

B&R Power Supply PS110.2

1. General Information

Features of the B&R power supply PS110.2:

- Input: AC 115V / 230V, DC 240 - 375V
- Output: 24 VDC / 10 A
- High overload current, no switch-off
- N+1 redundancy, RDY relay contact
- Robust mechanics and EMC
- DIN rail mounting, unit holds even with vibrations or lateral pressure
- Clearly arranged and user-friendly
- Large, robust connector
- Closed metal housing
- Fine ventilation grid

2. Order Data

Model Number	Short Description	Image
0PS110.2	24 VAC power supply, 1 phase, 10 A, redundant within parallel operation, input 115/230 VAC, manual select, DIN rail mounting	

Table 1: PS110.2 - Order data

3. Technical Data

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

Name	PS110.2
General Information	
C-UL-US Listed	Yes
Input	
Nominal Input Voltage	AC 100 - 120 / 220 - 240 V (switchable), 47 - 63 Hz
Admissible Limits	AC 85 - 132 V / 176 - 264 V DC 240 - 375 V Note: Always leave the switch in the 230 V position for DC inputs.
Nominal Input Current	<6 A (switch in 115 V position) <2.8 A (switch in 230 V position)
Idle Current for DC _{in}	8 mA (preserves battery sources)
Starting Current	Typ. <30 A at 264 VAC and cold restart
Fuse Protection Internal External	Internal fuse (not accessible) Not necessary, but it is recommended to use a standard thermomagnetic 10 A, B-type circuit breaker which is also used to protect the input lines.
Transient Immunity	Transient resistance acc. to VDE 0160 / W2 (750 V / 1.3 ms), over entire load range.
Hold-Up Time	>25 ms (at 196 VAC, 24 V / 10 A) (see "Hold-up time" on Page 7)
Output	
Output Voltage	24 VDC
Voltage Regulation	Better 2% V _{out} overall
Residual Ripple	<30 mV _{pp} (20 MHz bandwidth, 50 Ω measurement)
Over-Voltage Protection	Typ. 35 V
Output Noise Suppression	Radiated EMI values below EN 61000-6-3 (Class B) even with long, unshielded output cables
Permitted Output Load T _{amb} =0°C - 60°C T _{amb} =0°C - 45°C	With convection cooling 24 V / 10 A 24 V / 12 A (short-term also at 60°C)
Protection Functions	Output is protected against short-circuit, open circuit and overload
Derating	Typ. 12 W/K (at T _{amb} =+60°C to +70°C)
Parallel Operation	Yes, current balancing using an inclined characteristic curve (25.2 VDC $\pm$ 2% without load, 24 VDC $\pm$ 0.5% with nominal load) (see "Output characteristics" on Page 6)
Operation Indicator	Green LED on front panel
RDY relay contact Type Closed Opened Load on Contacts Electrical Isolation	Coil If output voltage is > 22.1 V $\pm$ 4% If output voltage is < 19.8 V $\pm$ 4% 1 A at 28 VDC 500 VDC for output voltage

Table 2: PS110.2 - Technical data

Name	PS110.2
Efficiency, Reliability	
Efficiency	Typ. 89 % (230 VAC, 24 V / 10 A)
Loss	Typ. 26.7 W (230 VAC, 24 V / 10 A)
MTBF (Reliability)	390,000 h (24 V / 10 A, 230 VAC, $T_U = +40^{\circ}\text{C}$)
Life Cycle (Electrolytic Capacitors)	The unit exclusively uses long-life electrolytic capacitors, specified for $+105^{\circ}\text{C}$
Start / overload behavior	
Startup Delay	Typ. 100 ms
Startup Time	Approx. 5 - 20 ms depending on the load
Overload Behavior	• Special overload design (see "Output characteristics" on Page 6) • 20% power reserve • No switch-off, no hiccup if overloaded • High overload current (up to $1.6 I_{\text{Nom}}$), V_{out} is gradually reduced with increasing current • 12 A short-term, at 45°C or forced cooling, even continuous
Advantages	• High short-circuit current, therefore large "start window": power supply starts securely even with heavy or demanding loads (DC/DC converters, motors) • No "sticking" as can occur with fold-back characteristics • Secondary fuses operated reliably
Connection	
Terminals	Robust connector
Connection Cross Section Input Output	Solid/flexible: 0.2 - 2.5 mm ² , 24 - 14 AWG Solid/flexible: 0.2 - 4 mm ² , 24 - 12 AWG
Load Capacity	20 A per output
Grid	7.62 mm (distance between two adjacent terminals)
Special Features	• All terminals are easy to reach as mounted on the front panel. • Inputs and outputs are strictly separated from each other and therefore cannot be mixed up.
Operational Conditions	
Environmental Temperature During Operation	0°C to $+70^{\circ}\text{C}$ (starting at 60°C derating)
Relative Humidity During Operation	Max. 95%, non-condensing
Storage and Transport Conditions	
Storage Temperature	-25°C to $+85^{\circ}\text{C}$
Relative Humidity During Storage	Max. 95%, non-condensing
Transport Temperature	-25°C to $+85^{\circ}\text{C}$
Relative Humidity During Transport	Max. 95%, non-condensing

