RHINO DIN Rail Power Supplies PSV Series

Economical Power Supplies

Features

15–100W Models

- Ultra-compact size
- Up to 89% efficiency and built-in active PFC
- Universal AC input voltage
- Full power from -10°C to +55°C
- Low earth leakage current < 0.5 ma @ 264VAC
- Extreme low temperature cold start at -40°C
- NEC Class 2 / Limited Power Source (LPS) certified
- Plastic housing
- UL/cUL 508
- UL/cUL Recognized 60950-1
- CE
- Three year warranty



120–480W Models

- Universal AC input voltage
- Built-in constant current circuit for reactive loads
- Up to 89% efficiency
- Full power from -10°C to +50°C
- Compliance to SEMI F47 @ 200VAC voltage sag immunity
- Metal housing
- UL/cUL 508
- UL/cUL Recognized 60950-1
- CE
- 3-year warranty



| | DIN Rail Power Supplies | | | | | |
|-------------------|-------------------------|-----------------|-------------------|--------------------------------|------------------------------|--|
| Part Number | Price | Drawing Link | Output Voltage | Maximum Output Power [W] | Efficiency [Typ @ 115VAC] | |
| <u>PSV5-15S</u> | \$29.50 | <u>PDF</u> | 5V | 15 | 79% | |
| <u>PSV5-25S</u> | \$45.00 | PDF | 5V | 25 | 82% | |
| <u>PSV12-50S</u> | \$45.00 | PDF | 12V | 48 | 88% | |
| <u>PSV24-30S</u> | \$29.50 | <u>PDF</u> | 24V | 30 | 87.5% | |
| <u>PSV24-50S</u> | \$42.00 | PDF | 24V | 50 | 89% | |
| <u>PSV24-100S</u> | \$55.00 | PDF | 24V | 91.2 | 87% | |
| <u>PSV24-120S</u> | \$66.00 | PDF | 24V | 120 | 85% | |
| <u>PSV24-240S</u> | \$96.00 | PDF | 24V | 240 | 88% | |
| <u>PSV24-480S</u> | \$169.00 | PDF | 24V | 480 | 85% | |
| <u>PSV48-120S</u> | \$66.00 | PDF | 48V | 120 | 89% | |

RHINO PSV5-15S Power Supply











READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

- Switch main power off before connecting or disconnecting the device. Risk of explosion!
- To guarantee sufficient convection cooling, please keep a distance of >40mm above and >20mm below the device as well as a lateral distance of >15mm to other cold source or heat source.
- Note that the enclosure of the device can become very hot depending on the ambient temperature and load of the power supply. Risk of burns!
- The main power must be turned off before connecting or disconnecting wires to the terminals!
 - Do not introduce any objects into the unit!
- Dangerous voltage present for at least 5 minutes after disconnecting all sources of power.
- The power supplies are built-in units and must be installed in a cabinet or room (condensation
- free environment and indoor location) that is relatively free of conductive contaminants.
- The unit must be installed in an IP54 enclosure or cabinet in the final installation.
 CAUTION: FOR USE IN A CONTROLLED ENVIRONMENT.

2. Device description (Fig. 1)

- Input terminal block connector
- (2) Output terminal block connector
- (3) DC voltage adjustment potentiometer
- (4) DC OK LED (green)
- (5) Universal mounting rail system

3. Mounting (Fig. 2)

The power supply unit can be mounted on 35mm DIN rails in accordance with EN60715. The device should be installed with input terminal block on the bottom.

Each device is delivered ready to install.

Snap on the DIN rail as shown in Fig. 2:

- 1. Tilt the unit slightly upwards and put it onto the DIN rail.
- 2. Push downwards until stopped.
- 3. Press against the bottom front side for locking.
- 4. Shake the unit slightly to ensure that it is secured.

4. Dismounting (Fig. 3)

To uninstall, use a flat screwdriver to pull or slide down the latch as shown in Fig. 3. Then slide the PSU in the opposite direction, release the latch and pull out the PSU from the rail.

5. Connection

The terminal block connectors allow easy and fast wiring.

You can use flexible (stranded wire) or solid cables with cross sections:

| Electrical Connections and Wire Size | | | | | | |
|--------------------------------------|-------------------------|-------|------|-------|------------------|--|
| | Stranded / Solid Torque | | | | Stranded / Solid | |
| | mm² | AWG | N∙m | lb∙in | | |
| Input | 0.32-3.3 | 22-12 | 0.51 | 4.5 | | |
| Output | 0.52-3.3 | 20-12 | 0.51 | 4.5 | | |

To secure reliable and shock proof connections, the stripping length should be 4-5mm (see Fig. 4 (1)). Please ensure that wires are fully inserted into the connecting terminals as shown in Fig. 4 (2).

In accordance to EN60950 / UL60950, flexible cables require ferrules.

Use appropriate copper cables that are designed to sustain operating temperature of at least 60°C/75°C for USA or at least 90°C for Canada.

5.1. Input connection (Fig. 1, Fig. 5)

Use L, N and GND connections of input terminal connector (see Fig. 1 (1)) to establish the 100-240 VAC connection. Typical connection methods are shown in Figure 5.

The unit is protected with an internal fuse (not replaceable) at L pin and it has been tested and approved on 20A (UL) and 16A (IEC) branch circuits without additional protection device. An external protection device is only required if the supplying branch has an ampacity greater than above. Thus, if an external protective device is necessary, or utilized, a minimum value of 10A B- or 6A C- characteristic breaker should be used.

The internal fuse must not be replaced by the user.

5.2. Output connection (Fig. 1 (2))

Use the "+" and "-" screw connections to establish the 5VDC connection. The output provides 5VDC. The output voltage can be adjusted from 5 to 5.5 VDC on the potentiometer. The green LED DC OK displays correct function of the output (Fig. 1 (4)). The device has a short circuit and overload protection and an overvoltage protection limited to 6.325-7.425 VDC.

5.3. Output characteristic curve

The device functions normal under operating line and load conditions. In the event of a short circuit or overload the output voltage and current collapses (I_O = 110-150%). The secondary voltage is reduced and bounces until short circuit or overload on the secondary side has been removed.

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

- At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

tPWR-117

1-800-633-0405

RHINO PSV5-15S Power Supply

| Technical Specifications | | | | |
|--|--|--|--|--|
| Input (AC) | | | | |
| Nominal input voltage / frequency | 100-240 VAC / 50-60 Hz | | | |
| Voltage range | 85-264 VAC | | | |
| · · · | | | | |
| Frequency | 47-63 Hz < 0.5 A @ 115VAC, < 0.3 A @ 230VAC | | | |
| Nominal current | | | | |
| Inrush current limitation (+25°C, cold start) | < 35A @ 115VAC, < 65A @ 230VAC | | | |
| Mains buffering at nominal load (typ.) | 20ms typ. @ 115VAC (100% load) 100ms typ. @ 230VAC (100% load) | | | |
| Turn-on time | < 3s @ 115VAC, < 1.5 s @ 230VAC (100% load) | | | |
| Internal fuse | T 3.15 A / 250V (non-replaceable) | | | |
| Recommended backup protection | 10A B- or 6A C- characteristic circuit breaker | | | |
| Leakage current | < 1mA @ 240VAC | | | |
| | < IIIIA @ 240VAC | | | |
| Output (DC) | | | | |
| Nominal output voltage U _N / tolerance | 5VDC ± 2 % | | | |
| Voltage adjustment range | 5-5.5 VDC (maximum power \leq 15W) | | | |
| Nominal current | 3A | | | |
| Derating | Refer to Fig. 6 -10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation | | | |
| Startup with capacitive loads | Max. 3,000µF | | | |
| Max. power dissipation idling / nominal load approx. | 0.3 W / 4 W | | | |
| | | | | |
| Efficiency at 100% load | 78.0% typ. @ 115VAC, 79.0% typ. @ 230VAC | | | |
| PARD (20MHz) at 100% load | < 75 mVpp | | | |
| General Data | | | | |
| Type of housing | Plastic (PC), enclosed | | | |
| LED signals | Green LED DC OK | | | |
| MTBF | > 350,000 hrs. as per Telcordia | | | |
| Dimensions (L x W x H) | 75mm x 21mm x 89.5 mm [2.95 in x 0.83 in x 3.52 in] (See www.AutomationDirect.com for complete engineering drawings.) | | | |
| Weight | 0.11 kg [3.9 oz] | | | |
| Connection method | Screw connection | | | |
| Stripping length | 4-5mm [0.16-0.20 in] | | | |
| Operating temperature (surrounding air temperature) | -20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6) | | | |
| Storage temperature | -40°C to +85°C [-40°F to +185°F] | | | |
| Humidity at +25°C, no condensation | 5 to 95% RH | | | |
| | Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s ² ; displacement of 0.35 mm, 60min per axis for all X, Y, Z | | | |
| Vibration | directions | | | |
| | Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions | | | |
| Shock | Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions | | | |
| Pollution degree | | | | |
| Altitude (operating) | 2000m | | | |
| Certification and Standards | 200011 | | | |
| | | | | |
| Safety entry low voltage | SELV (EN60950) UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1, | | | |
| Electrical safety (of information technology equipment) | UL/U-UL recognized to UL00950-1 and USA U22.2 NO. 60950-1 (File No. E 198298), UB scheme to IEU60950-1, Limited Power Source (LPS) | | | |
| Industrial control equipment | UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) | | | |
| Class 2 power supply | UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) | | | |
| CE | In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU | | | |
| Component power supply for general use | EN61204-3 | | | |
| | EN01204-3 EN55024, EN61000-6-1, EN61000-6-2 | | | |
| Immunity | (EN61000-4-2, 3, 4, 5, 6, 8, 11) | | | |
| Emission | EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4 | | | |
| C | E C D E197592 LISTED E197592 Ind. Cont. Eq. | | | |
| RoHS Compliant | Yes | | | |
| Safety and Protection | 1 | | | |
| | | | | |
| | No | | | |
| Surge voltage protection against internal surge voltages | No | | | |
| Surge voltage protection against internal surge voltages Isolation voltage: | | | | |
| Surge voltage protection against internal surge voltages Isolation voltage: Input / output Input / PE | 3kVAC 3kVAC | | | |
| Surge voltage protection against internal surge voltages Isolation voltage: Input / output | 3kVAC 3kVAC 0.5 kVAC | | | |
| Surge voltage protection against internal surge voltages Isolation voltage: Input / output Input / PE | 3kVAC 3kVAC | | | |

RHINO PSV5-25S Power Supply





d 3







Power Derating Curve for PSU in Vertical Mounting 110 100 90 80 Percentage of Max Load (%) 70 60 50 40 30 20 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 Surrounding Air Temperature (°C) -4 5 14 23 32 41 50 59 68 77 86 95 104 113 122 131 140 149 158 Surrounding Air Temperature (°F) Figure 6

READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

- Switch main power off before connecting or disconnecting the device. Risk of explosion!
 To guarantee sufficient convection cooling, please keep a distance of >40mm above and >20mm below the device as well as a lateral distance of >15mm to other cold source. In case the adjacent device is a heat source, the lateral distance will be >25mm.
- Note that the enclosure of the device can become very hot depending on the ambient temperature and load of the power supply. Risk of burns!
- The main power must be turned off before connecting or disconnecting wires to the terminals!
- Do not introduce any objects into the unit!
- Dangerous voltage present for at least 5 minutes after disconnecting all sources of power.
- The power supplies are built-in units and must be installed in a cabinet or room (condensation
- free environment and indoor location) that is relatively free of conductive contaminants. The unit must be installed in an IP54 enclosure or cabinet in the final installation.

The unit must be installed in an IP54 enclosure or cabinet in the CAUTION: FOR USE IN A CONTROLLED ENVIRONMENT.

2. Device description (Fig. 1)

- (1) Input terminal block connector
- (2) Output terminal block connector
- (3) DC voltage adjustment potentiometer
- (4) DC OK LED (green)
- (5) Universal mounting rail system

3. Mounting (Fig. 2)

The power supply unit can be mounted on 35mm DIN rails in accordance with EN60715. The device should be installed with input terminal block on the bottom.

Each device is delivered ready to install.

- Snap on the DIN rail as shown in Fig. 2:
 - 1. Tilt the unit slightly upwards and put it onto the DIN rail.
 - Push downwards until stopped.
 - Press against the bottom front side for locking.
 - 4. Shake the unit slightly to ensure that it is secured.

4. Dismounting (Fig. 3)

To uninstall, use a flat screwdriver to pull or slide down the latch as shown in Fig. 3. Then slide the PSU in the opposite direction, release the latch and pull out the PSU from the rail.

5. Connection

The terminal block connectors allow easy and fast wiring.

You can use flexible (stranded wire) or solid cables with cross sections:

| Electrical Connections and Wire Size | | | | |
|--------------------------------------|-------------------------|-------|------|-------|
| | Stranded / Solid Torque | | | |
| | mm² | AWG | N∙m | lb∙in |
| Input | 0.32-3.3 | 22-12 | 0.51 | 4.5 |
| Output | 0.82-3.3 | 18-12 | 0.51 | 4.5 |

To secure reliable and shock proof connections, the stripping length should be 4-5mm (see Fig. 4 (1)). Please ensure that wires are fully inserted into the connecting terminals as shown in Fig. 4 (2).

