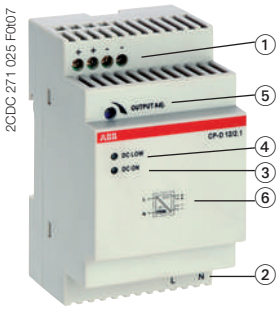
Power supply CP-D 12/2.1

Primary switch mode power supply

Data sheet



① OUTPUT ++/--: terminals - output

② INPUT L, N: terminals - input

③ DC ON: green LED - output voltage applied

④ DC LOW: red LED - output voltage too low

⑤ OUTPUT Adjust: potentiometer - adjustment of output voltage

⑥ Circuit diagram

Features

- Rated output voltage 12 V DC
- Output voltage adjustable via front-face potentiometer “OUTPUT Adjust”
- Rated output current 2.1 A
- Rated output power 30 W
- Wide range input 100-240 V AC (90-264 V AC, 120-375 V DC)
- Efficiency of typ. 80 %
- Low power dissipation and low heating
- Free convection cooling (no forced cooling with ventilators)
- Ambient temperature range during operation -40...+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
- Structural form ideal for installation in distribution panels
- Light-grey enclosure in RAL 7035

Approvals

	UL 508, CAN/CSA C22.2 No.14	*)
	UL 1310, CAN/CSA C22.2 No.223 (Class 2 Power Supply)	*)
	UL 60950, CAN/CSA C22.2 No.60950	*)
	GOST	
	CCC	*)

*) Approval refers to rated input voltage U_{in}

Marks

CE	CE	
	C-Tick	pending

Order data

Type	Input voltage range	Rated output voltage / current	Order code
CP-D 12/2.1	90-264 V AC / 120-375 V DC	12 V DC / 2.1 A	1SVR 427 043 R1200

Application

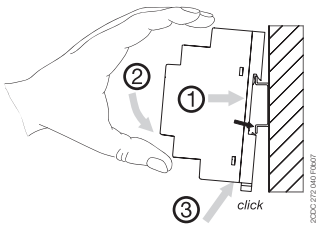
The primary switch mode power supply has two voltage input ranges. This enables the supply with AC or DC. Furthermore it is equipped with two generous capacitors, which ensure mains buffering of at least 30 ms. That is why the device can be used worldwide also in high fluctuating networks and battery-powered plants.

Operating mode

Adjustable output voltage

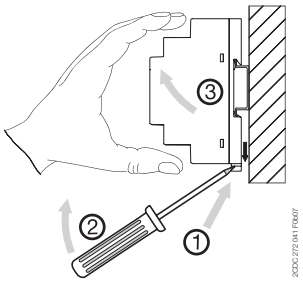
This device features an continuously adjustable output voltage from 12-14 V DC. Thus they can be optimally adapted to the application, e.g. compensating the voltage drop caused by a long line length.

Installation



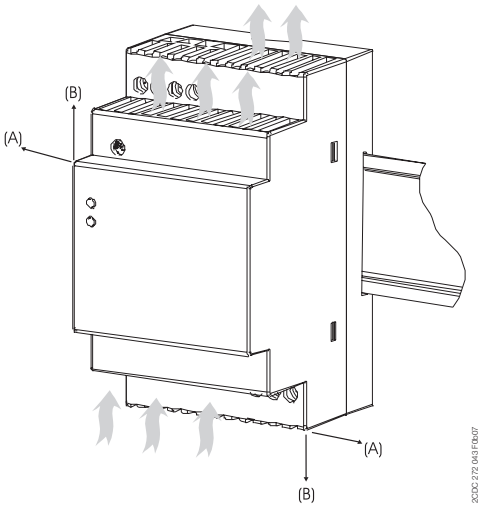
Mounting

The switch mode power supply can be snapped on a DIN rail according to IEC/EN 60715 as shown in the accompanying picture. For that the device is set with its mounting rail slide on the upper edge of the mounting rail and locked by lifting it downwards.



Demounting

Remove the switch mode power supply as shown in the accompanying picture. For that the latching lever is pulled downwards by means of the screwdriver. Alternatively you can press the unlock button to release the device. Then in both cases the device can be unhinged from the mounting rail edge and removed.



