# **RHINO PSV Series DIN Rail Power**

# **Supplies**

#### Please note: \$US prices shown For current \$AUD visit www.directautomation.com.au

### **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
- · Three year warranty







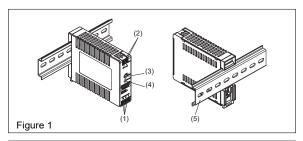
#### 120-480W Models

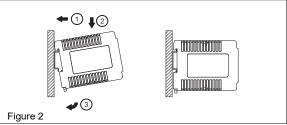
- Universal AC input voltage
- · Built-in constant current circuit for reactive loads
- Up to 89% efficiency
- Full power from -10°C to +50°C
- Compliance to SEMI F47 @ 200VAC voltage sag immunity
- · Metal housing
- UL/cUL 508
- UL/cUL Recognized 60950-1
- CE
- 3-year warranty

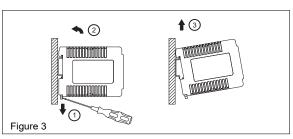


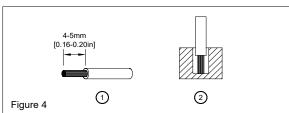
	PSV Series Specifications						
Part Number	Price	Drawing Link	Output Voltage	Maximum Output Power [W]	Efficiency [Typ @ 115VAC]		
<u>PSV5-15S</u>	\$37.00	PDF	5V	15	79%		
<u>PSV5-25S</u>	\$51.00	PDF	5V	25	82%		
<u>PSV12-50S</u>	\$51.00	PDF	12V	48	88%		
PSV24-30S	\$37.00	PDF	24V	30	87.5%		
PSV24-50S	\$48.50	PDF	24V	50	89%		
PSV24-100S	\$64.00	PDF	24V	91.2	87%		
PSV24-120S	\$60.00	PDF	24V	120	85%		
PSV24-240S	\$87.00	PDF	24V	240	88%		
PSV24-480S	\$154.00	PDF	24V	480	85%		
PSV48-120S	\$60.00	PDF	48V	120	89%		

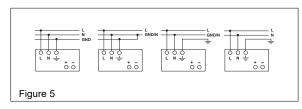
## **RHINO PSV5-15S Power Supply**

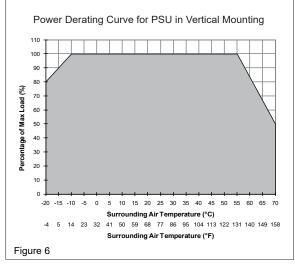












### READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

#### 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)

- (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				
	Strande	d / Solid	Tor	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 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 ( $I_0 = 110-150\%$ ). 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:

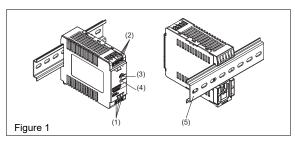
- 1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- 2. Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

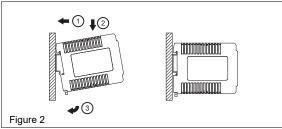
If the output capacity is not reduced when  $T_{Amb} > 55^{\circ}C$  [131'F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

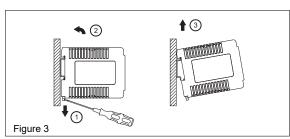
# **RHINO PSV5-15S Power Supply**

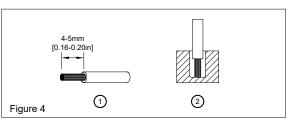
	Tacketed One-Westlers
4 (40)	Technical Specifications
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 0.5 A @ 115VAC, < 0.3 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 65A @ 230VAC
Mains 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
Output (DC)	
Nominal output voltage U <sub>N</sub> / tolerance	5VDC ± 2 %
Voltage adjustment range	5-5.5 VDC (maximum power ≤ 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. power dissipation idling / nominal load approx.	Max. 3,000μF 0.3 W / 4 W
Efficiency at 100% load	78.0% typ. @ 115VAC, 79.0% typ. @ 230VAC
PARD (20MHz) at 100% load	76.0 % typ. @ 115VAC, 73.0 % typ. @ 250VAC <75 mVpp
General Data	(10 ширр
	Plastia /PC\ analogod
Type of housing	Plastic (PC), enclosed
LED signals MTBF	Green LED DC OK
	> 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  Vibration	5 to 95% RH  Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s²; 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	(ENG1000-4-2, 3, 4, 3, 0, 8, 11) EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4
	OPET
RoHS Compliant	Yes
Safety and Protection	
Surge voltage protection against internal surge voltages	No
Isolation voltage:	2000
Input / output Input / PE	3kVAC 3kVAC
Output / PE	0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection
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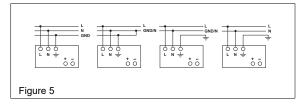
## **RHINO PSV5-25S Power Supply**

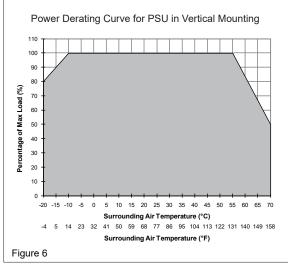












### READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

#### 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. 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.
- 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	0.32-3.3	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  $60^{\circ}\text{C}/75^{\circ}\text{C}$  for USA or at least  $90^{\circ}\text{C}$  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 ( $l_0 = 110-160\%$ ). 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:

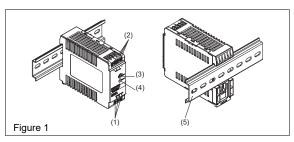
- 1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

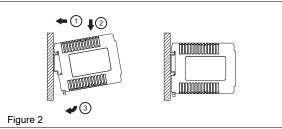
If the output capacity is not reduced when  $T_{Amb} > 55^{\circ}C$  [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