Table 2: PS110.2 - Technical data (cont.)

B&R Power Supply PS110.2

Name	PS110.2
Mechanical Characteristics	
Dimensions (W x H x D [mm])	120 x 124 x 102 (+ rail)
Weight	980 g
Housing	Robust sealed metal housing with fine ventilation grid IP20 ($\diamond$ 3.5 mm)
Installation	Mounting on DIN rail (TS35/7.5 or TS35/15, 1 to 1.5 mm thick), therefore: • Simple snap-on system • Sits safely and firmly on the DIN rail • No tools required for removal
Ventilation / Cooling Free Space for Ventilation	Normal convection, no fan required Above/below 25 mm and left/right 15 mm recommended The housing surface is not permitted to be warmer than 90°C (measurement directly on the metal).
Special Features	• Outputs and inputs can be inserted using a Combicon[®] plug. • Stress relief for connection terminals must be guaranteed when installing devices. • All operational elements (incl. terminals) should be clearly labeled and easy to reach on the front pane of the device.

Table 2: PS110.2 - 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

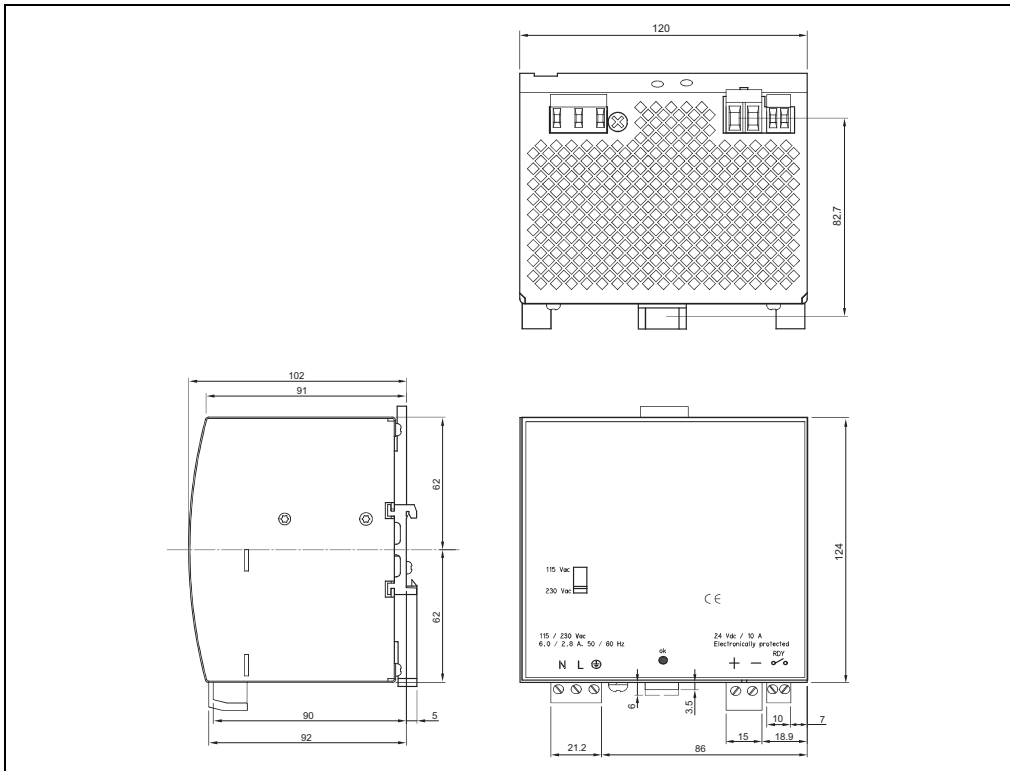


Figure 1: PS110.2 - Dimensions

5. Installation

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

6. Power wiring

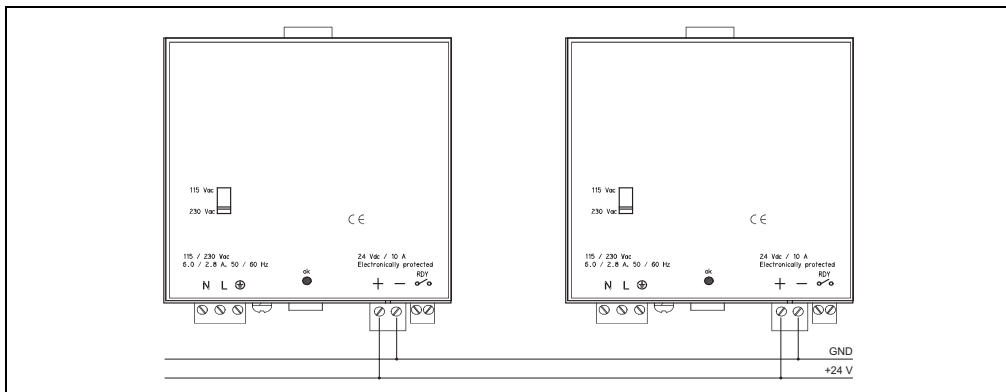


Figure 2: PS110.2 - Power wiring

7. Diagrams

7.1 Output characteristics

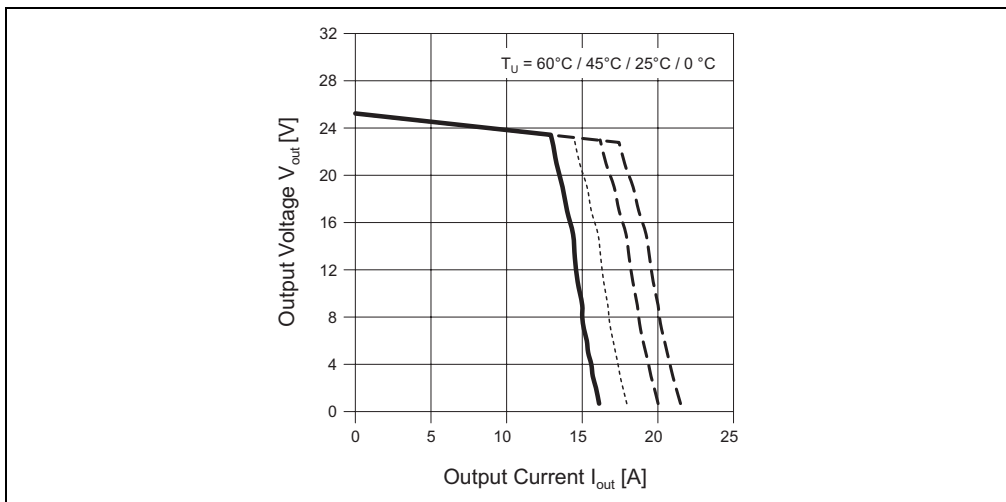


Figure 3: PS110.2 - Output characteristics (min.)

