B&R Power Supply PS105

1. General Information

Features of the B&R power supply PS105:

- Input: AC 230 V / 115 V
- Quasi wide range input
- Output: 24 V / 5 A
- Power boost up to 6 A
- High overload current, no switch-off
- Robust mechanics and EMC
- DIN rail mounting, unit holds even with vibrations or lateral pressure
- Clearly arranged and user-friendly
- Large, robust screw terminals
- Closed metal housing
- Fine ventilation grid

2. Order Data

Model Number	Short Description	Image
0PS105.1	24 VDC power supply, 1 phase, 5 A, Input 115/230 VAC, manual-select, DIN rail mounting	

Table 1: PS105 - Order data

3. Technical Data

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

Name	PS105
General Information	
C-UL-US Listed	Yes
Input	
Nominal Input Voltage	AC 100 - 120 / 200 - 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 +5% - 1%
Voltage Regulation	Better 2% V_{out} overall
Residual Ripple	<50 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 (not recommended because current balancing is not available)
Power Back Immunity	26 V
Operation Indicator	Green LED on front panel (goes out when V_{out}<18 V)

Table 2: PS105 - Technical data

Name	PS105
Efficiency, Reliability	
Efficiency	Typ. 90% (230 VAC, 24 V / 5 A)
Loss	Typ. 13.3 W (230 VAC, 24 V / 5 A)
MTBF (Reliability)	520,000 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 6) • 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 screw terminals
Connection Cross Section Input / Output	Solid: 1.5 - 6 mm² / Flexible: 1.5 - 4 mm² 2 connectors per output
Load Capacity	30 A per output
Grid	9 mm distance between adjacent connectors
Additional Features	• All terminals are easy to reach as mounted on the front panel. • Inputs and outputs are distinctly separate from each other and 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 - Technical data (cont.)

Name	PS105
Mechanical Characteristics	
Dimensions (W x H x D [mm])	64 x 124 x 102 (incl. rail)
Weight	620 g
Housing	Robust sealed metal housing with fine ventilation grid (◇ 3.5 mm, IP20)
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
Special Features	All operational elements (incl. terminals) should be clearly labeled and easy to reach on the front pane of the device.

Table 2: PS105 - 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 6):

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 - 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

