RHINO DIN Rail Power Supplies
PSV Series

Economical Power Supplies

Features

15–100W Models

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

UL508 UL60950-1

120–480W Models

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

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

RHINO PSV5-15S Power Supply

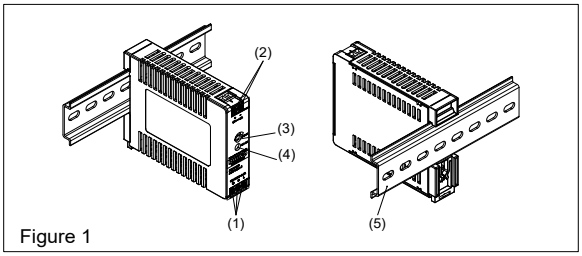

Figure 1

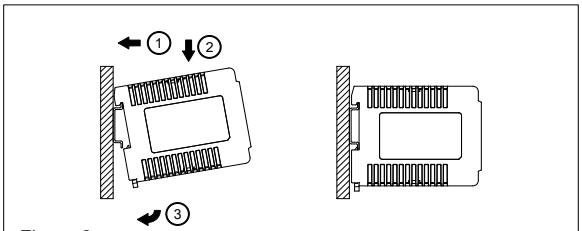

Figure 2

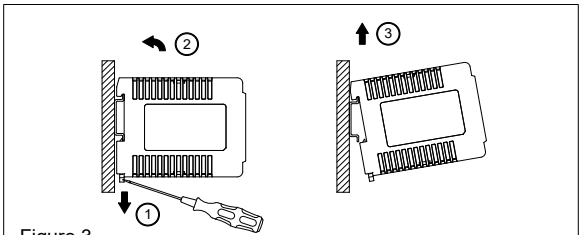

Figure 3

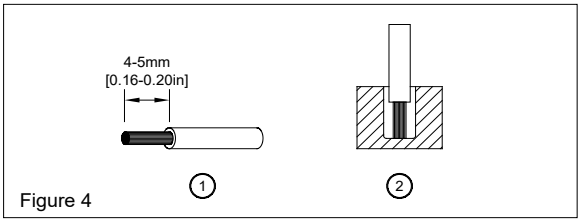

Figure 4

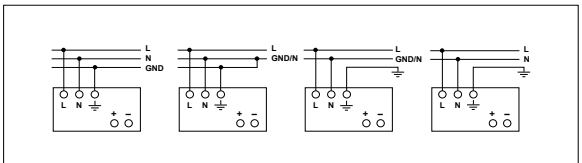

Figure 5

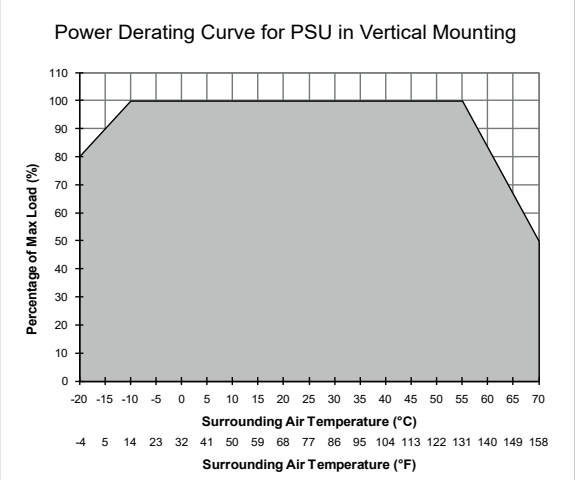

Figure 6

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

1. Safety instructions

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

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

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

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

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

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

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

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

The internal fuse must not be replaced by the user.

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

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

5.3. Output characteristic curve

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

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

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°C [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

RHINO PSV5-15S Power Supply

Technical Specifications	
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 0.5 A @ 115VAC, < 0.3 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 65A @ 230VAC
Mains buffering at nominal load (typ.)	20ms typ. @ 115VAC (100% load) 100ms typ. @ 230VAC (100% load)
Turn-on time	< 3s @ 115VAC, < 1.5 s @ 230VAC (100% load)
Internal fuse	T 3.15 A / 250V (non-replaceable)
Recommended backup protection	10A B- or 6A C- characteristic circuit breaker
Leakage current	< 1mA @ 240VAC
Output (DC)	
Nominal output voltage U_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
Shock	Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions
Pollution degree	2
Altitude (operating)	2000m
Certification and Standards	
Safety entry low voltage	SELV (EN60950)
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1, Limited Power Source (LPS)
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
Class 2 power supply	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Component power supply for general use	EN61204-3
Immunity	EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11)
Emission	EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4
CE 3PET c UL E197592 US LISTED Ind. Cont. Eq. c UL us E198298	
RoHS Compliant	Yes
Safety and Protection	
Surge voltage protection against internal surge voltages	No
Isolation voltage: Input / output Input / PE Output / PE	 3kVAC 3kVAC 0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