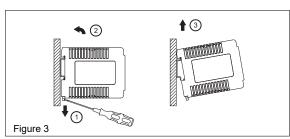
# **RHINO PSV5-25S Power Supply**

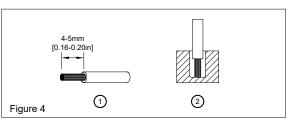
	Technical Specifications
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 0.8 A @ 115VAC, < 0.5 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 60A @ 230VAC
Mains buffering at nominal load (typ.)	20ms 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	20A B- or 10A C- characteristic circuit breaker
Leakage current	< 1mA @ 240VAC
Output (DC)	CHIRT & ELOVIDO
Nominal output voltage U <sub>N</sub> / tolerance	5VDC ± 2 %
Voltage adjustment range	5-5.5 VDC (maximum power ≤ 25W)
Nominal current	5-0.0 ¥DO (IIIAAIIIIIIII powei ≤ 20W)
	Refer to Fig. 6
Derating	-10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation
Startup with capacitive loads	Мах. 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
	Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s²; displacement of 0.35 mm, 60min per axis for all X, Y, Z
Vibration	directions  Non-Operations IECC00000 2.6 Pendam Ella to E00Lla (2000 Creek) 20 min per quie for all V. V. 7 directions
	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
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,
3, 1, 7	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	(ENG1000-4-2, 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	
Surge voltage protection against internal surge voltages	No
Isolation voltage:	INU
Input / output	3kVAC
Input / PE	3kVAC
Output / PE	0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

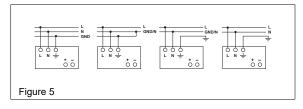
## RHINO PSV12-50S Power Supply

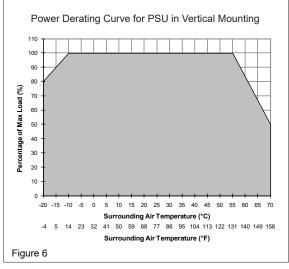












### READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

#### 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. 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.
- 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	0.32-3.3	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  $60^{\circ}\text{C}/75^{\circ}\text{C}$  for USA or at least  $90^{\circ}\text{C}$  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 ( $I_0 = 110-150\%$ ). 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:

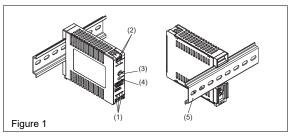
- 1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase
  in temperature.

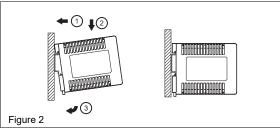
If the output capacity is not reduced when  $T_{Amb} > 55^{\circ}C$  [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

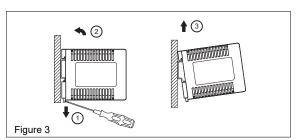
# **RHINO PSV12-50S Power Supply**

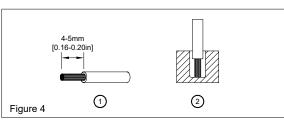
Invest (40)	Technical Specifications
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 1.0 A @ 115VAC, < 0.6 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 60A @ 230VAC
Mains buffering at nominal 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)	VIIII 0 2 10 11 0
Nominal output voltage U <sub>N</sub> / tolerance	12VDC ± 2 %
Voltage adjustment range	12-15 VDC (maximum power ≤ 48W)
Nominal current	4A
	Refer to Fig. 6
Derating	-10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation
Startup with capacitive loads	Мах. 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	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
APhasPas	Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s²; 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	0511/5100000
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 SPET CINC
· ·	LISTED
	Ind. Cont. Eq.
RoHS Compliant	Yes
Safety and Protection	
Surge voltage protection against internal surge voltages	No
Isolation voltage:	914/4.0
Input / output Input / PE	3kVAC 3kVAC
Output / PE	0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection
•	,

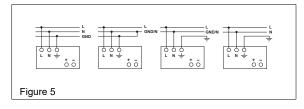
## **RHINO PSV24-30S Power Supply**

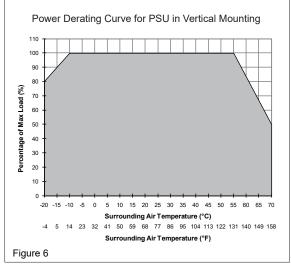












### READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

#### 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
- (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					
	Strande	d / Solid	Tor	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  $60^{\circ}\text{C}/75^{\circ}\text{C}$  for USA or at least  $90^{\circ}\text{C}$  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

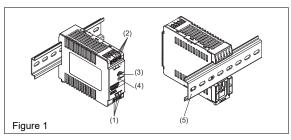
- At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

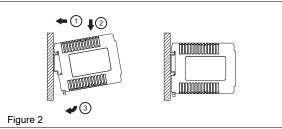
If the output capacity is not reduced when  $T_{Amb} > 55^{\circ}C$  [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

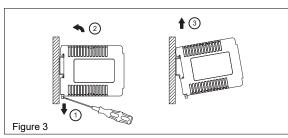
# **RHINO PSV24-30S Power Supply**

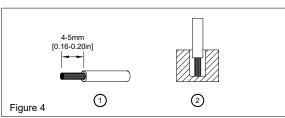
4 (40)	Technical Specifications
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 0.8 A @ 115VAC, < 0.4 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 60A @ 230VAC
Mains buffering at nominal load (typ.)	20ms typ. @ 115VAC (100% load) 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 <sub>N</sub> / 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°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
Vibration	Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s²; 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	0514 (5100000)
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
	C 3PET C 10°
· · · · · · · · · · · · · · · · · · ·	LISTED E198298
	Ind. Cont. Eq.
RoHS Compliant	Yes
Safety and Protection	
Surge voltage protection against internal surge voltages	No
Isolation voltage:	ONAIG
Input / output Input / PE	3kVAC 3kVAC
Output / PE	0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

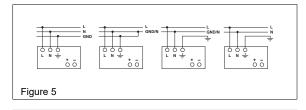
## RHINO PSV24-50S Power Supply

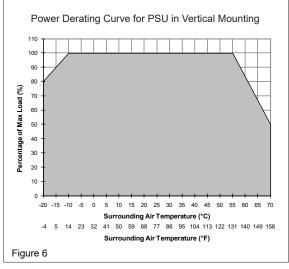












### READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

#### 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. 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.
- 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	0.32-3.3	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  $60^{\circ}\text{C}/75^{\circ}\text{C}$  for USA or at least  $90^{\circ}\text{C}$  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 ( $I_0 = 110-150\%$ ). 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

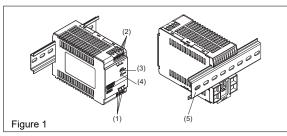
- At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

