B&R Power Supply PS102

1. General Information

Features of the B&R power supply PS102:

- Output voltage can be set up to 28 VDC
- 100 - 240 VAC wide range input (permitted: 85 - 264 VAC)
- Overload design (does not switch off during overloads up to 1.5 times nominal current)
- World-wide certification (UL, EN, CSA, CB Scheme) for industry and office/home
- Compact design
- Mounted and installed quickly and easily (no tools required)
- NEC Class 2 power supply and hazardous location Class I Div. 2 (UL 1604)

2. Order Data

Model Number	Short Description	Image
0PS102.0	24 VDC Power Supply, 1 phase, 2.1 A, Input 100..240 VAC, wide range, DIN rail mounting	

Table 1: PS102 - Order data

3. Technical Data

See also data sheet "Technical data", which is delivered with the power supply.

Name	PS102
General Information	
C-UL-US Listed	Yes
Input	
Nominal Input Voltage	AC 100 - 240 V (wide range), 47 - 63 Hz, suitable for IT power systems
Admissible Limits	AC 85 - 264 V, DC 85 - 375 V
Input Current	<1.0 A (at AC 100 V, 50 W P_{out}) <0.6 A (at AC 196 V, 50 W P_{out})
Starting Current I_{pk} / I^2t	18 A / 0.37 A^2s (120 Vin) 38.5 A / 1.8 A^2s (240 Vin) (typ., T_U = 50 °C, cold restart, power supply acc. to EN 61000-3-3)
External Over-Current Protection	Not required, unit provides internal fuse (T3 AH, not accessible)
Transient Immunity	Transient resistance acc. to VDE 0160 / W2 (750 V / 1.3 ms), over *entire* load range.
Hold-Up Time (See Diagram "Hold-up time at AC_{in}" on Page 6)	>171 ms at AC 230 V, 24 V / 2.1 A >97 ms at AC 196 V, 24 V / 2.1 A >17 ms at AC 100 V, 24 V / 2.1 A
Output (Incl. Logic)	
Output Voltage	DC 24 - 28 V (front potentiometer); Preset: 24.5 V ±0.5%
Voltage Regulation	Stat. 0.5% V_{out} Dyn. ±2% V_{out} overall
Residual Ripple	<50 mV_{PP} (20 MHz bandwidth, 50 Ωmeasurement)
Overvoltage Protection (OVP)	<40 V
Output Noise Suppression	Unit complies with EN61000-6-3 (class B) even with long (>2 m), unshielded output cables
Permitted Output Load	Permanently up to 2.1 A (convection cooling) depending on installation orientation, V_{in} and T_U; For details, see "Derating of output power" on Page 6
Overload Behavior	**Overload design**: No switch-off for overload/short-circuit. Instead: up to 1.5 · I_{rated}. Oversizing is not necessary to start heavy or demanding loads.
Protection Functions	Unit is protected against continuous short-circuit, overload and open-circuit.
Derating	See "Derating of output power" on Page 6
Power Back Immunity	35 V
Operation Indicator	Green LED (DC OK), threshold V_{out} = 20 V
"Power Good" Output	To feed a 24 V relay (R_{coil} > 700 Ω) Relay operates if output voltage exceeds threshold value. Inverse diode for relay is included in the power supply unit Threshold: V_{out} = 20 V ±4%
Efficiency, Reliability	
Efficiency	Typ. 88.5% (at AC 230 V, 24 V / 2,1 A), See "Efficiency" on Page 5.
Loss	Typ. 6.8 W (at AC 230 V, 24 V / 2.1 A)

