



Technical Description

AC 800M and S800 I/O Power supplies SD831 - SD834, Technical data

ABB recommend the use of these robust and reliable power supply units, (PSUs), for providing power to the AC800 and S800I/O system, when connected to an industrial mains network of installation category III. PSUs can be used for both non-redundant and redundant applications.

The four PSUs are designed as switch mode power converters. They converting a.c. or d.c. mains supply voltage to a regulated d.c. 24 V output. The four PSUs have data as follows:

- SD831 = Input a.c. 100-240 V or d.c. 110-300 V.
Output d.c. 24 Volts regulated @ 3 A
- SD832 = Input a.c. 100-120 or 200-240 V.
Output d.c. 24 Volts regulated @ 5 A
- SD833 = Input a.c. 100-120 or 200-240 V.
Output d.c. 24 Volts regulated @ 10 A
- SD834 = Input a.c. 100-240 V or d.c. 110-300 V.
Output d.c. 24 Volts regulated @ 20 A

The output voltage of all four PSUs is, as stated, a regulated, low noise, d.c. 24 V. A LED, mounted on the PSU front panel indicates that the output voltage is within range.

All four PCS's provide a soft start feature. The controlled power-on of a PSU therefore, will not trip fuses or earth-fault circuit breakers. In addition, the normal disturbances that occur within an industrial main network will not cause any transient fault conditions or trips to occur.

Key features

- Simple DIN-rail mounting
- Class I Equipment, (when connected to Protective Earth, (PE))
- Over-voltage Category III for connection to primary main TN network of Installation Category III
- Protective separation of secondary circuit from primary circuit.
- Accepted for SELV and PELV applications
- The output of the units is protected against over current (current limit) and over voltage (OVP)
- SD834 can be connected in parallel to increase output power
- Both a.c. and d.c. input at SD831 and SD834
- Floating DC-OK relay contact at SD834

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Approvals

The Power Supply Units, (PSU), are designed to meet all the applicable electrical safety data stated by the EN 50178 harmonized European Standard Publication and the additional safety and function data required by EN 61131-2 and UL 508.

The secondary output circuitry is accepted for SELV or PELV applications.

SELV according to EN 50178, EN 60950 and VDE 0100 Part 410.

For PELV applications; in accordance with EN 50178.

UL 508. Listed E198865.

Fulfilled Standards

EN 61558-2-17	Safety of Power Transformers
EN/IEC 60204-1	Safety of Electrical Equipment of Machines
EN/IEC 61131-2	Programmable Controllers
EN 50178	Electronic Equipment in Power Installations