1st Edition, 01/2019

RHINO PSV5-25S Power Supply

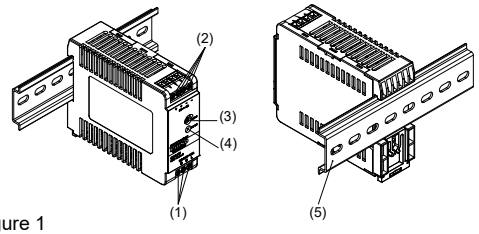

Figure 1

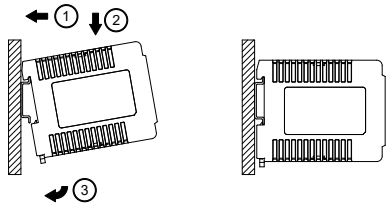

Figure 2

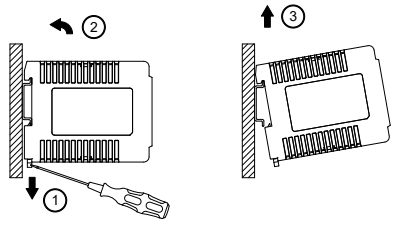

Figure 3

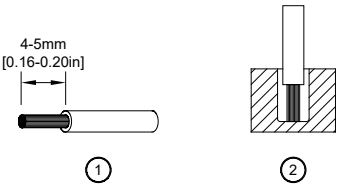

Figure 4

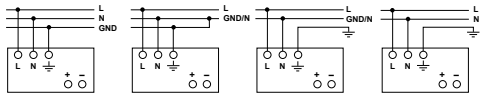

Figure 5

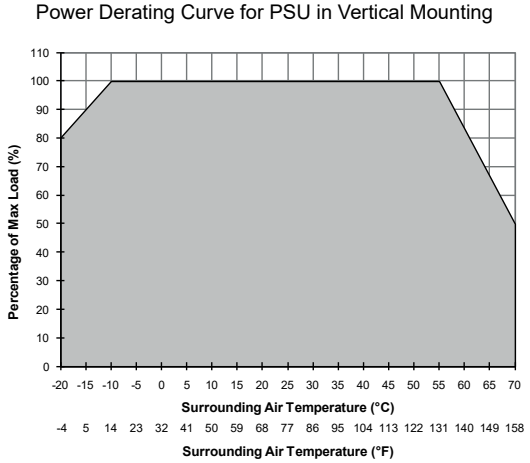

Figure 6

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

1. Safety instructions

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

Electrical Connections and Wire Size				
	Stranded / Solid		*Torque*	
	mm²	*AWG*	*N·m*	*lb·in*
Input	0.32-3.3	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_O = 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°C [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

RHINO PSV5-25S Power Supply

Technical Specifications	
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 0.8 A @ 115VAC, < 0.5 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 60A @ 230VAC
Mains buffering at nominal load (typ.)	20ms 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
Derating	Refer to Fig. 6 -10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation
Startup with capacitive loads	Max. 3,000µF
Max. power dissipation idling / nominal load approx.	0.4 W / 8 W
Efficiency at 100% load	79.0% typ. @ 115VAC, 80.0% typ. @ 230VAC
PARD (20MHz) at 100% load	< 75 mVpp
General Data	
Type of housing	Plastic (PC), enclosed
LED signals	Green LED DC OK
MTBF	> 350,000 hrs. as per Telcordia
Dimensions (L x W x H)	75mm x 30mm x 89.5 mm [2.95 in x 1.18 in x 3.52 in] (See www.AutomationDirect.com for complete engineering drawings.)
Weight	0.16 kg [5.6 oz]
Connection method	Screw connection
Stripping length	4-5mm [0.16-0.20 in]
Operating temperature (surrounding air temperature)	-20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6)
Storage temperature	-40°C to +85°C [-40°F to +185°F]
Humidity at +25°C, no condensation	5 to 95% RH
Vibration	Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s²; displacement of 0.35 mm, 60min per axis for all X, Y, Z directions Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions
Shock	Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions
Pollution degree	2
Altitude (operating)	2000m
Certification and Standards	
Safety entry low voltage	SELV (EN60950)
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1, Limited Power Source (LPS)
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
Class 2 power supply	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Component power supply for general use	EN61204-3
Immunity	EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11)
Emission	EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4
CE 3PET c UL E197592 US LISTED Ind. Cont. Eq. c CSA US E198298	
RoHS Compliant	Yes
Safety and Protection	
Surge voltage protection against internal surge voltages	No
Isolation voltage: Input / output Input / PE Output / PE	 3kVAC 3kVAC 0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

1st Edition, 01/2019

RHINO PSV12-50S Power Supply

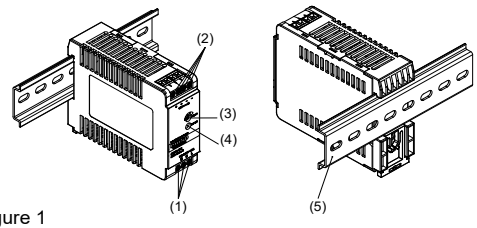

Figure 1

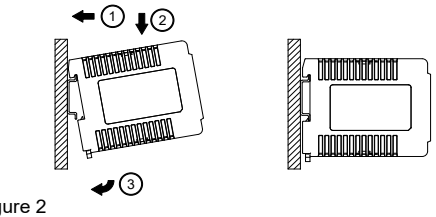

Figure 2

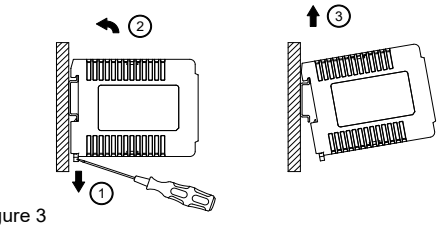

Figure 3

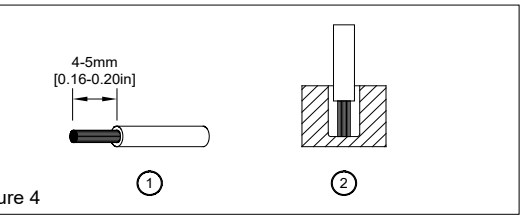

Figure 4

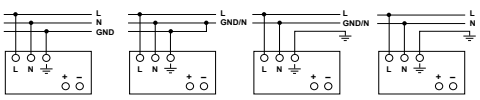

Figure 5

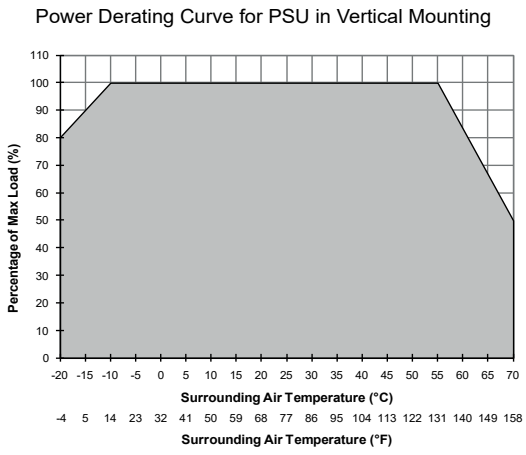

Figure 6

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

1. Safety instructions

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

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

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

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

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

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

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

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

The internal fuse must not be replaced by the user.

