

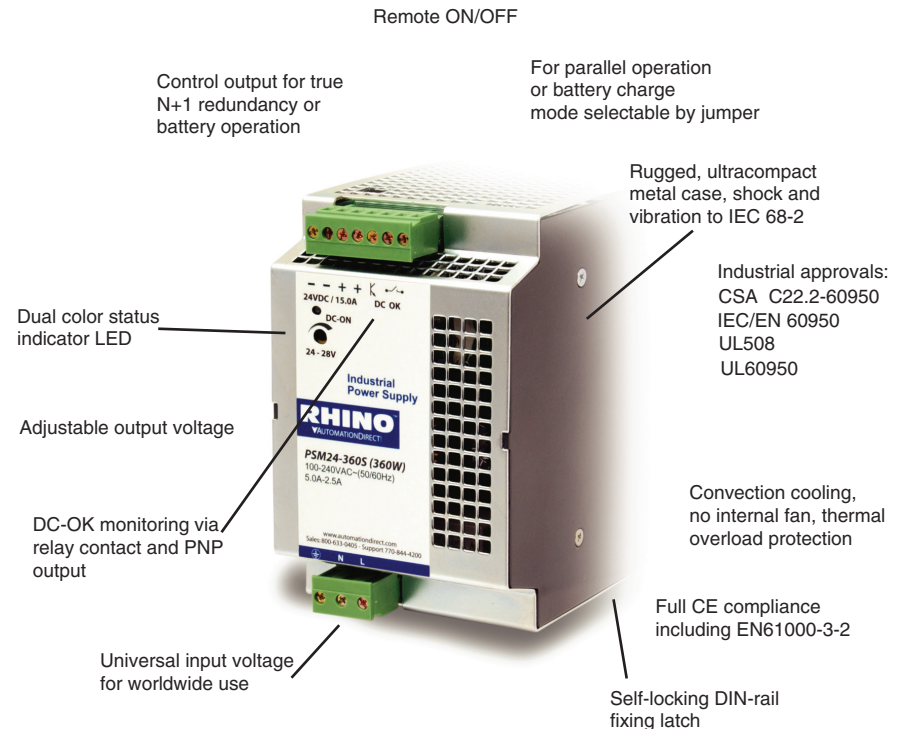
# RHINO PSM Series Power Supplies

## Versatile switching power supplies are DIN rail mountable

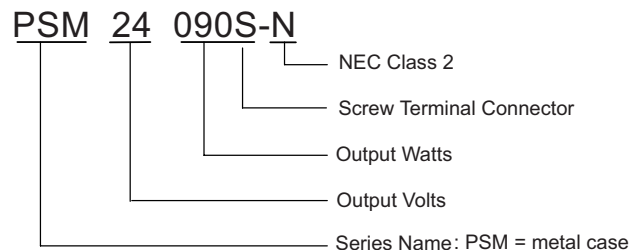
AutomationDirect offers the most practical industrial control power supplies available. The RHINO PSM series power supplies are industrial grade switching DC output supplies with a sturdy steel case to withstand harsh environments. Autoselect inputs for 115 VAC or 230 VAC and international agency approvals make the RHINO PSM series suitable for worldwide use. RHINO PSM power supplies are available in 12 or 24 VDC output, with adjustable output voltages, and feature low output ripple along with overload and overtemperature protection. The seven models offer power ratings from 78W to 600W, and up to 25A output current.

## Features

- Industrial grade design
- Sturdy metal case to withstand harsh industrial environments
- Model [PSM24-090S-N](#) meets NEC Class 2
- Universal 100/230 VAC input voltage
- Adjustable output voltage
- Low output ripple
- Short-circuit, overvoltage and overtemperature protection
- Power Good signal
- Remote ON/OFF
- Optional wall mounting
- Specialty modules for redundancy, power backup and UPS
- Terminal connectors included
- 3-year warranty



