

PS5R Slim Line Series Switching Power Supplies

Key features:

- Lightweight and compact in size
- Wide power range: 10W-240W
- Universal input:
10W to 90W: 85-264V AC/100-370V DC
120W and 240W: 85-264V AC/100-350V DC
- Power Factor Correction for 60W to 240W (EN61000-3-2)
- Meets SEMI F47 Sag Immunity (120W & 240W only)
- UL Listed for Class 1, Div. 2 Hazardous Locations
- Overcurrent protection, auto-reset
- Overvoltage protection, shut down
- Spring-up screw terminal type, IP20
- DIN rail or panel surface mount
- Approvals:
CE Marked
TUV
c-UL, UL508
UL1310 (PS5R-SB, -SC, -SD)

ANSI/ISA-12.12.01-2011 (Hazardous locations)
EN50178:1997

LVD: EN60950:2000

EMC: Directive EN61204-3:2000 (EMI: Class B, EMS: Industrial)



File #E234997



(SEMI F47 120W & 240W only)

Designed with Accessibility & Convenience in Mind

DC Low Indicator (15W, 120W & 240W Slim Line 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.

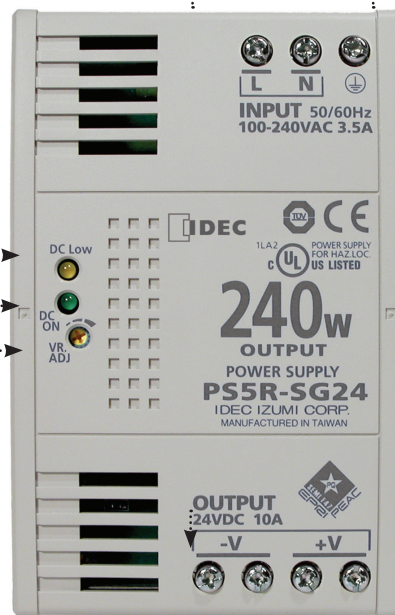
Output Voltage Adjustment

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



Fingersafe, Spring-up Screw Terminals

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 Input Power

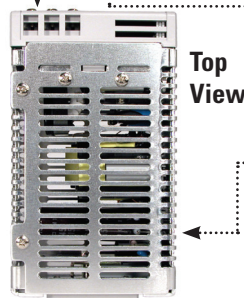
The applied input power has a range of 85-264V AC (100-350V DC) without the use of jumpers or slide switches. This makes IDEC power supplies suitable for use anywhere in the world.

Long Life Expectancy

IDEC power supplies are very reliable, with a life expectancy of 70,000 hrs. (minimum) or longer, depending on usage. Power factor correction has also been included to minimize harmonic distortion, resulting in a longer operating life and increased reliability.

Output Channel

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 output comes with overload protection that avoids damaging the power supply and the spring-up, fingersafe, screw terminals add a level of safety and ease for the user. The 240W power supply also has the convenience of two output terminals.






Top View



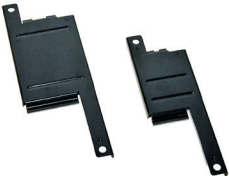
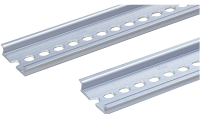

Ventilation Grill

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

Part Numbers

| Style | Output Capacity | Input Voltage | Output Voltage | Rated Current | Part Number |
|--|-----------------|---------------|----------------|---------------|-------------|
|  | 10 | 85 to 264V AC | 5V DC | 2.0A | PS5R-SB05 |
| | | | 12V DC | 1.2A | PS5R-SB12 |
| | | | 24V DC | 0.65A | PS5R-SB24 |
|  | 15 | 85 to 264V AC | 12V DC | 2.5A | PS5R-SC12 |
| | | | 24V DC | 1.3A | PS5R-SC24 |
|  | 30 | 85 to 264V AC | 24V DC | 2.5A | PS5R-SD24 |
| | | | 24V DC | 10A | PS5R-SG24 |
|  | 60 | 85 to 264V AC | 24V DC | 5A | PS5R-SF24 |
| | | | 24V DC | 10A | PS5R-SG24 |

