

# Redundancy unit CP-C.1-A-RU

## Accessory for CP range power supplies

ABB's redundancy units are used to establish true redundancy which increases the availability of electrical systems significantly.



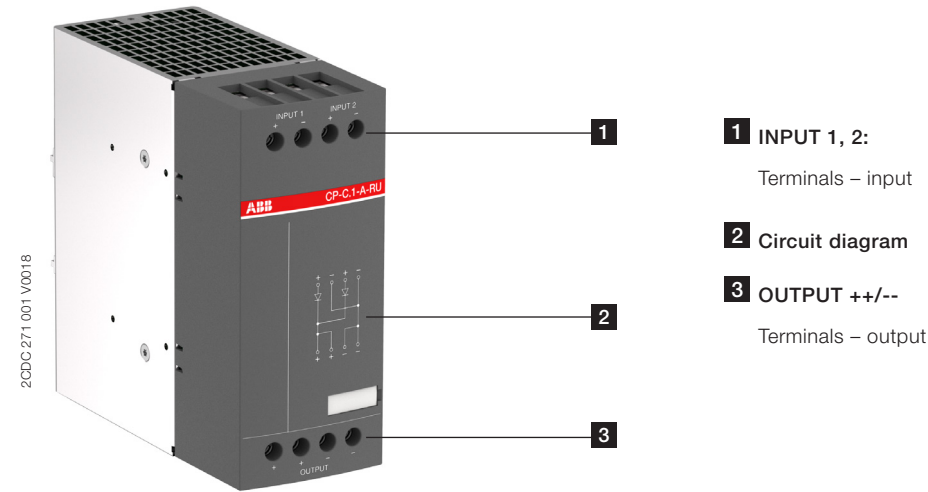
### Characteristics

- Decoupling of CP power supply units with 2 inputs, each up to 20 A per input / channel
- Output up to 40 A
- True redundancy by 100 % decoupling of two parallel connected power supplies
- 2 integrated diodes for the decoupling of 2 switch mode power supplies up to 20 A
- Device with coated PCBA for harsh environments and with extended temperature range
- Various certifications and approvals (see overview, document no. [2CDC114098D0201](#))

### Ordering details

Description	Suitable for decoupling of two 24 V DC power supply units	PCBA	Type	Order code	Weight (1 pc) kg (lb)
2 inputs each up to 20 A and 1 output up to 40 A	$\leq 28.5 \text{ V}$ and $\leq 40 \text{ A}$	uncoated	CP-C.1-A-RU	1SVR360060R1001	1.04 (2.29)
		coated	CP-C.1-A-RU-C	1SVR360060R2001	1.04 (2.29)

Functions



- 1 INPUT 1, 2:  
Terminals – input
- 2 Circuit diagram
- 3 OUTPUT ++/--  
Terminals – output

Application

The redundancy unit CP-C.1-A-RU provides decoupling of two CP power supply units. It provides automatic redundant power supply operation for critical applications. It has 2 inputs, each up to 20 A, and 1 output up to 40 A.

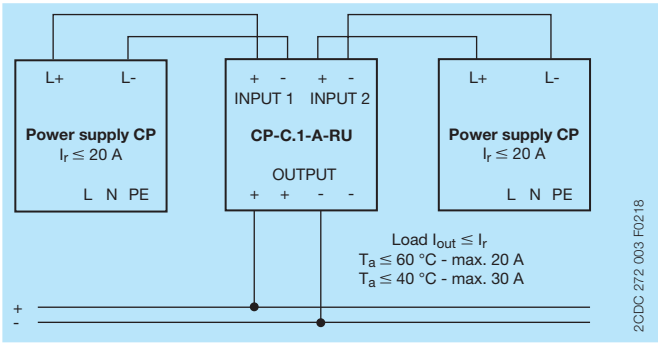
Operating mode

True redundancy with decoupling provided by the CP-C.1-A-RU and CP-C.1-A-RU-C

Redundant circuits are used to increase the operational reliability and eliminate power supply outages. Events that can cause a power supply failure include: incorrect wiring, blown fuses, or failure of a single power supply. If a fault event occurs (called initial fault) in the first power supply circuit, power to all loads is then supplied by the second (redundant) power supply. For this reason, both power supplies must be sized to handle the total current requirement of all loads. The primary and the redundant power supplies are decoupled from one another by the CP-C.1-A-RU unit.