In accordance to EN60950 / UL60950, flexible cables require ferrules.

Use appropriate copper cables that are designed to sustain operating temperature of at least $60^{\circ}C/75^{\circ}C$ for USA or at least $90^{\circ}C$ for Canada.

5.1. Input connection (Fig. 1, Fig. 5)

Use L, N and GND connections of input terminal connector (see Fig. 1 (1)) to establish the 100-240 VAC connection. Typical connection methods are shown in Figure 5.

The unit is protected with an internal fuse (not replaceable) at L pin and it has been tested and approved on 20A (UL) and 16A (IEC) branch circuits without additional protection device. An external protection device is only required if the supplying branch has an ampacity greater than above. Thus, if an external protective device is necessary, or utilized, a minimum value of 20A B- or 10A C- characteristic breaker should be used.

The internal fuse must not be replaced by the user.

5.2. Output connection (Fig. 1 (2))

Use the "+" and "-" screw connections to establish the 5VDC connection. The output provides 5VDC. The output voltage can be adjusted from 5 to 5.5 VDC on the potentiometer. The green LED DC OK displays correct function of the output (Fig. 1 (4)). The device has a short circuit and overload protection and an overvoltage protection limited to 6.325-7.425 VDC.

5.3. Output characteristic curve

The device functions normal under operating line and load conditions. In the event of a short circuit or overload the output voltage and current collapses (I₀ = 110-160%). The secondary voltage is reduced and bounces until short circuit or overload on the secondary side has been removed.

5.4. Thermal behavior (Fig. 6)

- In the case of ambient temperatures:
 - 1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
 - Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

RHINO PSV5-25S Power Supply

| | Technical Specifications |
|--|---|
| Input (AC) | |
| Nominal input voltage / frequency | 100-240 VAC / 50-60 Hz |
| Voltage range | 85-264 VAC |
| Frequency | 47-63 Hz |
| Nominal current | < 0.8 A @ 115VAC, < 0.5 A @ 230VAC |
| Inrush current limitation (+25°C, cold start) | < 35A @ 115VAC, < 60A @ 230VAC |
| Mains buffering at nominal load (typ.) | 20ms tvp. @ 115VAC (100% load) |
| • (),) | 100ms typ. @ 230VAC (100% load) |
| Turn-on time | < 3s @ 115VAC, < 1.5 s @ 230VAC (100% load) |
| Internal fuse | T 3.15 A / 250V (non-replaceable) |
| Recommended backup protection | 20A B- or 10A C- characteristic circuit breaker |
| Leakage current | < 1mA @ 240VAC |
| Output (DC) | |
| Nominal output voltage U _N / tolerance | 5VDC ±2 % |
| Voltage adjustment range | 5-5.5 VDC (maximum power \leq 25W) |
| Nominal current | 5A Refer to Fig. 6 |
| Derating | -10° C to -20° C (2%/°C), > 55°C (3.33%/°C) in vertical orientation |
| Startup with capacitive loads | Max. 3,000µF |
| Max. power dissipation idling / nominal load approx. | 0.4 W / 8 W |
| Efficiency at 100% load | 79.0% typ. @ 115VAC, 80.0% typ. @ 230VAC |
| PARD (20MHz) at 100% load | < 75 mVpp |
| General Data | |
| Type of housing | Plastic (PC), enclosed |
| LED signals | Green LED DC OK |
| MTBF | > 350,000 hrs. as per Telcordia |
| Dimensions (L x W x H) | 75mm x 30mm x 89.5 mm [2.95 in x 1.18 in x 3.52 in] (See www.AutomationDirect.com for complete engineering drawings.) |
| Weight | 0.16 kg [5.6 oz] |
| Connection method | Screw connection |
| Stripping length | 4-5mm [0.16-0.20 in] |
| Operating temperature (surrounding air temperature) | -20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6) |
| Storage temperature | -40°C to +85°C [-40°F to +185°F] |
| Humidity at +25°C, no condensation | 5 to 95% RH |
| Vibration | Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s ² ; displacement of 0.35 mm, 60min per axis for all X, Y, Z directions |
| Vibration | Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions |
| Shock | Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) |
| | Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions |
| Pollution degree | 2 |
| Altitude (operating) | 2000m |
| Certification and Standards | |
| Safety entry low voltage | SELV (EN60950) UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1, |
| Electrical safety (of information technology equipment) | Limited Power Source (LPS) |
| Industrial control equipment | UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) |
| Class 2 power supply | UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) |
| CE | In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU |
| Component power supply for general use | EN61204-3 |
| Immunity | EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11) |
| Emission | EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4 |
| | |
| | |
| | |
| | LISTED <i>E198298</i> Ind. Cont. Eq. |
| RoHS Compliant | Yes |
| Safety and Protection | 100 |
| Surge voltage protection against internal surge voltages | No |
| Isolation voltage: | |
| Input / output | 3kVAC |
| Input / PE Output / PE | 3kVAC 0.5 kVAC |
| | |
| Protection degree | IP20 Class Luith RE connection |
| Safety class | Class I with PE connection |

Figure 2 Figure 3 Figure









READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

- Switch main power off before connecting or disconnecting the device. Risk of explosion!
- To guarantee sufficient convection cooling, please keep a distance of >40mm above and >20mm below the device as well as a lateral distance of >15mm to other cold source. In case the adjacent device is a heat source, the lateral distance will be >25mm.
 - Note that the enclosure of the device can become very hot depending on the ambient
- temperature and load of the power supply. Risk of burns!
- The main power must be turned off before connecting or disconnecting wires to the terminals!
- Do not introduce any objects into the unit!
- Dangerous voltage present for at least 5 minutes after disconnecting all sources of power.
 The power supplies are built-in units and must be installed in a cabinet or room (condensation
- free environment and indoor location) that is relatively free of conductive contaminants.
- The unit must be installed in an IP54 enclosure or cabinet in the final installation
 CAUTION: FOR USE IN A CONTROLLED ENVIRONMENT.

2. Device description (Fig. 1)

- (1) Input terminal block connector
- (2) Output terminal block connector
- (3) DC voltage adjustment potentiometer
- (4) DC OK LED (green)
- (5) Universal mounting rail system

3. Mounting (Fig. 2)

The power supply unit can be mounted on 35mm DIN rails in accordance with EN60715. The device should be installed with input terminal block on the bottom.

Each device is delivered ready to install.

Snap on the DIN rail as shown in Fig. 2:

- 1. Tilt the unit slightly upwards and put it onto the DIN rail.
- Push downwards until stopped.
- Press against the bottom front side for locking.
- Shake the unit slightly to ensure that it is secured.

4. Dismounting (Fig. 3)

To uninstall, use a flat screwdriver to pull or slide down the latch as shown in Fig. 3. Then slide the PSU in the opposite direction, release the latch and pull out the PSU from the rail.

5. Connection

The terminal block connectors allow easy and fast wiring.

You can use flexible (stranded wire) or solid cables with cross sections:

| Electrical Connections and Wire Size | | | | | | |
|--------------------------------------|-------------------------|-------|------|-------|------------------|--|
| | Stranded / Solid Torque | | | | Stranded / Solid | |
| | mm² | AWG | N∙m | lb-in | | |
| Input | 0.52-3.3 | 20-12 | 0.51 | 4.5 | | |
| Output | 0.52-3.3 | 20-12 | 0.51 | 4.5 | | |

To secure reliable and shock proof connections, the stripping length should be 4-5mm (see Fig. 4 (1)). Please ensure that wires are fully inserted into the connecting terminals as shown in Fig. 4 (2).

In accordance to EN60950 / UL60950 and EN62368 / UL62368, flexible cables require ferrules.

Use appropriate copper cables that are designed to sustain operating temperature of at least $60^{\circ}C/75^{\circ}C$ for USA or at least $90^{\circ}C$ for Canada.

5.1. Input connection (Fig. 1, Fig. 5)

Use L, N and GND connections of input terminal connector (see Fig. 1 (1)) to establish the 100-240 VAC connection. Typical connection methods are shown in Figure 5.

The unit is protected with an internal fuse (not replaceable) at L pin and it has been tested and approved on 20A (UL) and 16A (IEC) branch circuits without additional protection device. An external protection device is only required if the supplying branch has an ampacity greater than above. Thus, if an external protective device is necessary, or utilized, a minimum value of 20A B- or 13A C- characteristic breaker should be used.

The internal fuse must not be replaced by the user.

5.2. Output connection (Fig. 1 (2))

Use the "+" and "-" screw connections to establish the 12 VDC connection. The output provides 12 VDC. The output voltage can be adjusted from 12 to 15 VDC on the potentiometer. The green LED DC OK displays correct function of the output (Fig. 1 (4)). The device has a short circuit and overload protection and an overvoltage protection limited to 16-18.7 VDC.

5.3. Output characteristic curve

The device functions normal under operating line and load conditions. In the event of a short circuit or overload the output voltage and current collapses (I₀ = 110-150%). The secondary voltage is reduced and bounces until short circuit or overload on the secondary side has been removed.

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

- At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

RHINO PSV12-50S Power Supply

| | Technical Specifications |
|--|--|
| Input (AC) | |
| Nominal input voltage / frequency | 100-240 VAC / 50-60 Hz |
| Voltage range | 85-264 VAC |
| Frequency | 47-63 Hz |
| Nominal current | < 1.0 A @ 115VAC, < 0.6 A @ 230VAC |
| Inrush current limitation (+25°C, cold start) | < 35A @ 115VAC, < 60A @ 230VAC |
| | 20ms tvp. @ 115VAC (100% load) |
| Mains buffering at nominal load (typ.) | 90ms typ. @ 230VAC (100% load) |
| Turn-on time | < 3s @ 115VAC, < 1.5 s @ 230VAC (100% load) |
| Internal fuse | T 3.15 A / 250V (non-replaceable) |
| Recommended backup protection | 20A B- or 13A C- characteristic circuit breaker |
| Leakage current | < 1mA @ 240VAC |
| Output (DC) | |
| Nominal output voltage U_N / tolerance | 12VDC ± 2 % |
| Voltage adjustment range | 12-15 VDC (maximum power ≤ 48W) |
| Nominal current | 4A |
| | Befer to Fig. 6 |
| Derating | -10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation |
| Startup with capacitive loads | Max. 3,000µF |
| Max. power dissipation idling / nominal load approx. | 0.5 W / 7 W |
| Efficiency at 100% load | 86.0% typ. @ 115VAC, 88.0% typ. @ 230VAC |
| PARD (20MHz) at 100% load | < 75 mVpp |
| Parallel operation | With ORing Diode |
| General Data | |
| Type of housing | Plastic (PC), enclosed |
| LED signals | Green LED DC OK |
| MTBF | > 350,000 hrs. as per Telcordia |
| Dimensions (L x W x H) | 75mm x 30mm x 89.5 mm [2.95 in x 1.18 in x 3.52 in] (See www.AutomationDirect.com for complete engineering drawings.) |
| Weight | 0.18 kg [6.3 oz] |
| Connection method | Screw connection |
| Stripping length | 4-5mm [0.16-0.20 in] |
| | |
| Operating temperature (surrounding air temperature) | -20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6) |
| Storage temperature | -40°C to +85°C [-40°F to +185°F] |
| Humidity at +25°C, no condensation | 5 to 95% RH Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s ² ; displacement of 0.35 mm, 60min per axis for all X, Y, Z |
| Vibration | directions |
| | Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions |
| Shock | Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions |
| Pollution degree | |
| Altitude (operating) | |
| | 2000m |
| Certification and Standards | |
| Safety entry low voltage | SELV (EN60950) UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1, |
| Electrical safety (of information technology equipment) | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1, UL/C-UL recognized to UL62368-1 and CSA C22.2 No. 62368-1 (File No. E508040), CB scheme to IEC62368-1, |
| | Limited Power Source (LPS) |
| Industrial control equipment | UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) |
| Class 2 power supply | UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) |
| CE | In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU |
| Component power supply for general use | EN61204-3 |
| Immunity | EN55024, EN61000-6-1, EN61000-6-2 |
| | (EN61000-4-2, 3, 4, 5, 6, 8, 11) |
| Emission | EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4 |
| | |
| C | |
| | LISTED E198298 |
| | Ind. Cont. Eq. <i>E508040</i> |
| | |
| RoHS Compliant | Yes |
| RoHS Compliant Safety and Protection | Yes |
| | Yes No |
| Safety and Protection Surge voltage protection against internal surge voltages Isolation voltage: | No No |
| Safety and Protection Surge voltage protection against internal surge voltages Isolation voltage: Input / output | No 3kVAC |
| Safety and Protection Surge voltage protection against internal surge voltages Isolation voltage: Input / output Input / PE | No 3kVAC 3kVAC |
| Safety and Protection Surge voltage protection against internal surge voltages Isolation voltage: Input / output Input / PE Output / PE | No 3kVAC 3kVAC 0.5 kVAC |
| Safety and Protection Surge voltage protection against internal surge voltages Isolation voltage: Input / PE | No 3kVAC 3kVAC |

1st Edition, Rev. C, 08/2019

1-800-633-0405 **RHINO PSV24-30S Power Supply**













READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

- Switch main power off before connecting or disconnecting the device. Risk of explosion!
- To guarantee sufficient convection cooling, please keep a distance of >40mm above and >20mm below the device as well as a lateral distance of >10mm to other cold source. In case the adjacent device is a heat source, the lateral distance will be >25mm
- Note that the enclosure of the device can become very hot depending on the ambient temperature and load of the power supply. Risk of burns!
- The main power must be turned off before connecting or disconnecting wires to the terminals!
- Do not introduce any objects into the unit! •
- Dangerous voltage present for at least 5 minutes after disconnecting all sources of power.
- The power supplies are built-in units and must be installed in a cabinet or room (condensation
- free environment and indoor location) that is relatively free of conductive contaminants.
- The unit must be installed in an IP54 enclosure or cabinet in the final installation.