## Part Numbering System



| RHINO PSM Industrial Power Supplies |          |                     |                               |                                |                               |
|-------------------------------------|----------|---------------------|-------------------------------|--------------------------------|-------------------------------|
| Part Number                         | Price    | Drawing Link        | *Output Voltage [ $V_{nom}$ ] | **Output Current [ $I_{max}$ ] | ***Output Power [ $P_{max}$ ] |
| <a href="#">PSM12-078S</a>          | \$165.00 | <a href="#">PDF</a> | 12VDC                         | 6.0 A                          | 78W                           |
| <a href="#">PSM24-090S</a>          | \$123.00 | <a href="#">PDF</a> | 24VDC                         | 3.75 A                         | 90W                           |
| <a href="#">PSM24-090S-N</a>        | \$170.00 | <a href="#">PDF</a> | 24VDC                         | 3.75 A                         | 90W                           |
| <a href="#">PSM12-156S</a>          | \$197.00 | <a href="#">PDF</a> | 12VDC                         | 12.0 A                         | 156W                          |
| <a href="#">PSM24-180S</a>          | \$191.00 | <a href="#">PDF</a> | 24VDC                         | 7.5 A                          | 180W                          |
| <a href="#">PSM24-360S</a>          | \$288.00 | <a href="#">PDF</a> | 24VDC                         | 15.0 A                         | 360W                          |
| <a href="#">PSM24-600S</a>          | \$429.00 | <a href="#">PDF</a> | 24VDC                         | 25.0 A                         | 600W                          |

\*12V models adjustable from 12 to 14 VDC. 24V models adjustable from 24 - 28 VDC

\*\*Maximum current at nominal output voltage

\*\*\*Up to an operating temperature of +40°C

# PSM Series Power Supplies Specifications

| Input Specifications                |                                               |                                |                       |                                      |         |                                       |         |                                          |                           |                                    |     |                  |
|-------------------------------------|-----------------------------------------------|--------------------------------|-----------------------|--------------------------------------|---------|---------------------------------------|---------|------------------------------------------|---------------------------|------------------------------------|-----|------------------|
| Part Number                         | Input Voltage Range                           | Operating Voltage min/ max     | Input Frequency Range | Input Current [Typical] at full load |         | Inrush Current max [ $<2ms$ ] @ +25°C |         | Holdup Time                              | Efficiency [Typ @ 115VAC] | Circuit Breaker or Fuse [slo-blow] |     |                  |
|                                     |                                               |                                |                       | 115 VAC                              | 230 VAC | 115 VAC                               | 230 VAC |                                          |                           |                                    |     |                  |
| <a href="#"><u>PSM12-078S</u></a>   | 100 - 240 VAC<br>Universal Input              | 85 - 264 VAC                   | 47-63 Hz              | 2.0 A                                | 1.0 A   | <12 A                                 | <20 A   | 20 ms min.<br>[full load<br>115/230 VAC] | 81%                       | 6.0 A to 16.0 A                    |     |                  |
| <a href="#"><u>PSM24-090S</u></a>   |                                               |                                |                       | 2.1 A                                | 1.0 A   |                                       |         |                                          | 86%                       |                                    |     |                  |
| <a href="#"><u>PSM24-090S-N</u></a> |                                               |                                |                       | 2.1 A                                | 1.0 A   |                                       |         |                                          | 85%                       |                                    |     |                  |
| <a href="#"><u>PSM12-156S</u></a>   | 100 - 120 VAC/<br>220 - 230 VAC<br>Autoselect | 85 - 132 VAC/<br>187 - 264 VAC |                       | 2.5 A                                | 1.4 A   | <13 A                                 | <25 A   |                                          | 85%                       |                                    |     |                  |
| <a href="#"><u>PSM24-180S</u></a>   |                                               |                                |                       | 2.8 A                                | 1.5 A   |                                       |         |                                          | 87%                       |                                    |     |                  |
| <a href="#"><u>PSM24-360S</u></a>   |                                               |                                |                       | 5.0 A                                | 2.5 A   |                                       |         |                                          | <16 A                     | <25 A                              | 85% | 10.0 A to 16.0 A |
| <a href="#"><u>PSM24-600S</u></a>   |                                               |                                |                       | 10.0 A                               | 5.0 A   |                                       |         |                                          | <25 A                     | <30 A                              | 88% | 16.0 A to 25.0 A |

