratings | voltage/current | 24 V DC / ≤ 20 mA |

General data

| | | |
|-------------------------------------|------------------------------|--|
| Efficiency | at rated output power | up to 94 % |
| Power loss | at rated output power | 16 W |
| | at 50% of rated output power | 12 W |
| | at no load | < 3.6 W |
| Duty time | | 100 % |
| MTBF | acc. to MIL 217 HDBK | on request |
| Dimensions | | see 'Dimensional drawings' |
| Material of housing | cover | zinc-coated sheet-steel |
| | housing shell | aluminium |
| | front | plastic, PA6, V-0 |
| Mounting | | DIN rail (IEC/EN 60715), snap-on mounting without any tool |
| Mounting position | | 1, 7 |
| Minimum distance to other units | horizontal | 25 mm (0.98 in) |
| | vertical | 25 mm (0.98 in) |
| Degree of protection (IEC/EN 60529) | housing / terminals | IP20 / IP20 |
| Protection class (EN 61140) | | I |

Electrical connection

| | | |
|--|--|-------------------------------------|
| Input circuits (L(+), N(-), PE) | | |
| Connecting capacity | rigid | 0.5-4.0 mm ² (20-10 AWG) |
| | fine-strand with(out) wire end ferrule | 0.5-2.5 mm ² (20-12 AWG) |
| Stripping length | | 8 mm (0.315 in) |
| Tightening torque | | 0.5 Nm (4.4 lb.in) |
| Recommended screw driver | | PH1 / Ø 4.0 x 0.8 mm |

| | CP-C.1 24/10.0 | CP-C.1 24/10.0-C |
|---|--|-------------------------------------|
| Output circuits (L+, L+, L-, L-) | | |
| Connecting capacity | rigid | 0.5-4.0 mm ² (20-10 AWG) |
| | fine-strand with(out) wire end ferrule | 0.5-2.5 mm ² (20-12 AWG) |
| Stripping length | 8 mm (0.315 in) | |
| Tightening torque | 0.5 Nm (4.4 lb.in) | |
| Recommended screw driver | PH1 / Ø 4.0 x 0.8 mm | |

| | | |
|---|--|-------------------------------------|
| Signaling output (13-14, I > I_R) | | |
| Connecting capacity | rigid | 0.5-4.0 mm ² (20-10 AWG) |
| | fine-strand with(out) wire end ferrule | 0.5-2.5 mm ² (20-12 AWG) |
| Stripping length | 8 mm (0.315 in) | |
| Tightening torque | 0.5 Nm (4.4 lb.in) | |
| Recommended screw driver | PH1 / Ø 4.0 x 0.8 mm | |
| Maximum cable length (applicable for I > I _R) | 30 m | |

Environmental data

| | | | |
|---------------------------------------|--|------------------------------------|------------------------------------|
| Ambient temperature range | operation | -25...+70 °C (-13...+158 °F) | -40...+70 °C (-40...+158 °F) |
| | rated output power | -25...+60 °C (-13...+140 °F) | -40...+60 °C (-40...+140 °F) |
| | storage | -40...+85 °C (-40...+185 °F) | |
| | transportation | -40...+85 °C (-40...+185 °F) | |
| Climatic class (IEC/EN 60721-3-1) | storage | 1K2 (-40...+85 °C / -40...+185 °F) | |
| Climatic class (IEC/EN 60721-3-2) | transportation | 2K2 (-40...+85 °C / -40...+185 °F) | |
| Climatic class (IEC/EN 60721-3-3) | operation | 3K3 (-25...+70 °C / -13...+158 °F) | 3K3 (-40...+70 °C / -40...+158 °F) |
| Damp heat, cyclic (IEC/EN 60068-2-30) | Test Db: 55°C, 2 cycles | | |
| Vibration (IEC/EN 60068-2-6) | Test Fc: 10-58 Hz, amplitude ±0.15 mm, 58-150 Hz, 2 g, 10 sweep cycles each axis | | |
| Shock, half-sine (IEC/EN 60068-2-27) | Test Ea: 30 g, 6 ms, 3 pulses each axis; bump 20 g, 11 ms, 100 pulses each axis | | |
| Coated PCBA | No | Yes | |