CAUTION: FOR USE IN A CONTROLLED ENVIRONMENT.

2. Device description (Fig. 1)

- (1) Input terminal block connector
- Output terminal block connector (2)
- (3) DC voltage adjustment potentiometer
- (4) DC OK LED (green)
- (5) Universal mounting rail system

3. Mounting (Fig. 2)

The power supply unit can be mounted on 35mm DIN rails in accordance with EN60715. The device should be installed with input terminal block on the bottom.

Each device is delivered ready to install.

- Snap on the DIN rail as shown in Fig. 2:
 - 1. Tilt the unit slightly upwards and put it onto the DIN rail.
 - 2. Push downwards until stopped.
 - 3. Press against the bottom front side for locking.
 - 4. Shake the unit slightly to ensure that it is secured.

4. Dismounting (Fig. 3)

To uninstall, use a flat screwdriver to pull or slide down the latch as shown in Fig. 3. Then slide the PSU in the opposite direction, release the latch and pull out the PSU from the rail.

5. Connection

The terminal block connectors allow easy and fast wiring.

You can use flexible (stranded wire) or solid cables with cross sections:

| Electrical Connections and Wire Size | | | | |
|--------------------------------------|------------------|-------|------|-------|
| | Stranded / Solid | | | que |
| | mm² | AWG | N·m | lb∙in |
| Input | 0.32-3.3 | 22-12 | 0.51 | 4.5 |
| Output | 0.52-3.3 | 20-12 | 0.51 | 4.5 |

To secure reliable and shock proof connections, the stripping length should be 4-5mm (see Fig. 4 (1)). Please ensure that wires are fully inserted into the connecting terminals as shown in Fig. 4 (2).

In accordance to EN60950 / UL60950, flexible cables require ferrules.

Use appropriate copper cables that are designed to sustain operating temperature of at least 60°C/75°C for USA or at least 90°C for Canada.

5.1. Input connection (Fig. 1, Fig. 5)

Use L, N and GND connections of input terminal connector (see Fig. 1 (1)) to establish the 100-240 VAC connection. Typical connection methods are shown in Figure 5.

The unit is protected with an internal fuse (not replaceable) at L pin and it has been tested and approved on 20A (UL) and 16A (IEC) branch circuits without additional protection device. An external protection device is only required if the supplying branch has an ampacity greater than above. Thus, if an external protective device is necessary, or utilized, a minimum value of 13A B- or 8A C- characteristic breaker should be used.

The internal fuse must not be replaced by the user.

5.2. Output connection (Fig. 1 (2))

Use the "+" and "-" screw connections to establish the 24VDC connection. The output provides 24VDC. The output voltage can be adjusted from 24 to 28 VDC on the potentiometer. The green LED DC OK displays correct function of the output (Fig. 1 (4)). The device has a short circuit and overload protection and an overvoltage protection limited to 30-34.8 VDC.

5.3. Output characteristic curve

The device functions normal under operating line and load conditions. In the event of a short circuit or overload the output voltage and current collapses ($I_0 = 110-150\%$). The secondary voltage is reduced and bounces until short circuit or overload on the secondary side has been removed.

5.4. Thermal behavior (Fig. 6)

- In the case of ambient temperatures:
 - 1. At -10 $^\circ$ C to -20 $^\circ$ C [14 $^\circ$ F to -4 $^\circ$ F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature
 - 2. Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

If the output capacity is not reduced when T_{Amb} > 55 $^{\circ}C$ [131 $^{\circ}F$], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

Power Supplies tPWR-123

RHINO PSV24-30S Power Supply

| | Technical Specifications |
|--|--|
| Input (AC) | |
| Nominal input voltage / frequency | 100-240 VAC / 50-60 Hz |
| Voltage range | 85-264 VAC |
| Frequency | 47-63 Hz |
| Nominal current | < 0.8 A @ 115VAC, < 0.4 A @ 230VAC |
| Inrush current limitation (+25°C, cold start) | < 35A @ 115VAC, < 60A @ 230VAC |
| | 20ms typ. @ 115VAC (100% load) |
| Mains buffering at nominal load (typ.) | 100ms typ. @ 230VAC (100% load) |
| Turn-on time | < 3s @ 115VAC, < 1.6 s @ 230VAC (100% load) |
| Internal fuse | T 3.15 A / 250V (non-replaceable) |
| Recommended backup protection | 13A B- or 8A C- characteristic circuit breaker |
| Leakage current | < 1mA @ 240VAC |
| Output (DC) | |
| Nominal output voltage U _N / tolerance | 24VDC ± 2 % |
| Voltage adjustment range | 24-28 VDC (maximum power ≤ 30W) |
| Nominal current | 1.25 A Refer to Fig. 6 |
| Derating | -10° C to -20° C (2%/°C), $> 55^{\circ}$ C (3.33%/°C) in vertical orientation |
| Startup with capacitive loads | Max. 3,000µF |
| Max. power dissipation idling / nominal load approx. | 0.5 W / 4.5 W |
| Efficiency at 100% load | 87.0% typ. @ 115VAC, 88.0% typ. @ 230VAC |
| PARD (20MHz) at +25°C, 100% load | < 75 mVpp |
| Parallel operation | PSB60-REM20S / PSB60-REM40S or with ORing Diode |
| General Data | |
| Type of housing | Plastic (PC), enclosed |
| LED signals | Green LED DC OK |
| MTBF | > 350,000 hrs. as per Telcordia |
| Dimensions (L x W x H) | 75mm x 21mm x 89.5 mm [2.95 in x 0.83 in x 3.52 in] (See www.AutomationDirect.com for complete engineering drawings.) |
| Weight | 0.11 kg [3.9 oz] |
| Connection method | Screw connection |
| Stripping length | 4-5mm [0.16-0.20 in] |
| Operating temperature (surrounding air temperature) | -20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6) |
| Storage temperature | -40°C to +85°C [-40°F to +185°F] |
| Humidity at +25°C, no condensation | 5 to 95% RH |
| | Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s ² ; displacement of 0.35 mm, 60min per axis for all X, Y, Z |
| Vibration | directions Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions |
| Shook | Operating: IEC60068-2-27. Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) |
| Shock | Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions |
| Pollution degree | 2 |
| Altitude (operating) | 2000m |
| Certification and Standards | |
| Safety entry low voltage | SELV (EN60950) |
| Electrical safety (of information technology equipment) | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1, Limited Power Source (LPS) |
| Industrial control equipment | UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) |
| Class 2 power supply | UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) |
| CE | In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU |
| Component power supply for general use | EN61204-3 |
| | EN55024, EN61000-6-1, EN61000-6-2 |
| Immunity | (EN61000-4-2, 3, 4, 5, 6, 8, 11) |
| Emission | EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4 |
| C C | |
| ((| |
| | LISTED E198298 |
| RoHS Compliant | Ind. Cont. Eq. Yes |
| Safety and Protection | 163 |
| Surge voltage protection against internal surge voltages | No |
| Isolation voltage: | IV |
| Input / output | 3kVAC |
| Input / PE Output / PE | 3kVAC |
| | 0.5 kVAC IP20 |
| Protection degree | |
| Safety class | Class I with PE connection |

1-800-633-0405 For the latest prices, please check AutomationDirect.com. RHINO PSV24-50S Power Supply



Figure 2







Power Derating Curve for PSU in Vertical Mounting 110 100 90 80 Percentage of Max Load (%) 70 60 50 40 30 20 10 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 Surrounding Air Temperature (°C) -4 5 14 23 32 41 50 59 68 77 86 95 104 113 122 131 140 149 158 Surrounding Air Temperature (°F) Figure 6

READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

- Switch main power off before connecting or disconnecting the device. Risk of explosion!
- To guarantee sufficient convection cooling, please keep a distance of >40mm above and >20mm below the device as well as a lateral distance of >15mm to other cold source. In case the adjacent device is a heat source, the lateral distance will be >25mm.
- Note that the enclosure of the device can become very hot depending on the ambient temperature and load of the power supply. Risk of burns!
- The main power must be turned off before connecting or disconnecting wires to the terminals!
- Do not introduce any objects into the unit!
- Dangerous voltage present for at least 5 minutes after disconnecting all sources of power.
- The power supplies are built-in units and must be installed in a cabinet or room (condensation free environment and indoor location) that is relatively free of conductive contaminants.
- The unit must be installed in an IP54 enclosure or cabinet in the final installation.

CAUTION: FOR USE IN A CONTROLLED ENVIRONMENT.

2. Device description (Fig. 1)

- (1) Input terminal block connector
- (2) Output terminal block connector
- (3) DC voltage adjustment potentiometer
- (4) DC OK LED (green)
- (5) Universal mounting rail system

3. Mounting (Fig. 2)

The power supply unit can be mounted on 35mm DIN rails in accordance with EN60715. The device should be installed with input terminal block on the bottom.

Each device is delivered ready to install.

Snap on the DIN rail as shown in Fig. 2:

- 1. Tilt the unit slightly upwards and put it onto the DIN rail.
- 2. Push downwards until stopped.
- Press against the bottom front side for locking.
- 4. Shake the unit slightly to ensure that it is secured.

4. Dismounting (Fig. 3)

To uninstall, use a flat screwdriver to pull or slide down the latch as shown in Fig. 3. Then slide the PSU in the opposite direction, release the latch and pull out the PSU from the rail.

5. Connection

The terminal block connectors allow easy and fast wiring.

You can use flexible (stranded wire) or solid cables with cross sections:

| Electrical Connections and Wire Size | | | | | |
|--------------------------------------|-----------------------|-------|------|-------|--|
| | Stranded / Solid Torg | | | que | |
| | mm² | AWG | N·m | lb∙in | |
| Input | 0.32-3.3 | 22-12 | 0.51 | 4.5 | |
| Output | 0.52-3.3 | 20-12 | 0.51 | 4.5 | |

To secure reliable and shock proof connections, the stripping length should be 4-5mm (see Fig. 4 (1)). Please ensure that wires are fully inserted into the connecting terminals as shown in Fig. 4 (2).

In accordance to EN60950 / UL60950, flexible cables require ferrules.

Use appropriate copper cables that are designed to sustain operating temperature of at least $60^{\circ}C/75^{\circ}C$ for USA or at least $90^{\circ}C$ for Canada.

5.1. Input connection (Fig. 1, Fig. 5)

Use L, N and GND connections of input terminal connector (see Fig. 1 (1)) to establish the 100-240 VAC connection. Typical connection methods are shown in Figure 5.

The unit is protected with an internal fuse (not replaceable) at L pin and it has been tested and approved on 20A (UL) and 16A (IEC) branch circuits without additional protection device. An external protection device is only required if the supplying branch has an ampacity greater than above. Thus, if an external protective device is necessary, or utilized, a minimum value of 20A B- or 13A C- characteristic breaker should be used.

The internal fuse must not be replaced by the user.

5.2. Output connection (Fig. 1 (2))

Use the "+" and "-" screw connections to establish the 24VDC connection. The output provides 24VDC. The output voltage can be adjusted from 24 to 28 VDC on the potentiometer. The green LED DC OK displays correct function of the output (Fig. 1 (4)). The device has a short circuit and overload protection and an overvoltage protection limited to 30-34.8 VDC.

5.3. Output characteristic curve

The device functions normal under operating line and load conditions. In the event of a short circuit or overload the output voltage and current collapses (I₀ = 110-150%). The secondary voltage is reduced and bounces until short circuit or overload on the secondary side has been removed.