| Output Specifications        |                |                           |                       |                     |                               |                     |                      |                                            |                         |
|------------------------------|----------------|---------------------------|-----------------------|---------------------|-------------------------------|---------------------|----------------------|--------------------------------------------|-------------------------|
| Part Number                  | Output Voltage | Output Voltage Adj. Range | Output Current (Max.) | Output Power (Max.) | Output Overvoltage Protection | Power - Good Signal |                      |                                            | MTBF (IEC 61709 @ 25°C) |
|                              |                |                           |                       |                     |                               | Trigger Threshold   | Active Output Signal | Relay Output                               |                         |
| <a href="#">PSM12-078S</a>   | 12VDC          | 12 - 14 VDC               | 6.5 A                 | 78 watts            | 20V                           | 9 - 11 V            | 11V ± 1V / 20mA max. | DC OK = contact closed (rated:30 VDC 1.0A) | 350,000 hours           |
| <a href="#">PSM24-090S</a>   | 24VDC          | 24 - 28 VDC               | 3.75 A                | 90 watts            | 35V                           | 18 - 22 V           | 22V ± 2V /10mA max   |                                            |                         |
| <a href="#">PSM24-090S-N</a> |                |                           | 3.75 A                | 90 watts            | 35V                           |                     |                      |                                            |                         |
| <a href="#">PSM12-156S</a>   | 12VDC          | 12 - 14 VDC               | 13.0 A                | 156 watts           | 20V                           | 9 - 11 V            | 11V ± 1V / 40mA max. |                                            |                         |
| <a href="#">PSM24-180S</a>   | 24VDC          | 24 - 28 VDC               | 7.5 A                 | 180 watts           | 35V                           | 18 - 22 V           | 22V ± 2V / 20mA max  |                                            |                         |
| <a href="#">PSM24-360S</a>   |                |                           | 15.0 A                | 360 watts           | 35V                           |                     |                      |                                            |                         |
| <a href="#">PSM24-600S</a>   |                |                           | 25.0 A                | 600 watts           | 35V                           |                     |                      |                                            |                         |

| General Specifications      |                                                                                                                                                                                                                     |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Specification               | Description                                                                                                                                                                                                         |
| Temperature                 | Operating (ambient): -25 to 70°C max [-13 to 158°F]. Above +40°C [104°F] load derating<br>Storage [non-operating]: -25 to 85°C max [-13 to 185°F]. Temperature drift: 0.02%/C. Cooling: convection, no internal fan |
| Humidity                    | 95% [non-condensing] relative humidity maximum                                                                                                                                                                      |
| Isolation                   | According to IEC/EN 60950, EN50178, EN61558-2-8, EN60204, CSA                                                                                                                                                       |
| Output Regulation           | Input variation: 0.5% maximum. Load variation [10 to 100%]: 0.5% maximum                                                                                                                                            |
| Output Voltage Ripple       | 100 mV peak-to-peak typical [20 MHz bandwidth], [200 mV peak to peak maximum at I <sub>max</sub> ]                                                                                                                  |
| Output Protection           | Current limit: 110% constant current, automatic recovery, thermal protection, output rating, Voltage limit: 140% V <sub>out</sub> nom                                                                               |
| Over-temperature Protection | Switch off at over-temperature, automatic restart                                                                                                                                                                   |
| Status Indicator            | Dual color LED [green: DC Ok; Red: DC Off]                                                                                                                                                                          |
| Remote ON/OFF               | By external contact. DC On: -S contact open. DC Off: -S connected via 1 K <sub>Ω</sub> to -V <sub>out</sub> , (3VDC max across V <sub>out</sub> [+] and V <sub>out</sub> [-])                                       |
| Maximum Capacitive Load     | Unlimited                                                                                                                                                                                                           |
| Vibration                   | IEC 60068-2-6: 3 axis, sine sweep, 10-55 Hz, 1g, 1 oct/min                                                                                                                                                          |
| Shock                       | IEC 60068-2-27: 3 axis, 15g half sine, 11ms                                                                                                                                                                         |
| Enclosure Rating            | IP20 [IEC 529]                                                                                                                                                                                                      |
| Enclosure Material          | Aluminum [chassis] / zinc plated steel [cover]                                                                                                                                                                      |
| Mounting                    | Snap-on with self-locking spring for 35mm DIN rails per EN 50022-35x15/75, or wall mount with bracket                                                                                                               |
| Connection                  | Pluggable screw terminals [plugs included] 2 terminals per output [not available in 600 watt unit.]                                                                                                                 |
| Agency Approvals            | UL 508 Listed File E197592, UL 60950 Recognized File E198298; CSA C22.2-60950 File 229285; CE                                                                                                                       |

