



Primary switch mode power supplies CP range

ABB power supply units: CP range



Modern power supply units are a vital component in most areas of energy management and automation technology. ABB as your global partner in these areas pays the utmost attention to the resulting requirements. Innovation is the key to a substantial enlargement of our power supply product program:

CP-D

The CP-D range of power supply units in MDRC design (modular DIN rail components) fits into all domestic installation and distribution panels.

CP-E

The CP-E range offers enhanced functionality while the number of different types has been considerably reduced. Now all power supply units can be operated at an ambient temperature of up to +70 °C.

CP-T

The CP-T range of three-phase power supply units is ABB's youngest member of the power supply family.

CP-S

The CP-S range is ABB's standard range, a high-end power supply unit optimised for serial applications.

CP-C

The CP-C range's pluggable function modules adapt these power supply units exactly to your application's needs. Of course, all ABB power supply units feature primary switch mode technology – environmentally sound and cost-efficiency. This represents the highest level of innovative industrial electronics.

Application manual

For today's applications, e.g. in control engineering, it is essential to make the right decision regarding the selection and planning of the power supply unit. Incorrect dimensioning or incorrect connection of a power supply unit can seriously affect the safety and/or availability of the entire installation.

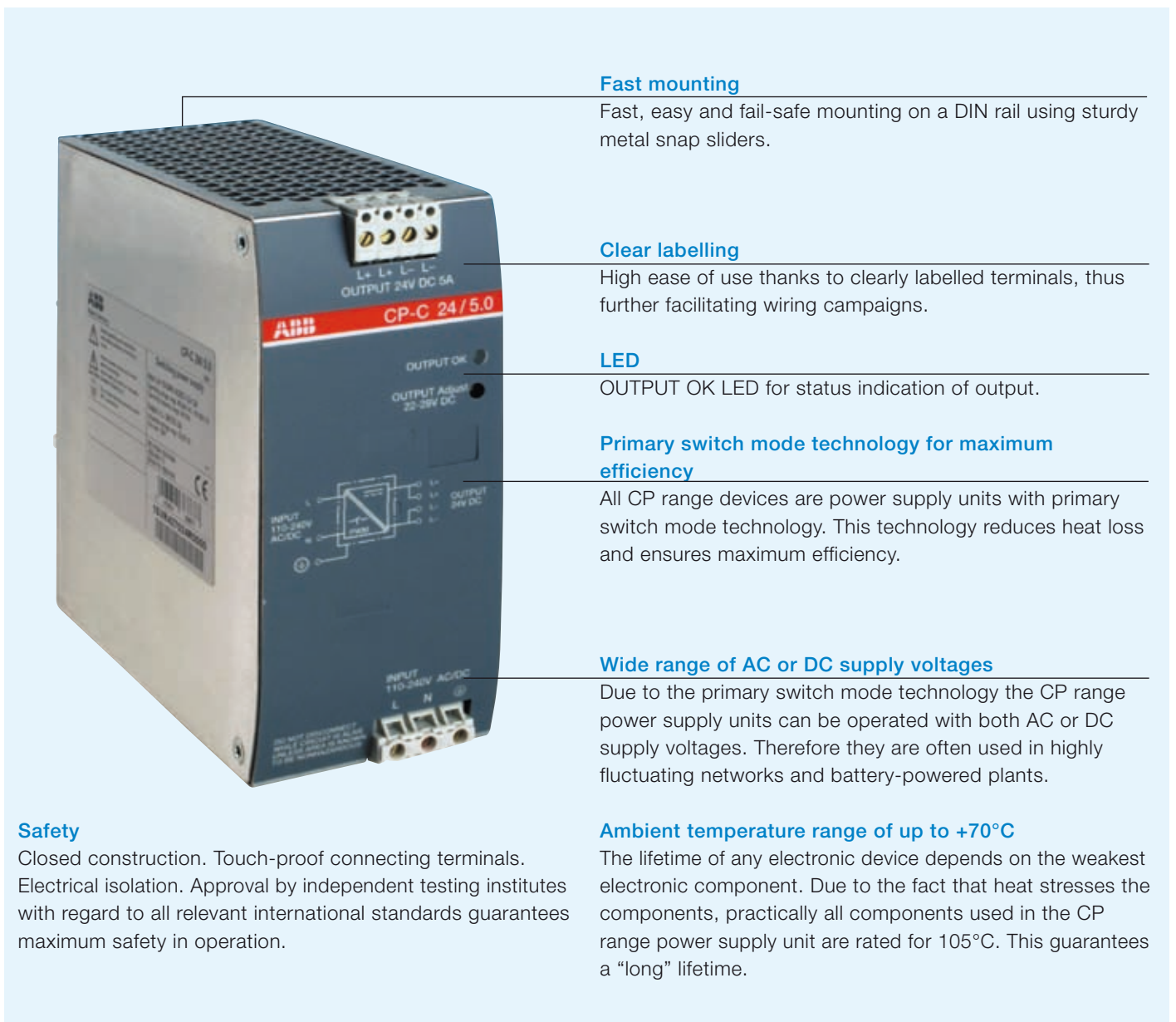
ABB's "Power Supply Units" application manual provides a general overview of switch mode power supply units, thus helping you to choose the ideal power supply unit and avoid

problems during engineering and commissioning. The manual generally shows and explains the fundamental characteristics of and the differences between power supply units, and provides a detailed introduction to the ABB product range on the basis of the selection criteria. Finally, it describes and explains application examples for engineering.