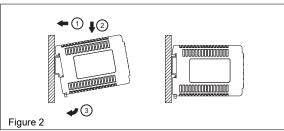
If the output capacity is not reduced when  $T_{Amb} > 55^{\circ}C$  [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

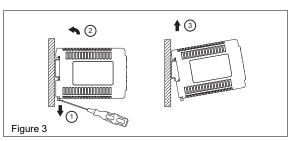
# **RHINO PSV24-50S Power Supply**

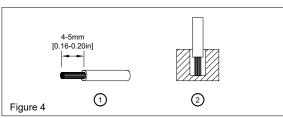
Imput (AC)		
Number of part of voltage / Requency		Technical Specifications
September   Sept	Input (AC)	
Finesparts    A # 68 Hz	Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Invast current   Invastino (125°C, cold start)   C. 258 de 1159AC, c. 105 A. D. 2020AC	Voltage range	85-264 VAC
Financial current   limitation (+25°C, cold start)	Frequency	47-63 Hz
Mains buffering at nominal load (typ.)    Some Sp. 0g. 2000ACC (100% load)   Some Sp. 0g. 2000ACC (100% load)   Some Sp. 0g. 2000ACC (100% load)   Internal truse	Nominal current	< 1.0 A @ 115VAC, < 0.6 A @ 230VAC
Some Syp. @ 230MAC (100% load)	Inrush current limitation (+25°C, cold start)	,
Turn-on time	Mains buffering at nominal load (tvp.)	20ms typ. @ 115VAC (100% load)
Recommended backup protection	***************************************	
Recommended backup protection		
Leakage current		
Output (DC)         Author doubt voltage U <sub>N</sub> / Iblerance         24 VDC ± 2 %           Voltage adjustment range         24 28 VDC (maximum power ≤ 50W)           Numbral current         2.1 A           Deating         1-0°C to -20°C (2%°C) > 55°C (3.38%°C) in vertical orientation           Sartup with zapacitive loads         Max 3.000pf           Max power dissipation (illing / nominal load approx.         Max 3.000pf           Efficiency at 100% load         86.0% by -2 ft/VAC, 86.0% by .0° 230VAC           PARD (20MHz) at +25°C, 100% load         86.0% by -2 ft/VAC, 86.0% by .0° 230VAC           Parallel operation         PS860-REMOS / PS869-REMADS or with ORing Diode           General Data         75 month of the properties of the proper		
Nominal output voltage U <sub>IV</sub> folerance	*	☐ CHILD SE ZHOVAC
Voltage adjustment range         24-28 VDC (maximum power ≤ 50W)           Nominal ournet         2.1 A           Berating         -10°C to -20°C (2°%C)C, > 55°C (3.3%%C) in vertical orientation           Starting with capacitive loads         Max 3,000µF           Max, power dissipation idling / nominal load approx.         86.0% byp. © 115VAC, 88.0% byp. © 230VAC           Efficiency at 100% load         86.0% byp. © 115VAC, 88.0% byp. © 230VAC           PARAID (20MHz) at 25°C, 100% load         2.5 KBO, 25% byp. © 230VAC           Parallel operation         PS860-REM20S / PS860-REM40S or with ORing Diode           General Data         7 bype of housing         Plastic (PC), enclosed           LED signals         Gene LED DC OK           MIEF         > 350.0000 firs, as per Teloordia           Dimensions (1, 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 in the properature (surrounding air temperature)         9.5 km x 1.8 in x 3.52 in] (See www. AutomationDirect.com for complete engineering in the properature (surrounding air temperature)         4.5 mm (1.96 to 1.95 fig. (Refer to Fig. 6)           Stripping length         4.5 mm (2.96 to 1.70°C	, , ,	24\/\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Nominal current	, , ,	
Derating	• ,	
Defaulty		
Max power dissipation idling / nominal load approx.  Biliciency at 100% load  86.0% typ, @ 115VAC, 88.0% typ. @ 230VAC  2-75 m/ypp  Parallel operation  PSB60-REMZOS / PSB60-REMANOS or with ORing Diode  General Data  Type of housing  Plastic (PC), enclosed  LED signals  Green LED DC OK  MTBF  75mm x 30mm x 89.5 mm [2.95 in x 1.18 in x 3.52 in] (See www.AutorationDirect.com for complete engineering of the signal parallel operation o	Derating	
Efficiency at 100% load  86.0% typ. © 115VAC, 88.0% typ. © 230VAC  275 mVpp  Parallel operation  PS860-REM2OS / PS860-REM4OS or with ORing Diode  General Data  Type of housing  Plastic (PC), enclosed  LED signals  Green LED DC OK  MTBF  So \$50,000 hrs. as per Telecordia  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 of the stripping length  Operating temperature (surrounding air temperature)  Storage 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 +186°F]  Humidity at +25°C, no condensation  Operating: IEC600068-2-6, Sine Wave: 10Hz to 500Hz @ 19 6m/8*, displacement of 0.35 mm, 60min per axis for a directions  Non-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: 10G for a duration of 11ms, shock for addresion (X axis)  Non-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: 10G for a duration of 11ms, shock for addresion (X axis)  Non-Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for addresion (X axis)  Non-Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for addresion (X axis)  Non-Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for addresion (X axis)  Non-Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for addresion (X axis)  Non-Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shocks for each 3 direction (X axis)  Non-Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shocks for each 3 direction (X axis)  Non-Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shocks for each 3 direction (X axis)  Non-Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shocks for each 3 direction (X axi	Startup with capacitive loads	Max. 3,000μF
PARD (20MHz) at +25°C, 100% load	Max. power dissipation idling / nominal load approx.	0.5 W / 7W
Parallel operation  General Data  Type of housing  Plastic (PC), enclosed  ED signals  Green LED DC OK  MTBF  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 of the signal of the si	Efficiency at 100% load	86.0% typ. @ 115VAC, 88.0% typ. @ 230VAC
Plastic (PC), enclosed   Plastic (PC), enclosed	PARD (20MHz) at +25°C, 100% load	< 75 mVpp
Type of housing Plastic (PC), enclosed LED signals Green LED DC NK MTBF 355,0000 hrs. as per Telcordia Dimensions (t 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 of the properties of the proper	Parallel operation	PSB60-REM20S / PSB60-REM40S or with ORing Diode