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

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

5.3. Output characteristic curve

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

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
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°C [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

RHINO PSV12-50S Power Supply

Technical Specifications	
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 1.0 A @ 115VAC, < 0.6 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 60A @ 230VAC
Mains buffering at nominal load (typ.)	20ms typ. @ 115VAC (100% load) 90ms typ. @ 230VAC (100% load)
Turn-on time	< 3s @ 115VAC, < 1.5 s @ 230VAC (100% load)
Internal fuse	T 3.15 A / 250V (non-replaceable)
Recommended backup protection	20A B- or 13A C- characteristic circuit breaker
Leakage current	< 1mA @ 240VAC
Output (DC)	
Nominal output voltage U_N / tolerance	12VDC ± 2 %
Voltage adjustment range	12-15 VDC (maximum power ≤ 48W)
Nominal current	4A
Derating	Refer to Fig. 6 -10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation
Startup with capacitive loads	Max. 3,000µF
Max. power dissipation idling / nominal load approx.	0.5 W / 7 W
Efficiency at 100% load	86.0% typ. @ 115VAC, 88.0% typ. @ 230VAC
PARD (20MHz) at 100% load	< 75 mVpp
Parallel operation	With ORing Diode
General Data	
Type of housing	Plastic (PC), enclosed
LED signals	Green LED DC OK
MTBF	> 350,000 hrs. as per Telcordia
Dimensions (L x W x H)	75mm x 30mm x 89.5 mm [2.95 in x 1.18 in x 3.52 in] (See www.AutomationDirect.com for complete engineering drawings.)
Weight	0.18 kg [6.3 oz]
Connection method	Screw connection
Stripping length	4-5mm [0.16-0.20 in]
Operating temperature (surrounding air temperature)	-20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6)
Storage temperature	-40°C to +85°C [-40°F to +185°F]
Humidity at +25°C, no condensation	5 to 95% RH
Vibration	Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s²; displacement of 0.35 mm, 60min per axis for all X, Y, Z directions Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions
Shock	Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions
Pollution degree	2
Altitude (operating)	2000m
Certification and Standards	
Safety entry low voltage	SELV (EN60950)
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1, UL/C-UL recognized to UL62368-1 and CSA C22.2 No. 62368-1 (File No. E508040), CB scheme to IEC62368-1, Limited Power Source (LPS)
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
Class 2 power supply	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Component power supply for general use	EN61204-3
Immunity	EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11)
Emission	EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4
CE 3PET c UL E197592 US LISTED Ind. Cont. Eq. c US E198298 E508040	
RoHS Compliant	Yes
Safety and Protection	
Surge voltage protection against internal surge voltages	No
Isolation voltage: Input / output Input / PE Output / PE	 3kVAC 3kVAC 0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

1st Edition, Rev. C, 08/2019

RHINO PSV24-30S Power Supply

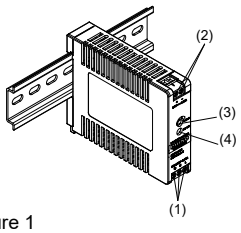

Figure 1

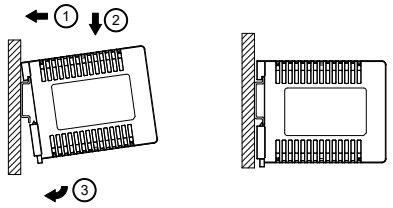

Figure 2

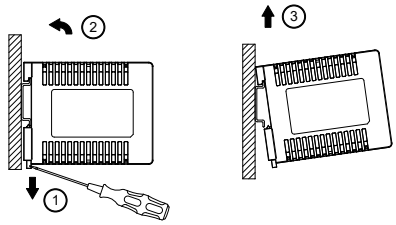

Figure 3

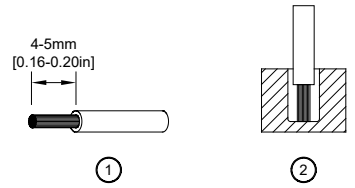

Figure 4

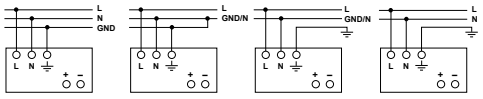

Figure 5

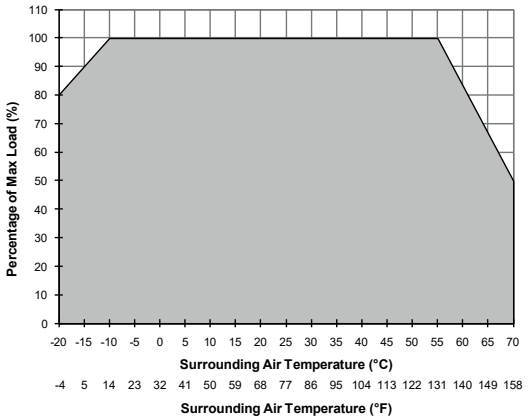

Figure 6

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

1. Safety instructions

- Switch main power off before connecting or disconnecting the device. Risk of explosion!
- To guarantee sufficient convection cooling, please keep a distance of >40mm above and >20mm below the device as well as a lateral distance of >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				
	Stranded / Solid		*Torque*	
	mm²	*AWG*	*N·m*	*lb·in*
Input	0.32-3.3	22-12	0.51	4.5
Output	0.52-3.3	20-12	0.51	4.5

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

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

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

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

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

The unit is protected with an internal fuse (not replaceable) at L pin and it has been tested and approved on 20A (UL) and 16A (IEC) branch circuits without additional protection device. An external protection device is only required if the supplying branch has an ampacity greater than above. Thus, if an external protective device is necessary, or utilized, a minimum value of 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_O = 110-150%). The secondary voltage is reduced and bounces until short circuit or overload on the secondary side has been removed.

