Data sheet

Power Supply CP-ASI/2.8
Primary switch mode power supply for AS-interface

The CP-ASI power supply range is specifically designed with integrated data decoupling for the supply of AS-Interface systems.

Up to 62 slaves (binary I/O devices) can be supplied with a single two-conductor cable.

The configurable IR addressing mode allows the easy assign of new ID addresses by means of an external infrared programming unit.

2CDC271002S0012

Characteristics
- Rated output voltage 30.5 V DC
- Rated output current 2.8 A
- Rated output power 85 W
- Rated input voltage 115 or 230 V AC, configurable
- Infrared addressing mode
- High efficiency of up to 90.5 %
- Low power dissipation and low heating
- Free convection cooling (no forced cooling with ventilators)
- Ambient temperature range during operation -10…70 °C
- Open-circuit, overload and short-circuit stable
- Integrated input fuse
- Tool-free mounting on DIN rail as well as demounting
- LEDs for the indication of operational states

Approvals
UL 508, CAN/CSA C22.2 No.107.1[1)]

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

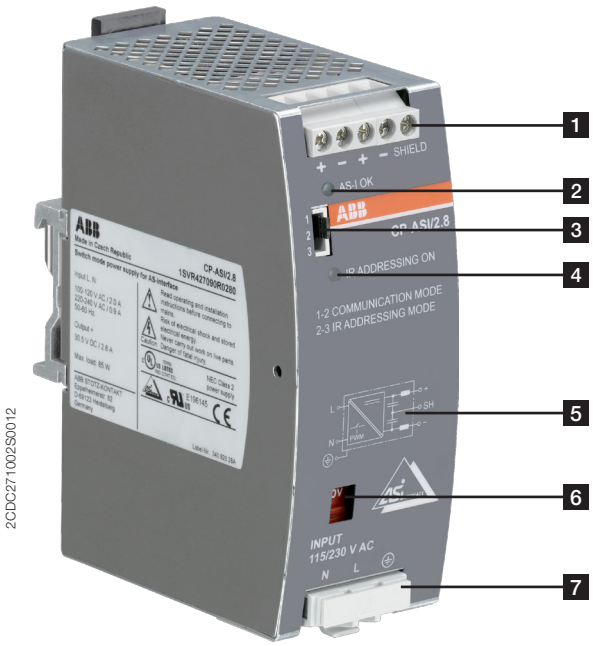
[1)] Approvals refer to rated input voltage U_{in}

Marks
CE CE

Order data

Type	Input voltage range	Rated output voltage	Rated output current	Order code
CP-ASI/2.8	85-132 V AC 184-264 V AC	30.5 V DC	2.8 A	1SVR427090R0280

Functions



2CDC271002S0012

1 Output

+, -, +, -, SHIELD: output terminals

2 Indication of operational states

AS-I OK: green LED – output voltage OK

3 Configuration of operation mode

Jumper

4 Indication of operational states

IR ADDRESSING ON: red LED – infrared addressing mode active

5 Circuit diagram

6 Input voltage selector

Adjustment of input voltage

7 Input

L, N, PE: input terminals

Application

The primary switch mode power supply is specifically designed with integrated data decoupling for the supply of AS-interface systems. It operates at two selectable input voltage ranges and can be used worldwide, within compact dimensions. The easy-to-set front-face jumper allows the assignment of new ID addresses to slaves by means of an external infrared programming unit without disconnecting them from the AS-Interface cable.

Up to 62 binary I/O devices can be connected and supplied according to the AS-interface bus technology with a single two-conductor cable. The communication signals are modulated onto the slaves' DC supply voltage of the AS-interface system, which therefore requires a specific power supply with integrated data decoupling.

Operating mode

By means of the input voltage selector the input voltage can either be set to 115 V AC or 230 V AC. The front-face jumper allows the configuration of the operation mode of the power supply, i.e. "1-2 COMMUNICATION MODE" or "2-3 IR ADDRESSING MODE" to enable communication control and supply of AS-interface slaves or to interrupt the data communication for the assignment of new ID addresses to participants by means of an external infrared programming unit.

The green LED "AS-I OK" is on during normal operation, i.e. when the output voltage exceeds 30 V DC, and is off at overload.