It automatically switches from the primary to the redundant supply after a fault. It decouples the output of the failed power supply from the redundant supply preventing the initial fault from shorting or compromising the redundant supplies' output. In this way, uninterrupted supply of power to all loads is guaranteed. When available, the two power supplies should be connected to different input voltage phases, to avoid loss of power caused by a blown fuse on the primary side of the power supplies.

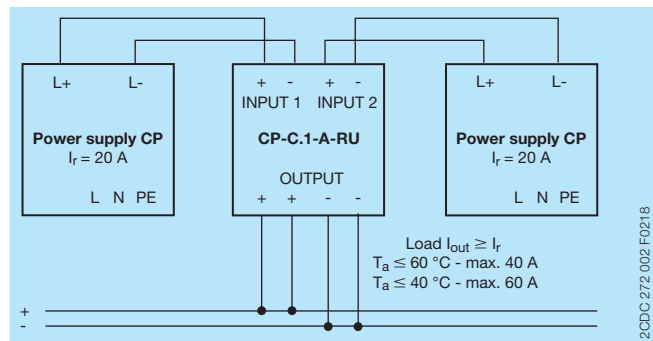
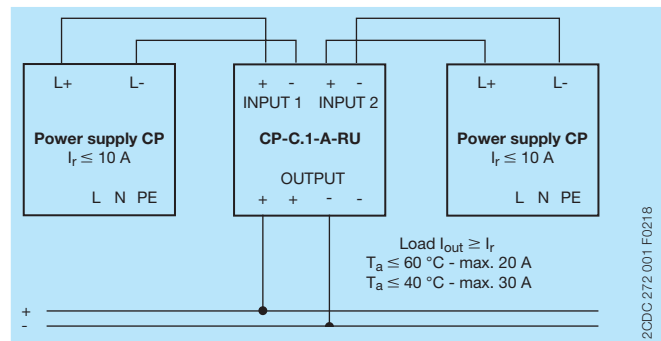
True redundancy,  $I_{out} \leq I_r$



## Parallel operation for increased power

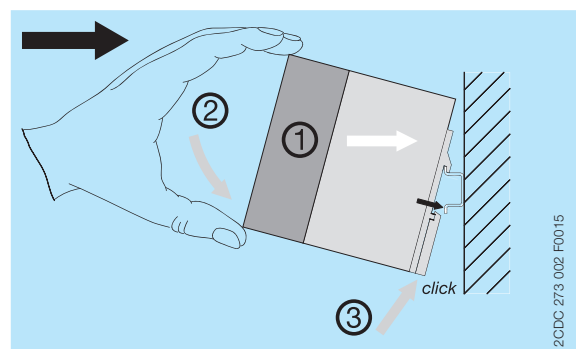
Another operation mode of two power supplies in combination with a redundancy unit is to parallel and decouple them for increased power. The setup looks similar to the true redundant installation above but the field of application is different. Instead of redundancy the max. output current (limits see under the schematics) can be used to power up the loads. The redundancy module decouples both power supplies from each other to avoid that any electrical failure from one power supply circuit affects the other one. However, using the increased power also means there is no redundancy since if one supply fails the other one can not supply the load alone.