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
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°C [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

RHINO PSV24-30S Power Supply

Technical Specifications	
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 0.8 A @ 115VAC, < 0.4 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 60A @ 230VAC
Mains buffering at nominal load (typ.)	20ms typ. @ 115VAC (100% load) 100ms typ. @ 230VAC (100% load)
Turn-on time	< 3s @ 115VAC, < 1.6 s @ 230VAC (100% load)
Internal fuse	T 3.15 A / 250V (non-replaceable)
Recommended backup protection	13A B- or 8A C- characteristic circuit breaker
Leakage current	< 1mA @ 240VAC
Output (DC)	
Nominal output voltage U_N / tolerance	24VDC ± 2 %
Voltage adjustment range	24-28 VDC (maximum power ≤ 30W)
Nominal current	1.25 A
Derating	Refer to Fig. 6 -10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation
Startup with capacitive loads	Max. 3,000µF
Max. power dissipation idling / nominal load approx.	0.5 W / 4.5 W
Efficiency at 100% load	87.0% typ. @ 115VAC, 88.0% typ. @ 230VAC
PARD (20MHz) at +25°C, 100% load	< 75 mVpp
Parallel operation	PSB60-REM20S / PSB60-REM40S or with ORing Diode
General Data	
Type of housing	Plastic (PC), enclosed
LED signals	Green LED DC OK
MTBF	> 350,000 hrs. as per Telcordia
Dimensions (L x W x H)	75mm x 21mm x 89.5 mm [2.95 in x 0.83 in x 3.52 in] (See www.AutomationDirect.com for complete engineering drawings.)
Weight	0.11 kg [3.9 oz]
Connection method	Screw connection
Stripping length	4-5mm [0.16-0.20 in]
Operating temperature (surrounding air temperature)	-20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6)
Storage temperature	-40°C to +85°C [-40°F to +185°F]
Humidity at +25°C, no condensation	5 to 95% RH
Vibration	Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s²; displacement of 0.35 mm, 60min per axis for all X, Y, Z directions Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions
Shock	Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions
Pollution degree	2
Altitude (operating)	2000m
Certification and Standards	
Safety entry low voltage	SELV (EN60950)
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1, Limited Power Source (LPS)
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
Class 2 power supply	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Component power supply for general use	EN61204-3
Immunity	EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11)
Emission	EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4
CE 3PET c UL E197592 US LISTED Ind. Cont. Eq. c UL us E198298	
RoHS Compliant	Yes
Safety and Protection	
Surge voltage protection against internal surge voltages	No
Isolation voltage: Input / output Input / PE Output / PE	 3kVAC 3kVAC 0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

1st Edition, 01/2019

RHINO PSV24-50S Power Supply

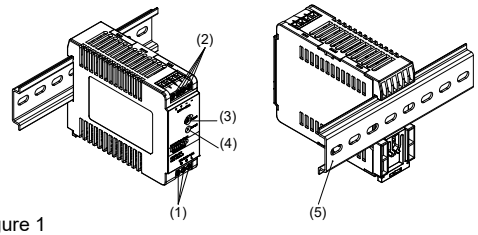

Figure 1

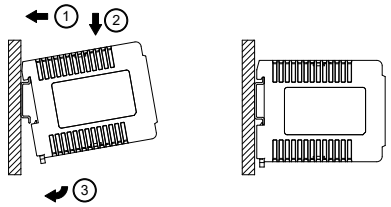

Figure 2

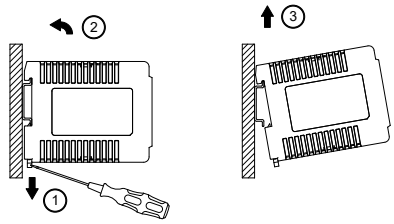

Figure 3

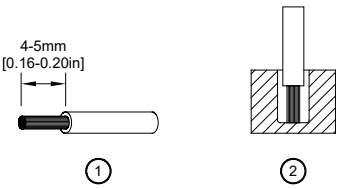

Figure 4

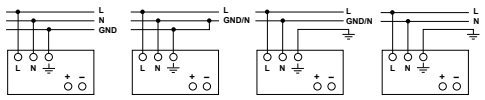

Figure 5

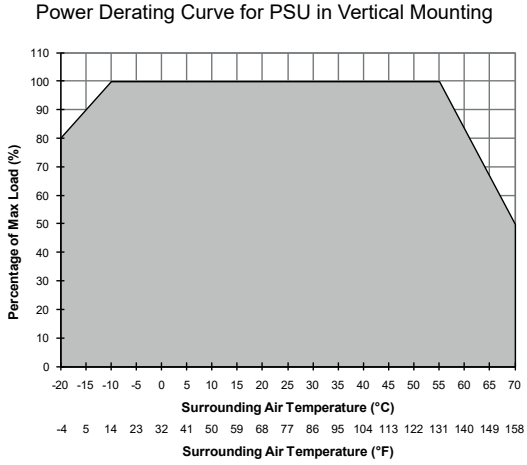

Figure 6

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

1. Safety instructions

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

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

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

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

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

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

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

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

The internal fuse must not be replaced by the user.

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

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

5.3. Output characteristic curve

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

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
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°C [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

RHINO PSV24-50S Power Supply

Technical Specifications	
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	< 1.0 A @ 115VAC, < 0.6 A @ 230VAC
Inrush current limitation (+25°C, cold start)	< 35A @ 115VAC, < 60A @ 230VAC
Mains buffering at nominal load (typ.)	20ms typ. @ 115VAC (100% load) 90ms typ. @ 230VAC (100% load)
Turn-on time	< 3s @ 115VAC, < 1.5 s @ 230VAC (100% load)
Internal fuse	T 3.15 A / 250V (non-replaceable)
Recommended backup protection	20A B- or 13A C- characteristic circuit breaker
Leakage current	< 1mA @ 240VAC
Output (DC)	
Nominal output voltage U_N / tolerance	24VDC ± 2 %
Voltage adjustment range	24-28 VDC (maximum power ≤ 50W)
Nominal current	2.1 A
Derating	Refer to Fig. 6 -10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation
Startup with capacitive loads	Max. 3,000µF
Max. power dissipation idling / nominal load approx.	0.5 W / 7W
Efficiency at 100% load	86.0% typ. @ 115VAC, 88.0% typ. @ 230VAC
PARD (20MHz) at +25°C, 100% load	< 75 mVpp
Parallel operation	PSB60-REM20S / PSB60-REM40S or with ORing Diode
General Data	
Type of housing	Plastic (PC), enclosed
LED signals	Green LED DC OK
MTBF	> 350,000 hrs. as per Telcordia
Dimensions (L x W x H)	75mm x 30mm x 89.5 mm [2.95 in x 1.18 in x 3.52 in] (See www.AutomationDirect.com for complete engineering drawings.)
Weight	0.18 kg [6.3 oz]
Connection method	Screw connection
Stripping length	4-5mm [0.16-0.20 in]
Operating temperature (surrounding air temperature)	-20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6)
Storage temperature	-40°C to +85°C [-40°F to +185°F]
Humidity at +25°C, no condensation	5 to 95% RH
Vibration	Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s²; displacement of 0.35 mm, 60min per axis for all X, Y, Z directions Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions
Shock	Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions
Pollution degree	2
Altitude (operating)	2000m
Certification and Standards	
Safety entry low voltage	SELV (EN60950)
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1, Limited Power Source (LPS)
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
Class 2 power supply	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Component power supply for general use	EN61204-3
Immunity	EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11)
Emission	EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4
CE 3PET c UL E197592 US LISTED Ind. Cont. Eq. c UL us E198298	
RoHS Compliant	Yes
Safety and Protection	
Surge voltage protection against internal surge voltages	No
Isolation voltage: Input / output Input / PE Output / PE	 3kVAC 3kVAC 0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

