

Power Supplies: PS5R-S Series

PS5R-S Slim Line Universal Power Supplies



Universal Input Power ♦ 10W to 240W Power Range ♦ Compact Design ♦ Worldwide Approvals

Description

Models

PS5R-SB05: 10W power supply, 22.5mm wide
 PS5R-SB12: 15W power supply, 22.5mm wide
 PS5R-SB24: 15W power supply, 22.5mm wide
 PS5R-SC12: 30W power supply, 36mm wide
 PS5R-SC24: 30W power supply, 36mm wide
 PS5R-SD24: 60W power supply, 36mm wide
 PS5R-SE24: 90W power supply, 46mm wide
 PS5R-SF24: 120W power supply, 50mm wide
 PS5R-SG24: 240W power supply, 80mm wide

Input Power Requirement

Universal Input

85 to 264V AC
 100 to 370V DC (10W to 90W units)
 100 to 350V DC (120W and 240W units)

Output

5V DC, 12V DC, or 24V DC

PS5R-S Slim Line models give you all the power of a traditional power supply in only half the space. They feature universal voltage inputs and all the convenient features you've come to expect. Use them in tight spaces or save valuable DIN rail space while still filling your requirements for power. With nine models available, it's easy to find the one that's right for your application!

The PS5R-S Slim Line series has worldwide approvals. It is UL508 listed and approved for Class I Div 2 hazardous locations. The 10W, 15W, 30W and 60W models are also NEC Class 2 rated, while the 120W and 240W even comply with SEMI F47 sag immunity requirements.

For accessibility and convenience, the PS5R-S series has spring-up screw terminals, fused inputs and overload protection. They are DIN Rail or direct surface mountable. No derating means you save money, space and time. You get the power you need; the way you need it.



Finger-safe spring-up screw terminals

Key Features & Benefits

- Lightweight and compact size
- Universal Input (85-264V AC / 100-370V DC)
- Worldwide approvals: CE, UL/cUL, TÜV
 - UL 1604, Class 1, Div 2, Groups ABCD hazardous locations (all units)
 - UL 508 (all units)
 - UL 13010, NEC Class 2 (10W – 60W only)
 - EN50178:1997
 - LVD: EN60950:2000
 - EMC: Directive EN61204-3:2000 (EMI: Class B, EMS: Industrial)
- Power factor correction (EN61000-3-2) (60W to 240W only)
- Meets SEMI F47 sag immunity (120W and 240W only)
- Over-current protection, auto reset
- Over-voltage protection, shut down
- Output voltage adjust (+ / -10%)
- Unique spring-up finger-safe terminals, IP20
- DIN rail or surface mount

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Power Supplies: PS5R-S Series

Easy-to-use

Fast and Easy Installation

IDEC power supplies can quickly snap onto a DIN rail with built-in DIN rail clips that require no additional brackets. They can also be directly mounted on a panel, which means installation is a snap.

IP20 Finger-safe, Spring-up Screw Terminals

Don't worry about losing screws or getting an inadvertent shock from a terminal. The terminals are captive spring-up screws, which makes using them as easy as pushing a screw down and tightening it. They are shock and vibration resistant, and work with ring lugs, fork connectors or stripped wire connections. The terminals are rated IP20 (when tightened) meaning they are recessed to keep fingers and objects from touching the input contacts.

Universal AC/DC Inputs

The power inputs have a range of 85-264V AC to 100-350V DC, and automatically adjust to the correct input power. This makes PS5R-S power supplies suitable for use anywhere in the world.

Output Voltage Adjustment

The output voltage can be easily adjusted within $\pm 10\%$ of the rated voltage.

DC Low Indicator

(15W, 120W & 240W only)

The indicator turns on when the output voltage drops below 80% of the rated value. This assists in troubleshooting power supply problems.

DC ON Indicator

The indicator turns on when the unit is powered up. This is a convenient way to know when the power supply is receiving power.

Reliable Operation

High-performance Output

With very low output ripples of less than 1% peak to peak, the 120W and 240W power supplies are some of the best in the industry. The 240W power supply also has the convenience of two output terminals.

Power Factor Correction (EN61000-3-2)

(60W, 90W, 120W & 240W only)

Power factor correction has also been included to minimize harmonic distortion, resulting in a longer operating life and increased reliability.

