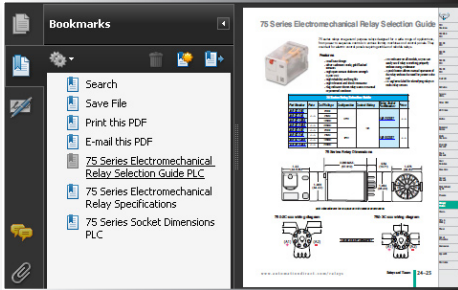




AUTOMATIONDIRECT.COM

Power Supplies

BOOKMARKS



Up-to-date price list:

www.automationdirect.com/pricelist

FREE Technical Support:

www.automationdirect.com/support

FREE Videos:

www.automationdirect.com/videos

FREE Documentation:

www.automationdirect.com/documentation

FREE CAD drawings:

www.automationdirect.com/cad

In this interactive PDF you can:

- Use bookmarks to navigate by product category
- Use bookmarks to save, search, print or e-mail the catalog section
- Click on part #s to link directly to our online store for current pricing, specs, stocking information and more



Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

Terms and Conditions

Quality power products...



Rhino PSS Series Power Supplies

- Universal input voltage, 85-264 VAC / 100-375 VDC
- 24 VDC or 12 VDC outputs, 35 to 100 Watts
- Dual Output Voltage Model - 24VDC (adjustable), 5VDC (fixed)
- Rugged aluminum housing
- Overload, overvoltage and thermal protection
- UL60950-1 recognized, CE marked



Rhino PSB Series Power Supplies

- Universal input voltage, 85-264 VAC / 120-375 VDC single phase or 320-600 VAC 3-phase input
- 24 VDC or 48 VDC outputs, 15 to 480 Watts
- Overload, overvoltage and thermal protection
- (5) 24 VDC output, single phase input models for Class 1, Div 2 hazardous locations
- (3) 48 VDC output single phase input models
- 24 VDC (adjustable), 40A (960W) output, 320-600 VAC 3-phase model
- Redundancy and buffer modules
- UL508 listed, UL60950-1 recognized, CSA certified, CE marked



Rhino PSM Series Power Supplies

- Industrial grade
- Sturdy metal case
- Low output ripple
- DIN rail mounting/optional wall mount
- Specialty modules for redundancy, power backup and UPS
- 12 VDC from 78 to 156 watts
- 24 VDC from 90 to 600 watt
- Overload and overvoltage protection
- UL508 listed, UL60950-1 recognized, CSA certified, CE marked



Rhino PSP Slimline Power Supplies

- Compact footprint
- Plastic housing
- Universal input 85 to 264 VDC/VAC
- 20 W to 120 W
- 5 VDC, 20 W, 4 A output
- 12 VDC from 24 to 120 watts
- 24 VDC from 24 to 120 watts
- DIN rail mounting
- Overload and overvoltage protection
- UL508 listed, UL60950-1 recognized, CE marked

...at great prices



Rhino PSC Series NEC Class 2 Power Supplies

- DIN rail mounting
- 12W to 90W
- Universal 85 to 264 VAC input voltage and output current limitation.
- Plastic-housed low-profile
- UL508 listed, UL1310 recognized for NEC Class 2 compliance and CE marked



Rhino PS Series Power Supplies

- DIN rail mounting
- Durable metal case
- 12 VDC from 50 to 75 watt
- 24 VDC from 50 to 600 watt
- Overload and overvoltage protection
- UL508 listed, UL60950-1 recognized, UL1604 listed for hazardous locations (most models), CE marked



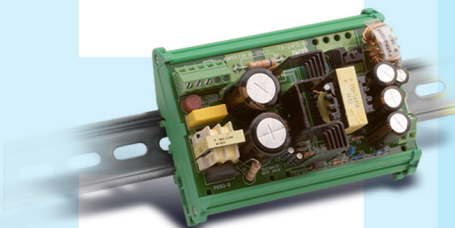
Rhino PSE Series Encapsulated Power Supplies

- Ultra compact, low profile plastic case
- Single or dual output models
- 5, 12, 15 and 24 VDC
- 15W to 60W
- Screw terminal blocks
- Chassis mount or 35mm DIN rail mount with optional adaptor
- Universal input 85-264 VAC, 47-440 Hz (60 Watt, 47-63 Hz)
- Double insulated - no external ground required
- UL508 listed, UL60950-1 recognized, CE marked
- Short circuit and overload protection
- 3-year warranty



DC to DC Converters

- DIN-rail, chassis mount, and panel mount DC to DC Converters
- PSP series - wide input ranges of 9.5-18 VDC or 18-75 VDC for operation with all popular DC supply voltage systems. 5, 12, and 24 VDC adjustable output voltages at 25W & 60W.
- PSE series - wide input ranges of 9.5-36 VDC or 18-75 VDC. Encapsulated low profile plastic case with chassis mount or optional DIN rail bracket. 5.1, 12, 24, & 48 VDC output voltages at 40W & 60W.
- FA-DCDC-1 - Isolated ± 10 VDC, ± 5 VDC multiple outputs. 12-24 VDC input voltage range. Designed to handle many types of configurations.



Open Frame Power Supplies

- DIN rail mounting
- 24 VDC
- Units available with 1.25 amp or 3.7 amp
- Universal inputs:
FA-24PS: 100-240 VAC/VDC
FA-24PS-90: 95-130 VAC or 190-264 VAC

Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

Terms and Conditions

RHINO PSS Series Panel Mount Power Supplies

AutomationDirect's RHINO PSS series of panel mount power supplies is perfect for applications that require a basic DC voltage power supply. These low cost power supplies offer high performance and reliability without all the additional features of higher cost full-featured power supplies. The RHINO PSS series is available with universal single-phase input and with output voltages of 12 and 24VDC from 35 to 100 Watts. The PSS0524-100 unit provides both a 24VDC and a 5VDC output. The rugged aluminum housing easily screw mounts in three different mounting orientations. These high-quality power supplies include overload, overvoltage and thermal protection, and are UL 60950 recognized, CE marked and RoHS compliant.

Features

- Universal input voltage, 85–264 VAC / 100–375 VDC
- 12VDC, 24VDC or dual 5 and 24VDC, 35 to 100 Watts
- Adjustable output voltage
- Rugged aluminum housing, screw mounts in three different orientations
- Output voltage status LED
- Robust fixed-screw terminal strips
- Overload, overvoltage and thermal protection
- UL 60950 recognized, CE marked and RoHS compliant
- Two year warranty



PSS Series Input Specifications								
Part No.	Price	Weight	Input Voltage	Input Frequency Range	Max. Input Current	Inrush Current Limitation P_t @ 77° F (+25° C) typ.	Leakage Current	Recommended Circuit Breaker
PSS12-035	\$17.75	0.21 kg [0.46 lb]	85–264 VAC (DC input range 100–375 VDC)	47–63 Hz (0Hz @ DC Input)	<0.75A Max @ 115VAC, <0.5A Max @ 230 VAC	<30A @ 115VAC, 60A @ 230VAC	<1mA	16A "B" Curve
PSS12-050	\$19.75	0.26 kg [0.57 lb]			<1.1A Max @ 115VAC, <0.7A Max @ 230VAC	<30A @ 115VAC, 60A @ 230VAC		
PSS12-100	\$30.00	0.45 kg [0.99 lb]			<2 A Max @ 115VAC, <1.1A Max @ 230VAC	<60A @ 115VAC, 130A @ 230VAC		
PSS24-035	\$17.75	0.237 kg [0.52 lb]			<0.75A Max @ 115VAC, <0.5A Max @ 230VAC	<30A @ 115VAC, 60A @ 230VAC		10A "B" Curve
PSS24-050	\$19.75	0.255 kg [0.56 lb]			<1.1A Max @ 115VAC, <0.7A Max @ 230VAC	<30A @ 115VAC, 60A @ 230VAC		
PSS24-100	\$30.00	0.410 kg [0.90 lb]			<2A Max @ 115VAC, <1.1A Max @ 230VAC	<50A @ 115VAC, 100A @ 230VAC		
PSS0524-100	\$42.00	0.52 kg [1.15 lb]	85–264 VAC (DC input range 125–375 VDC)	<2A Max @ 115VAC, <1.1A Max @ 230VAC	<50A @ 115VAC, 100A @ 230VAC			

PSS Series Output Specifications									
Part No.	Output Voltage (Vnom) / Adjustment Range	Output Power	Output Current	Ripple and Noise (20MHz)	Startup with Capacitive Loads	Start-Up Time	Hold-Up Time at Nominal Load (Typ.) (Mains Buffering)	Rise Time	Efficiency
PSS12-035	12VDC / 11–14 VDC	35W	3Amp	<100 mVpp	6000µF	<2500ms @ 100% load (25°C [77°F]) and typical line input	>15ms @ 115VAC, >80ms @ 230VAC with 35W load (25°C [77°F])	<30ms @ 100% load (25°C [77°F])	>84% (typical)
PSS12-050		50W	4.17 Amp				>15ms @ 115VAC, >80ms @ 230VAC with 50W load (25°C [77°F])		>83% @ 115VAC & >84% @ 230VAC
PSS12-100		100W	8.33 Amp				>15ms @ 115VAC, >80ms @ 230VAC with 100W load (25°C [77°F])		>84% (typical)
PSS24-035	24VDC / 22–28 VDC	35W	1.46 Amp	<150 mVpp	8000µF	<2500ms @ 100% load (25°C [77°F]) and typical line input	>15ms @ 115VAC, >80ms @ 230VAC with 35W load (25°C [77°F])		>85% @ 115VAC & >84% @ 230VAC
PSS24-050		50W	2.1 Amp				>15ms @ 115VAC, >80ms @ 230VAC with 50W load (25°C [77°F])		>86% (typical)
PSS24-100		4.17 Amp	>15ms @ 115VAC, >90ms @ 230VAC with 100W load (25°C [77°F])				>86% (typical)		
PSS0524-100	V1: 24VDC / 22.8–26.4 VDC V2: 5VDC / Fixed	100W	V1: 2.7 Amp V2: 7.0 Amp	V1: <200 mVpp; V2: <80 mVpp	4000µF	<1000ms @ 100% load (25°C [77°F]) and typical line input	>15ms @ 115VAC, >80ms @ 230VAC with 100W load (25°C [77°F])	V1: <30ms, V2: <20ms @ 100% load (25°C [77°F])	>84% @ 115VAC & >86% @ 230VAC

RHINO PSS Series Panel Mount Power Supply Specifications

Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

Terms and Conditions

General Specifications	
Output Line Regulation	<0.5% typical (@ 85–264 VAC input, 100% load)
Output Load Regulation	<1% typical (@ 85–264 VAC input, 0–100% load)
Overload/Short Circuit Protection	>120% rated load current, hiccup mode with auto recovery (PSS0524-100: >150% of total rated output power, hiccup mode, non-latching, auto-recovery)
Overvoltage Protection	32VDC max. (PSS0524-100 V1: <32.4 VDC max., V2: 6.75 VDC max.), hiccup mode, non-latching (auto recovery)
Case Cover	Aluminium (Al1100)
Signals	Green LED DC OK
MTBF	>700,000 hrs.
Noise	Sound pressure level (SPL) <40dBA
Cooling	Convection
Input/Output Terminal	Terminal block 5-Pin rated 300V/20A (PSS0524-100: 7-Pin rated 300V/15A)
Shock Test	30g half sine, 3 times per direction, 6 directions, per IEC60068-2-27
Vibration	10 to 150Hz, 5g, 20 min. each axis per IEC60068-2-6
Operating Temperature	-10°C to +70°C* [14°F to 158°F]
Storage Temperature	-25°C to +85°C [-13°F to 185°F]
Humidity at +25 °C [77°F], no condensation	<95% RH non-condensing

* Operating to 70°C [158°F] possible with a linear derating to half power from 50°C to 70°C [122°F to 158°F]

Safety and Agency Approvals	
EMC / Emissions	FCC Title 47, Class B/EN 55022; CISPR22, Class B
Immunity	EN 61000-4-2,1995; EN 61000-4-3,1998; EN 61000-4-4,1995; IEC61000-4-5,1995; EN 61000-4-6,1996; EN 61000-4-8 or IEC61000-4-12 or IEEE C62.41; EN 61000-3-2,1994
Voltage Dips	Conform to EN 61000-4-11
Galvanic Isolation	Input to Output : 3 KVAC, Input to Ground : 1.5 KVAC, Output to Ground : 0.5 KVAC
Approvals	UR/cUR recognized to UL60950-1 (file no. E198298); CB test certificate and report to IEC60950-1, CE (EMC and Low Voltage directive)
RoHS Compliant	Yes


Additional Data				
Part No.	Wire Size / Torque		Terminal Block Type	Chassis Mounting Torque
	Input	Output		
PSS12-035	0.32-2.1 mm ² [AWG 22–14] / 1.3 Nm [11.3 lb-in]	0.32-2.1 mm ² [AWG 22–14] / 1.3 Nm [11.3 lb-in]	Fixed screw terminals	0.4–0.8 Nm [3.5–7 lb-in]
PSS12-050				
PSS12-100				
PSS24-035	0.32-3.3 mm ² [AWG 22–12] / 1.3 Nm [11.3 lb-in]	0.32-3.3 mm ² (AWG 22–12) / 1.3 Nm [11.3 lb-in]		
PSS24-050				
PSS24-100				
PSS0524-100				

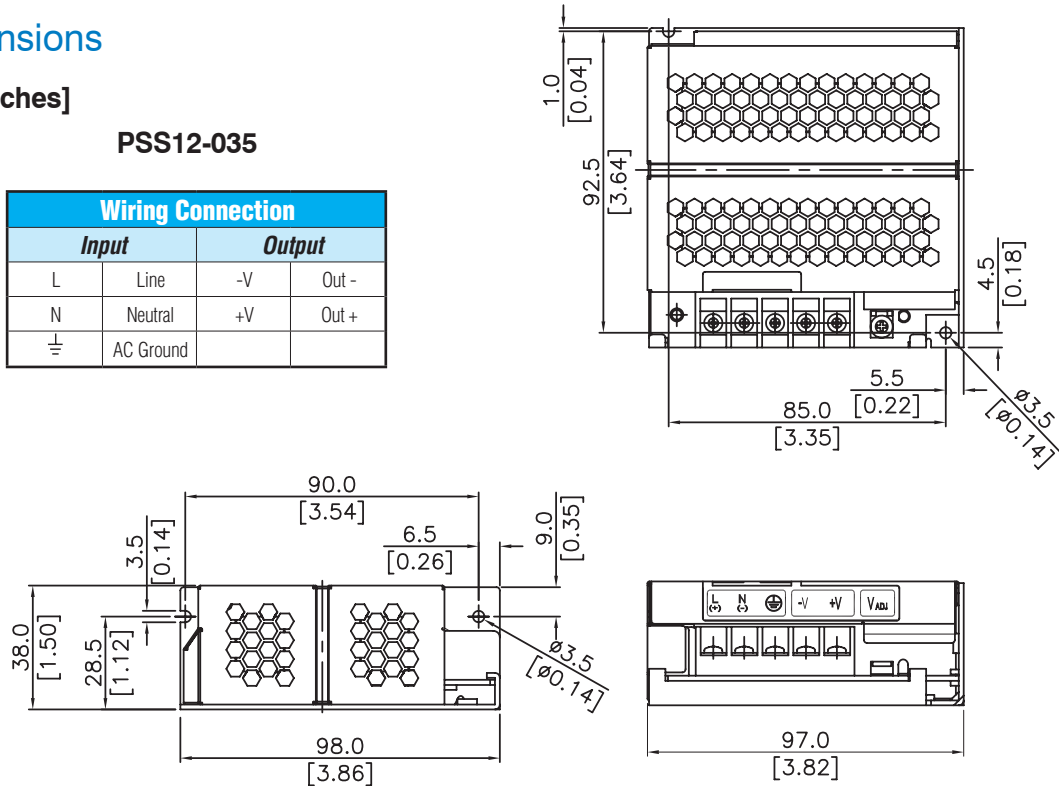
RHINO PSS Series Panel Mount Power Supplies

Dimensions


mm [inches]

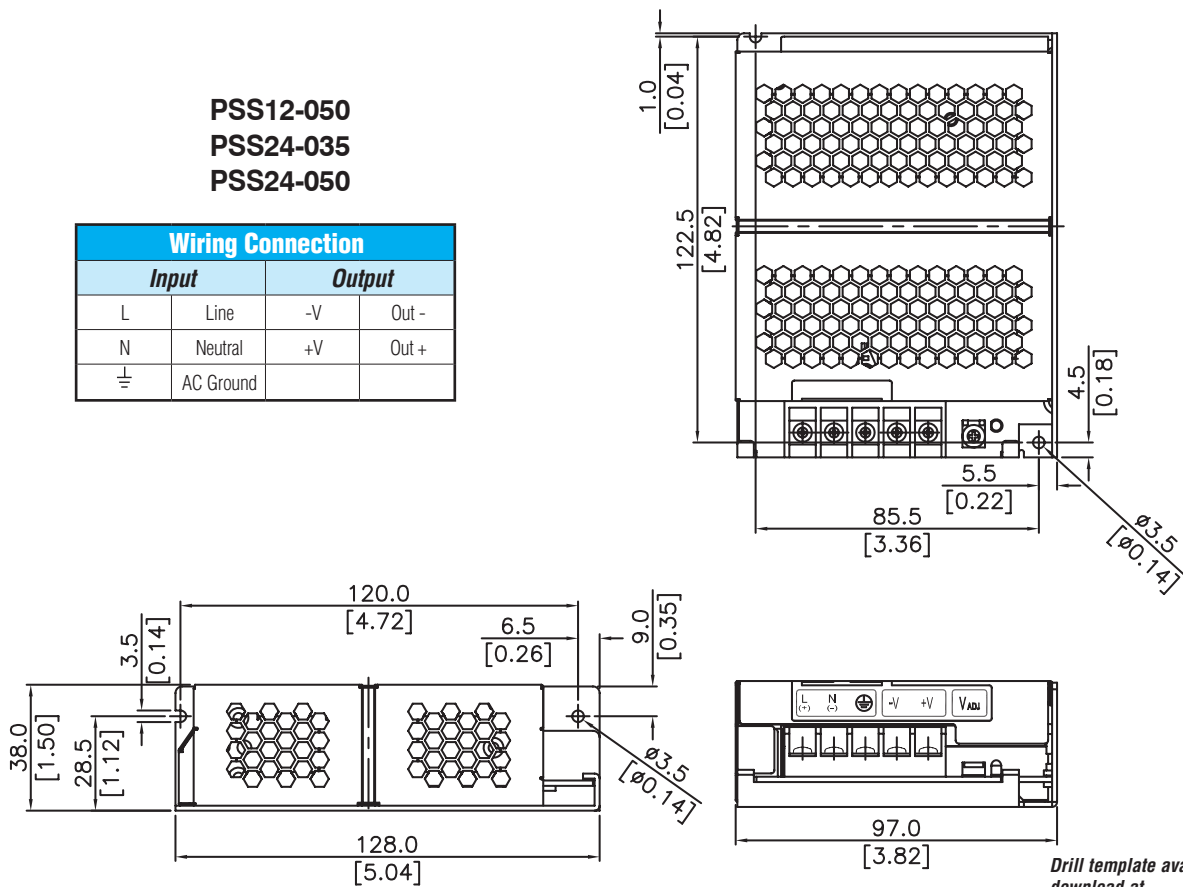
PSS12-035

Wiring Connection			
Input		Output	
L	Line	-V	Out -
N	Neutral	+V	Out +
	AC Ground		



PSS12-050 PSS24-035 PSS24-050

Wiring Connection			
Input		Output	
L	Line	-V	Out -
N	Neutral	+V	Out +
	AC Ground		



Drill template available for download at www.AutomationDirect.com

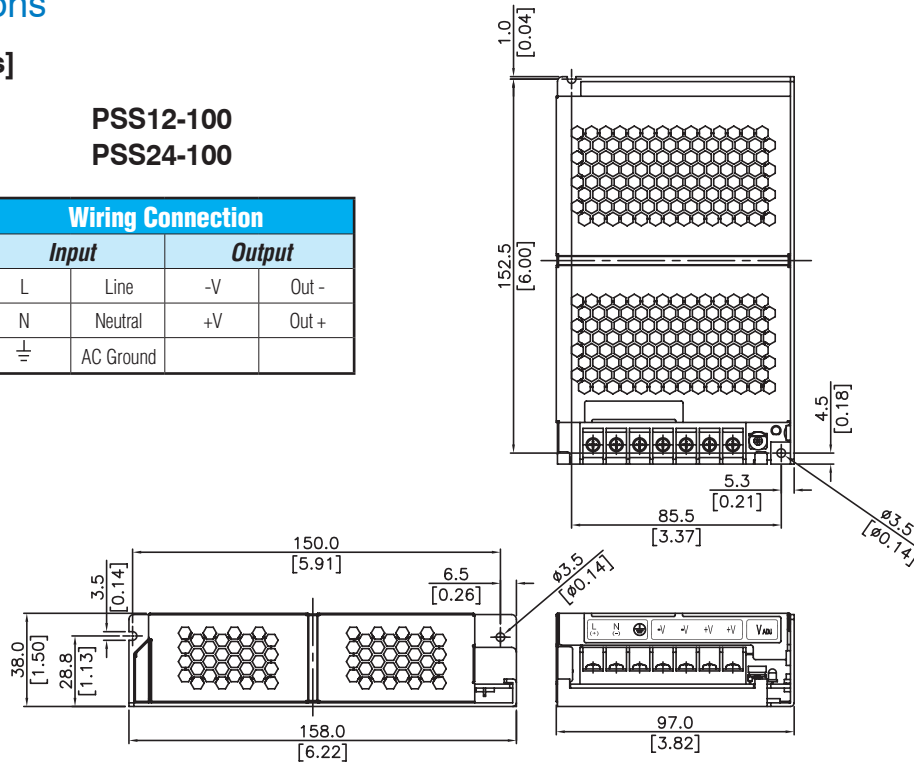
RHINO PSS Series Panel Mount Power Supplies

Dimensions

mm [inches]

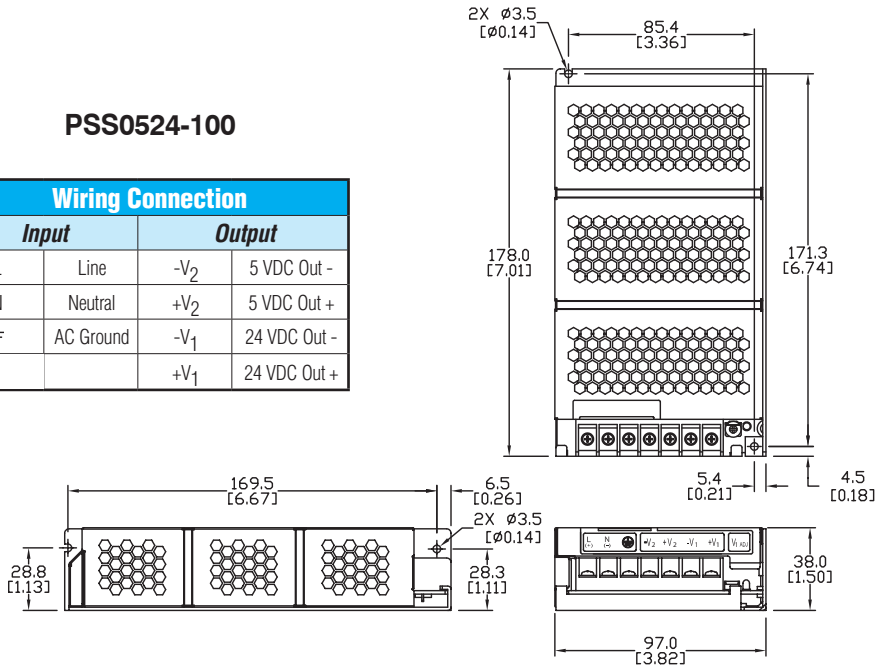
PSS12-100
PSS24-100

Wiring Connection			
Input		Output	
L	Line	-V	Out -
N	Neutral	+V	Out +
	AC Ground		



PSS0524-100

Wiring Connection			
Input		Output	
L	Line	-V ₂	5 VDC Out -
N	Neutral	+V ₂	5 VDC Out +
	AC Ground	-V ₁	24 VDC Out -
		+V ₁	24 VDC Out +



Drill template available for download at www.AutomationDirect.com

Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

Terms and Conditions

RHINO PSB Series DIN rail Power Supplies

Single-Phase Input

AutomationDirect's RHINO PSB series of DIN rail power supplies is perfect for applications that require a basic DC voltage power supply. These low cost power supplies offer high performance and reliability without all the additional features of higher cost full-featured power supplies. The following models in the RHINO PSB series are available with universal single-phase input and with output voltages of 12 and 24VDC from 15 to 480 Watts. The rugged plastic and aluminum housings easily install with integral 35mm DIN-rail mounting adapters. These high-quality power supplies include overload, overvoltage and thermal protection, and are UL 508 listed, UL 60950 recognized, CSA certified, CE marked and RoHS compliant.

Features

- Universal input voltage, 85–264 VAC / 120–375 VDC single phase
- 24VDC or 12VDC outputs, 15 to 480 Watts
- Adjustable output voltage
- Rugged plastic or aluminum housings with integral 35mm DIN-rail mounting adapters
- Output voltage status LED
- Robust fixed-screw terminal strips with finger-safe covers
- Overload, overvoltage and thermal protection
- UL 508 listed, UL 60950 recognized, CSA certified, CE marked and RoHS compliant
- Three year warranty



PSB Single-Phase Series Input Specifications

Part No.	Price	Weight	Housing	Input Voltage	Input Frequency Range	Max. Input Current	Inrush Current Limitation $I_{in}t$ @ 77°F [+25°C] typ.	Leakage Current	Recommended Circuit Breaker	Hold-Up Time at Nominal Load (Typ.) (Mains Buffering)	Turn-on Time
PSB12-015-P	\$21.50	0.175 kg [0.39 lb]	Plastic	85–264 VAC (DC input range 120–375 VDC); Nominal 100–240 VAC	47–63 Hz (0Hz @ DC Input)	<0.37 A @ 115VAC, <0.22 A @ 230VAC	<30A @ 115 AC, <65A @ 230VAC	<1mA	6A "B" Curve	>22ms @ 115VAC, >110ms @ 230VAC	<2.5 s
PSB12-030-P	\$23.50	0.197 kg [0.43 lb]	Plastic			<0.7 A @ 115VAC, <0.42 A @ 230VAC	<40A @ 115VAC, <80A @ 230VAC				
PSB12-060	\$37.25	0.325 kg [0.72 lb]	Aluminum			<1.35 A @ 115VAC <0.8 A @ 230VAC	<50A @ 115VAC, <100A @ 230VAC				
PSB12-100	\$56.00	0.636 kg [1.40 lb]	Aluminum			<2.5 A @ 115VAC <1.5 A @ 230VAC	<100A @ 115VAC, no damage @ 230VAC		<3s		
PSB24-060	\$34.75	0.37 kg [0.82 lb]	Aluminum			<1.1 A @ 115VAC <0.7 A @ 230VAC	<40A @ 115VAC, <80A @ 230VAC				
PSB24-060-P	\$28.00	0.325 kg [0.72 lb]	Plastic			<1.1 A @ 115VAC <0.7 A @ 230VAC	<40A @ 115VAC, <80A @ 230VAC				
PSB24-120	\$63.50	0.54 kg [1.19 lb]	Aluminum			<1.4 A @ 115VAC <0.8 A @ 230VAC	<80A @ 115VAC, <150A @ 230VAC		<1s		
PSB24-240	\$115.00	1.04 kg [2.29 lb]	Aluminum			<2.9 A @ 115VAC <1.5 A @ 230VAC	<40A @ 115VAC, <100A @ 230VAC				
PSB24-480	\$172.00	1.8 kg [3.97 lb]	Aluminum			<5.7 A @ 115VAC <2.8 A @ 230VAC	<50A @ 115VAC, <150A @ 230VAC				

RHINO PSB Series DIN rail Power Supplies

Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

Terms and Conditions

PSB Single-Phase Series Output Specifications									
Part No.	Output Voltage (Vnom) / Adjustment Range	Output Power	Output Current	Ripple and Noise (20MHz)	Startup with Capacitive Loads	Derating	Max Power Dissipation Idling / Nominal Load Approx.	Efficiency	MTBF
PSB12-015-P	12VDC ±2%/11-14VDC (maximum power <15W)	15W	1.25 A	<100mV	Max 5,000µF	>50°C de-rate power by 2.5%/°C >70°C de-rate power by 4%/°C	≤3.2 W	83.5% Min @ 115VAC & 83% Min @ 230VAC	>300,000 hrs.
PSB12-030-P	12VDC ±2%/11-14VDC (maximum power ≤30W)	30W	2.5 A		Max 6,600µF		≤5.6 W	84.5% Min @ 115VAC & 230VAC	
PSB12-060	12VDC ±2%/11-14VDC (maximum power ≤60W)	60W	5 A		Max 8,000µF		≤10.2 W	85.5% Min @ 115VAC & 230VAC	
PSB12-100	12VDC ±2%/11-14VDC (maximum power ≤100W)	100W	8.33 A		Max 10,000µF		≤16.3 W	86% Min @ 115VAC & 87% Min @ 230VAC	
PSB24-060	24VDC ±2%/22-28VDC (maximum power ≤60W)	60W	2.5 A	<50mV / <240mVpp	Max 8,000µF	>50°C de-rate power by 2.5%/°C <0°C de-rate power by 1%/°C	10W	>85% typical	>800,000 hrs.
PSB24-060-P	24VDC ±2%/22-28VDC (maximum power ≤60W)	60W	2.5 A		Max 10,000µF	>50°C de-rate power by 2.5%/°C	22.5 W	>84% typical	
PSB24-120	24VDC ±2%/22-28VDC (maximum power ≤120W)	120W	5 A			>50°C de-rate power by 2.5%/°C >70°C de-rate power by 4%/°C	42.5 W		
PSB24-240	24VDC ±2%/22-28VDC (maximum power ≤240W)	240W	10 A			>50°C de-rate power by 2.5%/°C	72W		>86% typical
PSB24-480	24VDC ±2%/22-28VDC (maximum power ≤480W)	480W	20 A		>50°C de-rate power by 2.5%/°C				