1st Edition, 01/2019

RHINO PSV24-100S Power Supply

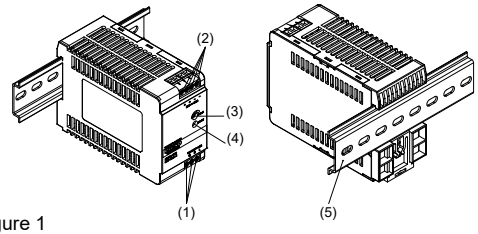

Figure 1

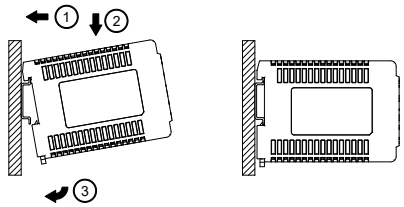

Figure 2

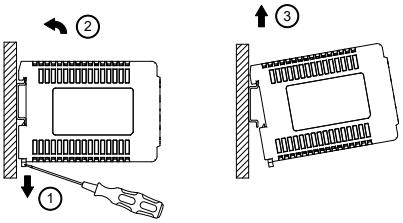

Figure 3

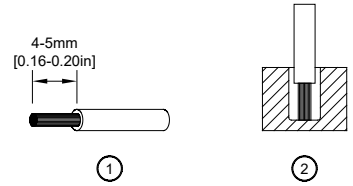

Figure 4

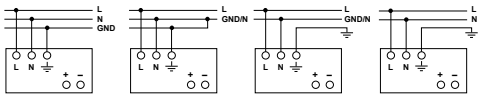

Figure 5

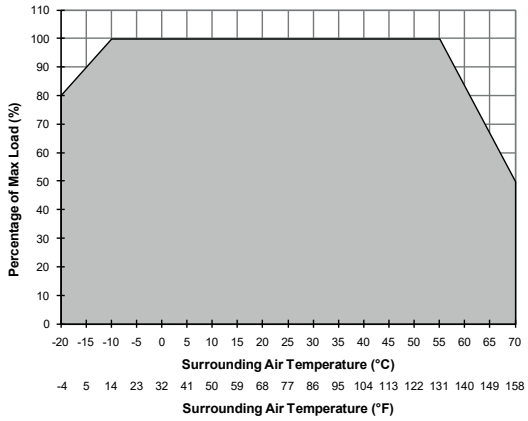

Figure 6

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

1. Safety instructions

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

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

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

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

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

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

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

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

The internal fuse must not be replaced by the user.

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

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

5.3. Output characteristic curve

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

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

1. At -10°C to -20°C [14°F to -4°F], the output capacity has to be reduced by 2% per degree Celsius increase in temperature.
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°C [131°F], the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

RHINO PSV24-100S 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
Derating	Refer to Fig. 6 -10°C to -20°C (2%/°C), > 55°C (3.33%/°C) in vertical orientation
Startup with capacitive loads	Max. 3,000µF
Max. power dissipation idling / nominal load approx.	0.4 W / 10W
Efficiency at 100% load	87.0% typ. @ 115VAC, 89.0% typ. @ 230VAC
PARD (20MHz) at +25°C, 100% load	< 75 mVpp
Parallel operation	PSB60-REM20S / PSB60-REM40S or with ORing Diode
General Data	
Type of housing	Plastic (PC), enclosed
LED signals	Green LED DC OK
MTBF	> 350,000 hrs. as per Telcordia
Dimensions (L x W x H)	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 Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions
Shock	Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions
Pollution degree	2
Altitude (operating)	2000m
Certification and Standards	
Safety entry low voltage	SELV (EN60950)
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1, Limited Power Source (LPS)
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
Class 2 power supply	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Component power supply for general use	EN61204-3
Immunity	EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11)
Emission	EN55032, EN55011, EN61000-3-3, EN61000-6-3, EN61000-6-4
CE 3PET c UL E197592 US LISTED Ind. Cont. Eq. c UL us E198298	
RoHS Compliant	Yes
Safety and Protection	
Surge voltage protection against internal surge voltages	No
Isolation voltage: Input / output Input / PE Output / PE	 3kVAC 1.5 kVAC 0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