Overload Protection

All PS5R-S power supplies are designed with over-current and over-voltage protection to eliminate power supply or equipment damage. With over-current protection, the output voltage automatically drops to zero due to excessive current. When the load returns to a normal level, normal output voltage is restored. With over-voltage protection, the power shuts down when an over-voltage occurs. Only a manual reset can turn the power back on.

Long Life Expectancy

PS5R-S power supplies are very reliable, with a life expectancy of 70,000 hrs. (minimum) or longer, depending on usage.

Ventilation Grill

Provides cooling for the power supply and prevents small objects from falling into the power supply circuitry.

Safety Approvals

SEMI F47

(for 120W & 240W only)

The semiconductor industry requires SEMI F47 approved equipment for use in semiconductor fabrication machinery. The EAC Corp. is a third party agency and a global leader in conducting voltage sag testing on semiconductor equipment. They certified the 120W and 240W to the SEMI F47 standard.

Class I, Div. 2, Groups ABCD (UL 1604)

All PS5R-S Slim Line power supplies are approved for use in Class I, Div. 2 environments. They can be used in hazardous locations where flammable liquids, gases, and vapors exist or are normally confined within closed containers.

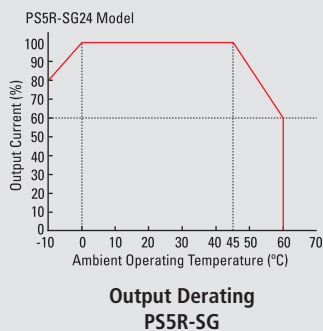
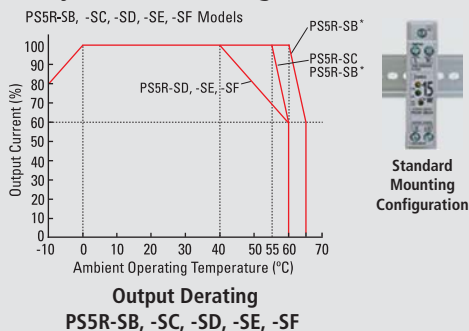
NEC Class 2 (UL 1310)

The 10W, 15W, 30W and 60W PS5R-S Slim Line power supplies are listed according to UL1310, making them compliant to the NEC (National Electric Code) Class 2 rating. For UL1310, the output of the power supplies must be less than 100V AC (under all conditions), have electric shock protection and meet the National Fire Protection Association standards.

SELV (Safety Extra Low Voltage)

All PS5R-S power supplies are SELV compliant. For safety purposes, regulatory agencies defined the highest voltage a person can sustain, without causing any injury, at approximately 30V AC or 42.4V DC.

Safety Charts - Derating Curves



All Slim Line power supplies are listed to UL508, which allows operation at 100% capacity inside a panel. This eliminates the need to use oversize power supplies or utilize two power supplies derated at 50% of their rated output.

The charts above show that the PS5R-S 10W and 15W (at 60°C), 30W/60W/90W (at 55°C), 120W (at 40°C), and 240W (at 45°C) meet the ambient temperature required by UL508 and EN60950 standards to operate at an output current of 100%. The output current starts to derate beyond the required temperature.

* Use lower derating curve for -SB units when using non-standard (rotated) mounting configurations.



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Performance Specifications

Input

Input Voltage (single-phase, 2-wire)

85 to 264V AC, 105 to 370V DC (10W - 90W units)
85 to 264V AC, 105 to 350V DC (120W, 240W units).

Input Current (maximum)

PS5R-SB05, PS5R-SB12, PS5R-SB24:
0.45A at 100V AC, 0.3A at 200V AC.

PS5R-SC12, PS5R-SC24:
0.9A at 100V AC, 0.6A at 200V AC.

PS5R-SD24:
1.7A at 100V AC, 1.0A at 200V AC.

PS5R-SE24:
2.3A at 100V AC, 1.4A at 200V AC.

PS5R-SF24:
1.8A at 100V AC, 1.0A at 200V AC.

PS5R-SG24:
3.5A at 100V AC, 1.7A at 200V AC.

Internal Fuse Rating

PS5R-SB05, PS5R-SB12, PS5R-SB24: 2A.
PS5R-SC12, PS5R-SC24, PS5R-SD24: 3.15A.

PS5R-SE24, PS5R-SF24: 4A.