PSB Single-Phase Series General Specifications	
Output Line Regulation	<0.5% typical (@ 85-264 VAC input, 100% load)
Output Load Regulation	<1% typical (@ 85-264 VAC input, 0-100% load)
Parallel Operation	PSB60-REM20S, PSB60-REM40S or Oring Diode
Case Cover	Aluminium (Al5052) or Plastic (PC) for P Series
Signals	Green LED DC OK
Humidity at 25°C [77°F], no condensation	<95% RH
Shock	30g half sign, 3 times per direction, 6 directions, per IEC60068-2-27
Vibration (Non-Operating)	10 to 150Hz, 5 g, 90 min. each axis per IEC60068-2-6
Pollution Degree	2
Climatic Class	3K3 according to EN 60721

PSB Single-Phase Series Certification and Standards	
Electrical Equipment of Machines	IEC60204-1 (over voltage category III)
Electronic Equipment for use in Electrical Power Installations	EN 50178 / IEC62103
Safety Entry Low Voltage	PELV (EN 60204), SELV (EN 60950)
Electrical Safety (of information technology equipment)	UR/cUR recognized to UL 60950-1 (file no. E198298), CSA C22.2 No.60950-1 (file no. 249074), CB scheme to IEC60950-1
Industrial Control Equipment	UL listed to UL 508 (file no. E197592), CSA to CSA C22.2 No.107.1-01 (file no. 249074)
Protection Against Electric Shock	DIN 57100-410
CE	In conformance with EMC directive 2004/108/EC and low voltage directive 2006/95/EC

PSB Single-Phase Series Safety and Protection	
Transient surge voltage protection	VARISTOR
Overload/Short Circuit Protection	<150% rated load current, hiccup mode with automatic recovery
Overvoltage Protection	35VDC max.
Isolation Voltage:: Input/output (type test/routine test) Input/GND (type test/routine test) Output/GND (type test/routine test)	4 kVAC / 3 kVAC 1.5 kVAC / 1.5 kVAC 1.5 kVAC / 500VAC
Protection Degree	IP20
Safety Class	Class I with GND connection

RHINO PSB Series DIN rail Power Supplies

Additional Data				
Part No.	Wire Size / Torque*		Ambient Operating Temperature**	Storage Temperature
	Input	Output		
PSB12-015-P PSB12-030-P	0.32–2.1 mm ² [AWG 22–14] / 0.79 Nm [7.0 lb-in]	0.32–2.1 mm ² [AWG 22–14] / 0.79 Nm [7.0 lb-in]	-20°C to 50°C [-4°F to 122°F]	-25°C to 85°C [-13°F to 185°F]
PSB12-060	0.52–2.1 mm ² [AWG 20–14] / 0.78–0.98 Nm [6.94–8.68 lb-in]	0.52–2.1 mm ² [AWG 20–14] / 0.78–0.98 Nm [6.94–8.68 lb-in]		
PSB12-100	0.82–2.1 mm ² [AWG 18–14] / 0.78–0.98 Nm [6.94–8.68 lb-in]	0.82–2.1 mm ² [AWG 18–14] / 0.78–0.98 Nm [6.94–8.68 lb-in]		
PSB24-060 PSB24-060-P PSB24-120 PSB24-240	0.32–2.1 mm ² [AWG 22–14] / 0.78–0.98 Nm [6.94–8.68 lb-in]	0.32–2.1 mm ² [AWG 22–14] / 0.78–0.98 Nm [6.94–8.68 lb-in]	-20°C to 75°C [-4°F to 167°F]	-25°C to 85°C [-13°F to 185°F]
PSB24-480	1.3–2.1 mm ² [AWG 16–14] / 1.18–1.57 Nm [10.41–13.89 lb-in]	3.5–5.3 mm ² [AWG 12–10] / 1.18–1.57 Nm [10.41–13.89 lb-in]		

*Stripping length 7 mm (0.28 in) or use suitable lug to crimp

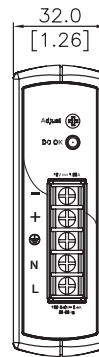
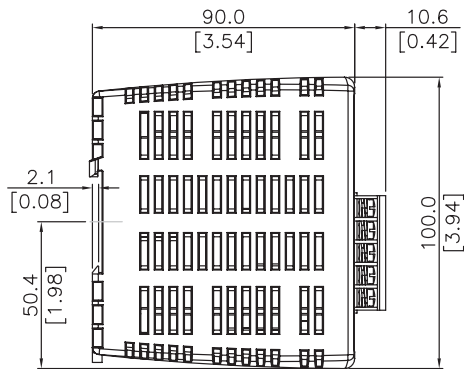
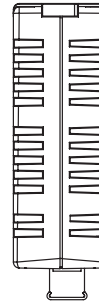
** See output specifications for temperature derating

Dimensions

mm [inches]

PSB12-015-P
PSB12-030-P

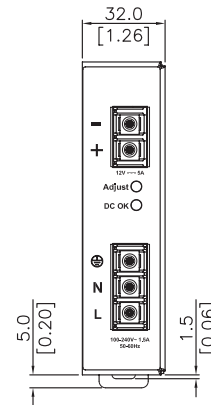
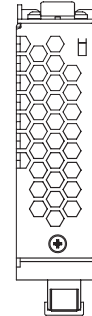
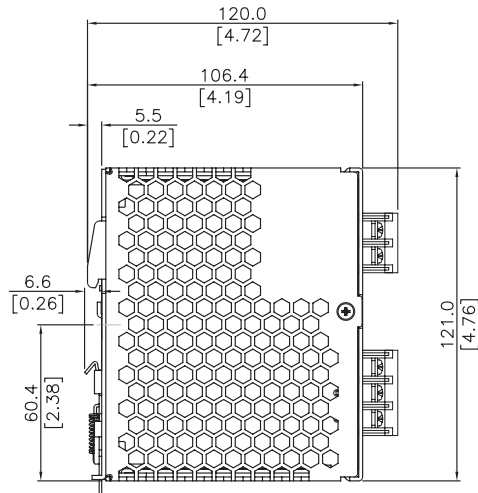
Wiring Connection			
Input		Output	
L	Line	+	Out +
N	Neutral	-	Out -
⊥	AC Ground		



RHINO PSB Series DIN rail Power Supply Dimensions

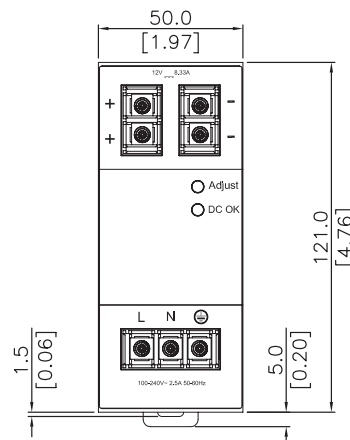
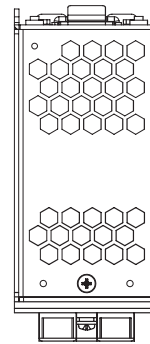
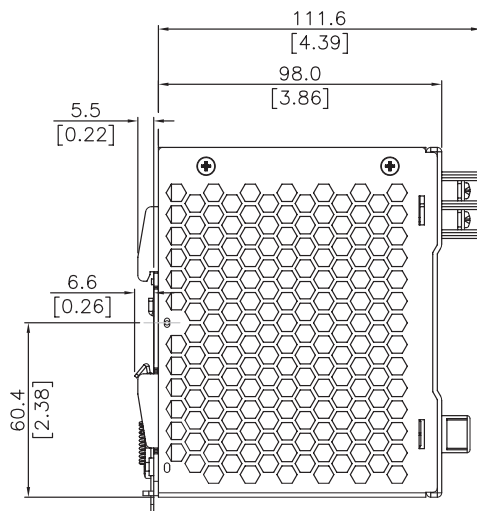
PSB12-060
PSB24-060

Wiring Connection			
Input		Output	
L	Line	+	Out +
N	Neutral	-	Out -
	AC Ground		



PSB12-100
PSB24-120

Wiring Connection			
Input		Output	
L	Line	+	Out +
N	Neutral	-	Out -
	AC Ground		



All dimensions in mm [inches]

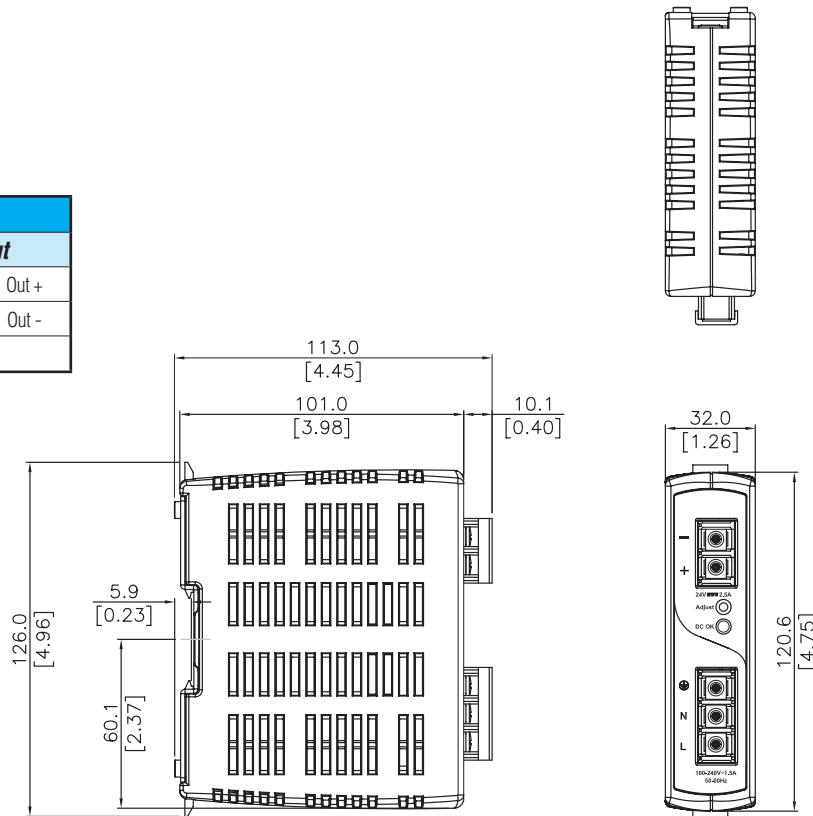
RHINO PSB Series DIN rail Power Supply Dimensions

Dimensions

mm [inches]

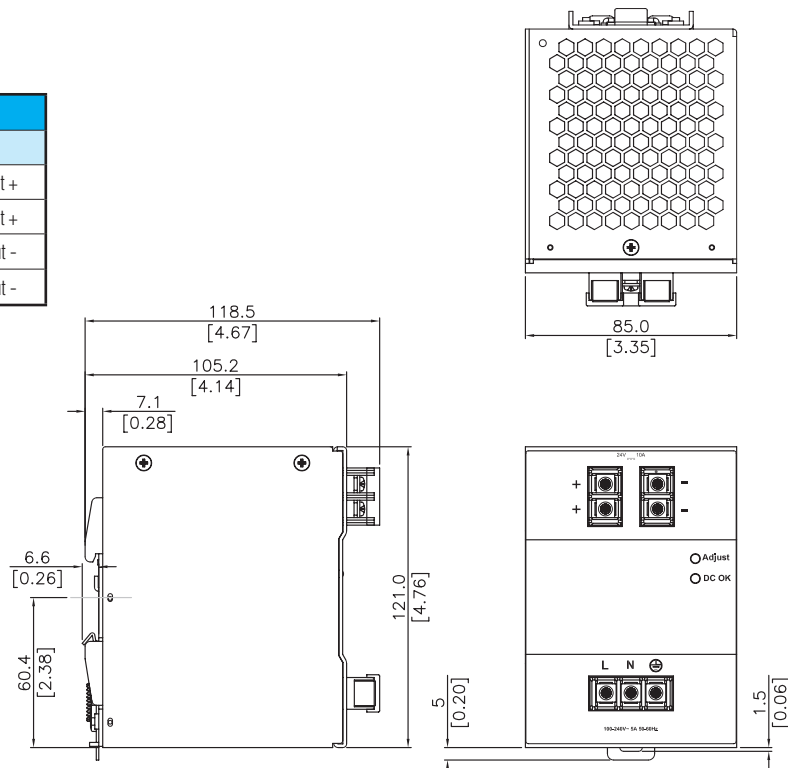
PSB24-060-P

Wiring Connection			
Input		Output	
L	Line	+	Out +
N	Neutral	-	Out -
⏏	AC Ground		



PSB24-240

Wiring Connection			
Input		Output	
L	Line	+	Out +
N	Neutral	+	Out +
⏏	AC Ground	-	Out -
		-	Out -



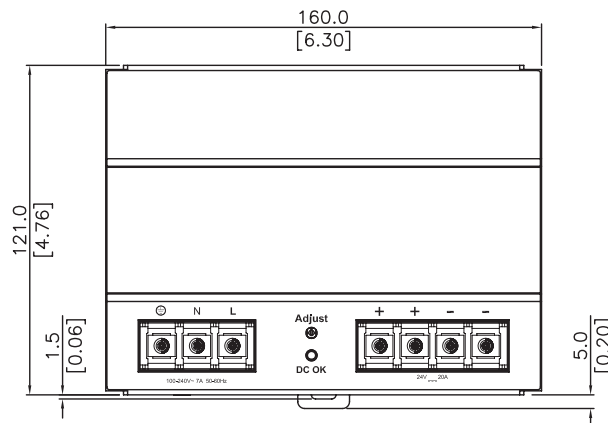
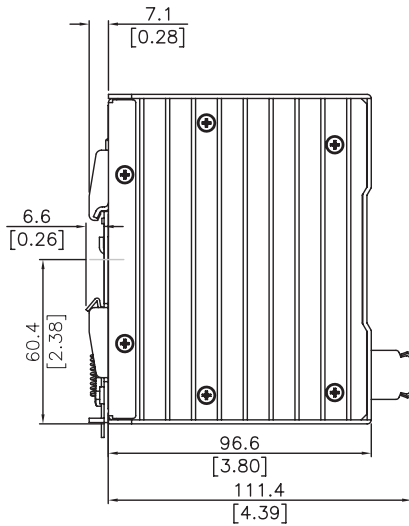
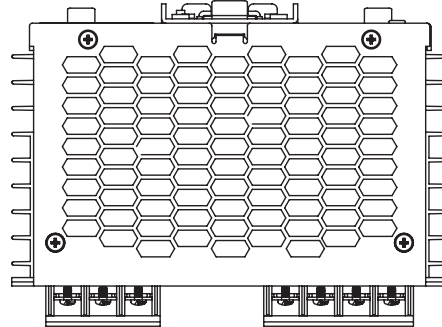
RHINO PSB Series DIN rail Power Supply Dimensions

Dimensions

mm [inches]

PSB24-480

Wiring Connection			
Input		Output	
L	Line	+	Out +
N	Neutral	+	Out +
⏏	AC Ground	-	Out -
		-	Out -



PSB Power Supply Accessories

PSB Series Power Supply Accessories		
Part No.	Price	Description
PSB-CVR	\$5.00	Universal replacement terminal cover kit for all RHINO PSB series power supplies. Universal kit includes (9) terminal covers to replace all terminal covers on any PSB power supply model



Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

Terms and Conditions

RHINO PSB Series DIN rail Power Supplies

Single-Phase Input

AutomationDirect's RHINO PSB series of DIN rail power supplies is perfect for applications that require a basic DC voltage power supply. These low-cost power supplies offer high performance and reliability without all the additional features of higher-cost full-featured power supplies. The following models in the RHINO PSB series are available with universal single-phase input and with output voltages of 24VDC or 48VDC from 60 to 480 Watts. They feature removable terminal blocks, high efficiencies, conformal coated circuit boards, and approval for Class 1, Division 2 hazardous locations. The rugged plastic and aluminum housings easily install with integral 35mm DIN rail mounting adapters. These high-quality power supplies include overload, overvoltage and thermal protection, and are UL 508 listed, UL 60950 recognized, CSA certified, CE marked and RoHS compliant.

PSB48-480S is perfect for Stepper Drives, like our STP-DRV-6575, STP-DRV-4850 or STP-DRV-80100

Features

- Universal input voltage, single-phase 85–264 VAC / 120–375 VDC
- 24VDC or 48VDC outputs, 60 to 480 Watts
- Adjustable output voltage
- Rugged plastic or aluminum housings with integral 35mm DIN rail mounting adapters
- Output voltage status LED
- Removable terminal blocks (except PSB24-060S-P, PSB24-480S and PSB48-480S) with IP20 protection
- Conformal coated circuit board for protection against demanding environments
- Overload, overvoltage and thermal protection
- UL 508 listed, UL 60950 recognized, CSA certified, approved for Class I, Division 2 hazardous locations CE marked and RoHS compliant
- Three year warranty



PSB Single-Phase Series Input Specifications

Part No.	Price	Weight	Housing	Input Voltage	Input Frequency Range	Max. Input Current	Inrush Current Limitation $I_{t @ 77^{\circ}F (+25^{\circ}C)}$ typ.	Leakage Current	Recommended Circuit Breaker	Hold-Up Time at Nominal Load (Typ.) (Mains Buffering)	Turn-on Time
PSB24-060S-P	\$35.00	0.33 kg [0.73 lb]	Plastic	85–264 VAC Nominal 100–240 VAC	47–63 Hz (0Hz @ DC Input)	<1.5 A @ 100VAC	<40A @ 115VAC, <80A @ 230VAC	<1mA @ 240VAC	16A "B" Curve	>20ms @ 115VAC >125ms @ 230VAC (100% load, 25°C)	<3 sec.
PSB24-060S	\$42.00	0.37 kg [0.82 lb]	Aluminum	85–264 VAC (DC input range 120–375 VDC); Nominal 100–240 VAC UL Approved for 100–240 VAC only		<1.4 A @ 115VAC, <0.8 A @ 230VAC	<20A @ 115VAC, <35A @ 230VAC			<3mA @ 240VAC	>20ms @ 115VAC >115ms @ 230VAC (100% load, 25°C)
PSB24-120S	\$75.00	0.72 kg [1.59 lb]				<2.2 A @ 115VAC, <1.2 A @ 230VAC	<35A @ 115VAC, <35A @ 230VAC	<1mA @ 240VAC			>20ms @ 115VAC >115ms @ 230VAC (100% load, 25°C)
PSB24-240S	\$125.00	1.10 kg [2.43 lb]				<2.5 A @ 115VAC, <1.3 A @ 230VAC				<1mA @ 240VAC	>20ms @ 115VAC >115ms @ 230VAC (100% load, 25°C)
PSB24-480S	\$192.00	1.37 kg [3.02 lb]				<5A @ 115VAC, <3A @ 230VAC	<3mA @ 240VAC	>20ms @ 115VAC >115ms @ 230VAC (100% load, 25°C)			
PSB48-120S	\$75.00	0.72 kg [1.59 lb]				<2.2 A @ 115VAC, <1.1 A @ 230VAC		<3mA @ 240VAC		>20ms @ 115VAC >115ms @ 230VAC (100% load, 25°C)	
PSB48-240S	\$125.00	0.97 kg [2.14 lb]				<2.5 A @ 115VAC, <1.3 A @ 230VAC	<3mA @ 240VAC			>20ms @ 115VAC >115ms @ 230VAC (100% load, 25°C)	
PSB48-480S	\$170.00	1.37 kg [3.02 lb]	<5A @ 115VAC, <3A @ 230VAC	>20ms @ 115VAC & 230VAC (100% load, 25°C)		<1.5 sec.					

RHINO PSB Series DIN rail Power Supplies

PSB Single-Phase Series Output Specifications									
Part No.	Output Voltage (Vnom) / Adjustment Range	Output Power	Output Current	Ripple and Noise (20 MHz)	Startup with Capacitive Loads	Derating	Max. Power Dissipation Idling / Nominal Load Approx.	Efficiency	MTBF
PSB24-060S-P	24VDC ±2%/22–28 VDC (maximum power ≤60W)	60W	2.5 A	<50 mVpp/<240mVpp @ 25°C	Max 8,000µF	>50°C de-rate power by 2.5%/°C	9W	>86.0% @ 115VAC, >87.0% @ 230VAC	>800,000 hrs.
PSB24-060S						>70°C de-rate power by 4%/°C			
PSB24-120S	24VDC ±2%/22–28 VDC (maximum power ≤120W)	120W	5A	<50 mVpp/<150mVpp @ 25°C	Max 10,000µF	>50°C de-rate power by 2.5%/°C	14.8 W	>89.0% @ 115VAC, >90.0% @ 230VAC	>800,000 hrs.
PSB24-240S						>70°C de-rate power by 5%/°C			
PSB24-480S	24VDC ±2%/22–28 VDC (maximum power ≤480W)	480W	20A	<50 mVpp @ 25°C		>50°C de-rate power by 2.5%/°C	59W	>89.0% @ 115VAC & 230VAC	>500,000 hrs.
PSB48-120S	48VDC ±1%/48–56 VDC (maximum power ≤120W)	120W	2.5 A	<100 mVpp @ 25°C	Max 6,500µF	>50°C de-rate power by 2.5%/°C	14.8 W	>89.0% @ 115VAC & 230VAC	>600,000 hrs.
PSB48-240S						>70°C de-rate power by 5%/°C			
PSB48-480S	48VDC ±1%/48–56 VDC (maximum power ≤480W)	480W	10A	<100 mVpp/ <200 mVpp @ 85VAC to 264VAC	Max 10,000µF	>50°C de-rate power by 2.5%/°C	59W	>91.0% @ 115VAC & >92.0% @ 230VAC	>500,000 hrs.

PSB Single-Phase Series General Specifications	
Output Line Regulation	<0.5% typ. (@ 85–264 VAC input, 100% load)
Output Load Regulation	<1% typ. (@ 85–264 VAC input, 0–100% load)
Parallel Operation	PSB60-REM20S / PSB60-REM40S or with ORing Diode
Case Cover	Aluminium or Plastic (Polycarbonate) for P Series
Signals	Green LED DC OK
Humidity at 25°C [77°F], no condensation	<95% RH (non-condensing)
Shock	IEC60068-2-27, 30G (300 m/S ²) for a duration of 10ms
Vibration (Non-Operating)	IEC60068-2-6, 10Hz to 500Hz @ 30 m/S ² (3G peak); 60 min per axis for all X, Y, Z direction
Environmental Air	No corrosive gases permitted
Pollution Degree	2
Climatic Class	3K3 according to EN 60721

PSB Single-Phase Series Certification and Standards	
Electrical Equipment of Machines	IEC60204-1 (over voltage category III)
Electronic equipment for use in electrical power installations	EN50178 / IEC62103
Safety Entry Low Voltage	PELV (EN60204), SELV (EN60950)
Industrial Control Equipment	UL/cUL listed to UL508 and CSA C22.2 No. 107.1-01 (file no. E197592), CSA to CSA C22.2 No. 107.1-01 (file no. 249074)
Hazardous Location	cCSAus to CSA C22.2 No. 213-M1987, ANSI / ISA 12.12.01:2007 [Class I, Division 2, Group A,B,C,D T4, Ta = -25°C to +75°C (Vertical: > +50°C derating)], (file no. 249074)
Class 2 Power Supply	UR/cUR Class 2 power supply recognized to UL1310 and CSA C22.2 No. 223 (file no. E198298) (PSB24-060S-P only)
CE	CE Marked

PSB Single-Phase Series Safety and Protection	
Transient surge voltage protection	Varistor
Overvoltage	<57V, SELV Output, hiccup mode, non-latching (auto-recovery)
Overload / Overcurrent	>120% & 150% of rated load current, hiccup mode, non-latching (auto-recovery)
Isolation Voltage:: Input/output (type test/routine test) Input/GND (type test/routine test) Output/GND (type test/routine test)	4 kVAC / 3 kVAC 1.5 kVAC / 1.5 kVAC 1.5 kVAC / 500 VAC
Protection Degree	IP20
Safety Class	Class I with GND connection

RHINO PSB Series DIN rail Power Supplies

Additional Data					
Part No.	Wire Size / Torque*		Terminal Block Type	Ambient Operating Temperature**	Storage Temperature
	Input	Output			
PSB24-060S-P	0.32–5.3 mm ² [AWG 22–10] / 0.45 Nm [3.96 lb-in]	0.32–5.3 mm ² [AWG 22–10] / 0.45 Nm [3.96 lb-in]	Fixed screw terminals	-25°C to 80°C [-13°F to 176°F]	-25°C to 80°C [-13°F to 176°F]
PSB24-060S	0.32–3.3 mm ² [AWG 22–12] / 0.46 Nm [4.05 lb-in]	0.32–3.3 mm ² [AWG 22–12] / 0.46 Nm [4.05 lb-in]	Removable screw terminals	-25°C to 80°C [-13°F to 176°F] Cold start at -40°C [-40°F]	-40°C to 85°C [-40°F to 185°F]
PSB24-120S	0.52–3.3 mm ² [AWG 20–12] / 0.46 Nm [4.05 lb-in]	0.52–3.3 mm ² [AWG 20–12] / 0.46 Nm [4.05 lb-in]			
PSB24-240S	1.3–2.1 mm ² [AWG 16–14] / 0.46 Nm [4.05 lb-in]	1.3–2.1 mm ² [AWG 16–14] / 0.46 Nm [4.05 lb-in]			
PSB24-480S	0.82–5.3 mm ² [AWG 18–10] / 0.45 Nm [3.96 lb-in]	3.5–5.3 mm ² [AWG 12–10] / 0.45 Nm [3.96 lb-in]	Fixed screw terminals	-25°C to 80°C [-13°F to 176°F] Cold start at -40°C [-40°F]	-40°C to 85°C [-40°F to 185°F]
PSB48-120S	0.52–3.3 mm ² [AWG 20–12] / 0.46 Nm [4.05 lb-in]	0.52–3.3 mm ² [AWG 20–12] / 0.46 Nm [4.05 lb-in]	Removable screw terminals		
PSB48-240S					
PSB48-480S	0.82–5.3 mm ² [AWG 18–10] / 0.45 Nm [3.96 lb-in]	1.3–5.3 mm ² [AWG 16–10] / 0.45 Nm [3.96 lb-in]	Fixed screw terminals		

*Stripping length 7 mm (0.28 in)

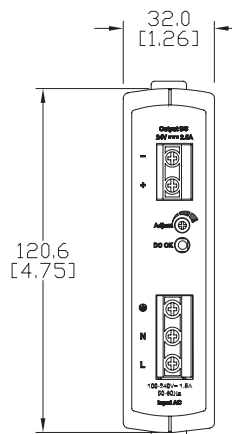
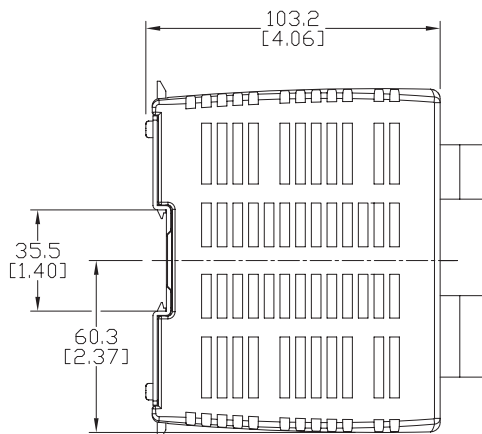
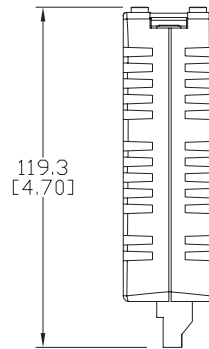
** See output specifications for temperature derating

Dimensions

mm [inches]

PSB24-060S-P

Wiring Connection			
Input		Output	
L	Line	+	Out +
N	Neutral	-	Out -
\perp	AC Ground		



RHINO PSB Series DIN rail Power Supplies

Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

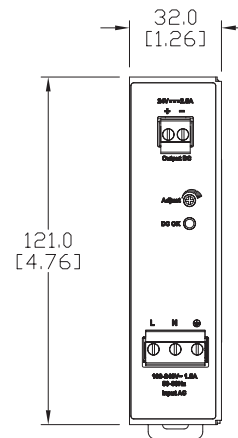
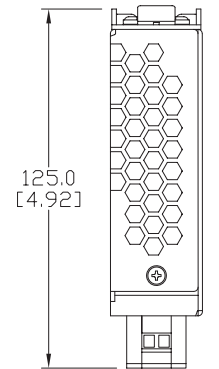
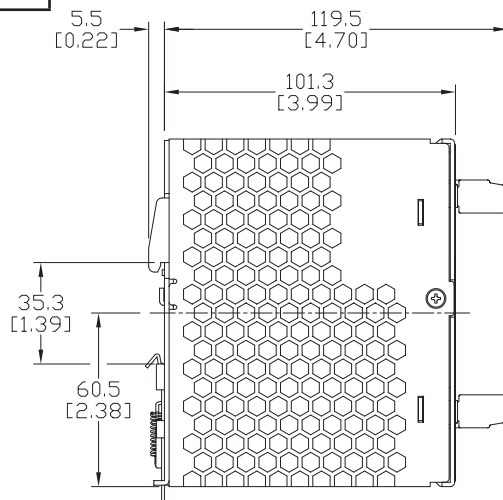
Terms and Conditions

Dimensions

mm [inches]

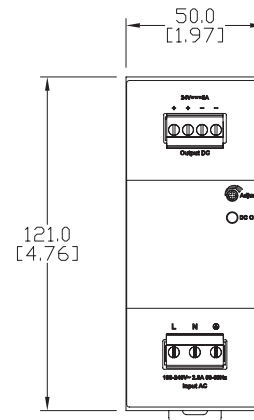
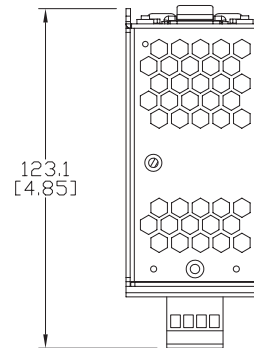
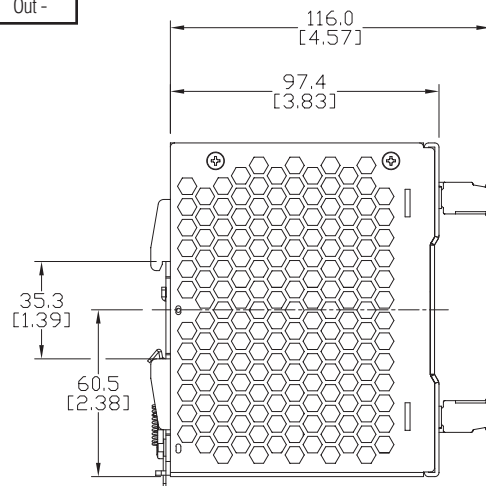
PSB24-060S