1st Edition, 01/2019

RHINO PSV24-120S Power Supply

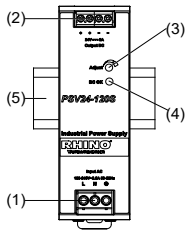

Figure 1

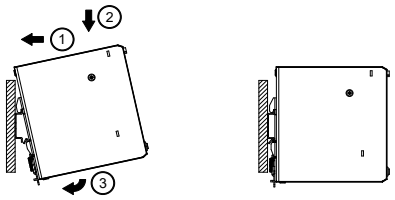

Figure 2

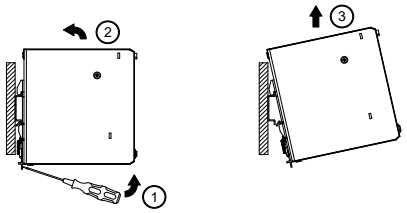

Figure 3

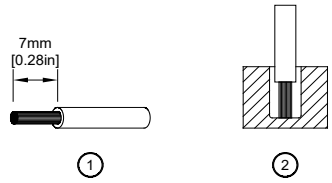

Figure 4

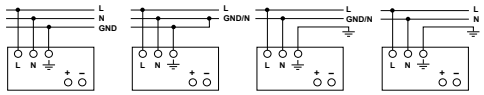

Figure 5

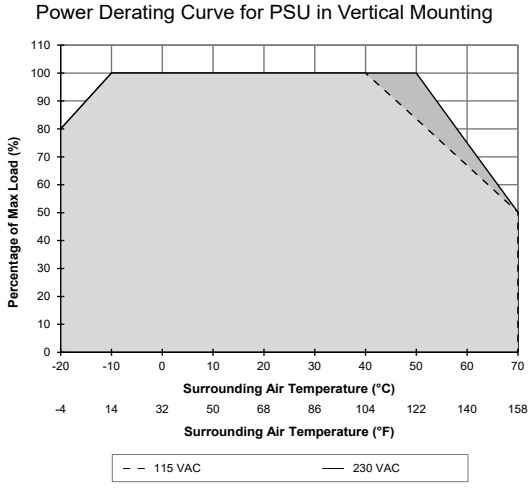

Figure 6

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

1. Safety instructions

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

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

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

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

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

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

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

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

The internal fuse must not be replaced by the user.

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

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

5.3. Output characteristic curve

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

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

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

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

FOR TECHNICAL ASSISTANCE CALL 770-844-4200

RHINO PSV24-120S Power Supply

Technical Specifications	
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	2.2 A typ. @ 115VAC, 1.2 A typ. @ 230VAC
Inrush current limitation (+25°C, cold start)	20A typ. @ 115VAC, 40A typ. @ 230VAC
Mains buffering at nominal load (typ.)	20ms typ. @ 115VAC (100% load) 90ms typ. @ 230VAC (100% load)
Turn-on time	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	
Type of housing	SGCC (Case Cover) / Aluminum (Case Chassis)
LED signals	Green LED DC OK
MTBF	> 700,000 hrs. as per Telcordia
Dimensions (L x W x H)	123.6 mm x 40mm x 117.6 mm [4.87 in x 1.57 in x 4.63 in] (See www.AutomationDirect.com for complete engineering drawings.)
Weight	0.54 kg [19 oz]
Connection method	Screw connection
Stripping length	7mm [0.28 in]
Operating temperature (surrounding air temperature)	-20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6)
Storage temperature	-40°C to +85°C [-40°F to +185°F]
Humidity at +25°C, no condensation	5 to 95% RH
Vibration	Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s² (2G peak); 10min per cycle, 60min for X direction Non-Operating: IEC60068-2-6, Random: 5Hz to 500Hz (2.09 Grms); 20 min. per axis for all X, Y, Z directions
Shock	Operating: IEC60068-2-27, Half Sine Wave: 10G for a duration of 11ms, shock for 1 direction (X axis) Non-Operating: IEC60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions
Pollution degree	2
Altitude (operating)	2000m for industrial application 5000m for ITE application
Certification and Standards	
Safety entry low voltage	SELV (EN60950)
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Component power supply for general use	EN61204-3
Immunity	EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12)
Emission	EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4
Voltage Sag Immunity	SEMI F47 – 0706 @ 200VAC
	CE 4ZW4 c UL E197592 US LISTED Ind. Cont. Eq. c UL us E198298
RoHS Compliant	Yes
Safety and Protection	
Transient surge voltage protection	Varistor
Current limitation at short-circuits approx.	I_{surge} = 105-150% or Po_{max} typically
Surge voltage protection against internal surge voltages	Yes
Isolation voltage: Input / output Input / PE Output / PE	 3kVAC 2kVAC 0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

1st Edition, 01/2019

RHINO PSV24-240S Power Supply

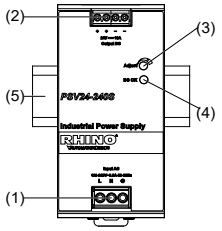

Figure 1

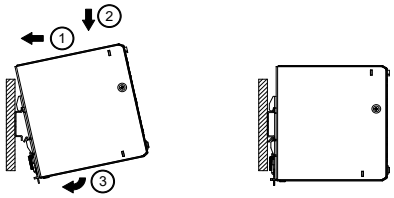

Figure 2

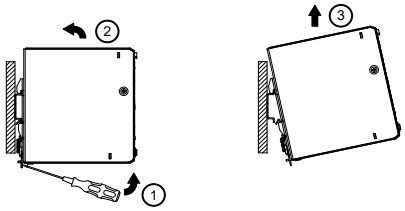

Figure 3

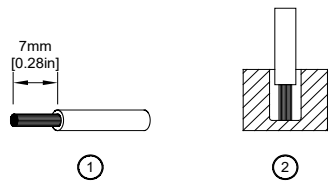

Figure 4

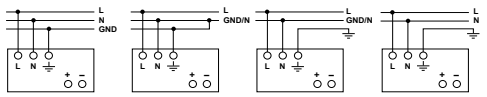

Figure 5

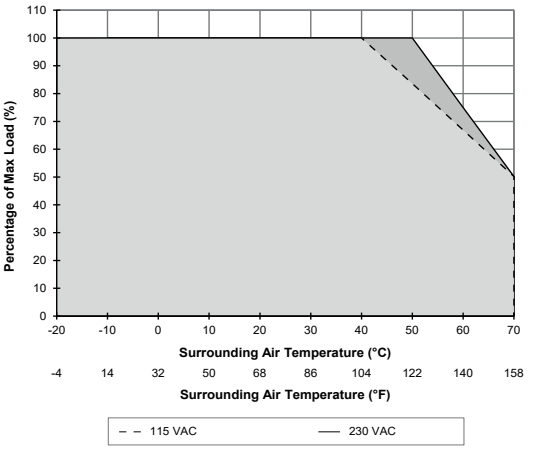

Figure 6

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

1. Safety instructions

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

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

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

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

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

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

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

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

The internal fuse must not be replaced by the user.

