RHINO DIN Rail Power Supplies PSV Series

Economical Power Supplies Features

15-100W Models

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







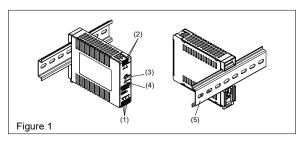
120-480W Models

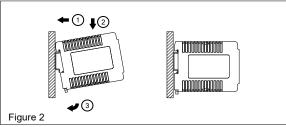
- Universal AC input voltage
- · Built-in constant current circuit for reactive loads
- Up to 89% efficiency
- Full power from -10°C to +50°C
- Compliance to SEMI F47 @ 200VAC voltage sag immunity
- · Metal housing
- UL/cUL 508
- UL/cUL Recognized 60950-1
- CE
- 3-year warranty

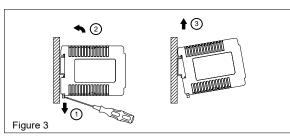


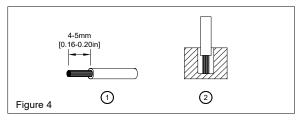
DIN Rail Power Supplies					
Part Number	Price	Drawing Link	Output Voltage	Maximum Output Power [W]	Efficiency [Typ @ 115VAC]
<u>PSV5-15S</u>	\$3?eg:	<u>PDF</u>	5V	15	79%
<u>PSV5-25S</u>	\$3?e7:	PDF	5V	25	82%
<u>PSV12-50S</u>	\$3?e8:	<u>PDF</u>	12V	48	88%
PSV24-30S	\$3?e9:	<u>PDF</u>	24V	30	87.5%
PSV24-50S	\$3?ea:	PDF	24V	50	89%
PSV24-100S	\$3?eb:	<u>PDF</u>	24V	91.2	87%
PSV24-120S	\$3?ec:	<u>PDF</u>	24V	120	85%
PSV24-240S	\$3?ed:	<u>PDF</u>	24V	240	88%
PSV24-480S	\$03?ee:	PDF	24V	480	85%
PSV48-120S	\$;3?ef:	PDF	48V	120	89%

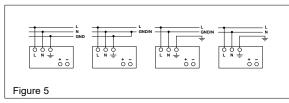
RHINO PSV5-15S Power Supply

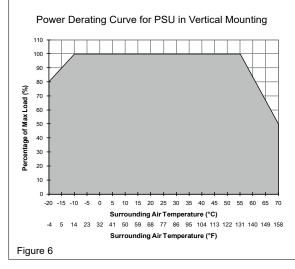












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

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 35 mm 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°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:

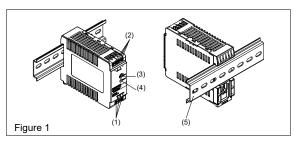
- At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- 2. Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

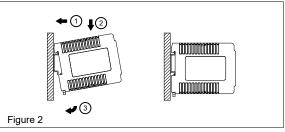
If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

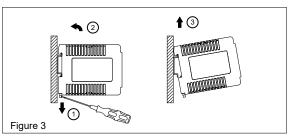
RHINO PSV5-15S Power Supply

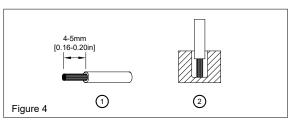
	Technical Specifications
Input (AC)	Tooling opcomoditions
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 0.5 A @ 115VAC, < 0.3 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 65A @ 230VAC
` ' '	20ms typ. @ 115VAC (100% load)
Mains buffering at nominal load (typ.)	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 _N / tolerance	5VDC ± 2 %
Voltage adjustment range	5-5.5 VDC (maximum power ≤ 15W)
Nominal current	3A
Derating	Refer to Fig. 6
Startup with capacitive loads	-10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation Max. 3,000µF
Max. power dissipation idling / nominal load approx.	мах. 3,000µг 0.3 W / 4 W
Efficiency at 100% load	78.0% typ. @ 115VAC, 79.0% typ. @ 230VAC
PARD (20MHz) at 100% load	
General Data	< 75 mVpp
	Distr. (DO) and said
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	07/ // (71/00070)
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
	3PET S
_	LISTED <i>E198298</i>
	Ind. Cont. Eq.
RoHS Compliant	Yes
Safety and Protection	
Surge voltage protection against internal surge voltages	No
Isolation voltage:	
Input / output Input / PE	3kVAC 3kVAC
Output / PE	3KVAC 0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection
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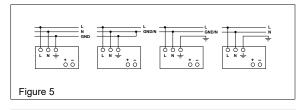
RHINO PSV5-25S Power Supply

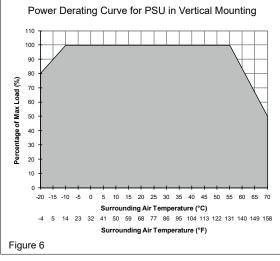












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1. Safety instructions

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- 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.
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5 Connection

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

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

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

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

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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 ($I_0 = 110-160\%$). 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:

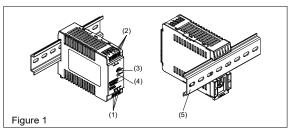
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- Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

