RHINO PSV Series DIN Rail Power Supplies

Economical Power Supplies Features

15-100W Models

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







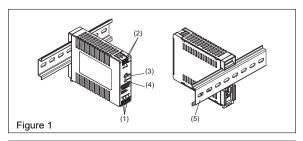
120-480W Models

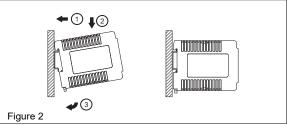
- Universal AC input voltage
- · Built-in constant current circuit for reactive loads
- Up to 89% efficiency
- Full power from -10°C to +50°C
- Compliance to SEMI F47 @ 200VAC voltage sag immunity
- · Metal housing
- UL/cUL 508
- UL/cUL Recognized 60950-1
- CE
- 3-year warranty

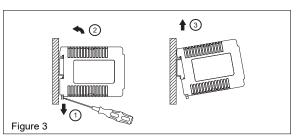


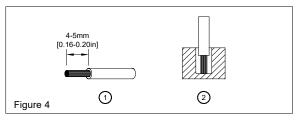
	PSV Series Specifications						
Part Number	Price	Drawing Link	Output Voltage	Maximum Output Power [W]	Efficiency [Typ @ 115VAC]		
<u>PSV5-15S</u>	\$27.00	<u>PDF</u>	5V	15	79%		
<u>PSV5-25S</u>	\$41.00	PDF	5V	25	82%		
<u>PSV12-50S</u>	\$41.00	PDF	12V	48	88%		
PSV24-30S	\$27.00	PDF	24V	30	87.5%		
PSV24-50S	\$38.00	<u>PDF</u>	24V	50	89%		
PSV24-100S	\$50.00	PDF	24V	91.2	87%		
<u>PSV24-120S</u>	\$60.00	<u>PDF</u>	24V	120	85%		
PSV24-240S	\$87.00	<u>PDF</u>	24V	240	88%		
PSV24-480S	\$154.00	PDF	24V	480	85%		
PSV48-120S	\$60.00	<u>PDF</u>	48V	120	89%		

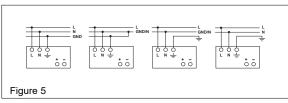
RHINO PSV5-15S Power Supply

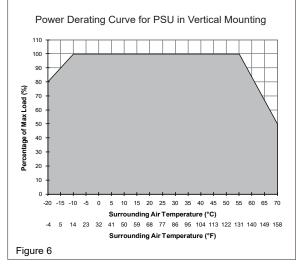












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

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					
	Stranded / Solid Torque				
	mm²	AWG	N∙m	lb-in	
Input	0.32-3.3	22-12	0.51	4.5	
Output	0.52-3.3	20-12	0.51	4.5	

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

In accordance to EN60950 / UL60950, flexible cables require ferrules

Use appropriate copper cables that are designed to sustain operating temperature of at least 60° C/75 $^{\circ}$ 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 (+)). 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:

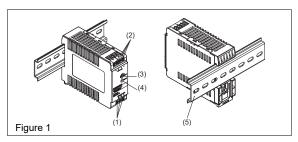
- At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- 2. Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

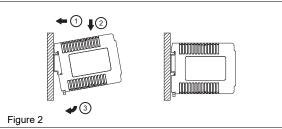
If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

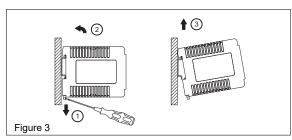
RHINO PSV5-15S Power Supply

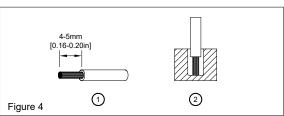
	T 1 1 10 10 10 11
Invest (AC)	Technical Specifications
Input (AC)	400 040 1/10 1/20 00 1/
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 0.5 A @ 115VAC, < 0.3 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 65A @ 230VAC 20ms typ. @ 115VAC (100% load)
Mains buffering at nominal load (typ.)	2011s typ. @ 115VAC (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 -10° C to -20° C (2%/°C), > 55°C (3.33%/°C) in vertical orientation
Startup with capacitive loads	Max. 3,000µF
Max. power dissipation idling / nominal load approx.	0.3 W / 4 W
Efficiency at 100% load	78.0% typ. @ 115VAC, 79.0% typ. @ 230VAC
PARD (20MHz) at 100% load	< 75 mVpp
General Data	
Type of housing	Plastic (PC), enclosed
LED signals	Green LED DC OK
MTBF	> 350,000 hrs. as per Telcordia
Dimensions (L x W x H)	75mm x 21mm x 89.5 mm [2.95 in x 0.83 in x 3.52 in] (See www.AutomationDirect.com for complete engineering drawings.
Weight	0.11 kg [3.9 oz]
Connection method	Screw connection
Stripping length	4-5mm [0.16-0.20 in]
Operating temperature (surrounding air temperature)	-20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6)
Storage temperature	-40°C to +85°C [-40°F to +185°F]
Humidity at +25°C, no condensation	5 to 95% RH
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 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 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	FN55024, FN61000-6-1, FN61000-6-2
,	(EN61000-4-2, 3, 4, 5, 6, 8, 11) EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4
Emission	2DET
C	C US US
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
Safety class	Class I with PE connection
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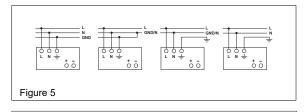
RHINO PSV5-25S Power Supply

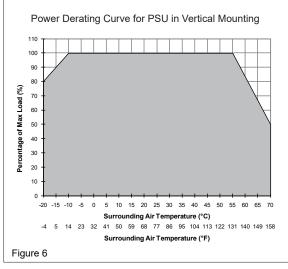












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

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

2. Device description (Fig. 1)

- (1) Input terminal block connector
- 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. The device should be installed with input terminal block on the bottom.