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

- At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

RHINO PSV24-50S Power Supply

| Technical Specifications | | | | |
|--|--|--|--|--|
| Input (AC) | | | | |
| Nominal input voltage / frequency | 100-240 VAC / 50-60 Hz | | | |
| Voltage range | 85-264 VAC | | | |
| Frequency | 47-63 Hz | | | |
| Nominal current | < 1.0 A @ 115VAC, < 0.6 A @ 230VAC | | | |
| Inrush current limitation (+25°C, cold start) | < 35A @ 115VAC, < 60A @ 230VAC | | | |
| Mains buffering at nominal load (typ.) | 20ms typ. @ 115VAC (100% load) 90ms typ. @ 230VAC (100% load) | | | |
| Turn-on time | < 3s @ 115VAC, < 1.5 s @ 230VAC (100% load) | | | |
| Internal fuse | T 3.15 A / 250V (non-replaceable) | | | |
| Recommended backup protection | 20A B- or 13A C- characteristic circuit breaker | | | |
| Leakage current | < 1mA @ 240VAC | | | |
| Output (DC) | | | | |
| Nominal output voltage U _N / tolerance | 24VDC ± 2 % | | | |
| Voltage adjustment range | 24-28 VDC (maximum power \leq 50W) | | | |
| Nominal current | 2.1 A | | | |
| Derating | Refer to Fig. 6 -10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation | | | |
| Startup with capacitive loads | Max. 3,000µF | | | |
| Max. power dissipation idling / nominal load approx. | 0.5 W / 7W | | | |
| Efficiency at 100% load | 86.0% typ. @ 115VAC, 88.0% typ. @ 230VAC | | | |
| PARD (20MHz) at +25°C, 100% load | <75 mVpp | | | |
| Parallel operation | PSB60-REM20S / PSB60-REM40S or with ORing Diode | | | |
| General Data | · · · · · · · · · · · · · · · · · · · | | | |
| Type of housing | Plastic (PC), enclosed | | | |
| LED signals | Green LED DC OK | | | |
| MTBF | > 350,000 hrs. as per Telcordia | | | |
| Dimensions (L x W x H) | 75mm x 30mm x 89.5 mm [2.95 in x 1.18 in x 3.52 in] (See www.AutomationDirect.com for complete engineering drawings.) | | | |
| Weight | 0.18 kg [6.3 oz] | | | |
| Connection method | Screw connection | | | |
| Stripping length | 4-5mm [0.16-0.20 in] | | | |
| Operating temperature (surrounding air temperature) | -20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6) | | | |
| Storage temperature | -40°C to +85°C [-40°F to +185°F] | | | |
| Humidity at +25°C, no condensation | 5 to 95% RH | | | |
| Vibration | Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s ² ; displacement of 0.35 mm, 60min per axis for all X, Y, Z directions Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions | | | |
| Shock | Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions | | | |
| Pollution degree | 2 | | | |
| Altitude (operating) | 2000m | | | |
| Certification and Standards | | | | |
| Safety entry low voltage | SELV (EN60950) | | | |
| Electrical safety (of information technology equipment) | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1, Limited Power Source (LPS) | | | |
| Industrial control equipment | UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) | | | |
| Class 2 power supply | UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) | | | |
| CE | In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU | | | |
| Component power supply for general use | EN61204-3 | | | |
| Immunity | EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11) | | | |
| Emission | EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4 | | | |
| | SPET CULSTED LISTED Ind. Cont. Eq. | | | |
| RoHS Compliant | Yes | | | |
| Safety and Protection | | | | |
| Surge voltage protection against internal surge voltages | No | | | |
| Isolation voltage: | | | | |
| Input / output Input / PE | 3kVAC 3kVAC | | | |
| Output / PE | 0.5 KVAC | | | |
| Protection degree | IP20 | | | |
| Safety class | Class I with PE connection | | | |

1-800-633-0405 For the latest pri RHINO PSV24-100S Power Supply











Power Derating Curve for PSU in Vertical Mounting 110 100 90 80 Percentage of Max Load (%) 70 60 50 40 30 20 10 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 Surrounding Air Temperature (°C) -4 5 14 23 32 41 50 59 68 77 86 95 104 113 122 131 140 149 158 Surrounding Air Temperature (°F) Figure 6

READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

- Switch main power off before connecting or disconnecting the device. Risk of explosion!
 To guarantee sufficient convection cooling, please keep a distance of >40mm above and >20mm
 - below the device as well as a lateral distance of >25mm to other cold source or heat source. Note that the enclosure of the device can become very hot depending on the ambient transacture and load of the news supply Bick of hursel
- temperature and load of the power supply. Risk of burns!
 The main power must be turned off before connecting or disconnecting wires to the terminals!
- The main power must be turned off before
 Do not introduce any objects into the unit!
 - Dangerous voltage present for at least 5 minutes after disconnecting all sources of power.
- The power supplies are built-in units and must be installed in a cabinet or room (condensation free environment and indoor location) that is relatively free of conductive contaminants.
- The unit must be installed in an IP54 enclosure or cabinet in the final installation.
- CAUTION: FOR USE IN A CONTROLLED ENVIRONMENT.

2. Device description (Fig. 1)

- (1) Input terminal block connector
- (2) Output terminal block connector
- (3) DC voltage adjustment potentiometer
- (4) DC OK LED (green)
- (5) Universal mounting rail system

3. Mounting (Fig. 2)

The power supply unit can be mounted on 35mm DIN rails in accordance with EN60715. The device should be installed with input terminal block on the bottom.

Each device is delivered ready to install.

Snap on the DIN rail as shown in Fig. 2:

- 1. Tilt the unit slightly upwards and put it onto the DIN rail.
- Push downwards until stopped.
- Press against the bottom front side for locking.
- Shake the unit slightly to ensure that it is secured.

4. Dismounting (Fig. 3)

To uninstall, use a flat screwdriver to pull or slide down the latch as shown in Fig. 3. Then slide the PSU in the opposite direction, release the latch and pull out the PSU from the rail.

5. Connection

The terminal block connectors allow easy and fast wiring.

You can use flexible (stranded wire) or solid cables with cross sections:

| Electrical Connections and Wire Size | | | | | |
|--------------------------------------|-------------------------|-------|------|-------|--|
| | Stranded / Solid Torque | | | | |
| | mm² | AWG | N·m | lb∙in | |
| Input | 0.32-3.3 | 22-12 | 0.51 | 4.5 | |
| Output | 0.52-3.3 | 20-12 | 0.51 | 4.5 | |

To secure reliable and shock proof connections, the stripping length should be 4-5mm (see Fig. 4 (1)). Please ensure that wires are fully inserted into the connecting terminals as shown in Fig. 4 (2).

In accordance to EN60950 / UL60950, flexible cables require ferrules.

Use appropriate copper cables that are designed to sustain operating temperature of at least 60°C/75°C for USA or at least 90°C for Canada.

5.1. Input connection (Fig. 1, Fig. 5)

Use L, N and GND connections of input terminal connector (see Fig. 1 (1)) to establish the 100-240 VAC connection. Typical connection methods are shown in Figure 5.

The unit is protected with an internal fuse (not replaceable) at L pin and it has been tested and approved on 20A (UL) and 16A (IEC) branch circuits without additional protection device. An external protection device is only required if the supplying branch has an ampacity greater than above. Thus, if an external protective device is necessary, or utilized, a minimum value of 20A B- or 10A C- characteristic breaker should be used.



5.2. Output connection (Fig. 1 (2))

Use the "+" and "-" screw connections to establish the 24VDC connection. The output provides 24VDC. The output voltage can be adjusted from 22 to 24 VDC on the potentiometer. The green LED DC OK displays correct function of the output (Fig. 1 (4)). The device has a short circuit and overload protection and an overvoltage protection limited to 30-34.8 VDC.

5.3. Output characteristic curve

The device functions normal under operating line and load conditions. In the event of a short circuit or overload the output voltage and current collapses (I_O = 110-150%). The secondary voltage is reduced and bounces until short circuit or overload on the secondary side has been removed.

5.4. Thermal behavior (Fig. 6)

- In the case of ambient temperatures:
 - 1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
 - Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

tPWR-127

RHINO PSV24-100S Power Supply

| Technical Specifications | | |
|---|--|--|
| Input (AC) | | |
| Nominal input voltage / frequency | 100-240 VAC / 50-60 Hz | |
| Voltage range | 85-264 VAC | |
| Frequency | 47-63 Hz | |
| Nominal current | < 1.2 A @ 115VAC, < 0.6 A @ 230VAC | |
| Inrush current limitation (+25°C, cold start) | < 35A @ 115VAC, < 60A @ 230VAC | |
| Mains buffering at nominal load (typ.) | 25ms typ. @ 115VAC (100% load) | |
| | 50ms typ. @ 230VAC (100% load) < 3s @ 115VAC, < 1.5 s @ 230VAC (100% load) | |
| Turn-on time Internal fuse | T 3.15 A / 250V (non-replaceable) | |
| Recommended backup protection | 20A B- or 10A C- characteristic circuit breaker | |
| Leakage current | < 1mA @ 240VAC | |
| Output (DC) | | |
| Nominal output voltage U_N / tolerance | 24VDC ± 2 % | |
| Voltage adjustment range | 22-24 VDC (maximum power \leq 91.2 W) | |
| Nominal current | 3.8 A | |
| Derating | Refer to Fig. 6 -10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation | |
| Startup with capacitive loads | Max. 3,000µF | |
| Max. power dissipation idling / nominal load approx. | 0.4 W / 10W | |
| Efficiency at 100% load | 87.0% typ. @ 115VAC, 89.0% typ. @ 230VAC | |
| PARD (20MHz) at +25°C, 100% load | < 75 mVpp | |
| Parallel operation | PSB60-REM20S / PSB60-REM40S or with ORing Diode | |
| General Data | | |
| Type of housing | Plastic (PC), enclosed | |
| LED signals | Green LED DC OK | |
| MTBF | > 350,000 hrs. as per Telcordia | |
| Dimensions (L x W x H) Weight | 75mm x 45mm x 100mm [2.95 in x 1.77 in x 3.94 in] (See www.AutomationDirect.com for complete engineering drawings.) 0.325 kg [11.5 oz] | |
| Connection method | Screw connection | |
| Stripping length | 4-5mm [0.16-0.20 in] | |
| Operating temperature (surrounding air temperature) | -20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6) | |
| Storage temperature | -40°C to +85°C [-40°F to +185°F] | |
| Humidity at +25°C, no condensation | 5 to 95% RH | |
| Vibration | Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s ² ; displacement of 0.35 mm, 60min per axis for all X, Y, Z directions Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions | |
| Shock | Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions | |
| Pollution degree | 2 | |
| Altitude (operating) | 2000m | |
| Certification and Standards | | |
| Safety entry low voltage Electrical safety (of information technology equipment) | SELV (EN60950) UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1, Lipited Power Source (LPC) | |
| Industrial control equipment | Limited Power Source (LPS) UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) | |
| Class 2 power supply | UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) | |
| CE | In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU | |
| Component power supply for general use | EN61204-3 | |
| Immunity | EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11) | |
| Emission | EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4 | |
| C | | |
| RoHS Compliant | Yes | |
| Safety and Protection | | |
| Surge voltage protection against internal surge voltages Isolation voltage: | No | |
| Input / output | 3kVAC | |
| Input / PE Output / PE | 1.5 kVAC | |
| | 0.5 kVAC IP20 | |
| Protection degree Safety class | Class I with PE connection | |
| υαιστή σιαδο | Glass I with FE WIIIIEUtion | |

1-800-633-0405 For the latest prices, please check AutomationDirect.com. RHINO PSV24-120S Power Supply













READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

- Switch main power off before connecting or disconnecting the device. Risk of explosion!
- If the unit is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- To guarantee sufficient convection cooling, please keep a distance of 50mm above and 18cm below the device as well as a lateral distance of 10mm to other units.
- Note that the enclosure of the device can become very hot depending on the ambient
 - temperature and load of the power supply. Risk of burns!
- The main power must be turned off before connecting or disconnecting wires to the terminals!
 Do not introduce any objects into the unit!
- Dangerous voltage present for at least 5 minutes after disconnecting all sources of power.
- The power supplies are built-in units and must be installed in a cabinet or room (condensation free environment and indoor location) that is relatively free of conductive contaminants.
- The unit must be installed in an IP54 enclosure or cabinet in the final installation.

CAUTION: FOR USE IN A CONTROLLED ENVIRONMENT.

2. Device description (Fig. 1)

- (1) Input terminal block connector
- (2) Output terminal block connector
- (3) DC voltage adjustment potentiometer
- (4) DC OK LED (green)
- (5) Universal mounting rail system

3. Mounting (Fig. 2)

The power supply unit can be mounted on 35mm DIN rails in accordance with EN60715. For vertical mounting, the device should be installed with input terminal block on the bottom.

Each device is delivered ready to install.

- Snap on the DIN rail as shown in Fig. 2:
 - 1. Tilt the unit slightly upwards and put it onto the DIN rail.
 - 2. Push downwards until stopped.
 - 3. Press against the bottom front side for locking.
 - 4. Shake the unit slightly to ensure that it is secured.
- 4. Dismounting (Fig. 3)

To uninstall, use a flat screwdriver to pull or slide down the latch as shown in Fig. 3. Then slide the PSU in the opposite direction, release the latch and pull out the PSU from the rail.

5. Connection

The terminal block connectors allow easy and fast wiring.

You can use flexible (stranded wire) or solid cables with cross sections:

| Electrical Connections and Wire Size | | | | | |
|--------------------------------------|------------------|-------|------|--------|--|
| | Stranded / Solid | | Tor | Torque | |
| | mm² | AWG | N·m | lb.in | |
| Input | 0.823-8.365 | 18-8 | 1.01 | 9 | |
| Output | 0.20-3.3 | 24-12 | 0.68 | 6 | |

To secure reliable and shock proof connections, the stripping length should be 7mm (see Fig. 4 (1)). Please ensure that wires are fully inserted into the connecting terminals as shown in Fig. 4 (2). All wire strands must be fully inserted into the terminals with the screws securely fastened in order to ensure safety and maximum contact.