Mounting position

The devices have to be mounted horizontally with the input terminals on the bottom. In order to ensure a sufficient convection, the minimum distance to other modules should not be less than 25 mm in vertical direction and horizontal direction.

Electrical connection

Connect the input terminals L and N. The installation must be executed acc. to EN 60950, provide a suitable disconnecting device (e. g. line protection switch) in the supply line. The input side is protected by an internal input fuse.

Rate the lines for the maximum output current or provide a separate fuse protection. We recommend to choose the cable section as large as possible in order to minimize voltage drops. Observe the polarity. Actuate plug connector only when power is off. 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 therefore be earthed by the user according to the needs with + or - (PELV).

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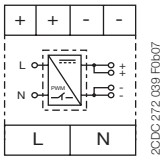
Connection diagram(s)



+ +, --	Output voltage
L, N	Input voltage

Safety instructions and warnings

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

CP-D power supplies are chassis-mounted units. They are maintenance-free and do not contain any integral

setting elements and should therefore not be opend.

Before any installation, maintenance or modification work:

Disconnect the system from the supply network and protect against switching on!

Before start of operation the following must be ensured:

- Connect to main according to the specific national regulations.
- 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.
- Rate the output lines for the output current of the power supply and connect them with the correct polarity.
- In order to ensure sufficient air-cooling the distance to the other devices has to be considered.

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

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 enclosure can become very hot.
- If the internal fuse blows, most probably the device is defect. In this case, an examination of the switch mode power supply by the manufacturer is necessary.

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.

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Technical data

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

Input circuits - Supply circuits		1SVR 427 043 R1200	
Rated input voltage U_{in}	L, N	100-240 V AC	
Typical input current / power consumption		110 V AC	230 V AC
	100-240 V AC	502 mA / 31.14 W	277 mA / 31.2 W
Input voltage range	AC	90-264 V AC	
	DC	120-375 V DC	
Frequency range	AC	47-63 Hz	
Inrush current limiting		50 A max. 3 ms	
Power failure buffering time		min. 30 ms	
Internal input fuse (apparatus protection, not accessible)		2 A slow-acting / 250 V AC	
Power factor correction (PFC)		no	

Indication of operational states		1SVR 427 043 R1200
Output voltage	DC ON: green LED	⎍: output voltage applied
	DC LOW: red LED	⎍: output voltage too low

Operating controls		1SVR 427 043 R1200
Potentiometer - OUTPUT Adjust: Potentiometer	OUTPUT Adjust	Output adjustment

Output circuits		1SVR 427 043 R1200
Rated output voltage	++,--	12 V DC
Tolerance of the output voltage		± 1 %
Adjustment range of the output voltage		12-14 V DC
Rated output power		30 W
Rated output current I_r	$T_a \leq 60$ °C	2.1 A
Derating of the output current	60 °C < $T_a \leq$ 70 °C	2.5 %/°C
Deviation	load change statical	max. 1 %
	change of output voltage within the input voltage range	max. 1 %
Control time		< 1 ms
Starting time after applying supply voltage	at I_r	1000 ms
Rise time	at rated load	typ. 1 ms
Residual ripple and switching peaks	BW = 20 MHz	50 mV
Parallel connection		yes, use of CP-D RU required
Series connection		yes, to increase voltage
Resistance to reverse feed		18 V / 1 s
Characteristic curve of output		U/I characteristic curve
Short-circuit protection		continuous short-circuit stability
Short-circuit behaviour		continuation with output power limiting
Current limiting at short circuit		typ. 5.9 A
Overload protection		output power limiting
Overvoltage protection		15-16.5 V DC
No-load protection		continuous no-load stability
Starting of capacitive loads		unlimited

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General data		1SVR 427 043 R1200
Duty time		100 %
Dimensions (W x H x D)		53 x 91 x 57.5 mm (2.09 x 3.58 x 2.26 inches)
Material of housing	housing	Plastic
Efficiency		typ. 82 %
Weight		0.196 kg (0.42 lb)
Mounting position		horizontal
Minimum distance to other units		
normal operation mode	horizontal	25 mm (0.98 inch)
	vertical	25 mm (0.98 inch)
Mounting		DIN rail (IEC/EN 60715), snap-on mounting without any tool
Degree of protection	housing / terminals	IP20 / IP20
Class of protection		II