Wiring Connection			
Input		Output	
L	Line	+	Out +
N	Neutral	-	Out -
	AC Ground		



PSB24-120S and PSB48-120S

Wiring Connection			
Input		Output	
L	Line	+	Out +
N	Neutral	+	Out +
	AC Ground	-	Out -
		-	Out -



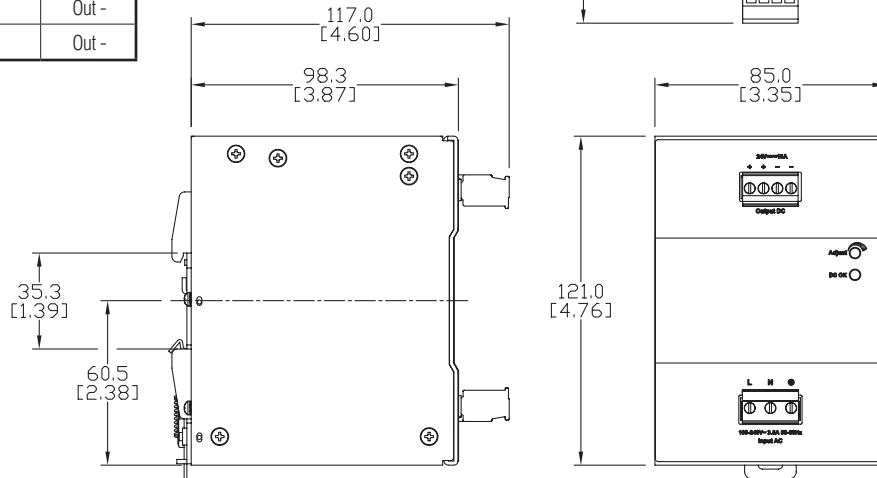
RHINO PSB Series DIN rail Power Supplies

Dimensions

mm [inches]

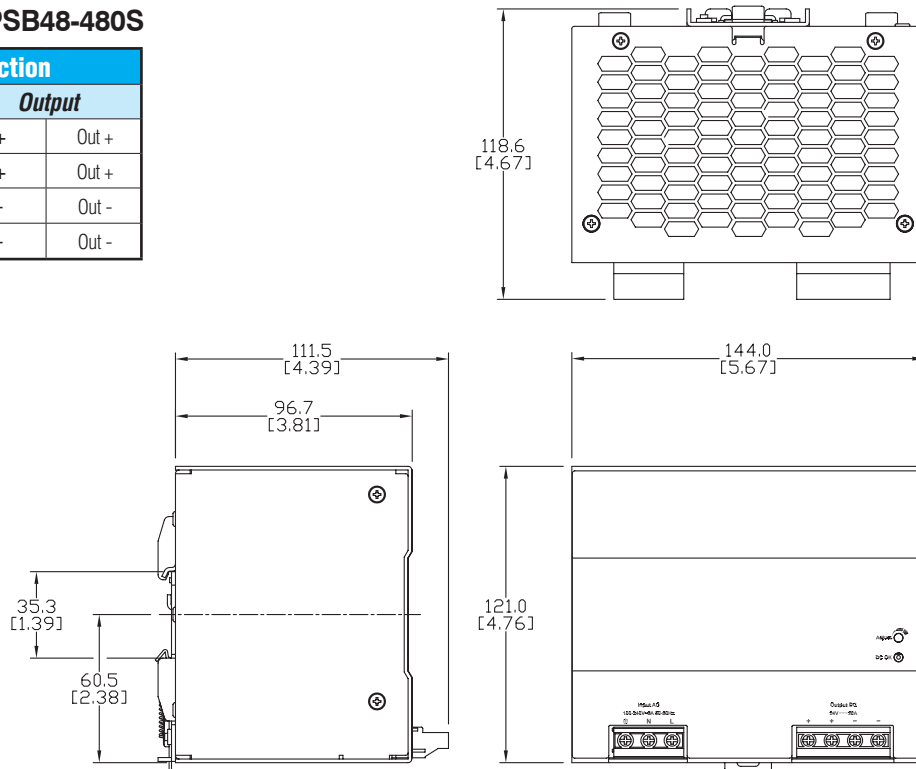
PSB24-240S and PSB48-240S

Wiring Connection			
Input		Output	
L	Line	+	Out +
N	Neutral	+	Out +
⏏	AC Ground	-	Out -
		-	Out -



PSB24-480S and PSB48-480S

Wiring Connection			
Input		Output	
L	Line	+	Out +
N	Neutral	+	Out +
⏏	AC Ground	-	Out -
		-	Out -



RHINO PSB Series DIN rail Power Supplies

Three-Phase Input

AutomationDirect's RHINO PSB series of DIN rail three-phase input power supplies is perfect for applications that require a basic DC voltage power supply. These low cost power supplies offer high performance and reliability without all the additional features of higher cost full-featured power supplies. The three-phase input eliminates the need for a separate step down transformer and the output of 24VDC is available from 60 to 960 Watts. The rugged aluminum housings easily install with integral 35mm DIN rail mounting adapters. These high-quality power supplies include overload, overvoltage and thermal protection, and are UL 508 listed, UL 60950 recognized, CSA certified, CE marked and RoHS compliant. Units are covered by a 3-year warranty.



Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

Terms and Conditions

PSB Three-Phase Series Input Specifications

Part No.	Price	Weight	Housing	Input Voltage	Input Frequency Range	Max. Input Current	Inrush Current Limitation <i>I_t</i> @ 77°F (+25°C) typ.	Leakage Current	Recommended Circuit Breaker	Hold-Up Time at Nominal Load (Typ.) (Mains Buffering)	Turn-on Time	
PSB24-060S-3	\$59.00	0.66 kg [1.46 lb]	Aluminum	Nominal 400-500VAC	47-63 Hz	<1.3 A / Phase @ 400VAC and <0.25 A / Phase @ 500VAC	<30A @ 400VAC & 500VAC @ 25°C (With 3Ph AC source capability up to 3KVA) <55A @ 400VAC & 500VAC @ 25°C (With 3Ph AC source capability up to 18KVA)	<3.5 mA	3 x circuit breakers 16A "B" Curve	>20ms @ 3 x 400VAC, >40ms @ 3 x 500VAC	<1000ms @ 100% load (25°C) and typical line input	
PSB24-120S-3	\$76.00					<0.5 A / Phase @ 400VAC and <0.4 A / Phase @ 500VAC	<30A @ 400VAC & 500VAC @ 25°C (With 3Ph AC source capability up to 3KVA) <60A @ 400VAC & 500VAC @ 25°C (With 3Ph AC source capability up to 18KVA)					
PSB24-240S-3	\$127.00	0.89 kg [1.96 lb]				320VAC minimum to 600VAC maximum	<0.75 A / Phase @ 400VAC and <0.65 A / Phase @ 500VAC					<40A @ 400VAC & 500VAC @ 25°C (With 3Ph AC source capability up to 3KVA) <60A @ 400VAC & 500VAC @ 25°C (With 3Ph AC source capability up to 18KVA)
PSB24-480S-3	\$180.00	1.35 kg [2.98 lb]				UL/CSA approved to 500VAC	<0.95 A / Phase @ 400VAC and <0.75 A / Phase @ 500VAC					<50A @ 400VAC & 500VAC @ 25°C (With 3Ph AC source capability up to 3KVA) <70A @ 400VAC & 500VAC @ 25°C (With 3Ph AC source capability up to 18KVA)
PSB24-960S-3	\$265.00	2.6 kg [5.73 lb]					1.7 A Max / Phase					<50A @ 500VAC @ 25°C

RHINO PSB Series DIN rail Power Supplies

PSB Three-Phase Series Output Specifications									
Part No.	Output Voltage (Vnom) / Adjustment Range	Output Power	Output Current	Ripple and Noise (20 MHz)	Startup with Capacitive Loads	Derating	Max Power Dissipation / Nominal Load Approx.	Efficiency	MTBF
PSB24-060S-3	24-28 VDC (maximum power ≤60W)	60W	2.5 A (60W Max)	<150mVpp at 320VAC to 600VAC input	Max 10,000µF	>50°C de-rate power by 2.5%/°C >70°C de-rate power by 5%/°C	9.8 W	>86% @ 3 x 400VAC & 3 x 500VAC	>500,000 hrs
PSB24-120S-3	24-28 VDC (maximum power ≤120W)	120W	5A (120W Max)				16.5 W	>87% @ 3 x 400VAC, >86% @ 3 x 500VAC	
PSB24-240S-3	24-28 VDC (maximum power ≤240W)	240W	10A (240W Max)				26.7 W	>90% @ 3 x 400VAC & 3 x 500VAC	>300,000 hrs
PSB24-480S-3	24-28 VDC (maximum power ≤480W)	480W	20A (480W Max)				53W		
PSB24-960S-3	24-28 VDC (maximum power ≤960W)	960W	40A (960W Max)				<240mVpp at 320VAC to 575VAC input	>50°C de-rate power by 2.5%/°C	94W

PSB Three-Phase Series General Specifications	
Output Line Regulation	<0.5% typ. (@ 320 to 600VAC input, 100% load)
Output Load Regulation	<1% typical (with rated input, 0 to 100% load)
Parallel Operation	PSB60-REM20S* / PSB60-REM40S or with ORing Diode
Case Cover	Aluminium (Al5052)
Signals	Green LED DC OK
Humidity at +25°C [77°F], no condensation	<95% RH (non-condensing)
Shock	IEC 60068-2-27
Vibration (Non-operating)	IEC 60068-2-6
Pollution Degree	2
Climatic Class	3K3 according to EN 60721

* Does not apply to the PSB24-960S-3

PSB Three-Phase Series Certification and Standards	
EMC / Emissions	FCC Title 47, Class B / EN55022, CISPR22, CISPR11, Class B
Immunity	EN61000-4-2, 1995; EN61000-4-4, 1995; EN61000-4-5, 1995; IEC61000-4-12 or IEEE C62.41; EN61000-4-3, 1998; EN61000-4-8; EN61000-4-6, 1996
Approvals	UL/cUL listed to UL508 and CSA C22.2 No. 107.1-01 (file no. E197592), CSA to CSA C22.2 No. 107.1-01 (file no. 249074) UR/cUR recognized to UL60950-1 and CSA C22.2 No. 60950-1 (file no. E198298) CE (EMC and Low Voltage directive)
Voltage Dips	EN61000-4-11

PSB Three-Phase Series Safety and Protection	
Transient Surge Voltage Protection	Varistor
Overload/Short Circuit Protection	> 150% of rated load current, auto recovery (hiccup mode)
Overvoltage Protection	<32V, ±10%, SELV output, non-latching (autorecovery)
Isolation Voltage:	
Input/output	4 KVac
Input/GND	1.5 KVac
Output/GND	1.5 KVac
Protection Degree	IP20
Safety Class	Class I with GND connection

RHINO PSB Series DIN rail Power Supplies

Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

Terms and Conditions

Additional Data					
Part No.	Wire Size / Torque*		Terminal Block Type	Ambient Operating Temperature**	Storage Temperature
	Input	Output			
PSB24-060S-3	0.82–3.3 mm ² [AWG 18–12] / 0.92 Nm [8.1 lb-in]	0.82–3.3 mm ² [AWG 18–12] / 0.61 Nm [5.4 lb-in]	Fixed screw terminals	-25°C to +80°C [-13°F to 176°F]	-25°C to +85°C [-13°F to 185°F]
PSB24-120S-3					
PSB24-240S-3	1.3–3.3 mm ² [AWG 16–12] / 0.61 Nm [5.4 lb-in]				
PSB24-480S-3					
PSB24-960S-3	0.82–8.4 mm ² [AWG 18–8] / 0.92 Nm [8.1 lb-in]	3.3–5.3 mm ² [AWG 12–10] / 0.92 Nm [8.1 lb-in]			

*Stripping length 7 mm (0.28 in) or use suitable lug to crimp

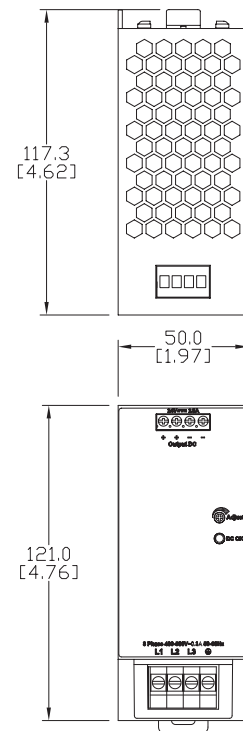
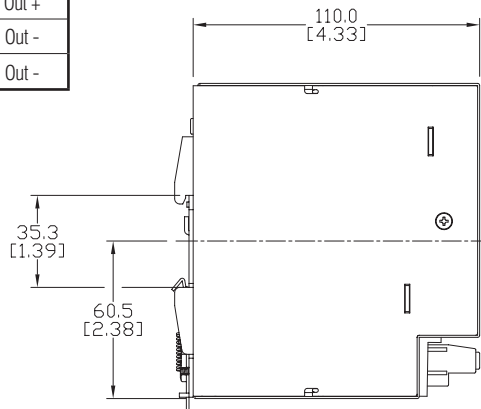
** See output specifications for temperature derating

Dimensions

mm [inches]

PSB24-060S-3
PSB24-120S-3

Wiring Connection			
Input		Output	
L1	Line 1	+	Out +
L2	Line 2	+	Out +
L3	Line 3	-	Out -
⏏	AC Ground	-	Out -



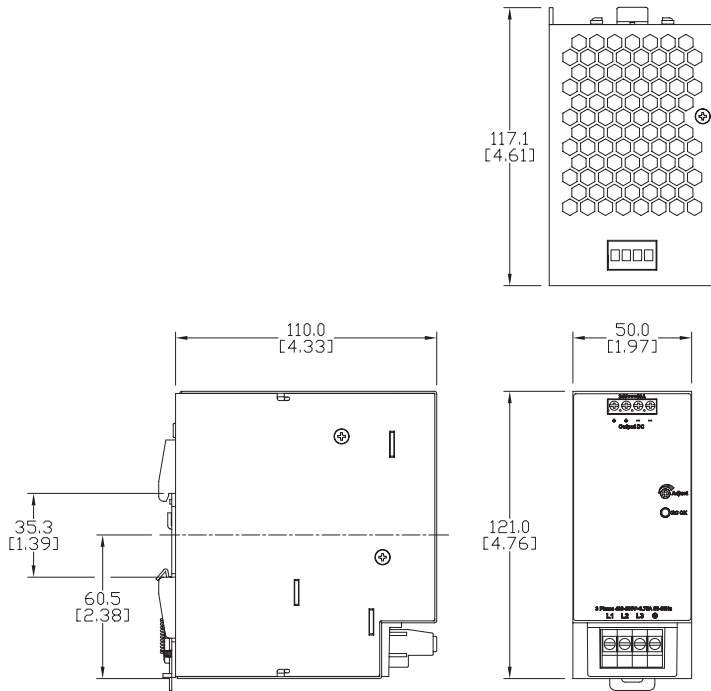
RHINO PSB Series DIN rail Power Supply Dimensions

Dimensions

mm [inches]

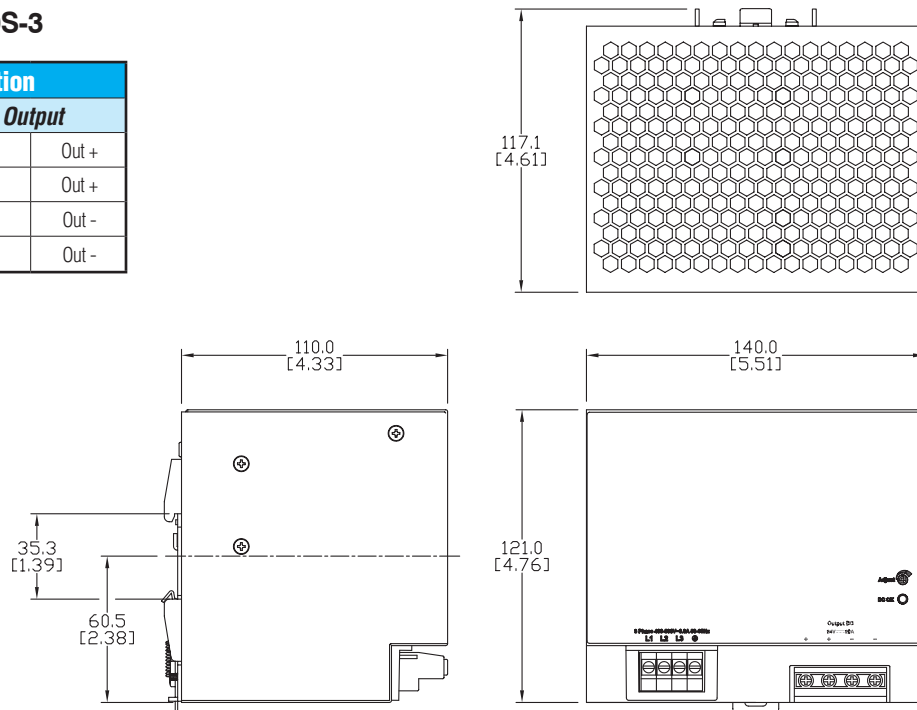
PSB24-240S-3

Wiring Connection			
Input		Output	
L1	Line 1	+	Out +
L2	Line 2	+	Out +
L3	Line 3	-	Out -
⊥	AC Ground	-	Out -



PSB24-480S-3

Wiring Connection			
Input		Output	
L1	Line 1	+	Out +
L2	Line 2	+	Out +
L3	Line 3	-	Out -
⊥	AC Ground	-	Out -



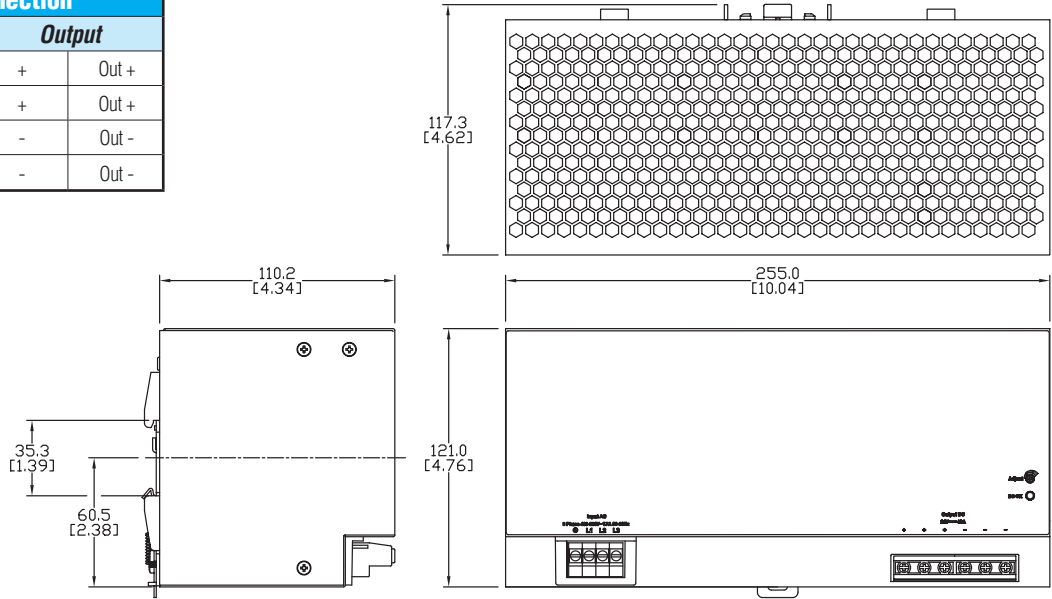
RHINO PSB Series DIN rail Power Supply Dimensions

Dimensions

mm [inches]

PSB24-960S-3

Wiring Connection			
Input		Output	
L1	Line 1	+	Out +
L2	Line 2	+	Out +
L3	Line 3	-	Out -
	AC Ground	-	Out -



Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

Terms and Conditions

RHINO PSB Power Supply Accessories

Redundancy Module

The RHINO PSB60-REM series redundancy modules are used with two RHINO PSB series power supplies in parallel to create redundancy to help prevent costly downtime due to power supply failure. The redundancy module decouples the outputs of the two connected power supplies so that in case of failure, one power supply cannot overload the other. The modules can handle power supply voltages from 22 to 60VDC and provides alarm relay contacts for remote monitoring.

Features

- Provides redundancy and parallel operation of two RHINO PSB power supplies
- Wide input and output range 22–60 VDC
- Input voltage OK LED and relay alarm indication
- Corrosion resistant aluminum housing
- Approved for use in Class I, Division 2 hazardous locations
- Three year warranty



Redundancy Modules		
Part No.	PSB60-REM20S	PSB60-REM40S
Price	\$35.00	\$43.00
Weight	0.375 kg [0.83 lb]	0.515 kg [1.14 lb]
Redundancy Module Input Specifications		
Nominal Input Voltage	24–48 VDC	
Voltage Range	22–60 VDC	
Nominal Current	20A max	40A max
Input Voltage Alarm/Relay Contacts	24V system: both Vin1 & Vin2 >18V ± 5% or < 30V max. relay contacts 48V system: both Vin1 & Vin2 >36V ± 5% or <60V max. relay contacts	
Input Voltage LED Operation	The LED will turn on when the Vin1 & Vin2 >18V ± 5% (for 24V systems) or >36V ± 5% (for 48V system) and not more than 30V (for 24V systems) or not more than 60V (for 48V systems), the relay contacts will be closed. If Vin1 & Vin2 is under or over this range, the LED will turn off	
Redundancy Module Output Specifications		
Nominal Output Voltage U_N / Tolerance	Vin-0.65V (Typ.)	
Nominal Current	20A max	40A max
Derating above +50°C	>50°C [2.5% / K]	
Short Circuit / Over Load Limit	<25A	<50A
Efficiency	>97% typical	
<i>Note: The overload condition must be controlled by the power supply units in parallel; The limit of input current should not be more than 25A (for 20A module) or not more than 50A (for 40A module)</i>		
Redundancy Module Certification / Standards		
Electrical Equipment of Machines	IEC60204-1 (over voltage category III)	
Electrical Safety (IT equipment)	UR/cUR recognized to UL60950-1 (file no. E198298), CB test certificate and report to IEC60950-1 and CE	
Industrial Control Equipment	UL/cUL recognized to UL508 and CSA C22.2 No. 107.1-01 (file no. E197592)	
Hazardous Location	cCSAus to CSA C22.2 No. 213-M1987, ANSI / ISA 12.12.01:2007 [Class I, Division 2, Group A,B,C,D T4, Ta = -40°C to +80°C (> +50°C derating)], (file no. 249074)	
Electronic Equipment For Use in Electrical Power Installations	EN50178 / IEC62103	
Safety Entry Low Voltage	PELV (EN60204), SELV (EN60950)	
RoHS Compliant	Yes, RoHS directive, WEEE directive	
Protection Against Electric Shock	DIN 57100-410	

RHINO PSB Power Supply Accessories

Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

Terms and Conditions

Redundancy Module General Specifications	
Isolation Voltage: Input / PE Output / PE	1.5 KVAC / 1.5 KVAC 1.5 KVAC / 1.5 KVAC
Degree of Protection	IP20
Class of Protection	Class II with PE connection
MTBF	>800,000 hrs. per BELL CORE STD or IEC61709
Type of Housing	Aluminum (AL1100F)
Redundancy Module Environmental Specifications	
Humidity at +25° C, no condensation	<95% RH
Vibration	10Hz to 500Hz @ 30 m/S ² (3G peak); displacement of 0.35 mm; 60 min per axis for all X, Y, Z direction. Refer to IEC 60068-2-6. Note: all figures quoted are amplitudes (peak values)
Shock (in all directions)	IEC60068-2-27, 30G (300m/s ²) for duration 18 ms 1 Shock in 2 directions tested with fixture with EUT mounted on DIN rail in vertical and horizontal position
Pollution Degree	2 according to EN50178
Climatic Class	3K3 according to EN60721

Additional Data					
Part No.	Wire Size / Torque*		Terminal Block Type	Ambient Operating Temperature**	Storage Temperature
	Input	Output			
PSB60-REM20S	3.3–5.3 mm ² [AWG 12–10] / 0.72 Nm [6.3 lb-in]	3.3–5.3 mm ² [AWG 12–10] / 0.72 Nm [6.3 lb-in]	Fixed screw terminals	-25°C to +80°C [-13°F to 176°F]	-25°C to +85°C [-13°F to 185°F]
PSB60-REM40S					

*Stripping length 7 mm (0.28 in) or use suitable lug to crimp

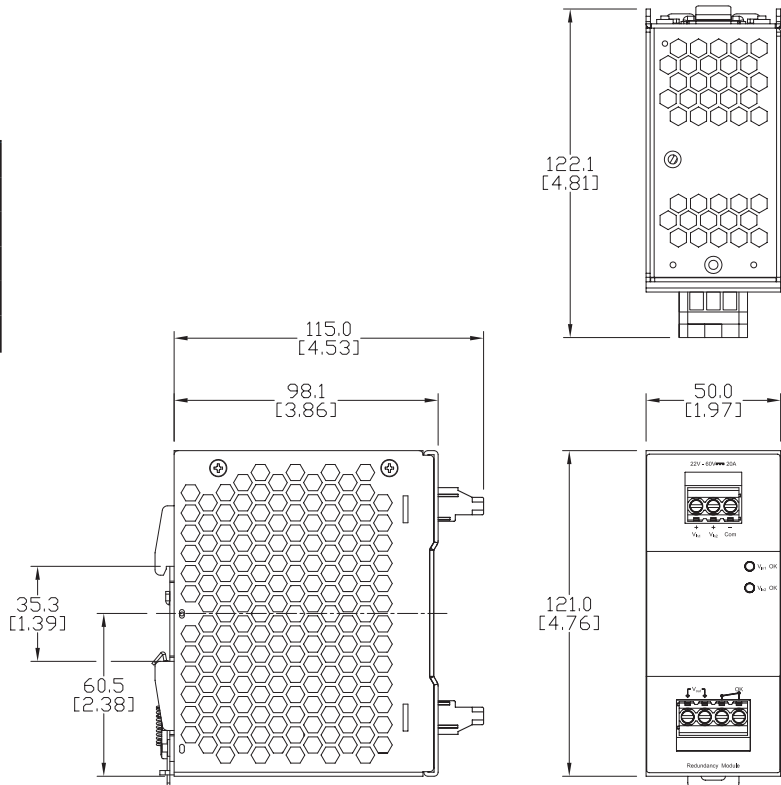
** See output specifications for temperature derating

Dimensions

mm [inches]

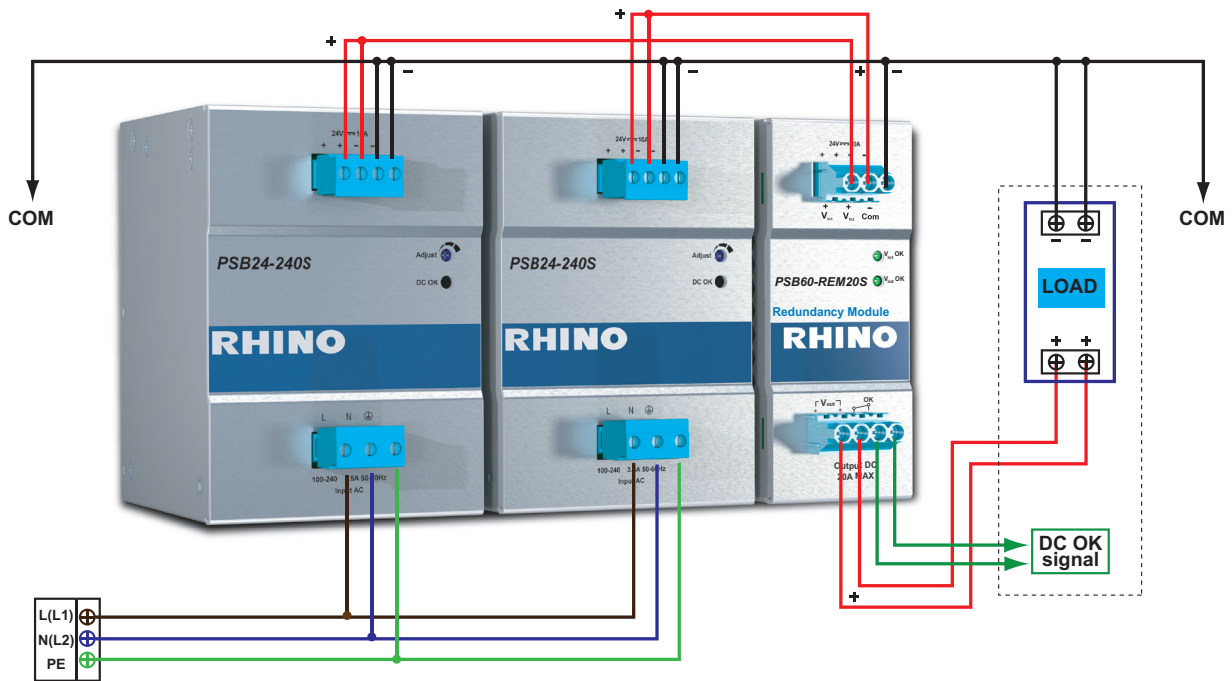
PSB60-REM20S
PSB60-REM40S

Wiring Connection			
Input		Output	
Vin1	Line 1	Vout+	Output +
Vin2	Line 2	Vout+	Output +
Com	Common	OK	Alarm Relay
		OK	Alarm Relay



RHINO PSB Power Supply Accessories

Redundancy Module Wiring



Parallel Operation

When 2 power supplies are connected in parallel, they can share the load if the following steps are taken.

- Step 1:** Measure the output voltages at no load from Vin1 to Com of power supply 1 and Vin2 to Com of power supply 2. If the voltages are not the same, follow Step 2. If they are the same, skip to Step 3.
- Step 2:** Adjust the output voltages, with the help of the adjustment pot on the power supply front panel marked as ADJUST, to the same level. For example, if power supply 1 is measuring 24.15 VDC and power supply 2 is measuring 24.25 VDC, adjust the output voltage of one to be the same as the other.
- Step 3:** Connect the power supply to the end system load and measure the output voltages from Vin1 to Com of power supply 1 and Vin2 to Com of power supply 2. Ensure that the output voltages are the same even after the 2 power supplies are connected to load. If not, adjust them with the adjustment pot available on the front panel. A tolerance of $\pm 25\text{mV}$ would be acceptable.