Accessories

| | | |
|---|---|-----------|
|  | Panel Mounting Bracket for PS5R-SB | PS9Z-5R1B |
| | Panel Mounting Bracket for PS5R-SB (flat side mounting) | PS9Z-5R2B |
| | Panel Mounting Bracket for PS5R-SC and PS5R-SD | PS9Z-5R1C |
| | Panel Mounting Bracket for PS5R-SE | PS9Z-5R1E |
| | Panel Mounting Bracket for PS5R-SF & PS5R-SG | PS9Z-5R1G |
|  | DIN rail (1000mm) | BNDN1000 |
|  | DIN rail end clip | BNL5 |

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Specifications

| Model | | 5V DC output | PS5R-SB05 | — | | — | — | — | |
|-------------------------------|--------------------------------------|---------------|--|---|---------------------------|-------------------------|---|--------------------|--|
| | | 12V DC output | PS5R-SB12 | PS5R-SC12 | — | — | — | — | |
| | | 24V DC output | PS5R-SB24 | PS5R-SC24 | PS5R-SD24 | PS5R-SE24 | PS5R-SF24 | PS5R-SG24 | |
| Output Capacity | | | 15W (5V Model is 10W) | 30W | 60W | 90W | 120W | 240W | |
| Input | Input Voltage (single-phase, 2-wire) | | 85 to 264V AC, 100 to 370V DC | | | | 85 to 264V AC, 100 to 350V DC | | |
| | Input Current (maximum) | 100VAC | 0.45A | 0.9A | 1.7A | 2.3A | 1.8A | 3.5A | |
| | | 200VAC | 0.3A | 0.6A | 1.0A | 1.4A | 1.0A | 1.7A | |
| | Internal Fuse Rating | | 2A | 3.15A | | 4A | | 6.3A | |
| | Inrush Current (cold start) | | 50A maximum (at 200V AC) | | | | | | |
| | Leakage Current (at no load) | | 132V AC: 0.38 mA maximum 264V AC: 0.75 mA maximum | 0.75mA maximum | | | 1mA maximum | | |
| | Typical Efficiency | 5V DC | 69% | — | — | — | — | — | |
| | | 12V DC | 75% | 78% | — | — | — | — | |
| | | 24V DC | 79% | 80% | 83% | 82% | 84% | | |
| | Output Current Ratings | 5V DC | 2.0A | — | — | — | — | — | |
| 12V DC | | 1.2A | 2.5A | — | — | — | — | | |
| 24V DC | | 0.65A | 1.3A | 2.5A | 3.75A | 5A | 10A | | |
| Output | Voltage Adjustment | | ±10% (V. ADJ control on front) | | | | | | |
| | Output Holding Time | | 20ms minimum (at rated input and output) | | | | | | |
| | Starting Time | | 200ms maximum | — | — | — | 650ms maximum | 500ms maximum | |
| | Rise Time | | 100ms maximum (at rated input and output) | | | | 200ms maximum | | |
| | Line Regulation | | 0.4% maximum | | | | | | |
| | Load Regulation | | 1.5% maximum | | | | | 0.8% max | |
| | Temperature Regulation | | 0.05% degree C maximum | | | | | | |
| | Ripple Voltage | | 2% peak to peak maximum (including noise) | | | | 1% peak to peak maximum (including noise) | | |
| | Overcurrent Protection | | 105% or more, auto reset | | | 105 to 130%, auto reset | 103 to 110%, auto reset | | |
| | Overvoltage Protection | | 120% min. SHUTDOWN | | | | | | |
| | Operation Indicator | | LED (green) | | | | | | |
| | Voltage Low Indication | | LED (amber) | — | — | — | LED (amber) | | |
| | Dielectric Strength | | | Between Input and Ground: 2000 V AC, 1 minute Between input and output: 3000V AC, 1 minute; Between output and ground: 500V AC, 1 minute. | | | | | |
| | Insulation Resistance | | | Between Input & Output Terminals: 100 MΩ Min | | | | | |
| | Operating Temperature | | | −10 to +65°C (14 to 149°F) | -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 | | | Frequency 10 to 55Hz, Amplitude 0.375mm | | | | | | |
| Shock Resistance | | | 300m/s ² (30G) 3 times each in 6 axes | | | | | | |
| Approvals | | | EMC: EN61204-3 (EMI: Class B, EMS: Industrial), c-UL (CSA 22.2 No. 14), ANSI/ISA-12.12.01-2011, UL508, LVD: EN60950, EN50178 | | | | | | |
| | | | UL1310 Class 2, c-UL (CSA 22.2 No. 213 and 223) | | | — | | SEMI F47 | |
| Harmonic Directive | | | N/A | | | EN61000-3-2 A14 class A | | | |
| Weight (approx.) | | | 160g | 250g | 285g | 440g | 630g | 1000g | |
| Terminal Screw | | | M3.5 slotted-Phillips head screw (screw terminal type) | | | | | | |
| IP protection | | | IP20 fingersafe | | | | | | |
| Dimensions H x W x D (mm) | | | 90 x 22.5 x 95 | 95 x 36 x 108 | | 115 x 46 x 121 | 115 x 50 x 129 | 125 x 80 x 149.5 | |
| Dimensions H x W x D (inches) | | | 3.54 x 0.89 x 3.74 | 3.74 x 1.42 x 4.25 | | 4.53 x 1.81 x 4.76 | 4.53 x 1.97 x 5.08 | 4.92 x 3.15 x 5.89 | |