In accordance to EN60950 / UL60950, flexible cables require ferrules.

Use appropriate copper cables that are designed to sustain operating temperature of at least 60°C/75°C or more to fulfill UL requirements.

5.1. Input connection (Fig. 1, Fig. 5)

Use L, N and GND connections of input terminal connector (see Fig. 1 (1)) to establish the 100-240 VAC connection. Typical connection methods are shown in Figure 5.

The unit is protected with an internal fuse (not replaceable) at L pin and it has been tested and approved on 20A (UL) and 16A (IEC) branch circuits without additional protection device. An external protection device is only required if the supplying branch has an ampacity greater than above.

The internal fuse must not be replaced by the user.

5.2. Output connection (Fig. 1 (2))

Use the "+" and "-" screw connections to establish the 24VDC connection. The output provides 24VDC. The output voltage can be adjusted from 22 to 28 VDC on the potentiometer. The green LED DC OK displays correct function of the output (Fig. 1 (4)). The device has a short circuit and overload protection and an overvoltage protection limited to 28.8-35.2 VDC.

5.3. Output characteristic curve

The device functions normal under operating line and load conditions. In the event of an overload ($I_{o} = 105-150\%$) the output voltage will start to droop until overload has been removed.

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

- At -10°C to -20°C [14°F to -4°F], the output capacity must be reduced by 2% per °C temperature increase.
 Above +40°C [104°F] (115VAC), the output capacity must be reduced by 1.67% per degree Celsius
- temperature increase. 3. Above +50°C [122°F] (230VAC), the output capacity must be reduced by 2.5% per degree Celsius
- temperature increase.

If the output capacity is not reduced when $T_{Amb} > 40^{\circ}C$ (115VAC) or $> 50^{\circ}C$ (230VAC), the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

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1-800-633-0405

RHINO PSV24-120S Power Supply

| | Technical Specifications |
|--|--|
| Input (AC) | |
| Nominal input voltage / frequency | 100-240 VAC / 50-60 Hz |
| Voltage range | 85-264 VAC |
| Frequency | 47-63 Hz |
| Nominal current | 2.2 A typ. @ 115VAC, 1.2 A typ. @ 230VAC |
| Inrush current limitation (+25°C, cold start) | 20A typ. @ 115VAC, 40A typ. @ 230VAC |
| Mains buffering at nominal load (typ.) | 20ms typ. @ 115VAC (100% load) |
| • ()) / | 90ms typ. @ 230VAC (100% load) |
| Turn-on time Internal fuse | 200ms typ. @ 115VAC & 230VAC (100% load) T 4A / 250V (non-replaceable) |
| Leakage current | < 0.25 mA @ 264VAC |
| Output (DC) | |
| Nominal output voltage U _N / tolerance | 24VDC ± 2 % |
| Voltage adjustment range | 22-28 VDC (maximum power ≤ 120W) |
| Output current | 5A |
| Derating | Refer to Fig. 6 -10°C to -20°C (2%/°C), > 40°C (1.67%/°C) @ 115VAC -10°C to -20°C (2%/°C), > 50°C (2.5%/°C) @ 230VAC |
| Startup with capacitive loads | Max. 8,000µF |
| Max. power dissipation idling / nominal load approx. | 0.65 W / 13.3 W |
| Efficiency at 100% load | 88.0% typ. @ 115VAC, 90.0% typ. @ 230VAC |
| PARD (20MHz) at 100% load | < 120 mVpp |
| Parallel operation | PSB60-REM20S / PSB60-REM40S or with ORing Diode |
| General Data | |
| Type of housing | SGCC (Case Cover) / Aluminum (Case Chassis) |
| LED signals | Green LED DC OK |
| MTBF | > 700,000 hrs. as per Telcordia |
| Dimensions (L x W x H) | 123.6 mm x 40mm x 117.6 mm [4.87 in x 1.57 in x 4.63 in] (See www.AutomationDirect.com for complete engineering drawings.) |
| Weight | 0.54 kg [19 oz] |
| Connection method | Screw connection |
| Stripping length | 7mm [0.28 in] |
| Operating temperature (surrounding air temperature) | -20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6) |
| Storage temperature | -40°C to +85°C [-40°F to +185°F] |
| Humidity at +25°C, no condensation | 5 to 95% RH |
| Vibration | Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s ² (2G peak); 10min per cycle, 60min for X direction Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) |
| Shock | Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions |
| Pollution degree | 2 |
| Altitude (operating) | 2000m for industrial application 5000m for ITE application |
| Certification and Standards | |
| Safety entry low voltage | SELV (EN60950) |
| Electrical safety (of information technology equipment) | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 |
| Industrial control equipment | UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) |
| CE | In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU |
| Component power supply for general use | EN61204-3 |
| Immunity | EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) |
| Emission | EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4 |
| Voltage Sag Immunity | SEMI F47 – 0706 @ 200VAC |
| | |
| RoHS Compliant | Yes |
| Safety and Protection | |
| Transient surge voltage protection | Varistor |
| Current limitation at short-circuits approx. | I _{surge} = 105-150% or Po _{max} typically |
| Surge voltage protection against internal surge voltages | Yes |
| Isolation voltage: | 04/40 |
| Input / output Input / PE | 3kVAC 2kVAC |
| Output / PE | 0.5 kVAC |
| Protection degree | IP20 |
| Safety class | Class I with PE connection |

RHINO PSV24-240S Power Supply













READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

- Switch main power off before connecting or disconnecting the device. Risk of explosion!
- If the unit is used in a manner not specified by the manufacturer, the protection provided by the
 equipment may be impaired.
- To guarantee sufficient convection cooling, please keep a distance of 50mm above and 18cm
- below the device as well as a lateral distance of 10mm to other units.Note that the enclosure of the device can become very hot depending on the ambient
- temperature and load of the power supply. Risk of burns!
- The main power must be turned off before connecting or disconnecting wires to the terminals!
 Do not introduce any objects into the unit!
- Dangerous voltage present for at least 5 minutes after disconnecting all sources of power.
- The power supplies are built-in units and must be installed in a cabinet or room (condensation
 - free environment and indoor location) that is relatively free of conductive contaminants. The unit must be installed in an IP54 enclosure or cabinet in the final installation.
- CAUTION: FOR USE IN A CONTROLLED ENVIRONMENT.

2. Device description (Fig. 1)

- (1) Input terminal block connector
- (2) Output terminal block connector
- (3) DC voltage adjustment potentiometer
- (4) DC OK LED (green)
- (5) Universal mounting rail system

3. Mounting (Fig. 2)

The power supply unit can be mounted on 35mm DIN rails in accordance with EN60715. For vertical mounting, the device should be installed with input terminal block on the bottom.

Each device is delivered ready to install. Snap on the DIN rail as shown in Fig. 2:

- Tilt the unit slightly upwards and put it onto the DIN rail.
- Push downwards until stopped.
- Press against the bottom front side for locking.
- Shake the unit slightly to ensure that it is secured.

4. Dismounting (Fig. 3)

To uninstall, use a flat screwdriver to pull or slide down the latch as shown in Fig. 3. Then slide the PSU in the opposite direction, release the latch and pull out the PSU from the rail.

5. Connection

The terminal block connectors allow easy and fast wiring.

You can use flexible (stranded wire) or solid cables with cross sections:

| Electrical Connections and Wire Size | | | | |
|--------------------------------------|------------------|-------|------|-------|
| | Stranded / Solid | | Tor | que |
| | mm² | AWG | N·m | lb-in |
| Input | 1.3-3.3 | 16-12 | 1.01 | 9 |
| Output | 1.3-3.3 | 16-12 | 0.68 | 6 |

To secure reliable and shock proof connections, the stripping length should be 7mm (see Fig. 4 (1)). Please ensure that wires are fully inserted into the connecting terminals as shown in Fig. 4 (2). All wire strands must be fully inserted into the terminals with the screws securely fastened in order to ensure safety and maximum contact.

In accordance to EN60950 / UL60950, flexible cables require ferrules.

Use appropriate copper cables that are designed to sustain operating temperature of at least 60° C/75 $^{\circ}$ C or more to fulfill UL requirements.

5.1. Input connection (Fig. 1, Fig. 5)

Use L, N and GND connections of input terminal connector (see Fig. 1 (1)) to establish the 100-240 VAC connection. Typical connection methods are shown in Figure 5.

The unit is protected with an internal fuse (not replaceable) at L pin and it has been tested and approved on 20A (UL) and 16A (IEC) branch circuits without additional protection device. An external protection device is only required if the supplying branch has an ampacity greater than above.

The internal fuse must not be replaced by the user.

5.2. Output connection (Fig. 1 (2))

Use the "+" and "-" screw connections to establish the 24VDC connection. The output provides 24VDC. The output voltage can be adjusted from 22 to 28 VDC on the potentiometer. The green LED DC OK displays correct function of the output (Fig. 1 (4)). The device has a short circuit and overload protection and an overvoltage protection limited to 28.8-35.2 VDC.

5.3. Output characteristic curve

The device functions normal under operating line and load conditions. In the event of an overload ($I_{O} = 105-150\%$) the output voltage will start to droop until overload has been removed.

5.4. Thermal behavior (Fig. 6)

- In the case of ambient temperatures:
 - Above +40°C [104°F] (115VAC), the output capacity has to be reduced by 1.67% per degree Celsius increase in temperature.
 - Above +50°C [122°F] (230VAC), the output capacity has to be reduced by 2.5% per degree Celsius increase in temperature.

If the output capacity is not reduced when $T_{Amb} > 40^{\circ}C$ [104°F] (115VAC) or $> 50^{\circ}C$ [122°F] (230VAC), the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