Note:

- 1) If the output voltage of any power supply is higher, it will take the initial load and share the maximum load.
- 2) If the output voltages are the same, then an equal load current sharing between the 2 power supplies can be achieved.

RHINO PSB Power Supply Accessories

Buffer Module

The RHINO PSB24-BFM20S buffer module is a cost effective alternative to battery-based backup systems. Utilizing electrolytic capacitors the buffer module is maintenance free and will maintain the output voltage of a 24VDC power supply system for 250 msec minimum with a 20A load and 5 sec minimum with a 1A load. A switch is provided to select the voltage level to start buffering. An inhibit input is available for remote shut-down as well as output signals for remote stand-by and buffering mode indication. The module is housed in a corrosion-resistant aluminum chassis with IP20 terminals and conformal coated circuit board for protection against demanding environments.



Features

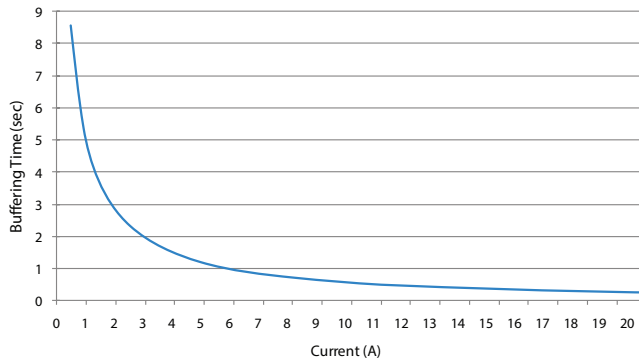
- Corrosion-resistant aluminum housing
- Long minimum buffering time of 250ms @ 24V/20A
- Units can be connected in parallel to increase buffering time
- Less than 30 second charging time
- Approved for use in Class 1 Division 2 hazardous locations
- IP20 wiring terminals
- Overvoltage / Overcurrent / Short Circuit protections
- Three year warranty



Buffer Module	
Part No.	PSB24-BFM20S
Price	\$149.00
Weight	0.76 kg [1.68 lb]
Buffer Module Input Specifications	
Nominal Input Voltage	24VDC
Voltage Range	22.8 to 28.8 VDC (35VDC Max)
Input Current	Charging mode: < 0.6 A; Discharging mode: 20A Max
Input Power	2.5 W average
Maximum Signal Input (Inhibit)	35V / 10mA
Max Inrush Current	<20A
Charging Time	<30sec
Buffer Module Output Specifications	
Nominal Output Voltage	24VDC typ. (depends on V_{in})
Adjustment Range Of The Voltage	22 to 28VDC Switch = "Fix 22V" - Buffering starts if terminal voltage falls below 22V Factory Setting, Switch = " $V_{in} - 1V$ " - Buffering starts if terminal voltage is decreased by >1V
Maximum Output Voltage	35VDC
Output Current	20A max
Buffering Time	250ms Min @ 24V / 20A Load, 5sec Min @ 24V / 1A Load (Refer to Fig. 1)
Maximum Signal Output	35V / 10mA
Signals	Inhibit Signal (I) - "Low" = shuts down buffer module Ready Signal (R) - "High" = buffer module is fully charged or in standby mode Buffering Signal (B) - "High" = Buffer module is discharging or in buffering mode Supply Voltage ($+V_s$) - Common $+V_s$, 35V Max
Noise and Ripple (20MHz)	<200mVpp @ 25°C [77°F] during buffering mode
Parallel Connection	Yes (requires PSB60-REM redundancy module)
Series Connection	No
Protective Device	Transient voltage suppressor (TVS) for signals

RHINO PSB Power Supply Accessories

Figure 1 1 Buffering Time (Typical Values at “V_{in}-1V” Mode)



Buffer Module Mechanical Specifications	
Case Cover	Aluminum
LED Indicators	Green LED Off - Unit is discharged or Vin <22VDC Green LED On - Unit is fully charged
Cooling System	Convection
Terminal	Input / Output - M3 x 2 pins (Rated 300V / 30A) Signal - M3 x 5 pins (Rated 300V / 30A)
Wire	Input / Output - AWG 12-10 [0.08-0.10 in]; Torque: 0.72 Nm [6.3 lb-in] Signal - AWG 24-10 [0.02-0.10 in]; Torque: 0.72 Nm [6.3 lb-in]
Buffer Module Environmental Specifications	
Operating Temperature	-25°C to +75°C [-13°F to +167°F]
Storage Temperature	-25°C to +85°C [-13°F to +185°F]
Power De-rating	>70°C [158°F] de-rate power by 5% / °C
Operating Humidity	<95% RH (Non-Condensing)
Operating Altitude	2,500 Meters
Shock Test (Non-Operating)	IEC60068-2-27, 30G (300m/S ²) for a duration of 18ms
Vibration (Non-Operating)	IEC60068-2-6, 10 Hz to 500 Hz @ 30m/S ² (3G peak); 60min per axis for all X, Y, Z direction
Pollution Degree	2
Buffer Module Protection Specifications	
Overvoltage	32V ± 10%
Overload / Overcurrent	30A Max
Short Circuit	No damage
Penetration Protection	>3.5mm (eg. screws, small parts)
Reverse Polarity Protection	Yes
Degree of Protection	IP20
Protection Against Shock	Class I with GND connection

RHINO PSB Power Supply Accessories

Buffer Module Reliability Specifications	
MTBF (at V_{in}-1V Mode)	>2,800,000 hrs. as per Telcordia SR-332 at Standby Mode (Buffer Module in Ready State)
Expected Capacitor Life	10 years (Standby mode @ 40°C)
Buffer Module Safety Standards / Directives	
Electronic Equipment in Power Installations	EN50718 / IEC62103
Electrical Safety (Information Technology Equipment)	UR/cUR recognized to UL60950-1 and CSA C22.2 No. 60950-1 (file no. E198298), CB scheme to IEC60950-1
Industrial Control Equipment	UL/cUL listed to UL508 and CSA C22.2 No. 107.1-01 (file no. E197592) CSA to CSA C22.2 No. 107.1-01 (file no. 249074)
Hazardous Location	cCSAus to CSA C22.2 No. 213-M1987, ANSI / ISA 12.12.01:2007 [Class I, Division 2, Group A,B,C,D T4, Ta = -25°C to +75°C (> +70°C derating)], (file no. 249074)
CE	in conformance with EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC
Materials and Parts	RoHS Directive 2011/65/EU Compliant
Galvanic Isolation	Input & Output to Ground - 1.5 KVAC Signal to Ground - 1.5 KVAC
Buffer Module EMC Specifications	
EMC / Emissions	CISPR22, EN55022, EN55011
Component Power Supply for General Use	EN61204-3
Immunity	EN55024, EN61000-6-2
Electrostatic Discharge	EN61000-4-2
Radiated Field	EN61000-4-3
Fast Transient / Burst	EN61000-4-4
Surge	IEC61000-4-5
Conducted	EN61000-4-6
Power Frequency Magnetic Fields	EN61000-4-8
Voltage Dips	EN61000-4-11
Low Energy Pulse Test (Ring Wave)	EN61000-4-12

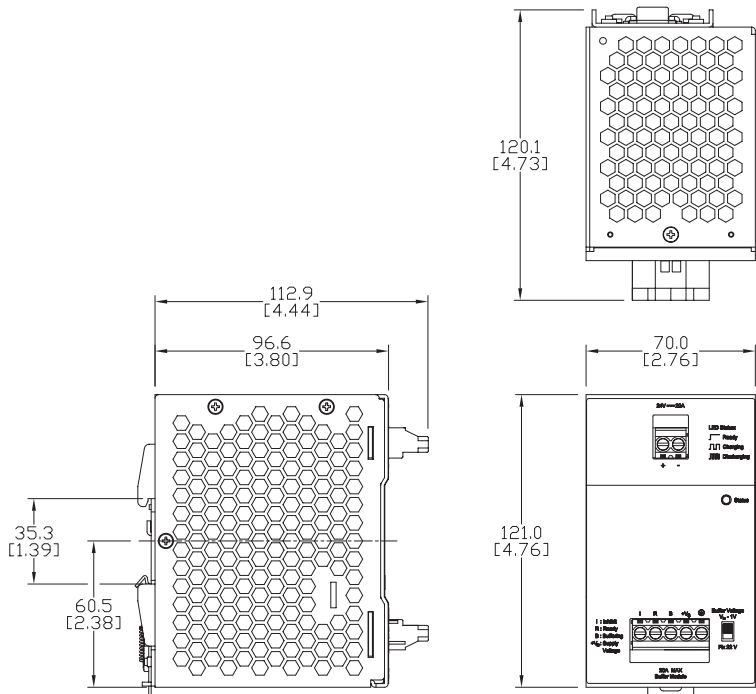
Note: Product intended to be used as Apparatus with AC-DC Power Supply, EMC compliance to be verified in correspondence to the connected units.

Dimensions

mm [inches]

PSB24-BFM20S

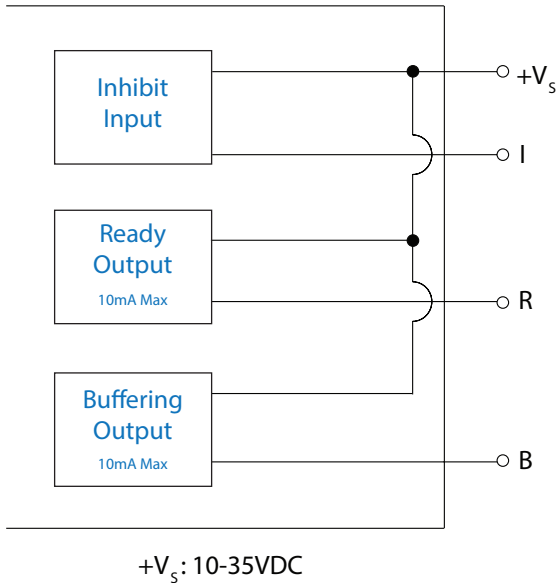
Wiring Connection			
Input		Output	
+	DC+	R	Ready
-	DC+	B	Buffering
I	Inhibit	+Vs	+ Voltage Supply
		⏏	Ground



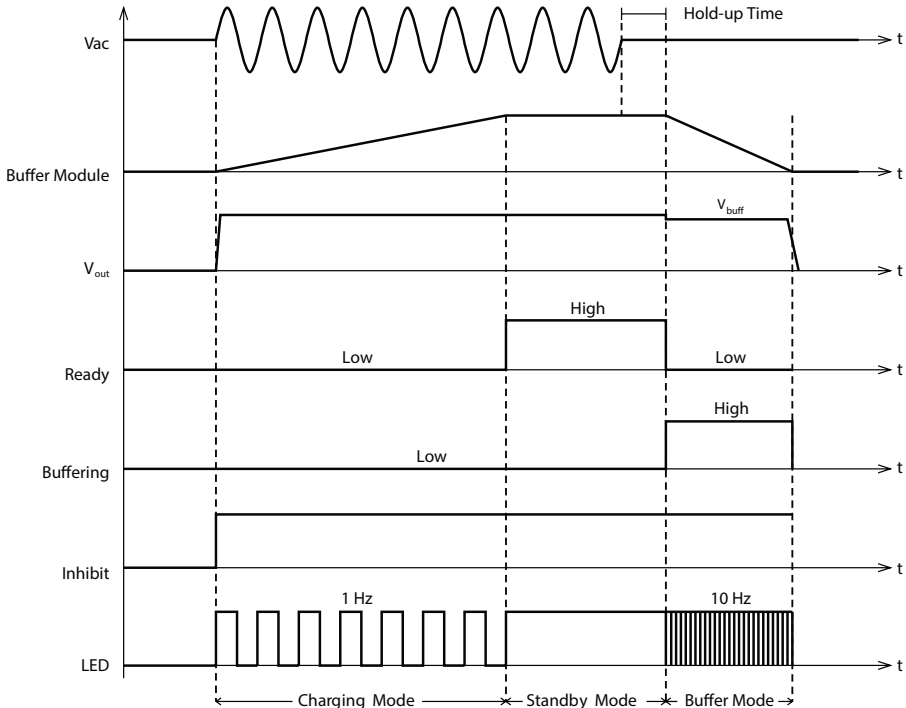
RHINO PSB Power Supply Accessories

Buffering, Ready and Inhibit Signal	
Buffering Output Signal (B)	"High" = PSB24-BFM20S is discharging or in Buffering Mode
Ready Output Signal (R)	"High" = PSB-BFM20S is fully charged or in Standby Mode
Inhibit Input Signal (I)	"Low" = Shuts down Buffer Module
Signal Voltage	+VS: 10-35 VDC
Maximum Signal Current	10mA
Isolation (Signal to Power)	1.5 KVAC

**I/O (input/output)
Example**



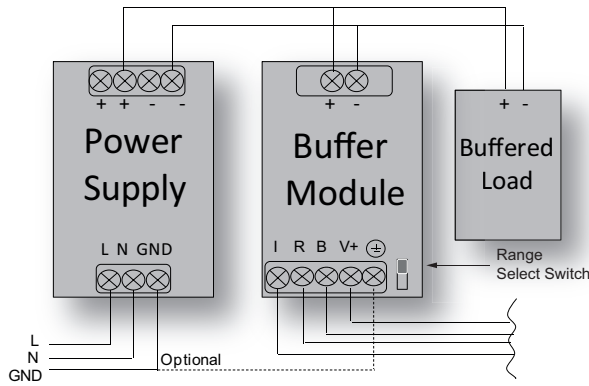
Buffer Module Operations



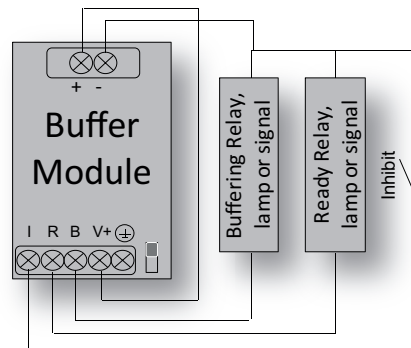
RHINO PSB Power Supply Accessories

Buffer Module Wiring

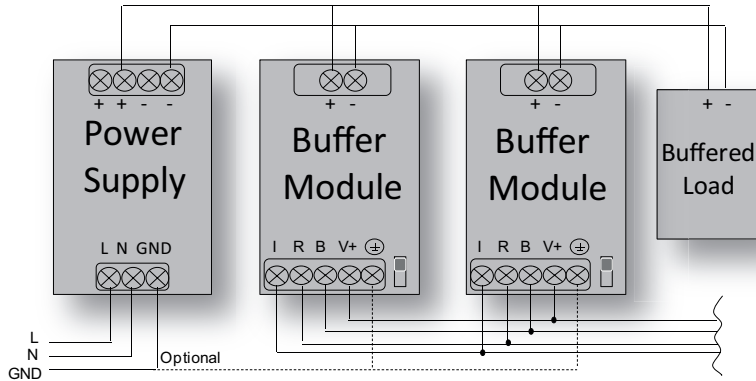
General connection / wiring diagram



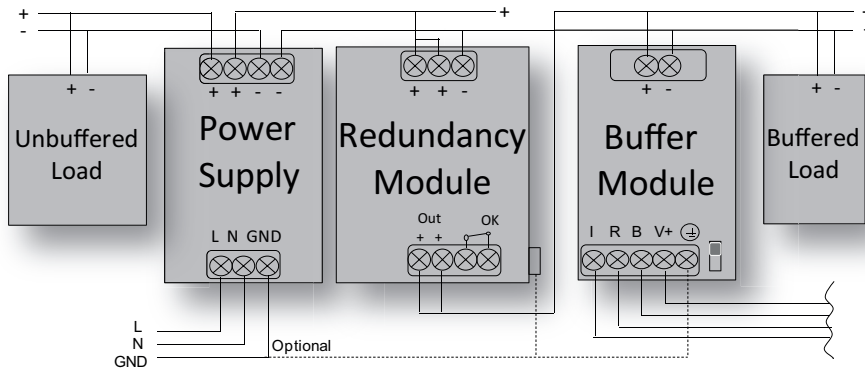
General signals wiring



Paralleling of buffer units



Decoupling of buffered branches



If it's in your cabinet, it's online at: www.AutomationDirect.com



Tens of thousands of in-stock quality items

An Extensive Lineup of Products

Starting with the enclosure, we carry everything you need to build an electrical control system, right down to the wire and tools. And we have the devices that go in the panel, such as logic controllers, HMI, drives, relays, and motor controls. If you're maintaining existing systems, we've got great prices on MRO parts such as circuit breakers, fuses, motors, pneumatics and pilot devices. In addition to our catalog all our products are available to **order 24/7 at www.automationdirect.com.**

Value Pricing

Our everyday prices on industrial control products are well below the list prices of more traditional automation companies because, with our direct business model and focus on high efficiency, AUTOMATIONDIRECT has the **lowest overhead in the industry**. We pass the savings on to you by offering high-quality products at low prices.

FREE Award Winning Support

Almost 99% of AUTOMATIONDIRECT customers responding to surveys say they would recommend us to someone else, and they do! And we've been **voted tops in service by independent magazine surveys 14 years running**.

FREE & Fast Shipping*

The majority of our products are stocked for same-day shipping, when you place your order by 6 p.m. EST.

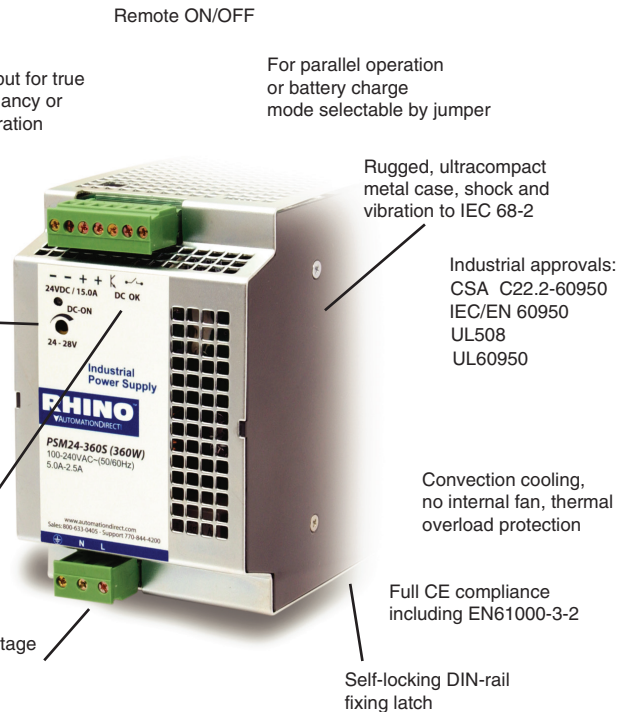
** Same day shipping with approved company credit or credit card. Free 2-day (transit) shipping for orders over \$49; other expedited services extra. See Web site or catalog Terms and Conditions for all details and exceptions.*

 **AUTOMATIONDIRECT**.com

RHINO PSM Series Power Supplies

Versatile switching power supplies are DIN-rail mountable

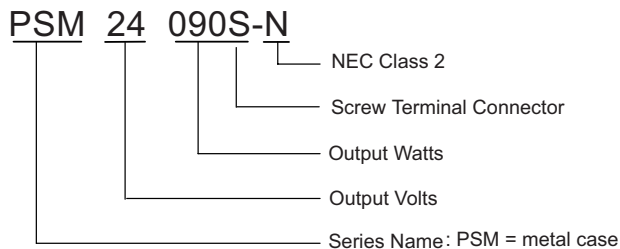
AUTOMATIONDIRECT offers the most practical industrial control power supplies available. The RHINO PSM series power supplies are industrial grade switching DC output supplies with a sturdy steel case to withstand harsh environments. Autoselect inputs for 115 VAC or 230 VAC and international agency approvals make the RHINO PSM series suitable for worldwide use. RHINO PSM power supplies are available in 12 or 24 VDC output, with adjustable output voltages, and feature low output ripple along with overload and overtemperature protection. The seven models offer power ratings from 78W to 600W, and up to 25A output current.



Features

- Industrial grade design
- Sturdy metal case to withstand harsh industrial environments
- Model PSM24-090S-N meets NEC Class 2
- Universal 100/230 VAC input voltage
- Adjustable output voltage
- Low output ripple
- Short-circuit, overvoltage and overtemperature protection
- Power Good signal
- Remote ON/OFF
- Optional wall mounting
- Specialty modules for redundancy, power backup and UPS
- Terminal connectors included
- 3-year product warranty

Part Numbering System



RHINO PSM Industrial Power Supplies			
Part Number	*Output Voltage (V_{nom})	**Output Current (I_{max})	***Output Power (P_{max})
PSM12-078S	12 VDC	6.0 A	78 W
PSM24-090S	24 VDC	3.75 A	90 W
PSM24-090S-N	24 VDC	3.75 A	90 W
PSM12-156S	12 VDC	12.0 A	156 W
PSM24-180S	24 VDC	7.5 A	180 W
PSM24-360S	24 VDC	15.0 A	360 W
PSM24-600S	24 VDC	25.0 A	600 W

*12V models adjustable from 12 to 14 VDC. 24V models adjustable from 24 - 28 VDC

**Maximum current at nominal output voltage

***Up to an operating temperature of +40°C

Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

Terms and Conditions

RHINO PSM Series Power Supplies Specifications

Input Specifications										
Part Number	Input Voltage Range	Operating Voltage min/max	Input Frequency Range	Input Current (Typical) at full load		Inrush Current max (<2ms) @ +25°C		Holdup Time	Efficiency (Typical) @ 115VAC	Circuit Breaker or Fuse (slo-blo)
				115 VAC	230 VAC	115 VAC	230 VAC			
PSM12-078S	100 - 240 VAC Universal Input	85 - 264 VAC	47-63 Hz	2.0 A	1.0 A	<12 A	<20 A	20 ms min. (full load 115/230 VAC)	82%	6.0 A to 16.0 A
PSM24-090S				2.1 A	1.0 A				85%	
PSM24-090S-N				2.1 A	1.0 A				85%	
PSM12-156S	100 - 120 VAC/ 220 - 230 VAC Autoselect	85 - 132 VAC/ 187 - 264 VAC		2.5 A	1.4 A	<13 A	<25 A		85%	
PSM24-180S				2.8 A	1.5 A				88%	
PSM24-360S				5.0 A	2.5 A	<16 A	<25 A		87%	
PSM24-600S			10.0 A	5.0 A	<25 A	<30 A	89%	16.0 A to 25.0 A		

Output Specifications										
Part Number	Price	Output Voltage	Output Voltage Adj. Range	Output Current (Max.)	Output Power (Max.)	Output Overvoltage Protection	Power - Good Signal			MTBF (IEC 61709 @ 25°C)
							Trigger Threshold	Active Output Signal	Relay Output	
PSM12-078S	\$132.00	12 VDC	12 - 14 VDC	6.5 A	78 watts	20 V	9 - 11 V	11 V ± 1 V/20 mA max.	DC OK = contact closed (rated:30 VDC 1.0A)	350,000 hours
PSM24-090S	\$99.00	24 VDC	24 - 28 VDC	3.75 A	90 watts	35 V	18 - 22 V	22 V ± 2 V/10 mA max.		
PSM24-090S-N	\$135.00			3.75 A	90 watts	35 V				
PSM12-156S	\$158.00	12 VDC	12 - 14 VDC	13.0 A	156 watts	20 V	9 - 11 V	11 V ± 1 V/40 mA max.		
PSM24-180S	\$152.00	24 VDC	24 - 28 VDC	7.5 A	180 watts	35 V	18 - 22 V	22 V ± 2 V/20 mA max.		
PSM24-360S	\$229.00			15.0 A	360 watts	35 V				
PSM24-600S	\$341.00			25.0 A	600 watts	35 V				

General Specifications	
Specification	Description
Temperature	Operating (ambient): -25°C to +70°C max (-13°F to 158°F). Above +40°C(104°F) load derating Storage (non-operating): -25°C to +85°C max (-13°F to 185°F). Temperature drift: 0.02%/C. Cooling: convection, no internal fan
Humidity	95% (non-condensing) relative humidity maximum
Isolation	According to IEC/EN 60950, EN50178, EN61558-2-8, EN60204, CSA
Output Regulation	Input variation: 0.5% maximum. Load variation (10 to 100%): 0.5% maximum
Output Voltage Ripple	100 mV peak-to-peak typical (20 MHz bandwidth), (200 mV peak - peak maximum at I _{max})
Output Protection	Current limit: 110% constant current, automatic recovery, thermal protection, output rating, Voltage limit: 140% V _{out} nom
Over-temperature Protection	Switch off at over-temperature, automatic restart
Status Indicator	Dual color LED (green: DC Ok; Red: DC Off)
Remote ON/OFF	By external contact. DC On: -S contact open. DC Off: -S connected via 1 KΩ to -V _{out} , [3VDC max across V _{out} (+) and V _{out} (-)]
Maximum Capacitive Load	Unlimited
Vibration	IEC 60068-2-6: 3 axis, sine sweep, 10-55 Hz, 1g, 1 oct/min
Shock	IEC 60068-2-27: 3 axis, 15g half sine, 11ms
Enclosure Rating	IP20 (IEC 529)
Enclosure Material	Aluminum (chassis) / zinc plated steel (cover)
Mounting	Snap-on with self-locking spring for 35mm DIN rails per EN 50022-35x15/75, or wall mount with bracket
Connection	Pluggable screw terminals (plugs included) 2 terminals per output (not available in 600 watt unit.)
Agency Approvals	UL 508 Listed File E197592, UL 60950 Recognized File E198298; CSA C22.2-60950 File 229285; CE
<i>Note: Unless otherwise stated all specifications are valid at nominal input voltage, full load and +25°C after warmup time.</i>	

RHINO PSM Series Power Supplies Specifications

Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

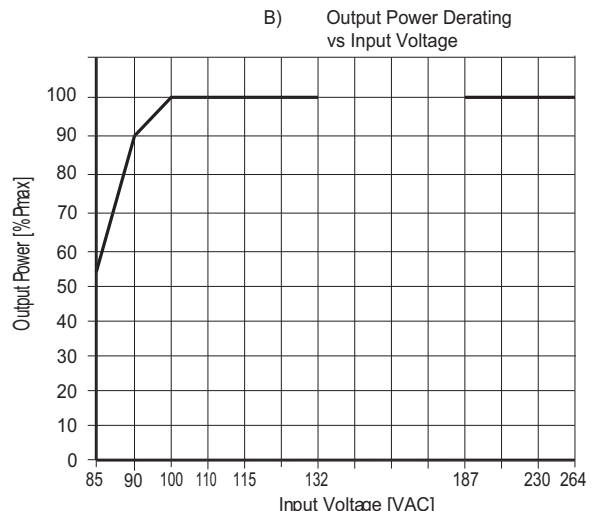
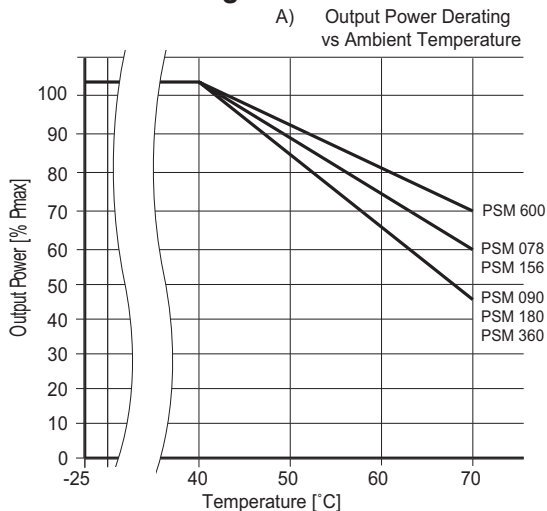
Safety: Protective Wear

Terms and Conditions

General Specifications (continued)		
Specification	Standard	Document Number
Harmonic Limits	Harmonic Current Limits	EN 61000-3-2, Class A for limited output power
Safety Standards	Information technology equipment	IEC/EN60950; CSA 60950-1-03/UL 60950-1
	Industrial control equipment	UL 508
	Electrical equipment of machines	EN 60204
	Electronic equipment for power installation	EN 50178
	Safety, transformers	EN 61558-2-8
	Limited power source (model PSM24-090S-N)	EN 60950 sect. 2.5 and NEC Class 2
Safety Approvals	CB-Report per IEC 60950	EN 50178, EN 60079-15 EN 61558-2-8, CSA
Safety Class	Degree of electrical protection Class1	IEC 536
Electromagnetic Compatibility (EMC), Emissions	EMC, Emissions	EN 61204-3, EN61000-6-3
	Conducted RI suppression on input	EN 55011 class B, EN 55022 class B
	Radiated RI suppression	EN 55011 class B, EN 55022 class B
Electromagnetic Compatibility (EMC), Immunity	EMC, Immunity	EN 61000-6-2, EN 61204-3
	Electrostatic Discharge (ESD)	IEC / EN 61000-4-2 4 kV (contact discharge) / 8 kV (air discharge)
	Radiated RF field immunity (80-1000 MHz)	IEC / EN 61000-4-3 10 V / m
	Electrical fast transient / burst immunity	IEC / EN 61000-4-4 2 kV
	Surge immunity	IEC / EN 61000-4-5 1 kV / 2 kV
	Immunity to conducted RF disturbances (0.15 to 80 MHz)	IEC / EN 61000-4-6 10 V
	Power frequency field immunity	IEC / EN 61000-4-8 30 A / m
	Voltage dips	IEC / EN 61000-4-11(70% UN Crit. B/40%/100% UN Crit. C)
Pollution Degree	2*	

*Note: Normally, only non-conductive pollution occurs. Temporary conductivity caused by condensation is to be expected.

Output Power Derating



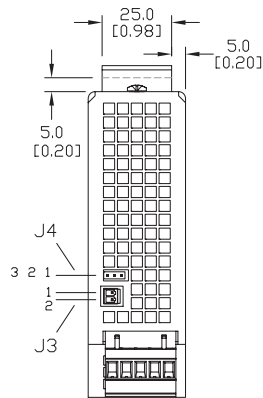
Note: Unless otherwise stated, all specifications are valid at nominal input voltage, full load and +25°C after warmup time.