The manual is available in English and German.

English Version: 2CDC 114 048 M0202

German Version: 2CDC 114 048 M0102



Fast mounting

Fast, easy and fail-safe mounting on a DIN rail using sturdy metal snap sliders.

Clear labelling

High ease of use thanks to clearly labelled terminals, thus further facilitating wiring campaigns.

LED

OUTPUT OK LED for status indication of output.

Primary switch mode technology for maximum efficiency

All CP range devices are power supply units with primary switch mode technology. This technology reduces heat loss and ensures maximum efficiency.

Wide range of AC or DC supply voltages

Due to the primary switch mode technology the CP range power supply units can be operated with both AC or DC supply voltages. Therefore they are often used in highly fluctuating networks and battery-powered plants.

Safety

Closed construction. Touch-proof connecting terminals. Electrical isolation. Approval by independent testing institutes with regard to all relevant international standards guarantees maximum safety in operation.

Ambient temperature range of up to +70°C

The lifetime of any electronic device depends on the weakest electronic component. Due to the fact that heat stresses the components, practically all components used in the CP range power supply unit are rated for 105°C. This guarantees a "long" lifetime.

The CP-D range power supply units



The CP-D range of modular power supply units in MDRC design (modular DIN rail components) is ideally suited for installation in distribution panels. This range offers devices with output voltages of 12 V DC and 24 V DC at output currents of 0.42 A to 4.2 A. Thanks to a high thermal efficiency corresponding to low power and heat dissipation, the devices can be operated without forced cooling. They feature the U/I output characteristic (fold forward behaviour), which makes it possible to start up loads with high inrush currents. All power supply units in the CP-D range are approved according to all relevant international standards.

Characteristics








- Output voltages 12 V, 24 V
- Adjustable output voltages (devices > 10 W)
- Output currents 0.42 A / 0.83 A / 1.3 A / 2.1 A / 2.5 A / 4.2 A
- Power range 10 W, 30 W, 60 W, 100 W
- Wide range input 100-240 V AC (90-264 V AC, 120-370 V DC)
- High efficiency of up to 89 %
- Low power dissipation and low heating
- Free convection cooling (no forced cooling with ventilators)
- Ambient temperature range during operation - 25...+70 °C
- Open-circuit, overload and short-circuit stable
- Integrated input fuse
- U/I characteristic (fold-forward behaviour at - overload – no switch-off)
- LEDs for status indication
- Light-grey enclosure in RAL 7035

Width and structural form

With a width of just 18 to 90 mm, the CP-D range switch mode power supply units are ideally suited for installation in distribution panels.

The light-grey enclosure (RAL7035) perfectly fits in with ABB's MDRC products such as RCBs and MCBs.