Isolation data

| | | | |
|---|--------------------------------|--------------------|--|
| Rated impulse withstand voltage U _{imp} (EN 50178) | input circuit / output circuit | 4 kV (1.2/50 µs) | |
| | input circuit / PE | 4 kV (1.2/50 µs) | |
| | input circuit / relay contact | 4 kV (1.2/50 µs) | |
| | output circuit / relay contact | 0.5 kV (1.2/50 µs) | |
| | relay contact / PE | 0.5 kV (1.2/50 µs) | |
| | output circuit / PE | 0.5 kV (1.2/50 µs) | |
| Rated insulation voltage U _i (EN 50178) | input circuit / output circuit | 300 V | |
| | input circuit / PE | 300 V | |
| | input circuit / relay contact | 300 V | |
| | output circuit / relay contact | 50 V | |
| | relay contact / PE | 50 V | |
| | output circuit / PE | 50 V | |
| Overvoltage category (EN 50178) | < 2000 m | III | |
| | 2000...5000 m | II | |
| Overvoltage category (IEC/EN 60950-1) | < 2000 m | II | |
| | 2000...5000 m | I | |
| Pollution degree | 2 | | |
| Protective separation (IEC/EN 60950-1) | input circuit / output circuit | Yes | |
| | input circuit / relay contact | Yes | |

Standards

| | |
|---|----------------------------|
| Product standard | IEC/EN 61204 |
| Low Voltage Directive | 2014/35/EU |
| EMC directive | 2014/30/EU |
| RoHS directive | 2011/65/EU |
| Electrical safety | IEC/EN 60950-1 |
| Industrial control equipment / General Use Power Supplies | UL 508 / CSA 22.2 No 107.1 |
| Electronic equipment for use in power installations | EN 50178 |
| Protective extra low voltage | PELV (EN 50178) |
| Safety extra low voltage | SELV (IEC/EN 60950-1) |
| Limitation of harmonic line currents | IEC/EN 61000-3-2 |

Electromagnetic compatibility

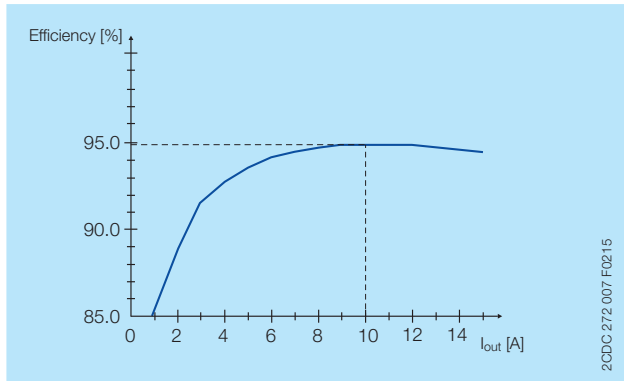
| | |
|---|--|
| Low-voltage power supplies, d.c. output – Part 3: Electromagnetic compatibility (EMC) | IEC/EN 61204-3 |
| Interference immunity to | IEC/EN 61000-6-2 |
| electrostatic discharge (ESD) | IEC/EN 61000-4-2 Level 4, 8 kV / 15 kV (criterion A) |
| radiated, radio-frequency, electromagnetic field | IEC/EN 61000-4-3 Level 3, 10 V/m (criterion A) |
| electrical fast transient / burst | IEC/EN 61000-4-4 Level 4, 4 kV / 2 kV (criterion A) |
| surge | IEC/EN 61000-4-5 Level 4, L/N 2 kV (criterion A) Level 4, L,N/PE 4 kV |
| conducted disturbances, induced by radio-frequency fields | IEC/EN 61000-4-6 Level 3, 10 V (criterion A) |
| voltage dips, short interruptions and voltage variations | IEC/EN 61000-4-11 Class 3 |
| harmonics and interharmonics | IEC/EN 61000-4-13 Class 3 (Criterion A) |
| conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz | IEC/EN 61000-4-16 Level 3, 10 V |
| Interference emission | IEC/EN 61000-6-3 |
| limits for harmonic current emissions | IEC/EN 61000-3-2 Class A |
| limitation of voltage changes etc. | IEC/EN 61000-3-3 compliant |
| Information technology equipment radio disturbance characteristics limits and methods of measurement | IEC/CISPR 22, EN 55022 Class B |
| Industrial scientific and medical (ISM) radio-frequency equipment electromagnetic disturbance characteristics limits and methods of measurement | IEC/CISPR 11, EN 55011 Class B |
| Voltage sags | SEMI F47 passed |
| Federal Communications Commission | FCC15 compliant |

Technical diagrams

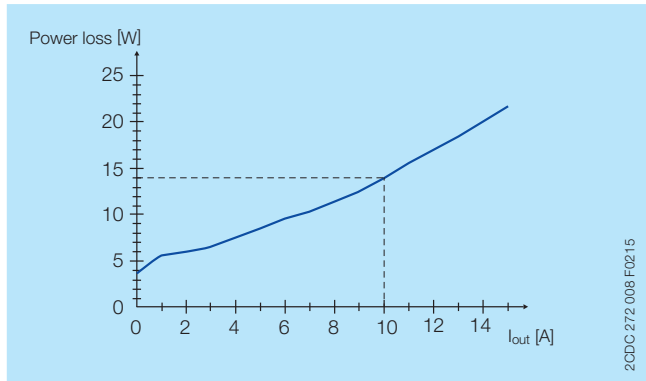
Data at $T_a = 25\text{ }^\circ\text{C}$, $U_{in} = 230\text{ V AC}$ and rated values, typical values unless otherwise indicated