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

Electrical Connections and Wire Size					
	Strande	d / Solid	Tor	que	
	mm²	AWG	N∙m	lb-in	
Input	0.32-3.3	22-12	0.51	4.5	
Output	0.82-3.3	18-12	0.51	4.5	

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

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

Use appropriate copper cables that are designed to sustain operating temperature of at least 60°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 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:

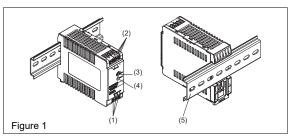
- 1. At -10° C to -20° C [14°F to -4° F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- 2. Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

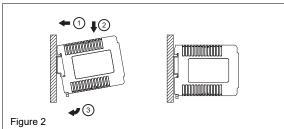
If the output capacity is not reduced when $T_{Amb} > 55 ^{\circ} C$ [131 $^{\circ} F$], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools

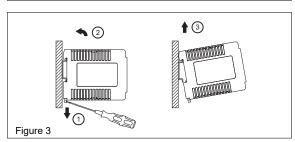
RHINO PSV5-25S Power Supply

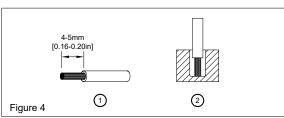
	Technical Considerations
Imput (AC)	Technical Specifications
Input (AC)	400 040 140 750 00 14
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 0.8 A @ 115VAC, < 0.5 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 60A @ 230VAC
Mains buffering at nominal load (typ.)	20ms typ. @ 115VAC (100% load) 100ms typ. @ 230VAC (100% load)
Turn-on time	< 3s @ 115VAC, < 1.5 s @ 230VAC (100% load)
Internal fuse	T 3.15 A / 250V (non-replaceable)
Recommended backup protection	20A B- or 10A C- characteristic circuit breaker
Leakage current	< 1mA @ 240VAC
Output (DC)	
Nominal output voltage U _N / tolerance	5VDC ± 2 %
Voltage adjustment range	5-5.5 VDC (maximum power ≤ 25W)
Nominal current	5A
	Refer to Fig. 6
Derating	-10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation
Startup with capacitive loads	Мах. 3,000µF
Max. power dissipation idling / nominal load approx.	0.4 W / 8 W
Efficiency at 100% load	79.0% typ. @ 115VAC, 80.0% typ. @ 230VAC
PARD (20MHz) at 100% load	< 75 mVpp
General Data	
Type of housing	Plastic (PC), enclosed
LED signals	Green LED DC OK
MTBF	> 350,000 hrs. as per Telcordia
Dimensions (L x W x H)	75mm x 30mm x 89.5 mm [2.95 in x 1.18 in x 3.52 in] (See www.AutomationDirect.com for complete engineering drawings.
Weight	0.16 kg [5.6 oz]
Connection method	Screw connection
Stripping length	4-5mm [0.16-0.20 in]
Operating temperature (surrounding air temperature)	-20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6)
Storage temperature	-40°C to +85°C [-40°F to +185°F]
Humidity at +25°C, no condensation	5 to 95% RH
NO. II	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
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
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)
, ,	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
Class 2 power supply CE	
	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU EN61204-3
Component power supply for general use	EN51204-3 EN55024, EN61000-6-1, EN61000-6-2
Immunity	(EN61000-4-2, 3, 4, 5, 6, 8, 11)
Emission	EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4
C	C C S US E197592 US E198298
RoHS Compliant	Ind. Cont. Eq. Yes
Safety and Protection	
Surge voltage protection against internal surge voltages	No
Isolation voltage:	01110
Input / output	3kVAC 3kVAC
INDUIT / PF	3//1/0
Input / PE Output / PE	0.5 kVAC
Input / PE Output / PE Protection degree	0.5 kVAC IP20

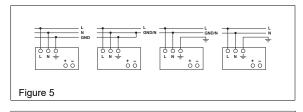
RHINO PSV12-50S Power Supply

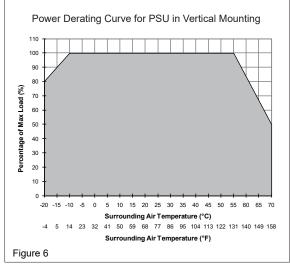












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

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

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

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

Use appropriate copper cables that are designed to sustain operating temperature of at least $60^{\circ}\text{C}/75^{\circ}\text{C}$ for USA or at least 90°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 $_{\rm O}=110\text{-}150\%$). The secondary voltage is reduced and bounces until short circuit or overload on the secondary side has been removed.

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

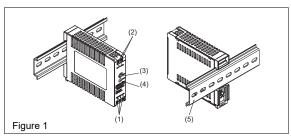
- 1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

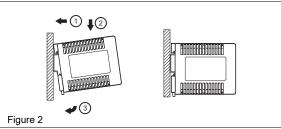
If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

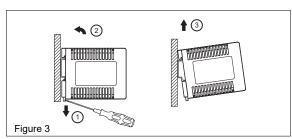
RHINO PSV12-50S Power Supply

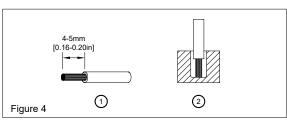
	T 1 1 10 10 11
Invest (40)	Technical Specifications
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 1.0 A @ 115VAC, < 0.6 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 60A @ 230VAC
Mains buffering at nominal load (typ.)	20ms typ. @ 115VAC (100% load) 90ms typ. @ 230VAC (100% load)
Turn-on time	< 3s @ 115VAC, < 1.5 s @ 230VAC (100% load)
Internal fuse	T 3.15 A / 250V (non-replaceable)
Recommended backup protection	20A B- or 13A C- characteristic circuit breaker
Leakage current	<1mA @ 240VAC
Output (DC)	
Nominal output voltage U _N / tolerance	12VDC ± 2 %
Voltage adjustment range	12-15 VDC (maximum power ≤ 48W)
Nominal current	4A
	Refer to Fig. 6
Derating	-10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation
Startup with capacitive loads	Мах. 3,000µF
Max. power dissipation idling / nominal load approx.	0.5 W / 7 W
Efficiency at 100% load	86.0% typ. @ 115VAC, 88.0% typ. @ 230VAC
PARD (20MHz) at 100% load	< 75 mVpp
Parallel operation	PSB60-REM20S / PSB60-REM40S or with ORing Diode
General Data	
Type of housing	Plastic (PC), enclosed
LED signals	Green LED DC OK
MTBF	> 350,000 hrs. as per Telcordia
Dimensions (L x W x H)	75mm x 30mm x 89.5 mm [2.95 in x 1.18 in x 3.52 in] (See www.AutomationDirect.com for complete engineering drawings.)
Weight	0.18 kg [6.3 oz]
Connection method	Screw connection
Stripping length	4-5mm [0.16-0.20 in]
Operating temperature (surrounding air temperature)	-20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6)
Storage temperature	-40°C to +85°C [-40°F to +185°F]
Humidity at +25°C, no condensation	5 to 95% RH
APhasPas	Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s²; displacement of 0.35 mm, 60min per axis for all X, Y, Z directions
Vibration	Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions
Shock	Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis)
	Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions
Pollution degree	2
Altitude (operating)	2000m
Certification and Standards	05111/51/00000
Safety entry low voltage	SELV (EN60950)
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1, Limited Power Source (LPS)
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
Class 2 power supply	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Component power supply for general use	EN61204-3
, , , , , , , ,	EN55024, EN61000-6-1, EN61000-6-2
Immunity	(EN61000-4-2, 3, 4, 5, 6, 8, 11)
Emission	EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4
	C 3PET CIN
· ·	LISTED
	Ind. Cont. Eq.
RoHS Compliant	Yes
Safety and Protection	
Surge voltage protection against internal surge voltages	No
Isolation voltage:	214/40
Input / output Input / PE	3kVAC 3kVAC
Output / PE	0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection
•	,