PS5R-SG24: 6.3A.

Inrush Current (cold start)

50A maximum (at 200V AC).

Leakage Current (at no load)

PS5R-SB05, PS5R-SB12, PS5R-SB24 :
132V AC: 0.38mA max.; 264V AC: 0.75mA max.

PS5R-SC12, PS5R-SC24, PS5R-SD24, PS5R-SE24:
0.75mA maximum.

PS5R-SF24, PS5R-SG24:
1mA maximum.

Typical Efficiency

PS5R-SB05, PS5R-SB12, PS5R-SB24:
69% at 5V DC, 75% at 12VDC, 79% at 24V DC.

PS5R-SC12, PS5R-SC24:
78% at 12V DC, 80% at 24V DC.

PS5R-SD24: 83% at 24V DC.

PS5R-SE24: 82% at 24V DC.

PSR5-SF24, PS5R-SG24: 84% at 24V DC.

Output

Output Voltage and Current Ratings

See derating curve charts on previous page.

PS5R-SB05, PS5R-SB12, PS5R-SB24:
2.0A at 5V DC, 1.2A at 12V DC, 0.65A at 24V DC.

PS5R-SC12, PS5R-SC24:
2.5A at 12V DC, 1.3A at 24V DC.

PS5R-SD24: 2.5A at 24V DC.

PS5R-SE24: 3.75A at 24V DC.

PSR5-SF24: 5A at 24V DC.

PS5R-SG24: 10A at 24V DC.

Voltage Adjustment

±10% (V. ADJ control on front).

Output Holding Time

20ms minimum (at rated input and output).

Starting Time

PS5R-SB05, PS5R-SB12, PS5R-SB24: 200ms maximum.

PSR5-SF24: 650ms maximum.

PS5R-SG24: 500ms maximum.

Rise Time

All units except PSR5-SF24, PS5R-SG24:
100ms maximum (at rated input and output).

PSR5-SF24, PS5R-SG24: 200ms maximum.

Line Regulation

0.4% maximum

Load Regulation

All units except PS5R-SG24: 1.5% maximum.

PS5R-SG24: 0.8% maximum.

Temperature Regulation

0.05% °C maximum.

Ripple Voltage

All units except PSR5-SF24, PS5R-SG24:
2% peak-to-peak maximum (including noise).

PSR5-SF24, PS5R-SG24:
1% peak-to-peak maximum (including noise).

Over-current Protection

PS5R-SB05, PS5R-SB12, PS5R-SB24:
105% or more, auto reset

PS5R-SC12, PS5R-SC24, PS5R-SD24:
105% or more, auto reset

PS5R-SE24: 105 to 130%, auto reset

PS5R-SF24, PS5R-SG24: 103 to 110%, auto reset

Over-voltage Protection

120% minimum shutdown.

Environmental

Dielectric Strength

Between input and ground: 2000V AC, 1 minute.

Between input and output: 3000V AC, 1 minute.

Between output and ground: 500V AC, 1 minute.

Insulation Resistance

100M ohms min. between input and output terminals.

Operating Temperature

See derating curve charts on previous page.

PS5R-SB05, PS5R-SB12, PS5R-SB24:
-10 to 65°C (14 to 149°F)

All other units: -10 to 60°C (14 to 140°F)

Storage Temperature

-25 to 75°C (-13 to 167°F)

Operating Humidity

20 to 90% relative humidity (no condensation)

Vibration Resistance

10 to 55Hz frequency, 0.375mm amplitude.

Shock Resistance

300m/S², (30G) 3 times each in 6 axes.

Physical

Dimensions and Weight

See dimension diagrams on next page.

Terminal Screw

M3.5 Phillips head screw (screw terminal type).

IP Protection

IP20 finger-safe.

LED Indicators

Operation: Green.

Voltage low: Amber (10W, 15W, 120W, 240W only).