tPWR-131

1-800-633-0405

RHINO PSV24-240S Power Supply

| Input (AC) Nominal input voltage / frequency Voltage range Frequency Nominal current Inrush current limitation (+25°C, cold start) Mains buffering at nominal load (typ.) Turn-on time Internal fuse Leakage current Output (DC) Nominal output voltage U _N / tolerance Voltage adjustment range Output current Derating Startup with capacitive loads Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF Functional (L, L)D | Technical Specifications 100-240 VAC / 50-60 Hz 85-264 VAC 47-63 Hz 2.8 A typ. @ 115VAC, 1.4 A typ. @ 230VAC 20A typ. @ 115VAC, 40A typ. @ 230VAC 10ms typ. @ 115VAC (100% load) 16ms typ. @ 230VAC (100% load) 1000ms typ. @ 115VAC (100% load) 1000ms typ. @ 115VAC & 230VAC (100% load) 1000ms typ. @ 115VAC (100% load) 24VDC ± 2 % 24VDC ± 2 % 22-28 VDC (maximum power ≤ 240W) 10A Refer to Fig. 6 > 40°C (1.67%/°C) @ 115VAC (90-229 VAC) > 50°C (2.5%/°C) @ 230VAC (20-229 VAC) > 50°C (2.5%/°C) @ 230VAC (20-229 VAC) > 50°C (2.5%/°C) @ 115VAC (0% load) 214 W @ 230VAC (10% load) 21.4 W @ 230VAC (10% load) 25.44 W @ 230VAC (10% load) 25.44 W @ 230VAC (10% load) 25.44 W @ 230VAC (100% load) 31.53 W @ 115VAC (00% load) 25.44 W @ 230VAC (100% load) 26.40 Wpp @ -0°C to -10°C < 120mVpp @ -10°C to +70°C |
|---|---|
| Nominal input voltage / frequency Voltage range Frequency Nominal current Inrush current limitation (+25°C, cold start) Mains buffering at nominal load (typ.) Turn-on time Internal fuse Leakage current Output (DC) Nominal output voltage U _N / tolerance Voltage adjustment range Output current Derating Startup with capacitive loads Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | $\begin{array}{c} 85-264 \ VAC \\ \hline 47-63 \ Hz \\ \hline 2.8 \ A \ typ. @ 115 \ VAC, 1.4 \ A \ typ. @ 230 \ VAC \\ \hline 20A \ typ. @ 115 \ VAC, 40A \ typ. @ 230 \ VAC \\ \hline 20A \ typ. @ 115 \ VAC, (100\% \ load) \\ \hline 10ms \ typ. @ 115 \ VAC \ (100\% \ load) \\ \hline 16ms \ typ. @ 230 \ VAC (100\% \ load) \\ \hline 16ms \ typ. @ 230 \ VAC (100\% \ load) \\ \hline 1000 \ ms \ typ. @ 115 \ VAC \ & 230 \ VAC (100\% \ load) \\ \hline 1000 \ ms \ typ. @ 125 \ VAC \ & 230 \ VAC (100\% \ load) \\ \hline 1000 \ ms \ typ. @ 125 \ VAC \ & 230 \ VAC \ (100\% \ load) \\ \hline 24VDC \pm 2 \ \% \\ \hline 22-28 \ \ VDC \ (maximum \ power \le 240W) \\ \hline 10A \\ \hline Refer \ to \ Fig. 6 \\ > \ 40^{\circ}C \ (1.67\%/^{\circ}C) \ @ 115 \ VAC \ (90-229 \ VAC) \\ > \ 50^{\circ}C \ (2.5\%/^{\circ}C) \ @ 230 \ VAC \ (230-264 \ VAC) \\ \hline Max. \ 8,000 \ \muF \\ \hline 4.62 \ W \ @ 115 \ VAC \ (0\% \ load) \\ \hline 2.14 \ W \ @ 230 \ VAC \ (100\% \ load) \\ \hline 31.53 \ W \ @ 115 \ VAC \ (100\% \ load) \\ \hline 31.53 \ W \ @ 115 \ VAC \ (100\% \ load) \\ \hline 31.53 \ W \ @ 230 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ \ typ. \ @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ \ typ. \ @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ \ typ. \ @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ \ typ. \ @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ \ typ. \ @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ \ typ. \ @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ \ typ. \ @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ \ typ. \ @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ \ typ. \ @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ \ typ. \ @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ \ typ. \ @ 115 \ VAC \ (100\% \ load) \\ \hline \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$ |
| Voltage range Frequency Nominal current Inrush current limitation (+25°C, cold start) Mains buffering at nominal load (typ.) Turn-on time Turn-on time Internal fuse Leakage current Dutput (DC) Nominal output voltage U _N / tolerance Voltage adjustment range Output current Derating Startup with capacitive loads Internal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation Image: Startup vith current Derating Image: Startup vith current Derating Startup with capacitive loads Max. power dissipation idling / nominal load approx. Image: Startup vith current Derating | $\begin{array}{c} 85-264 \ VAC \\ \hline 47-63 \ Hz \\ \hline 2.8 \ A \ typ. @ 115 \ VAC, 1.4 \ A \ typ. @ 230 \ VAC \\ \hline 20A \ typ. @ 115 \ VAC, 40A \ typ. @ 230 \ VAC \\ \hline 20A \ typ. @ 115 \ VAC, (100\% \ load) \\ \hline 10ms \ typ. @ 115 \ VAC \ (100\% \ load) \\ \hline 16ms \ typ. @ 230 \ VAC \ (100\% \ load) \\ \hline 1000 \ ms \ typ. @ 230 \ VAC \ (100\% \ load) \\ \hline 1000 \ ms \ typ. @ 230 \ VAC \ (100\% \ load) \\ \hline 1000 \ ms \ typ. @ 115 \ VAC \ & 230 \ VAC \ (100\% \ load) \\ \hline 1000 \ ms \ typ. @ 126 \ VAC \ & 240 \ VAC \ (100\% \ load) \\ \hline 24V \ DC \pm 2 \ \% \\ \hline 22-28 \ VDC \ (maximum \ power \le 240 \ W) \\ \hline 10A \\ \ Refer \ to \ Fig. 6 \\ > \ 40^{\circ}C \ (1.67\% \ /^{\circ}C) \ @ 115 \ VAC \ (90-229 \ VAC) \\ > \ 50^{\circ}C \ (2.5\% \ /^{\circ}C) \ @ 230 \ VAC \ (230-264 \ VAC) \\ \hline Max. \ 8,000 \ \muF \\ \hline 4.62 \ W \ @ 115 \ VAC \ (0\% \ load) \\ 2.14 \ W \ @ 230 \ VAC \ (100\% \ load) \\ \hline 2.14 \ W \ @ 230 \ VAC \ (100\% \ load) \\ \hline 31.53 \ W \ @ 115 \ VAC \ (100\% \ load) \\ \hline 31.53 \ W \ @ 115 \ VAC \ (100\% \ load) \\ \hline 31.53 \ W \ @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ typ. @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ typ. @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ typ. @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ typ. @ 115 \ VAC \ (100\% \ load) \\ \hline 25.44 \ W \ @ 230 \ VAC \ (100\% \ load) \\ \hline 25.44 \ W \ @ 230 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ typ. @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ typ. @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ typ. @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ typ. @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ typ. @ 115 \ VAC \ (100\% \ load) \\ \hline 88.0\% \ typ. @ 115 \ VAC \ (100\% \ load) \\ \hline \ 88.0\% \ typ. @ 115 \ VAC \ (100\% \ load) \\ \hline \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$ |
| Frequency Nominal current Inrush current limitation (+25°C, cold start) Mains buffering at nominal load (typ.) Turn-on time Internal fuse Leakage current Internal fuse Dutput (DC) Nominal output voltage U _N / tolerance Voltage adjustment range Output current Derating Startup with capacitive loads Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | $\begin{array}{c} 47-63 \ \text{Hz} \\ \hline 2.8 \ A \ typ. @ 115 \ VAC, 1.4 \ A \ typ. @ 230 \ VAC \\ \hline 20A \ typ. @ 115 \ VAC, 40A \ typ. @ 230 \ VAC \\ \hline 10 \ ms \ typ. @ 115 \ VAC \ (100\% \ load) \\ \hline 10 \ ms \ typ. @ 230 \ VAC \ (100\% \ load) \\ \hline 1000 \ ms \ typ. @ 230 \ VAC \ (100\% \ load) \\ \hline 1000 \ ms \ typ. @ 115 \ VAC \ & 230 \ VAC \ (100\% \ load) \\ \hline 1000 \ ms \ typ. @ 115 \ VAC \ & 230 \ VAC \ (100\% \ load) \\ \hline T \ 6.3 \ A \ / 250 \ (non-replaceable) \\ \hline < 1 \ mA \ @ 264 \ VAC \\ \hline \\ \hline 24 \ VDC \ \pm 2 \ \% \\ \hline \\ \hline 22 \ -28 \ \ VDC \ (maximum \ power \le 240 \ W) \\ \hline 10A \\ \hline Refer \ to \ Fig. \ 6 \\ \hline \ 40^{\circ} C \ (1.67\% \ ^{\circ} C) \ @ 230 \ VAC \ (230 \ -229 \ VAC) \\ \hline \\ $ |
| Nominal current Inrush current limitation (+25°C, cold start) Mains buffering at nominal load (typ.) Turn-on time Internal fuse Leakage current Output (DC) Nominal output voltage U _N / tolerance Voltage adjustment range Output current Derating Startup with capacitive loads Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | $20A typ. @ 115VAC, 40A typ. @ 230VAC \\10ms typ. @ 115VAC (100% load) \\16ms typ. @ 230VAC (100% load) \\1000ms typ. @ 115VAC & 230VAC (100% load) \\T 6.3 A / 250V (non-replaceable) <100 <100 <100 <100 <100 <100 <100 <10$ |
| Mains buffering at nominal load (typ.) Turn-on time Internal fuse Leakage current Output (DC) Nominal output voltage U _N / tolerance Voltage adjustment range Output current Derating Startup with capacitive loads Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | $20A typ. @ 115VAC, 40A typ. @ 230VAC \\10ms typ. @ 115VAC (100% load) \\16ms typ. @ 230VAC (100% load) \\1000ms typ. @ 115VAC & 230VAC (100% load) \\T 6.3 A / 250V (non-replaceable) <100 <100 <100 <100 <100 <100 <100 <10$ |
| Mains buffering at nominal load (typ.) Turn-on time Internal fuse Leakage current Output (DC) Nominal output voltage U _N / tolerance Voltage adjustment range Output current Derating Startup with capacitive loads Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | 10ms typ. @ 115VAC (100% load) 16ms typ. @ 230VAC (100% load) 1000ms typ. @ 115VAC & 230VAC (100% load) T 6.3 A / 250V (non-replaceable) <1mA @ 264VAC |
| Turn-on time Internal fuse Internal fuse Internal fuse Leakage current Image: Comparison of the second | $\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$ |
| Internal fuse Internal fuse Leakage current Image: Comparison of the second | $T 6.3 A / 250V (non-replaceable) < 1mA @ 264VAC 24VDC \pm 2 \%22-28 VDC (maximum power \leq 240W)10ARefer to Fig. 6> 40°C (1.67%/°C) @ 115VAC (90-229 VAC)> 50°C (2.5%/°C) @ 230VAC (230-264 VAC)Max. 8,000µF4.62 W @ 115VAC (0% load)2.14 W @ 230VAC (0% load)31.53 W @ 115VAC (100% load)25.44 W @ 230VAC (100% load)88.0% typ. @ 115VAC, 90.0% typ. @ 230VAC< 120mVpp @ -10°C to +70°C< 240mVpp @ -20°C to -10°C$ |
| Leakage current Image: Current Output (DC) Nominal output voltage U _N / tolerance Voltage adjustment range Output current Derating Startup with capacitive loads Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | $< 1mA @ 264VAC$ $24VDC \pm 2 \%$ $22-28 VDC (maximum power \le 240W)$ $10A$ Refer to Fig. 6 $> 40^{\circ}C (1.67\%/^{\circ}C) @ 115VAC (90-229 VAC)$ $> 50^{\circ}C (2.5\%/^{\circ}C) @ 230VAC (230-264 VAC)$ $Max. 8,000\muF$ $4.62 W @ 115VAC (0\% load)$ $2.14 W @ 230VAC (0\% load)$ $31.53 W @ 115VAC (0\% load)$ $25.44 W @ 230VAC (100\% load)$ $25.44 W @ 230VAC (100\% load)$ $88.0\% typ. @ 115VAC, 90.0\% typ. @ 230VAC$ $< 120mVpp @ -10^{\circ}C to +70^{\circ}C$ $< 240mVpp @ -20^{\circ}C to -10^{\circ}C$ $PSB60-REM20S / PSB60-REM40S or with ORing Diode$ |
| Output (DC) Nominal output voltage U _N / tolerance Voltage adjustment range Output current Derating Startup with capacitive loads Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | $\begin{array}{c} 24 \text{VDC} \pm 2 \ \% \\ \hline 22 - 28 \ \text{VDC} \ (\text{maximum power} \leq 240 \text{W}) \\ \hline 10\text{A} \\ \text{Refer to Fig. 6} \\ > 40^{\circ}\text{C} \ (1.67\%/^{\circ}\text{C}) \ @ 115 \text{VAC} \ (90 - 229 \ \text{VAC}) \\ > 50^{\circ}\text{C} \ (2.5\%/^{\circ}\text{C}) \ @ 230 \text{VAC} \ (230 - 264 \ \text{VAC}) \\ \hline \text{Max} \ 8,000 \mu\text{F} \\ \hline 4.62 \ \text{W} \ @ 115 \text{VAC} \ (0\% \ \text{load}) \\ 2.14 \ \text{W} \ @ 230 \text{VAC} \ (0\% \ \text{load}) \\ 25.44 \ \text{W} \ @ 230 \text{VAC} \ (100\% \ \text{load}) \\ \hline 25.44 \ \text{W} \ @ 230 \text{VAC} \ (100\% \ \text{load}) \\ \hline 88.0\% \ \text{typ.} \ @ 115 \text{VAC}, 90.0\% \ \text{typ.} \ @ 230 \text{VAC} \\ < 120 \text{mVpp} \ @ -10^{\circ}\text{C} \ \text{to} \ -70^{\circ}\text{C} \\ < 240 \text{mVpp} \ @ -20^{\circ}\text{C} \ \text{to} \ -10^{\circ}\text{C} \\ \hline \text{PSB60-REM20S / PSB60-REM40S or with ORing Diode} \\ \end{array}$ |
| Nominal output voltage U _N / tolerance Voltage adjustment range Output current Derating Startup with capacitive loads Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | $\begin{array}{c} 22-28 \ \text{VDC} \ (\text{maximum power} \leq 240\text{W}) \\ 10\text{A} \\ \text{Refer to Fig. 6} \\ > 40^{\circ}\text{C} \ (1.67\%/^{\circ}\text{C}) \ @ 115\text{VAC} \ (90-229 \ \text{VAC}) \\ > 50^{\circ}\text{C} \ (2.5\%/^{\circ}\text{C}) \ @ 230\text{VAC} \ (230-264 \ \text{VAC}) \\ \hline \text{Max. 8,000\muF} \\ 4.62 \ W \ @ 115\text{VAC} \ (0\% \ \text{load}) \\ 2.14 \ W \ @ 230\text{VAC} \ (0\% \ \text{load}) \\ 2.14 \ W \ @ 230\text{VAC} \ (0\% \ \text{load}) \\ 31.53 \ W \ @ 115\text{VAC} \ (100\% \ \text{load}) \\ 25.44 \ W \ @ 230\text{VAC} \ (100\% \ \text{load}) \\ 88.0\% \ \text{typ.} \ @ 115\text{VAC}, 90.0\% \ \text{typ.} \ @ 230\text{VAC} \\ < 120\text{mVpp} \ @ -10^{\circ}\text{C} \ \text{to} \ -70^{\circ}\text{C} \\ < 240\text{mVpp} \ @ -20^{\circ}\text{C} \ \text{to} \ -10^{\circ}\text{C} \\ \hline \text{PSB60-REM20S / PSB60-REM40S or with ORing Diode} \\ \end{array}$ |
| Voltage adjustment range Output current Derating Startup with capacitive loads Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | $\begin{array}{c} 22-28 \ \text{VDC} \ (\text{maximum power} \leq 240\text{W}) \\ 10\text{A} \\ \text{Refer to Fig. 6} \\ > 40^{\circ}\text{C} \ (1.67\%/^{\circ}\text{C}) \ @ 115\text{VAC} \ (90-229 \ \text{VAC}) \\ > 50^{\circ}\text{C} \ (2.5\%/^{\circ}\text{C}) \ @ 230\text{VAC} \ (230-264 \ \text{VAC}) \\ \hline \text{Max. 8,000\muF} \\ 4.62 \ W \ @ 115\text{VAC} \ (0\% \ \text{load}) \\ 2.14 \ W \ @ 230\text{VAC} \ (0\% \ \text{load}) \\ 2.14 \ W \ @ 230\text{VAC} \ (0\% \ \text{load}) \\ 31.53 \ W \ @ 115\text{VAC} \ (100\% \ \text{load}) \\ 25.44 \ W \ @ 230\text{VAC} \ (100\% \ \text{load}) \\ 88.0\% \ \text{typ.} \ @ 115\text{VAC}, 90.0\% \ \text{typ.} \ @ 230\text{VAC} \\ < 120\text{mVpp} \ @ -10^{\circ}\text{C} \ \text{to} \ -70^{\circ}\text{C} \\ < 240\text{mVpp} \ @ -20^{\circ}\text{C} \ \text{to} \ -10^{\circ}\text{C} \\ \hline \text{PSB60-REM20S / PSB60-REM40S or with ORing Diode} \\ \end{array}$ |
| Output current Derating Startup with capacitive loads Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | $\begin{array}{c} 10A \\ \hline \\ Refer to Fig. 6 \\ > 40^{\circ}C (1.67\%/^{\circ}C) @ 115VAC (90-229 VAC) \\ > 50^{\circ}C (2.5\%/^{\circ}C) @ 230VAC (230-264 VAC) \\ \hline \\ Max. 8,000\muF \\ \hline \\ 4.62 W @ 115VAC (0\% load) \\ 2.14 W @ 230VAC (0\% load) \\ \hline \\ 31.53 W @ 115VAC (100\% load) \\ \hline \\ 25.44 W @ 230VAC (100\% load) \\ \hline \\ 88.0\% typ. @ 115VAC, 90.0\% typ. @ 230VAC \\ < 120mVpp @ -10^{\circ}C to +70^{\circ}C \\ < 240mVpp @ -20^{\circ}C to -10^{\circ}C \\ \hline \\ PSB60-REM20S / PSB60-REM40S or with ORing Diode \\ \hline \end{array}$ |
| Derating Startup with capacitive loads Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | Refer to Fig. 6 > 40°C (1.67%/°C) @ 115VAC (90-229 VAC) > 50°C (2.5%/°C) @ 230VAC (230-264 VAC) Max. 8,000µF 4.62 W @ 115VAC (0% load) 2.14 W @ 230VAC (0% load) 31.53 W @ 115VAC (100% load) 25.44 W @ 230VAC (100% load) 88.0% typ. @ 115VAC, 90.0% typ. @ 230VAC < 120mVpp @ -10°C to +70°C |
| Startup with capacitive loads Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | > 40°C (1.67%/°C) @ 115VAC (90-229 VAC) > 50°C (2.5%/°C) @ 230VAC (230-264 VAC) Max. 8,000µF 4.62 W @ 115VAC (0% load) 2.14 W @ 230VAC (0% load) 31.53 W @ 115VAC (100% load) 25.44 W @ 230VAC (100% load) 88.0% typ. @ 115VAC, 90.0% typ. @ 230VAC < 120mVpp @ -10°C to +70°C < 240mVpp @ -20°C to -10°C PSB60-REM20S / PSB60-REM40S or with ORing Diode |
| Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | Max. 8,000µF 4.62 W @ 115VAC (0% load) 2.14 W @ 230VAC (0% load) 31.53 W @ 115VAC (100% load) 25.44 W @ 230VAC (100% load) 25.44 W @ 230VAC (100% load) 88.0% typ. @ 115VAC, 90.0% typ. @ 230VAC < 120mVpp @ -10°C to +70°C |
| Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | 4.62 W @ 115VAC (0% load) 2.14 W @ 230VAC (0% load) 31.53 W @ 115VAC (100% load) 25.44 W @ 230VAC (100% load) 88.0% typ. @ 115VAC, 90.0% typ. @ 230VAC <120mVpp @ -10°C to +70°C <240mVpp @ -20°C to -10°C PSB60-REM20S / PSB60-REM40S or with ORing Diode |
| Efficiency at 100% load PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | 2.14 W @ 230VAC (0% load) 31.53 W @ 115VAC (100% load) 25.44 W @ 230VAC (100% load) 88.0% typ. @ 115VAC, 90.0% typ. @ 230VAC < 120mVpp @ -10°C to +70°C < 240mVpp @ -20°C to -10°C PSB60-REM20S / PSB60-REM40S or with ORing Diode |
| PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | 25.44 W @ 230VAC (100% load) 88.0% typ. @ 115VAC, 90.0% typ. @ 230VAC < 120mVpp @ -10°C to +70°C < 240mVpp @ -20°C to -10°C PSB60-REM20S / PSB60-REM40S or with ORing Diode |
| PARD (20MHz) at 100% load Parallel operation General Data Type of housing LED signals MTBF | < 120mVpp @ -10°C to +70°C < 240mVpp @ -20°C to -10°C PSB60-REM20S / PSB60-REM40S or with ORing Diode |
| Parallel operation General Data Type of housing LED signals MTBF | < 240mVpp @ -20°C to -10°C PSB60-REM20S / PSB60-REM40S or with ORing Diode |
| General Data Type of housing I LED signals MTBF | |
| Type of housing LED signals MTBF | SGCC (Case Cover) / Aluminum (Case Chassis) |
| LED signals MTBF | SGCC (Case Cover) / Aluminum (Case Chassis) |
| MTBF | |
| | Green LED DC OK |
| | > 700,000 hrs. as per Telcordia |
| Dimensions (L x W x H) | 123.6 mm x 60mm x 117.6 mm [4.87 in x 2.36 in x 4.63 in] (See www.AutomationDirect.com for complete engineering drawings.) |
| Weight | 0.80 kg [28 oz] |
| Connection method | Screw connection |
| Stripping length | 7mm [0.28 in] |
| Operating temperature (surrounding air temperature) | -20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6) |
| Storage temperature | -40°C to +85°C [-40°F to +185°F] |
| Humidity at +25°C, no condensation | 5 to 95% RH |
| Vibration | Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s ² (2G peak); 10min per cycle, 60min for X direction Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions |
| Shock | Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) |
| | Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions |
| Pollution degree | 2 2000m for industrial application |
| Altitude (operating) | 5000m for ITE application |
| Certification and Standards | |
| Safety entry low voltage | SELV (EN60950) |
| Electrical safety (of information technology equipment) | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 |
| Industrial control equipment | UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) |
| CE | In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU |
| Component power supply for general use | EN61204-3 |
| Immunity | EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) |
| Emission | EN55032. EN55011. EN61000-3-2 Class A. EN61000-3-3. EN61000-6-3. EN61000-6-4 |
| Voltage Sag Immunity | SEMI F47 – 0706 @ 200VAC |
| CE | |
| | LISTED <i>E198298</i> Ind. Cont. Eq. |
| RoHS Compliant | • Yes |
| Safety and Protection | |
| Transient surge voltage protection | Varistor |
| Current limitation at short-circuits approx. | I _{suroe} = 105-150% or Po _{max} typically |
| Surge voltage protection against internal surge voltages | Yes |
| Isolation voltage: | |
| Input / output | 3kVAC |
| Input / PE Output / PE | 2kVAC 0.5 kVAC |
| Protection degree | IP20 |
| Safety class | Class I with PE connection |
| 1st Edition, 01/2019 | |