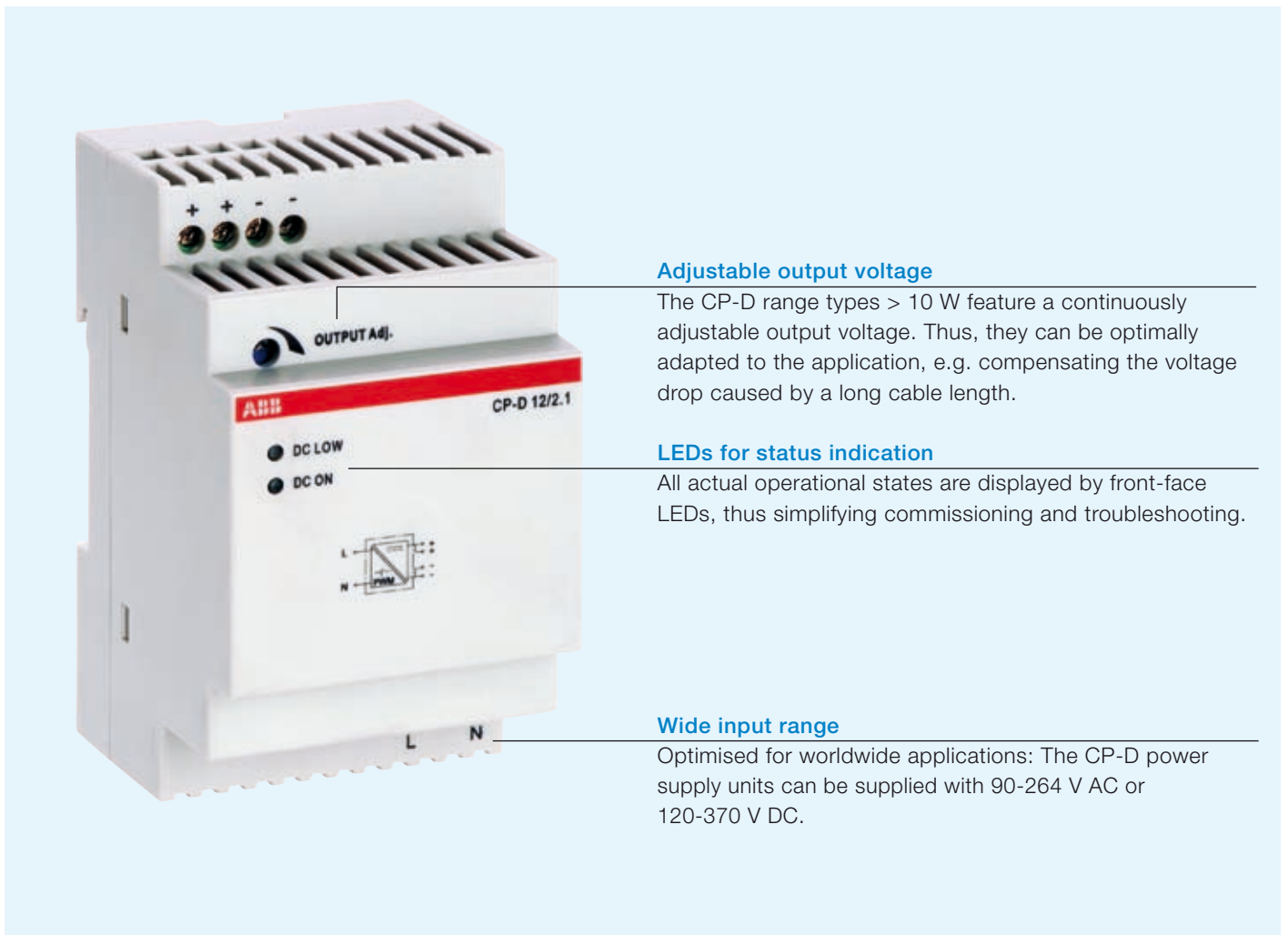
Approvals/marks

-  UL 508, CAN/CSA C22.2 No.14 ¹⁾
-  UL 1310, CAN/CSA C22.2 No.223 ^{1) 3)}
(Class 2 Power Supply),
-  UL 60950, CAN/CSA C22.2 No.60950 ¹⁾
-  GOST
-  CCC ¹⁾
-  CE
-  C-Tick ²⁾

¹⁾ Approvals refer to rated input voltage U_{IN}

²⁾ Pending

³⁾ Except CP-D 24/4.2



Adjustable output voltage

The CP-D range types > 10 W 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 cable length.

LEDs for status indication

All actual operational states are displayed by front-face LEDs, thus simplifying commissioning and troubleshooting.

Wide input range

Optimised for worldwide applications: The CP-D power supply units can be supplied with 90-264 V AC or 120-370 V DC.

The CP-E range power supply units for standard applications



The CP-E range power supply units are an impressive addition to the ABB power supply program. This range offers types with output voltages from 5 V DC to 48 V DC at output currents of 0.625 A to 20 A. The high thermal efficiency of up to 90 %, corresponding to very low power and heat dissipation, allows operation without forced cooling. The functionality has been enhanced while the number of different types has been considerably reduced. Of course all power supplies of the CP-E range are approved in accordance with all relevant international standards.

Characteristics of the CP-E range









- Output voltage 5 V, 12 V, 24 V, 48 V DC
- Adjustable output voltages
- Output current 0.625 A / 0.75 A / 1.25 A / 2.5 A / 3 A / 5 A / 10 A / 20 A
- Power range 15 W, 18 W, 30 W, 60 W, 120 W, 240 W, 480 W
- High efficiency of up to 90 %
- Low power dissipation and low heating
- Free convection cooling (no forced cooling with ventilators)
- Ambient temperature range during operation -25... +70 °C
- Open-circuit, overload and short-circuit stable
- Integrated input fuse
- Output characteristics:
 - Hiccup-mode on CP-E 5/3.0 and CP-E 24/0.75
 - U/I characteristic curve on all other CP-E devices (fold-forward behaviour at overload – no shutdown)
- Redundancy units offering true redundancy
- LED(s) for status indication
- Signalling output/contact:
 - Transistor on 24 V devices > 18 W and < 120 W
 - Relay on 24 V devices 120 W

True redundancy and decoupling

The CP-E range power supply units are the economical solution whenever the capacity or output voltage of a power supply unit needs to be increased. Both serial and parallel connection is possible.

When it comes to decoupling parallelised power supply units < 48 V and/or decoupling issues, true redundancy can be achieved with our redundancy module CP-RUD.