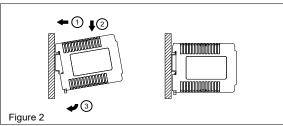
If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

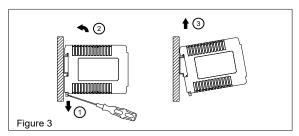
RHINO PSV5-25S Power Supply

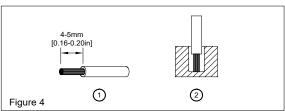
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Description of Voltage Principles Image: Principles	(42)	Technical Specifications
State And Comment Stat	Input (AC)	
resurancy month outside AF 83 E Month of Committed	Nominal input voltage / frequency	
Common C	Voltage range	85-264 VAC
Section Committee Commit	Frequency	47-63 Hz
Common C	Nominal current	< 0.8 A @ 115VAC, < 0.5 A @ 230VAC
To the control of the	Inrush current limitation (+25°C, cold start)	
tomen time	Mains buffering at nominal load (tvp.)	
terrant lue (T 3 1 5 A 7 250 V (non-replaceable) terrant lue (S 8 or 10 6 C characteristic circult breaker sologe current (A 10 C 24 00 V C (Deptar (ICC) Tomate doubt vehicle III, / to benice (S 50 C 2 % (Deptar (ICC) Tomate doubt vehicle III, / to benice (S 50 C 2 % (D 10 C 10 20 C 2 % C	3 (31 /	
incommentate backup protection Salapa current Salapa current Salapa current		
Clinical CDC Compared to Clinical CDC		
Designate Colora	, ,	
Informational purk voltage U ₁ / Volerance S.5.5 VID. (Impairment propose < 2W)	· · ·	< IIIIA @ 240VAC
Totage adjustment range inclinate current control current curr	, , ,	EVIDO A OV
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Perform Perf	• , •	
### ##################################	Nominal current	
Interlay with capsoritive loads As power dissipation utiling / nominal load approx. The property of 100% load The propert	Derating	-10°C to -20°C (2%/°C). > 55°C (3.33%/°C) in vertical orientation
Ass. power dissipation (iding / nominal load approx.	Startup with capacitive loads	
### 10% load	Max. power dissipation idling / nominal load approx.	
APD (20MHz) at 100% load	Efficiency at 100% load	
Plastic (PC), enclosed		71 71
Plastic (PC), enclosed Plastic (PC), enclosed ED signals Green LED DC OK	,	
ED signals Green LED D.C OK TIPE SS0,000 Ins. as per Telcordia Financians (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). Veright 4.5mm 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). On the kg [5.6 oz] Screw connection Afficial in the control of the con		Plastic (PC.) enclosed
Same		
Form 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.) Veright	,	
Velight 0.16 kg 15.6 oz connection method Screw connection tripping length 4-5mm (0.16 + 0.20 in] perating temperature (surrounding air temperature) perating 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 +158°F) -40°C to +80°C (-4		
Screw connection method Screw connection in method stripping length	, ,	
A-5mm [0.16-0.20 in]	0	•
Paralling temperature (surrounding air temperature)		
Accordance temperature -40°C to +85°C [-40°F to +185°F] Lumidity at +25°C, no condensation Operating: IEC60068-2-6, Sine Wave: 10Hz to 500042 @ 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 500042 (2.09 Gm/s), 20 min. per axis for all X, Y, Z 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: 50G for a duration of 11ms, 3 shocks for each 3 directions 2 duration and Standards active the form voltage Identical safety (of information technology equipment) Accordination and Standards Active the form of the following of the following state of the following sta	1. • •	
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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	• 1	
Non-Operating: IEC60088-2-97, Half Sine Wave: 10G for a duration of 11ms, shock for leactions Operating: IEC60088-2-1, Half Sine Wave: 10G for a duration of 11ms, shock for leact 3 directions Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions 2000m Continue	numuny at +25°C, no condensation	
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Autitude (operating) Certification and Standards 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) Adustrial control equipment UL/C-UL listed to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL recognized to UL60950-1 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL recognized to UL60950-1 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 No. 107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 No.107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 No.107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 No.107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 No.107.1-01 (File No. E197592) UL/C-UL listed to UL508 and CSA C22 No.107.1-01 (File No. E197592) UL/C-UL listed to UL	SHOCK	, ,
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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) EN55032, EN55011, EN61000-6-3, EN61000-6-4 EN55032, EN55011, EN61000-6-3, EN61000-6-4 EN55032, EN55011, EN61000-6-3, EN61000-6-4 EN55032, EN55011, EN61000-6-3, EN61000-6-4 EN5604 Engevoltage protection against internal surge voltages No solation voltage: Input / output Input / output Input / PE Output / PE	Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
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Protection degree IP20	Input / PE	3kVAC
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artery crass Class I with PE connection	•	· · · · · · · · · · · · · · · · · · ·
	Safety class	Class I with PE connection

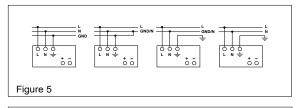
RHINO PSV12-50S Power Supply

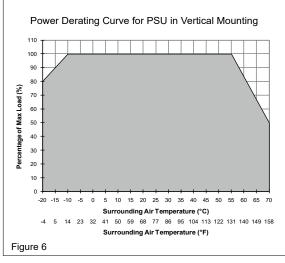












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

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					
	Stranded / Solid Torque				
	mm²	AWG	N-m	lb-in	
Input	0.52-3.3	20-12	0.51	4.5	
Output	0.52-3.3	20-12	0.51	4.5	

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

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

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

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

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

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

- 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.