**Increased power,  $I_{out} \geq I_r$**

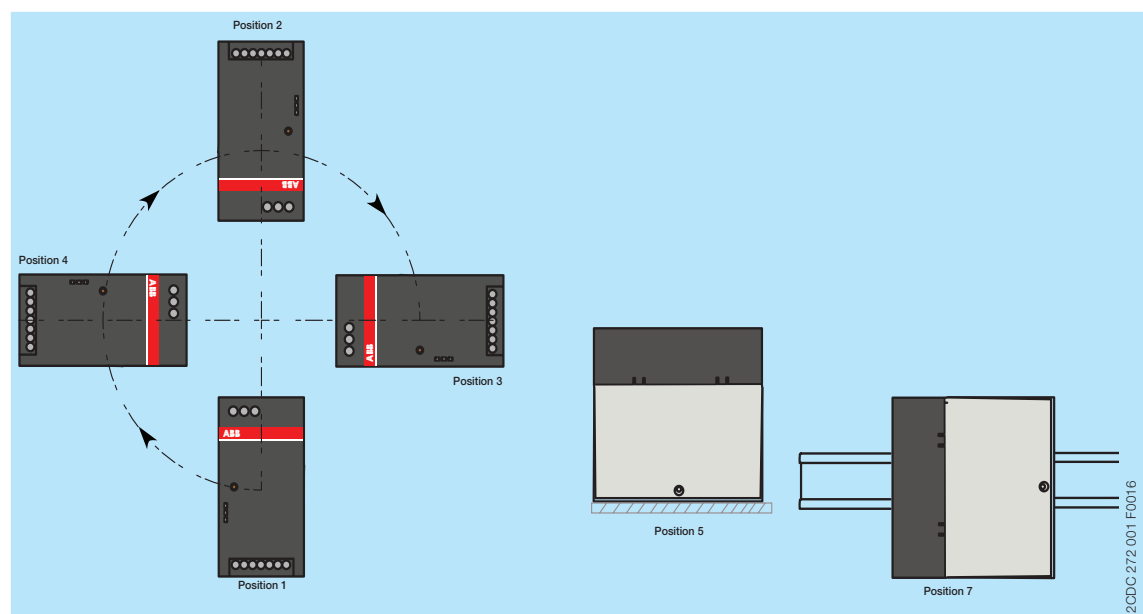


## Mounting

To mount the unit 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.

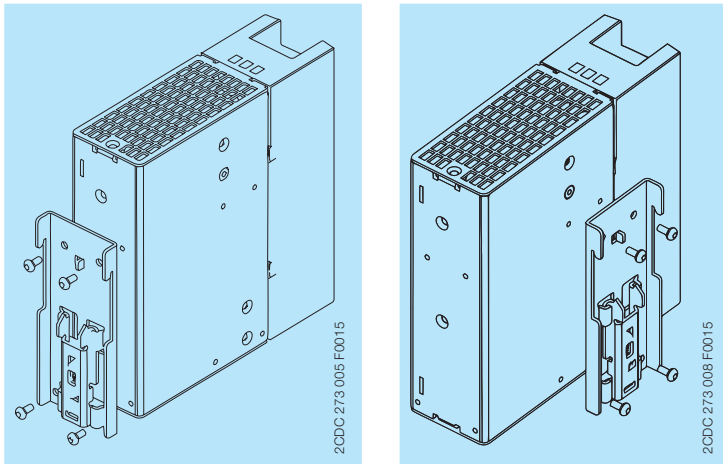


## Mounting positions



In order to ensure a sufficient convection in mounting position 1 and 7, 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-A-RU in position 7

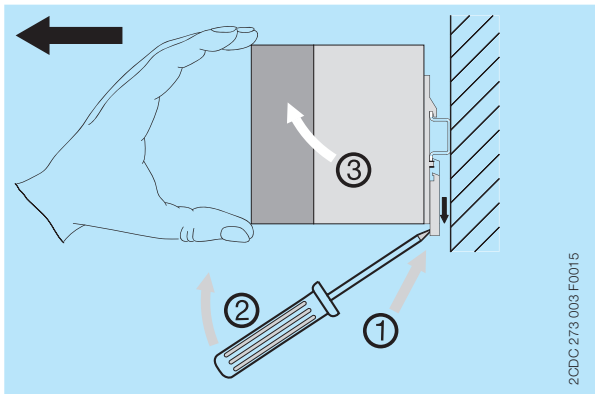


To mount the unit in position 7 remove the DIN rail adapter that is fastened with 4 screws and attach it on the side of the power supply.