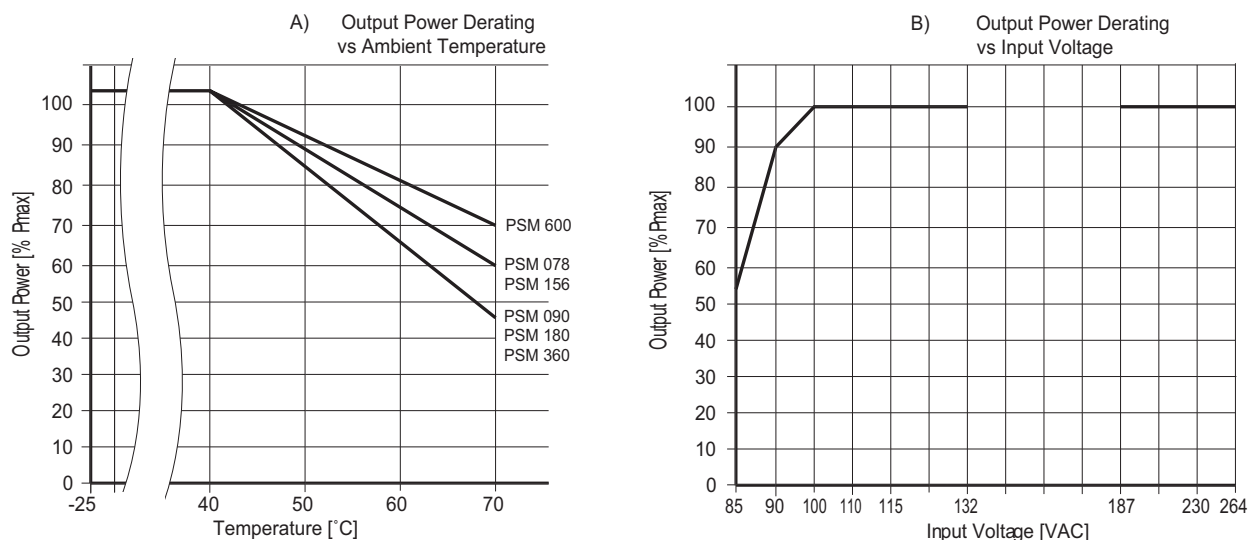
Note: Unless otherwise stated all specifications are valid at nominal input voltage, full load and +25°C after warmup time.

# PSM Series Power Supplies Specifications

| General Specifications (continued)             |                                                            |                                                                    |
|------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------|
| Specification                                  | Standard                                                   | Document Number                                                    |
| Harmonic Limits                                | Harmonic Current Limits                                    | EN 61000-3-2, Class A for limited output power                     |
| Safety Standards                               | Information technology equipment                           | IEC/EN60950; CSA 60950-1-03/UL 60950-1                             |
|                                                | Industrial control equipment                               | UL 508                                                             |
|                                                | Electrical equipment of machines                           | EN 60204                                                           |
|                                                | Electronic equipment for power installation                | EN 50178                                                           |
|                                                | Safety, transformers                                       | EN 61558-2-8                                                       |
|                                                | Limited power source (model <a href="#">PSM24-090S-N</a> ) | EN 60950 sect. 2.5 and NEC Class 2                                 |
| Safety Approvals                               | CB-Report per IEC 60950                                    | EN 50178, EN 60079-15 EN 61558-2-8, CSA                            |
| Safety Class                                   | Degree of electrical protection Class1                     | IEC 536                                                            |
| Electromagnetic Compatibility (EMC), Emissions | EMC, Emissions                                             | EN 61204-3, EN61000-6-3                                            |
|                                                | Conducted RI suppression on input                          | EN 55011 class B, EN 55032 class B                                 |
|                                                | Radiated RI suppression                                    | EN 55011 class B, EN 55032 class B                                 |
| Electromagnetic Compatibility (EMC), Immunity  | EMC, Immunity                                              | EN 61000-6-2, EN 61204-3                                           |
|                                                | Electrostatic Discharge [ESD]                              | IEC / EN 61000-4-2 4 kV [contact discharge] / 8 kV [air discharge] |
|                                                | Radiated RF field immunity [80-1000 MHz]                   | IEC / EN 61000-4-3 10 V / m                                        |
|                                                | Electrical fast transient / burst immunity                 | IEC / EN 61000-4-4 2 kV                                            |
|                                                | Surge immunity                                             | IEC / EN 61000-4-5 1 kV / 2 kV                                     |
|                                                | Immunity to conducted RF disturbances [0.15 to 80 MHz]     | IEC / EN 61000-4-6 10 V                                            |
|                                                | Power frequency field immunity                             | IEC / EN 61000-4-8 30 A / m                                        |
|                                                | Voltage dips                                               | IEC / EN 61000-4-11 [70% UN Crit. B/40%/100% UN Crit. C]           |
| Pollution Degree                               | 2*                                                         |                                                                    |