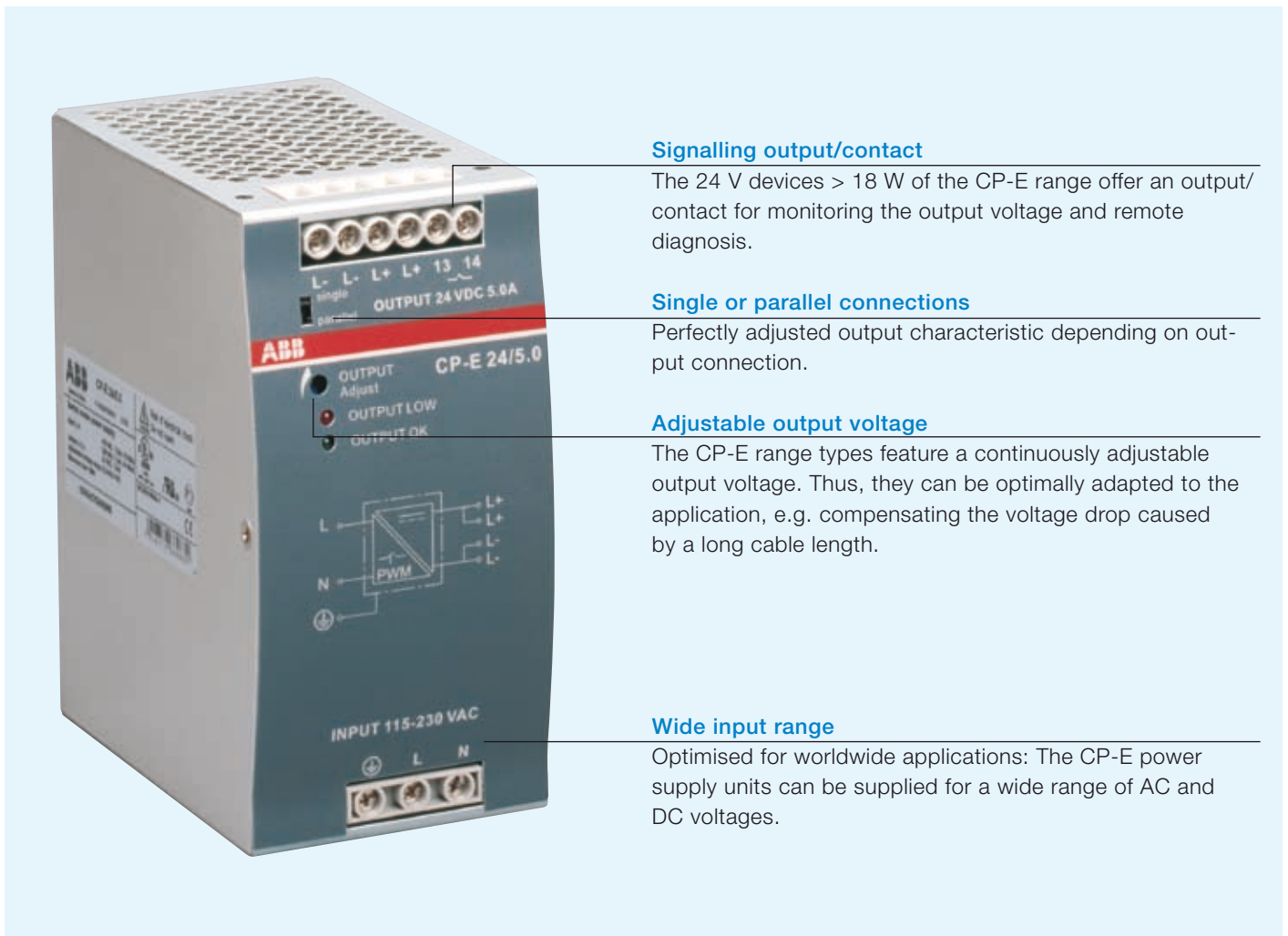
Approvals/marks of the power supply units

| | |
|---|---|
|  | UL 508, CAN/CSA C22.2 No.14 ¹⁾ |
|  | UL 1310, CAN/CSA C22.2 No.223 (Class 2 Power Supply) ²⁾ |
|  | ANSI/ISA-12.12 (Class I, Div. 2 hazardous locations) ²⁾ |
|  | UL 60950, CAN/CSA C22.2 No.60950 ¹⁾ |
|  | GOST |
|  | CCC ^{1) 2)} |
|  | CE |
|  | C-Tick ³⁾ |

¹⁾ Approvals refer to rated input voltage U_{IN}

²⁾ Except power supply units ≥ 5 A

³⁾ Available for power supply units < 5 A, pending for power supply units ≥ 5 A



Signalling output/contact

The 24 V devices > 18 W of the CP-E range offer an output/contact for monitoring the output voltage and remote diagnosis.

Single or parallel connections

Perfectly adjusted output characteristic depending on output connection.

Adjustable output voltage

The CP-E range types 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 cable length.