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.AutomatioDirect.com for complete engineering weight  Connection method  Screw connection  Stripping length  4-5mm [0.16-0.20 in]  Operating temperature (surrounding air temperature)  -20°C to +70°C (1-4°F to +185°F) (Refer to Fig. 6)  Stroage temperature  -20°C to +85°C [-40°F to +185°F]  Humidity at +25°C, no condensation  Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz ② 19 6myS², displacement of 0.35 mm, 60min per axis for a directions  Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z direction  Non-Operating: IEC60068-2-27, Half Sine Wave: 106 for a duration of 11ms, shock for 1 direction (X axis)  Non-Operating: IEC60068-2-27, Half Sine Wave: 506 for a duration of 11ms, shock for each 3 direction  Pollution degree  2 Alfitude (operating)  Certification and Standards  Safety entry low voltage  Electrical safety (of information technology equipment)  UL/C-UL recognized to UL60950-1 and CSA C222 No. 60950-1 (File No. E198298), CB scheme to IEC60085-2 (PNG00950)  UL/C-UL listed to UL508 and CSA C222 No. 107.1-01 (File No. E197592)  Class 2 power supply for general use  Inmunity  Inmunity  Ensiston  ENS5032, ENS5011, ENS1000-6-3, EN61000-6-4  INSTED  ENS5032, ENS5011, ENS1000-3-3, EN61000-6-3  ENS5032, ENS5011, ENS1000-3-3, EN61000-6-3  ENS5032, ENS5011, ENS1000-3-3, EN61000-6-4	General Data	
Street   S	Type of housing	Plastic (PC), enclosed
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 of the properties of t	LED signals	Green LED DC OK
Weight O.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 [-40°F to +186°F] (Refer to Fig. 6) Storage temperature (surrounding air temperature) -20°C to +85°C [-40°F to +186°F] Humidity at +25°C, no condensation  To sos 9% RH  Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s², displacement of 0.35 mm, 60min per axis for a directions Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z direction 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: 10G for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for ach 3 direction Pollution degree 2 altitude (operating)  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 IEC6095 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 EN55032, EN55032, EN55011, EN61000-6-3, EN61000-6-4  EN55032, EN55031, EN55031, EN61000-6-3, EN61000-6-4	MTBF	> 350,000 hrs. as per Telcordia
Connection method  Screw connection  Stripping length  4-5mm [0.16-0.20 in]  Operating temperature (surrounding air temperature)  -20°C to +70°C [-44°F to +158°F] [Refer to Fig. 6)  Storage temperature  -40°C to +85°C [-40°F to +158°F]  Humidity at +25°C, no condensation  5 to 95% RH  Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz (20 9 Grms); displacement of 0.35 mm, 60min per axis for a directions  Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (20 9 Grms); 20 min. per axis for a directions  Non-Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shocks for 1 direction (X axis)  Non-Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shocks for each 3 direction  Pollution degree  2 Altitude (operating)  Certification and Standards  Safety entry low voltage  Safety entry low voltage  Set (EN60950)  UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC6095  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)  Component power supply for general use  EN55032, EN55032, EN55011, EN61000-6-2, 3, 4, 5, 6, 8, 11)  Emission  EN55032, EN55031, EN61000-6-3, EN61000-6-4	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.)
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  Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz (2.90 grms); 20 min. per axis for at directions Non-Operating: IEC60068-2-6, Random: SHz to 500Hz (2.09 grms); 20 min. per axis for all X, Y, Z direction  Non-Operating: IEC60068-2-27, Half Sine Wave: 10F to 500Hz (2.09 grms); 20 min. per axis for all X, Y, Z direction  Shock  Operating: IEC60068-2-27, Half Sine Wave: 10F to 500Hz (2.09 grms); 20 min. per axis for all X, Y, Z direction Operating: IEC60068-2-27, Half Sine Wave: 50G 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, 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 direction  Certification and Standards  Safety entry low voltage  SELV (EN60950)  UL/C-UL recognized to UL60950-1 and CSA C222 No. 60950-1 (File No. E198298), CB scheme to IEC6095 Limited Power Source (LPS) Industrial control equipment  UL/C-UL listed to UL508 and CSA C222 No. 107.1-01 (File No. E197592)  Class 2 power supply  UL/C-UL listed to UL508 and CSA C222 No. 107.1-01 (File No. E197592)  CE  In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU  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	Weight	0.18 kg [6.3 oz]
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  Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s², displacement of 0.35 mm, 60min per axis for a directions  Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z direction  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: 90G for a duration of 11ms, shocks for each 3 direction  Pollution degree  2 Altitude (operating)  Certification and Standards  Safety entry low voltage  SELV (EN60950)  UL/C-UL recognized to UL60950-1 and CSA C222 No. 60950-1 (File No. E198298), CB scheme to IEC6095  Limited Power Source (LPS)  Industrial control equipment  UL/C-UL listed to UL508 and CSA C222 No.107.1-01 (File No. E197592)  Class 2 power supply  UL/C-UL listed to UL508 and CSA C222 No.107.1-01 (File No. E197592)  UL/C-UL listed to UL508 and CSA C222 No.107.1-01 (File No. E197592)  In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU  Emission  EN55024, EN61000-6-1, EN61000-6-2  (EN61000-4-2, 3, 4, 5, 6, 8, 11)  Emission  EN55032, EN55011, EN61000-3-3, EN61000-6-4	Connection method	Screw connection
