B&R Power Supply PS105.2

1. General Information

Features of the B&R power supply PS105.2:

- Input: AC 230 V / 115 V, DC 210-375 V
- Quasi wide range input
- Output: 24 VDC / 5 A
- Power boost up to 6 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
0PS105.2	24 VDC power supply, 1 phase, 5 A, redundant within parallel operation, input 115/230 VAC, manual select, DIN rail mounting	

Table 1: PS105.2 - Order data

3. Technical Data

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

Name	PS105.2
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 / 176 - 264 V DC 210 - 375 V See "Continuous loading" on Page 4. Quasi wide range input: With the switch in the 230 V position, the power supply unit operates at low and moderate load (unit 3 A) at any input voltage between 95 and 264 VAC. **Note:** Always leave the switch in the 230 V position for DC inputs.
Nominal Input Current	<2.6 A (switch in 115 V position) <1.4 A (switch in 230 V position)
Idle Current for DC_{in}	Typ. 5 mA (preserves battery sources)
Starting Current	Typ. <15 A at 264 VAC and cold restart
Fuse Protection Internal External	 T4A/250V HBC (IEC127), terminal L^d Not necessary, but it is recommended to use a standard thermomagnetic B-type circuit breaker which is also used to protect the input lines.
Harmonic Current Emissions	EN 61000-3-2 is fulfilled
Transient Immunity	Transient resistance acc. to VDE 0160 / W2 (750 V / 1.3 ms), over entire load range.
Hold-Up Time	>37 ms at 196 VAC, 24 V / 5 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. 29 V
Output Noise Suppression	Radiated EMI values below EN 61000-6-3 (Class B) even with long, unshielded output cables
Continuous Loading	5 A (for detailed information, see "Continuous loading" on Page 4)
Protection Functions	Output is protected against short-circuit, open circuit and overload
Derating	Typ. 3 W/K (at T_{amb}=+60°C to +70°C)
Parallel Operation	Yes, current balancing using an inclined characteristic curve (25.2 VDC ±2% without load, 24 VDC ±0.5% with nominal load) (see section "...")
Operation Indicator	Green LED on front panel

Table 2: PS105.2 - Technical data

Name	PS105.2
RDY relay contact Type Closed Opened Load on Contacts Electrical Isolation	 Coil If output voltage is > 22.1 V ±4% If output voltage is < 19.8 V ±4% 1 A at 28 VDC 500 VDC for output voltage
Efficiency, Reliability	
Efficiency	Typ. 89% (230 VAC, 24 V / 5 A)
Loss	Typ. 14.8 W (230 VAC, 24 V / 5 A)
MTBF (Reliability)	480,000 h (24 V / 5 A, 230 VAC, T_U = +40°C)
Life Cycle (Electrolytic Capacitors)	The unit exclusively uses long-life electrolytic capacitors, specified for +105°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 7) • 20% power reserve • No switch-off, no hiccup if overloaded • High overload current (up to 1.9 I_{Nom}), V_{out} is gradually reduced with increasing current • 6 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 mm², 24 - 14 AWG
Stripping the Cable End	6 mm
Load Capacity	12 A per output
Grid Input Output	between two adjacent terminals: 7.62 mm 5.08 mm
Additional 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	-10°C to +70°C (starting at 60 °C derating)
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

Table 2: PS105.2 - Technical data (cont.)

Name	PS105.2
Mechanical Characteristics	
Dimensions (W x H x D [mm])	64 x 124 x 102 (+ rail)
Weight	620 g
Housing	Robust sealed metal housing with fine ventilation grid IP20 (◇ 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: PS105.2 - 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.

3.1 Continuous loading

Detailed information about continuous loading of the power supply at T_{amb}= 0 °C to +60 °C and convection cooling (see “Output characteristics" on Page 7):

Switch	AC_{in}	DC_{in}	I_{out}
230 V	176 - 264 V 95 - 176 V	-	5 A (6 A) 3 A
	-	210 - 375 V 150 - 210 V 100 - 150 V	5 A (6 A) 3 A 2 A
115 V	85 - 132 V	-	5 A (6 A)

Table 3: PS105.2 - Continuous loading

Notes:

The 6 A specified in brackets are only allowed for a short time (<1 min), or for a longer time at 45°C or with forced ventilation.