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

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

5.3. Output characteristic curve

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

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

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

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

RHINO PSV24-240S Power Supply

Technical Specifications	
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
Mains buffering at nominal load (typ.)	10ms typ. @ 115VAC (100% load) 16ms typ. @ 230VAC (100% load)
Turn-on time	1000ms typ. @ 115VAC & 230VAC (100% load)
Internal fuse	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
Derating	Refer to Fig. 6 > 40°C (1.67%/°C) @ 115VAC (90-229 VAC) > 50°C (2.5%/°C) @ 230VAC (230-264 VAC)
Startup with capacitive loads	Max. 8,000µF
Max. power dissipation idling / nominal load approx.	4.62 W @ 115VAC (0% load) 2.14 W @ 230VAC (0% load) 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
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	
Safety entry low voltage	SELV (EN60950)
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Component power supply for general use	EN61204-3
Immunity	EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12)
Emission	EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4
Voltage Sag Immunity	SEMI F47 – 0706 @ 200VAC
CE 4ZW4 c UL E197592 US LISTED Ind. Cont. Eq. c US E198298	
RoHS Compliant	Yes
Safety and Protection	
Transient surge voltage protection	Varistor
Current limitation at short-circuits approx.	I_{surge} = 105-150% or Po_{max} typically
Surge voltage protection against internal surge voltages	Yes
Isolation voltage: Input / output Input / PE Output / PE	 3kVAC 2kVAC 0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

1st Edition, 01/2019

RHINO PSV24-480S Power Supply

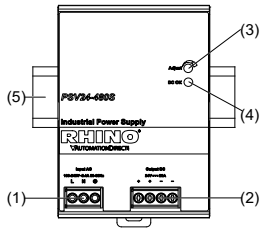

Figure 1

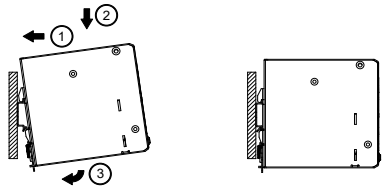

Figure 2

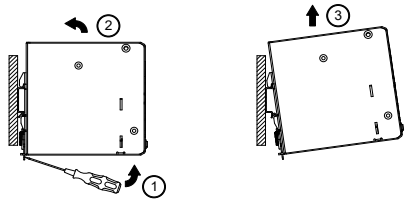

Figure 3

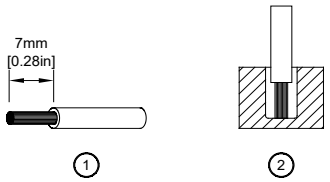

Figure 4

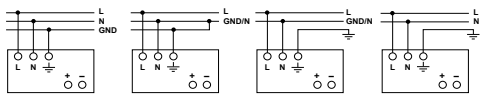

Figure 5

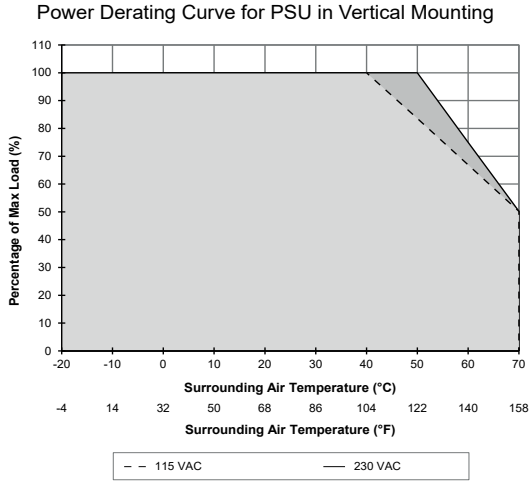

Figure 6

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

1. Safety instructions

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

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

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

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

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

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

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

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

The internal fuse must not be replaced by the user.

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

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

5.3. Output characteristic curve

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

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

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

If the output capacity is not reduced when T_{Amb} > 40°C [104°F] (115VAC) or > 50°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
Mains buffering at nominal load (typ.)	10ms typ. @ 115VAC (100% load) 16ms typ. @ 230VAC (100% load)
Turn-on time	1000ms typ. @ 115VAC & 230VAC (100% load)
Internal fuse	F 10 A / 250V (non-replaceable)
Leakage current	< 1mA @ 264VAC
Output (DC)	
Nominal output voltage U_N / tolerance	24VDC ± 2 %
Voltage adjustment range	22-28 VDC (maximum power ≤ 480W)
Output current	20A
Derating	Refer to Fig. 6 > 40°C (1.67%/°C) @ 115VAC (90-229 VAC) > 50°C (2.5%/°C) @ 230VAC (230-264 VAC)
Startup with capacitive loads	Max. 8,000µF
Max. power dissipation idling / nominal load approx.	5W @ 115VAC (0% load) 4W @ 230VAC (0% load) 50W @ 115VAC (100% load) 40W @ 230VAC (100% load)
Efficiency at 100% load	85.0% typ. @ 115VAC, 88.0% typ. @ 230VAC
PARD (20MHz) at 100% load	< 120mVpp @ -10°C to +70°C < 240mVpp @ -20°C to -10°C
Parallel operation	PSB60-REM40S or with ORing Diode
General Data	
Type of housing	SGCC (Case Cover) / Aluminum (Case Chassis)
LED signals	Green LED DC OK
MTBF	> 700,000 hrs. as per Telcordia
Dimensions (L x W x H)	123.6 mm x 85.5 mm x 128.5 mm [4.87 in x 3.37 in x 5.06 in] (See www.AutomationDirect.com for complete engineering drawings.)
Weight	1.30 kg [45.9 oz]
Connection method	Screw connection
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	
Safety entry low voltage	SELV (EN60950)
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Component power supply for general use	EN61204-3
Immunity	EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12)
Emission	EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4
Voltage Sag Immunity	SEMI F47 – 0706 @ 200VAC
CE 4ZW4 c UL E197592 US LISTED Ind. Cont. Eq. c UL us E198298	
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: Input / output Input / PE Output / PE	 3kVAC 2kVAC 0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