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/s², displacement of 0.35 mm, 60min per axis for a directions Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z direction 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 direction Pollution degree  Altitude (operating)  Certification and Standards Safety entry low voltage  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 IEC6095 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  EN51024-3  EN55032, EN55011, EN61000-6-3, EN61000-6-4  3PET  (EN61000-4-2, 3, 4, 5, 6, 8, 11)  Emission  En55032, EN55011, EN61000-6-3, EN61000-6-4	Stripping length	4-5mm [0.16-0.20 in]
Humidity at +25°C, no condensation    Sto 95% RH	Operating temperature (surrounding air temperature)	-20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6)
Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s²; displacement of 0.35 mm, 60min per axis for a directions Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all IX, Y, Z direction 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 direction Pollution degree Altitude (operating)  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 IEC6095 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  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	Storage temperature	-40°C to +85°C [-40°F to +185°F]
Vibration  Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z direction  Operating: IEC60068-2-27, Half Sine Wave: 106 for a duration of 11ms, 3 shocks for each 3 direction  Pollution degree  2  Altitude (operating)  Certification and Standards  Safety entry low voltage  Electrical safety (of information technology equipment)  Industrial control equipment  UL/C-UL recognized to UL60950-1 and CSA C222 No. 60950-1 (File No. E198298), CB scheme to IEC6095  Limited Power Source (LPS)  Industrial control equipment  UL/C-UL listed to UL508 and CSA C222 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  EN55024, EN61000-6-1, EN61000-6-2  [EN55032, EN55011, EN61000-6-3, EN61000-6-4]  SPET  COMBON	Humidity at +25°C, no condensation	5 to 95% RH
Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z direction 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 direction Pollution degree Altitude (operating)  Certification and Standards Safety entry low voltage 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 IEC6095 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 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 Component power supply for general use  EN61204-3  Immunity  Ensistion  Non-Operating: IEC60068-2-27, Half Sine Wave: 106 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 506 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 506 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 506 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 506 for a duration of 11ms, shock for a duration of 11ms, shock for a duration of 11ms, shock for a for a duration of 11ms, shock for a duration of 11ms, shock for a light for a duration of 11ms, shock for a duration of 11ms, 3 shock for		Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s²; displacement of 0.35 mm, 60min per axis for all X, Y, Z
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 direction 2  Altitude (operating)  Certification and Standards  Safety entry low voltage  Electrical safety (of information technology equipment)  Industrial control equipment  UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC6095 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  (EN61000-4-2, 3, 4, 5, 6, 8, 11)  Emission  EN55032, EN55011, EN61000-6-3, EN61000-6-4	Vibration	
Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 direction 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 IEC6095 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, EN61000-6-3, EN61000-6-4	Charle	Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis)
Altitude (operating)  Certification and Standards  Safety entry low voltage  Electrical safety (of information technology equipment)  Industrial control equipment  Class 2 power supply  Cle  In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU  Component power supply for general use  EN55024, EN61000-6-1, EN61000-6-2  (EN61000-4-2, 3, 4, 5, 6, 8, 11)  Emission  EN55032, EN55011, EN61000-6-3, EN61000-6-4		Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions
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 IEC6095 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, EN61000-6-3, EN61000-6-4	•	
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 IEC6095 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, EN61000-6-3, EN61000-6-4		
UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC6095   Limited Power Source (LPS)		
Limited Power Source (LPS)   Industrial control equipment	Safety entry low voltage	
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	Electrical safety (of information technology equipment)	
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  (EN61000-4-2, 3, 4, 5, 6, 8, 11)  Emission  EN55032, EN55011, EN61000-3-3, EN61000-6-4	Industrial control equipment	
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, EN61000-6-4  CE CULUSTED E197892  LISTED E198298		
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, EN61000-6-4  EN55032, EN55011, EN61000-6-3, EN61000-6-4  EN55032, EN55011, EN61000-6-3, EN61000-6-4	1 112	,
EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11)  Emission  EN55032, EN55011, EN61000-3-3, EN61000-6-4  C C U USEP197892 USEP198298		
Emission  EN55032, EN55011, EN61000-3-3, EN61000-6-4  C  C  U  US  E197592  US  E198298	, , , , , ,	EN55024, EN61000-6-1, EN61000-6-2
C C CUL E197592 C SUS E198298	·	
C C CUL EUS US E198298		
USTED E198298		SPET SPET
USTED E198298	<u> </u>	c (UL) E197592 C <b>7 LL</b> US
Ind. Cont. Fo.	_ `	LISTED <i>E198298</i>
· • • • • • • • • • • • • • • • • • • •		Ind. Cont. Eq.
RoHS Compliant Yes	·	Yes
Safety and Protection		
Surge voltage protection against internal surge voltages No		No
Isolation voltage: Input / output 3KVAC		3P/VC
Input / output 3kVAC Input / PE 3kVAC	Input / PE	
Output / PE 0.5 kVAC		
Protection degree IP20	Protection degree	IP20
Safety class Class I with PE connection	Safety class	Class I with PE connection