www.automationdirect.com

RHINO PSV24-480S Power Supply













READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

- Switch main power off before connecting or disconnecting the device. Risk of explosion!
- If the unit is used in a manner not specified by the manufacturer, the protection provided by the
 equipment may be impaired.
- To guarantee sufficient convection cooling, please keep a distance of 50mm above and 18cm below the device as well as a lateral distance of 10mm to other units.
- Note that the enclosure of the device can become very hot depending on the ambient temperature and load of the power supply. Risk of burns!
- The main power must be turned off before connecting or disconnecting wires to the terminals!
 Do not introduce any objects into the unit!
- Dangerous voltage present for at least 5 minutes after disconnecting all sources of power.
- The power supplies are built-in units and must be installed in a cabinet or room (condensation
 - free environment and indoor location) that is relatively free of conductive contaminants.
- The unit must be installed in an IP54 enclosure or cabinet in the final installation.
- CAUTION: FOR USE IN A CONTROLLED ENVIRONMENT.

2. Device description (Fig. 1)

- (1) Input terminal block connector
- (2) Output terminal block connector
- (3) DC voltage adjustment potentiometer
- (4) DC OK LED (green)
- (5) Universal mounting rail system

3. Mounting (Fig. 2)

The power supply unit can be mounted on 35mm DIN rails in accordance with EN60715. For vertical mounting, the device should be installed with input terminal block on the bottom.

Each device is delivered ready to install.

- Snap on the DIN rail as shown in Fig. 2:
 - 1. Tilt the unit slightly upwards and put it onto the DIN rail.
 - 2. Push downwards until stopped.
 - 3. Press against the bottom front side for locking.
 - 4. Shake the unit slightly to ensure that it is secured.

4. Dismounting (Fig. 3)

To uninstall, use a flat screwdriver to pull or slide down the latch as shown in Fig. 3. Then slide the PSU in the opposite direction, release the latch and pull out the PSU from the rail.

5. Connection

The terminal block connectors allow easy and fast wiring.

You can use flexible (stranded wire) or solid cables with cross sections:

| Electrical Connections and Wire Size | | | | | |
|--------------------------------------|------------------|-------|-------------------------|-------|-----|
| | Stranded / Solid | | Stranded / Solid Torque | | que |
| | mm² | AWG | N∙m | lb-in | |
| Input | 1.3-3.3 | 16-12 | 1.01 | 9 | |
| Output | 1.3-3.3 | 16-12 | 0.68 | 6 | |

To secure reliable and shock proof connections, the stripping length should be 7mm (see Fig. 4 (1)). Please ensure that wires are fully inserted into the connecting terminals as shown in Fig. 4 (2). All wire strands must be fully inserted into the terminals with the screws securely fastened in order to ensure safety and maximum contact.

In accordance to EN60950 / UL60950, flexible cables require ferrules.

Use appropriate copper cables that are designed to sustain operating temperature of at least 60°C/75°C or more to fulfill UL requirements.

5.1. Input connection (Fig. 1, Fig. 5)

Use L, N and GND connections of input terminal connector (see Fig. 1 (1)) to establish the 100-240 VAC connection. Typical connection methods are shown in Figure 5.

The unit is protected with an internal fuse (not replaceable) at L pin and it has been tested and approved on 20A (UL) and 16A (IEC) branch circuits without additional protection device. An external protection device is only required if the supplying branch has an ampacity greater than above.

The internal fuse must not be replaced by the user.

5.2. Output connection (Fig. 1 (2))

Use the "+" and "-" screw connections to establish the 24VDC connection. The output provides 24VDC. The output voltage can be adjusted from 22 to 28 VDC on the potentiometer. The green LED DC OK displays correct function of the output (Fig. 1 (4)). The device has a short circuit and overload protection and an overvoltage protection limited to 28.8-35.2 VDC.

5.3. Output characteristic curve

The device functions normal under operating line and load conditions. In the event of an overload (I_{c} = 109-130%) the output voltage will start to droop until overload has been removed.

5.4. Thermal behavior (Fig. 6)

- In the case of ambient temperatures:
 - Above +40°C [104°F] (115VAC), the output capacity has to be reduced by 1.67% per degree Celsius increase in temperature.
 - Above +50°C [122°F] (230VAC), the output capacity has to be reduced by 2.5% per degree Celsius increase in temperature.