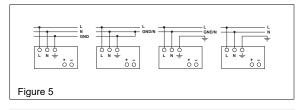
RHINO PSV24-30S Power Supply

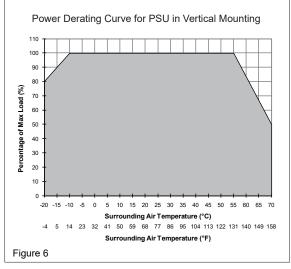












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

Electrical Connections and Wire Size					
	Strande	d / Solid	Tor	que	
	mm²	AWG	N⋅m	lb-in	
Input	0.32-3.3	22-12	0.51	4.5	
Output	0.52-3.3	20-12	0.51	4.5	

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

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

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

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

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

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



The internal fuse must not be replaced by the user.

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

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

5.3. Output characteristic curve

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

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures

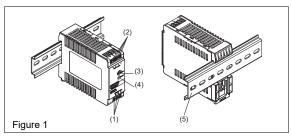
- At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

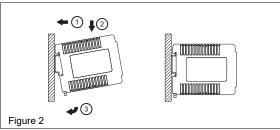
If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

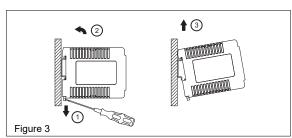
RHINO PSV24-30S Power Supply

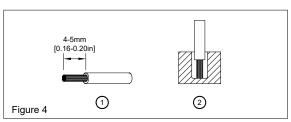
Imput (AC)		
Normal part votage Requency 100,240 Word, 154-00 Int		Technical Specifications
Section Sect	, , ,	
Finalization of the Committed Commit	Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
An All 1918/AL, Call A & 2020/AL	Voltage range	85-264 VAC
Comment Comm	Frequency	47-63 Hz
Meins bullering at nominal load (typ.) 20th styp. de 1194/06 (100% load) 10th styp. de 2200AC (100% load) 10th styp. de 2200AC (100% load) 10th styp. de 2200AC (100% load) 1348-0 r 8A C- characteristic circulal brasiler 2460AC (1004 2400AC 256 1348-0 r 8A C- characteristic circulal brasiler 2460AC (1005 256 10th styp. de 200AC (1006 256 10th styp. d	Nominal current	< 0.8 A @ 115VAC, < 0.4 A @ 230VAC
100	Inrush current limitation (+25°C, cold start)	,
Turn on time	Mains buffering at nominal load (typ.)	20ms typ. @ 115VAC (100% load)
Second 13.5 A 2500 (non-epipecoble)	Turn-on time	
Seconomical testing protection Carlo Compared Control Contro		
Calego paramet		
Output (OC) Nomman output voltage U _M / fobrance 24-09 VCC (maximum prover ≤ 30W) Nominal columnt 1.25 A Peating 1.10°C to -20°C (25°K°), 55°C (3.38°K°C) in ventral orientation Sturby with capacitive bads Max. gover dissipation idling / normal load approx. Bickins y at 100% load 87.0% by @ 115VAC, 88.0% by @ 230VAC PARD (20MHz) at 25°C, 100% load 87.0% by @ 115VAC, 88.0% by @ 230VAC PARD (20MHz) at 25°C, 100% load 87.0% by @ 115VAC, 88.0% by @ 230VAC PARD (20MHz) at 25°C, 100% load PSB6-REMADS, PSB6-REMADS or with ORing Doole General Data Psack (PC), enclosed Type of housing Psack (PC), enclosed LD signals Groon LED OC OK MTBF 350,000 by s.s. sp tribourdia Dimensions (L, xV, xV, H) 75mm x 21mm x 89.5 mm [295 in x 0.83 in x 3.52 in] (See www.hutemalonibret.com for complete engineering draw Weight 0.11 kg/l 38 orl Connection method Serve connection Stripping longth 4.5 mm (10.16 kg.0.20 in] Operating Emperature (surrounding air temperature) 4.0°C to 4.5°C 1-40°F to 14.5°F l Humidity at 4.5°C, no condensation Operating ED000000-2-6, Sie Www. 100°k to 500		
Nominal output violage Lifty fibelance 24-28 VDC (recoimum power < 30My) Nominal output 12.5 A. Heise in Fig. 8. Heise in	,	THING E-TOWNO
Vertage adjustment range 24-28 VOC (maximum power ≤ 80W)	. , ,	24VDC ± 2 %
Naminal current	, , ,	
Derating		
1-00°C to -20°C (28°C/C) 58°C (33°S/C) in wetleal orientation		Refer to Fig. 6
Max. power dissipation idling / nominal load approx. 87.0% by m. 0.15VA (2.8.0% by m. 0.230VAC	perating	-10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation
Biticiency at 100% load	Startup with capacitive loads	Max. 3,000µF
PARD (20MHz) at +25°C, 100% load	Max. power dissipation idling / nominal load approx.	0.5 W / 4.5 W
Parallel operation General Data Type of housing LED signals Green LED DC OK MTBF Assistic (PC), enclosed Green LED DC OK Assistic (PC), enclosed Green LED COOR Assistic (PC), e	Efficiency at 100% load	87.0% typ. @ 115VAC, 88.0% typ. @ 230VAC
Plastic (PC), enclosed	PARD (20MHz) at +25°C, 100% load	
Plastic (PC), enclosed	Parallel operation	PSB60-REM20S / PSB60-REM40S or with ORing Diode
LED signals Green LED DC OK MTBF A 530,000 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 waw AutomationDirect.com for complete engineering draw Veight Connection method Screw connection Stripping length A-5mm [0.16-0.20 in] Operating temperature (surrounding air temperature) Poerating temperature (surrounding air temperature) Purificial temperature (surrou	General Data	
MTBF S350,000 hrs. as per Telcordia	Type of housing	Plastic (PC), enclosed
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 draw Weight	LED signals	Green LED DC OK
Weight 0.11 kg [3.9 oz] Connection method Sorew connection Sorew connection 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 +158°F] Humidity at +25°C, no condensation Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz [9.19 kg/s] Vibration Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz [9.19 kg/s] Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz [9.19 kg/s] Non-Operating: IEC60068-2-7, Half Sine Wave: 105 for a duration of 11ms, shock for all X, Y, Z directions Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for deach 3 directions Pollution degree Altitude (operating) 2000m Certification and Standards Sately entry low voltage Electrical safety (of information technology equipment) Industrial control equipment UL/C-UL lised to UL508 and CSA C22 2 No. 107.1-01 (File No. E198298), CB scheme to IEC60950-1, Limited Power Source (IEP) Industrial control equipment UL/C-UL lised to UL508 and CSA C22 2 No. 107.1-01 (File No. E197592) CE In conformance with EMC directive 2014/30FU and Low Voltage Directive 2014/35/EU Component power supply for general use ENSSO24, ENSTOOL 4-2, 3, 4, 5, 6, 8, 11) Emission ENSSO24, ENSTOOL 4-3, 4, 5, 6, 8, 11) Enission ENSSO24, ENSTOOL 4-3, 4, 5, 6, 8, 11) ENSSO24, ENSTOOL 4-3, 4, 5, 6, 8, 11) ENSSO24, ENSTOOL 4-3, 4, 5, 6, 8, 11) ENSSO25, ENSSO011, ENSTOOL-6-3, ENSTOOL-6-4 Sately and Protection Surge voltage protection against internal surge voltages Input / PE 38VAC	MTBF	> 350,000 hrs. as per Telcordia
Connection method Screw connection Shripping length 4-5mm [0.16-0.20 in] Operating temperature (surrounding air temperature) -20°C to +70°C 1-4°F to +158°F [Refer to Fig. 6) Storage temperature -4-0°C to +45°C [-40°F to +158°F] Humidity at +25°C, no condensation Operating: IEC60068-2-6, Sine Wave: 1042 to 5000+2 (2) 09 fmis; 20 min. per axis for all X, Y, Z directions Non-Operating: IEC60068-2-6, Random: 54t to 5000+2 (2) 09 fmis; 20 min. per axis for all X, Y, Z directions Non-Operating: IEC60068-2-27, Half Sine Wave: 105 for a duration of 11ms, shock for 1 microtion (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for each 3 directions Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for each 3 directions Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for each 3 directions Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for each 3 directions Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for each 3 directions Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for each 3 directions Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for each 3 directions Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for each 3 directions Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for each 3 directions Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for all X, Y, Z directions Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for all X, Y, Z directions Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for all X, Y, Z directions Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for all X, Y, Z directions Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for all X, Y, Z directions Non-Oper	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.)