Efficiency diagrams

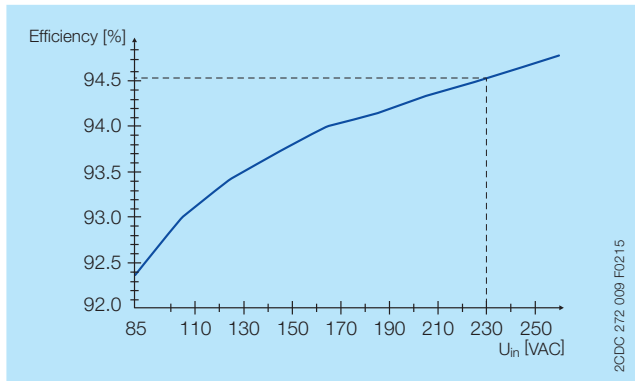
The efficiency and thus the power loss depends on the output current, input voltage, output voltage and ambient temperature as illustrated in the diagrams below.



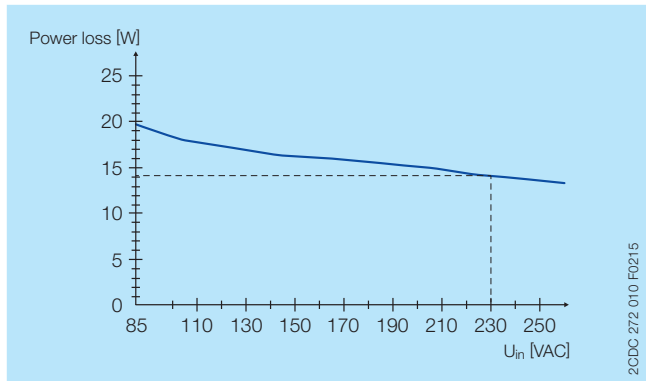
Typical efficiency over output current



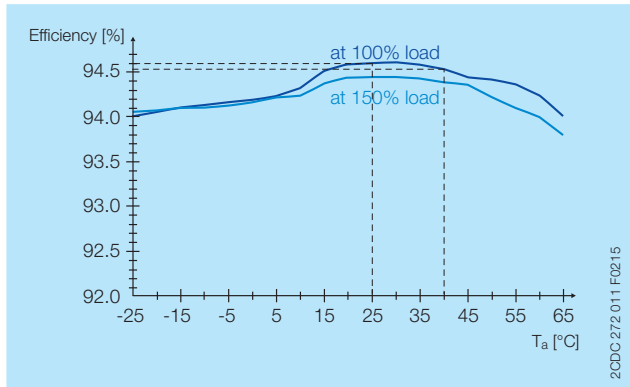
Typical power loss over output current



Typical efficiency over AC input voltage

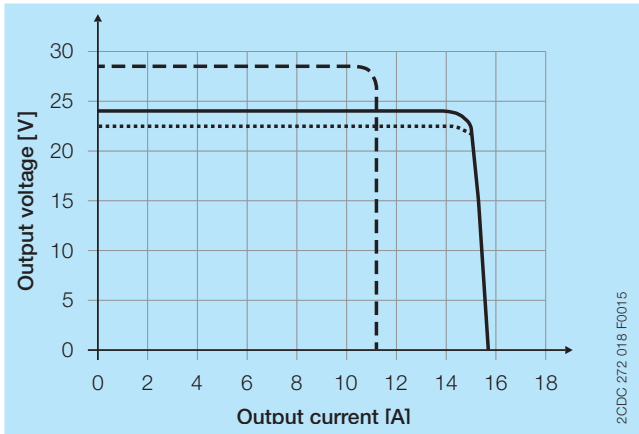


Typical power loss over AC input voltage



Typical efficiency over ambient temperature

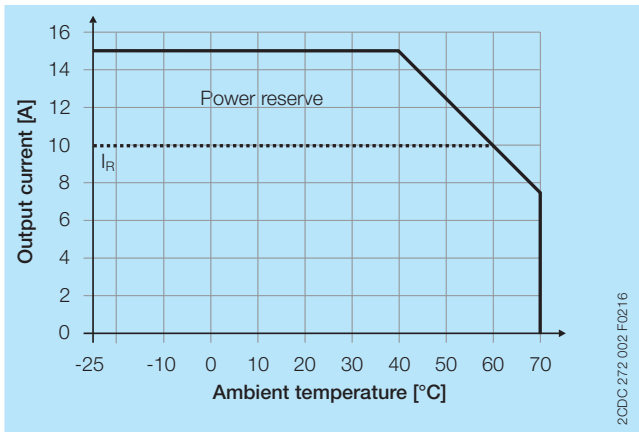
Characteristic curve of output



Characteristic curve of output at T_a = 25 °C

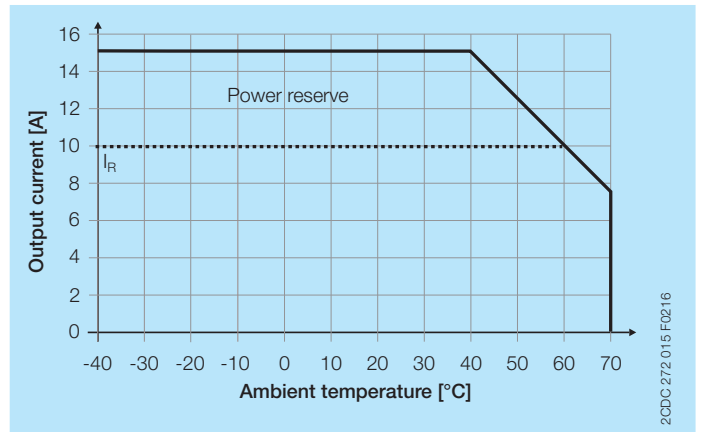
Characteristic curve of temperature

CP-C.1 24/10.0



Characteristic curves of temperature at U_{out} = 24 V, mounting position 1

CP-C.1 24/10.0-C



The switch mode power supply CP-C.1 is able to supply at 24 V DC output voltage and at an ambient temperature of

- ≤ 40 °C a continuous output current of typ. ≤ 15 A
- ≤ 60 °C the rated current of 10 A

With mounting position 1 and at ambient temperatures of > +60 °C the output power has to be reduced by 2.5 % per Celsius degree temperature increase. Deratings for other mounting positions on request.