Ingress protection

IP20 according to EN 60529, IEC 60529

Protective Class I according to EN 50718; 3.56

Physical dimensions and connections

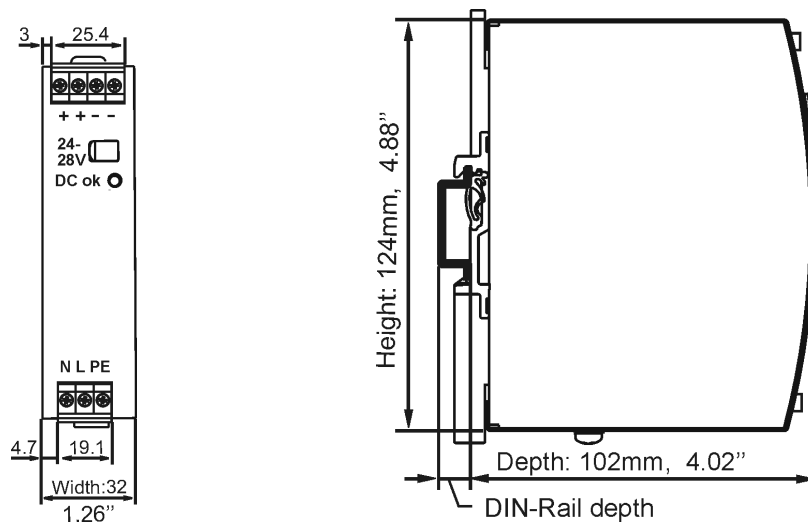


Figure 1 SD831 Dimension and Connections for 3A Power Supply

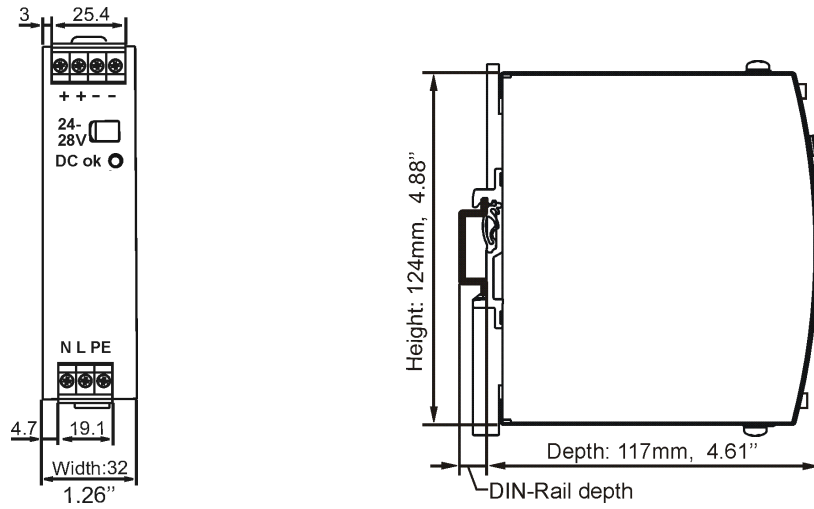


Figure 2 SD832 Dimension and Connections for 5A Power Supply

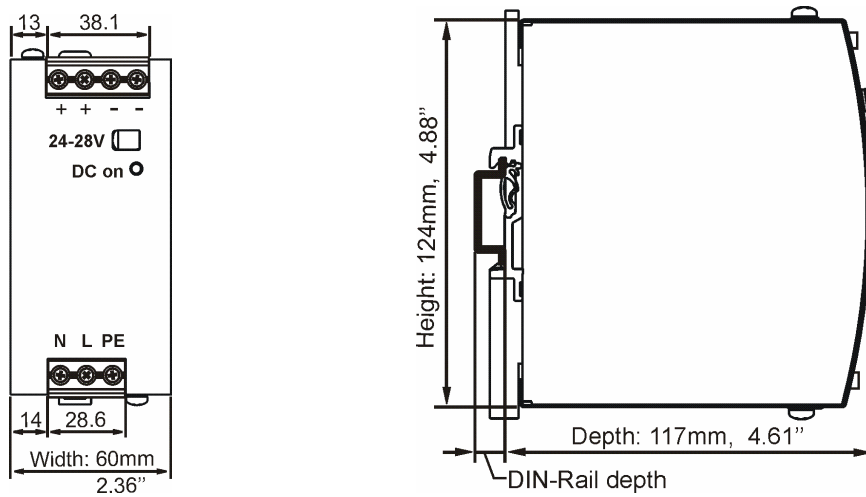


Figure 3 SD833 Dimension and Connections for 10A Power Supply

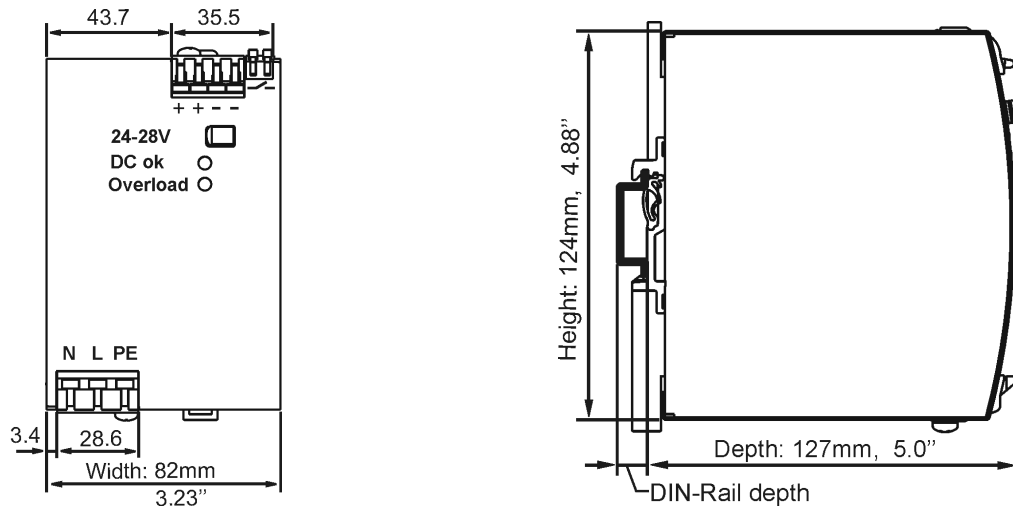


Figure 4 SD834 Dimension and Connections for 20A Power Supply

Block diagram

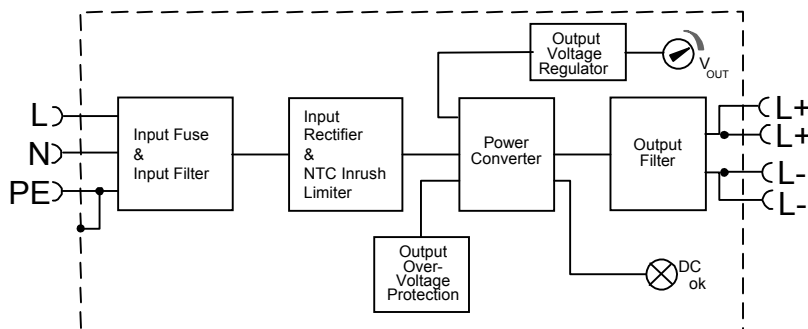


Figure 5 SD831 Functional diagram for 3A Power Supply

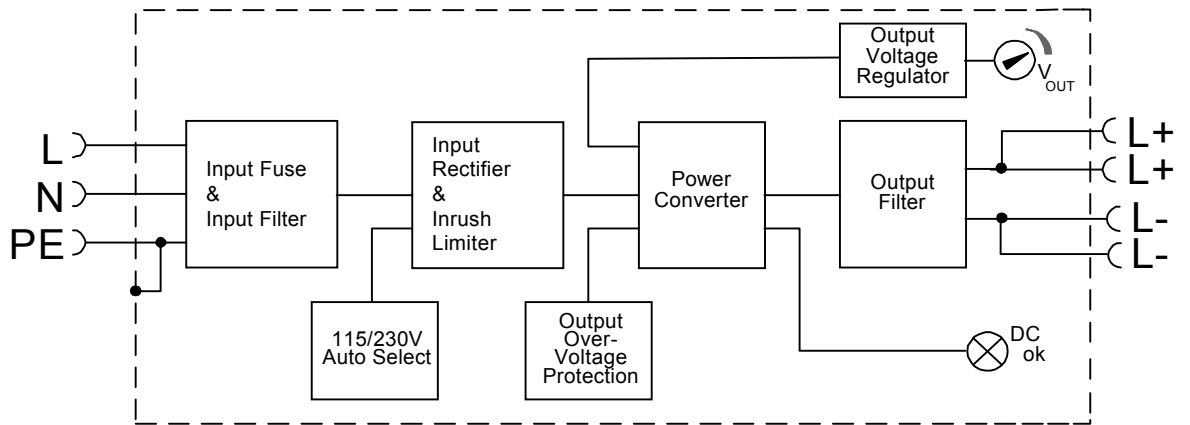


Figure 6 SD832 / SD833 Functional diagram for 5A /10A Power Supply

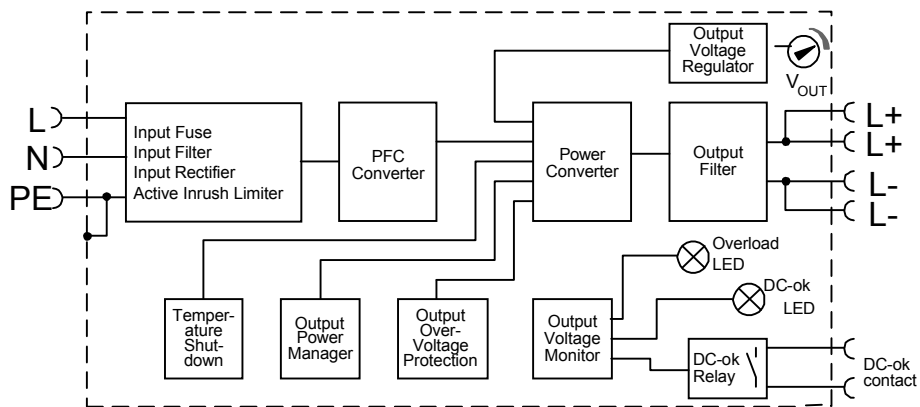
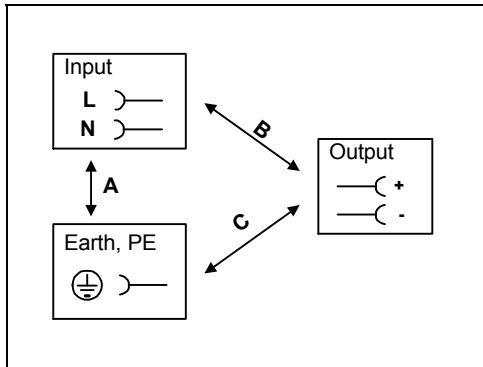


Figure 7 SD834 Functional diagram for 20A Power Supply

Dielectric strength

Basic with protective conductor. The primary circuit is separated from all other live circuits by reinforced insulation.



		A	B	C
Type test	60s	a.c. 2500 V	a.c. 3000 V	a.c. 500 V
Factory test	5s	a.c. 2500 V	a.c. 2500 V	a.c. 500 V
Field test	5s	a.c. 2000 V	a.c. 2000 V	a.c. 500 V

Type tests and factory tests:

Conducted by the manufacturer. Do not repeat test in field!

Rules for field test:

Use appropriate test equipment which applies the voltage with a slow ramp! Connect L and N together as well as all output poles.

The output voltage is floating and has no galvanic connection to ground.

To fulfill the PELV requirements according to EN60204-1 § 6.4.1, we recommend that either the + terminal, the – terminal of the output circuit shall be connected to the protective earth system. This helps to avoid situations in which a load starts unexpectedly or cannot be switched off any more when unnoticed earth faults occur.

DC-OK relay contact (SD834 only)

This feature monitors the output voltage, which is produced by the power supply itself. It is independent of a backfed voltage from a unit that is connected in parallel to the power supply output.

Contact closes as soon as the output voltage reaches the adjusted output voltage.

Contact opens as soon as the output voltage dips more than 10% below the adjusted output voltage.

Short dips will be extended to a signal length of 250ms. Dips shorter than 1ms will be ignored.

Contact re-closes as soon as the output voltage exceeds 90% of the adjusted voltage.

Contact ratings max 60Vdc 0.3A, 30Vdc 1A, 30Vac 0.5A resistive load

Contact current >1mA. Open contact voltage >5 V

Isolation voltage. Field test: a.c. 2000 V to input . a.c. 500 V to output.



Installation, fuses and protective devices

The PSU's shall be mounted horizontally at a DIN rail.

The PSU's have to be used in non-hazardous locations only.

Internal primary main fuses are arranged to meet the requirements of electrical safety publications for connection to the Phase - Neutral terminals of primary main network; TN network, 1 (one) fuse. When SD831 and SD834 is used with d.c. input. Connect + terminal to L and – terminal to N.

Recommended primary external fuse:

*Table 2. Power Supply Units - Fuses and Protective Devices3BSE053111_-
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Fuse	SD831	SD832	SD833	SD834
Primary: Recommended external fuse 1) min/max	10-20 A	10-20 A	10-20 A	10-20 A
Secondary: Short circuit	< 8 A	< 14 A	< 18 A	< 40 A
Secondary: Over-Voltage protection	< 39 V	< 39 V	< 39 V	< 37 V

1) Microcircuit Breaker (MCB), Characteristic B or a delayed action fuse

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Table 1. PSUs SD831, 832, 833 and 834 - Mounting space and weight

Parameter	SD831 Converter	SD832 Converter	SD833 Converter	SD834 Converter
Mounting spacing top 2)	40 mm	40 mm	40 mm	40 mm
Mounting spacing bottom 3)	20 mm	20 mm	20 mm	20 mm
Mounting spacing side	15 mm	15 mm	15 mm	15 mm
Weight	430 g	500 g	700 g	1200 g

2) Do not place temperature sensitive units above the PSU.