Wide input range

Optimised for worldwide applications: The CP-E power supply units can be supplied for a wide range of AC and DC voltages.

The proven power supply units in the CP-S and CP-C ranges



The power supply units in the CP-S and CP-C range are ABB's high-end solutions. Designed with an integrated 50 % power reserve and an efficiency of approximately 89 % these are the perfect products for all complex, highly reliable applications. All the devices cover the U-I output characteristic and are built with thermal protection which switches off in case of overheating.

In particular, the devices in the CP-C range feature have a much broader functionality, including active power factor correction and pluggable function modules.

Characteristics

- Output current 5 A, 10 A and 20 A
- Integrated power reserve of up to 50 %
- High efficiency of approx. 89 %
- Low power dissipation and low heating
- Open-circuit, overload and short-circuit stable, automatic recovery
- Integrated input fuse
- Redundancy unit CP-A RU offering true redundancy
- Control module (voting unit) CP-A CM pluggable onto CP-A RU
- Pluggable output terminals for up to 10 A
- Status LED "OUTPUT OK"

CP-S

- Wide input range of 110-240 V AC (85-264 V AC, 100-350 V DC) 5 A version
- Input voltage adjustable via front-face selector switch (10 A, 20 A version)
- Output voltage fixed at 24 V DC
- Parallel operation for redundancy

CP-C

- Wide input range of 110-240 V AC (85-264 V AC, 100-350 V DC)
- Output voltage adjustable in a range of 22-28 V DC
- Parallel operation for increased capacity and redundancy
- Power factor correction (PFC) in accordance with EN 61000-3-2
- Function module CP-C MM pluggable onto the front side

State-of-the-art technology

Integrated power reserve:

The CP-S and CP-C range power supply units feature an integrated power reserve of up to 50 %. No oversized electricity supply is needed, especially under heavy load conditions.

U-I characteristic:

Perfect performance in case of overload or short-circuit. The current does not sag in the case of overload; this method allows reliable starting of high loads.

Active power factor correction:

Fully compliant with EN61000-3-2, the CP-C range avoids almost every kind of harmonics.

Approvals/marks of the power supply units



UL 508, CAN/CSA C22.2 No.14 ¹⁾



UL 1604 (Class I, Div. 2, hazardous locations)
CAN/CSA C22.2 No.213¹⁾,



UL 60950, CAN/CSA C22.2 No.60950 ¹⁾



GOST,



CB scheme



^{1) 2)}



C-Tick

¹⁾ Approvals refer to rated input voltage U_{IN}

²⁾ Not for CP-S 24/10.0 and CP-S 24/20.0



Double terminal assignment

The double assignment of the output terminals considerably reduces the amount of wiring by eliminating the need for potential multiplication.

Adjustable output voltage

The CP-C range types 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.

Pluggable function modules

The CP-C range power supply units can be equipped with the pluggable module CP-C MM to add specific functions. The result is a superior price/performance ratio and a future-proof solution for maximum flexibility without any sacrifices to user comfort.

Pluggable terminals

Extended flexibility in operation due to pluggable output terminals (this feature is not offered on all devices).

Messaging module

Messaging module CP-C MM is designed to indicate the input and output status and can be used to switch the power supply unit on or off via remote control.

The new three-phase power supplies CP-T range



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.










Characteristics of the CP-T range

- Rated output voltage 24 V DC or 48 V DC
- Output voltage adjustable via front-face rotary potentiometer "OUTPUT Adjust"
- Rated output current 5 A / 10 A / 20 A / 40 A
- Rated output power 120 W / 240 W / 480 W / 960 W
- Supply range 3 x 400-500 V AC (3 x 340-575 V AC, 480-820 V DC)
- Two-phase supply with a derating of the output to 75 % possible / permitted
- Typical efficiency of 89 %
- Low power dissipation and low heating
- Free convection cooling (no forced cooling with ventilators)
- Ambient temperature range during operation -25... +70 °C
- Open-circuit, overload and short-circuit stable
- Integrated input fuse
- Redundancy unit CP-A RU offering true redundancy, available as accessory
- Signalling contact "13-14" (Relay) for output voltage OK

Completion of product range

The CP-T range completes ABB's high-class power supply units. ABB now offers devices in a very wide range for nearly all kinds of applications: in MDRC (CP-D) design, for serial applications (CP-E), for high performance (CP-S and CP-C) as well as for three-phase and two-phase applications. The current product portfolio is constantly adapted to the market demand and the requirements of our customers.