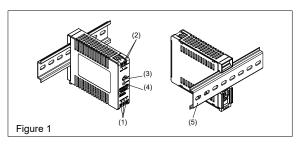
If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

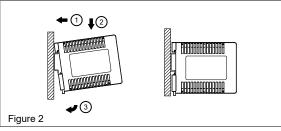
RHINO PSV12-50S Power Supply

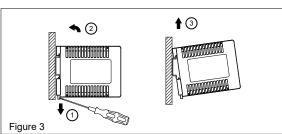
	Technical Specifications
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 1.0 A @ 115VAC, < 0.6 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 60A @ 230VAC
Mains buffering at nominal load (typ.)	20ms typ. @ 115VAC (100% load) 90ms typ. @ 230VAC (100% load)
Turn-on time	< 3s @ 115VAC, < 1.5 s @ 230VAC (100% load)
Internal fuse	T 3.15 A / 250V (non-replaceable)
Recommended backup protection	20A B- or 13A C- characteristic circuit breaker
Leakage current	< 1mA @ 240VAC
Output (DC)	
Nominal output voltage U _N / tolerance	12VDC ± 2 %
Voltage adjustment range	12-15 VDC (maximum power ≤ 48W)
Nominal current	4A
Derating	Refer to Fig. 6
*	-10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation
Startup with capacitive loads	Max. 3,000µF
Max. power dissipation idling / nominal load approx.	0.5 W / 7 W
Efficiency at 100% load	86.0% typ. @ 115VAC, 88.0% typ. @ 230VAC
PARD (20MHz) at 100% load	< 75 mVpp
Parallel operation	With ORing Diode
General Data	DL 11 (DD)
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 4-5mm [0.16-0.20 in]
Stripping length	
Operating temperature (surrounding air temperature)	-20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6)
Storage temperature	-40°C to +85°C [-40°F to +185°F] 5 to 95% RH
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 all X, Y, Z
Vibration	directions
	Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions
Shock	Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions
Pollution degree	2
Altitude (operating)	2000m
Certification and Standards	
Safety entry low voltage	SELV (EN60950)
	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1,
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL62368-1 and CSA C22.2 No. 62368-1 (File No. E508040), CB scheme to IEC62368-1,
Industrial control equipment	Limited Power Source (LPS) UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
Class 2 power supply	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Component power supply for general use	EN61204-3
1 11 7 0	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
	SPET COLOR F197592 COLOR F197592
	LISTED <i>E198298</i> Ind. Cont. Eq. <i>E508040</i>
PoUC Compliant	
RoHS Compliant	Yes
Safety and Protection	No
Surge voltage protection against internal surge voltages Isolation voltage:	No No
Input / output	3kVAC
Input / PE	3kVAC
Output / PE	0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

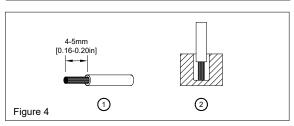
1st Edition, Rev. C, 08/2019

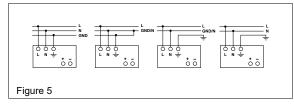
RHINO PSV24-30S Power Supply

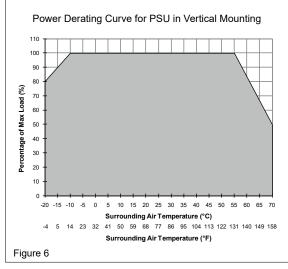












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

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°C for Canada.

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

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

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



The internal fuse must not be replaced by the user.

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

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

5.3. Output characteristic curve

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

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

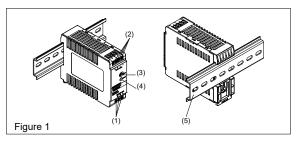
- 1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- 2. Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

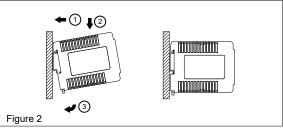
If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