Screwdriver: Torx T10  
Tightening torque: 0.7 ±0.1 Nm

Demounting

To release the unit 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.



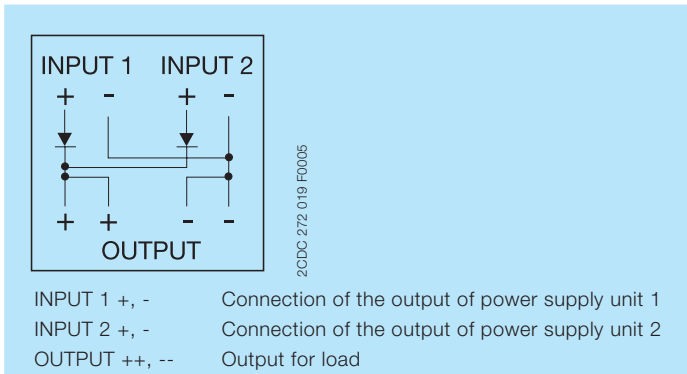
Electrical connection - Input side [INPUT 1 + - / INPUT 2 + -]

Connect the input terminals, stripping length of the cable – see technical data. For channel 1 left-hand input terminals + -, for channel 2 right-hand input terminals + -.

Electrical connection - Output side [OUTPUT ++ --]

Rate the lines for the maximum output current or provide a separate fuse protection. We recommend to choose the cable cross section as large as possible in order to minimize voltage drops. Observe the polarity.

Connection diagram



**In operation pay attention to:**

- Do not modify the installation! Risk of electric arcs!
- 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.).

These devices are maintenance-free chassis-mounted units.

**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:**

- Power supply cables and unit must be sufficiently fused.
- Rate the output lines for the output current 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!**

Never carry out work when voltage is present. The unit 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.

## Technical data

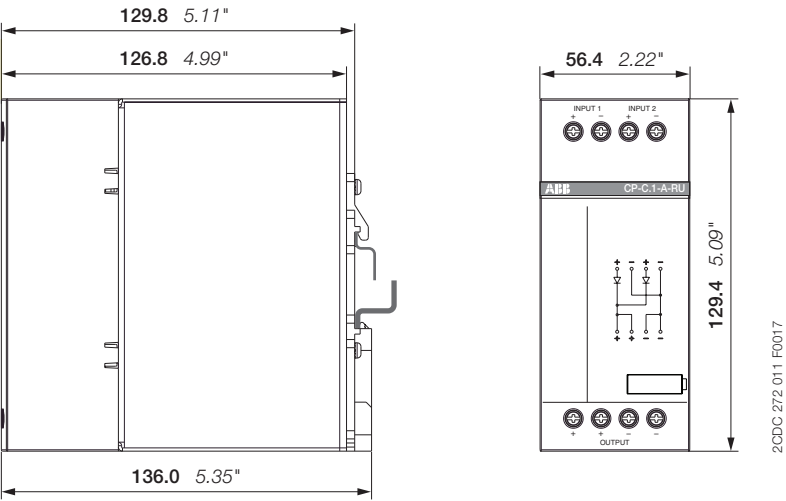
Data at  $T_a = 25\text{ °C}$ ,  $U_{in} = 230\text{ V AC}$  and rated values, unless otherwise indicated