RHINO PSM Series Dimensions/Connections

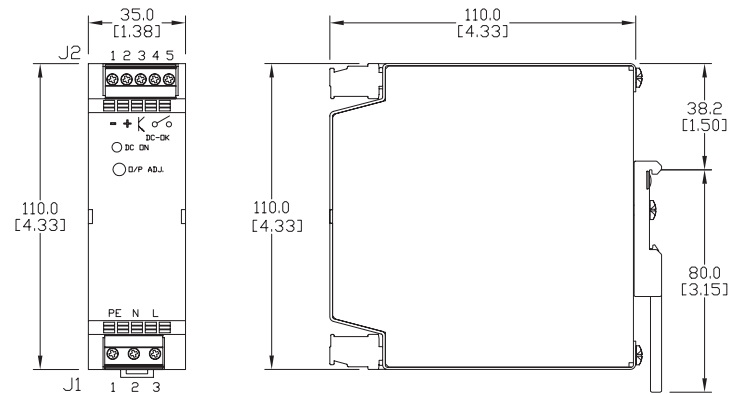
PSM12-078S/PSM24-090S

PSM24-REM360S

PSM24-BCM360S

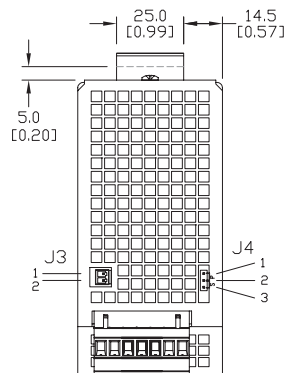


	J1	J2	J3	J4
Pin 1	Earth	GND (-)	S+	Normal mode
Pin 2	Neutral	Vout (+)	S-	Common
Pin 3	Line	DC-OK Signal	—	Parallel mode
Pin 4	—	DC-OK Relay contact 1	—	—
Pin 5	—	DC-OK Relay contact 2	—	—

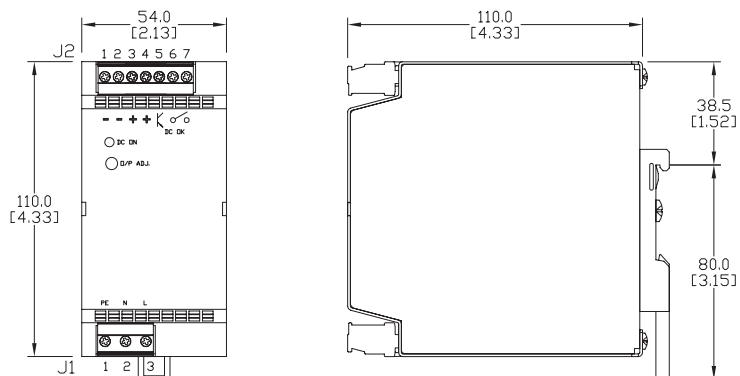


PSM12-156S/PSM24-180S

PSM24-BFM600S



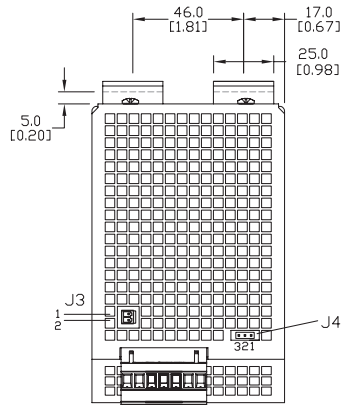
	J1	J2	J3	J4
Pin 1	Earth	GND (-)	S+	Normal mode
Pin 2	Neutral	GND (-)	S-	Common
Pin 3	Line	Vout (+)	—	Parallel mode
Pin 4	—	Vout (+)	—	—
Pin 5	—	DC-OK Signal	—	—
Pin 6	—	DC-OK Relay contact 1	—	—
Pin 7	—	DC-OK Relay contact 2	—	—



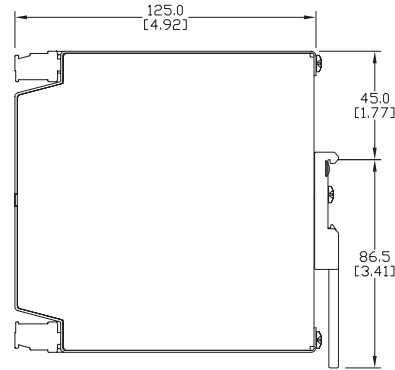
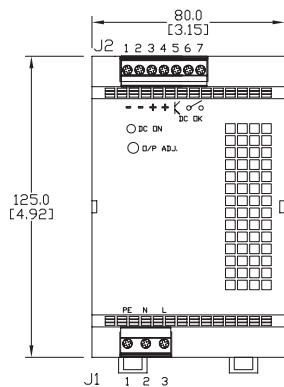
RHINO PSM Series Dimensions/Connections

Company Information

PSM24-360S



	J1	J2	J3	J4
Pin 1	Earth	GND (-)	S+	Normal mode
Pin 2	Neutral	GND (-)	S-	Common
Pin 3	Line	Vout (+)	—	Parallel mode
Pin 4	—	Vout (+)	—	—
Pin 5	—	DC-OK Signal	—	—
Pin 6	—	DC-OK Relay contact 1	—	—
Pin 7	—	DC-OK Relay contact 2	—	—



Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

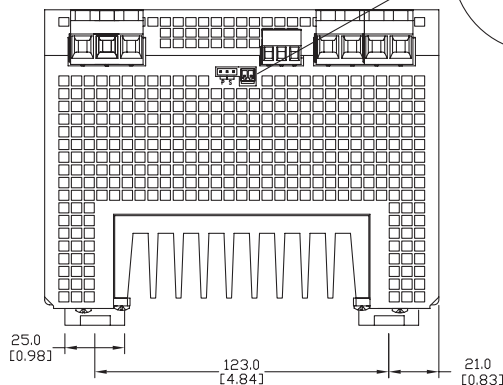
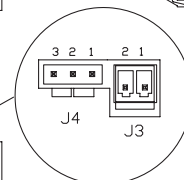
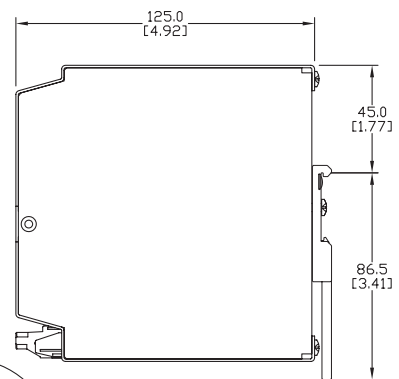
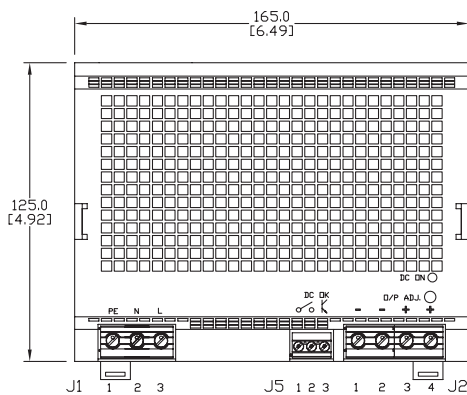
Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

Terms and Conditions

PSM24-600S



	J1	J2	J3	J4	J5
Pin 1	Earth	GND (-)	S+	Normal mode	DC-OK Relay contact 1
Pin 2	Neutral	GND (-)	S-	Common	DC-OK Relay contact 2
Pin 3	Line	Vout (+)	—	Parallel mode	DC-OK Signal
Pin 4	—	Vout (+)	—	—	—

RHINO PSM24-REM360S Redundancy Module

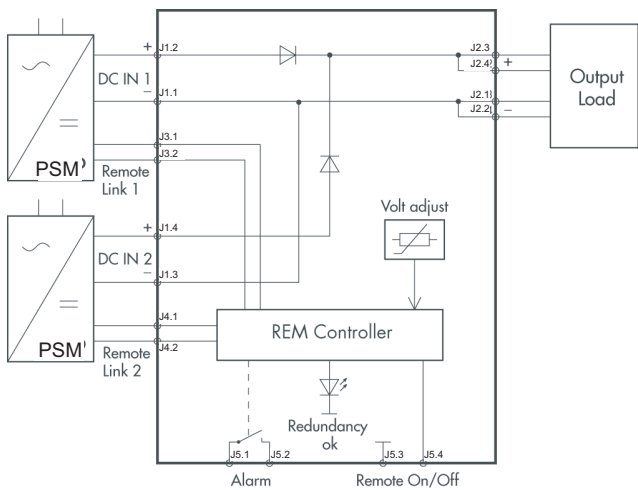
Using two PSM24 power supplies and a redundancy module, you can configure a redundant power system, featuring active current sharing, without any additional components. Even if one power supply fails or becomes disconnected, the second unit will supply full current to the load. The module has an alarm contact for monitoring of operations. The inputs are hot-swappable and can be loaded up to 15A each.



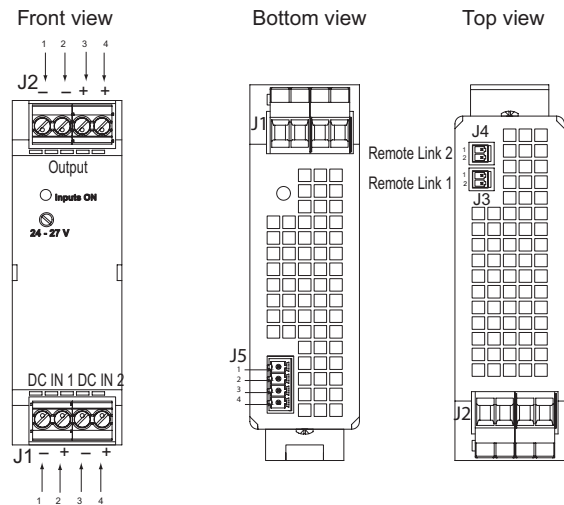
Redundancy Module					
Part Number	Price	Input	Max Power per Input	Output Voltage Adjust	Output Power Max
PSM24-REM360S (includes terminal plugs)	\$159.00	2 x 24 VDC 2 x Control Input	2 x 360 W	24 VDC (24 - 27 VDC)	360 W

General Specifications	
Operating Temperature	-25°C to +70°C max (-13°F to +158°F), derating above 40°C (104°F)
Electromagnetic Compatibility	In correspondence to connected units (no internal switching device)
Redundancy OK Signal	Trigger threshold at 18 to 22 VDC. Contact closed if one or both inputs failed
Dimensions	Same as model PSM24-090S (see dimensions page)
Remote Link Wire 0.5m	Two cables included with PSM24-REM360S module
Remote ON/OFF	By external contact: ON = J5.3 + J5.4 not shorted OFF = J5.3 + J5.4 shorted
Alarm Contact Rating	30 VDC/1.0 A max

Redundancy Module Function Diagram



Redundancy Module Connector Positions



Note: this redundancy module only works with the PSM series. Other series of power supplies are not compatible.

	J1	J2	J3 Voltage control 1 for Input 1	J4 Voltage control 2 for Input 2	J5
Pin 1	Input 1 -Vin	GND (-)	S+	S+	DC-OK Signal
Pin 2	Input 1 +Vin	GND (-)	S-	S-	DC-OK Relay contact
Pin 3	Input 2 -Vin	Vout (+)	—	—	Remote ON/OFF
Pin 4	Input 2 +Vin	Vout (+)	—	—	Remote ON/OFF

RHINO PSM24-BCM360S Battery Control Module

The battery control module, when combined with a PSM24 power supply, makes a perfect DC-UPS system by providing the means to charge and monitor an external lead acid battery. The power supply charges the connected battery and keeps it in a charged mode. Consequently, the output voltage of the system is equivalent to the battery

voltage. To avoid overcharging the battery, an external temperature sensor (sold separately) automatically adjusts the battery voltage to the required end of charge voltage. This configuration extends the battery life.



Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

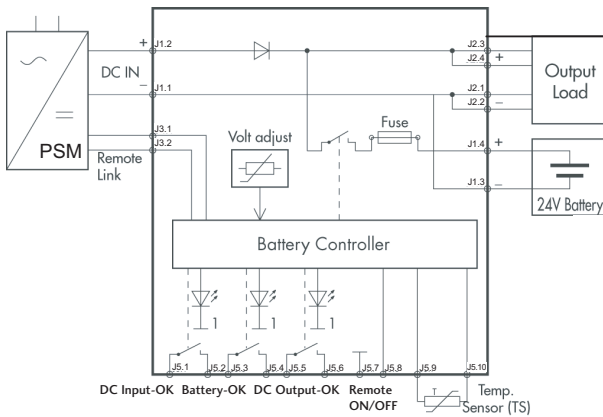
Terms and Conditions

Battery Control Module					
Part Number	Price	Input	Input Power Max	Output Voltage Nom	*Output Power Max
PSM24-BCM360S (includes terminal plugs)	\$157.00	24 VDC power supply and 24 VDC battery	360 W	24 VDC	360 W

*reduce maximum output current by battery charging current.

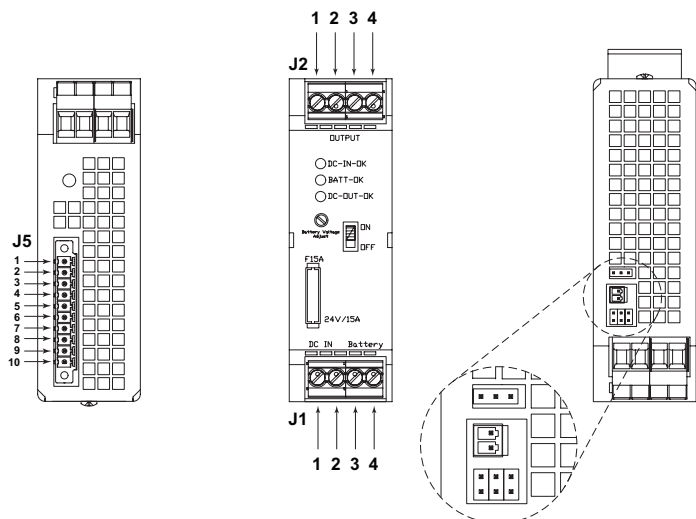
General Specifications	
Operating Temperature	-25°C to +70°C max (-13°F to +158°F) 1.5%/K, derating above 40°C (104°F)
Electromagnetic Compatibility	In correspondence to connected units (no internal switching device)
Battery Protection	Over voltage, deep discharge, short-circuit and reverse connection (built-in fuse)
Status Signals	DC-OK input, DC-OK output, BAT OK (all relay contacts closed at status OK)
Rating per Relay Contact	30 VDC / 1.0 A max.
Dimensions	Same as model PSM24-090S (see dimensions page)
Remote Link Wire 0.5m	One cable included with PSM24-BCM360S module
Remote ON/OFF	By external contact: ON = J5.7 + J5.8 not shorted OFF = J5.7 + J5.8 shorted

Battery Control Module Function Diagram



	J1	J2	J3	J4	J5	J6
Pin 1	- Vin (DC In)	GND (-)	S+	15 sec test	DC-IN-OK Signal	PSM24-360S (factory setting)
Pin 2	+ Vin (DC In)	GND (-)	S-	Common	DC-IN-OK Relay contact	PSM24-180S
Pin 3	- Bat in	Vout (+)	—	10 min test	Bat-OK Signal	PSM24-090S
Pin 4	+ Bat in	Vout (+)	—	—	Bat-OK Relay Contact	
Pin 5	—	—	—	—	DC-OUT-OK Signal	
Pin 6	—	—	—	—	DC-OUT-OK Relay Contact	
Pin 7	—	—	—	—	Remote ON/OFF	
Pin 8	—	—	—	—	Remote ON/OFF	
Pin 9	—	—	—	—	Temperature Sensing	
Pin 10	—	—	—	—	Temperature Sensing	

Battery Control Module Connector Positions



RHINO PSM24-BFM600S Buffer Module



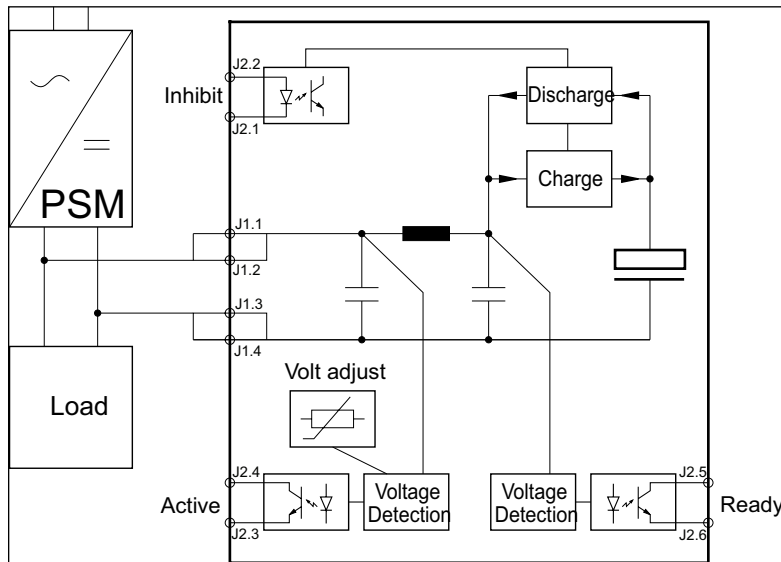
The buffer module will maintain the output voltage of a 24 VDC power supply after brownouts or voltage dips for up to 200 ms at 25 amps. It is a cost effective alternative to a battery-based backup system. The operation modes are indicated by an LED on the front panel.

Storing the energy in a capacitor bank, this backup solution is completely maintenance free. Its storage capacity does not deteriorate over the lifetime of the unit.

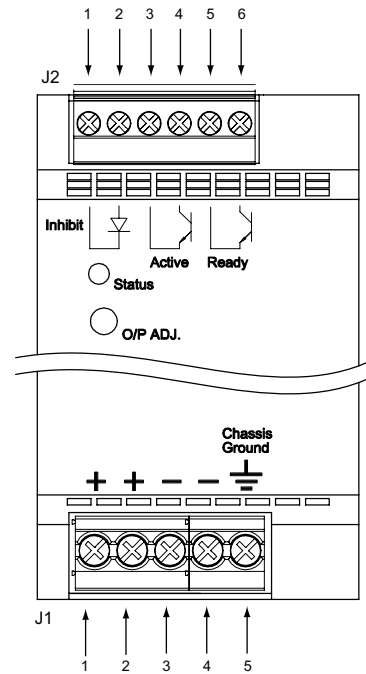
Buffer Module					
Part Number	Price	Input	Operating Voltage Range	Buffer Time	Output Power Max
PSM24-BFM600S (includes terminal plugs)	\$227.00	24 VDC	22 to 28 VDC	200 msec typical @ 25A max load 4.0 sec maximum @ 1.2A load	25.0 A (600 W)

General Specifications	
Operating Temperature	-25°C to +70°C max (-13°F to +158°F), derating above 40°C (104°F)
Electromagnetic Compatibility	In accordance to connected units (no internal switching device)
Buffer Voltage	Adjustable, >1 V below input voltage, min. 22 VDC
Charging	0.6 A max/30s max
Status Signals	Buffer Active, Buffer Ready (optocoupler output), dual-color LED for status indication
Inhibit Input	Optocoupler input: supply between 5 VDC and 28 VDC to Inhibit
Dimensions	Same as model PSM12-156S (see dimensions page)
Signal Output Ratings	10 mA

Buffer Module Function Diagram



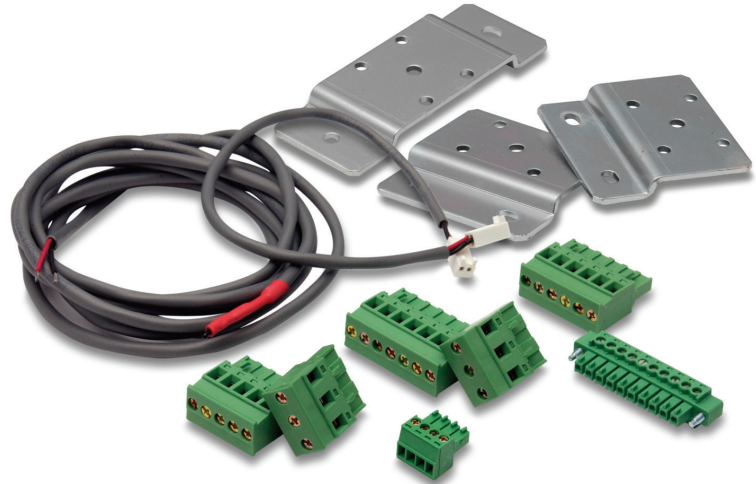
Buffer Module Connector Positions



	J1	J2
Pin 1	+ Vin	Inhibit GND
Pin 2	+ Vin	Inhibit +
Pin 3	- Vin	Active GND
Pin 4	- Vin	Active Signal
Pin 5	FG	Ready GND
Pin 6	—	Ready Signal

RHINO PSM Power Supplies - Accessories

A variety of accessories is available to complement the RHINO PSM power supplies. Choose panel mounting brackets and replacement plug kits from the table below, based on the size of the power supply. There is also a temperature sensor for the battery control module and replacement link cable for the redundancy and battery control modules.



Accessories		
Part Number	Price	Description
PSM-PANEL1	\$30.00	Panel mounting bracket. 1 bracket type A includes M4-screw (DIN 74-4fA) for 78W, 90W, 156W, 180W PSM power supplies
PSM-PANEL2	\$27.00	Panel mounting bracket. 2 brackets type A include M4-screws (DIN 74-4fA) for 360W, 600W PSM power supplies
PSM-PK1	\$6.00	Replacement plug kit for PSM series with 78W and 90W outputs
PSM-PK2	\$9.00	Replacement plug kit for PSM series with 156W, 180W and 360W outputs
PSM-PK5	\$17.50	Replacement plug kit for PSM series battery control module
PSM-TS	\$27.00	Temperature sensor for PSM24-BCM360S battery control module
PSM-JC01	\$7.00	Replacement link cable for PSM series redundancy module PSM24-REM360S and battery control module PSM24-BCM360S

Mounting

PSM power supplies are designed for mounting on a DIN rail. Please allow minimum free space of 80 mm (3.15") above and below, and 50 mm (1.97") on each side of the power supply for air convection. To attach unit onto the DIN rail, hook the top part of clip on DIN rail, then push down and inward until you hear the clipping sound. To remove, pull the latch of the clip using an insulated flat-head screwdriver.

For wall or chassis mounting, use mounting brackets PSM-PANEL1 (for 78W to 180W PSM style power supplies) or PSM-PANEL2 (for 360W and 600W PSM power supplies). Remove the DIN clips and replace with the brackets. Use the countersink screws included with the wall mount kit to attach the brackets to the power supply.

To attach the power supply to the DIN rail

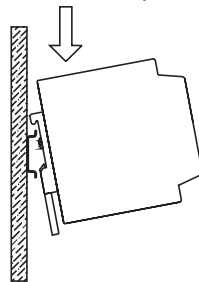


Fig. 2.1

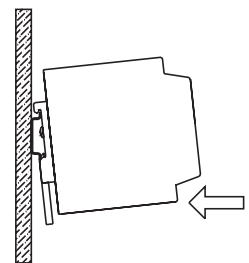


Fig. 2.2

To remove the power supply from DIN rail

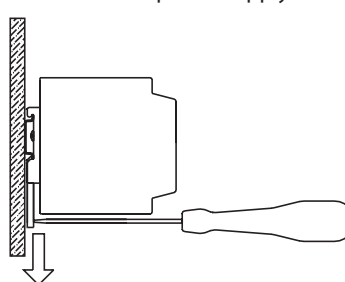


Fig. 2.3

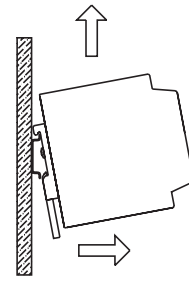
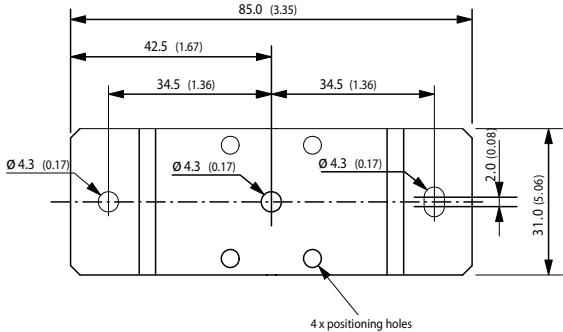


Fig. 2.4

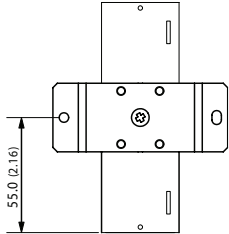
RHINO PSM Panel Mounting Bracket Dimensions

PSM-PANEL1

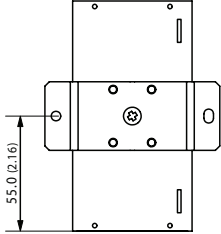


Material: 2 mm Mild Steel
Tolerance: $\pm 0.1\text{mm}$ (± 0.004)

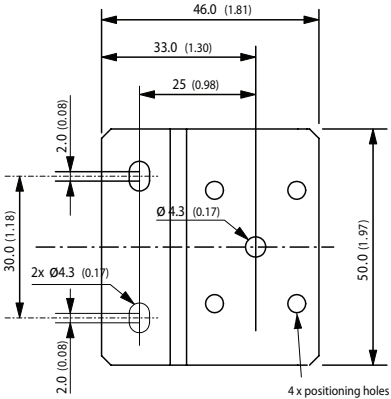
PSM12-078S, PSM24-090S



PSM12-156S, PSM24-180S



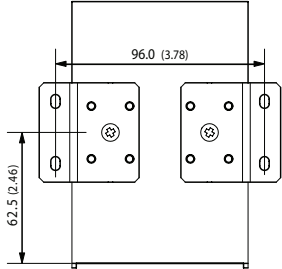
PSM-PANEL2



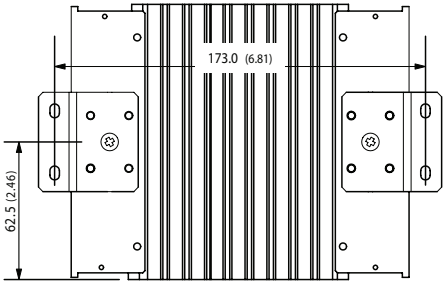
Material: 2 mm Mild Steel
Tolerance: $\pm 0.1\text{mm}$ (± 0.004)

Dimensions: [mm] () = Inch

PSM24-360S



PSM24-600S



Other products you might want to consider

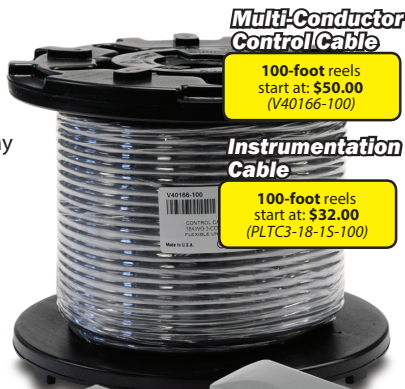
Build your control system for less!

with our everyday low prices on high-quality components

From cable to wire duct ...

NEW! 300V UL Instrumentation Cable is dual listed as UL 2250 Type ITC (Instrumentation Tray Cables) and UL 13 Type PLTC (Power Limited Tray Cables).

- **18 gauge**
- **1, 2, 4 or 8 twisted pairs**
- **Overall shielded or individually shielded with overall shield**
- **Available in 100, 250 or 1000 ft reels**



Multi-Conductor Control Cable

100-foot reels start at: **\$50.00** (V40166-100)

Instrumentation Cable

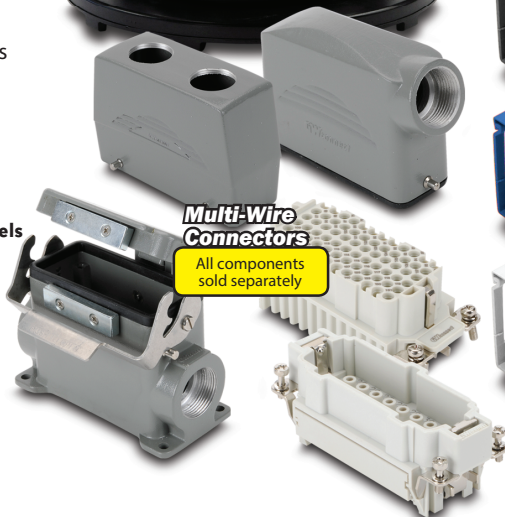
100-foot reels start at: **\$32.00** (PLTC3-18-1S-100)

Flexible **multi-conductor control cable** is suitable for wet and dry locations, and is resistant to sunlight, oil and moisture penetration.

- **Conductor sizes from 18 to 10 gauge**
- **3 to 41 unshielded conductors**
- **Available in 100, 250, 500 or 1000 ft reels**
- **UL and CSA approved, RoHS compliant**

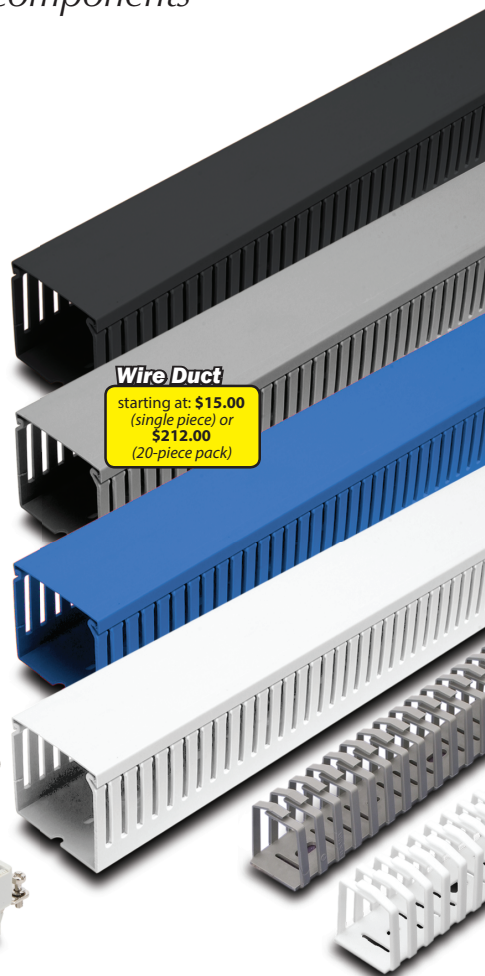
Heavy-duty **multi-wire connectors** quickly and reliably connect wiring in applications such as machinery, robots, and control and signal circuits.