Stripping length 4-5mm [0.16-0.20 in] Operating temperature (surrounding air temperature) -20°C to +70°C [-4°F to +158°F] Riefer to Fig. 6) Storage temperature -40°C to +85°C [-40°F to +158°F] Riefer to Fig. 6) Storage temperature 5 to 95% RH Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19 Em/s² displacement of 0.35 mm, 60min per axis for all X, vibration Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz @ 0 grms); 20 min. per axis for all X, Y, Z directions 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: 500 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 500 for a duration of 11ms, shock for 1 direction (X axis	Weight	0.11 kg [3.9 oz]
Operating temperature (surrounding air temperature) -20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6) Storage temperature -40°C to +85°C [-40°F to +185°F] Humidity at +25°C, no condensation Operating: IEC60068-2-6, Sine Wave: 101k to 50001k-20 general; Singulacement of 0.35 mm, 60min per axis for all X, directions Non-Operating: IEC60068-2-27, Half Sine Wave: 106 for a duration of 11 ms, shock for 1 directions (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 106 for a duration of 11 ms, shock for 1 directions (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 106 for a duration of 11 ms, shock for a directions of the period of the per	Connection method	Screw connection
Storage temperature -40°C to +85°C [-40°F to +185°F] Humidity at +25°C, no condensation S to 95% RH Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19,6m/s³ displacement of 0.35 mm, 60min per axis for all X, vibration Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz @ 19,6m/s³ displacement of 0.35 mm, 60min per axis for all X, vibration Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz @ 19,6m/s³ displacement of 0.35 mm, 60min per axis for all X, vibration of 11ms, shock for 1 directions of 11ms, 5 mock for 2 directions on 4 monopolity (File Mark) of 11ms, 3 shocks for each 3 directions on 4 monopolity (File Mark) of 11ms, 5 mock for 1 directions on 4 monopolity (File Mark) of 11ms, 5 mock for 1 directions on 4 monopolity (File Mark) of 11ms, 5 mock for 1 directions on 4 monopolity (File Mark) of 11ms, 5 mock for 1 directions on 4 monopolity (File Mark) of 11ms, 5 mock for a duration of 11ms, 5 mock for a duration of 11ms, 5 mock for ach 3 directions on 4 monopolity (File Mark) of 11ms, 5 mock for a duration of 11ms, 5 mock for all X, vibration of 11ms, 5 mock for all X, vi	Stripping length	4-5mm [0.16-0.20 in]
Humidity at 425°C, no condensation Sto 95% RH	Operating temperature (surrounding air temperature)	-20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6)
Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s², displacement of 0.35 mm, 60min per axis for all X, Vibration Non-Operating: IEC60068-2-6, Random: 5Hz 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: 50G for a duration of 11ms, shock for each 3 directions Pollution degree 2 Allitude (operating) 2000m Certification and Standards Salety entry low voltage SELV (EN60950) 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, Limited Power Source (LPS) Industrial control equipment UL/C-UL listed to UL508 and CSA C22.2 No. 107.1-01 (File No. E197592) CE UL/C-UL listed to UL508 and CSA C22.2 No. 107.1-01 (File No. E197592) CE UL/C-UL listed to UL508 and CSA C22.2 No. 107.1-01 (File No. E197592) CE Inmunity	Storage temperature	-40°C to +85°C [-40°F to +185°F]
Vibration Non-Operating: IEC60068-2-6, Random: SHz 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) Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, shock for 1 directions Pollution degree 2 Allitude (operating) 2000m Certification and Standards Safety entry low voltage SELV (EN60950) UL/C-UL recognized to UL60950-1 and CSA C222 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1, Limited Power Source (LPS) Industrial control equipment UL/C-UL listed to UL508 and CSA C222 No. 107.1-01 (File No. E197592) Class 2 power supply UL/C-UL listed to UL508 and CSA C222 No. 107.1-01 (File No. E197592) CE UL/C-UL listed to UL508 and CSA C222 No. 107.1-01 (File No. E197592) CE In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU Component power supply for general use EN55032, EN55011, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11) Emission EN55032, EN55011, EN61000-6-3, EN61000-6-3 EN55032, EN55011, EN61000-6-3, EN61000-6-3 Surge voltage protection Surge voltage protection against internal surge voltages Input / Output Input / PE 3KVAC	Humidity at +25°C, no condensation	
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: 106 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 506 for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 506 for a duration of 11ms, shocks for each 3 directions Pollution degree 2 Altitude (operating) 2000m Certification and Standards Satety entry low voltage Electrical satety (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, 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) UL/C-UL listed to UL508 and CSA C22.2 No. 107.1-01 (File No. E197592) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU Component power supply for general use EN61204-3 Immunity EN5024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11) Emission EN55032, EN55011, EN61000-6-3, EN61000-6-4 **Safety and Protection** Surge voltage protection against internal surge voltages Isolation voltage: Input / Output Input / PE 3kVAC	Vibration	
Shock Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions Pollution degree Altitude (operating) Zenotification and Standards Safety entry low voltage SELV (EN60950) SELV (EN60950) SUL/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 EN61204-3 Immunity EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11) Emission EN55032, EN55011, EN61000-6-3, EN61000-6-4 Safety and Protection Surge voltage protection against internal surge voltages Input / output Input / PE SAVAC INSURANCE	VIDIALIUII	Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms): 20 min, per axis for all X. Y. Z directions
Pollution degree 2 Altitude (operating) Certification and Standards Safety entry low voltage Electrical safety (of information technology equipment) Industrial control equipment Class 2 power supply Class 2 power supply Cle Component power supply for general use Immunity Emission EN55024, EN55011, EN61000-6-3, EN61000-6-4 EN55024, EN55032, EN55011, EN61000-6-3, EN61000-6-4 Safety and Protection Surge voltage protection against internal surge voltages Inculatory of the protection of the protectio	Shock	Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis)
Altitude (operating) Certification and Standards Safety entry low voltage Electrical safety (of information technology equipment) Industrial control equipment Class 2 power supply Class 2 power supply Class 2 power supply or general use Immunity Emission ENSECUAL (SACCE) ENSECUAL (SACCE) ENSECUAL (SACCE) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU ENSECUAL (SACCE) ENSECUAL (SACCE) ENSECUAL (SACCE) In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU ENSECUAL (SACCE) ENSECUAL (SAC		
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Component power supply for general use		
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Emission EN55032, EN55011, EN61000-6-3, EN61000-6-4 EN58298 RoHS Compliant Yes Safety and Protection Surge voltage protection against internal surge voltages Isolation voltage: Input / output Input / PE 3kVAC Input / PE		EN55024, EN61000-6-1, EN61000-6-2
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Surge voltage protection against internal surge voltages Isolation voltage: Input / output Input / PE SkVAC 3kVAC 3kVAC		Yes
Isolation voltage:		
Input / output Input / PE 3kVAC 3kVAC		No No
Input / PE 3kVAC		אואור
	Input / Output Input / PE	
Output/PE U.5 KVAC	Output / PE	0.5 kVAC
Protection degree IP20	Protection degree	IP20
Safety class Class I with PE connection	Safety class	Class I with PE connection

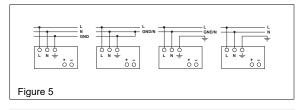
RHINO PSV24-50S Power Supply

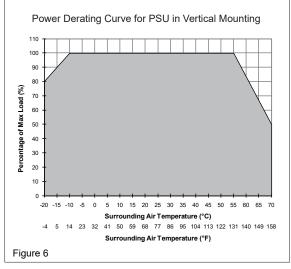












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

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

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

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

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

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

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

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



The internal fuse must not be replaced by the user.

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

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

5.3. Output characteristic curve

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

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures

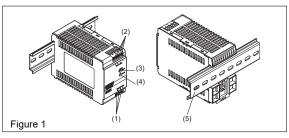
- At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

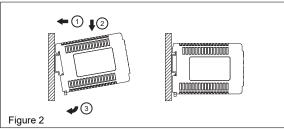
If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

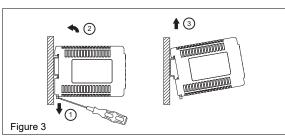
RHINO PSV24-50S Power Supply

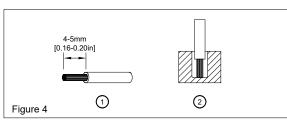
	Technical Specifications
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 1.0 A @ 115VAC, < 0.6 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 60A @ 230VAC
Mains buffering at nominal load (typ.)	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)	V mar o Elotto
Nominal output voltage U _N / tolerance	24VDC ± 2 %
Voltage adjustment range	24-28 VDC (maximum power ≤ 50W)
Nominal current	2.1 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 / 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
VIDIALIOII	Non-Operating: IFC60068-2-6. 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	OFILM/FM000F0)
Safety entry low voltage	SELV (EN60950) UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1,
Electrical safety (of information technology equipment)	Limited Power Source (LPS)
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
Class 2 power supply	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Component power supply for general use	EN61204-3
Immunity	EN55024, EN61000-6-1, EN61000-6-2
, and the second	(EN61000-4-2, 3, 4, 5, 6, 8, 11)
Emission	EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4
	3PET CONTRACTOR OF THE CONTRAC
	c UL) E197592 C THE US
	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	3kVAC
Output / PE	0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

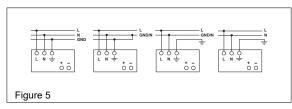
RHINO PSV24-100S Power Supply

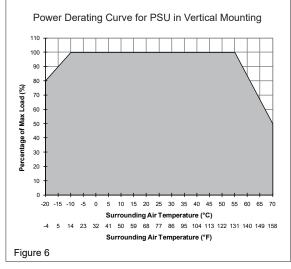












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1. Safety instructions

- 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.

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- (3) DC voltage adjustment potentiometer
- (4) DC OK LED (green)
- 5) Universal mounting rail system

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

- -

The terminal block connectors allow easy and fast wiring.

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

Electrical Connections and Wire Size					
	Strande	d / Solid	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 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:

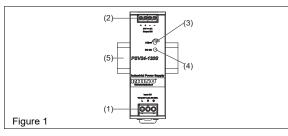
- 1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
- 2. Above +55°C [131°F], the output capacity has to be reduced by 3.33% per degree Celsius increase in temperature.

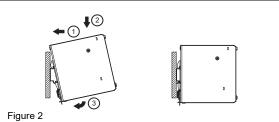
If the output capacity is not reduced when $T_{Amb} > 55^{\circ}C$ [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

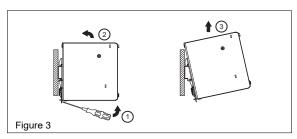
RHINO PSV24-100S Power Supply

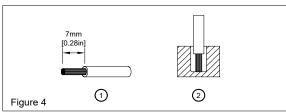
	Technical Specifications		
Input (AC)			
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz		
Voltage range	85-264 VAC		
Frequency	47-63 Hz		
Nominal current	< 1.2 A @ 115VAC, < 0.6 A @ 230VAC		
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 60A @ 230VAC		
Mains buffering at nominal load (typ.)	25ms typ. @ 115VAC (100% load) 50ms typ. @ 230VAC (100% load)		
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		
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)		
Pollution degree	Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions		
Altitude (operating)	2000m		
Certification and Standards	200011		
Safety entry low voltage	SELV (EN60950)		
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1,		
	Limited Power Source (LPS)		
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)		
Class 2 power supply	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)		
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU		
Component power supply for general use	EN61204-3 EN55024, EN61000-6-1, EN61000-6-2		
Immunity	(EN61000-4-2, 3, 4, 5, 6, 8, 11)		
Emission	EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4		
(c C US		
RoHS Compliant	LISTED E198298 Ind. Cont. Eq. Yes		
Safety and Protection	100		
Surge voltage protection against internal surge voltages	No		
Isolation voltage:	NU NU		
Input / output	3kVAC		
Input / PE	1.5 kVAC		
Output / PE	0.5 kVAC		
Protection degree	IP20		
Safety class	Class I with PE connection		

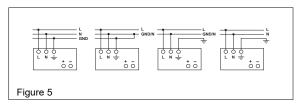
RHINO PSV24-120S Power Supply

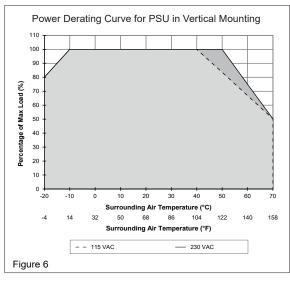












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. **KEEP FOR FUTURE REFERENCE.**

1. Safety instructions

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

The terminal block connectors allow easy and fast wiring.

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

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

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

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

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

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

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

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



The internal fuse must not be replaced by the user

5.2. Output connection (Fig. 1 (2))Use the "+" and "-" screw connections to establish the 24VDC connection. The output provides 24VDC. The output voltage can be adjusted from 22 to 28 VDC on the potentiometer. The green LED DC OK displays correct function of the output (Fig. 1 (4)). The device has a short circuit and overload protection and an overvoltage protection limited to 28.8-35.2 VDC.

5.3. Output characteristic curve

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

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

- 1. At -10° 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
- Above +50°C [122°F] (230VAC), the output capacity must be reduced by 2.5% per degree Celsius temperature increase.

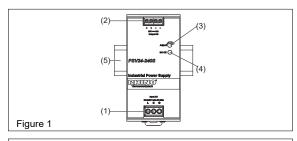
If the output capacity is not reduced when $T_{Amb} > 40^{\circ}C$ (115VAC) or $> 50^{\circ}C$ (230VAC), the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

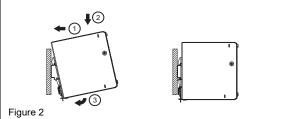
RHINO PSV24-120S Power Supply

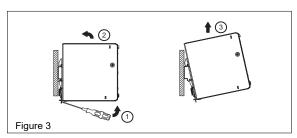
	Technical Specifications	
Input (AC)	Poolitical opoortionations	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz	
Voltage range	85-264 VAC	
Frequency	47-63 Hz	
Nominal current	2.2 A typ. @ 115VAC, 1.2 A typ. @ 230VAC	
Inrush current limitation (+25°C, cold start)	20A typ. @ 115VAC, 40A typ. @ 230VAC	
,	20ms typ. @ 115VAC (100% load)	
Mains buffering at nominal load (typ.)	90ms typ. @ 230VAC (100% load)	
Turn-on time	200ms typ. @ 115VAC & 230VAC (100% load)	
Internal fuse	T 4A / 250V (non-replaceable)	
Leakage current	< 0.25 mA @ 264VAC	
Output (DC)		
Nominal output voltage U _N / tolerance	24VDC ± 2 %	
Voltage adjustment range	22-28 VDC (maximum power ≤ 120W)	
Output current	5A	
Derating	Refer to Fig. 6 -10°C to -20°C (2%/°C), > 40°C (1.67%/°C) @ 115VAC -10°C to -20°C (2%/°C), > 50°C (2.5%/°C) @ 230VAC	
Startup with capacitive loads	Max. 8,000µF	
Max. power dissipation idling / nominal load approx.	0.65 W / 13.3 W	
Efficiency at 100% load	88.0% typ. @ 115VAC, 90.0% typ. @ 230VAC	
PARD (20MHz) at 100% load	< 120 mVpp	
Parallel operation	PSB60-REM20S / PSB60-REM40S or with ORing Diode	
General Data	1	
Type of housing	SGCC (Case Cover) / Aluminum (Case Chassis)	
LED signals	Green LED DC OK	
MTBF	>700,000 hrs. as per Telcordia	
	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.)	
Dimensions (L x W x H) 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 5000m for ITE application	
Certification and Standards	1 COOCHTOT TE application	
Safety entry low voltage	SELV (EN60950)	
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1	
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)	
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU	
Component power supply for general use	EN61204-3	
	FN55024, EN61000-6-1, FN61000-6-2	
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	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	
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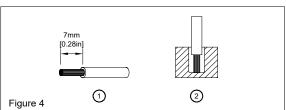
www.autiomationdirect.com

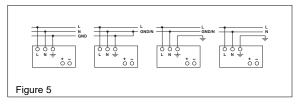
RHINO PSV24-240S Power Supply

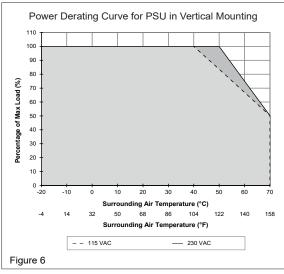












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

Electrical Connections and Wire Size				
	Stranded / Solid		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 $60^{\circ}\text{C}/75^{\circ}\text{C}$ or more to fulfill UL requirements.

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

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

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



The internal fuse must not be replaced by the user.

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

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

5.3. Output characteristic curve

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

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures

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

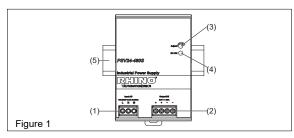
If the output capacity is not reduced when $T_{Amb} > 40^{\circ}C$ [$104^{\circ}F$] (115VAC) or $> 50^{\circ}C$ [$122^{\circ}F$] (230VAC), the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the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

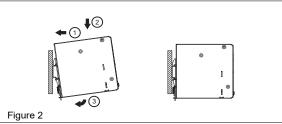
RHINO PSV24-240S Power Supply

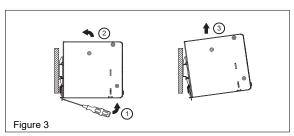
	,
	Technical Specifications
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	2.8 A typ. @ 115VAC, 1.4 A typ. @ 230VAC
Inrush current limitation (+25°C, cold start)	20A typ. @ 115VAC, 40A typ. @ 230VAC
	10ms typ. @ 115VAC (100% load)
Mains buffering at nominal load (typ.)	16ms typ. @ 230VAC (100% load)
Turn-on time	1000ms typ. @ 115VAC & 230VAC (100% load)
Internal fuse	T 6.3 A / 250V (non-replaceable)
Leakage current	< 1mA @ 264VAC
Output (DC)	
Nominal output voltage U _N / tolerance	24VDC ± 2 %
Voltage adjustment range	22-28 VDC (maximum power ≤ 240W)
• ,	
Output current	10A Refer to Fig. 6
Derating	> 40°C (1.67%/°C) @ 115VAC (90-229 VAC)
20.49	> 50°C (2.5%/°C) @ 230VAC (230-264 VAC)
Startup with capacitive loads	Мах. 8,000µF
	4.62 W @ 115VAC (0% load)
May power discipation idling /	2.14 W @ 230VAC (0% load)
Max. power dissipation idling / nominal load approx.	31.53 W @ 115VAC (100% load)
	25.44 W @ 230VAC (100% load)
Efficiency at 100% load	88.0% typ. @ 115VAC, 90.0% typ. @ 230VAC
PARD (20MHz) at 100% load	< 120mVpp @ -10°C to +70°C
	< 240mVpp @ -20°C to -10°C
Parallel operation	PSB60-REM20S / PSB60-REM40S or with ORing Diode
General Data	
Type of housing	SGCC (Case Cover) / Aluminum (Case Chassis)
LED signals	Green LED DC OK
MTBF	> 700,000 hrs. as per Telcordia
Dimensions (L x W x H)	123.6 mm x 60mm x 117.6 mm [4.87 in x 2.36 in x 4.63 in] (See www.AutomationDirect.com for complete engineering drawings.
Weight	0.80 kg [28 oz]
Connection method	Screw connection
Stripping length	7mm [0.28 in]
Operating temperature (surrounding air temperature)	-20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6)
, , , ,	
Storage temperature	-40°C to +85°C [-40°F to +185°F]
Humidity at +25°C, no condensation	5 to 95% RH
Vibration	Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s² (2G peak); 10min per cycle, 60min for X direction Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions
Objection	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	API II (PI IAAPA)
Safety entry low voltage	SELV (EN60950)
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Component power supply for general use	EN61204-3
Immunity	EN55024, EN61000-6-1, EN61000-6-2
,	(EN61000-4-2, 3, 4, 5, 6, 8, 11, 12)
Emission	EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4
Voltage Sag Immunity	SEMI F47 – 0706 @ 200VAC
	4ZW4
	LISTED <i>E198298</i>
	Ind. Cont. Eq.
RoHS Compliant	Yes
Safety and Protection	
Transient surge voltage protection	Varistor
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 / Output Input / PE	2kVAC
Output / PE	0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection
1st Edition, 01/2019	Oldo F Harri E dominodorii

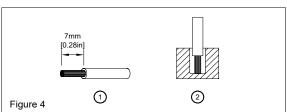
1st Edition, 01/2019 www.automationdirect.com

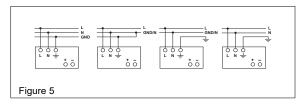
RHINO PSV24-480S Power Supply

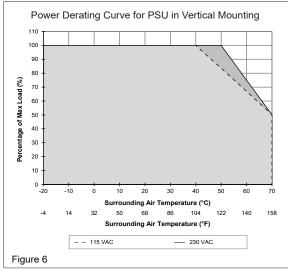












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

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

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

Electrical Connections and Wire Size				
	Stranded / Solid		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 $60^{\circ}\text{C}/75^{\circ}\text{C}$ or more to fulfill UL requirements.

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

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

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



The internal fuse must not be replaced by the user.

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

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

5.3. Output characteristic curve

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

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

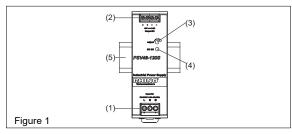
- 1. Above + 40° C [104° F] (115VAC), the output capacity has to be reduced by 1.67% per degree Celsius increase in temperature.
- Above +50°C [122°F] (230VAC), the output capacity has to be reduced by 2.5% per degree Celsius increase in temperature.