3) Do not place units with high power losses below the PSU.

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Short-form data

Table 3. PSUs SD831, 832,833 and 834 - Technical
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Parameter	SD831 Converter	SD832 Converter	SD833 Converter	SD8334 Converter
Rated output current	3A	5 A	10 A	20 A
Rated output power	72 W	120 W	240 W	480 W
Rated output voltage	d.c. 24 V	d.c. 24 V	d.c. 24 V	d.c. 24 V
Rated input power a.c. 120/230 V	134/143 VA 82/80 W	240/283 VA 134/133 W	447/514 VA 264/262 W	547/568 VA 519/511 W
Mains/input voltage, nominal. a.c. 47-63Hz	a.c. 100-240 V d.c. 110-300 V	a.c. 100-120 V a.c. 200-240 V Auto-select input	a.c. 100-120 V a.c. 200-240 V Auto-select input	a.c. 100-240 V d.c. 110-300 V
Mains voltage variation allowed	a.c. 90-264 V d.c. 88-375 V	a.c. 90-132 V a.c. 180-264 V	a.c. 90-132 V a.c. 180-264 V	a.c. 85-276 V d.c. 88-375 V
Max input voltage <0,5s	a.c. 264-300 V	a.c. 264-300 V	a.c. 264-300 V	a.c. 276-300 V
Primary peak current at power on at a.c. 120/230V	<28/<54 A	<10 A	<10 A	<13A
Power Factor (at rated output power) a.c. 120/230V typ	0,61/056	0.56/0,47	0,59/0,51	0,95/0,90
Heat dissipation a.c. 120/230 V	10/8 W	14/13 W	24/22 W	39,6/31,4 W
Efficiency factor a.c. 120/230 V typ	88/89,8 %	89,4/90,2 %	91/91,6 %	92,4/93,9 %
Line/load regulation	< 50 mV / < 100 mV	< 70 mV / < 100 mV	< 70 mV / < 100 mV	< 10mV / < 100mV

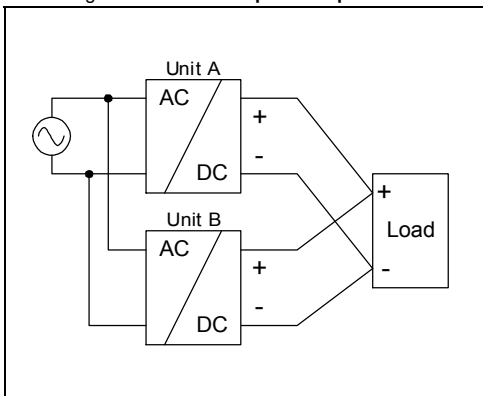
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Ripple (peak to peak)	< 50 mV	< 50 mV	< 50 mV	< 100mV
Holdup time at mains blackout a.c. 120/230 V typ	29/120 ms	80/78 ms	46/47 ms	32/51 ms
Maximum output current	3,3 A	6 A At ambient temp < 45 °C	12 A At ambient temp < 45 °C	30 A < 4 s
Maximum ambient temperature 4)	55°C	55°C	55°C	55°C

4) Mounting on a horizontal DIN rail

Using SD834 in parallel to increase output power

Fig.8 Schematic for parallel operation



Instructions for parallel use:

- Only SD834 can be used in parallel connection.
- Adjust the output voltages of all power supplies to approximately the same value ($\pm 500\text{mV}$). Otherwise, the DC-ok signal might not work properly.
- A fuse (or diode) on the output is only required if more than three units are connected in parallel.
- Do not continuously load the terminals with more than 25A. Follow wiring instructions according to figure 8. Keep an installation clearance of 15mm (left/right) between two power supplies and avoid installing the power supplies on top of each other.



REVISION

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-	All	New document	2008-09-02 PA/XA/AHE
A	Title	Title changed	2008-09-03 PA/XA/AHE

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