- **Build custom connectors from components**
- **3 to 144-pole configurations**
- **3A to 32B sizes**
- **Bulkhead or surface mount housings with standard or automatic covers**



Multi-Wire Connectors

All components sold separately



Wire Duct

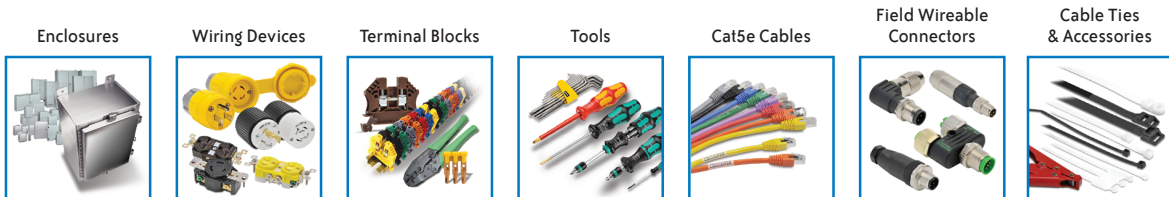
starting at: **\$15.00** (single piece) or **\$212.00** (20-piece pack)

Keep your wiring in order with Iboco rigid or flexible **wire duct** in a choice of styles and colors.

- **Standard or thin finger slotted styles, and solid duct for special applications**
- **Standard duct in gray, blue and black**
- **Sold per 2-meter piece for convenience or in cost-saving multi-packs**

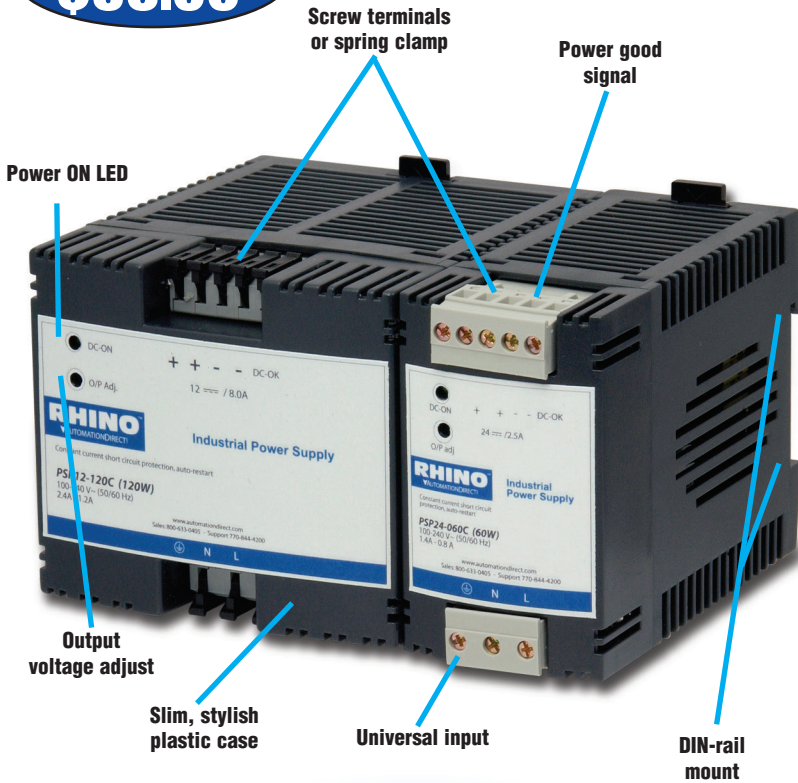
Research, price, buy at:
www.automationdirect.com/wiring-solutions

Also Available



RHINO PSP Series 5,12 & 24 VDC Power Supplies

Starting at
\$56.00



Slimline Power Supplies

RHINO PSP series power supplies are plastic housed ultracompact switching supplies available in 5V, 12V and 24V adjustable models. There are 13 models available with power ratings of 20W to 240W and up to 10A output current. They are DIN rail or panel-mountable and feature universal inputs, adjustable DC voltage outputs, power good signal and feature low output ripple along with short circuit, over-voltage and overload protection.

The RHINO PSP series of switching power supplies offer an excellent price/performance ratio. They provide tightly regulated output voltage for sensitive loads in industrial environments. The slim plastic case is lightweight and compact, and comes in both screw and spring clamp terminal versions. The constant-current, short-circuit protection limits the output current as the voltage is reduced, to safely protect the control components from direct shorts and device failures. Once a fault is corrected, the power supply automatically resumes supplying full-voltage power. (PSPxx-024x models have fold-back current protection with auto-recovery.)

The RHINO PSP power supplies have a **Power ON** LED for easy visual indication of operation as well as a **Power Good** signal for feedback to your system controller.

With a UL 508C rating, the RHINO PSP series is the right choice for space limited applications.

Features

- Regulated switch mode type
- Ultra-compact plastic case
- Finger-safe terminals
- Reliable snap-on mounting on DIN-rails
- Wall mounting bracket included
- Universal input 85-264 VAC, 50/60 Hz or 85-375 VDC (85-132/187-264 VAC only for PSP24-240S input)
- Models with 5, 12 or 24 VDC output
- Output voltage adjustable
- Parallel operation up to five units (not PSP24-240S)
- Power good signal (some models)
- Low ripple and noise
- Overload and short-circuit protection
- UL/cUL 508 listed, UL/cUL 60950 recognized*
- Worldwide safety approvals
- 3-year product warranty

* Note: PSP24-240S is not cUL listed.
PSP05-020S, PSP12-024S, and PSP24-240S are not UL 60950 recognized.



RHINO PSP Series Power Supplies Specifications



PSP05-020S
PSP12-024S
PSP24-024S



PSP24-024C



PSP12-060S
PSP24-060S



PSP12-060C
PSP24-060C



PSP12-120C
PSP24-120C

Input Specifications								
Part Number	Input Voltage Range		Input Freq. Range	Input Current (Typical) at full load		Efficiency (Typ.)	C-Curve Circuit Breaker or Slow-blow Fuse	
				115 VAC	230 VAC			
PSP05-020S	85-264 VAC 85-375 VDC UL Approved for 100-240 VAC only	30% output derating below 93 VAC/ 130 VDC	47-63 Hz	0.35 A	0.2A	88%	5.0 A	
PSP12-024S				20% output derating below 93 VAC/ 130 VDC	0.35 A			0.2 A
PSP24-024S								
PSP24-024C				15% output derating below 93 VAC/ 130 VDC	1.2 A			0.6 A
PSP12-060S								
PSP12-060C				2.0 A	1.0 A			
PSP24-060S								
PSP24-060C				88%	2.0 A			
PSP12-120S								
PSP12-120C				88%	2.0 A			
PSP24-120S								
PSP24-120C	88%	2.0 A						
PSP24-240S			85-132/ 187-264 VAC	20% output derating below 93 VAC	4.7 A	2.0 A		

Output Specifications									
Part Number	Price	Output Voltage	Output Volt. Adjust. Range	Output Current (Max.)	Output Power (Max.)	Hold-Up Time		MTBF (IEC 1709 @ 25°C)	
						115 VAC	230 VAC		
PSP05-020S	\$77.00	5.1 VDC	5-5.25 VDC	4.0 A	20W	15 ms	125 ms	2,681,000 hours	
PSP12-024S	\$73.00	12 VDC	12-16 VDC	2.0 A	24W				
PSP24-024S	\$56.00	24 VDC	24-28 VDC	1.0 A	24W				
PSP24-024C	\$59.00								
PSP12-060S	\$97.00	12 VDC	12-15 VDC	4.0 A	48W @ 12VDC 60W @ 60VDC			2,947,000 hours	
PSP12-060C	\$107.00	24 VDC	24-28 VDC	2.5 A	60W				
PSP24-060S	\$85.00								
PSP24-060C	\$86.00	12 VDC	12-15 VDC	8.0 A	120W				1,620,000 hours
PSP12-120S	\$153.00								
PSP12-120C	\$158.00								
PSP24-120S	\$135.00	24 VDC	24-28 VDC	5.0 A	240W	1,912,000 hours			
PSP24-120C	\$142.00								
PSP24-240S	\$180.00			10.0 A					

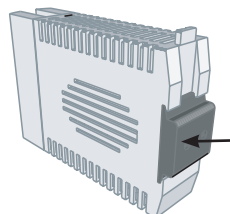
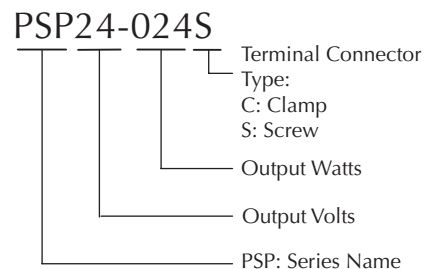


PSP24-240S



PSP24-120S
PSP12-120S

Part numbering system



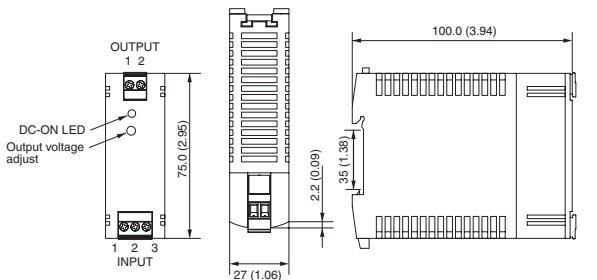
The unit can be mounted on a chassis or wall using the included mounting bracket.

RHINO PSP Series Power Supplies Dimensions

General Specifications							
Temperature	Operating: -10°C to +70°C (14°F to 158°F), Derating at 93-132 VAC or 130-187 VDC: -1.10%/C above 40°C, Derating at 187-264 VAC or 265-375 VDC: -1.67%/C above 50°C, Derating at 85-93 VAC or 85-130 VDC: -1.30%/C above 30°C, Temperature Coefficient: 0.02%/C Storage: -25°C to +85°C (-13°F to 185°F)						
Humidity	95% (non-condensing) relative humidity max.						
Output Regulation	2.5% (1% for PSP12-060x), 10 to 90% load variation						
Switching Frequency	55 - 180 kHz depending on load						
Safety Standards	IEC/EN 60950 (output SELV), UL 60950, UL 508, EN 50178, EN 60204, EN 61558-2-8						
Output Voltage Ripple	<50 mV peak-to-peak						
Output Protection	Current Limit at 120% typ., constant current, auto recovery (PSPxx-024x foldback, auto-recovery), Voltage Limit <40 VDC						
Power Good Signal*	<table border="0"> <tr> <td>Trigger Point</td> <td>Output Signal (reference to -Vout)</td> </tr> <tr> <td>12 VDC Models: >11 V</td> <td>11.0 V+/- 1.0 V @ 60 mA max.</td> </tr> <tr> <td>24 VDC Models: >22 V</td> <td>22.0 V+/- 2.0 V @ 30 mA max.</td> </tr> </table>	Trigger Point	Output Signal (reference to -Vout)	12 VDC Models: >11 V	11.0 V+/- 1.0 V @ 60 mA max.	24 VDC Models: >22 V	22.0 V+/- 2.0 V @ 30 mA max.
Trigger Point	Output Signal (reference to -Vout)						
12 VDC Models: >11 V	11.0 V+/- 1.0 V @ 60 mA max.						
24 VDC Models: >22 V	22.0 V+/- 2.0 V @ 30 mA max.						
Electromagnetic Compatibility (EMC)	EN 61000-3-2, EN 61000-6-2, EN 61000-6-3						
Enclosure Rating	IP 20						
Enclosure Material	Plastic FR2010-110C (UL 94 V-0 rated)						
Mounting	35 mm DIN rails, snap on with self-locking spring or wall mount adapter included						
Connection	S models: Plug-in Screw Terminals, C Models: Clamp Terminals. For 28-12 AWG wire						
Agency Approvals	UL/cUL 508 listed File E197592(PSP24-240S not cUL), UL 60950 recognized, file E198298 (except PSP05-020S, PSP12-024S and PSP24-240S).						

**Note: PSP05-020S, PSP12-024S and PSP24-024x models do not have Power Good output.*
Note: All specifications are valid at nominal input voltage, full load and +25°C after warmup time, unless otherwise stated.

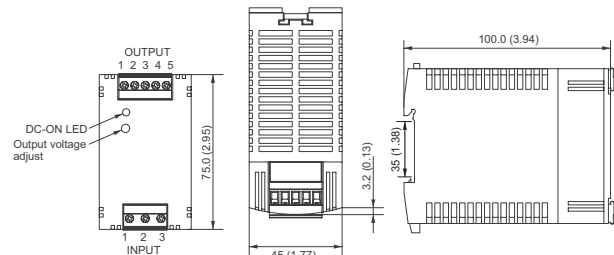
PSP05-020S, PSP12-024S, PSP24-024x



Weight: 140g (4.9 oz.)

Input	Output
1 AC Ground	1 +Vout
2 Neutral	2 -Vout
3 Line	

PSPxx-060x

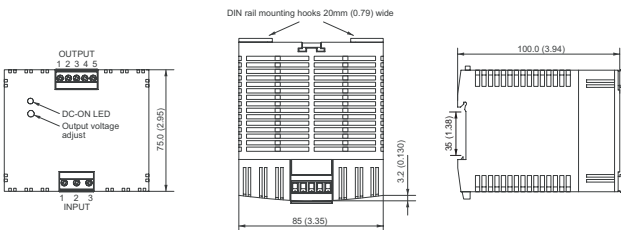


Weight: 265g (9.4 oz.)

Input	Output
1 AC Ground	1 +Vout
2 Neutral	2 +Vout
3 Line	3 -Vout
	4 -Vout
	5 Power Good

Note: All dimensions are in millimeters (inches).

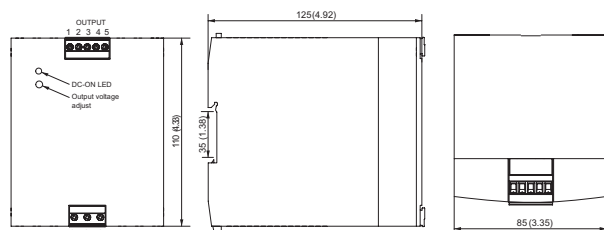
PSPxx-120x



Weight: 440g (15.5 oz.)

Input	Output
1 AC Ground	1 +Vout
2 Neutral	2 +Vout
3 Line	3 -Vout
	4 -Vout
	5 Power Good

PSP24-240S



Weight: 950g (33.5 oz.)

Input	Output
1 AC Ground	1 +Vout
2 Neutral	2 +Vout
3 Line	3 -Vout
	4 -Vout
	5 Power Good

RHINO PSP24-REM240S Redundancy Module

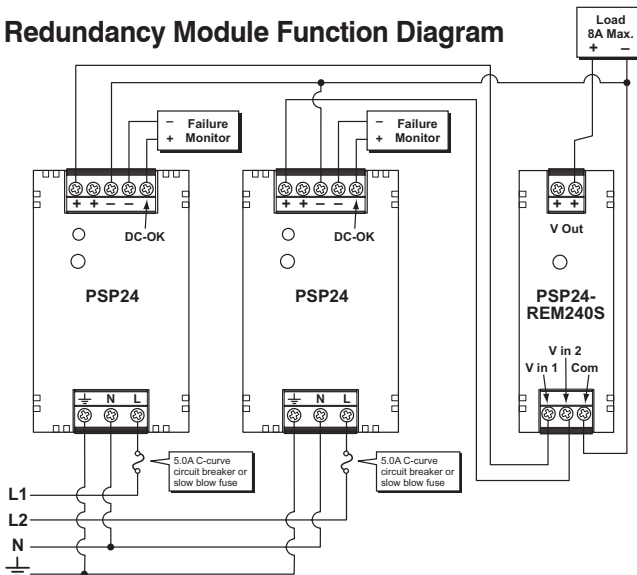
The PSP24-REM240S redundancy module used with two Rhino PSP Series power supplies creates redundancy to help prevent costly downtime due to power supply failure. The PSP24-REM240S decouples the outputs of the two connected power supplies so that in case of failure, one power supply cannot overload the other.



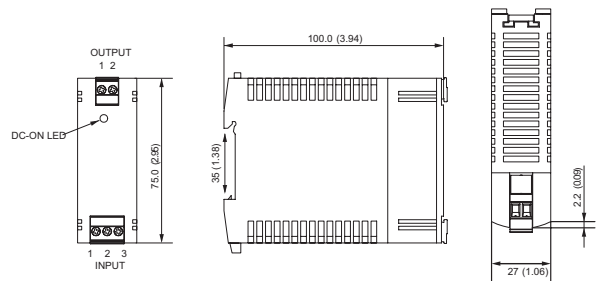
PSP Redundancy Module						
Part Number	Price	Input Voltage Range	Max Power per Input	Output Voltage	Output Current Max.	Connection
PSP24-REM240S	\$47.00	2 x 5 – 60 VDC	144 W	V in – 0.9 VDC	8 A	Detachable screw terminal block

PSP24-REM240S General Specifications	
Temperature	Operating: -10°C to +70°C max (14°F to +158°F max), Storage: -25°C to +85°C max, (-13°F to +185°F max), Cooling: Natural air convection
Parallel Operation	(2) Rhino PSP power supplies (except PSP24-240S) per module
Electromagnetic Compatibility	In correspondence with connected power supplies
Enclosure Material	Gray plastic, FR2010-110C (UL94 V-0 rated)
Mounting	Built-in snap-on connection for 35mm DIN rail or surface mount adapter included
Indication	Green LED for Output ON
Connections	Plug-in screw terminals, 0.5 to 0.7Nm (4.5 to 6.2lb-in) recommended tightening torque
Wire Size range	24 to 12 AWG (0.21 to 3.16 mm ²)
Dimensions	HxWxD 2.95" x 1.06" x 3.94" (75 x 27 x 100mm)
Agency Approvals	UL/cUL 508 listed, File E197592, CE

Redundancy Module Function Diagram



Redundancy Module Connector Positions



Input	Output
1 +Vin1	1 +Vout
2 +Vin2	2 +Vout
3 Common	

- Recommendations for redundant PSP Series power supply applications:**
- With no load connected, adjust the output voltage of both power supplies to the same value.
 - Use separate input over-current protection for each power supply.
 - When possible, connect the input power to each power supply to different phases or circuits.
 - Use the DC-OK output and/or DC-ON LED on each power supply to monitor for failure. (PSP05-020S, PSP12-024S and PSP24-024x do not have DC-OK output).
 - Connect all output leads together at a single distribution node using leads having the same length and cross section.

RHINO PSC Series Power Supplies Specifications



PSC-05-012, PSC-12-015,
PSC-24-015

NEC Class 2 Compliant Supplies

The RHINO PSC series power supplies are plastic low-profile housed switching supplies available in 5, 12 and 24 VDC adjustable output models. There are 8 models with power ratings from 12W to 90W. They have an integral DIN rail mounting adapter and feature universal 85 to 264 VAC input voltage, adjustable DC output, DC-OK LED indication, and output current limitation.



PSC-12-030, PSC-24-030

The RHINO PSC series of switching power supplies provide tightly regulated output voltage for sensitive loads in industrial, commercial and residential environments. The plastic housing is lightweight and low-profile, designed to fit in shallow depth control panels often used in the building automation industry. Screw terminals are provided for simple and speedy wiring terminations.

The RHINO PSC series is both UL508 listed for demanding industrial applications and UL1310 recognized for NEC Class 2 compliance in industrial, commercial and residential applications.

Features

- Low-profile housing - only 2.15 inches (55mm) deep (MCB form factor)
- 5, 12, 24VDC adjustable outputs
- Output power ratings from 12 to 90W
- Integral DIN rail mounting adapter
- Universal input voltage range 85-264VAC
- Tight output voltage regulation
- DC-OK LED indication
- UL508 Listed
- UL1310 Recognized for NEC Class 2 compliance
- CE compliant
- RoHS compliant



PSC-12-060, PSC-24-060



PSC-24-090



Input Specifications						
Part Number	Input Voltage Range	Input Frequency Range	Input Current (Typical) at full load		Efficiency (Typ.)	C-Curve Circuit Breaker or Slow-blow Fuse
			115 VAC	230 VAC		
PSC-05-012	100-240VAC - Nominal 85 to 264VAC - Universal (output power derating 5% / V for operation below 90 VAC)	47-63 Hz	0.25A typ.	0.17A typ.	73%	6.0 A
PSC-12-015			0.29A typ.	0.20A typ.	79%	
PSC-24-015					81%	
PSC-12-030					81%	
PSC-24-030					83%	
PSC-12-060					83%	
PSC-24-060					85%	
PSC-24-090					1.60A typ.	

Output Specifications								
Part Number	Price	Output Voltage	Output Volt. Adjust. Range	Output Current (Max.)	Output Power (Max.)	Hold-Up Time		MTBF (IEC 1709 @ 25°C)
						115 VAC	230 VAC	
PSC-05-012	\$45.00	5.0VDC	5.0 to 5.2VDC	2.4A	12 Watt	minimum 10 ms	minimum 20 ms	1,600,000 hours
PSC-12-015	\$45.00	12.0VDC	12.0 to 16.0VDC	1.25A	15 Watt			
PSC-24-015	\$45.00	24.0VDC	24.0 to 28.0VDC	0.63A	30 Watt			1,300,000 hours
PSC-12-030	\$57.00	12.0VDC	12.0 to 16.0VDC	2.5A				
PSC-24-030	\$57.00	24.0VDC	24.0 to 28.0VDC	1.25A	54 Watt			2,100,000 hours
PSC-12-060	\$69.00	12.0VDC	12.0 to 16.0VDC	4.5A				
PSC-24-060	\$69.00	24.0VDC	24.0 to 28.0VDC	2.5A	60 Watt			1,300,000 hours
PSC-24-090	\$87.00	24.0VDC		3.75A	90 Watt			

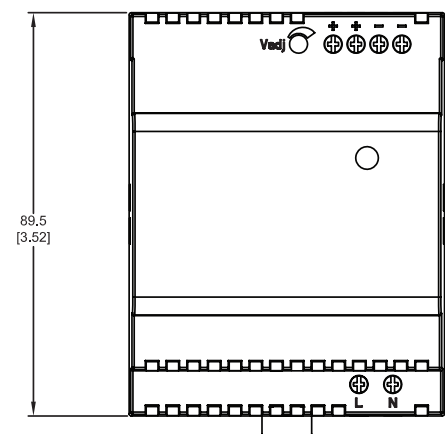
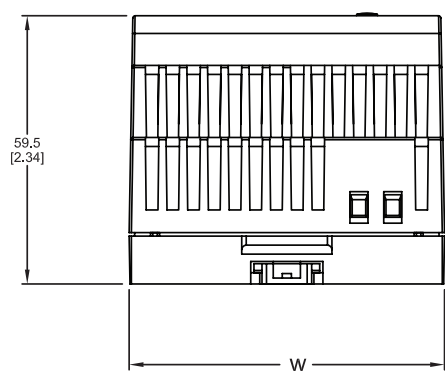
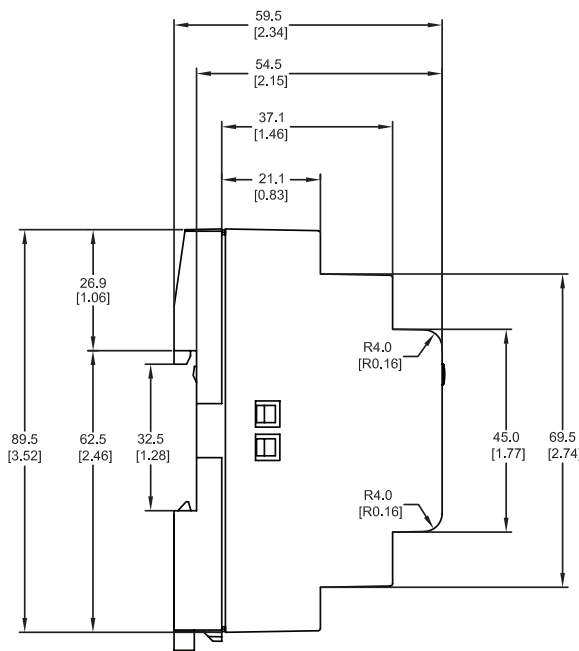
RHINO PSC Series Power Supplies

Specifications and Dimensions

General Specifications	
Temperature	Operating: -25°C (-13°F) to +60°C (+140°F) max at nominal load, above +60°C (+140°F) 2.5% / °C derating up to +70°C (+185°F) Storage: -25°C (-13°F) to +85°C (+185°F) max
Humidity	95% (non-condensing) relative humidity max.
Output Regulation	1%
Protection Class II	to IEC/EN 60536
Safety Standards	UL508, UL1310, Class 2 IEC/EN 60950-1, UL60950-1, EN50178 EN60204, EN61558-2-8
Output Voltage Ripple	<100 mV peak-to-peak
Output Protection	Current limitation at 100 - 150% typ. (automatic recovery)
Electromagnetic Compatibility (EMC)	Emissions - EN61000-6-3 Conducted RI suppression on input - EN55022 class B Radiated RI suppression - EN55022 class B Immunity - EN61000-6-2 EN61000-4-X
Enclosure Rating	IP 20 (IEC 60529)
Enclosure Material	Plastic FR2010-110C (UL 94V-0 rated)
Mounting	DIN-rails as per EN50022-35x15/735 (snap-on with self-locking springs)
Connection	Screw terminals with combi-type screw heads for wire size 24 to 12 AWG (0.20 to 3.30mm ²)
Agency Approvals	UL508 Listed, file #E197592 UL1310 Class 2 Recognized, file #E198298

Dimensions		
Part No.	Width (W) - mm [inches]	Weight oz [g]
PSC-05-012	26.3 [1.04]	3.53 [100]
PSC-12-015	26.3 [1.04]	3.53 [100]
PSC-24-015	26.3 [1.04]	3.53 [100]
PSC-12-030	52.5 [2.07]	5.64 [160]
PSC-24-030	52.5 [2.07]	5.64 [160]
PSC-12-060	70.0 [2.76]	8.11 [230]
PSC-24-060	70.0 [2.76]	8.11 [230]
PSC-24-090	105.0 [4.13]	12.0 [340]

Wiring		
Input/Output	Description	Wire size
AC Input	all models: L, N only (2 pin terminal)	24 - 12 AWG / 3.30mm ² max
DC Output	15 - 30 Watt models: single + and - terminals	24 - 12 AWG / 3.30mm ² max
DC Output	60 - 90 Watt models: double + and - terminals	24 - 12 AWG / 3.30mm ² max



TOLERANCE +/- 0.5mm [0.02"]

PS Series 12 VDC and 24 VDC Power Supplies

Switching power supplies at linear supply prices

The PS Series power supplies give you consistent, reliable, switched DC power at linear power supply prices.

These power supplies use efficient switching technology to produce the most power in the smallest space, while generating a minimum amount of heat. The constant-current short circuit protection limits the output current as the voltage is reduced to safely protect your control components from direct shorts and device failures. Once the short is corrected, the PS Series power supplies automatically resume supplying full-voltage power. Precisely regulated output power is suitable for battery charging applications. Extra-sturdy DIN rail mounts and removable plug connections make installation a breeze.

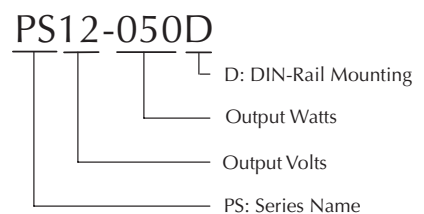
Meeting UL/cUL 60950, 508 and 1604* (Class I, Div. 2), our PS-D (DIN-rail mounted) power supplies meet the standards required for practically any industrial control application.

Features

- 2A - 24A at 24 VDC, 3.5A at 12 VDC
- Regulated switch mode type
- Low profile case
- Easy DIN-rail mounting
- Constant-current short circuit protection
- Low ripple and noise
- Selectable input voltage (115/230 VAC)
- High EMC immunity
- EMI meets EN 55011-B and FCC Part 15, Level B
- Worldwide safety approvals: UL/cUL 508, 60950 and 1604 Class I, Div. 2, CE
- * (PS12-050D, PS24-050D and PS24-500D do not meet UL 1604 Class I Div 2)



Part numbering system



PS Series Power Supplies Specifications



**PS12-050D
PS24-050D**



**PS12-075D
PS24-075D**



PS24-150D



PS24-300D



PS24-500D



PS24-600D

General Specifications	
Temperature	Operating (ambient): -25°C to +70°C (-13°F to 158°F) max, Derating above 50°C 2%/C Storage (non-operating): -25°C to +85°C (-13°F to 185°F) max, Temperature drift: 0.02%/C
Humidity	95% (non-condensing) relative humidity max
Switching Frequency	80 kHz typical (PWM)
Isolation	According to IEC/EN 60950, UL 60950, UL 508
Output Regulation	Input variation: ± 0.2% max Load variation: 50 W, 75 W, 150 W models: ± 1% max300 W, 500 W, 600 W models: ± 0.3% max
Output Voltage Ripple	< 50 mV peak to peak (20 MHz bandwidth)
Output Protection	Current limit: 110% maximum output rating. Voltage limit: 140% Vout nom
Vibration	1gn 20 sweeps each axis
Shock	15gn, 11mS each axis
Enclosure Rating	IP 20
Enclosure Material	Aluminum (chassis) / stainless steel (cover)
Mounting	Snap-on with self-locking spring for 35mm DIN rails
Connection	Removable screw terminals for 22-10 AWG
Agency Approvals	UL/cUL 60950 recognized, file E198298, UL/cUL 508 listed File E197592, UL/cUL 1604 listed (Class I, Div 2, groups A,B,C, and D hazardous locations), File E197886, except PSxx-050D and PS24-500D, which are not UL/cUL1604 listed. CE

Note: All specifications are valid at nominal input voltage, full load and +25°C after warm-up time, unless otherwise stated.

