RHINO DC to DC Converters PSE Series

Overview

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 to 85°C [-40 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

DC-DC Converters									
Part Number	***Price***	***Drawing Link***	***Input Voltage Range***	***Input Current Typ. @ Vin [No Load]***	***Output Voltage [VDC]***	***Output Current Max.***	***Output Power Max.***	***Efficiency***	***Weight [lb]***
PSE05-DC12-40	$10d#:	PDF	9.5 - 36.0 VDC	90mA @ 24VDC	5.1	8A	40W	90%	0.48
PSE12-DC12-40	$-10dl:	PDF			12	3.33 A		90%	
PSE24-DC12-40	$10dn:	PDF			24	1.67 A		90%	
PSE05-DC24-40	$10do:	PDF	18.0 - 75.0 VDC	55mA @ 48VDC	5.1	8A		89%	
PSE12-DC24-40	$10dp:	PDF			12	3.33 A		91%	
PSE24-DC24-40	$10dq:	PDF			24	1.67 A		92%	
PSE05-DC12-60	$010ds:	PDF	9.5 - 36.0 VDC	100mA @ 24VDC	5.1	12A	60W	90%	0.66
PSE12-DC12-60	$;010dt:	PDF		100mA @ 24VDC	12	5A		91%	
PSE24-DC12-60	$010du:	PDF		110mA @ 24VDC	24	2.5 A		91%	
PSE48-DC12-60	$010dv:	PDF		60mA @ 24VDC	48	1.25 A		91%	
PSE05-DC24-60	$010dx:	PDF	18.0 - 75.0 VDC	40mA @ 48VDC	5.1	12A		91%	
PSE12-DC24-60	$010dy:	PDF		60mA @ 48VDC	12	5A		92%	
PSE24-DC24-60	$010dz:	PDF		60mA @ 48VDC	24	2.5 A		91%	
PSE48-DC24-60	$;010d]:	PDF		50mA @ 48VDC	48	1.25 A		91%	

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

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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	

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

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.

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General Specifications			
Series Specification		***40 Watt***	***60 Watt***
Temperature Range	***Operating Ambient with Natural Convection (20LFM)***	-40 to 85°C [-40 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 to +125°C [-58 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], wire stripping length 7-8mm	
Wiring		16-26 AWG [1.5-0.14 mm²]	
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 No. E198298; CE; Reach; RoHS	

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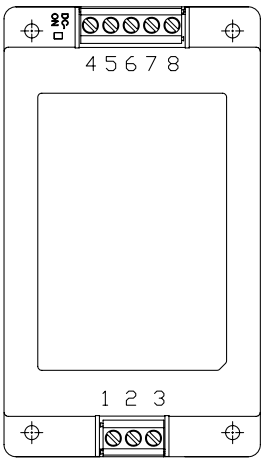
PSE05-DC12-40, PSE12-DC12-40, PSE24-DC12-40, PSE05-DC24-40 PSE12-DC24-40, PSE24-DC24-40

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

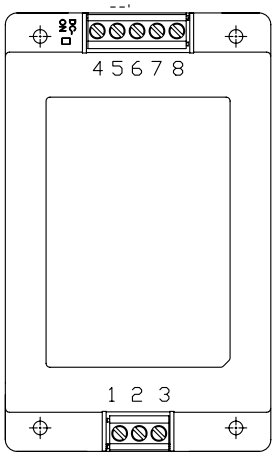
*** Refer to specifications for voltage requirements**
M3 x 0.5mm screw size, Typ



PSE05-DC12-60, PSE12-DC12-60, PSE24-DC12-60, PSE48-DC12-60, PSE05-DC24-40, PSE12-DC24-60, PSE24-DC24-60, PSE48-DC24-60

Wiring 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**
M3 x 0.5mm screw size, Typ



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Mounting Bracket

35mm DIN Rail Mounting Bracket				
Part Number	***Price***	***Drawing Link***	***Weight (lbs)***	***Description***
PSE-BRKT-2	$-06is:	PDF	0.2	DIN rail mounting bracket for 30W-60W PSE models

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

PSE-BRKT-2

Installation Example