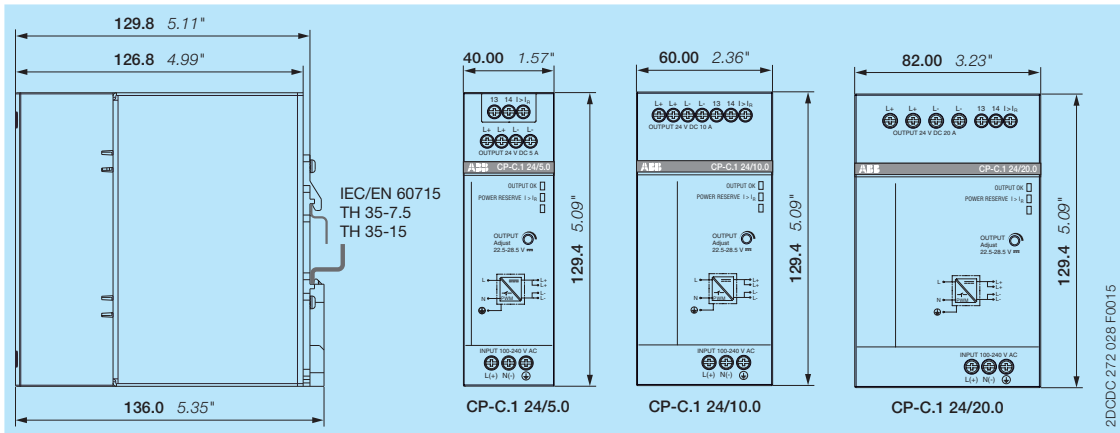
At thermal overload the device will switch-off as soon as the internal temperature exceeds the acceptable level. The exact ambient temperature threshold depends on the mounting position and load of the power supply.

If the switch mode power supply is loaded with an output current > 15 A, the operating point is passing through the U/I characteristic curve shown.

The device is equipped with an overtemperature protection function. It will switch-off as soon as the internal overtemperature protection function is activated.

Dimensions

in mm and inch



Further documentation

| Document title | Document type | Document number |
|--------------------------------|--------------------|--------------------|
| Electronic relays and controls | Catalog | 2CDC 110 004 C02xx |
| CP-C.1 | Instruction manual | 1SVC 360 560 M0000 |

You can find the documentation on the internet at www.abb.com/lowvoltage

-> Automation, Control and Protection -> Electronic relays and controls -> Power supplies.

CAD system files

You can find the CAD files for CAD systems at
<http://abb-control-products.partcommunity.com>

-> Low Voltage Products & Systems -> Control Products -> Electronic Relays and Controls.

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