\*Note: Normally, only non-conductive pollution occurs. Temporary conductivity caused by condensation is to be expected.

## Output Power Derating



Note: Unless otherwise stated, all specifications are valid at nominal input voltage, full load and +25°C after warmup time.

# RHINO PSM Series Connections

## PSM12-078S / PSM24-090S

### PSM24-REM360S

### PSM24-BCM360S

| Wiring Connections |         |                       |    |               |
|--------------------|---------|-----------------------|----|---------------|
| Pin                | J1      | J2                    | J3 | J4            |
| 1                  | Earth   | GND [-]               | S+ | Normal mode   |
| 2                  | Neutral | Vout [+]              | S- | Common        |
| 3                  | Line    | DC-OK Signal          | —  | Parallel mode |
| 4                  | —       | DC-OK Relay contact 1 | —  | —             |
| 5                  | —       | DC-OK Relay contact 2 | —  | —             |

## PSM12-156S

### PSM24-180S

### PSM24-BFM600S

| Wiring Connections |         |                       |    |               |
|--------------------|---------|-----------------------|----|---------------|
| Pin                | J1      | J2                    | J3 | J4            |
| 1                  | Earth   | GND [-]               | S+ | Normal mode   |
| 2                  | Neutral | GND [-]               | S- | Common        |
| 3                  | Line    | Vout [+]              | —  | Parallel mode |
| 4                  | —       | Vout [+]              | —  | —             |
| 5                  | —       | DC-OK Signal          | —  | —             |
| 6                  | —       | DC-OK Relay contact 1 | —  | —             |
| 7                  | —       | DC-OK Relay contact 2 | —  | —             |

## PSM24-360S

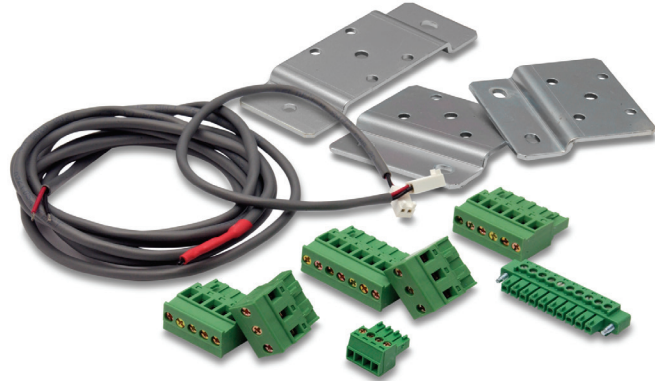
| Wiring Connections |         |                       |    |               |
|--------------------|---------|-----------------------|----|---------------|
| Pin                | J1      | J2                    | J3 | J4            |
| 1                  | Earth   | GND [-]               | S+ | Normal mode   |
| 2                  | Neutral | GND [-]               | S- | Common        |
| 3                  | Line    | Vout [+]              | —  | Parallel mode |
| 4                  | —       | Vout [+]              | —  | —             |
| 5                  | —       | DC-OK Signal          | —  | —             |
| 6                  | —       | DC-OK Relay contact 1 | —  | —             |
| 7                  | —       | DC-OK Relay contact 2 | —  | —             |