4. Dimensions

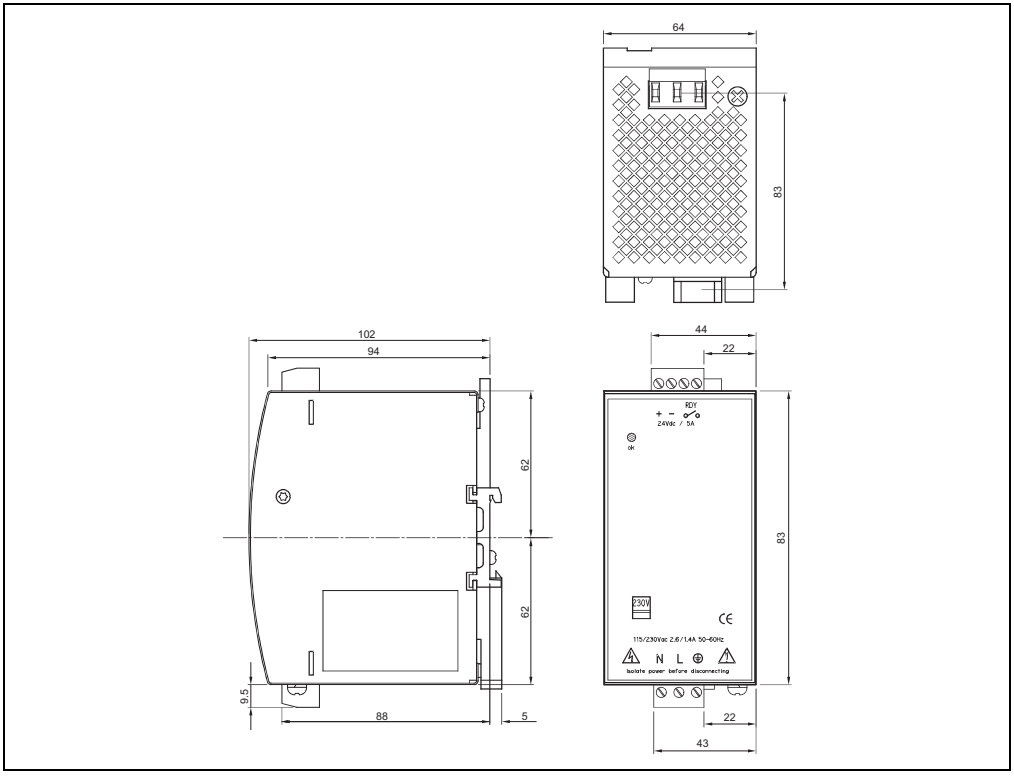

Figure 1: PS105.2 - Dimensions

5. Installation

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

6. Power wiring

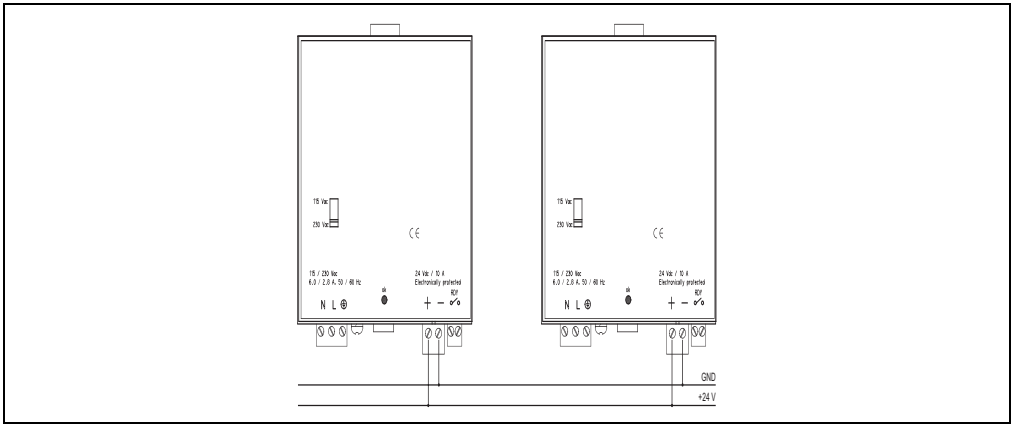

Figure 2: PS105.2 - Power wiring

7. Diagrams

7.1 Output current over input voltage

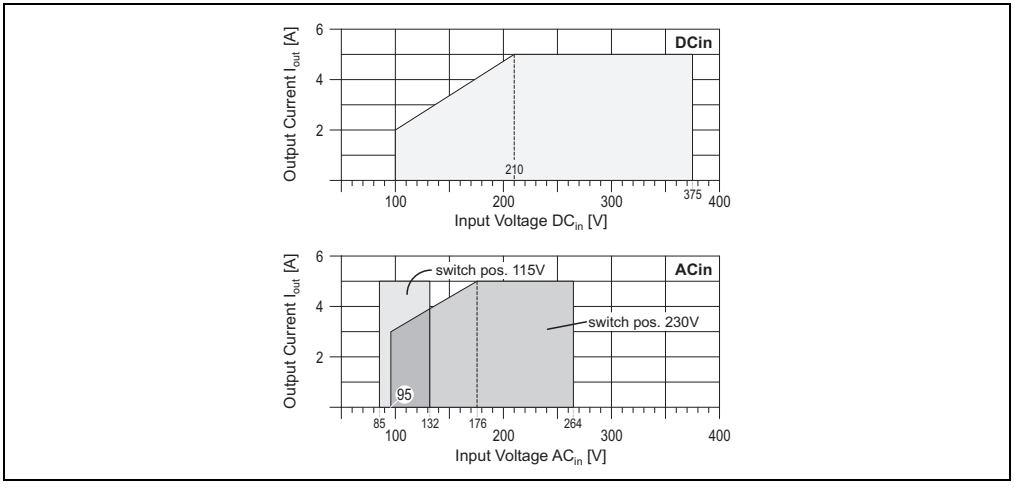

Figure 3: PS105.2 - Output current over input voltage (min.)