7.2 Efficiency

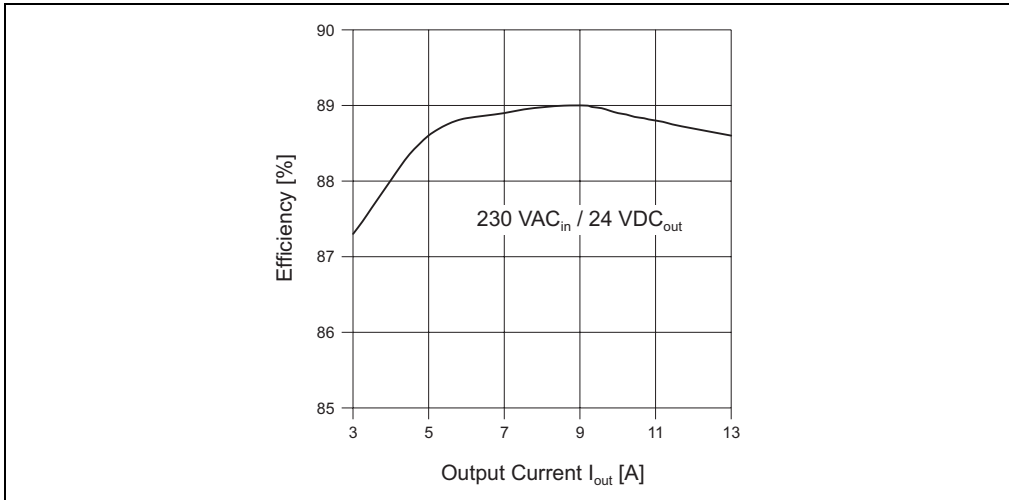


Figure 4: PS110.2 - Efficiency (typ.)

7.3 Hold-up time

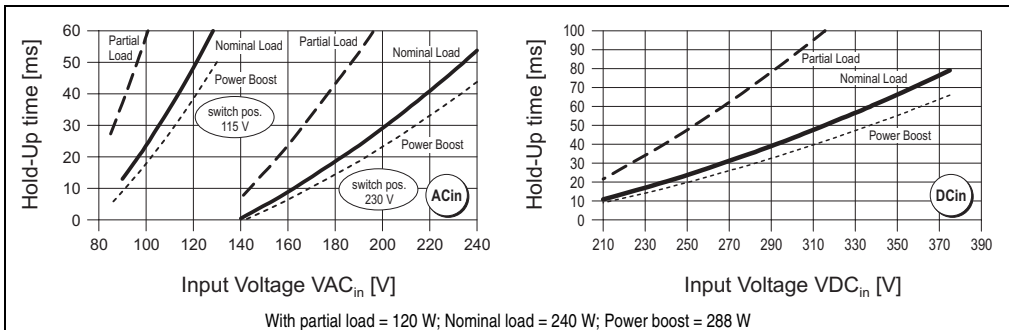


Figure 5: PS110.2 - Hold-up time (typ., at $V_{out} = 24$ V)

8. 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
Immunity to disturbances Static discharge (ESD) Electromagnetic radiated fields Burst, coupled to: AC _{in} lines DC _{out} lines Surge transients Differential (L ₁ ->PE) Common mode (L ₁ ->L ₂ /N) Conducted noise immunity Mains breaks Transient immunity	EN 61000-6-2 (also includes EN 61000-6-1) EN 61000-4-2, Level 4 (withstands 8 kV direct discharge, 15 kV air discharge) EN 61000-4-3, Level 3 (10 V/m), ENV 50204 (10 V/m) EN 61000-4-4, Level 4 (4 kV) EN 61000-4-4, Level 3 (2 kV) EN 61000-4-5, Installation class 4 (4 kV) (SLD2.5: class 3 (2 kV)) EN 61000-4-5, Installation class 4 (2 kV) (SLD2.5: class 3 (1 kV)) EN 61000-4-6, Level 3 (10 V, 150 kHz - 80 MHz) EN 61000-4-11 Transient resistance according to VDE 0160 / W2 over entire load range
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 PS110.2 complies with all major safety certifications for EU (EN 60950, EN 60204-1), USA (UL 1950, UL508 LISTED), Canada (CUL/CSA-C22.2 No 60950), CB Scheme (IEC 60950), and meets the European Standard for electronic equipment in electrical power installations EN 50178.	
 EMC and Low Volt. Directive  UL60950 E137006 CUL/CSA-C22.2 No 60950  UL508 LISTED IND. CONT. EQ. 18 WM, 60°C  IEC60950  EN60950 EN50178 EN61000-6-3 EN61000-6-2	

Table 3: PS110.2 - Standards and certifications