

B&R Power Supply PS104

1. General Information

Features of the B&R power supply PS104:

- Output voltage can be set up to 28 VDC
- 115/230 VAC auto-select input
- Overload design (high output overload capability)
- Selectable single/parallel operation (jumper on front)
- 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

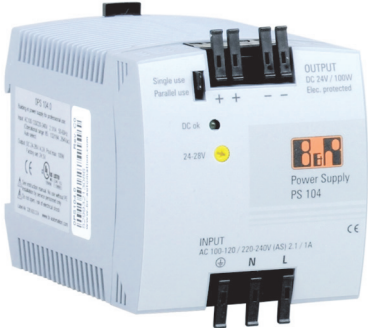
Model Number	Short Description	Image
0PS104.0	24 VDC power supply, 1 phase, 4.2 A, Input 115/230 VAC, auto-select, DIN rail mounting	

Table 1: PS104 - Order data

3. Technical Data

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

Name	PS104
General Information	
C-UL-US Listed	Yes
Input	
Nominal input Voltage	AC 100 - 120 / 220 - 240 V (auto-select), 47 - 63 Hz, suitable for IT power systems
Admissible Limits	AC 85 - 132 V / 184 - 264 V DC 220 - 375 V
Input Current	<2.1 A (at AC 100 V, 100 W P _{out}) <1 A (at AC 220 V, 100 W P _{out})
Starting Current I_{pk} / I_{ct}^2	22 A / 0.35 A ² s (120 Vin) 45 A / 1.5 A ² s (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 A15H, not accessible)
Transient Immunity	Transient resistance acc. to VDE 0160 / W2 (750 V / 1.3 ms), over <i>entire</i> load range.
Hold-Up Time (See Diagram "Hold-up time at AC _{in} " on Page 6)	>40 ms at AC 230 V, 24.5 V / 4.2 A >20 ms at AC 196 V, 24.5 V / 4.2 A >20 ms at AC 100 V, 24.5 V / 4.2 A
Output	
Output Voltage	DC 24 - 28 V (front potentiometer) Preset: 24.5 V ±0.5% at 4.2 A
Voltage Regulation Jumper Pos.: "Single Use" Jumper Pos.: "Parallel Use"	Dyn. <±1.5% V _{out} overall Stat. <1% V _{out} Stat. <3% V _{out}
Residual Ripple	<50 mV _{pp} (20 MHz bandwidth, 50 Ω measurement)
Overvoltage Protection (OVP)	<36 V
Output Noise Suppression	Radiated EMI values below EN 61000-6-3 (Class B) even with long (>2 m), unshielded output cables
Permitted Output Load	Up to 4.2 A at 24.5 V / 3.6 A at 28 V Depends on the installation orientation, V _{in} and T _U (convection cooling); See "Derating of output power" on Page 6
Overload Behavior	Overload design: No switch-off for overload/short-circuit. Instead: up to 1.9 · 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	Depends on the installation orientation (see "Derating of output power" on Page 6)
Parallel Operation	Yes (selectable via front panel jumper) We recommend that you do not operate more than 5 power supplies in parallel.
Power Back Immunity	35 V
Operation Indicator	Green LED (DC OK)
Efficiency, Reliability	
Efficiency	Typ. 90% (at AC 230 V, 24.5 V / 4.2 A); see "Efficiency" on Page 5
Loss	Typ. 11.4 W (at AC 230 V, 24.5 V / 4.2 A)

Table 2: PS104 - technical data


Name	PS104
MTBF (Reliability)	Approx. 500,000 h (24.5 V / 4.2 A, AC 230 V, $T_U = +40^{\circ}\text{C}$)
Prior to shipment, every unit undergoes the following tests in order to isolate any defective units which might suffer an early failure: <ul style="list-style-type: none"> Run-in / Burn-in (full load, $T_{\text{amb}} = +60^{\circ}\text{C}$, 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 mm ² / 28 - 12 AWG Flexible: 0.3 - 4 mm ² / 28 - 12 AWG Wire tip sleeves can be used
Wire Strip Length	6 mm (0.25in) recommended
Additional features: <ul style="list-style-type: none"> 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 (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	73 x 75 x 103 (incl. rail) 73 x 75 x 110 (incl. rail)
Weight	360 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	 (see "Derating of output power" on Page 6)
Ventilation / Cooling	Normal convection, no fan required: <ul style="list-style-type: none"> 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: PS104 - 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