Table 2: PS102 - Technical data

Name	PS102
MTBF (Reliability)	Approx. 600,000 h (24 V / 2,1 A, AC 230 V, T_U = +40°C)
Prior to shipment, every unit undergoes the following tests in order to isolate any defective units which might suffer an early failure: • Run-in / Burn-in (full load, T_{amb} = +60°C, on/off cycle) • Function test (100% of all pieces checked)	
Connection	
Terminals	Cage clamp terminals (spring clamp); uniformly firm hold, vibration-resistant and maintenance free: 2 terminals per output
Connection Cross Section	Solid: 0,3 - 2.5 mm² / 28 - 12 AWG Flexible: 0,3 - 4 mm² / 28 - 12 AWG Wire tip sleeves can be used
Wire Strip Length	6 mm (0.25in) recommended
Additional features: • All terminals are easy to reach as mounted on the front panel. • Inputs and outputs are strictly separated from each other (input below, output above) and therefore cannot be mixed up. • **Mounting and connection without requiring a screwdriver!** • Easy, quick, durable and reliable installation	
Operational Conditions	
Environmental Temperature During Operation	-10°C to +70°C, measured 25 mm below unit (see "Derating of output power" on Page 6)
Relative Humidity During Operation	Max. 95%, non-condensing
Storage and Transport Conditions	
Storage Temperature	-25°C to +85°C
Relative Humidity During Storage	Max. 95%, non-condensing
Transport Temperature	-25°C to +85°C
Relative humidity During Transport	Max. 95%, non-condensing
Mechanical Characteristics	
Dimensions (W x H x D [mm]) Incl. Terminals	45 x 75 x 91 (incl. rail) 45 x 75 x 98 (incl. rail)
Weight	240 g
Housing	Robust plastic housing, fine ventilation grid on three housing sides to keep out small parts, IP20
Installation	Easy snap-on mounting onto the DIN rail (TS35/7.5 or TS35/15). Unit sits safely and firmly on the rail; no tools required, even to remove
Mounting Orientation	 , or (see "Derating of output power" on Page 6)
Ventilation / Cooling	Normal convection, no fan required. • Leave sufficient space for cooling! • When the convection power is strong enough, the temperature difference ΔT between air intake and output in the housing should not exceed approximately 15 K. • Recommended space on sides with ventilation holes: 25 mm

Table 2: PS102 - Technical data (cont.)

Specifications are valid for 230 VAC input voltage, +25°C ambient temperature, and 5 min run-in time unless otherwise stated. They are subject to change without prior notice.

4. Dimensions

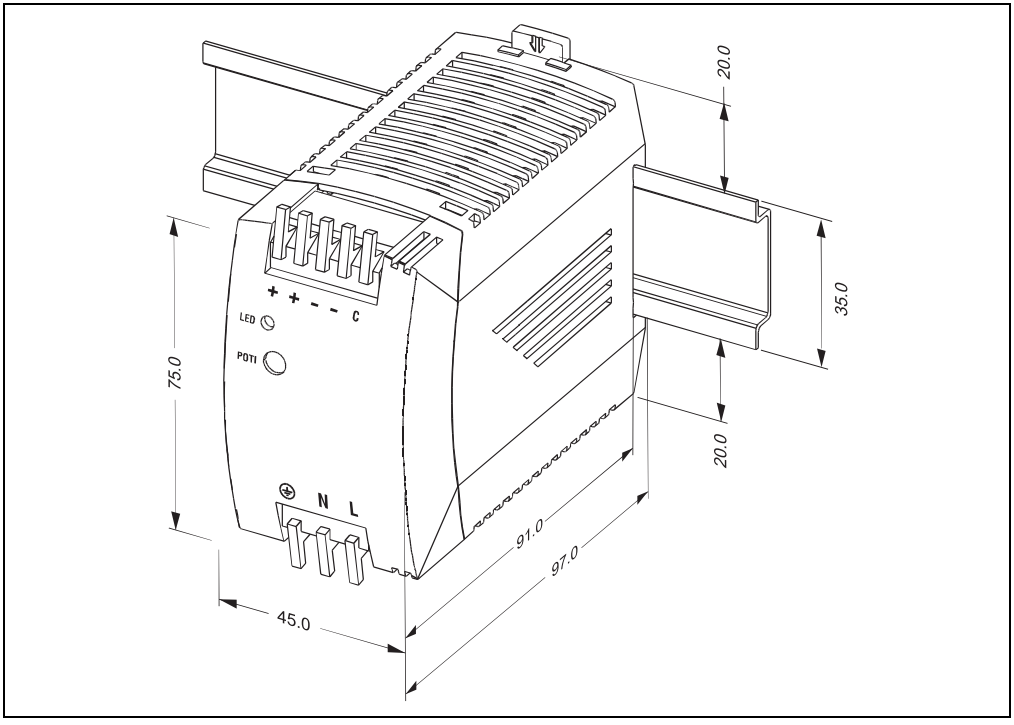

Figure 1: PS102 - Dimensions

5. Installation

See also the basic installation manual "Installation and Operation". The basic installation manual is delivered with each power supply.