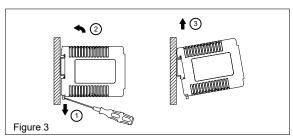
RHINO PSV24-30S Power Supply

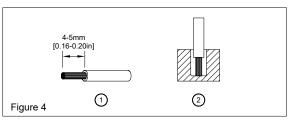
	Technical Specifications
Input (AC)	1 Common operations
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
,	85-264 VAC
Voltage range	
Frequency	47-63 Hz
Nominal current	< 0.8 A @ 115VAC, < 0.4 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 60A @ 230VAC
Mains buffering 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)	< IIIIA @ 240VAC
Nominal output voltage U _N / tolerance	24VDC ± 2 %
Voltage adjustment range	24-28 VDC (maximum power ≤ 30W)
Nominal current	1.25 A Refer to Fig. 6
Derating	-10°C to -20°C (2%/°C), > 55 °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	1 3D00-HEINIZO3 / 1 3D00-HEINI403 OF WITH OFFITING DIOGE
	Disatis (DD) analysis
Type of housing	Plastic (PC), enclosed
LED signals	Green LED DC OK
MTBF	> 350,000 hrs. as per Telcordia
Dimensions (L x W x H)	75mm x 21mm x 89.5 mm [2.95 in x 0.83 in x 3.52 in] (See www.AutomationDirect.com for complete engineering drawings.)
Weight	0.11 kg [3.9 oz]
Connection method	Screw connection
Stripping length	4-5mm [0.16-0.20 in]
Operating temperature (surrounding air temperature)	-20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6)
Storage temperature	-40°C to +85°C [-40°F to +185°F]
Humidity at +25°C, no condensation	5 to 95% RH
	Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s²; displacement of 0.35 mm, 60min per axis for all X, Y, Z
Vibration	directions Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions
	Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis)
Shock	Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions
Pollution degree	2
Altitude (operating)	2000m
Certification and Standards	
Safety entry low voltage	SELV (EN60950)
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1,
	Limited Power Source (LPS)
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
Class 2 power supply	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Component power supply for general use	EN61204-3
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
	LISTED <i>E198298</i>
	Ind. Cont. Eq.
RoHS Compliant	Yes
Safety and Protection	
Surge voltage protection against internal surge voltages	No
Isolation voltage:	
Input / output	3kVAC
Input / PE Output / PE	3kVAC 0.5 kVAC
Protection degree	IP20
· · · · · · · · · · · · · · · · · · ·	Class I with PE connection
Safety class	Class I with PE confilection

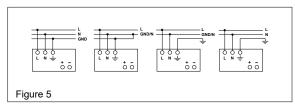
RHINO PSV24-50S Power Supply

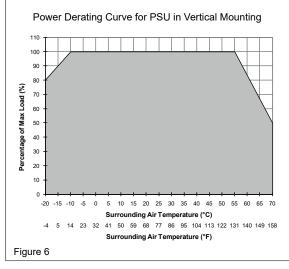












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

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° C/ 75° C for USA or at least 90° C for Canada.

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

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

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

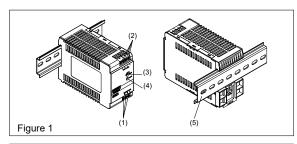
- 1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

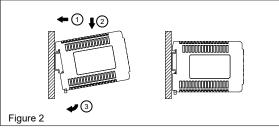
If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

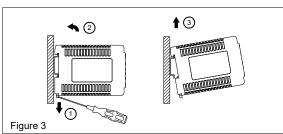
RHINO PSV24-50S Power Supply

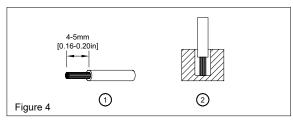
(40)	Technical Specifications
Input (AC)	100 AVAIVA 100 AVI
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	<1.0 A @ 115VAC, < 0.6 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 60A @ 230VAC 20ms typ. @ 115VAC (100% load)
Mains buffering at nominal load (typ.)	90ms typ. @ 230VAC (100% load)
Turn-on time	< 3s @ 115VAC, < 1.5 s @ 230VAC (100% load)
Internal fuse	T 3.15 A / 250V (non-replaceable)
Recommended backup protection	20A B- or 13A C- characteristic circuit breaker
Leakage current	< 1mA @ 240VAC
Output (DC)	
Nominal output voltage U _N / tolerance	24VDC ± 2 %
Voltage adjustment range	24-28 VDC (maximum power ≤ 50W)
Nominal current	2.1 A
Derating	Refer to Fig. 6 -10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation
Startup with capacitive loads	Max. 3,000μF
Max. power dissipation idling / nominal load approx.	0.5 W / 7W
Efficiency at 100% load	86.0% typ. @ 115VAC, 88.0% typ. @ 230VAC
PARD (20MHz) at +25°C, 100% load	< 75 mVpp
Parallel operation	PSB60-REM20S / PSB60-REM40S or with ORing Diode
General Data	
Type of housing	Plastic (PC), enclosed
LED signals	Green LED DC OK
MTBF	> 350,000 hrs. as per Telcordia
Dimensions (L x W x H)	75mm x 30mm x 89.5 mm [2.95 in x 1.18 in x 3.52 in] (See www.AutomationDirect.com for complete engineering drawings.)
Weight	0.18 kg [6.3 oz]
Connection method	Screw connection
Stripping length	4-5mm [0.16-0.20 in]
Operating temperature (surrounding air temperature)	-20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6)
Storage temperature	-40°C to +85°C [-40°F to +185°F]
Humidity at +25°C, no condensation	5 to 95% RH
Vibration	Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/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 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
	EN01204-3 EN55024, EN61000-6-1, EN61000-6-2
Immunity	(EN61000-4-2, 3, 4, 5, 6, 8, 11)
Emission	EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4
	3PET S
(c(UL)E197592 C 7 US
	LISTED
	Ind. Cont. Eq.
RoHS Compliant	Yes
Safety and Protection	
Surge voltage protection against internal surge voltages	No No
Isolation voltage: Input / output	3kVAC
Input / PE	3kVAC
Output / PE	0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

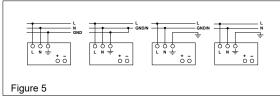
RHINO PSV24-100S Power Supply

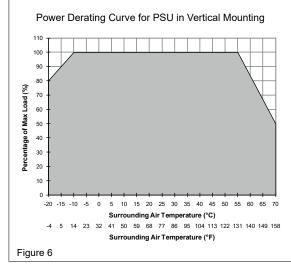












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

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)
- 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°C/75°C for USA or at least 90°C for Canada.