The red LED "IR ADDRESSING ON" is on when data communication has been interrupted by means of the jumper.

Installation

The device must be installed by qualified persons only and in accordance with the specific national regulations (e.g. VDE, etc.). The devices are maintenance-free chassis-mounted units.

Before installation

DANGER!

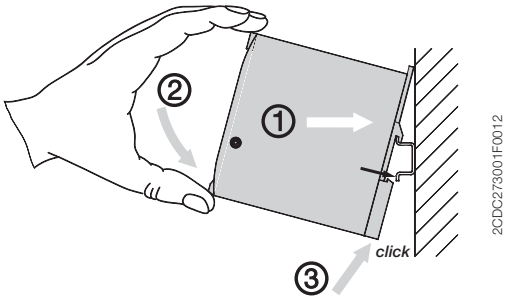
Components with high stored energy and circuits with high voltage

Danger to be electrocuted!

- ▶ Disconnect the system from the supply network and protect against switching on before any installation, maintenance or modification work.
- ▶ Do not introduce any objects into the unit and do not open the unit.
- ▶ Ensure that the service personnel is protected against inadvertent contact with parts carrying energy.

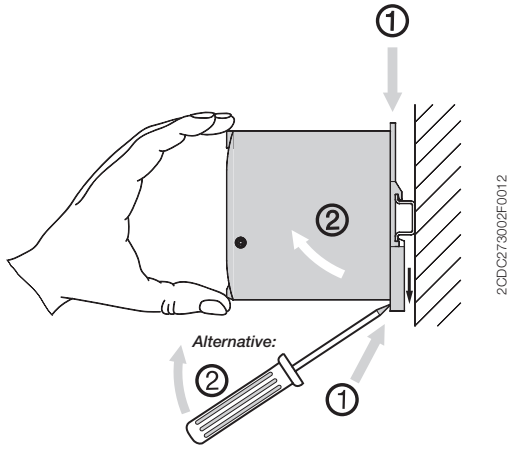
Mounting

The switch mode power supply can be snapped on a DIN rail (TH 35-15 or TH 35-7.5 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.



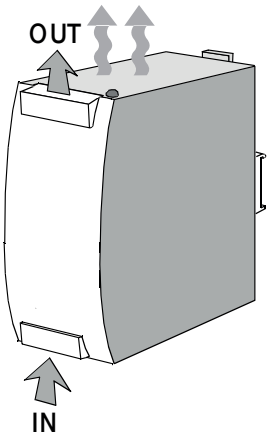
Demounting

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 the upperside of the latching lever can be pressed to release the device. Then in both cases the device can be unhinged from the mounting rail edge and removed.

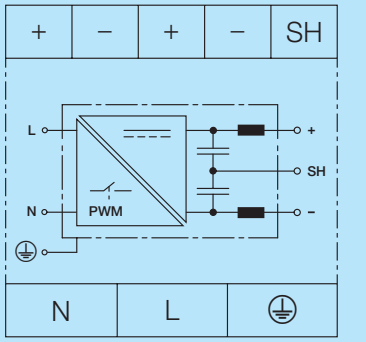


Mounting position

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 15 mm (0.59 in) in vertical and 25 mm (0.98 in) horizontal direction.



Electrical connection



+, -	Output voltage
SH	Shield
L, N	Input voltage
⏚	Protective earth

Preparations:

- Connect to mains according to the specific national regulations.
- Power supply cables and unit must be sufficiently fused. A disconnecting device has to be provided for the power supply to disengage unit and supply cables from supply mains if required.
- We recommend to choose the cable section as large as possible in order to minimize voltage drops.
- In order to ensure sufficient air-cooling the distance to other devices has to be considered.

Instructions:

1. Connect the input terminals L and N.
2. Connect the protective earth conductor to terminal ⏚ (protection class I).
3. Provide a suitable disconnecting device (e.g. line protection switch) in the supply line acc. to IEC/EN 60950-1.
4. Rate the lines for the maximum output current (considering the short-circuit current) or provide a separate fuse protection. The input side is protected by an internal input fuse.
5. Observe the polarity.

Connect the ‘shield’ terminal on the AS-i power supply to the machine ground so that the AS-i system is symmetrically operated against this machine ground. This improves noise sensitivity in case of symmetrical interference on the AS-i cable.

The device is overload, short-circuit and open-circuit proof. The secondary side of the power supply unit is electrically isolated from the input.

Operation

DANGER!

High current

Risk of electric arcs and electric shocks!

- ▶ Do not modify the installation (primary and secondary side).
- ▶ Intended use.

CAUTION!

Depending on the operation conditions the enclosure can become very hot

Risk of burns!

- ▶ In order to ensure sufficient air-cooling the distance to other devices has to be considered.

The device is intended for use as a primary switch mode power supply for AS-interface systems. Any other usage is not supported by the manufacturer. Other usage may impair safety and cause operational difficulties or destruction of the unit.

Service

The internal fuse is not user-replaceable. If the internal fuse blows, most probably the device is defective. In this case, an examination of the switch mode power supply by the manufacturer is necessary.

Technical data

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

Input circuit – Supply circuit		L, N
Rated input voltage U_{in}	switch position 115 V	100-120 V AC
	switch position 230 V	220-240 V AC
Input voltage range	switch position 115 V	85-132 V AC
	switch position 230 V	184-264 V AC
Frequency range AC		47-63 Hz
Typical input current	switch position 115 V	2.0 A
	switch position 230 V	0.9 A
Typical power consumption		94 W
Inrush current limiting / I^2t (cold start)		< 20 A (132 V AC) / approx. 1.5 A^2/s
		< 38 A (264 V AC) / approx. 1.8 A^2/s
Discharge current towards PE		< 3.5 mA
Power failure buffering time	at 115 V AC	min. 35 ms
	at 230 V AC	min. 40 ms
Transient overvoltage protection		varistor
Internal input fuse		2.5 A slow acting / 250 V AC
External fusing (not necessary, but recommended)		circuit breaker with C characteristic min. 6 A, or alternatively 10 A with B characteristic
Power Factor Correction (PFC)	at 115 V AC	0.58
	at 230 V AC	0.53

Indication of operational states		
Output voltage	AS-I OK	LED green
IR addressing mode	IR ADDRESSING ON	LED red

Output circuit		+, -
Rated output power		85 W
Rated output voltage		30.5 V DC
Tolerance of the output voltage		± 3 %
Rated output current I_r	$T_a \leq 60$ °C	2.8 A
Derating of the output current	60 °C < $T_a \leq$ 70 °C	2.5 % / °C
Control time		< 2 ms
Starting time after applying the supply voltage		max. 400 ms
Rise time		max. 100 ms
Residual ripple	BW = 500 kHz	typ. < 50 mV_{pp}
Switching peaks	BW = 20 MHz	typ. < 100 mV_{pp}

Output circuit – No-load, overload and short-circuit behaviour		
Characteristic curve of output		U/I characteristic curve
Short-circuit protection		continuous short-circuit stability
Short-circuit behavior		continuation with output power limiting
Current limiting at short circuit	min / max	3.2 A / 4.6 A
Overload protection		output power limiting
No-load protection		continuous no-load stability

General data		
MTBF		on request
Power dissipation		typ. < 9.1 W (230 V AC, 2.8 A)
Efficiency		typ. 90.5 %
Duty time		100 %
Dimensions (W x H x D)	product dimensions	49 x 131 x 107 mm (1.93 x 5.16 x 4.21 in)
	packaging dimensions	151 x 65 x 140 mm (5.94 x 2.56 x 5.51 in)
Weight	net weight	0.495 kg (1.019 lb)
	gross weight	0.568 kg (1.252 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	15 mm / 25 mm (0.59 / 0.99 in)
Degree of protection	housing / terminals	IP 20
Protection class		I

Electrical connection		
Wire size	fine-strand with wire end ferrule	0.5-4 mm² (20-12 AWG)
	fine-strand without wire end ferrule	0.5-4 mm² (20-12 AWG)
	rigid	0.5-6 mm² (20-10 AWG)
Stripping length		7 mm (0.28 in)
Tightening torque		0.8 Nm (7.08 lb.in)

Environmental data		
Ambient temperature ranges	operation	-10...+70 °C
	rated load	-10...+60 °C
	storage	-25...+85 °C
Vibration		2-17.8 Hz, amplitude ± 1.6 mm
	sinusoidal (IEC/EN 60068-2-6)	17.8 Hz - 500 Hz, 2 g
	random (IEC 60068-2-64)	2-800 Hz 0.5 s^2 (s^3)
Shock, half-sine (IEC/EN 60068-2-27)		15 g (6 ms), 10 g (11 ms)

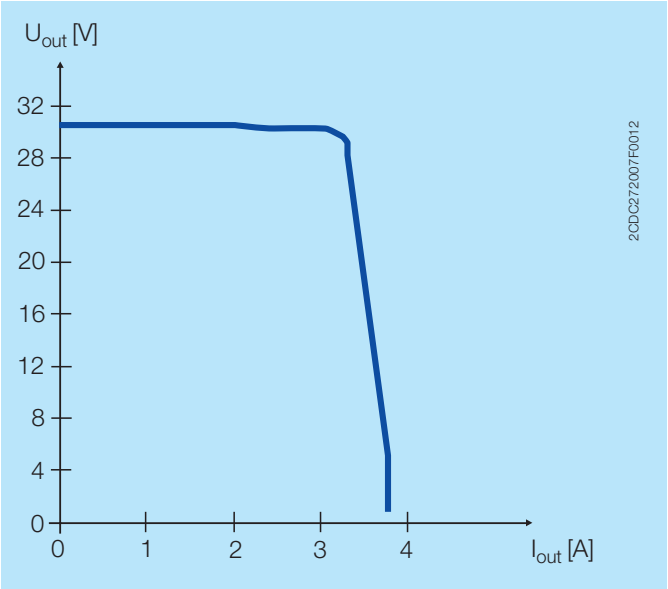
Isolation data		
Rated insulation voltage U_i	input / output	300 V
(IEC/EN 60950-1, EN 50178)	input / PE	300 V
	output / PE	50 V
	shield / output	50 V
	shield / PE	50 V
Rated impulse withstand voltage U_{imp}	input / output	6 kV 1.2/50 µs
(EN 50178)	input / PE	4 kV 1.2/50 µs
	output / PE	500 V 1.2/50 µs
Power-frequency withstand voltage test (test voltage)	input / output	2.5 kV AC / 3.0 kV AC
(routine test / type test)	input / PE	2.5 kV AC / 2.5 kV AC
	output / PE	500 V AC / 500 V AC
Pollution degree (IEC/EN 60950-1)		2
Overvoltage category (IEC/EN 60950-1, EN 50178)	input	II (IEC/EN 60950-1), III (EN 50178)
	output	II (IEC/EN 60950-1), II (EN 50178)

Standards / Directives	
Standards	IEC/EN 60950-1
Low Voltage Directive	2014/35/EU
Protective low voltage	SELV (IEC/EN 60950-1), PELV
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

Electromagnetic compatibility		
Interference immunity to		IEC/EN 61000-6-2
electrostatic discharge	IEC/EN 61000-4-2	Level 4 (8 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	input circuit: Level 4 (4 kV)
		output circuit: Level 3 (2 kV)
surge	IEC/EN 61000-4-5	input circuit: L-L Level 3 (2 kV) / L-PE Level 4 (4 kV)
		output circuit: Level 1 (0.5 kV)
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	Level 3 (10 V, 150 kHz - 80 MHz)
voltage dips, short interruptions and voltage variations	IEC/EN 61000-4-11	Class 3
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

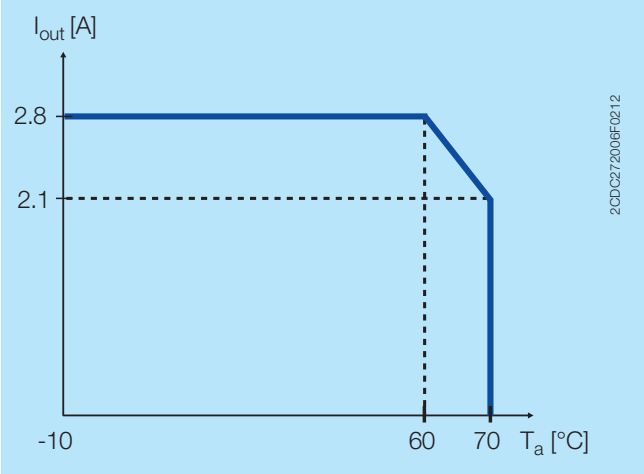
Technical diagrams

Output behaviour



Characteristic curve of output at T_a = 25 °C

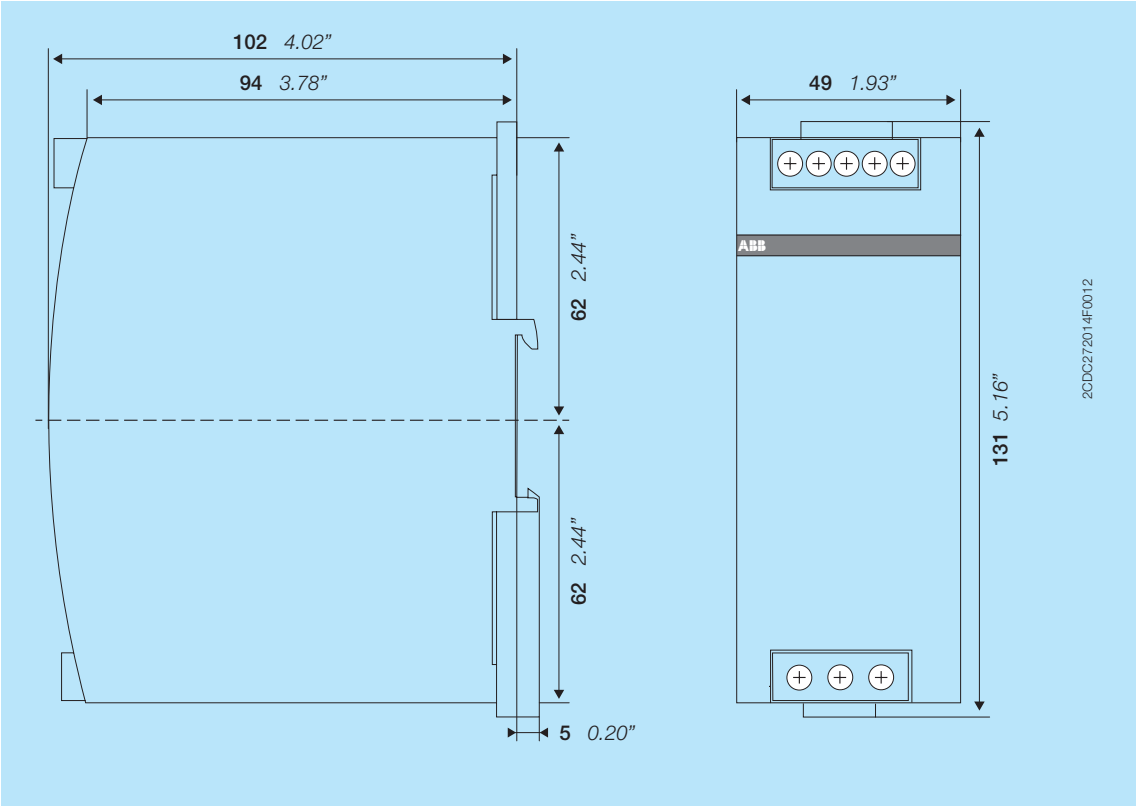
Temperature behaviour



Characteristic curve of temperature at rated load

Dimensions

in **mm** and inches



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
CP-ASI/2.8, CP-ASI/4.0, CP-ASI/8.0	Instruction manual	1SVC 427 090 M0000

You can find the documentation on the internet at 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 -> Power Supplies.

Contact us

ABB STOTZ-KONTAKT GmbH
P. O. Box 10 16 80
69006 Heidelberg, Germany
Phone: +49 (0) 6221 7 01-0
Fax: +49 (0) 6221 7 01-13 25
E-mail: info.desto@de.abb.com

You can find the address of your local sales organisation on the ABB home page
http://www.abb.com/contacts
-> Low Voltage Products and Systems

Document number 1SVC 114 001 D0200 (08.2016)

Note:
We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB AG does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB AG.

Copyright© 2016 ABB
All rights reserved