6. Diagrams

6.1 Output characteristics

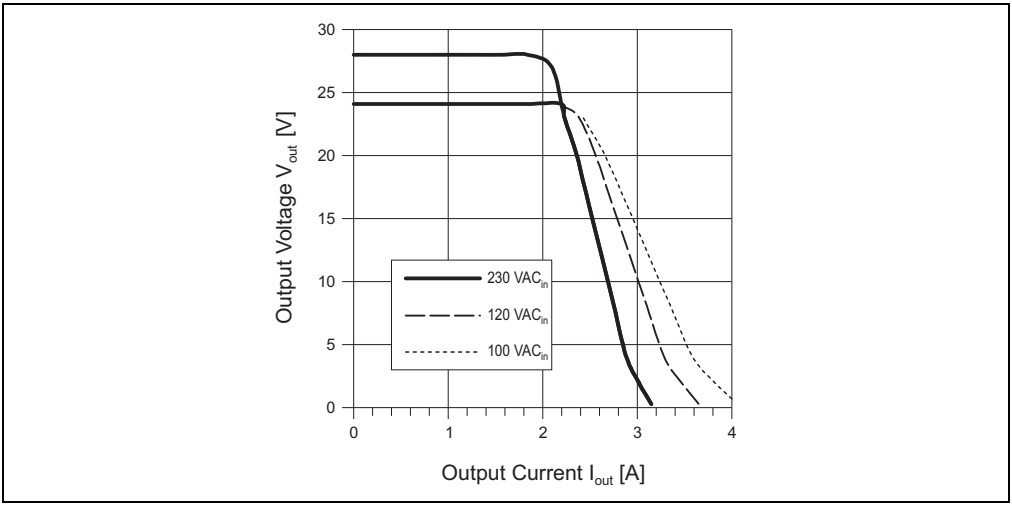

Figure 2: PS102 - Output characteristics I_{out}/V_{out} (min.)

6.2 Efficiency

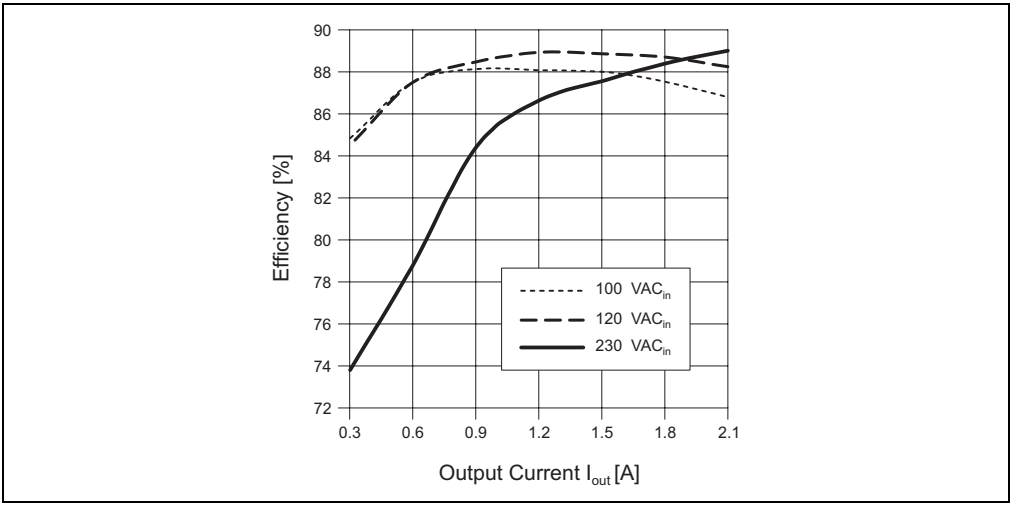

Figure 3: PS102 - Efficiency (at V_{out} = 24 V, typ.)