Input Specifications								
Part Number	Input Voltage Range	Input Frequency Range	Input Current (Typical)		Inrush Current (<2mS)		Efficiency (Typ.)	C-Curve Circuit Breaker or Slow-blow Fuse
			115 VAC	230 VAC	115 VAC	230 VAC		
PS12-050D	93-264 VAC	47-63 Hz	1.2 A	0.7 A	<15 A	<30 A	84%	5.0 A
PS24-050D	93-264 VAC		1.2 A	0.7 A			87%	
PS12-075D	93-132 VAC 187-264 VAC (switch selectable)		1.7 A	0.9 A	<16.5 A	<33 A	83%	
PS24-075D			1.7A	0.9 A			85%	
PS24-150D			3.0 A	1.7 A	<35 A	<70 A	84%	10.0 A
PS24-300D	5.4 A		3.3 A	87%				
PS24-500D	93-132 VAC		9.5 A	N/A	<50 A	N/A	87%	15.0 A
PS24-600D	93-132 VAC (switch selectable)		10.5 A	6.4 A	<70 A	<80 A	88%	20.0 A

Output Specifications									
Part Number	Price	Output Voltage	Output Voltage Adj. Range	Output Current (Max.)	Output Power (Max.)	Output Voltage Regulation*	Hold-Up Time		MTBF (IEC 1709 @ 25°C)
							115 VAC	230 VAC	
PS12-050D	\$113.00	12 VDC	12-14 VDC	3.5 A	50 W	1%	25 mS	30 mS	2,992,000 hours
PS24-050D	\$103.00	24 VDC	24-28 VDC	2.0 A	50 W				
PS12-075D	\$165.00	12 VDC	12-14 VDC	6.0 A	75 W	0.3%	20 mS	N/A	1,800,000 hours
PS24-075D	\$115.00	24 VDC	24-28 VDC	3.0 A	75 W				
PS24-150D	\$184.00			6.0 A	150 W				
PS24-300D	\$233.00			12.0 A	300 W	1,913,000 hours			
PS24-500D	\$397.00	20.0 A	500 W	1,467,000 hours					
PS24-600D	\$405.00	24.0 A	600 W	1,434,000 hours					

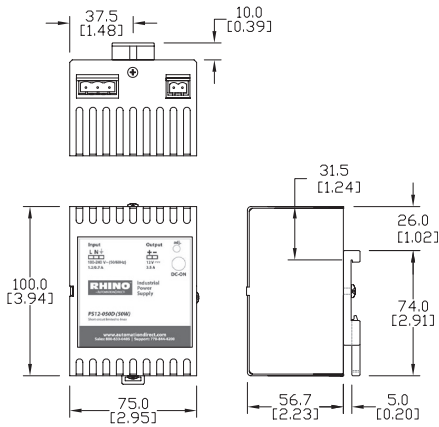
*Load variation (10-90%)

Notes: Output current characteristic suitable for battery charging applications. Not recommended for redundancy or parallel operation.

Replacement terminal blocks are available. See price list.

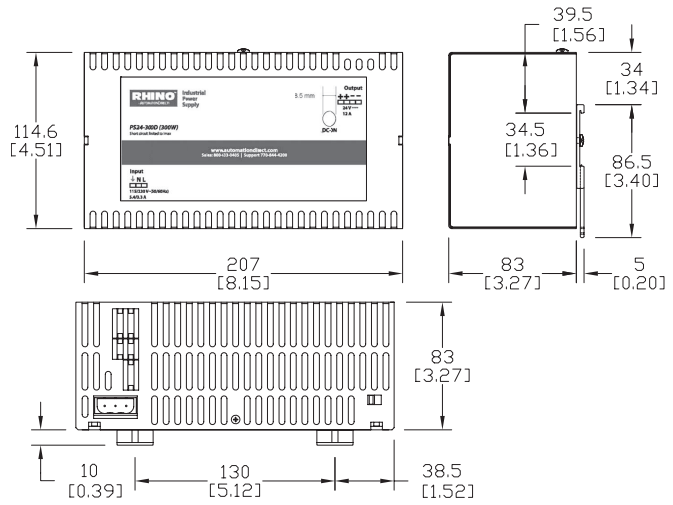
PS Series Power Supplies Dimensions

PS12-050D, PS24-050D

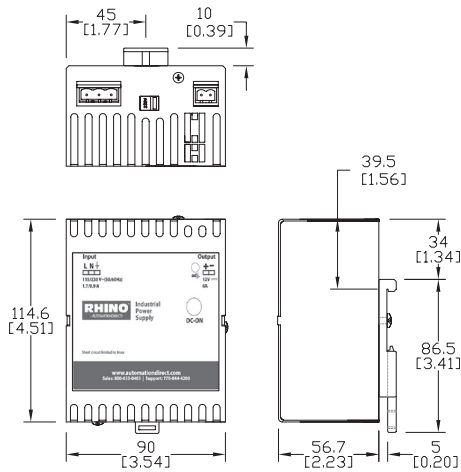


PS24-300D

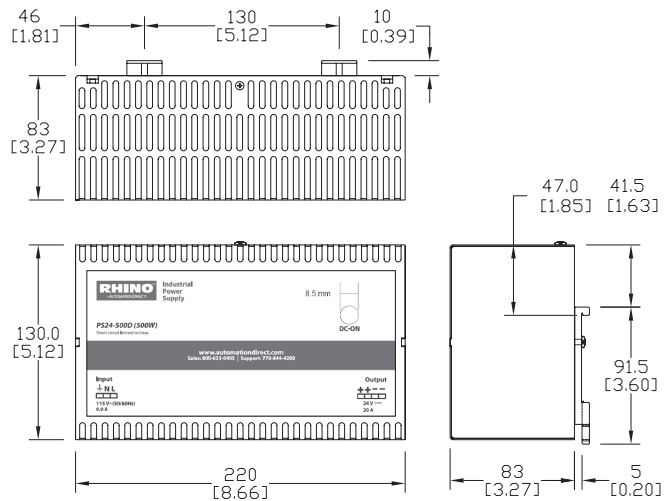
Note: All dimensions are in millimeters (inches).
Tolerances ± 0.5 mm



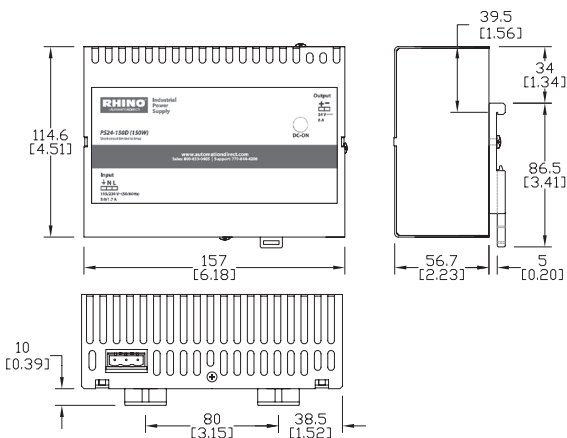
PS12-075D, PS24-075D



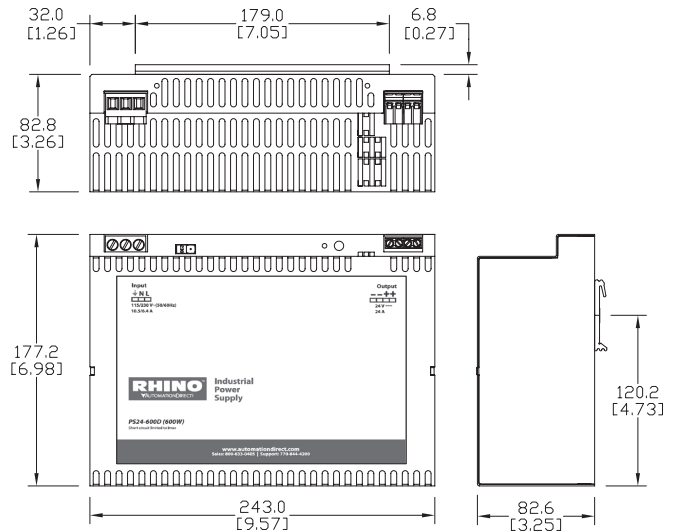
PS24-500D



PS24-150D



PS24-600D



RHINO PSE Series Encapsulated Power Supplies

The PSE series are AC/DC switch mode power supplies encapsulated in an ultra-compact, low profile housing. They are ideal for space limited applications and are easily screw mounted to a panel or equipment chassis, or can be DIN rail mounted using the optional DIN rail mounting kit. The PSE series features a universal input from 85-264 VAC and single or dual outputs from 15 Watts up to 60 Watts (above 30 Watt, single output only).

Features

- Ultra compact, low profile plastic case
- Single or dual output models
- Screw terminal blocks
- Chassis mount or 35mm DIN rail mount with optional adaptor
- Universal input 85-264 VAC, 47-440 Hz (60 Watt, 47-63 Hz)
- Double insulated - no external ground required
- UL508 listed, UL60950-1 recognized, CE marked
- Short circuit and overload protection
- DC on LED indicator
- 3-year warranty



Single Output Models 15 to 60 Watt				
Part No.	Price	Weight (lbs)	Output Power Max.	Output
PSE05-115	\$50.00	0.3	15 Watt	5 VDC / 3000 mA
PSE12-115	\$50.00	0.3		12 VDC / 1250 mA
PSE15-115	\$50.00	0.3		15 VDC / 1000 mA
PSE24-115	\$50.00	0.3		24 VDC / 625 mA
PSE05-130	\$72.00	0.5	30 Watt	5 VDC / 6000 mA
PSE12-130	\$72.00	0.5		12 VDC / 2500 mA
PSE15-130	\$72.00	0.5		15 VDC / 2000 mA
PSE24-130	\$72.00	0.5		24 VDC / 1250 mA
PSE05-150	\$87.00	0.8	51 Watt	5.1 VDC / 10,000 mA
PSE12-160	\$87.00	0.8	60 Watt	12 VDC / 5000 mA
PSE15-160	\$87.00	0.8		15 VDC / 4000 mA
PSE24-160	\$87.00	0.8		24 VDC / 2500 mA

Dual Output Models 15 to 30 Watt					
Part No.	Price	Weight (lbs)	Output Power Max.	Output 1	Output 2
PSE12-215	\$52.00	0.3	15 Watt	+12 VDC / 650 mA	-12 VDC / 650 mA
PSE15-215	\$52.00	0.3		+15 VDC / 500 mA	-15 VDC / 500 mA
PSE12-230	\$75.00	0.5	30 Watt	+12 VDC / 1300 mA	-12 VDC / 1300 mA
PSE15-230	\$75.00	0.5		+15 VDC / 1000 mA	-15 VDC / 1000 mA

PSE Series Encapsulated Power Supplies

Input Specifications		
Input Voltage	Nominal	100 - 240 VAC
	AC range (universal input)	85 - 264 VAC
	DC range	120 - 370 VDC (not for 60 Watt models)
Input Frequency	47 - 440 Hz (47 - 63 Hz for 60 Watt models)	
Input Current at Full Load (115 VAC / 230 VAC)	15 Watt models	300 mA / 190 mA typ.
	30 Watt models	550 mA / 330 mA typ.
	51/60 Watt models (typical for all)	1050 mA / 670 mA typ.
Input Current at No Load	15 mA @ 115 VAC & 20 mA @ 230 VAC typ.	
Inrush Current (< 2ms, cold start at 115 VAC / 230 VAC)	15 Watt models	15A / 30A
	30 Watt models	20 A / 40 A
	60 Watt models	30 A / 50 A
External Input Fuse Required (recommended value)	15 and 30 Watt models	1.5 A slow blow
	51/60 Watt models	3.0 A slow blow

Output Specifications					
Voltage Set Accuracy	±2%				
Regulation	Input variation	1% max.			
	Load variation	Single output models (10-100%): 1% max. Dual output models balanced load (10-100%): 2.5% max. Dual output models unbalanced load (20/100%): 5.0% max.			
Minimum Load	Single and dual output models	10% of rated max. current			
Ripple and Noise (20MHz bandwidth)	5.0 VDC outputs	1.8% of Vout [mVpk-pk]			
	All other outputs	1.3% of Vout [mVpk-pk]			
Overload Protection by Current Limit	105% min. of nominal current, fold back, automatic recovery (long term overload condition may cause damage to the power supply)				
Max. Capacitive Load [µF]	Output		Model Series		
			PSE15	PSE30	PSE60
	Single Output Models	5.0 VDC; 5.1 VDC	3900	8000	8000
		12 / 15 VDC	2200	3900	3900
		24 VDC	1000	1500	1500
Dual Output Models	+/-12 V; +/-15V	1500	1500	NA	



Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

Terms and Conditions

PSE Series Encapsulated Power Supplies

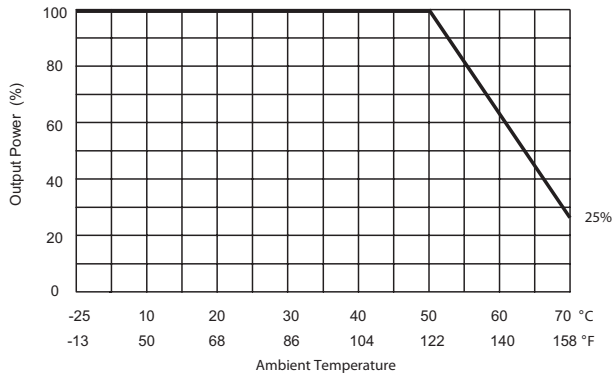
General Specifications					
Operating Temperature	Standard/Approval	Model Series			
		PSExx-115	PSExx-130	PSExx-150	PSExx-160
	IEC/EN60950-1	-25°C to +71°C (-13°F to +159.8°F)	-25°C to +71°C (-13°F to +159.8°F)	-10°C to +40°C (14°F to +104°F)	-10°C to +50°C (14°F to +122°F)
UL508	-25°C to +50°C (-13°F to +122°F)	-25°C to +50°C (-13°F to +122°F)	-10°C to +40°C (14°F to +104°F)	-10°C to +40°C (14°F to +104°F)	
Storage Temperature	-40° to 185°F (-40° to 85°C)				
Power Derating	3.75% per °C above +122°F (50°C) 2.5% per °C above +104°F (40°C) (for PSE05-150)				
Temperature Coefficient	0.02 %/°C				
Humidity (non-condensing)	95% rel. H max.				
Efficiency	78% typ.				
Switching Frequency	100 kHz typ. (fixed)				
Isolation Voltage (60 sec.)	Input/Output	3,000 VAC			
Isolation Resistance	Input/Output	100 MΩ (@ 500 VDC)			
Electromagnetic Compatibility (EMC), Emissions	EN 61000-6-3: 2007 EN61204-3: 2000, class A EN 55022, level B, FCC Part 15 level B				
Electromagnetic Compatibility (EMC), Immunity	EN61000-6-2: 2005 EN61204-3: 2000, class A				
	Electrostatic discharge ESD	EN61000-4-2 - 8kV / 4 kV, criteria B			
	RF field susceptibility	EN61000-4-3 - 10 V/m, criteria A			
	Electrical fast transient / burst immunity input	EN61000-4-4 - ±2 kV, criteria B			
	Electrical fast transient / burst immunity output	EN61000-4-4 - ±2 kV, criteria B			
	Surge immunity line - neutral	EN61000-4-5 - ±1 kV, criteria B			
	Surge immunity output	EN61000-4-5 - ±0.5 kV, criteria B			
	Immunity to conducted RF disturbances	EN61000-4-6 - 10 V, criteria B			
Mains voltage dips and interruptions	EN61000-4-11 - 30% 10 ms, criteria B, 60% 100 ms, criteria C, 95% 5000 ms, criteria C				
Protection Class II	to IEC/EN 60536				
Safety Standards	Information technology equipment	IEC/EN 60950-1, UL 60950-1			
Agency Approvals	UL and cUL for UL 508, Listed file #E197592; UL and cUL for UL 60950-1, Recognized file #E198298; CE				
RoHS Compliant	Yes				
Vibration	None				
Shock	None				
Reliability / Calculated MTBF (MIL-HDBK-217F, @ +25° C, ground benign)	15 Watt Models	>280,000 hours			
	30 Watt Models	>250,000 hours			
	60 Watt Models	>125,000 hours			
Casing Material	Plastic resin + fiberglass (UL 94V-0 rated)				
Mounting Screw Torque Specifications	4-5 in-lb [0.45-0.56 Nm]				

Note: All specifications valid at nominal input voltage, full load and +25° C after warm-up time unless otherwise stated.

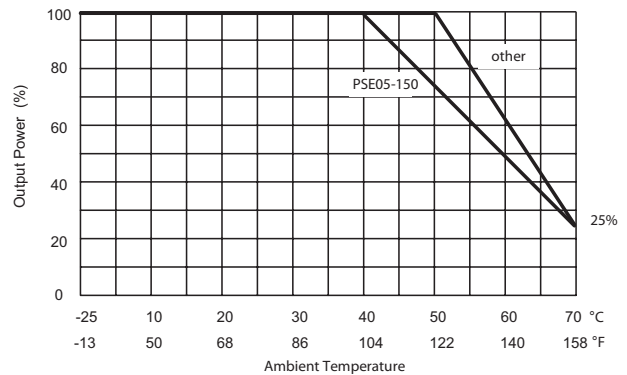
PSE Series Encapsulated Power Supplies

Derating Curves

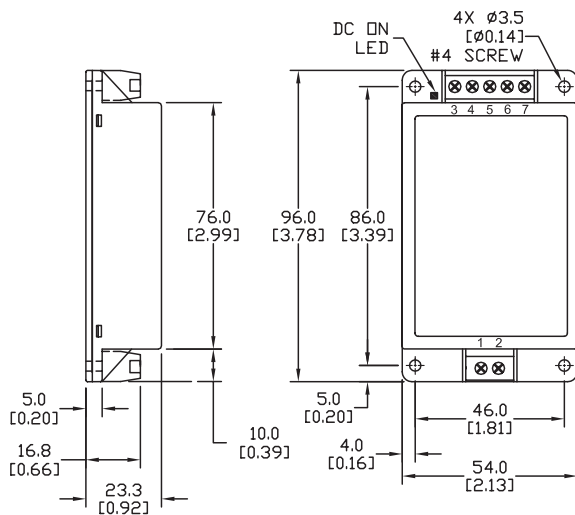
PSE 15 & 30W Models



PSE 51 & 60W Models



PSE 15W models for chassis mount

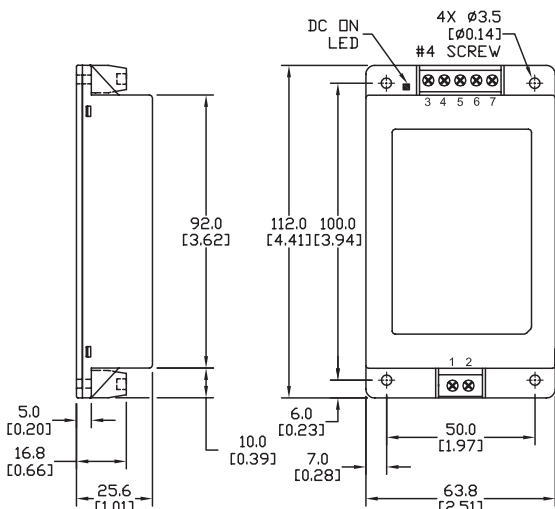


M3 x 0.5mm screw size, Typ

Dimensions mm [inches]

Connection		
Pin	Single	Dual (12V, 15V)
1	AC(N) - AC Neutral	
2	AC(L) - AC Line	
3		NC
4		-Vout
5	NC	Common
6		+Vout
7		NC

PSE 30W models for chassis mount



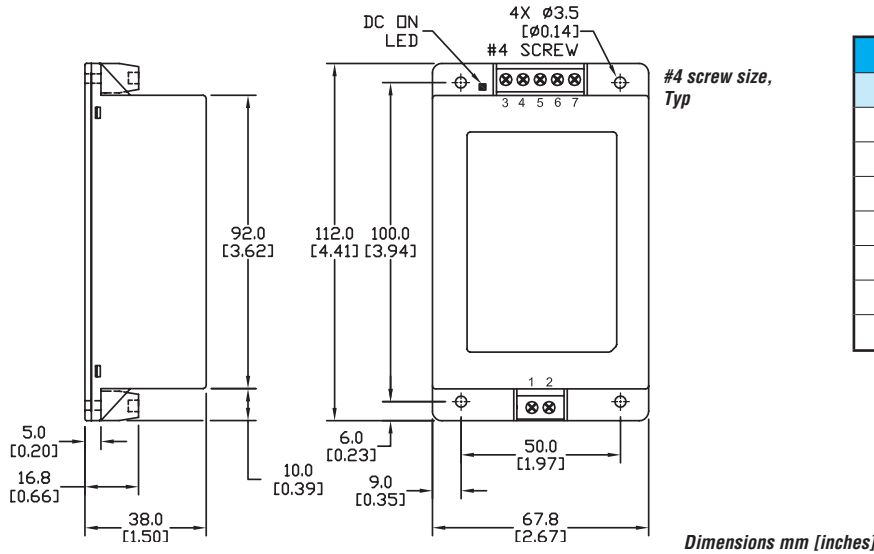
M3 x 0.5mm screw size, Typ

Dimensions mm [inches]

Connection		
Pin	Single	Dual (12V, 15V)
1	AC(N) - AC Neutral	
2	AC(L) - AC Line	
3		+Vout
4		NC
5	-Vout	Common
6		NC
7	NC	-Vout

PSE Series Encapsulated Power Supplies

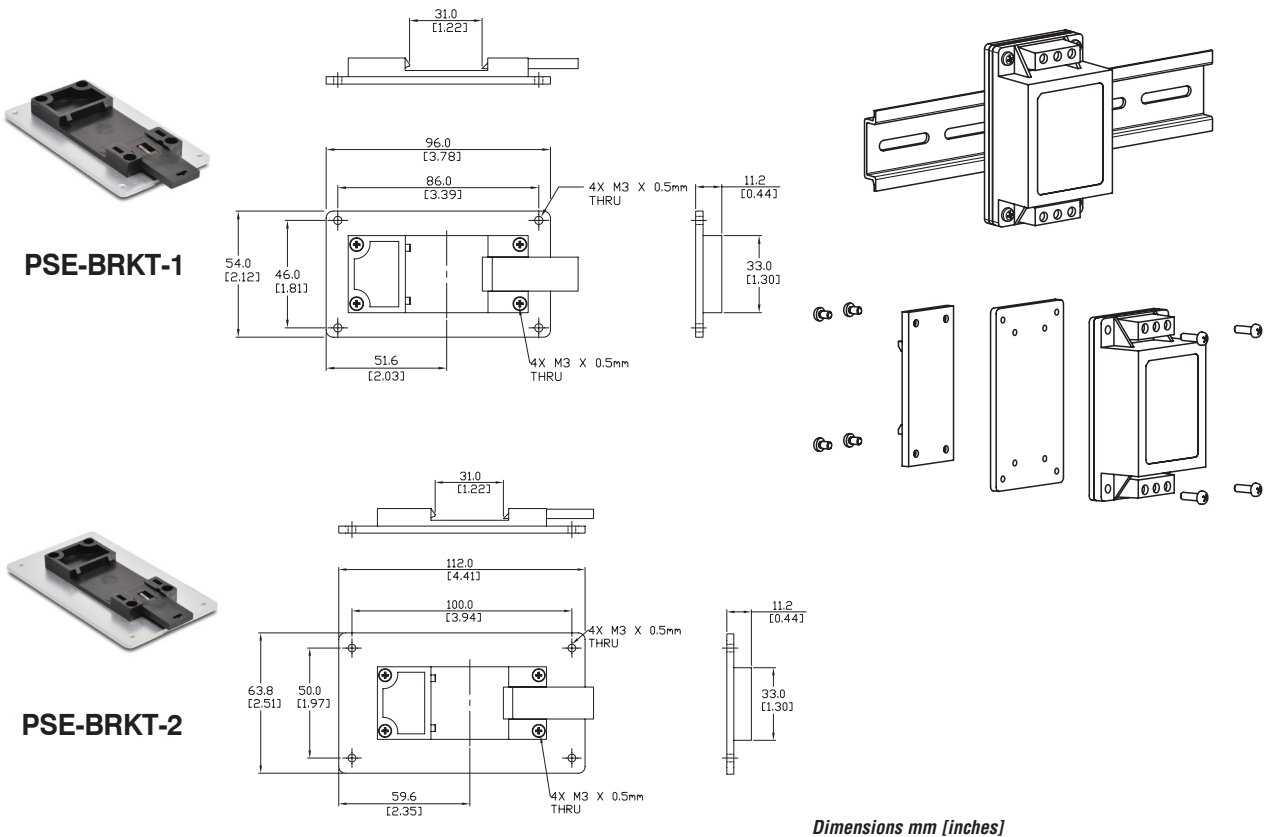
PSE 60W models for chassis mount



Connection	
Pin	Function
1	AC(N) - AC Neutral
2	AC(L) - AC Line
3	NC
4	+Vout
5	NC
6	-Vout
7	NC

35mm DIN Rail Mounting Bracket			
Part No.	Price	Weight (lbs)	Description
PSE-BRKT-1	\$9.00	0.2	DIN rail mounting bracket for 15W PSE models
PSE-BRKT-2	\$10.00	0.2	DIN rail mounting bracket for 30W-60W PSE models

Note: Kit contains interface plate, DIN rail clip and necessary screws.



RHINO PSP Series DC to DC Converters

Both 25W and 60W DC-DC converters are available in the Rhino PSP DIN rail series. Wide input ranges of 9.5 to 18VDC and 18 to 75VDC allow these models to operate from all popular DC supply voltage systems. With tightly regulated output voltage these DC-DC converters provide a reliable power source for sensitive loads in industrial process controls, factory automation and other equipment exposed to a critical industrial environment. They can be used to isolate a specific load from the 24 volt bus voltage, and offer easy installation with snap-on DIN rail mounting and detachable screw terminal blocks.



PSP 25 Watt DC-DC Converters

Features

- Ultra-wide input voltage range
- Output voltage adjustable
- Overload and short circuit protection
- Low ripple and noise
- I/O-isolation 1500 VDC
- Compact, slim plastic case
- Reliable snap-on 35mm DIN rail mount
- Wall-mount bracket included
- 3-year warranty



PSP 60 Watt DC-DC Converters



PSP Series DC-DC Converters							
Part Number	Input Voltage Range	Input Current Max. @ Vin, (Iout = 0% / 100%)	Output Voltage (Adjustable)	Output Current Max	Output Power	Price	Weight (lbs)
PSP24-DC12-1	9.5 - 18.0 VDC	80mA / 2.5 A @ 12VDC	24VDC	1A	25W	\$78.00	0.31
PSP05-DC24-5	18.0 - 75.0 VDC	80mA / 1.3 A @ 24VDC 60mA / 0.7 A @ 48VDC	5VDC	5A		\$79.00	0.31
PSP12-DC24-2			12VDC	2A		\$79.00	0.31
PSP24-DC24-1			24VDC	1A		\$75.00	0.31
PSP12-DC24-5			31mA / 2.9 A @ 24VDC 19mA / 1.4 A @ 48VDC	12VDC	5A	60W	\$92.00
PSP24-DC24-2	45mA / 3.1 A @ 24VDC 25mA / 1.54 A @ 48VDC	24VDC	2.5 A	\$95.00	0.59		

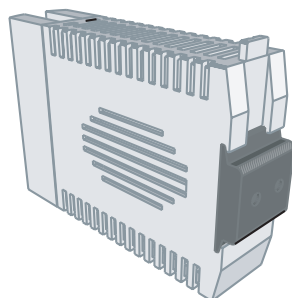
RHINO PSP Series DC to DC Converters

General Specifications	
Startup Voltage / Undervoltage Shut-down	17.2 VDC / 15.7 VDC (PSP24-DC12-1: 8.4 VDC / 7.6 VDC)
Efficiency (Typical)	86%
Output Voltage Adjustable Range	5VDC model: 5.0 - 5.25 VDC 12VDC models: 12.0 - 15.0 VDC 24VDC models: 24.0 - 28.0 VDC
Overvoltage Protection, Trigger Point	5VDC model: <6.5 V 12VDC models: <24V 24VDC models: <42V
Output Voltage Regulation*	0.5% max
Ripple/Noise (20MHz bandwidth)	<50mV (pk-pk)
Temperature: Operating Storage (non-operating) Derating	-25°C to 70°C max (-13°F to 158°F max) -25°C to 85°C max, (-13°F to 185°F max) 1.5%/K above 50°C (122°F) for 25W models, 2%/K above 40°C (104°F) for 60W models
Humidity (Non-condensing)	95 % relative humidity max.
Temperature Coefficient	0.02%/K
Switching Frequency	55 – 180kHz depending on load (frequency modulation)
Isolation Voltage (1 min.) – Input/Output	1500VDC
Safety Standards	IEC 60950-1, EN 60950-1 (output SELV), UL 60950-1, EN 60204, CSA 22.2 60950-1-07, EN50178, UL 508
Electromagnetic Compatibility (EMC)	Emissions: EN 61000-6-3; Immunity: EN 61000-6-2
Parallel Operation	No parallel operation
Safety Class	Degree of protection class 1
Environmental Air	No corrosive gases permitted
Enclosure Rating	IP 20 (IEC 60529)
Enclosure Material	Plastic FR2010-110C (UL 94V-0 rated)
Mounting	DIN rails per EN 50022-35x15/7.5 (snap-on with self-locking spring); bracket for wall/chassis mount included
Mounting Orientation	Vertical only
Wiring	12-24 AWG (3.16-0.21 mm ²)
Connections	Screw type plug-in connector (standard), Recommended tightening torque 0.5-0.7 Nm (4.5-6.2 in-lb)
Short Circuit Protection	Current limited at 110% typical
MTBF (IEC 61709 @ 25°C)	>2.5 million hours
Agency Approvals**	UL/cUL 508 listed, File E197592; CSA File 229285; CE; Reach; RoHS

* Input variation V_{in} min to V_{in} max and load variation 0 to 100%

** To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at www.automationdirect.com

Note: All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.



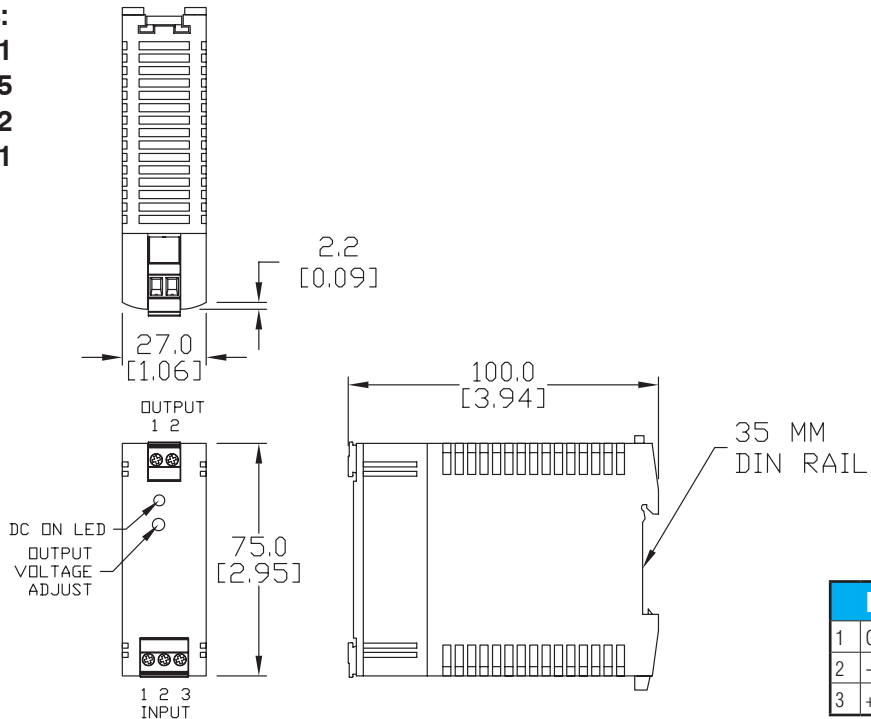
The unit can be mounted on a chassis or wall using the included mounting bracket.