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

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

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



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 ($I_0 = 110-150\%$). 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:

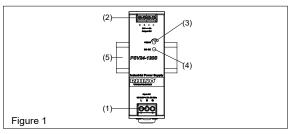
- 1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

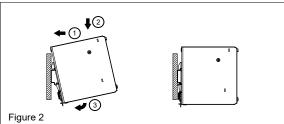
If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

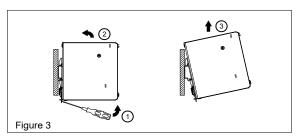
RHINO PSV24-100S Power Supply

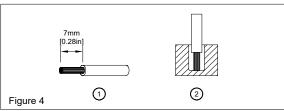
	Technical Specifications
Input (AC)	reconnical operations
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 1.2 A @ 115VAC, < 0.6 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 60A @ 230VAC
` '	25ms typ. @ 115VAC (100% load)
Mains buffering at nominal load (typ.)	50ms typ. @ 230VAC (100% load)
Turn-on time	< 3s @ 115VAC, < 1.5 s @ 230VAC (100% load)
Internal fuse	T 3.15 A / 250V (non-replaceable)
Recommended backup protection	20A B- or 10A C- characteristic circuit breaker
Leakage current	< 1mA @ 240VAC
Output (DC)	
Nominal output voltage U _N / tolerance	24VDC ± 2 %
Voltage adjustment range	22-24 VDC (maximum power ≤ 91.2 W)
Nominal current	3.8 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.	0.4 W / 10W
Efficiency at 100% load	87.0% typ. @ 115VAC, 89.0% typ. @ 230VAC
PARD (20MHz) at +25°C, 100% load	< 75 mVpp
Parallel operation	PSB60-REM20S / PSB60-REM40S or with ORing Diode
General Data	
Type of housing	Plastic (PC), enclosed
LED signals	Green LED DC OK
MTBF	> 350,000 hrs. as per Telcordia
Dimensions (L x W x H)	75mm x 45mm x 100mm [2.95 in x 1.77 in x 3.94 in] (See www.AutomationDirect.com for complete 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
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
Violation	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	Non-operating: iccoooco-z-zr, rian sine wave: sod for a duration of Firits, 3 shocks for each 3 directions
Altitude (operating)	2000m
Certification and Standards	200011
Safety entry low voltage	SELV (EN60950)
, , ,	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1,
Electrical safety (of information technology equipment)	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	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
	LISTED E198298
	Ind. Cont. Eq.
RoHS Compliant	Yes
Safety and Protection	
Surge voltage protection against internal surge voltages	No
Isolation voltage:	0140
Input / output Input / PE	3kVAC 1.5 kVAC
Output / PE	0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

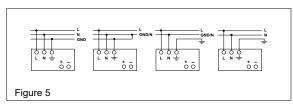
RHINO PSV24-120S Power Supply

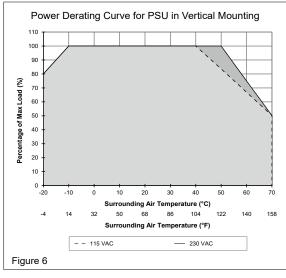












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

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
- (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.

- - ..

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	0.823-8.365	18-8	1.01	9
Output	0.20-3.3	24-12	0.68	6

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

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

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

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

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

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



The internal fuse must not be replaced by the user.

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

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

5.3. Output characteristic curve

The device functions normal under operating line and load conditions. In the event of an overload ($I_0 = 105-150\%$) the output voltage will start to droop until overload has been removed.

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

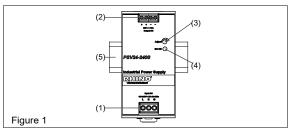
- 1. At -10°C to -20°C [14°F to -4°F], the output capacity must be reduced by 2% per °C temperature increase.
- 2. Above +40°C [104°F] (115VAC), the output capacity must be reduced by 1.67% per degree Celsius temperature increase.
- 3. Above +50°C [122°F] (230VAC), the output capacity must be reduced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

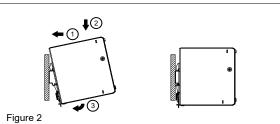
If the output capacity is not reduced when T $_{\rm Amb}$ > 40°C (115VAC) or > 50°C (230VAC), the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