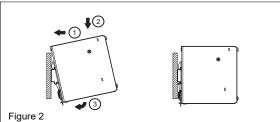
If the output capacity is not reduced when $T_{Amb} > 40^{\circ}C$ [104°F] (115VAC) or $> 50^{\circ}C$ [122°F] (230VAC), the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

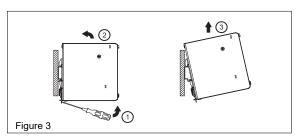
RHINO PSV24-480S Power Supply

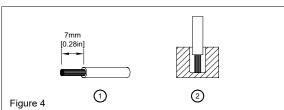
	,	
	Technical Specifications	
Input (AC)		
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz	
Voltage range	85-264 VAC	
Frequency	47-63 Hz	
Nominal current	5.4 A typ. @ 115VAC, 2.7 A typ. @ 230VAC	
Inrush current limitation (+25°C, cold start)	40A typ. @ 115VAC, 80A typ. @ 230VAC	
,	10ms typ. @ 115VAC (100% load)	
Mains buffering at nominal load (typ.)	16ms typ. @ 230VAC (100% load)	
Turn-on time	1000ms typ. @ 115VAC & 230VAC (100% load)	
Internal fuse	F 10 A / 250V (non-replaceable)	
Leakage current	< 1mA @ 264VAC	
Output (DC)		
Nominal output voltage U _N / tolerance	24VDC ± 2 %	
Voltage adjustment range	22-28 VDC (maximum power ≤ 480W)	
Output current	20A	
	Refer to Fig. 6	
Derating	> 40°C (1.67%/°C) @ 115VAC (90-229 VAC) > 50°C (2.5%/°C) @ 230VAC (230-264 VAC)	
Startup with capacitive loads	Мах. 8,000µF	
	5W @ 115VAC (0% load)	
May power dissipation idling / pomissi lead assets	4W @ 230VAC (0% load)	
Max. power dissipation idling / nominal load approx.	50W @ 115VAC (100% load)	
	40W @ 230VAC (100% load)	
Efficiency at 100% load	85.0% typ. @ 115VAC, 88.0% typ. @ 230VAC	
PARD (20MHz) at 100% load	< 120mVpp @ -10°C to +70°C < 240mVpp @ -20°C to -10°C	
, ,	PSB60-REM40S or with ORing Diode	
Parallel operation	F 3000-NEIW403 01 WILLI ONLING DIQUE	
General Data	CCCC (Case Cases) / Alisminus (Case Chearie)	
Type of housing	SGCC (Case Cover) / Aluminum (Case Chassis)	
LED signals	Green LED DC OK	
MTBF	> 700,000 hrs. as per Telcordia	
Dimensions (L x W x H)	123.6 mm x 85.5 mm x 128.5 mm [4.87 in x 3.37 in x 5.06 in] (See www.AutomationDirect.com for complete engineering drawings.)	
Weight	1.30 kg [45.9 oz]	
Connection method	Screw connection	
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-Öperating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis)	
Shock	Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions	
Pollution degree	2	
Altitude (operating)	2000m for industrial application	
	5000m for ITE application	
Certification and Standards		
Safety entry low voltage	SELV (EN60950)	
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1	
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)	
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU	
Component power supply for general use	EN61204-3	
Immunity	EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12)	
Emission	(EN01000-4-2, 3, 4, 5, 0, 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	
voltage Sag IIIIIIuiiity	3EIVII F47 — 0700 @ 200VAG	
\	C UL DE197592 C TAN US	
	LISTED E198298	
D-110 0 151	Ind. Cont. Eq.	
RoHS Compliant	Yes	
Safety and Protection		
Transient surge voltage protection	Varistor	
Current limitation at short-circuits approx.	I _{surge} = 109-130% or Po _{max} typically (continuous current)	
Surge voltage protection against internal surge voltages	Yes	
Isolation voltage:	01440	
Input / output Input / PE	3kVAC 2kVAC	
Output / PE	0.5 kVAC	
Protection degree	IP20	
Safety class	Class I with PE connection	
1ct Edition .01/2010		

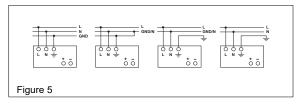
RHINO PSV48-120S Power Supply

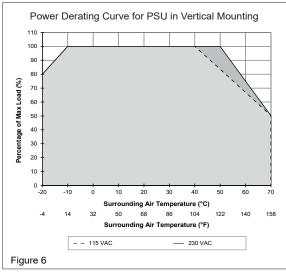












READ INSTRUCTIONS BEFORE INSTALLING OR OPERATING THIS DEVICE. KEEP FOR FUTURE REFERENCE.

1. Safety instructions

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

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

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

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

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

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

	1 1 7		
	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		
, , , , , , , , , , , , , , , , , , , ,	20ms typ. @ 115VAC (100% load)		
Mains buffering at nominal load (typ.)	90ms typ. @ 230VAC (100% load)		
Turn-on time	200ms typ. @ 115VAC & 230VAC (100% load)		
Internal fuse	T 4A / 250V (non-replaceable)		
Leakage current	< 0.25 mA @ 264VAC		
Output (DC)			
Nominal output voltage U _N / tolerance	48VDC ± 2 %		
Voltage adjustment range	44-56 VDC (maximum power ≤ 120W)		
Output current	2.5 A		
Output current	Refer to Fig. 6		
Derating	-10°C to -20°C (2%/°C), > 40°C (1.67%/°C) @ 115VAC -10°C to -20°C (2%/°C), > 50°C (2.5%/°C) @ 230VAC		
Startup with capacitive loads	Max. 4,000µF		
Max. power dissipation idling / nominal load approx.	1.21 W / 13.3 W		
Efficiency at 100% load	89.0% typ. @ 115VAC, 90.0% typ. @ 230VAC		
PARD (20MHz) at 100% load	< 150 mVpp		
Parallel operation	PSB60-REM20S / PSB60-REM40S or with ORing Diode		
General Data			
Type of housing	SGCC (Case Cover) / Aluminum (Case Chassis)		
LED signals	Green LED DC OK		
0			
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		
***	5000m for ITE application		
Certification and Standards	OFILI/FNIOOFO\		
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 Veltege Cog Immunity	EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4		
Voltage Sag Immunity	SEMI F47 – 0706 @ 200VAC		
	C SUUS LISTED Ind. Cont. Eq. C SUUS E198298		
RoHS Compliant	Yes		
Safety and Protection			
Transient surge voltage protection	Varistor		
Current limitation at short-circuits approx.	I _{suroe} = 105-150% or Po _{max} typically		
Surge voltage protection against internal surge voltages	Yes		
Isolation voltage:	163		
Input / output	3kVAC		
Input / PE	2kVAC		
Output / PE	0.5 kVAC		
Protection degree	IP20		
Safety class	Class I with PE connection		

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