1. For dimensions, see page 186.

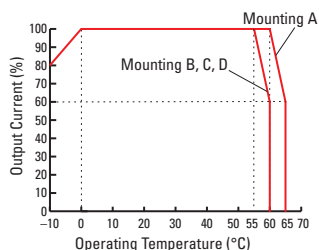


Temperature Derating Curves

All IDEC 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 below show that the PS5R Slim 10W (at 60°C) and 15W (at 60°C), 30W/60W/90W (at 55°C), 120W (at 40°C), and 240W (at 45°C) meet the elevated, operating 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.

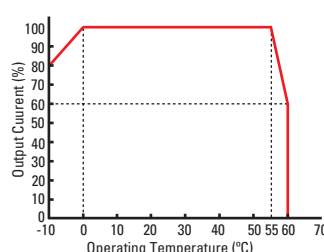
PS5R-SB



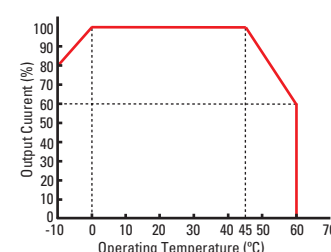
Derating curve for PS5R-SB varies depending on mounting method (see right).

Mounting A
(standard)Mounting B
(upright)Mounting C
(left side up)Mounting D
(right side up)

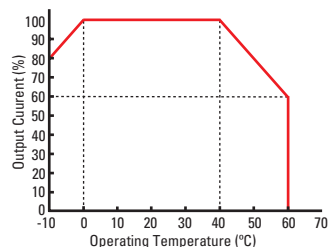
PS5R-SC



PS5R-SG

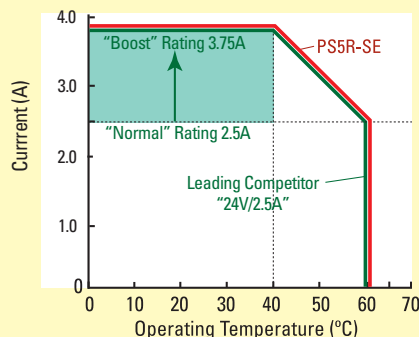


PS5R-SD, -SE, -SF



PS5R-SE 90W/3.75A/24V DC versus a Leading Competitor

Standard derating curve (operating temperature vs. output current)

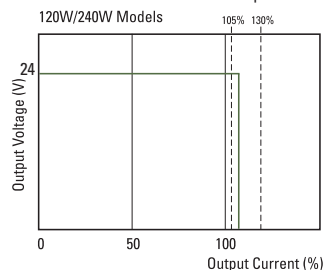


Don't Believe the Hype

Other companies use slick marketing to sell you 60W power supplies with a "BOOST," but what they don't tell you is that these are merely 90W power supplies that have been renamed to fool you into thinking they have a unique feature. IDEC 90W power supplies are just what they claim, 90W power supplies. The truth is IDEC led the market by incorporating UL508 DIN rail mount power supplies as a standard product. Don't let the other guys pull a fast one on you by claiming to provide features that just aren't true, or even possible. See what IDEC has to offer, no strings attached.