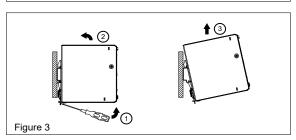
RHINO PSV24-120S Power Supply

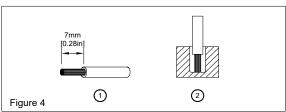
	Technical Specifications
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	2.2 A typ. @ 115VAC, 1.2 A typ. @ 230VAC
Inrush current limitation (+25°C, cold start)	20A typ. @ 115VAC, 40A typ. @ 230VAC
Mains buffering at nominal load (typ.)	20ms typ. @ 115VAC (100% load)
· · · · · · · · · · · · · · · · · · ·	90ms týp. @ 230VAC (100% load)
Turn-on time	200ms typ. @ 115VAC & 230VAC (100% load)
Internal fuse	T 4A / 250V (non-replaceable) < 0.25 mA @ 264VAC
Leakage current	< U.25 IIIA @ 204VAU
Naminal autaut valtaga II. / talarana	0.4VDC 0.07
Nominal output voltage U _N / tolerance	24VDC ± 2 %
Voltage adjustment range	22-28 VDC (maximum power ≤ 120W)
Output current	5A 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
Shock Dellution degree	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	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	(EN61000-4-2, 3, 4, 3, 6, 6, 11, 12) EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4
Voltage Sag Immunity	SEMI F47 – 0706 @ 200VAC
Vollage day illiminity	3LIVII 147 — 0700 @ 200VAC
	c UL E197592 C SUS
	LISTED E198298 Ind. Cont. Eq.
RoHS Compliant	Yes
Safety and Protection	
Transient surge voltage protection	Varistor
Current limitation at short-circuits approx.	I _{surge} = 105-150% or Po _{max} typically
Surge voltage protection against internal surge voltages	Yes
Isolation voltage:	
Input / output Input / PE	3kVAC 2kVAC
Output / PE	0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection
•	

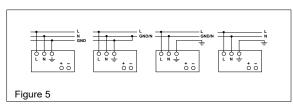
RHINO PSV24-240S Power Supply

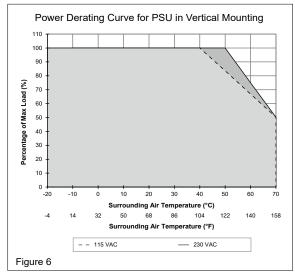












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

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

2. Device description (Fig. 1)

- (1) Input terminal block connector
- Output terminal block connector
- DC voltage adjustment potentiometer
- 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.

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	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

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.

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

5.3. Output characteristic curve

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

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

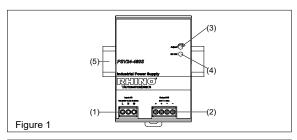
- 1. Above +40°C [104°F] (115VAC), the output capacity has to be reduced by 1.67% per degree Celsius increase in temperature
- 2. Above +50°C [122°F] (230VAC), the output capacity has to be reduced by 2.5% per degree Celsius increase in temperature

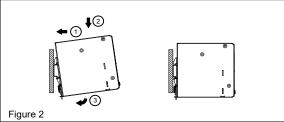
If the output capacity is not reduced when $T_{Amb} > 40^{\circ}C$ [104°F] (115VAC) or $> 50^{\circ}C$ [122°F] (230VAC), the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