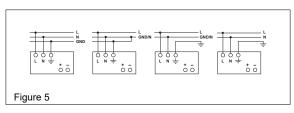
## RHINO PSV24-100S Power Supply

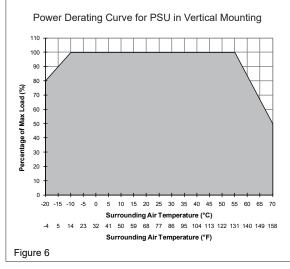












### READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

#### 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 >25mm 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)

- (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.

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	Toi	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  $60^{\circ}\text{C}/75^{\circ}\text{C}$  for USA or at least  $90^{\circ}\text{C}$  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 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 ( $l_0 = 110-150\%$ ). 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:

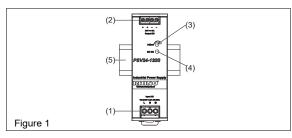
- 1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- 2. Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

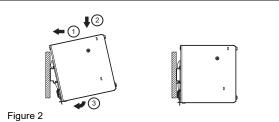
If the output capacity is not reduced when  $T_{Amb} > 55^{\circ}C$  [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

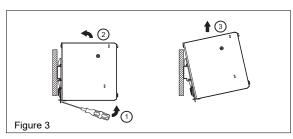
# **RHINO PSV24-100S Power Supply**

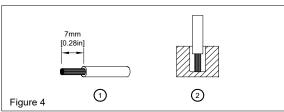
Technical Specifications	
Nominal input voltage / frequency $ 85-264  \text{VAC} / 50-60  \text{Hz}  $ Voltage range $ 85-264  \text{VAC}  $ Frequency $ 47-63  \text{Hz}  $ Nominal current $ < 1.2  \text{A} \otimes 115  \text{VAC} , < 0.6  \text{A} \otimes 230  \text{VAC}  $ Inrush current limitation $(+25^{\circ}\text{C},  \text{cold start}) $ $ < 35A \otimes 115  \text{VAC} , < 6.6  \text{A} \otimes 230  \text{VAC}  $ Amins buffering at nominal load $(\text{typ.}) $ $ 25  \text{ms typ.}  \otimes 115  \text{VAC} , (100\%  \text{load}) $ Turn-on time $ < 3s \otimes 115  \text{VAC} , < 1.5  \text{s} \otimes 230  \text{VAC}  $ (100% load) $ 10  \text{ternal fuse}  $ $ 13.15  \text{A} / 250  \text{V}  \text{(non-replaceable)}  $ Recommended backup protection $ 20A  \text{B- or } 10A  \text{C- characteristic circuit breaker}  $ Leakage current $ < 1  \text{mA} \otimes 240  \text{VAC}  $ $ \frac{\textbf{Output (DC)}}{\textbf{Dutput (DC)}}  $ Nominal output voltage $10  \text{V}  \text{Voltage}  \text{adjustment range}  $ $ 22-24  \text{VDC}  \text{(maximum power}  \text{S}  9.12  \text{W})  $ Nominal current $ 3.8  \text{A}  \text{Refer to Fig. 6}  $ Perating $ -10^{\circ}\text{C to } -20^{\circ}\text{C}  \text{(2\%/°C)},  \text{S}  5^{\circ}\text{C}  \text{(3.33\%/°C)}  \text{in vertical orientation}  $ Startup with capacitive loads $ \frac{\text{Max. power dissipation idling / nominal load approx.} }{\text{Max. power dissipation idling / nominal load approx.} }  $ $ \frac{\text{PARD (20MHz) at } +25^{\circ}\text{C},  100\%  \text{load} }{\text{PSB60-REM20S / PSB60-REM40S or with ORing Diode}  $	
$Voltage range & 85-264  VAC$ $Frequency & 47-63  Hz$ $Nominal current & < 1.2  A @ 115  VAC, < 0.6  A @ 230  VAC$ $Inrush current limitation (+25^{\circ}C, cold start) & < 35A @ 115  VAC, < 60A @ 230  VAC$ $25ms  typ. @ 115  VAC, (100\%  load) & 25ms  typ. @ 115  VAC (100\%  load) & 25ms  typ. @ 230  VAC (100\%  load) & 23ms  typ. @ 230  VAC (100\%  load) & 27ms  typ. @ 2300  VAC (100\%  load) & 27ms  typ. @ 2300  VAC (100\%  load) & 27ms  typ. @ 2300  VAC (100\%$	
Frequency  Nominal current    A7-63 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)         Turn-on time       < 3s @ 115VAC, < 1.5 s @ 230VAC (100% load)	
Main's burlering at nominal load (typ.)   50ms (yp. @ 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 <sub>N</sub> / tolerance   24VDC ± 2 %     Voltage adjustment range   22-24 VDC (maximum power ≤ 91.2 W)     Nominal current   3.8 A     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-REM40S or with ORing Diode	
Turn-on time	
Recommended backup protection 20A B- or 10A C- characteristic circuit breaker Leakage current $<1mA @ 240VAC$ **Output (DC)**  Nominal output voltage $U_N$ / tolerance 24VDC $\pm 2 \%$ Voltage adjustment range 22-24 VDC (maximum power $\le 91.2$ W)  Nominal current 3.8 A  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.  Efficiency at 100% load 87.0% typ. @ 115VAC, 89.0% typ. @ 230VAC  PARD (20MHz) at +25°C, 100% load PSB60-REM20S / PSB60-REM40S or with ORing Diode	
Leakage current  Output (DC) Nominal output voltage U <sub>N</sub> / tolerance Voltage adjustment range Voltage adjustment range 22-24 VDC (maximum power ≤ 91.2 W) Nominal current 3.8 A Perating 1-10°C to -20°C (2%/°C), >55°C (3.33%/°C) in vertical orientation Startup with capacitive loads Max. power dissipation idling / nominal load approx. Efficiency at 100% load PARD (20MHz) at +25°C, 100% load PSB60-REM20S / PSB60-REM40S or with ORing Diode	
Output (DC)         Nominal output voltage $U_N$ / tolerance $24\text{VDC} \pm 2\%$ Voltage adjustment range $22\text{-}24\text{ VDC}$ (maximum power ≤ 91.2 W)         Nominal current $3.8 \text{ A}$ 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. $0.4 \text{ W} / 10\text{W}$ Efficiency at 100% load       87.0% typ. @ 115VAC, 89.0% typ. @ 230VAC         PARD (20MHz) at +25°C, 100% load       < 75 mVpp	
Nominal output voltage $\mathrm{U_N}/\mathrm{tolerance}$ 24VDC $\pm 2~\%$ Voltage adjustment range 22-24 VDC (maximum power $\leq 91.2~\mathrm{W})$ Nominal current 3.8 A  Derating -10°C to -20°C (2%/°C), >55°C (3.33%/°C) in vertical orientation Startup with capacitive loads Max. 3,000 $\mu$ F  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	
Voltage adjustment range       22-24 VDC (maximum power ≤ 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	
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	
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.  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	
Defaultig  -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.  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	
Startup with capacitive loads  Max. 3,000µF  Max. power dissipation idling / nominal load approx.  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	
Max. power dissipation idling / nominal load approx.  O.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	
Efficiency at 100% load         87.0% typ. @ 115VAC, 89.0% typ. @ 230VAC           PARD (20MHz) at +25°C, 100% load         < 75 mVpp	
PARD (20MHz) at +25°C, 100% load <75 mVpp Parallel operation PSB60-REM20S / PSB60-REM40S or with ORing Diode	
Parallel operation PSB60-REM20S / PSB60-REM40S or with ORing Diode	
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 45mm x 100mm [2.95 in x 1.77 in x 3.94 in] (See www.AutomationDirect.com for complete	e engineering drawings.)
Weight 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	
Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s²; displacement of 0.35 mm, 60mi Vibration	in 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 2	X, Y, Z directions
Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 dire	ection (X axis)
NOTE-Operating. Tecouode-2-27, maii Sine wave, bud ful a duration of thins, b shocks for e	each 3 directions
Pollution degree 2	
Altitude (operating) 2000m  Certification and Standards	
III /C III recognized to III 60050.1 and CCA C22.2 No. 60050.1 /Eilo No. E100200\ CP coho	me to IFC60950-1.
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 2014/3	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	
3PFT ———	
C E c UL bis services C The US	
LISTED E198298	
Ind. Cont. Eq.	
RoHS Compliant Yes	
Safety and Protection	
Surge voltage protection against internal surge voltages No	
Isolation voltage: Input / output 3kVAC	
Input / PE 1.5 kVAC	
Output / PE 0.5 kVAC	
Protection degree IP20	
Safety class Class I with PE connection	