7.2 Output characteristics

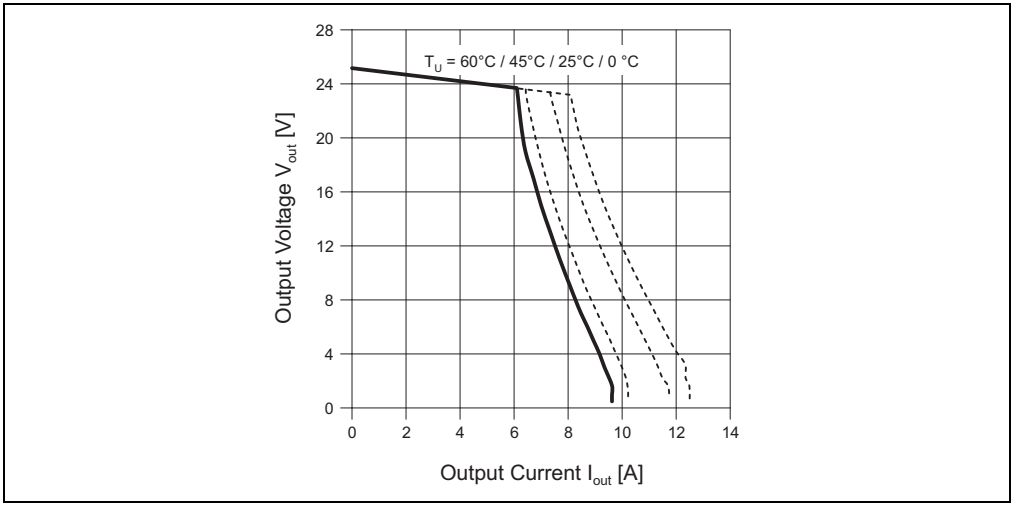

Figure 4: PS105.2 - Output characteristics (min.)

7.3 Hold-Up Time

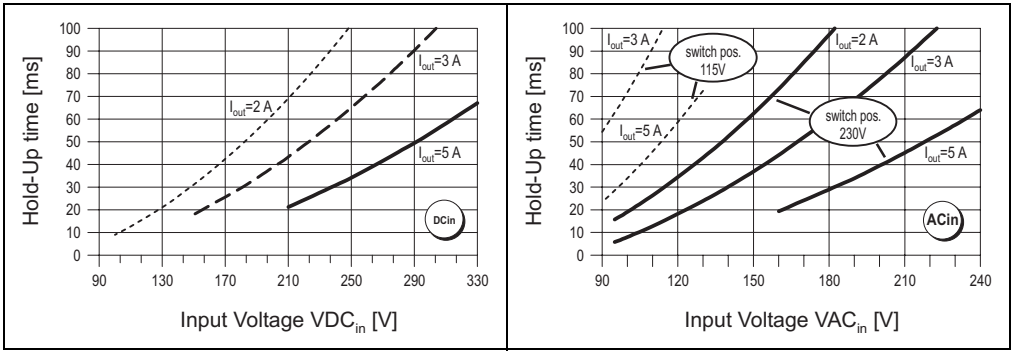

Figure 5: PS105.2 - Hold-up time (min.)

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_n->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 PS105.2 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 4: PS105.2 - Standards and certifications