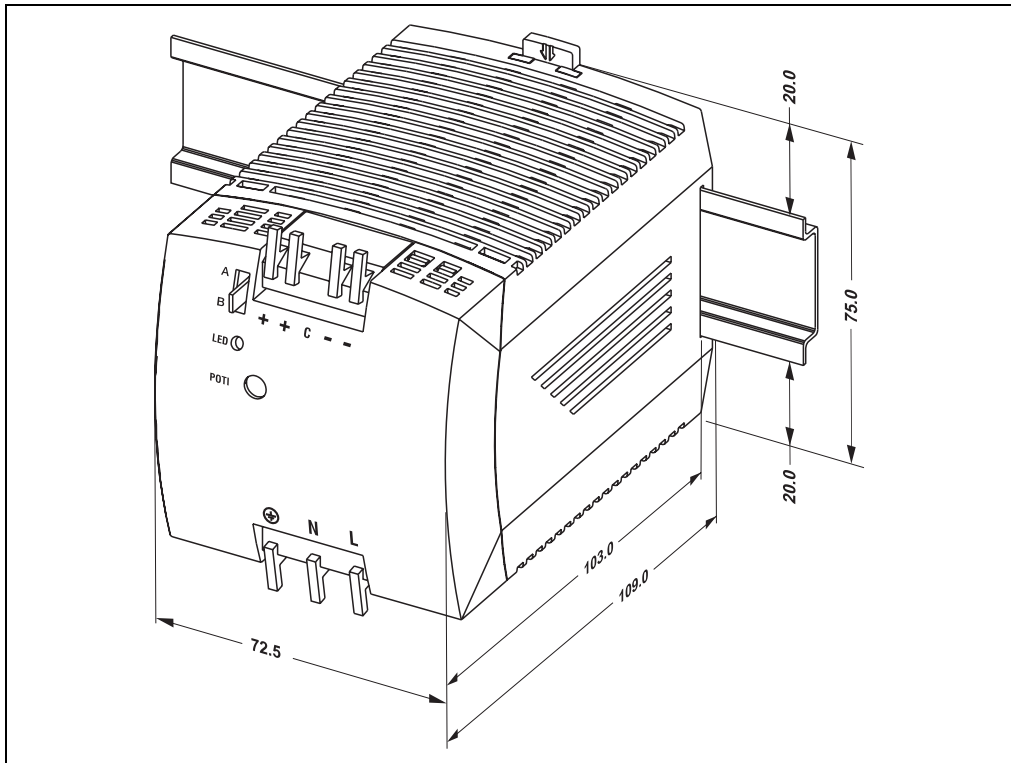


Figure 1: PS104 - Dimensions

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

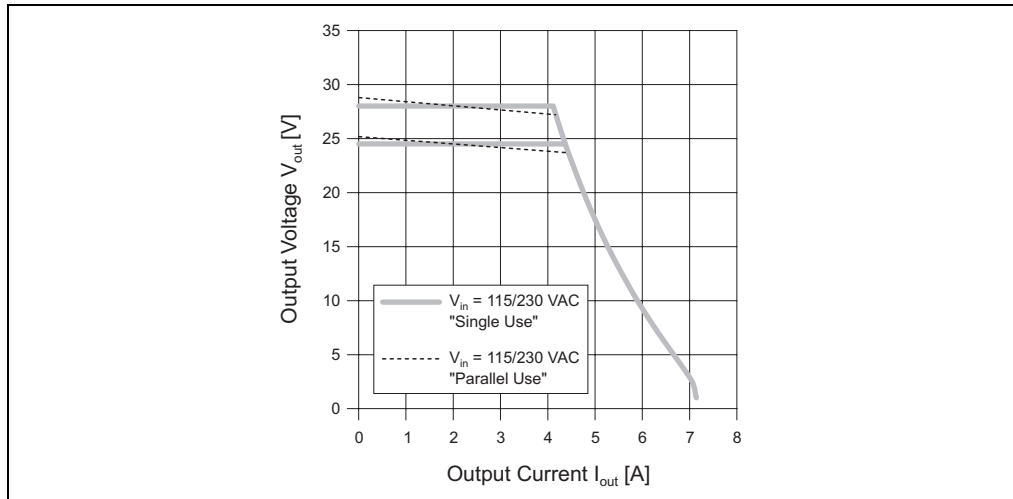


Figure 2: PS104 - Output characteristics V_{out}/I_{out} (min.)

6.2 Efficiency

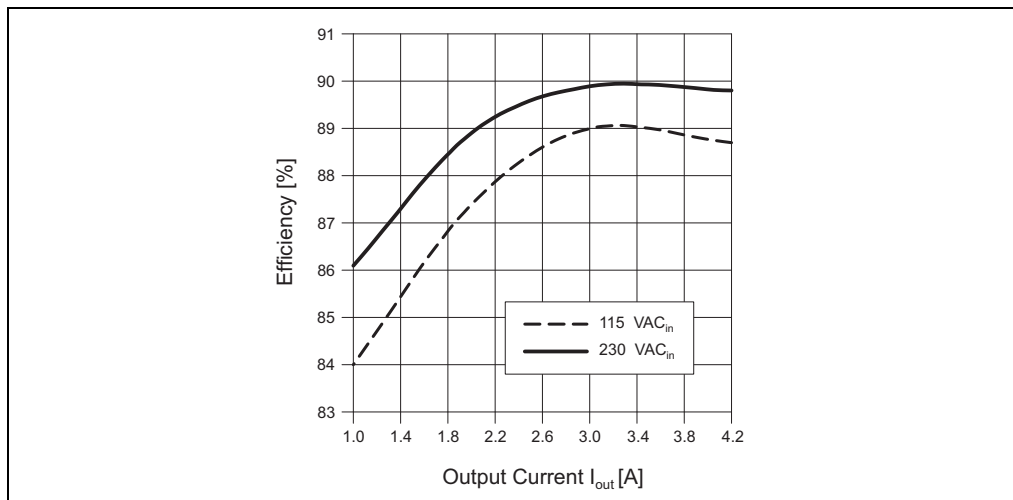


Figure 3: PS104 - Efficiency (at $V_{out} = 24.5$ V, typ.)

6.3 Derating of output power

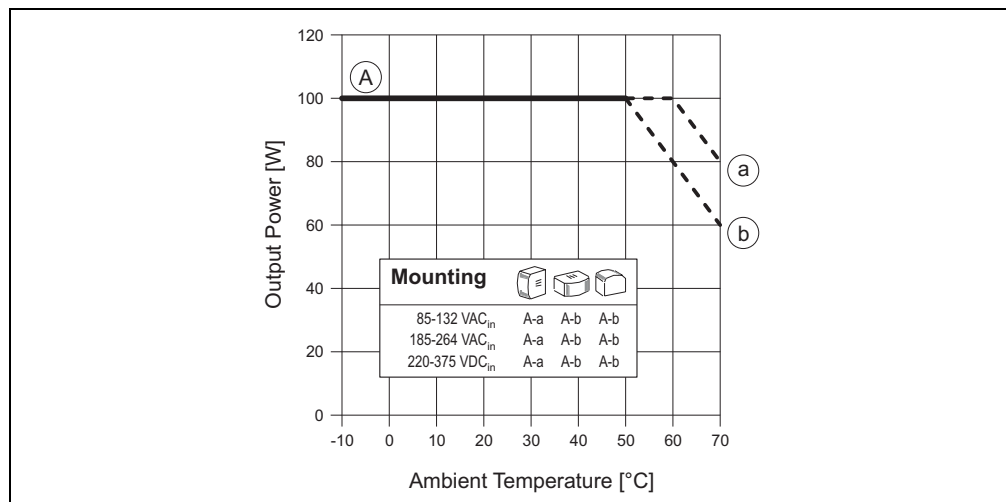


Figure 4: PS104 - Derating of output power

6.4 Hold-up time at AC_{in}

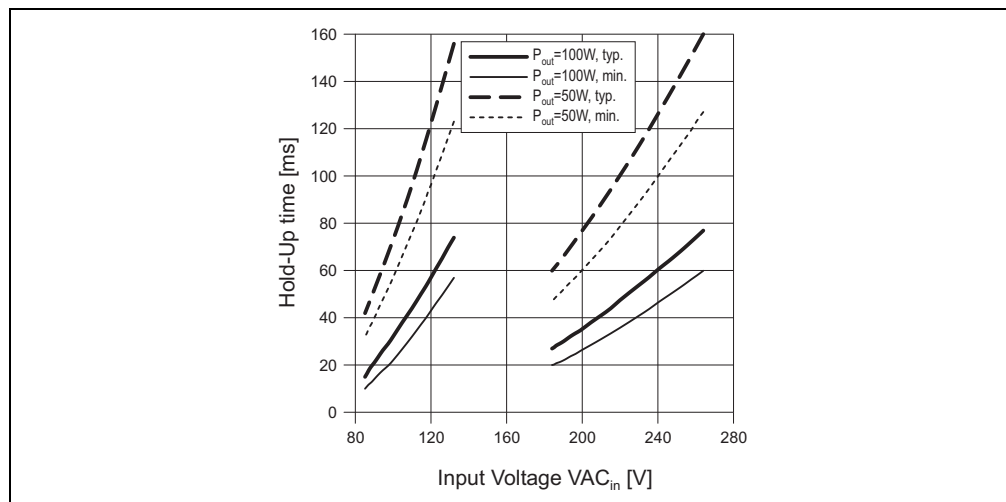


Figure 5: PS104 - Hold-up time at AC_{in} (at V_{out} = 24.5 V, typ. + min.)

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, thanks to noise suppression EN 61000-3-2 (PFC)
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).	
  	

Table 3: PS104 - Standards and certifications