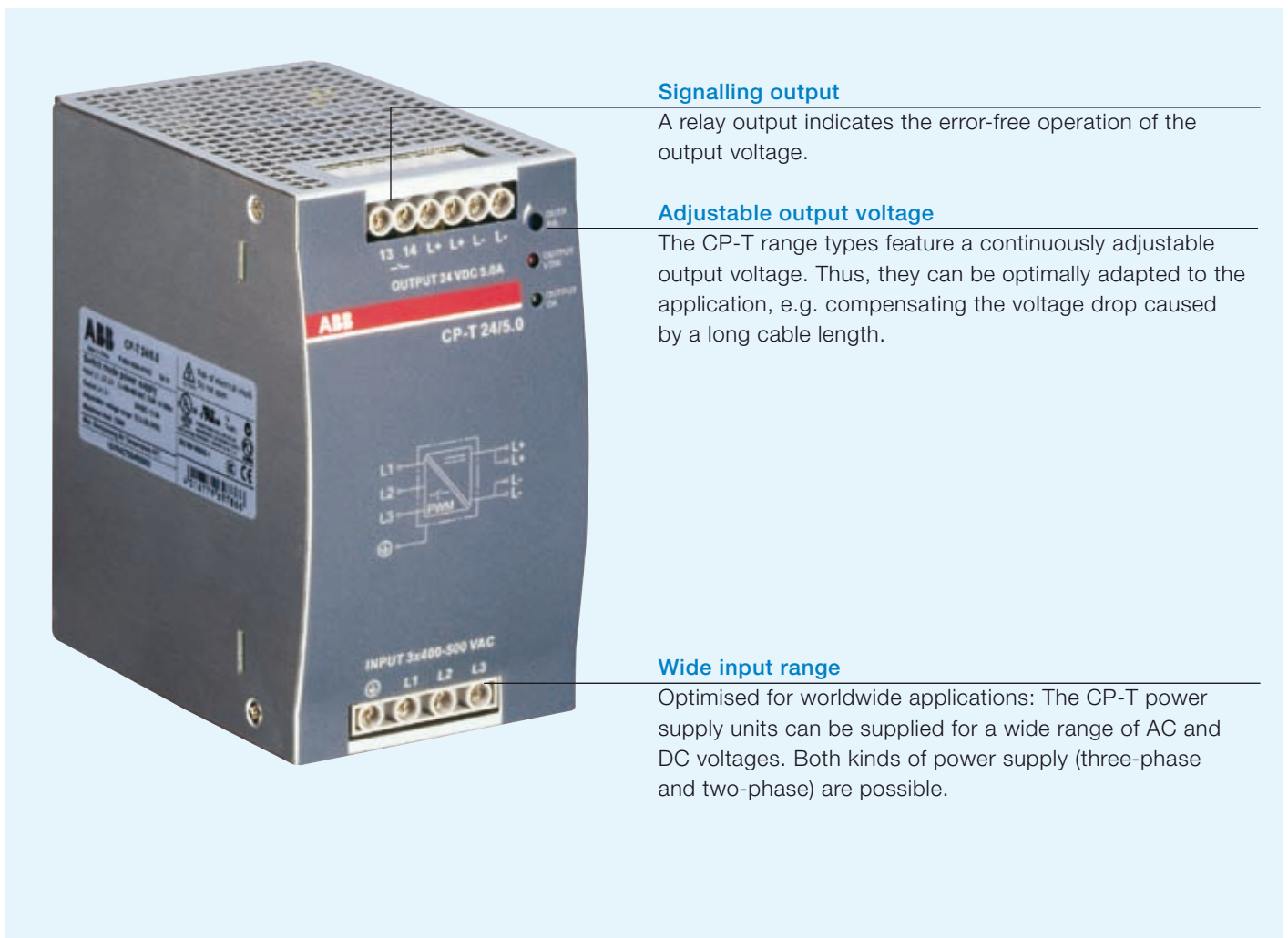
Approvals/marks of the power supply units

| | |
|---|---|
|  | UL 508, CAN/CSA C22.2 No.14 ¹⁾ |
|  | UL 1310, CAN/CSA C22.2 No.223 (Class 2 Power Supply) ²⁾ , |
|  | ANSI/ISA-12.12 (Class I, Div. 2 hazardous locations) ²⁾ |
|  | UL 60950, CAN/CSA C22.2 No.60950 ¹⁾ |
|  | |
|  | GOST |
|  | CB scheme |
|  | CCC ^{1) 2)} |
|  | C-Tick ³⁾ |

¹⁾ Approvals refer to rated input voltage U_{IN}

²⁾ Except power supply units ≥ 5 A

³⁾ Available for power supply units < 5 A, pending for power supply units ≥ 5 A



Signalling output

A relay output indicates the error-free operation of the output voltage.

Adjustable output voltage

The CP-T range types 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 cable length.

Wide input range

Optimised for worldwide applications: The CP-T power supply units can be supplied for a wide range of AC and DC voltages. Both kinds of power supply (three-phase and two-phase) are possible.