## PSM24-600S

| Wiring Connections |         |          |    |               |                       |
|--------------------|---------|----------|----|---------------|-----------------------|
| Pin                | J1      | J2       | J3 | J4            | J5                    |
| 1                  | Earth   | GND [-]  | S+ | Normal mode   | DC-OK Relay contact 1 |
| 2                  | Neutral | GND [-]  | S- | Common        | DC-OK Relay contact 2 |
| 3                  | Line    | Vout [+] | —  | Parallel mode | DC-OK Signal          |
| 4                  | —       | Vout [+] | —  | —             | —                     |

# RHINO PSM Power Supplies - Accessories

A variety of accessories is available to complement the RHINO PSM power supplies. Choose panel mounting brackets and replacement plug kits from the table below, based on the size of the power supply. There is also a temperature sensor for the battery control module and replacement link cable for the redundancy and battery control modules.



| Accessories                       |         |                     |                                                                                                                                                |
|-----------------------------------|---------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Part Number                       | Price   | Drawing Link        | Description                                                                                                                                    |
| <a href="#"><b>PSM-PANEL1</b></a> | \$38.00 | <a href="#">PDF</a> | Panel mounting bracket. 1 bracket type A includes M4-screw [DIN 74-4fA] for 78W, 90W, 156W, 180W PSM power supplies                            |
| <a href="#"><b>PSM-PANEL2</b></a> | \$33.00 | <a href="#">PDF</a> | Panel mounting bracket. 2 brackets type A include M4-screws [DIN 74-4fA] for 360W, 600W PSM power supplies                                     |
| <a href="#"><b>PSM-PK1</b></a>    | \$8.50  | N/A                 | Replacement plug kit for PSM series with 78W and 90W outputs                                                                                   |
| <a href="#"><b>PSM-PK2</b></a>    | \$12.50 | N/A                 | Replacement plug kit for PSM series with 156W, 180W and 360W outputs                                                                           |
| <a href="#"><b>PSM-TS</b></a>     | \$33.50 | N/A                 | Temperature sensor for PSM24-BCM360S battery control module                                                                                    |
| <a href="#"><b>PSM-JC01</b></a>   | \$9.00  | N/A                 | Replacement link cable for PSM series redundancy module <a href="#">PSM24-REM360S</a> and battery control module <a href="#">PSM24-BCM360S</a> |

## Mounting

PSM power supplies are designed for mounting on a DIN rail. Please allow minimum free space of 80 mm (3.15") above and below, and 50 mm (1.97") on each side of the power supply for air convection. To attach unit onto the DIN rail, hook the top part of clip on DIN rail, then push down and inward until you hear the clipping sound. To remove, pull the latch of the clip using an insulated flathead screwdriver.

For wall or chassis mounting, use mounting brackets [PSM-PANEL1](#) (for 78W to 180W PSM style power supplies) or [PSM-PANEL2](#) (for 360W and 600W PSM power supplies). Remove the DIN clips and replace with the brackets. Use the countersink screws included with the wall mount kit to attach the brackets to the power supply.

To attach the power supply to the DIN rail

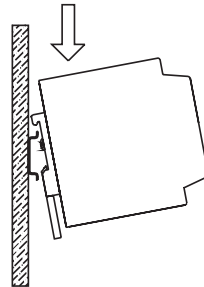


Fig. 2.1

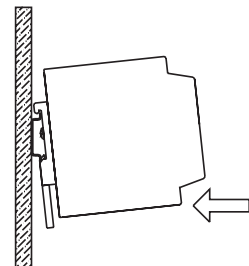


Fig. 2.2

To remove the power supply from DIN rail

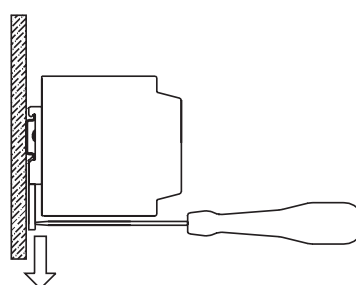


Fig. 2.3

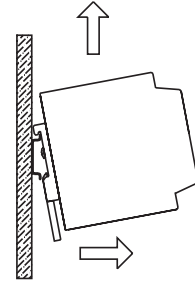


Fig. 2.4