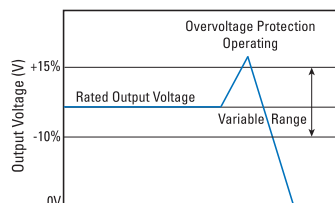
Overload Protection

Overload protection prevents the power supply from being damaged when an overload occurs. There are two kinds of protection.

Overcurrent Protection
PS5R-SF, -SG

Overcurrent Protection

When the output current exceeds 105% of the rated current, overload protection is triggered, and the output voltage starts decreasing. When the output current returns within the rated range, the overload protection function is automatically cleared.



Overvoltage Protection

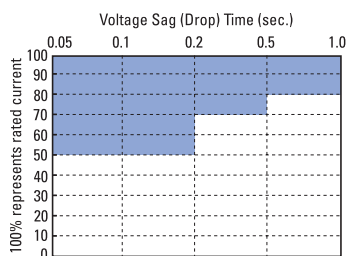
Overvoltage Protection

When the output voltage of the power supply rises to 120% or more of the rated value, the output will shut off. To restore power, only manual reset is available which is an advantage in troubleshooting.

SEMI-F47 Approved

The SEMI F47 (Semiconductor Processing Equipment Voltage Sag Immunity) defines the minimum voltage sag ride-through requirements for semiconductor processing, automated test equipment and other equipment. It requires that the equipment be able to tolerate voltage sags on an AC power line without interrupting operations. This avoids the loss of production and money.

The graph shows how the equipment must tolerate sags to 50% for 200ms, sags to 70% for up to 0.5 seconds and sags to 80% for up to 1 second.



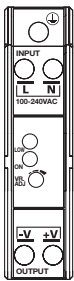
Voltage Sag Sliding Scale PS5R-SF, -SG

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Dimensions and Terminal Markings

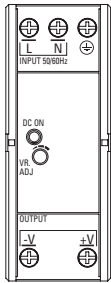
PS5R-SB

Height 90mm
Width 22.5mm
Depth 95mm



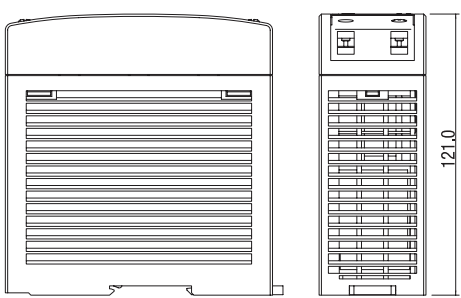
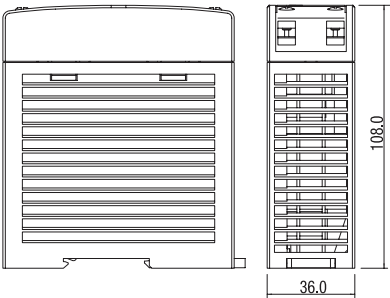
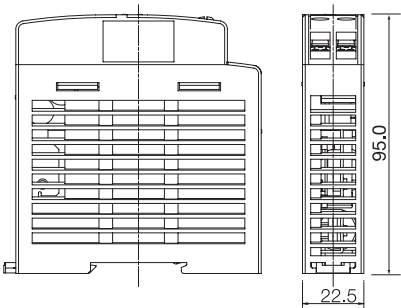
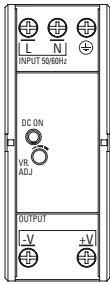
PS5R-SC
PS5R-SD