Electrical connection		1SVR 427 043 R1200
Input circuit / Output circuit		Screw connection
Wire size	fine-strand with wire end ferrule	0.2-2.5 mm^2 (24-14 AWG)
	rigid	0.2-2.5 mm^2 (24-12 AWG)
Stripping length		7 mm (0.28 in)
Tightening torque		0.7 Nm (6 lb.in)

Environmental data		1SVR 427 043 R1200
Ambient temperature range	operation	-40...+70 °C
	full load	-40...+60 °C
	storage	-40...+85 °C
Damp heat, cyclic (IEC/EN 60068-2-30)		4 x 24 h cycles, 40 °C, 95 % RH
Vibration, half-sine (IEC/EN 60068-2-6)		50 m/s^2, 10 Hz - 2 kHz
Shock, half-sine (IEC/EN 60068-2-27)		40 m/s^2, 22 ms

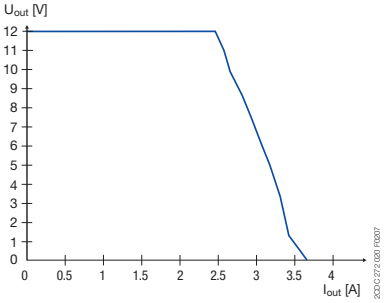
Isolation data		1SVR 427 043 R1200
Rated isolation voltage U_i	input circuit / output circuit	3 kV AC
Pollution degree		2
Overvoltage category (UL/IEC/EN 60950-1)		II

Standards / Directives	1SVR 427 043 R1200
Product standard	EN 61204
EMC Directive	2004/108/EC
Low Voltage Directive	2006/95/EC
Electrical safety	UL 508, UL 60950-1, EN 60950-1
Protective low voltage	SELV (EN 60950-1)

Electromagnetic compatibility		1SVR 427 043 R1200
Interference immunity to		IEC/EN 61000-6-2
electrostatic discharge	IEC/EN 61000-4-2	Level 4 (4 kV / 15 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)
surge	IEC/EN 61000-4-5	Level 3 (2 kV L-L)
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	Level 3 (10 V)
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

Technical diagrams

Output behaviour



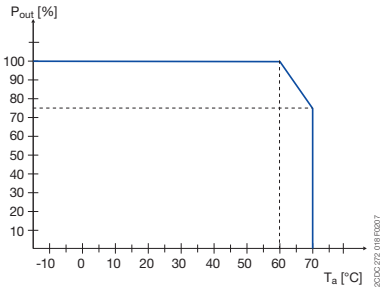
Characteristic curve of output at T_a = 25 °C

The switch mode power supply CP-D 12/2.1 is able to supply at 12 V DC output voltage and

- at an ambient temperature of:
  ≤ 60 °C a continuous output current of approx. 2.1 A
- at ambient temperatures of:
  60 °C < T_a ≤ 70 °C the output power has to be reduced by 2,5 % per °C temperature increase.

If the switch mode power supply is loaded with an output current > 2.1 A, the operating point is passing through the U/I characteristic curve shown.

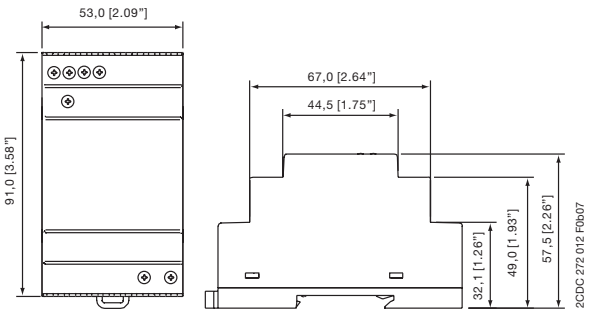
Temperature behaviour



Characteristic curve of temperature at U_{out}

Dimensions

in mm



CP-D 12/2.1

Further Documentation

Document title	Document type	Document number
Electronic Products and Relays	Technical catalogue	2CDC 110 004 C02xx
Power Supply Units	Application manual	2CDC 114 048 M020x

You can find the documentation on the internet at www.abb.com/lowvoltage -> Control Products -> Power Supplies.

CAD system files

You can find the CAD files for CAD systems at http://abb-control-products.partcommunity.com/PARTcommunity/Portal/abb-control-products -> Low Voltage Products & Systems -> Control Products -> Power Supplies -> CP-D - Power Supplies.

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