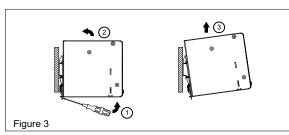
RHINO PSV24-240S Power Supply

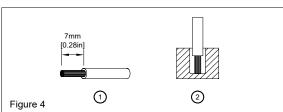
Technical Specifications
Normal prior voltage / Teguency
Voltage paragram Progressive
Finguistry
Name
Trush currer (Initation (42°C; Cold Start) 20 A pp. © 115VAC, 40A pp. © 230VAC
Mairs buffering at nominal load (typ.) 10ms bp. ⊕ 115VAC (100% load)
Maris Duffering at Comman (602 (typ.) 100% load
Turn-on-limits
T. 6.3 A / 259/ (non-replaceable) Calebog current Calebog cu
Calculation
Output voltage Up, / Interance 24VDC + 2 %
Nominal putput voltage Usy / tolerance
22.8 VDC (maximum power ≤ 240W)
Detailing
Section Fig. 6 Section Secti
Dearling \$ \
Sartup with capacitive loads
Max power dissipation idling / nominal load approx. 31.53 W @ 115VAC (100% load) 25.44 W @ 230VAC (100% load) 25.40 W @ 115VAC (100% load) 25.40 W @ 100% load 25.40 W W load 25.40 W W load 25.40 W W load 25.40 W @ 100% load 25.40 W l
Ass. power dissipation idling / nominal load approx. 2.14 W @ 230VAC (0% load)
Max. power dissipation idling / nominal load approx. 23.4 W № 230VAC (100% load) Efficiency at 100% load 88.90% by. @ 115VAC (100% load) 88.90% by. @ 115VAC (90% by. @ 200VAC 4.120m/pp@ -10°C to +70°C 4.240m/pp@ -10°C to +70°C 4.
31.53 W @ 115VAC (100% load)
Efficiency at 100% load
PARD (20MHz) at 100% load
PARIO (LOWINFD) #1 (100% load) PSB60-REMADS or with ORing Diode
Secretar Data Secretar Data Secretar Decides
Type of housing SGCC (Case Cover) / Aluminum (Case Chassis) LED signals Green LED DC OK MTEF > 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 draw Weight 0.80 kg [28 cz] Connection method Screw connection Stripping length 7mm [0.28 in] Operating temperature (surrounding air temperature) -20°C to +7°C°C [-4°F to +156°F] (Refer to Fig. 6) Storage temperature 40°C to 485°C [-40°F to +185°F] Humidity at +25°C, no condensation Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz g/20 grank); 10min per cycle, 60min for X direction Non-Operating: IEC60068-2-6, Bandom: 5Hz to 500Hz g/20 grank); 20 min. per axis for all X, Y, Z directions Shock 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: 106 for a duration of 11ms, shock for 1 direction (X axis) 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: 106 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 106 for a duration of 11ms, shocks for ach 3 directions 2000m for industrial application Certification and Standards Safety entry low voltage SELV (EN60950) 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 IEC60950-1 (Industrial control equipment) Industrial control equipment In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU Emission EN55032, EN50011, EN61000-6-2, SA, 5, 6, 8, 11, 12 Ensisted LISTED Industrial control equipment In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU Emission EN55032, EN550011, EN61000-6-3, EN61000-6-3, EN61000-6-4 Voltage Sag Immunity ESSENT SAGE SAGE CONDONE S
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Second Comment
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 draw Weight 0.80 kg [28 oz] Connection method Screw connection 7mm [0.28 in] Operating temperature (surrounding air temperature) 1-20°C to +70°C (1-4°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 Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s² (26 peak); 10min per cycle, 60min for X direction Non-Operating: IEC60068-2-27, Half Sine Wave: 10E 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, shocks for each 3 directions Pollution degree 2000m for ITE application 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 IEC60950-1 Industrial control equipment) UL/C-UL listed to UL508 and CSA C222 No. 107.1-01 (File No. E197592) Certification and Standards Safety entry low voltage Electrical safety (of information technology equipment) UL/C-UL listed to UL508 and CSA C222 No. 107.1-01 (File No. E197592) Certification experts to the safe of the safe
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 to +70°C t-4°F to +185°F] (Refer to Fig. 6) Storage temperature -40°C to +85°C [-40°F to +185°F] Humidity at +25°C, no condensation Vibration Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz (20 ps/ms/s) (26 peak); 10min per cycle, 60min for X direction Non-Operating: IEC60068-2-7, Random: 5Hz to 500Hz (20 ps/ms/s) (26 peak); 10min per cycle, 60min for X direction Non-Operating: IEC60068-2-7, Random: 5Hz to 500Hz (20 ps/ms/s); 20 min, per axis for all X, Y, Z directions Shock Operating: IEC60068-2-2-7, 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 in X axis Non-Operating: IEC60068-2-2-7, Half Sine Wave: 506 for a duration of 11ms, 3 shocks for each 3 directions Pollution degree 2000m for industrial application Certification and Standards Safety entry low voltage SELV (EN60950) UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1 Industrial control equipment UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 107.1-01 (File No. E198298), CB scheme to IEC60950-1 Industrial control equipment UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 107.1-01 (File No. E197592) UE Component power supply for general use EN55024, EN51000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12) Emission EN55032, EN55011, EN61000-3-2 Class A, EN61000-6-3, EN61000-6-4 Voltage Sag Immunity En55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-4 Voltage Sag Immunity EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-4 Voltage Sag Immunity EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-4 Voltage Sag Immunity EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-4 Voltage Sag Immunity EN55032, EN55011, EN61000-6-1 EN65000-8-2-2 EN65000-8-2-2 EN65000-8-2-2 EN65000-8
Connection method Screw connection Stripping length Tmm (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 Vibration Operating: IEC60068-2-6. Sine Wave: 10Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions Non-Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, 3 shocks for each 3 directions Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, 3 shocks for each 3 directions Shock Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, 3 shocks for each 3 directions Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, 3 shocks for each 3 directions Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, 3 shocks for each 3 directions Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, 3 shocks for each 3 directions Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, 3 shocks for each 3 directions Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, 3 shocks for each 3 directions Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, 3 shocks for each 3 directions Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, 3 shocks for each 3 directions Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, 3 shocks for each 3 directions Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, 3 shocks for each 3 directions Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, 3 shocks for each 3 directions Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, 3 shocks for each 3 directions Operating: IEC60068-2-7; Half Sine Wave: 10G for a duration of 11ms, 3 shocks for each 3 directions Operating: IEC60068-2-7; Half Sine Wave: 10G for a duratio
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Safety and Protection
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Current limitation at short-circuits approx. $I_{surge} = 105-150\% \text{ or } Po_{max} \text{ typically}$
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

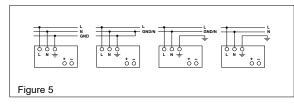
RHINO PSV24-480S Power Supply

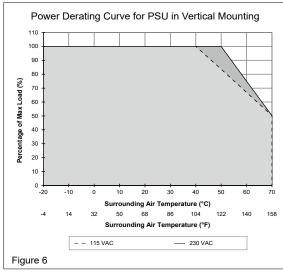












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

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
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- 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.