CP range auxiliaries

Redundancy module to establish true redundancy

Redundancy module CP-A RU

Characteristics

- For CP-S, CP-C, CP-T and CP-E power supply units
- For decoupling of parallelised power supply units, allowing true redundancy can be achieved
- 2 inputs, each up to 20 A
- Output up to 40 A
- 2 integrated diodes for decoupling
- Control module CP-A CM can be mounted on the front of the unit (accessory)



Control module CP-A CM

Characteristics

- Plugs onto the redundancy unit CP-A RU to allow the voltage to be monitored in each channel of the CP-A RU
- Adjustable threshold values (14-28 V) and one relay output per input/circuit



Application example

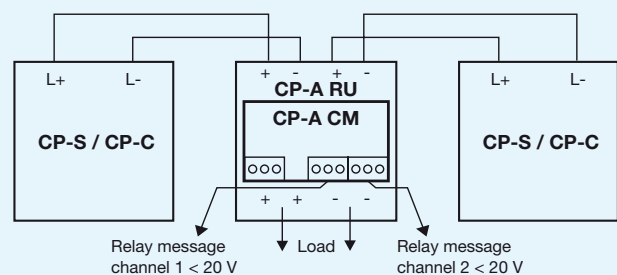
- Implementation of a 2-way redundant power supply unit
- Monitoring of the input voltages of both power supply units
- Relay outputs for separate signalling of faults

In the event of a fault on the secondary/load side (e.g. with a short-circuit on the load side of a power supply unit or the failure of a power supply unit), the CP-A RU decouples the second power supply unit from this fault. This prevents the fault from producing a short-circuit on the output of the intact power supply unit and guarantees a continued interruption-free supply to the load. It is recommended to power both power supply units on different phases to ensure that neither of them are disconnected from the mains supply in the event of a fault on the primary/supply side (e.g. should the common primary fuse for both supply units trip due to a short-circuit).

The CP-A CM monitors the voltages of both connected power supply units applied to the CP-A RU. If the voltage of one or both power supply units drops below the set threshold value (e.g. 20 V), the corresponding relay of the CP-A CM will de-energise. Possible causes for the de-energisation of one or both relays:

- A power supply unit has failed or is switched off
- Both power supply units have failed or are switched off
- The secondary side is subject to overload

A brief de-energisation of one or both relays indicates that the connected load has returned to normal rated operation after power-up.



2CDC 272 028 F0205

Primary switch mode power supplies CP-D, CP-E, CP-S/C, CP-T range



Environment protection thanks to modern technology

- The ABB power supplies of the CP-D, CP-E, CP-S, CP-C and CP-T range also persuade unconfined in consideration of effective and sustainable environment protection. This is because their primary switch mode design does not only stand for outstanding efficiency but also for a noteworthy relief of the environment.
- Power supplies with primary switch mode are characterised by their exceptional efficiency of up to 89 %: A remarkable difference to conventional power supplies that often only operate with 50 % efficiency.

High efficiency of up to 89 %

- The high efficiency of the ABB power supplies means that only 10-12 % of the input energy are lost in dissipated heat.
- Thanks to the low dissipated heat, other advantages result. For example it is often possible to dispense with costly extern cooling systems when the power supplies are used in cabinets.
- Also, the ABB power supplies with primary switch mode feature an outstanding durability. This improves the operating efficiency and means further relief of the environment.

Reliability in different environments

- Due to their reliable construction, the CP-D, CP-E, CP-S, CP-C and CP-T range power supplies can be used in very harsh environments.
- Adherence to electrical safety standards makes these power supplies very safe and well-suited for industrial equipment while also allowing their use in domestic applications, wherever automation is important.
- The wide AC/DC range of input power makes these power supplies very flexible and offers a perfect solution for DC networks, power failure back-up systems, and much more.
- The pluggable function module of the CP-C range power supplies allow a perfect adaptation for special application needs.
- Adjustable output voltage compensates for drops in the DC power line.

Approvals provide high safety

- Applicability of the most important approvals and the observance of the valid EU standards provide high safety when using the power supply.
- High interference immunity combined with reduced interference emission acc. to EN 61000-6-4 enable the use in rough industrial environments as well for building installations.