6.3 Derating of output power

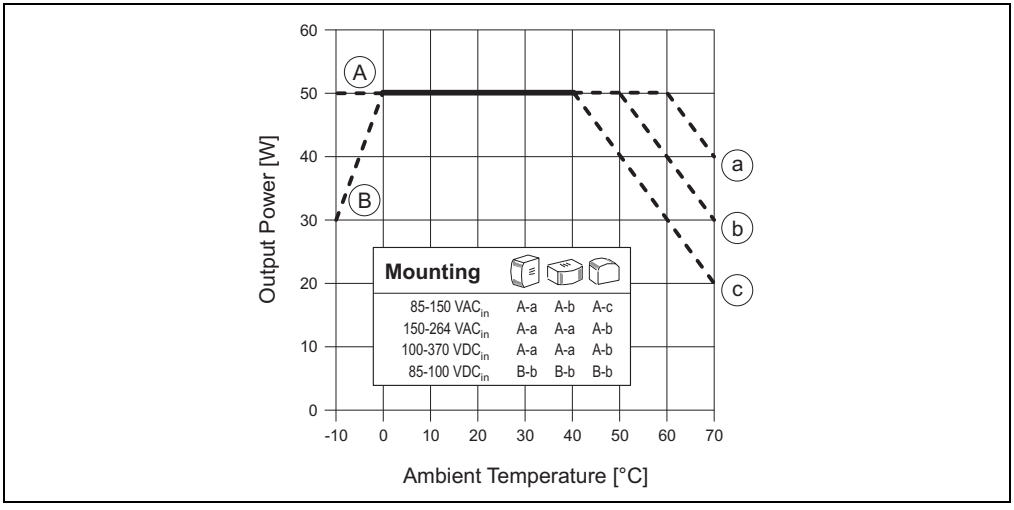

Figure 4: PS102 - Derating of output power

6.4 Hold-up time at AC$_{in}$

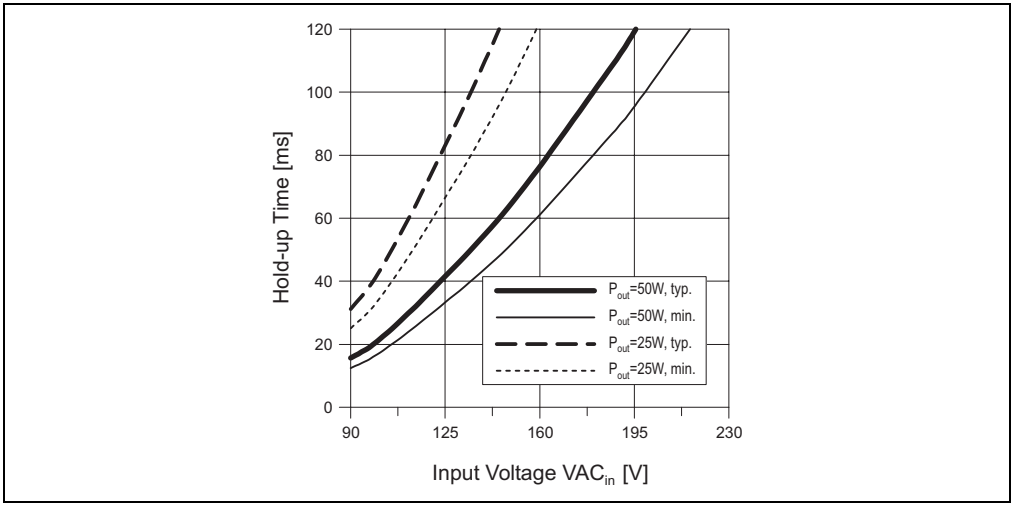

Figure 5: PS102 - Hold-up time at AC$_{in}$ (at V$_{out}$ = 24 V, typ. + min.)

7. Standards and Certifications

Electromagnetic emissions (EME)	EN 61000-6-3 (also includes EN 61000-6-4) Class B (EN 55011, EN 55022) incl. Annex A through noise suppression
Electromagnetic immunity (EMI)	EN 61000-6-2 (includes EN 61000-6-1)
Safe low voltage	SELV (EN 60950, VDE0100/T.410), PELV (EN 50178)
Protection class/degree	Class I (EN 60950) / IP20 (EN 60529)
The power supply P102 complies with all major **safety certifications** for EU (EN 60 950, EN 60204-1, EN 50178), USA (UL 60950, E137006, UL508 LISTED, E198865), Canada (CAN/CSA-C22.2 No. 60950 [CUR], CAN/CSA-C22.2 No. 14 [CUL]), CB Scheme (IEC 60950). NEC Class 2 power supply and hazardous location Class I Div. 2 (UL 1604).	
c UL us LISTED CB scheme CE	

Table 3: PS102 - Standards and certifications