1st Edition, 01/2019

RHINO PSV48-120S Power Supply

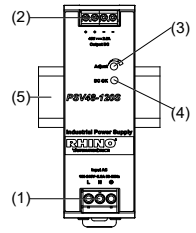

Figure 1

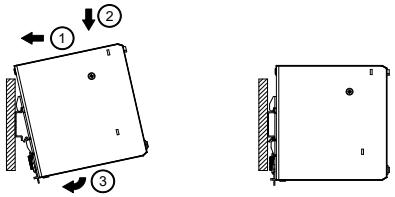

Figure 2

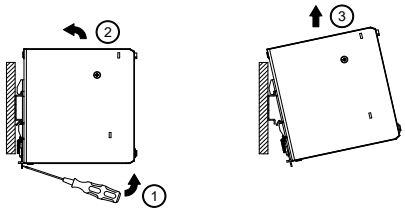

Figure 3

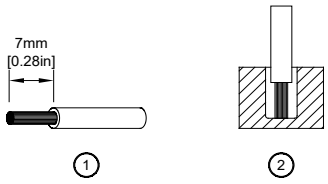

Figure 4

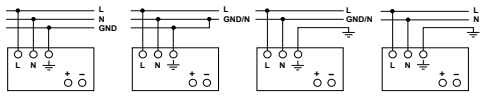

Figure 5

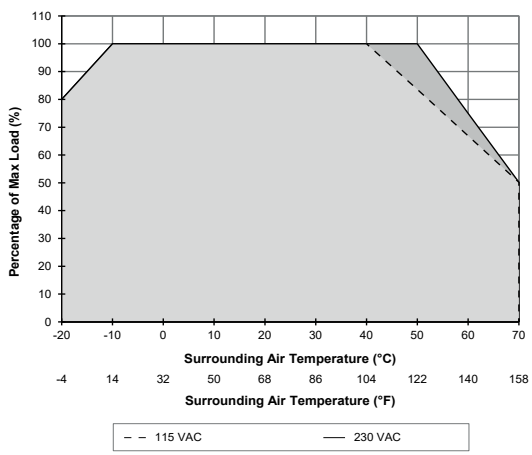

Figure 6

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

1. Safety instructions

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

2. Device description (Fig. 1)

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

3. Mounting (Fig. 2)

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

Each device is delivered ready to install.

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

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

4. Dismounting (Fig. 3)

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

5. Connection

The terminal block connectors allow easy and fast wiring.

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

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

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

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

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

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

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

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

The internal fuse must not be replaced by the user.

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

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

5.3. Output characteristic curve

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

5.4. Thermal behavior (Fig. 6)

In the case of ambient temperatures:

1. 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.
3. 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˚C [104˚F] (115VAC) or > 50˚C [122˚F] (230VAC), the device will engage thermal protection by switching off, i.e., the output voltage will go into latch-off mode until the component temperature cools down and the AC power is recycled.

RHINO PSV48-120S Power Supply

Technical Specifications	
Input (AC)	
Nominal input voltage / frequency	100-240 VAC / 50-60 Hz
Voltage range	85-264 VAC
Frequency	47-63 Hz
Nominal current	2.2 A typ. @ 115VAC, 1.2 A typ. @ 230VAC
Inrush current limitation (+25°C, cold start)	20A typ. @ 115VAC, 40A typ. @ 230VAC
Mains buffering at nominal load (typ.)	20ms typ. @ 115VAC (100% load) 90ms typ. @ 230VAC (100% load)
Turn-on time	200ms typ. @ 115VAC & 230VAC (100% load)
Internal fuse	T 4A / 250V (non-replaceable)
Leakage current	< 0.25 mA @ 264VAC
Output (DC)	
Nominal output voltage U_N / tolerance	48VDC ± 2 %
Voltage adjustment range	44-56 VDC (maximum power ≤ 120W)
Output current	2.5 A
Derating	Refer to Fig. 6 -10°C to -20°C (2%/°C), > 40°C (1.67%/°C) @ 115VAC -10°C to -20°C (2%/°C), > 50°C (2.5%/°C) @ 230VAC
Startup with capacitive loads	Max. 4,000µF
Max. power dissipation idling / nominal load approx.	1.21 W / 13.3 W
Efficiency at 100% load	89.0% typ. @ 115VAC, 90.0% typ. @ 230VAC
PARD (20MHz) at 100% load	< 150 mVpp
Parallel operation	PSB60-REM20S / PSB60-REM40S or with ORing Diode
General Data	
Type of housing	SGCC (Case Cover) / Aluminum (Case Chassis)
LED signals	Green LED DC OK
MTBF	> 700,000 hrs. as per Telcordia
Dimensions (L x W x H)	123.6 mm x 40mm x 117.6 mm [4.87 in x 1.57 in x 4.63 in] (See www.AutomationDirect.com for complete engineering drawings.)
Weight	0.54 kg [19 oz]
Connection method	Screw connection
Stripping length	7mm [0.28 in]
Operating temperature (surrounding air temperature)	-20°C to +70°C [-4°F to +158°F] (Refer to Fig. 6)
Storage temperature	-40°C to +85°C [-40°F to +185°F]
Humidity at +25°C, no condensation	5 to 95% RH
Vibration	Operating: IEC60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/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	
Safety entry low voltage	SELV (EN60950)
Electrical safety (of information technology equipment)	UL/C-UL recognized to UL60950-1 and CSA C22.2 No. 60950-1 (File No. E198298), CB scheme to IEC60950-1
Industrial control equipment	UL/C-UL listed to UL508 and CSA C22.2 No.107.1-01 (File No. E197592)
CE	In conformance with EMC directive 2014/30/EU and Low Voltage Directive 2014/35/EU
Component power supply for general use	EN61204-3
Immunity	EN55024, EN61000-6-1, EN61000-6-2 (EN61000-4-2, 3, 4, 5, 6, 8, 11, 12)
Emission	EN55032, EN55011, EN61000-3-2 Class A, EN61000-3-3, EN61000-6-3, EN61000-6-4
Voltage Sag Immunity	SEMI F47 – 0706 @ 200VAC
	CE 3PET c UL E197592 US LISTED Ind. Cont. Eq. c UL us E198298
RoHS Compliant	Yes
Safety and Protection	
Transient surge voltage protection	Varistor
Current limitation at short-circuits approx.	I_{surge} = 105-150% or Po_{max} typically
Surge voltage protection against internal surge voltages	Yes
Isolation voltage: Input / output Input / PE Output / PE	 3kVAC 2kVAC 0.5 kVAC
Protection degree	IP20
Safety class	Class I with PE connection

1st Edition, 01/2019