If the output capacity is not reduced when $T_{Amb} > 40^{\circ}C [104^{\circ}F]$ (115VAC) or $> 50^{\circ}C [122^{\circ}F]$ (230VAC), the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

www.automationdirect.com

1-800-633-0405

RHINO PSV24-480S Power Supply

| | Technical Specifications |
|---|--|
| Input (AC) | |
| Nominal input voltage / frequency | 100-240 VAC / 50-60 Hz |
| Voltage range | 85-264 VAC |
| Frequency | 47-63 Hz |
| Nominal current | 5.4 A typ. @ 115VAC, 2.7 A typ. @ 230VAC |
| Inrush current limitation (+25°C, cold start) | 40A typ. @ 115VAC, 80A typ. @ 230VAC |
| | 10ms typ. @ 115VAC (100% load) |
| Mains buffering at nominal load (typ.) | 16ms týp. @ 230VAC (100% load) |
| Turn-on time | 1000ms typ. @ 115VAC & 230VAC (100% load) |
| Internal fuse | F 10 A / 250V (non-replaceable) |
| Leakage current | < 1mA @ 264VAC |
| Output (DC) | |
| Nominal output voltage U _N / tolerance | 24VDC ± 2 % |
| Voltage adjustment range | 22-28 VDC (maximum power \leq 480W) |
| Output current | 20A |
| Denting | Refer to Fig. 6 |
| Derating | > 40°C (1.67%/°C) @ 115VAC (90-229 VAC) > 50°C (2.5%/°C) @ 230VAC (230-264 VAC) |
| Startup with capacitive loads | Max. 8,000µF |
| | 5W @ 115VAC (0% load) |
| May now dissipation idling / nominal load energy | 4W @ 230VAC (0% load) |
| Max. power dissipation idling / nominal load approx. | 50W @ 115VAC (100% load) |
| | 40W @ 230VAC (100% load) |
| Efficiency at 100% load | 85.0% typ. @ 115VAC, 88.0% typ. @ 230VAC |
| PARD (20MHz) at 100% load | < 120mVpp @ -10°C to +70°C < 240mVpp @ -20°C to -10°C |
| Parallel operation | PSB60-REM40S or with ORing Diode |
| General Data | |
| Type of housing | SGCC (Case Cover) / Aluminum (Case Chassis) |
| LED signals | Green LED DC OK |
| MTBF | > 700,000 hrs. as per Telcordia |
| Dimensions (L x W x H) | 123.6 mm x 85.5 mm x 128.5 mm [4.87 in x 3.37 in x 5.06 in] (See www.AutomationDirect.com for complete engineering drawings.) |
| Weight | 1.30 kg [45.9 oz] |
| Connection method | Screw connection |
| | 7mm [0.28 in] |
| Stripping length | |
| Operating temperature (surrounding air temperature) | -20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6) |
| Storage temperature | -40°C to +85°C [-40°F to +185°F] |
| Humidity at +25°C, no condensation | 5 to 95% RH Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s ² (2G peak); 10min per cycle, 60min for X direction |
| Vibration | Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions |
| Shock | Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) |
| | Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions |
| Pollution degree | 2 2000m for industrial application |
| Altitude (operating) | 2000m for industrial application 5000m for ITE application |
| Certification and Standards | |
| Safety entry low voltage | SELV (EN60950) |
| Electrical safety (of information technology equipment) | SELV (EN00330) |
| Industrial control equipment | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 |
| CE | |
| | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 |
| Component power supply for general use | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) |
| | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN61204-3 EN55024, EN61000-6-1, EN61000-6-2 |
| Immunity | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN61204-3 EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) |
| Immunity Emission | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No. 107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN61204-3 EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-4 |
| Immunity | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN61204-3 EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-4 SEMI F47 – 0706 @ 200VAC |
| Immunity Emission Voltage Sag Immunity | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No. 107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN61204-3 EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-4 |
| Immunity Emission Voltage Sag Immunity | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN61204-3 EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4 SEMI F47 – 0706 @ 200VAC CONSCIPTION OF CONSCIPTION OF CONSCIPTIO |
| Immunity Emission Voltage Sag Immunity | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No. 107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN61204-3 EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4 SEMI F47 – 0706 @ 200VAC 4ZW4 E197592 LISTED Ind. Cont. Eq. |
| Immunity Emission Voltage Sag Immunity RoHS Compliant | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN61204-3 EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4 SEMI F47 – 0706 @ 200VAC |
| Immunity Emission Voltage Sag Immunity RoHS Compliant Safety and Protection | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN61204-3 EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4 SEMI F47 – 0706 @ 200VAC 4ZW4 E197592 LISTED Ind. Cont. Eq. Yes |
| Immunity Emission Voltage Sag Immunity RoHS Compliant Safety and Protection Transient surge voltage protection | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN61204-3 EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4 SEMI F47 – 0706 @ 200VAC |
| Immunity Emission Voltage Sag Immunity RoHS Compliant Safety and Protection Transient surge voltage protection Current limitation at short-circuits approx. Surge voltage protection against internal surge voltages Isolation voltage: | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No. 107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN61204-3 EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4 SEMI F47 - 0706 @ 200VAC Yes Varistor Varistor Igs/ge = 109-130% or Po _{max} typically (continuous current) Yes |
| Immunity Emission Voltage Sag Immunity RoHS Compliant Safety and Protection Transient surge voltage protection Current limitation at short-circuits approx. Surge voltage protection against internal surge voltages Isolation voltage: Input / output | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No. 107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN51024-3 EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4 SEMI F47 – 0706 @ 200VAC Yes Varistor Inge = 109-130% or Po _{max} typically (continuous current) Yes |
| Immunity Emission Voltage Sag Immunity RoHS Compliant Safety and Protection Transient surge voltage protection Current limitation at short-circuits approx. Surge voltage protection against internal surge voltages Isolation voltage: Input / output Input / PE | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No. 107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN51024-3 EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4 SEMI F47 - 0706 @ 200VAC Yes Varistor Varistor Varistor Yes SKVAC |
| Immunity Emission Voltage Sag Immunity RoHS Compliant Safety and Protection Transient surge voltage protection Current limitation at short-circuits approx. Surge voltage protection against internal surge voltages Isolation voltage: Input / output Input / PE Output / PE | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No. 107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN51024-3 EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4 SEMI F47 - 0706 @ 200VAC Yes Varistor Varistor Idy and colspan="2">SkVAC SkVAC SkVAC SkVAC |
| Immunity Emission Voltage Sag Immunity RoHS Compliant Safety and Protection Transient surge voltage protection Current limitation at short-circuits approx. Surge voltage protection against internal surge voltages Isolation voltage: Input / output Input / PE | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 UL/C-UL listed to UL508 and CSA C22.2 No. 107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN51024-3 EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4 SEMI F47 - 0706 @ 200VAC Yes Varistor Varistor Varistor Yes SKVAC |

RHINO PSV48-120S Power Supply













READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

- Switch main power off before connecting or disconnecting the device. Risk of explosion!
- If the unit is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- To guarantee sufficient convection cooling, please keep a distance of 50mm above and 18cm below the device as well as a lateral distance of 10mm to other units.
- Note that the enclosure of the device can become very hot depending on the ambient temperature and load of the power supply. Risk of burns!
- The main power must be turned off before connecting or disconnecting wires to the terminals! • Do not introduce any objects into the unit!
- Dangerous voltage present for at least 5 minutes after disconnecting all sources of power.
- The power supplies are built-in units and must be installed in a cabinet or room (condensation
 - free environment and indoor location) that is relatively free of conductive contaminants.
- The unit must be installed in an IP54 enclosure or cabinet in the final installation. CAUTION: FOR USE IN A CONTROLLED ENVIRONMENT.
- 2. Device description (Fig. 1)
- (1) Input terminal block connector
- Output terminal block connector (2)
- (3) DC voltage adjustment potentiometer
- DC OK LED (green) (4)
- (5) Universal mounting rail system

3. Mounting (Fig. 2)

The power supply unit can be mounted on 35mm DIN rails in accordance with EN60715. For vertical mounting, the device should be installed with input terminal block on the bottom.

Each device is delivered ready to install.

- Snap on the DIN rail as shown in Fig. 2:
 - 1. Tilt the unit slightly upwards and put it onto the DIN rail.
 - 2. Push downwards until stopped.
 - 3. Press against the bottom front side for locking.
 - 4. Shake the unit slightly to ensure that it is secured.

4. Dismounting (Fig. 3)

To uninstall, use a flat screwdriver to pull or slide down the latch as shown in Fig. 3. Then slide the PSU in the opposite direction, release the latch and pull out the PSU from the rail.

5. Connection

The terminal block connectors allow easy and fast wiring.

You can use flexible (stranded wire) or solid cables with cross sections:

| Electrical Connections and Wire Size | | | | |
|--------------------------------------|-------------|-----------|------|-------|
| | Strande | d / Solid | Tor | que |
| | mm² | AWG | N∙m | lb-in |
| Input | 0.823-8.365 | 18-8 | 1.01 | 9 |
| Output | 0.20-3.3 | 24-12 | 0.68 | 6 |

To secure reliable and shock proof connections, the stripping length should be 7mm (see Fig. 4 (1)). Please ensure that wires are fully inserted into the connecting terminals as shown in Fig. 4 (2). All wire strands must be fully inserted into the terminals with the screws securely fastened in order to ensure safety and maximum contact.

In accordance to EN60950 / UL60950, flexible cables require ferrules.

Use appropriate copper cables that are designed to sustain operating temperature of at least 60°C/75°C or more to fulfill UL requirements.

5.1. Input connection (Fig. 1, Fig. 5)

Use L, N and GND connections of input terminal connector (see Fig. 1 (1)) to establish the 100-240 VAC connection. Typical connection methods are shown in Figure 5.

The unit is protected with an internal fuse (not replaceable) at L pin and it has been tested and approved on 20A (UL) and 16A (IEC) branch circuits without additional protection device. An external protection device is only required if the supplying branch has an ampacity greater than above

The internal fuse must not be replaced by the user.

5.2. Output connection (Fig. 1 (2))

Use the "+" and "-" screw connections to establish the 48 VDC connection. The output provides 48 VDC. The output voltage can be adjusted from 44 to 56 VDC on the potentiometer. The green LED DC OK displays correct function of the output (Fig. 1 (4)). The device has a short circuit and overload protection and an overvoltage protection limited to 56-67.2 VDC.

5.3. Output characteristic curve

The device functions normal under operating line and load conditions. In the event of an overload (I₀ = 105-150%) the output voltage will start to droop until overload has been removed.

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

- 1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature
- 2. Above +40°C [104°F] (115VAC), the output capacity has to be reduced by 1.67% per degree Celsius increase in temperature
- Above +50°C [122°F] (230VAC), the output capacity has to be reduced by 2.5% per degree Celsius increase in temperature.

If the output capacity is not reduced when $T_{Amb} > 40^{\circ}C [104^{\circ}F]$ (115VAC) or $> 50^{\circ}C [122^{\circ}F]$ (230VAC), the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.



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RHINO PSV48-120S Power Supply

| | Technical Specifications |
|--|--|
| Input (AC) | |
| Nominal input voltage / frequency | 100-240 VAC / 50-60 Hz |
| Voltage range | 85-264 VAC |
| | 47-63 Hz |
| Frequency | |
| Nominal current | 2.2 A typ. @ 115VAC, 1.2 A typ. @ 230VAC |
| Inrush current limitation (+25°C, cold start) | 20A typ. @ 115VAC, 40A typ. @ 230VAC 20ms typ. @ 115VAC (100% load) |
| Mains buffering at nominal load (typ.) | 90ms typ. @ 230VAC (100% load) |
| Turn-on time | 200ms typ. @ 115VAC & 230VAC (100% load) |
| Internal fuse | T 4A / 250V (non-replaceable) |
| Leakage current | < 0.25 mA @ 264VAC |
| Output (DC) | |
| Nominal output voltage U _N / tolerance | 48VDC ± 2 % |
| Voltage adjustment range | 44-56 VDC (maximum power ≤ 120W) |
| Output current | 2.5 A |
| Derating | Refer to Fig. 6 -10°C to -20°C (2%/°C), > 40°C (1.67%/°C) @ 115VAC -10°C to -20°C (2%/°C), > 50°C (2.5%/°C) @ 230VAC |
| Startup with capacitive loads | Max. 4,000µF |
| Max. power dissipation idling / nominal load approx. | 1.21 W / 13.3 W |
| Efficiency at 100% load | 89.0% typ. @ 115VAC, 90.0% typ. @ 230VAC |
| PARD (20MHz) at 100% load | < 150 mVpp |
| Parallel operation | PSB60-REM20S / PSB60-REM40S or with ORing Diode |
| General Data | |
| Type of housing | SGCC (Case Cover) / Aluminum (Case Chassis) |
| LED signals | Green LED DC OK |
| MTBF | |
| | >700,000 hrs. as per Telcordia |
| Dimensions (L x W x H) | 123.6 mm x 40mm x 117.6 mm [4.87 in x 1.57 in x 4.63 in] (See www.AutomationDirect.com for complete engineering drawings.) |
| Weight | 0.54 kg [19 oz] |
| Connection method | Screw connection |
| Stripping length | 7mm [0.28 in] |
| Operating temperature (surrounding air temperature) | -20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6) |
| Storage temperature | -40°C to +85°C [-40°F to +185°F] |
| Humidity at +25°C, no condensation | 5 to 95% RH |
| Vibration | Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s ² (2G peak); 10min per cycle, 60min for X direction Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) |
| Shock | Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions |
| Pollution degree | 2 |
| Altitude (operating) | 2000m for industrial application 5000m for ITE application |
| Certification and Standards | Sodon for the approximation |
| Safety entry low voltage | SELV (EN60950) |
| Electrical safety (of information technology equipment) | UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 |
| Industrial control equipment | UL/C-UL listed to UL508 and CSA C22.2 No. 107.1-01 (File No. E190530) |
| CE | In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU |
| Component power supply for general use | EN61204-3 |
| | EN55024, EN61000-6-1, EN61000-6-2 |
| Immunity | (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) |
| Emission | EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4 |
| Voltage Sag Immunity | SEMI F47 – 0706 @ 200VAC |
| | |
| | |
| | LISTED E198298 |
| | Ind. Cont. Eq. |
| RoHS Compliant | Yes |
| Safety and Protection | |
| Transient surge voltage protection | Varistor |
| Current limitation at short-circuits approx. | I _{surge} = 105-150% or Po _{max} typically |
| Surge voltage protection against internal surge voltages | Yes |
| Isolation voltage: | |
| Input / output Input / PE | 3kVAC 2kVAC |
| Output / PE | 0.5 kVAC |
| | |
| Protection degree | IP20 |
| Protection degree | Class I with PE connection |