Approvals

EMC: EN61204-3 (EMI: Class B, EMS: Industrial),

c-UL (CSA 22.2 No. 14), UL1604, UL508,

LVD: EN60950, EN50178

Ordering Information

Models

PS5R-SB05

Power supply, 10W, 2.0A at 5V DC

PS5R-SB12

Power supply, 15W, 1.2A at 12V DC

PS5R-SB24

Power supply, 15W, 0.65A at 24V DC

PS5R-SC12

Power supply, 30W, 2.5A at 12V DC

PS5R-SC24

Power supply, 30W, 1.3A at 24V DC

PS5R-SD24

Power supply, 60W, 2.5A at 24V DC

PS5R-SE24

Power supply, 90W, 3.75A at 24V DC

PS5R-SF24

Power supply, 120W, 5A at 24V DC

PS5R-SG24

Power supply, 240W, 10A at 24V DC

Accessories

PS9Z-5R1B

Panel mounting bracket for model PS5R-SB

PS9Z-5R2B

Panel mounting bracket for model PS5R-SB
(flat side mounting)

PS9Z-5R1C

Panel mounting bracket for models PS5R-SB, PS5R-SD

PS9Z-5R1G

Panel mounting bracket for models PS5R-SF, PS5R-SG

BNL5

Din rail end stop, small

BNL6

Din rail end stop, medium

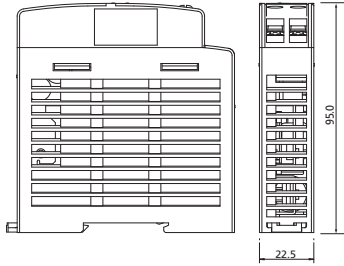
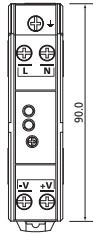


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Dimensions

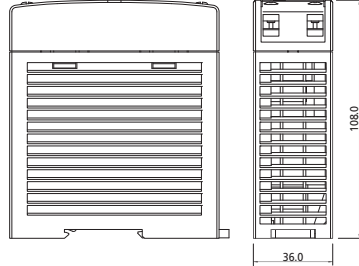
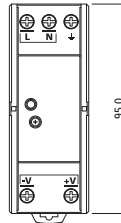
PS5R-SB

Height 90mm (3.54")
 Width 22.5mm (0.89")
 Depth 95mm (3.74")
 Weight 0.16kg (0.35lb.)



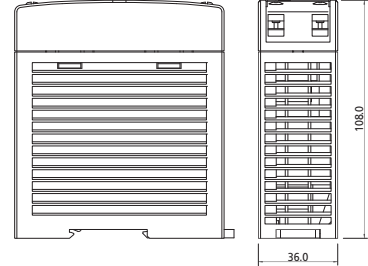
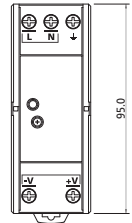
PS5R-SC

Height 95.0mm (3.74")
 Width 36.0mm (1.42")
 Depth 108.0mm (4.25")
 Weight 0.25kg (0.55lb.)



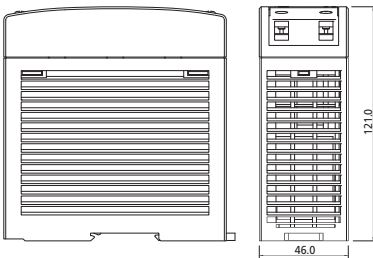
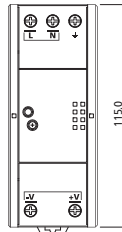
PS5R-SD

Height 95.0mm (3.74")
 Width 36.0mm (1.42")
 Depth 108.0mm (4.25")
 Weight 0.29kg (0.63lb.)



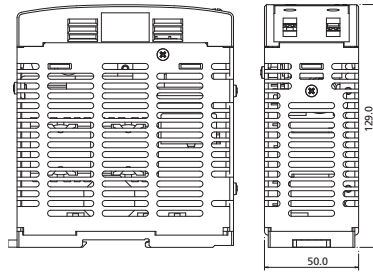
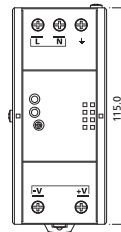
PS5R-SE

Height 115.0mm (4.53")
 Width 46.0mm (1.81")
 Depth 121.0mm (4.77")
 Weight 0.44kg (0.97lb.)



PS5R-SF

Height 115.0mm (4.53")
 Width 50.0mm (1.97")
 Depth 129.0mm (5.08")
 Weight 0.63kg (1.39lb.)



PS5R-SG

Height 125.0mm (4.92")
 Width 80.0mm (3.15")
 Depth 149.5mm (5.89")
 Weight 1.00kg (2.20lb.)