Type	CP-C.1-A-RU		CP-C.1-A-RU-C
Input circuit - Supply circuit	(+/+, -/-)		
Rated input voltage U <sub>in</sub>	24 V DC		
Input voltage range	10-28.5 V DC		
Rated input current I <sub>in</sub> per channel	-25 °C ≤ T <sub>a</sub> ≤ 60 °C	20 A	
Maximum input current per channel	-25 °C ≤ T <sub>a</sub> ≤ 40 °C	30 A	
	-40 °C ≤ T <sub>a</sub> ≤ 40 °C	-	30 A
Transient overvoltage protection	yes, varistor		
Output circuit	(++/--)		
Rated output voltage U <sub>out</sub>	24 V DC		
Voltage drop input/output	typ. 0.6 V, max. 0.9 V		
Rated output current I <sub>r</sub>	-25 °C ≤ T <sub>a</sub> ≤ 60 °C	2 x 20 A or 1 x 40 A	
Max. output current (power reserve)	-25 °C ≤ T <sub>a</sub> ≤ 40 °C	2 x 30 A or 1 x 60 A	
	-40 °C ≤ T <sub>a</sub> ≤ 40 °C	-	2 x 30 A or 1 x 60 A
Derating of the output current	60 °C < T <sub>a</sub> ≤ 70 °C	2.5 % per Kelvin temperature increase	
Resistance to reverse feed	< 60 V		
General data			
Power loss	input 2 x 20 A	23.0 W	
	input 2 x 10 A	9.4 W	
	input 2 x 5 A	4.1 W	
MTBF	acc. to MIL 217 HDBK	on request	
Dimensions	see "Dimensional drawings"		
Material of housing	cover / housing shell / front	aluminium / zinc-coated sheet steel / plastic	
Mounting	DIN rail (IEC/EN 60715), snap-on mounting		
Mounting position	1 and 7		
Minimum distance to other units	horizontal / vertical	25 mm (0.98 in) / 25 mm (0.98 in)	
Degree of protection (IEC/EN 60529)	housing / terminals	IP20 / IP20	
Protection class (IEC/EN 61140)	III		
Electrical connection - Input circuit / Output circuit			
Connecting capacity	fine-strand with(out) wire end ferrule	2.5-10 mm <sup>2</sup> (12-8 AWG)	
	rigid	2.5-16 mm <sup>2</sup> (12-6 AWG)	
Stripping length	10 mm (0.39 in)		
Tightening torque	1.2 Nm (10.5 lb.in)		
Recommended screw driver	PH1 / Ø 4.0 x 0.8 mm (0.16 x 0.03 in)		
Environmental data			
Ambient temperature range	operation	-25...+70 °C (-13... +158 °F)	-40...+70 °C (-40...+158 °F)
	rated load	-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 /	3K3 (-40...+70 °C /
		-13...+158 °F)	-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
Gaseous corrosive environment withstand test (IEC/EN 60068-2-60)	-		testing method: 4 testing period: 21 days ambient conditions: 25 °C, 75 % r.h. air/volume change rate per hour: 3-6 sample not energized during exposure gas concentrations acc. ISA-S71.04.2013 Harsh Group A, G3 IEC 60721-3.3 acc. 3C2/3C3 - H2S ≥ 100 ± 10 ppb - SO2/SO3 ≥ 300 ± 20 ppb - Cl2 ≥ 100 ± 10 ppb - NOx ≥ 1250 ± 20 ppb

Type	CP-C.1-A-RU		CP-C.1-A-RU-C
Isolation data			
Rated impulse withstand voltage U <sub>imp</sub> (EN 50178)	input / housing	1.5 kV (1.2/50 μs)	
	output / housing	1.5 kV (1.2/50 μs)	
Pollution degree	2		
Standards / Directives			
Standards	IEC/EN 61204		
EMC Directive	2014/30/EU		
ATEX Directive	-	2014/34/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		
Electromagnetic compatibility			
Interference immunity to			
electrostatic discharge	IEC/EN 61000-4-2	Level 4, contact discharge 8 kV, air discharge 15 kV (criterion B)	
electrical fast transient / burst	IEC/EN 61000-4-4	Level 3, DC mains inputs and output ±2 kV (criterion B)	
surge	IEC/EN 61000-4-5	Level 1, DC mains inputs and output ±0.5 kV, input and output vs. PE ±1 kV (criterion B)	

Dimensions

in mm [inches]



## Further Documentation

Document title	Document type	Document number
Electronic relays and controls	Catalog	2CDC 110 004 C02xx
Redundancy unit	Instruction manual	1SVC 360 561 M0000
Additional information and notes on safety (ATEX)	Instruction manual	1SVC 360 560 M9000

You can find the documentation on the internet at [www.abb.com/lowvoltage](http://www.abb.com/lowvoltage)

-> Automation, control and protection -> 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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