RHINO PSP Series DC to DC Converters

Dimensions

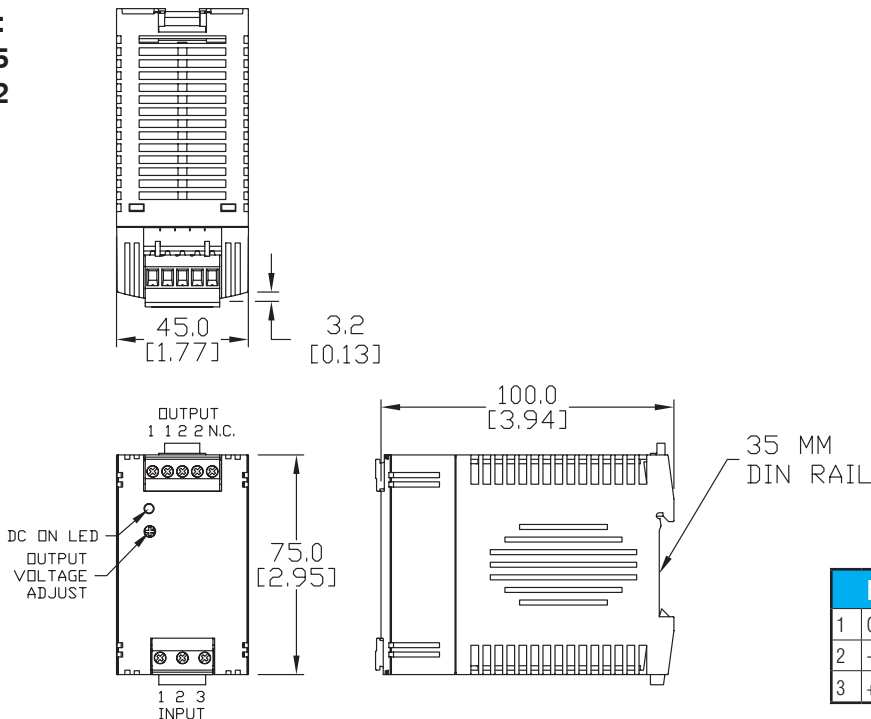
mm [inches]

Part Numbers:
PSP24-DC12-1
PSP05-DC24-5
PSP12-DC24-2
PSP24-DC24-1



Input		Output	
1	Ground	1	+Vout
2	-Vin	2	-Vout
3	+Vin		

Part Numbers:
PSP12-DC24-5
PSP24-DC24-2



Input		Output	
1	Ground	1	+Vout
2	-Vin	2	-Vout
3	+Vin	NC	No Connect

See our website www.AutomationDirect.com for complete Engineering drawings

RHINO PSE Series DC to DC Converters

The Rhino PSE Series DC-DC converters offers a compact, reliable power source for industrial process controls, factory automation, and equipment in harsh environments. Ultra-wide input voltage ranges of 9.5-36 VDC and 18-75 VDC allow these models to operate from all popular DC supply voltage systems. With tightly regulated and highly accurate output voltage these DC-DC converters provide a reliable power source for sensitive loads where AC power is not accessible. Remote on/off control, input polarity protection, and overload protection make them extremely rugged and versatile. They offer easy installation with chassis or DIN rail mounting options.

Features

- Fully encapsulated low profile plastic case
- Ultra-wide input voltage range
- Reverse polarity, overload and short circuit protection
- I/O-isolation 2500VDC
- Operating temperature range: -40°C to 85°C (-40°F to 185°F)
- Chassis mount or 35mm DIN rail mount with optional adapter
- No minimum load required
- Remote On/Off
- DC on LED indicator
- 3-year warranty



PSE Series DC-DC Converters								
Part No.	Input Voltage Range	Input Current Typ. @ Vin (No Load)	Output Voltage	Output Current Max	Output Power Max	Efficiency	Price	Weight (lbs)
PSE05-DC12-40	9.5 - 36.0 VDC	90mA @ 24VDC	5.1 VDC	8A	40W	90%	\$69.00	0.48
PSE12-DC12-40			12VDC	3.33 A		90%	\$69.00	
PSE24-DC12-40			24VDC	1.67 A		90%	\$69.00	
PSE05-DC24-40	18.0 - 75.0 VDC	55mA @ 48VDC	5.1 VDC	8A		89%	\$73.00	
PSE12-DC24-40			12VDC	3.33 A		91%	\$73.00	
PSE24-DC24-40			24VDC	1.67 A		92%	\$73.00	
PSE05-DC12-60	9.5 - 36.0 VDC	100mA @ 24VDC	5.1 VDC	12A	60W	90%	\$80.00	0.66
PSE12-DC12-60			12VDC	5A		91%	\$80.00	
PSE24-DC12-60			24VDC	2.5 A		91%	\$80.00	
PSE48-DC12-60			48VDC	1.25 A		91%	\$80.00	
PSE05-DC24-60	18.0 - 75.0 VDC	40mA @ 48VDC	5.1 VDC	12A		91%	\$85.00	
PSE12-DC24-60			12VDC	5A		92%	\$85.00	
PSE24-DC24-60			24VDC	2.5 A		91%	\$85.00	
PSE48-DC24-60			48VDC	1.25 A		91%	\$85.00	

Note: All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

RHINO PSE Series DC to DC Converters

Input Specifications		
Series	40 Watt	60 Watt
Surge Voltage (100 msec. max.)	PSExx-DC12 Models: 50V max. PSExx-DC24 Models: 100V max.	
Start-Up Time	30ms max.	50ms max.
Conducted Noise (Input)	EN 55022 class A, FCC part 15 class A (without external components)	
Start-Up Voltage / Under Voltage Shut Down	PSExx-DC12 Models: 9VDC max. / 7.5 VDC typical PSExx-DC24 Models: 18VDC max. / 16VDC typical	
ESD (Electrostatic Discharge)	EN 61000-4-2, air ±8kV, contact ±4kV, perf. criteria A	
Radiated Immunity	EN 61000-4-3, 10 V/m, perf. criteria A	
Fast Transient / Surge (With External Input Capacitor)	EN61000-4-4, ±2kV, perf. criteria A EN61000-4-5, ±2kV, perf. criteria A	
Conducted Immunity	EN61000-4-6, 10Vrms, perf. criteria A	

Output Specifications		
Series	40 Watt	60 Watt
Voltage Set Accuracy	±2.0% max.	
Regulation	Input variation (Vin min. to Vin max.): 0.5% max. Load Variation 0 - 100%: 1.0% max.	Input variation (Vin min. to Vin max.): 1.5% max. Load Variation 0 - 100%: 1.0% max.
Minimum Load	Not required	
Temperature Coefficient	±0.02 %/K	
Ripple and Noise (20MHz bandwidth)	5.1 VDC models: 100 mVpk-pk. typical 12 & 24VDC models: 150 mVpk-pk. typical 48VDC models: 200 mVpk-pk. typical	
Transient Response	250µs typical (Alignment to 1% at load step change 75% to 100%)	
Over Voltage Protection	120% of Vout (Zener diode clamp)	
Output Current Limitation	At 150% of Iout max.	
Short Circuit Protection	Hiccup mode, automatic recovery	
Capacitive Load	5.1 VDC models: 13,600µF max. 12VDC models: 2,400µF max. 24VDC models: 600µF max. 48VDC models: 150µF max.	5.1 VDC models: 20,000µF max. 12VDC models: 3,540µF max. 24VDC models: 890µF max. 48VDC models: 220µF max.

Note: All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

RHINO PSE Series DC to DC Converters

Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZiPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

Enclosure Climate Control

Safety: Electrical Components

Safety: Protective Wear

Terms and Conditions

General Specifications			
Series Specification		40 Watt	60 Watt
Temperature Range	Operating Ambient with Natural Convection (20LFM)	-40°C to +85°C (-40°F to +185°F) (with derating)	
	IEC/EN/UL60950-1 Approved Ambient	+65°C max. (+149°F max.) (without derating)	+60°C max. (+140°F max.) (without derating)
	Case Temperature	+95°C max. (+203°F max.)	
	Storage	-50°C to +125°C (-58°F to +257°F)	
Load Derating (with Natural Convection 20LFM)		4.5 %/K above +70°C (+158°F)	3.3 %/K above +70°C (+158°F)
Thermal Impedance (with Natural Convection 20LFM)		4.75 °C/W	3.5 °C/W
Humidity (non condensing)		95% relative humidity max.	
Reliability, Calculated MTBF (MIL-HDBK-217F, @ +25° C, ground benign)		>644,290 hours	>242,029 hours
Isolation Voltage (60 sec.) Input/Output		2500VDC	
Isolation Capacitance Input/Output		2400pF max. (100kHz, 1V)	3000pF (100kHz, 1V)
Isolation Resistance Input/Output		>1000MΩ (500VDC)	
Switching Frequency		285kHz typical	210kHz typical
Remote On/Off	On	3.5 to 12VDC on terminal 1 reference to -Vin or open circuit	
	Off	0 to +1.2 VDC on terminal 1 reference to -Vin	
	Off Idle Current	3mA typical	
Environmental Air		No corrosive gasses permitted	
Casing Material		Plastic resin (UL 94V-0 rated)	
Connections		Screw type connector (standard), Recommended tightening torque 0.5-0.6Nm (4.5-5.35 in-lb)	
Wiring		16-26AWG (1.5-0.14 mm ²)	
Soldering Temperature		Max. 260°C (500°F) / 10 seconds (1.5 mm from casing)	
Safety Standards		UL/cUL 60950-1 2nd edition, CSA C22.2 No. 60950-1-07, 2nd edition	
Agency Approvals		UR/cUR, File E198298; CE; Reach; RoHS	

Note: All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

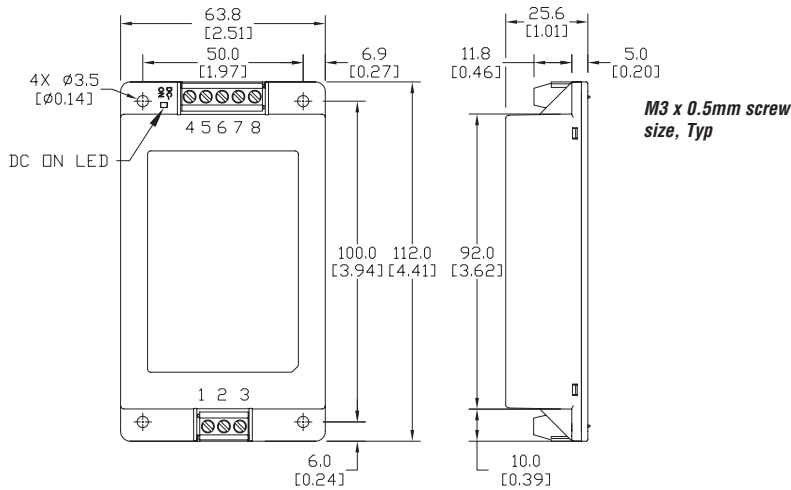
RHINO PSE Series DC to DC Converters

Dimensions

mm [inches]

Part Numbers:

**PSE05-DC12-40, PSE12-DC12-40, PSE24-DC12-40,
PSE05-DC24-40, PSE12-DC24-40, PSE24-DC24-40**

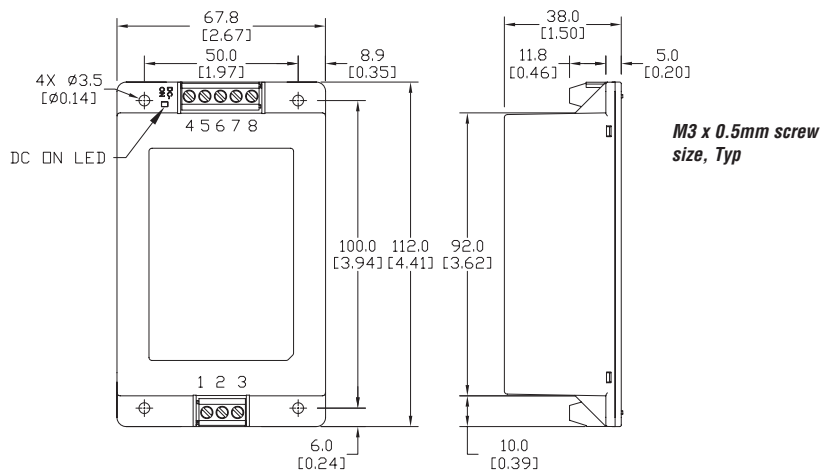


Connection	
Pin	Signal
1	Remote On/Off*
2	-Vin (GND)
3	+Vin (Vcc)
4	+Vout
5	NC
6	-Vout
7	NC
8	NC

* Refer to specifications for voltage requirements

Part Numbers:

**PSE05-DC12-60, PSE12-DC12-60, PSE24-DC12-60,
PSE48-DC12-60, PSE05-DC24-60, PSE12-DC24-60,
PSE24-DC24-60, PSE48-DC24-60**



Connection	
Pin	Signal
1	Remote On/Off*
2	-Vin (GND)
3	+Vin (Vcc)
4	NC
5	+Vout
6	NC
7	-Vout
8	NC

* Refer to specifications for voltage requirements

See our website www.AutomationDirect.com for complete Engineering drawings

RHINO PSE Series DC to DC Converters

Accessory for chassis mount

35mm DIN Rail Mounting Bracket			
Part No.	Price	Weight (lbs)	Description
PSE-BRKT-2	\$10.00	0.2	DIN rail mounting bracket for 30W-60W PSE models

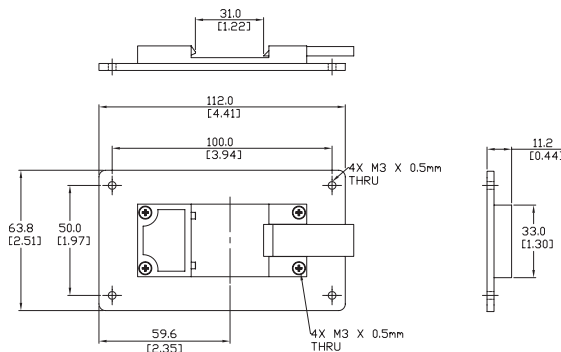
Note: Kit contains interface plate, DIN rail clip and necessary screws.

Dimensions

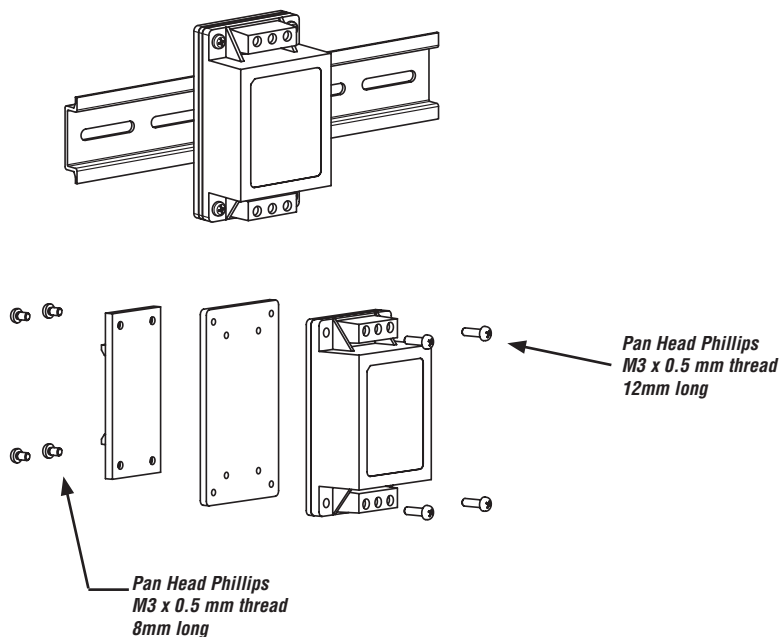
mm [inches]



PSE-BRKT-2



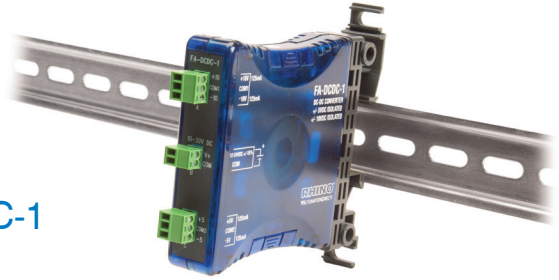
Installation Example



See our website www.AutomationDirect.com for complete Engineering drawings

RHINO DC to DC Isolated Converter

This isolated DC to DC power supply is used for eliminating ground loops or addressing isolation issues when interfacing to PLC analog I/O modules. The design features handle many types of configuration problems. The FA-DCDC-1 is a DIN-rail mount, $\pm 10\text{VDC}$, $\pm 5\text{VDC}$ isolated power supply, with each output rated at 125mA. The $\pm 10\text{V}$ and $\pm 5\text{V}$ outputs are fixed at 1.0% regulation. The input voltage range is 12-24V DC $\pm 15\%$ at approximately 6.7 Watts.



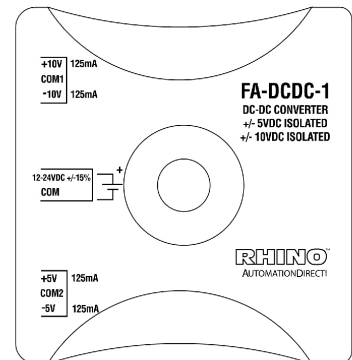
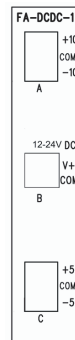
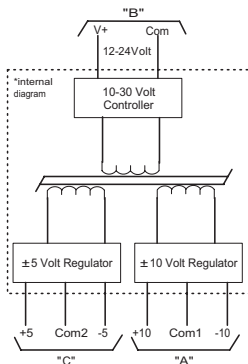
FA-DCDC-1

\$64.00

FA-DCDC-1 General Specifications¹

Input Voltage Range	12V to 24VDC $\pm 15\%$
Input Power²	6.7 Watts, Vin 27.6V, 125mA load each channel
Output Voltage³ (25°C)	+5V $\pm 1\%$, 125mA load, -5V $\pm 1\%$ 125mA load +10V $\pm 1\%$ 125mA load, -10V $\pm 1\%$ 125mA load
Output Current	125mA (per output voltage)
Output Ripple	$\pm 5\text{V}$ channels: <10mV peak to peak, Vin 10.2V 125mA load on both channels $\pm 10\text{V}$ channels: <25mV peak to peak, Vin 10.2V, 125mA load on both channels
Line Regulation⁴	$\pm 5\text{V}$ channels: <10mV, Vin 10.2V to 27.6V, 125mA load on both channels $\pm 10\text{V}$ channels: <20mV, Vin 10.2V to 27.6V, 125mA load on both channels
Load Regulation⁵	$\pm 5\text{V}$ channels: <20mV, Vin 10.2V, 0 - 125mA load variation $\pm 10\text{V}$ channels: <40mV, Vin 10.2V, 0 - 125mA load variation
Isolation	Input to Output: 1500V; $\pm 5\text{V}$ to $\pm 10\text{V}$: 1500V
Inrush Current (50ms)	970mA, Vin 10.2V, 125mA load all channels
Holdup Time (all channels)	30mS minimum, Vin 10V, 125mA load all channels
Overshoot Protection	No overshoot - Turn on and turn off of Vin
Input Protection (reverse DC input voltage)	Up to -50V reverse. \pm Vin reverse polarity connection.
Overload Protection	Auto shutdown. Short circuit. Cycle Vin post event
Output Protection	Indefinite duration. $\pm 5\text{V}$ tied to $\pm 10\text{V}$
Peak Line Transient Voltage	100V for 10mS. Voltage spike on input
Operating Temperature	0 to 60°C (32 to 140°F) full rated
Storage Temperature	-20 to 70°C (-4 to 158°F)
Enclosure	Clear Lexan 221-111 with UN5016 transparent blue colorant
Mounting	35mm wide DIN rail: part # DN-R35S1 or DN-35HS1; surface mount
Connection	5mm screw terminal
Relative Humidity	5 to 90% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	MIL STD 810C 514.2
Shock	MIL STD 810C 516.2
Noise Immunity	NEMA ICS3-304
Agency Standards and Approvals	UL/cUL listed, UL file E200031, UL508/CSA - C22.2 No. 142-M1987 for ordinary locations. Class I, Division 2, Groups A, B, C, D Hazardous Locations

Notes: 1. All specifications are over the full operating temperature range (0°C to 60°C) unless stated otherwise.
 2. "Channel" means Output Voltage. For example: +5V is one channel and -10V is another.
 3. All output voltage channels are independent of each other. Changing loading on one will have no effect on the other voltage outputs.
 4. LINE Regulation: varying the Input Voltage over entire range (12V to 24V $\pm 15\%$) and the resultant change in the Output Voltage(s) under worst case load conditions (all output channels drawing 125mA).
 5. LOAD Regulation: varying the output loads from no-load to a worst case 125mA load and measuring the resultant change in the Output Voltage(s) under a worst case minimum Input Voltage (10.2V) condition.



RHINO DC to DC Isolated Converter

Company Information

Terminal Blocks

Power Distribution Blocks

Wiring Accessories

ZIPLink Connection System

Multi-wire Connectors

Sensor Cables and Connectors

M12 Junction Blocks

Panel Interface Connectors

Wiring Duct

Cable Ties

Wire

Bulk Multi-conductor Cables

Wire Management Products

Power Supplies

DC Converters

Transformers and Filters

Circuit Protection

Tools

Test Equipment

Enclosures

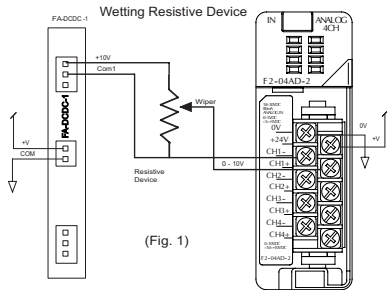
Enclosure Climate Control

Safety: Electrical Components

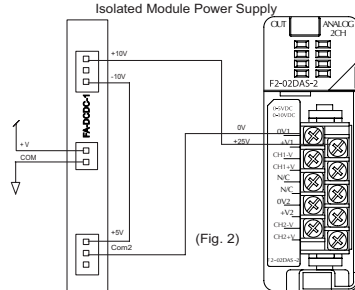
Safety: Protective Wear

Terms and Conditions

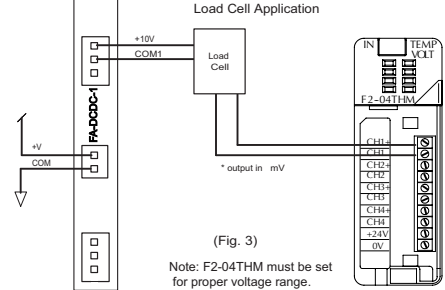
Applications



(Fig. 1)



(Fig. 2)



(Fig. 3)

Note: F2-04THM must be set for proper voltage range.

When using a linear potentiometer, the +10V connects to the high side of the potentiometer and the COM1 becomes the zero volt reference. The wiper connects to the analog input. The result is 0 to 10V at the analog module input. (Fig. 1)

Use in a solar/battery application where unregulated 12VDC is available and the analog module requires 24VDC for operation, connect the +10V to +24V module power, connect the -10V to the +5V and the COM2 to the 0V module power. (Fig. 2)

Use to power a load cell application. (Fig. 3)

THIS EQUIPMENT IS SUITABLE FOR USE IN CLASS I, DIVISION 2/ZONE 2, GROUPS A, B, C AND D NON-HAZARDOUS LOCATIONS ONLY.

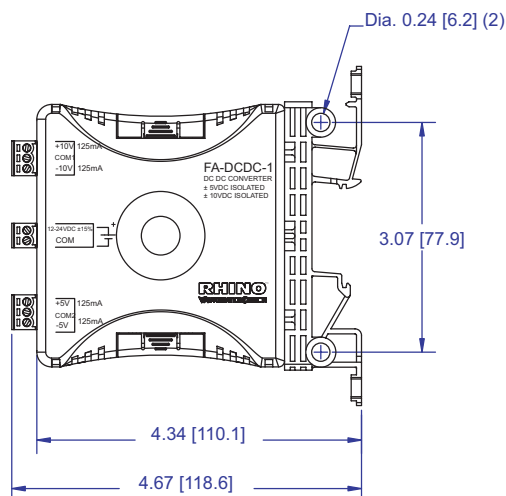
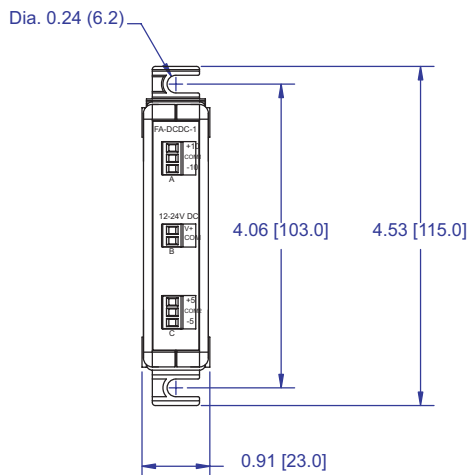


WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2/ZONE 2.



WARNING - EXPLOSION HAZARD - DO NOT CONNECT OR DISCONNECT CONNECTORS OR OPERATE SWITCHES WHILE CIRCUIT IS LIVE UNLESS THE AREA IS KNOWN TO BE NON HAZARDOUS.

Dimensions, in(mm)

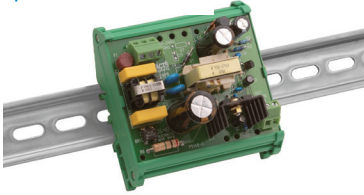


Power Supplies: Open Frame

The most economical choice for 24 VDC power

FA-24PS

\$44.50



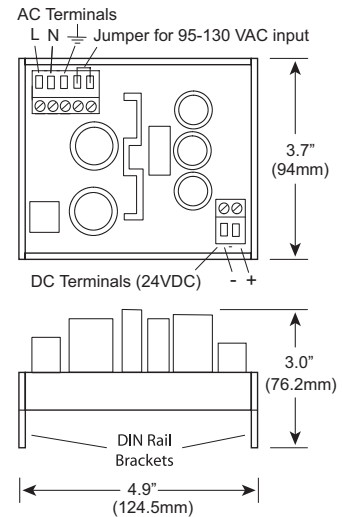
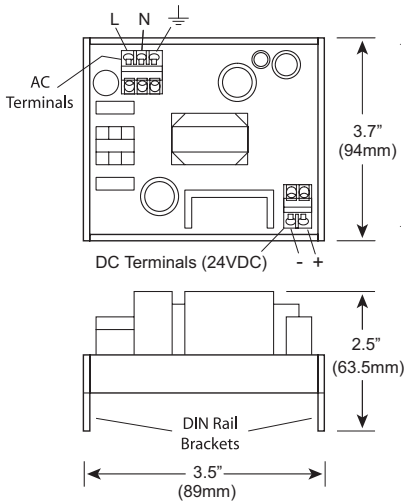
These power supplies are especially useful when an inexpensive external supply is required.

The FA-24PS compact switching power supply accepts 100-240 VAC or DC input and provides up to 1.25A (30 watts) output current at 24 VDC.

The FA-24PS-90 supplies 3.7A (90 watts) at 24 VDC and its input is jumper selectable between 95-130 or 190-264 VAC.

FA-24PS-90

\$62.00



General Specifications		
Part Number	FA-24PS	FA-24PS-90
Input Voltage Range	100-240 VAC/DC	95-130 VAC or 190-264 VAC, jumper selectable
Input Voltage Frequency	47 to 63 Hz	47 to 63 Hz
Input Power	40 VA	112 VA
Output Voltage	24 VDC \pm 5%	24 VDC \pm 5%
Output Current	1.25 A maximum continuous	3.7 A maximum continuous, subject to derating
Output Ripple	\pm 200 mV maximum	\pm 200 mV maximum
Temperature Rating	0°C to 60°C full rated	0°C to 30°C full rated; derate current 1.1% per degree above 30°C; 60°C max
Transient Response	Output stays within 1% for a load current change from 75% (0.9A) to either 50% (0.6A) or 100% (1.25A)	Output stays within 1% for a load current change from 75% (2.8A) to either 50% (1.8A) or 100% (3.7A)
Mounting	DIN rail, 35mm wide; Models DN-R35S1 or DN-R35HS1	DIN rail, 35mm wide; Models DN-R35S1 or DN-R35HS1
Screw Terminals	Wire Size: 18-12 AWG Rec. Screw Torque: 4.4 in•lb or 0.5 Nm	Wire Size: 18-12 AWG Rec. Screw Torque: 4.4 in•lb or 0.5 Nm
Insulation Resistance	10 M Ω at 500 V minimum	10 M Ω at 500 V minimum
Dielectric Withstand Voltage	L or N Input to Output: 500 V min; Ground Input to Output: 250 V min	L or N Input to Output: 500 V min; Ground Input to Output: 250 V min
Brown-out Protection	Provides temporary regulation down to 85 VAC at full load	Provides temporary regulation at 95VAC at full load
Input Protection	The power supply has an internal fuse for the AC input line, rated at 3.15 amps; not user replaceable; external input fusing required.	The power supply has an internal fuse for the AC input line, rated at 3.15 amps; not user replaceable; external input fusing required.
Overload Protection	Protects power supply from overload and short circuit conditions. Includes automatic recovery upon removal of the overload condition	Protects power supply from overload and short circuit conditions. Includes automatic recovery upon removal of the overload condition
Inrush Current (2mS)	115 V <12.5 A / 230 VAC <13.9 A	115 VAC <79 A / 230 VAC <37 A
Overshoot Protection	No overshoot on turn-on or turn-off	No overshoot on turn-on or turn-off
Agency Standards and Approvals	UL 508; Class I, Div 2, Groups A, B, C, D hazardous locations; CUL, UL Listed File E200031	