E 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	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:

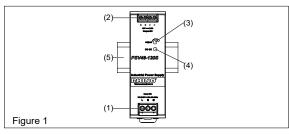
- 1. Above + 40° C [104° F] (115VAC), the output capacity has to be reduced by 1.67% per degree Celsius increase in temperature.
- 2. Above +50°C [122°F] (230VAC), the output capacity has to be reduced by 2.5% per degree Celsius increase in temperature.

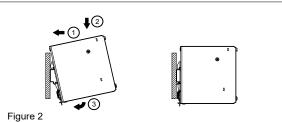
If the output capacity is not reduced when $T_{Amb} > 40^{\circ}C$ [$104^{\circ}F$] (115VAC) or $> 50^{\circ}C$ [$122^{\circ}F$] (230VAC), the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the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

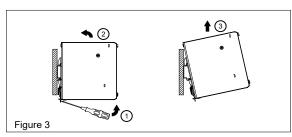
RHINO PSV24-480S Power Supply

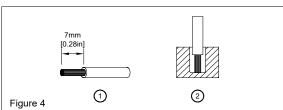
	Technical Specifications
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	5.4 A typ. @ 115VAC, 2.7 A typ. @ 230VAC
Inrush current limitation (+25°C, cold start)	40A typ. @ 115VAC, 80A typ. @ 230VAC
Mains buffering at nominal load (typ.)	10ms typ. @ 115VAC (100% load)
, , , , , , , , , , , , , , , , , , ,	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 _N / tolerance	24VDC ± 2 %
Voltage adjustment range	22-28 VDC (maximum power ≤ 480W)
Output current	20A
Dorating	Refer to Fig. 6 > 40°C (1.67%/°C) @ 115VAC (90-229 VAC)
Derating	> 40 C (1.07 %) C) C (1.07 %) C) C (2.5%) C) C) C (2.5%) C) C) C (2.5%) C)
Startup with capacitive loads	Max. 8,000µF
	5W @ 115VAC (0% load)
Max. power dissipation idling / nominal load approx.	4W @ 230VAC (0% load)
iviax. power dissipation runing / norminal road approx.	50W @ 115VAC (100% load)
E(('-'	40W @ 230VAC (100% load)
Efficiency at 100% load	85.0% typ. @ 115VAC, 88.0% typ. @ 230VAC
PARD (20MHz) at 100% load	< 120mVpp @ -10°C to +70°C < 240mVpp @ -20°C to -10°C
Parallel operation	PSB60-REM40S or with ORing Diode
General Data	
Type of housing	SGCC (Case Cover) / Aluminum (Case Chassis)
LED signals	Green LED DC OK
MTBF	> 700,000 hrs. as per Telcordia
Dimensions (L x W x H)	123.6 mm x 85.5 mm x 128.5 mm [4.87 in x 3.37 in x 5.06 in] (See www.AutomationDirect.com for complete engineering drawings.)
	1.30 kg [45.9 oz]
Weight	·
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
Charle	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	3000III IOI 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. 10930-1 (File No. E190290), CB Scheme to technosor-1
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
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	LISTED E198298 Ind. Cont. Eq.
RoHS Compliant	Yes
Safety and Protection	· · · · · · · · · · · · · · · · · · ·
Transient surge voltage protection	Varistor
Current limitation at short-circuits approx.	I _{suroe} = 109-130% or Po _{max} typically (continuous current)
Surge voltage protection against internal surge voltages	Yes
Isolation voltage:	105
Input / output	3kVAC
Input / PE	2kVAC
Output / PE	0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

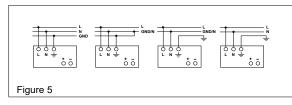
RHINO PSV48-120S Power Supply

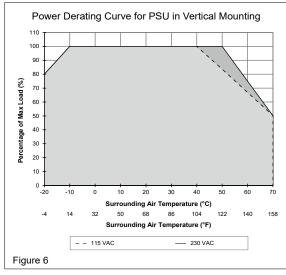












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

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
 The provided and lead of the anguard to Bidle of house.
- 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			que
	mm²	AWG	N∙m	lb-in
Input	0.823-8.365	18-8	1.01	9
Output	0.20-3.3	24-12	0.68	6

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

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

Use appropriate copper cables that are designed to sustain operating temperature of at least $60^{\circ}\text{C}/75^{\circ}\text{C}$ 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

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	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 _N / tolerance	48VDC ± 2 %
Voltage adjustment range	44-56 VDC (maximum power ≤ 120W)
Output current	2.5 A
Dorating	Refer to Fig. 6
Derating	-10°C to -20°C (2%/°C), > 40°Č (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
•	1 3000-UTINI203 / 1 3000-UTINI403 OF WILL ONLING DIOUR
General Data	CCCC (Coop County) Alternity (Coop Character)
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
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 recognized to UL50950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scriente to recogno-1 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 US LISTED E197592 C SUS E198298
RoHS Compliant	Yes
Safety and Protection	
Transient surge voltage protection	Varistor
Current limitation at short-circuits approx.	I _{surge} = 105-150% or Po _{max} typically
Surge voltage protection against internal surge voltages	Yes
Isolation voltage:	
Input / output	3kVAC
Input / PE	2kVAC
Output / PE	0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection