Power Supply CP-E 24/2.5

Application

The primary switch mode power supply offers 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 (at 230 V AC). That is why the devices can be used worldwide also in high fluctuating networks and battery powered plants.

Features

- Rated output voltage 24 V DC
- Output voltage adjustable via front face rotary potentiometer “OUTPUT Adjust”
- Rated output current 2.5 A
- Rated output power 60 W
- Wide range input 100 - 240 V AC (85 - 264 V AC, 90 - 375 V DC)
- Typical efficiency of 89 %
- 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
- Signaling output "DC OK" (Transistor) for output voltage OK
- LEDs for status indication

Technical Data

In addition to the RTU500 series general technical data, the following applies:

Input circuit

Rated input voltage U_{in}	100-240 V AC
Input voltage range	85-264 V AC / 90-375 V DC
Frequency range AC	47-63 Hz
Typical input current	1060 mA at 115 V AC 590 mA at 230 V AC
Typical power consumption	69.2 W
Inrush current limiting	20 A (max. 3 ms) at 155 V AC 40 A (max. 3ms) at 230 V AC
Discharge current input / output input / PE	 0.25 mA 3.5 mA
Power failure buffering time	min. 20 ms at 115 V AC min. 30 ms at 230 V AC
Internal input fuse	2 A slow-acting/ 250 V AC
Power factor correction (PFC)	no

Indication of operational states

Output voltage	V: output voltage OK (green LED)

Output circuit

Rated output voltage	24 V DC
Tolerance of the output voltage	0 ... +1 %
Adjustment range of the output voltage	24-28 V DC
Rated output power	60 W
Rated output current L_r	2.5 A $T_a \leq 60$ °C
Derating of the output current	2.5 %/°C 60 °C < $T_a \leq 70$ °C
Signalling output for output voltage OK	Transistor (DC OK)
Maximum deviation with	±0.5 % (load change statical) ±0.5 % (change of output voltage within the input voltage range)
Control time	< 2 ms
Starting time after applying the supply voltage	max. 1 s at L_r max. 1.5 s with 7000 µF
Rise time	max. 150 ms at L_r max. 500 ms with 7000 µF
Fall time	max. 150 ms
Residual ripple and switching peaks	50 mV BW = 20 MHz
Resistance to reverse feed	1 s - max. 35 V DC

Output circuit – No-load, overload and short-circuit behavior

Characteristic curve of output	U/I characteristic curve
Short-circuit protection	continuous short-circuit proof
Short-circuit behaviour	continuation with output power limiting
Overload protection	output power limiting
No-load protection	continuous no-load stability
Starting of capacitive loads	7000 µF

General data

Power dissipation	typ. 8.8 W
Efficiency	typ. 89 %
Duty time	100 %
Dimensions (W x H x D)	40.5 x 90 x 114 mm (1.59 x 3.54 x 4.49 in)
Weight	0.331 kg (0.73 lb)
Material of housing	Plastic
Mounting	DIN rail (IEC/EN 60715), snap-on mounting without any tool
Mounting position	horizontal
Minimum distance to other units	25 mm / 25 mm (0.98 in / 0.98 in) horizontal / vertical
Degree of protection	IP20 / IP20 housing / terminals
Protection class	I

Electrical connection – input circuit / output circuit

Wire size fine-strand with wire end ferrule fine-strand without wire end ferrule rigid	0.2-2.5 mm ^{2} (24-14 AWG)
Stripping length	6 mm (0.24 in)
Tightening torque	0.6 Nm (5 lb.in)

Environmental data

Ambient temperature range operation rated load storage	 -40…+70 °C -40...+60 °C -40…+85 °C
Damp heat	95 % RH, without condensation
Vibration (sinusoidal) (IEC/EN 60068-2-6)	10-500 Hz, 2 G, along X, Y, Z each axis, 60 min. for each axis
Shock (half-sine) (IEC/EN 60068-2-27)	15 G, 11 ms, 3 axis, 6 faces, 3 times for each face

Isolation data

Rated insulation voltage U_i input / output input / PE output / PE	 3 kV AC 1.5 kV AC 0.5 kV AC; 0.71 kV DC
Pollution degree	2
Overvoltage category (UL/IEC/EN 60950-1)	II

Standards

Product standard	EN 61204-3
Low Voltage Directive	2006/95/EC
EMC directive	2004/108/EC
RoHS directive	2002/95/EC
Electrical safety	EN 60950-1, UL 60950-1, UL 508, EN 61558-1, EN 61558-2-17, EN 60204-1
Protective low voltage	SELV (EN 60950)

Electromagnetic compatibility

Interference immunity to	IEC/EN 61000-6-2
electrostatic discharge IEC/EN 61000-4-2	Level 4 (air discharge 15 kV / contact discharge 8 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 / 5 kHz)
Surge IEC/EN 61000-4-5	L-L Level 3 (2 kV) / L-PE Level 4 (4 kV)
conducted disturbances, induced by radio-frequency fields IEC/EN 61000-4-6	Level 3 (10 V)
power frequency magnetic fields IEC/EN 61000-4-8	Level 4 (30 A/m)
voltage dips, short interruptions and voltage variations IEC/EN 61000-4-11	dip: >95 % 10 ms / >30 % 500 ms interruptions: >95 % 5000 ms
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

Approvals

	UL 508, CAN/CSA C22.2 No.14	Approval refers to rated input voltage U_{in}
	UL 1310, CAN/CSA C22.2 No.223 (Class 2 Power Supply)	
	ANSI/ISA-12.12 (Class I, Div. 2, hazardous locations)	
	UL 60950, CAN/CSA C22.2 No.60950	Approval refers to rated input voltage U_{in}
	GOST	
	CCC	Approval refers to rated input voltage U_{in}

Marks

CE	CE
	C-Tick

Ordering Information

Power Supply CP-E 24/2.5	1SVR427032R0000

Safety instruction

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.

Disconnect system from supply network
Before any installation, maintenance or modification work: Disconnect the system from the supply -network and protect against switching on.

Before start of operation
Attention! Improper installation/operation may impair safety and cause operational difficulties or -destruction of the unit. Before 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 power supply to disengage unit and supply cables from supply mains if required.
- The protective earth conductor must be connected to the terminal PE (Protection class I)
- The secondary side of the power supply unit is not earthed and can be earthed by the user according to the needs with L+ or L-.
- 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 other devices has to be considered.

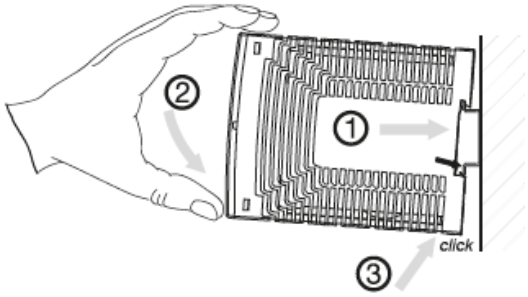
In operation

- Do not modify the installation (primary and secondary side)! High current! Risk of electric arcs and electric shocks (danger to life)!
- Risk of burns: Depending on the operation conditions the enclosure can become very hot.
- 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.

Installation

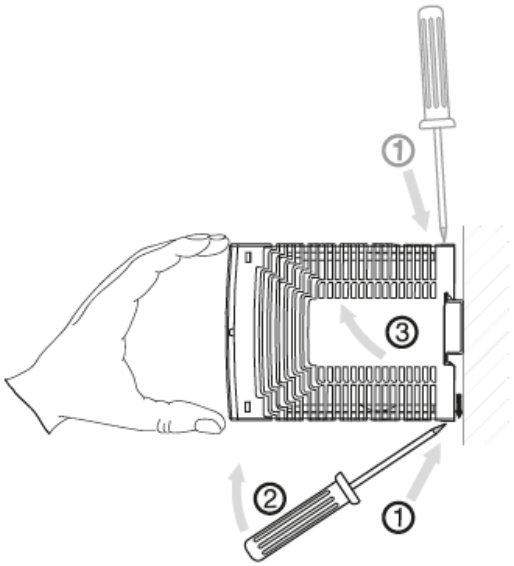
Mounting

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.



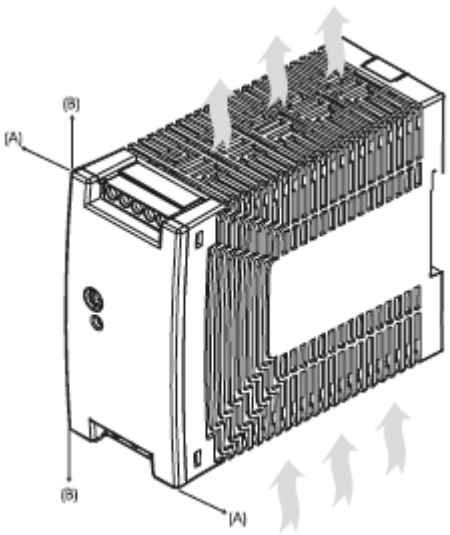
Demounting

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 and -horizontal direction.



Electrical connection

Connect the input terminals L and N. The protective earth conductor PE must be connected. 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 (considering the short circuit 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. The device is overload, short circuit and open circuit proof. The secondary side of the power supply unit is electrically isolated from the input and internally not earthed (SELV) and can therefore be earthed by the user according to the needs with L+ or L (PELV).

1. OUTPUT L+, L-:
   terminals – output

2. DC OK:
   terminal – signaling output

3. INPUT L, N, PE:
   terminals – output

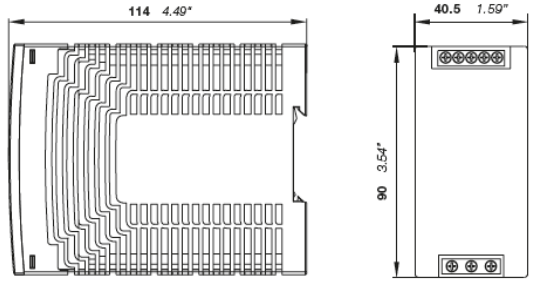
4. OUTPUT OK:
   green LED – output voltage OK

5. OUTPUT Adjust:
   Potentiometer – adjustment
   of output voltage

6. Circuit diagram

Dimensions

in mm



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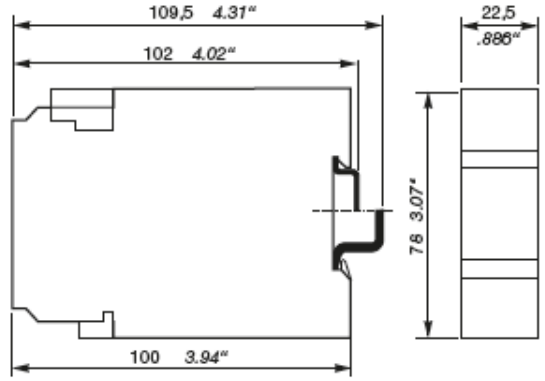
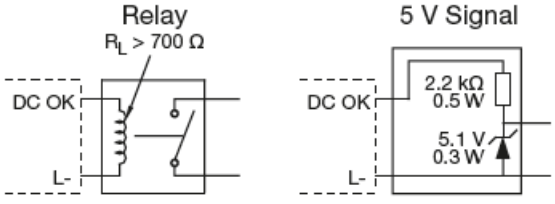
Dimensions accessories

in mm



CP-RUD

Wiring instructions



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