Height 95.0mm
Width 36.0mm
Depth 108.0mm



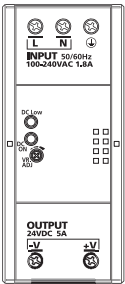
PS5R-SE

Height 115.0mm
Width 46.0mm
Depth 121.0mm



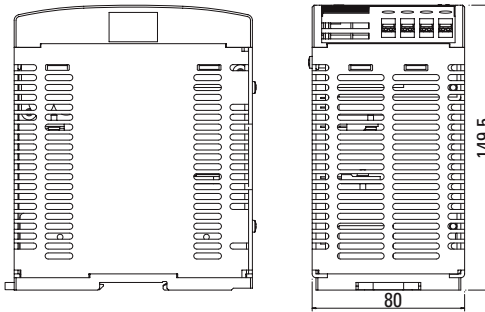
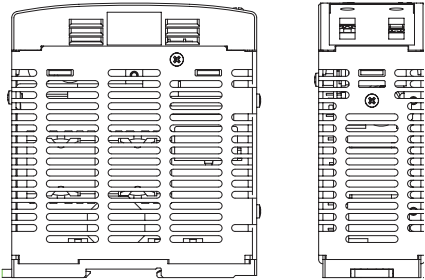
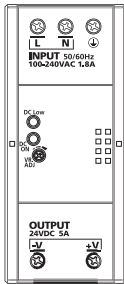
PS5R-SF

Height 115.0mm
Width 50.0mm
Depth 129.0mm



PS5R-SG

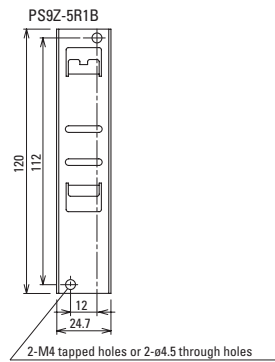
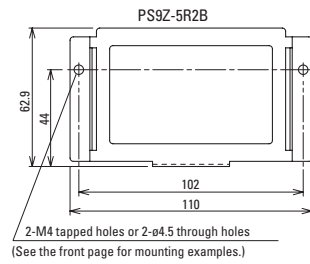
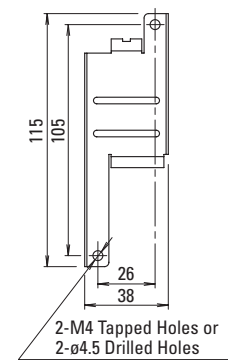
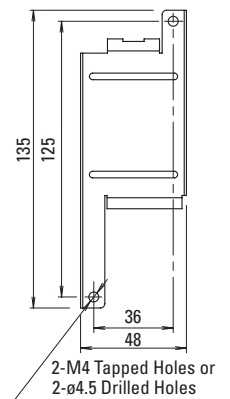
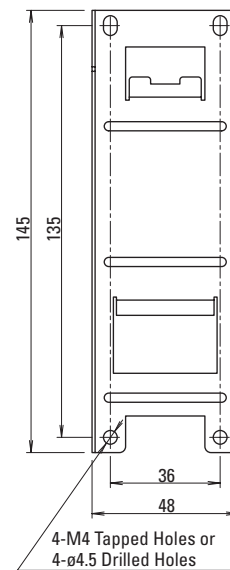
Height 125.0 mm
Width 80.0 mm
Depth 149.5 mm



Front Panel (terminals)

| Markings | Name | Description |
|----------|---------------------|---|
| V. ADJ | Voltage adjustment | Adjusts within $\pm 10\%$; turn clockwise to increase output voltage. |
| DC ON | Operation indicator | Green LED is lit when output voltage is on. |
| DC Low | Output indicator | Amber LED is lit when output voltage drops below 80% of rated voltage. |
| +V, -V | DC output terminals | +V: Positive output Terminal -V: Negative output terminal |
| | Frame ground | Ground this terminal to reduce high-frequency noise caused by switching power supply. |
| L, N | Input terminals | Accept a wide range of voltages and frequencies (no polarity at DC input). |

Mounting Bracket Dimensions (mm)

PS9Z-5R1B (for PS5R-SB)**PS9Z-5R2B** (for PS5R-SB)**PS9Z-5R1C** (for PS5R-SC & PS5R-SD)**PS9Z-5R1E** (for PS5R-SE)**PS9Z-5R1G** (for PS5R-SF & PS5R-SG)

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