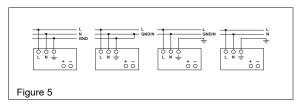
## RHINO PSV24-120S Power Supply

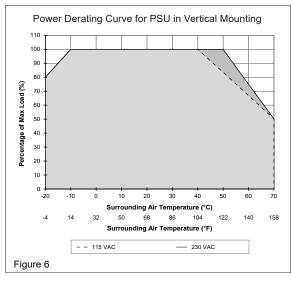












#### READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. **KEEP FOR FUTURE REFERENCE.**

#### 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
- Output terminal block connector
- DC voltage adjustment potentiometer
- DC OK LED (green)
- 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.

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	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

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  $(I_0 = 105-150\%)$  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  $-10^{\circ}$ C to  $-20^{\circ}$ C [ $14^{\circ}$ F to  $-4^{\circ}$ F], the output capacity must be reduced by 2% per °C temperature increase.
- 2. Above +40°C [104°F] (115VAC), the output capacity must be reduced by 1.67% per degree Celsius
- Above +50°C [122°F] (230VAC), the output capacity must be reduced by 2.5% per degree Celsius temperature increase.

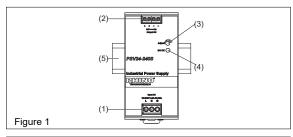
If the output capacity is not reduced when  $T_{Amb} > 40^{\circ}C$  (115VAC) or  $> 50^{\circ}C$  (230VAC), the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

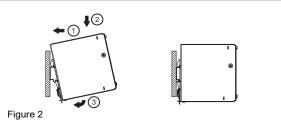
# **RHINO PSV24-120S Power Supply**

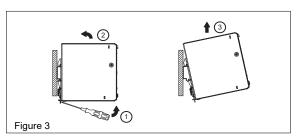
	Technical Specifications
Input (AC)	Technical Specifications
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	2.2 A typ. @ 115VAC, 1.2 A typ. @ 230VAC
Inrush current limitation (+25°C, cold start)	20A typ. @ 115VAC, 40A typ. @ 230VAC
Mains buffering at nominal load (typ.)	20ms typ. @ 115VAC (100% load)
Turn-on time	90ms typ. @ 230VAC (100% load) 200ms typ. @ 115VAC & 230VAC (100% load)
Internal fuse	T 4A / 250V (non-replaceable)
Leakage current	< 0.25 mA @ 264VAC
Output (DC)	< 0.23 IIA @ 204VAC
Nominal output voltage U <sub>N</sub> / tolerance	24VDC ± 2 %
Voltage adjustment range	22-28 VDC (maximum power ≤ 120W)
Output current	22-20 VDC (Haxiilidiii powei ≤ 120VV) 5A
Output current	Refer to Fig. 6
Derating	-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/s² (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
Certification and Standards	5000m for ITE application
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
	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
	C SUS E198298  LISTED E19.592  LISTED E19.8298
RoHS Compliant	Yes
Safety and Protection	Marieha
Transient surge voltage protection	Varistor  L = 105-150% or Po typically
Current limitation at short-circuits approx.	l <sub>surge</sub> = 105-150% or Po <sub>max</sub> typically
Surge voltage protection against internal surge voltages Isolation voltage:	Yes
Input / output	3kVAC
Input / PE	2kVAC
Output / PE	0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

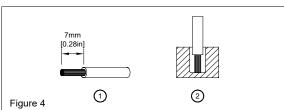
www.automationdirect.com

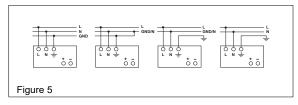
## **RHINO PSV24-240S Power Supply**

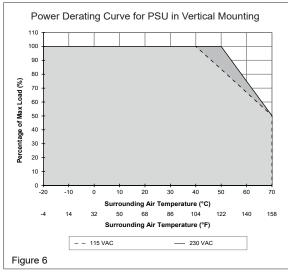












### READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

#### 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:

- 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  $60^{\circ}\text{C}/75^{\circ}\text{C}$  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 ( $I_0 = 105-150\%$ ) 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. 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.

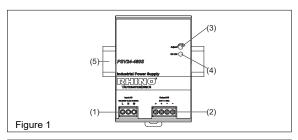
If the output capacity is not reduced when  $T_{Amb} > 40^{\circ}C$  [ $104^{\circ}F$ ] (115VAC) or  $> 50^{\circ}C$  [ $122^{\circ}F$ ] (230VAC), the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down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