Product selection table



| | | Single-phase | | | | | | | | | | | | | | | | | | |
|----------------------------|---------------------|--------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | CP-D | | | | | | CP-E | | | | | | | | | | | | |
| | | Rated output current | 0.42 A | 0.83 A | 1.3 A | 2.1 A | 2.5 A | 4.2 A | 0.625 A | 0.75 A | 1.25 A | 2.5 A | 3 A | 5 A | 10 A | 20 A | | | | |
| Rated output voltage | 5 V DC | | | | | | | | | | | • | | | | | | | | |
| | 12 V DC | | • | | • | | | | | | • | | | | • | | | | | |
| Rated output power/voltage | 24 V DC | • | | • | | • | • | | • | • | • | | • | | • | • | | | | |
| | 48 V DC | | | | | | | • | | | • | | | • | | • | | | | |
| | 10 W | | | | | | | | | | | | | | | | | | | |
| | 15 W | | • | | | | | | | | | | • | | | | | | | |
| | 18 W | • | | | | | | | | • | | | | | | | | | | |
| | 30 W | | | | | • | | | | | • | | | | | | | | | |
| | 60 W | | | | | | • | | | | | • | | | | | | | | |
| | 100 W | | | | | | | • | | | | | | | | | | | | |
| | 120 W | | | | | | | | | | | | | | • | | | | | |
| | 240 W | | | | | | | | | | | | | • | | • | | | | |
| | 480 W | | | | | | | | | | | | | • | | • | | | | |
| | 960 W | | | | | | | | | | | | | | | • | | | | |
| | Rated input voltage | 100-240 V AC | • | • | • | • | • | • | • | • | • | • | • | | | | | | | |
| | | 115/230 V AC auto select | | | | | | | | | | | | • | • | • | | | | |
| | | 115-230 V AC | | | | | | | | | | | | | | • | • | | | |
| | | 110-240 V AC | | | | | | | | | | | | | | | • | | | |
| 110-120 V AC | | | | | | | | | | | | | | | | | | | | |
| 220-240 V AC | | | | | | | | | | | | | | | | | | | | |
| Accessories | 400-500 V AC | | | | | | | | | | | | | | | | | | | |
| | Redundancy Module | | | | | | | • | • | • | • | • | • | • | • | • | | | | |
| | Control Module | | | | | | | | | | | | | | | | | | | |
| | Messaging Module | | | | | | | | | | | | | | | | | | | |
| | Order code | 1SVR427041R0000 | 1SVR427041R1000 | 1SVR427043R0100 | 1SVR427043R1200 | 1SVR427044R0200 | 1SVR427045R0400 | 1SVR427030R2000 | 1SVR427030R0000 | 1SVR427031R0000 | 1SVR427031R2000 | 1SVR427032R1000 | 1SVR427032R0000 | 1SVR427033R3000 | 1SVR427034R0000 | 1SVR427034R2000 | 1SVR427035R1000 | 1SVR427035R0000 | 1SVR427035R2000 | 1SVR427036R0000 |



| | | Rated output current | Single-phase | | | | | | Three-phase | | | | | |
|----------------------------|--------------------------|----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | | CP-S | | | CP-C | | | CP-T | | | | | |
| | | | 5 A | 10 A | 20 A | 5 A | 10 A | 20 A | 5 A | 10 A | 20 A | 40 A | | |
| Rated output voltage | | 5 V DC | | | | | | | | | | | | |
| | | 12 V DC | | | | | | | | | | | | |
| | | 24 V DC | • | • | • | • | • | • | • | • | • | • | | |
| | | 48 V DC | | | | | | | • | • | • | | | |
| Rated output power/voltage | 10 W | 12 V DC | | | | | | | | | | | | |
| | | 24 V DC | | | | | | | | | | | | |
| | 15 W | 5 V DC | | | | | | | | | | | | |
| | | 24 V DC | | | | | | | | | | | | |
| | 18 W | 12 V DC | | | | | | | | | | | | |
| | | 24 V DC | | | | | | | | | | | | |
| | 30 W | 12 V DC | | | | | | | | | | | | |
| | | 24 V DC | | | | | | | | | | | | |
| | 60 W | 48 V DC | | | | | | | | | | | | |
| | | 24 V DC | | | | | | | | | | | | |
| | 100 W | 48 V DC | | | | | | | | | | | | |
| | | 24 V DC | | | | | | | | | | | | |
| | 120 W | 12 V DC | | | | | | | | | | | | |
| | | 24 V DC | • | | | • | | | • | | | | | |
| | 240 W | 24 V DC | | • | | | • | | | • | | | | |
| | | 48 V DC | | | | | | | • | | • | | | |
| 480 W | 24 V DC | | | • | | | • | | | • | | | | |
| | 48 V DC | | | | | | | | • | | • | | | |
| 960 W | 24 V DC | | | | | | | | | | • | | | |
| | 48 V DC | | | | | | | | | • | | | | |
| Rated input voltage | 100-240 V AC | | | | | | | | | | | | | |
| | 115/230 V AC auto select | | | | | | | | | | | | | |
| | 115-230 V AC | | | | | | | | | | | | | |
| | 110-240 V AC | • | | | • | • | • | | | | | | | |
| | 110-120 V AC | | • | • | | | | | | | | | | |
| | 220-240 V AC | | • | • | | | | | | | | | | |
| Accessories | 400-500 V AC | | | | | | | • | • | • | • | | | |
| | Redundancy Module | • | • | • | • | • | • | • | • | • | • | | | |
| | Control Module | • | • | • | • | • | • | | | | | | | |
| | Messaging Module | | | | • | • | • | | | | | | | |
| | Order code | | | | | | | | | | | | | |
| | | 1SVR427014R0000 | 1SVR427015R0100 | 1SVR427016R0100 | 1SVR427024R0000 | 1SVR427025R0000 | 1SVR427026R0000 | 1SVR427054R0000 | 1SVR427054R2000 | 1SVR427055R0000 | 1SVR427055R2000 | 1SVR427056R0000 | 1SVR427056R2000 | 1SVR427057R0000 |