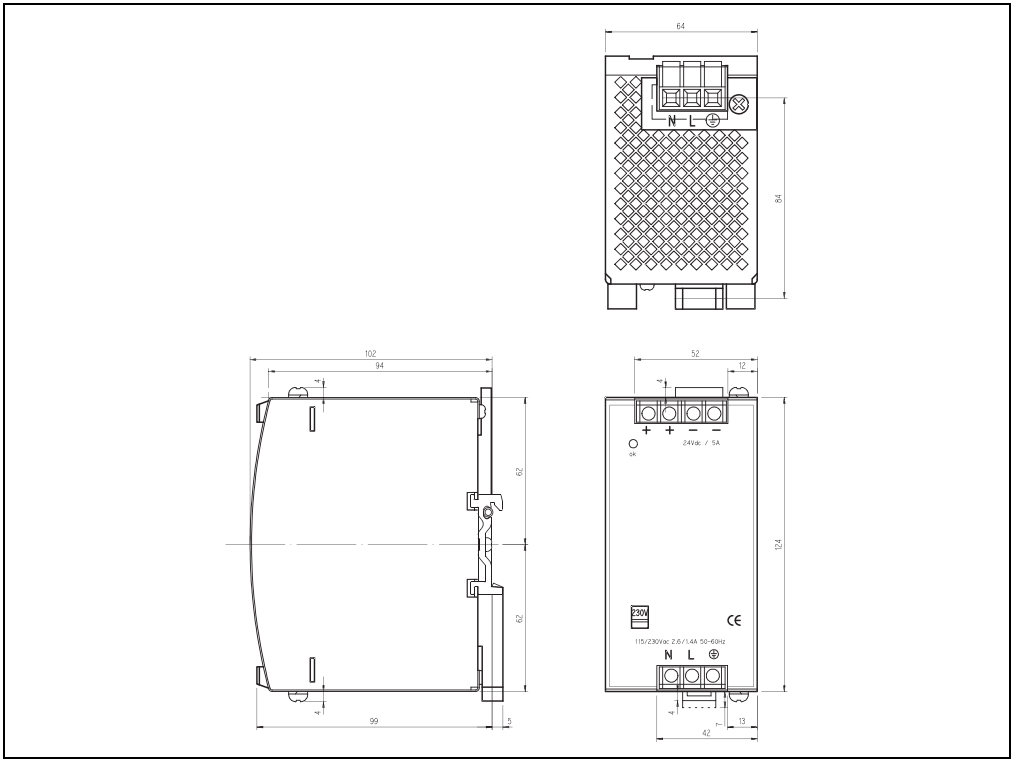

Figure 1: PS105 - Dimensions

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 current over input voltage

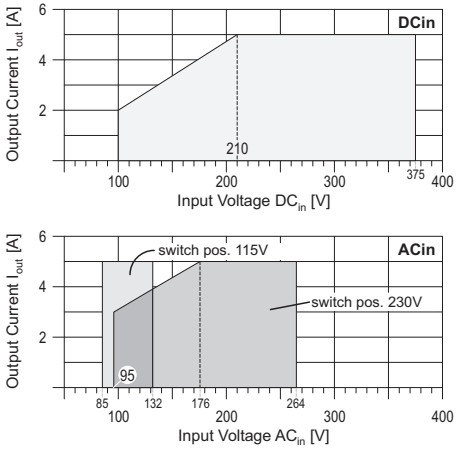

Figure 2: PS105 - Output current over input voltage (min.)

6.2 Output characteristics

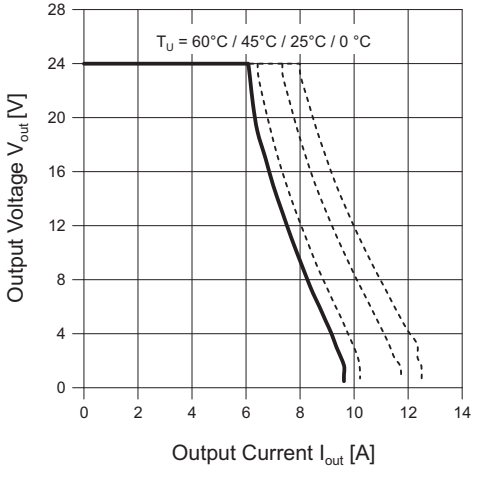

Figure 3: PS105 - Output characteristics (min.)

6.3 Efficiency

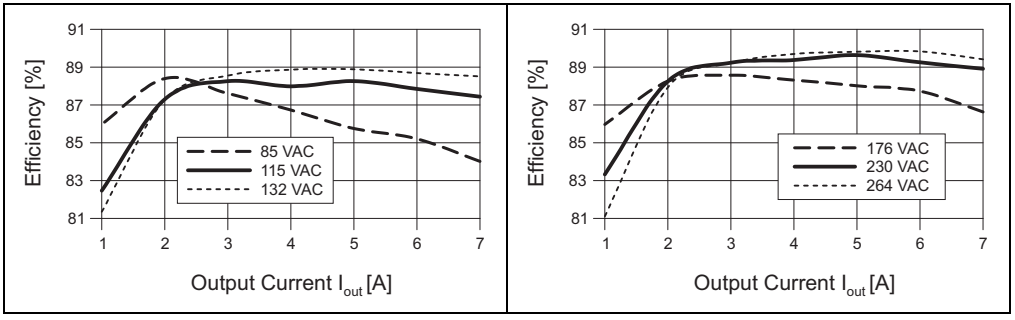

Figure 4: PS105 - Efficiency (min.)

6.4 Hold-Up Time

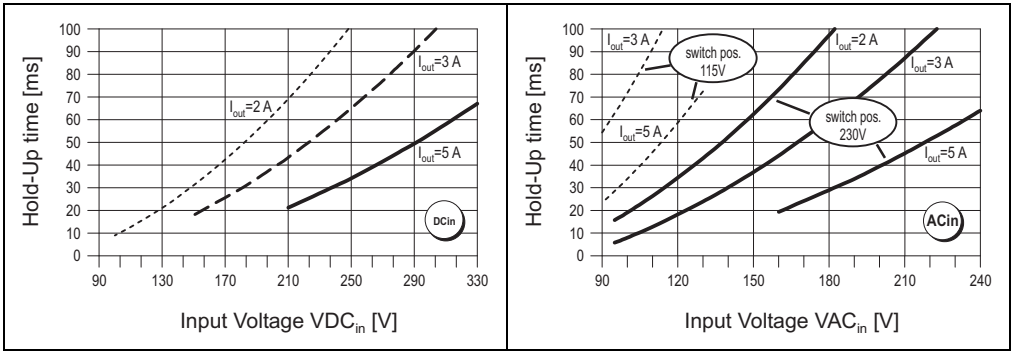

Figure 5: PS105 - Hold-up time (min.)

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
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 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 EN 60950 EN 50178 EN 61000-6-3 EN 61000-6-2	

Table 4: PS105 - Standards and certifications