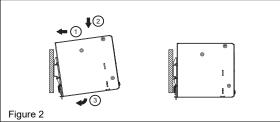
# RHINO PSV24-240S Power Supply

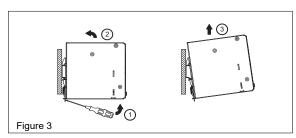
	117
	Technical Specifications
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	2.8 A typ. @ 115VAC, 1.4 A typ. @ 230VAC
Inrush current limitation (+25°C, cold start)	20A typ. @ 115VAC, 40A typ. @ 230VAC
	10ms typ. @ 115VAC (100% load)
Mains buffering at nominal load (typ.)	16ms typ. @ 230VAC (100% load)
Turn-on time	1000ms typ. @ 115VAC & 230VAC (100% load)
Internal fuse	T 6.3 A / 250V (non-replaceable)
Leakage current	< 1mA @ 264VAC
Output (DC)	
Nominal output voltage U <sub>N</sub> / tolerance	24VDC ± 2 %
Voltage adjustment range	22-28 VDC (maximum power ≤ 240W)
• ,	
Output current	10A Refer to Fig. 6
Derating	> 40°C (1.67%/°C) @ 115VAC (90-229 VAC)
Bording	> 50°C (2.5%/°C) @ 230VAC (230-264 VAC)
Startup with capacitive loads	Max. 8,000µF
	4.62 W @ 115VAC (0% load)
Many manufactuation tillian (t) bed even	2.14 W @ 230VAC (0% load)
Max. power dissipation idling / nominal load approx.	31.53 W @ 115VAC (100% load)
	25.44 W @ 230VAC (100% load)
Efficiency at 100% load	88.0% typ. @ 115VAC, 90.0% typ. @ 230VAC
PARD (20MHz) at 100% load	< 120mVpp @ -10°C to +70°C
,	< 240mVpp @ -20°C to -10°C
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 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/s² (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
Observation	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	05111/5100503
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
	4ZW4
	LISTED <i>E198298</i>
	Ind. Cont. Eq.
RoHS Compliant	Yes
Safety and Protection	
Transient surge voltage protection	Varistor
	Varistor I <sub>suroe</sub> = 105-150% or Po <sub>max</sub> typically
Current limitation at short-circuits approx.	
Surge voltage protection against internal surge voltages	Yes
Isolation voltage:	אואופ
Input / output	3kVAC 2kVAC
	3kVAC 2kVAC 0.5 kVAC
Input / output Input / PE Output / PE	2kVAC 0.5 kVAC
Input / output Input / PE	2kVAC

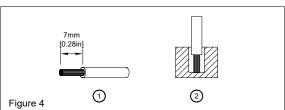
1st Edition, 01/2019 www.automationdirect.com

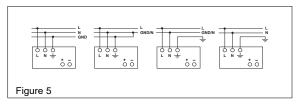
## RHINO PSV24-480S Power Supply

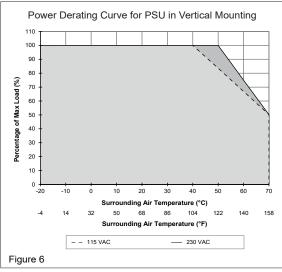












### READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

#### 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.
- $\bullet \quad \text{The power supplies are built-in units and must be installed in a cabinet or room (condensation)}\\$
- 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 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 ( $I_O = 109-130\%$ ) the output voltage will start to droop until overload has been removed.

#### 5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

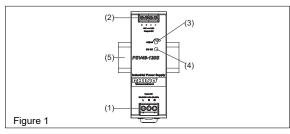
- 1. Above + $40^{\circ}$ C [ $104^{\circ}$ F] (115VAC), the output capacity has to be reduced by 1.67% per degree Celsius increase in temperature.
- Above +50°C [122°F] (230VAC), the output capacity has to be reduced by 2.5% per degree Celsius increase in temperature.

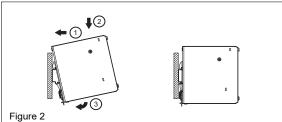
If the output capacity is not reduced when  $T_{Amb} > 40^{\circ}C$  [104°F] (115VAC) or  $> 50^{\circ}C$  [122°F] (230VAC), the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is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

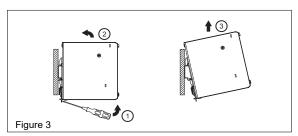
# RHINO PSV24-480S Power Supply

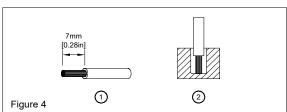
	Technical Specifications
Input (AC)	reclinical opecinications
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	5.4 A typ. @ 115VAC, 2.7 A typ. @ 230VAC
Inrush current limitation (+25°C, cold start)	40A typ. @ 115VAC, 80A typ. @ 230VAC
` '	10ms typ. @ 115VAC (100% load)
Mains buffering at nominal load (typ.)	16ms typ. @ 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 <sub>N</sub> / tolerance	24VDC ± 2 %
Voltage adjustment range	22-28 VDC (maximum power ≤ 480W)
Output current	20A
	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
Cantap man capacitive leads	5W @ 115VAC (0% load)
Man, named discipation idline / naminal land anner.	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	1 0000 Figure 100 of war oring proce
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) -40°C to +85°C [-40°F to +185°F]
Storage temperature	
Humidity at +25°C, no condensation	5 to 95% RH  Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s² (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)	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 Voltage Sag Immunity	EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4  SEMI F47 – 0706 @ 200VAC
Vollage Sag Infinumly	SENII P47 — 0700 @ 200VAC
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	C TL US
	LISTED E198298
Del IC Correlies	Ind. Cont. Eq.
RoHS Compliant	Yes
Safety and Protection	W · ·
Transient surge voltage protection	Varistor
Current limitation at short-circuits approx.	I <sub>surge</sub> = 109-130% or Po <sub>max</sub> typically (continuous current)
Surge voltage protection against internal surge voltages	Yes
Isolation voltage: Input / output	3kVAC
Input / PE	2kVAC
Output / PE	0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection
· · ·	

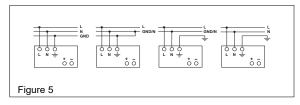
## RHINO PSV48-120S Power Supply

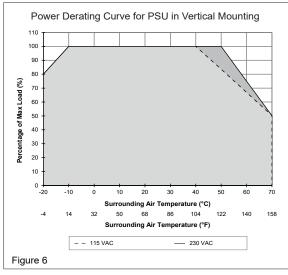












### READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

#### 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
- (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		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  $60^{\circ}\text{C}/75^{\circ}\text{C}$  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 ( $I_0 = 105-150\%$ ) 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 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  $T_{\rm Amb} > 40^{\circ}{\rm C}$  [104°F] (115VAC) or  $> 50^{\circ}{\rm C}$  [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.

# **RHINO PSV48-120S Power Supply**

	Technical Specifications
Input (AC)	Technical Specifications
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
, , ,	85-264 VAC
Voltage range	****
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	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 <sub>N</sub> / tolerance	48VDC ± 2 %
Voltage adjustment range	44-56 VDC (maximum power ≤ 120W)
Output current	2.5 A
Output current	Refer to Fig. 6
Derating	-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	The state of the s
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/s² (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
	C S US  LISTED Ind. Cont. Eq.
RoHS Compliant	Yes
Safety and Protection	
Transient surge voltage protection	Varistor
Current limitation at short-circuits approx.	I <sub>surge</sub> = 105-150% or Po <sub>max</sub> 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

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