



Switching Power Supplies

PSRS Series

Overview

The RHINO SELECT PSRS series of switching mode power supplies allows space-saving installation with a slim and compact design. This series also features easy and secure connection with rising clamp type terminals. These switching mode power supplies offer stable performance over a wide temperature range. The series features excellent environmental resistance with overcurrent/overvoltage protection and overheating prevention functions.

Features

- Various lineups for diverse applications (15 W - 480 W)
- Compact size for maximum space efficiency
- Improved power factor with PFC circuit on select models
- Power Boost 120% of rated current up to 10 s
- Outstanding environment resistance, overcurrent/overvoltage protection and overheating prevention, wide temperature range
- Low output voltage indicator (red LED) and output indicator (green LED)
- Simple and easy installation



PSRS-05-15

PSRS-48-480



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Part Number	Price	Output	Input Voltage	Efficiency	Weight g [lb]	Dimensions W x H x D mm [in]	Housing Material	Drawing Link
PSRS-05-15	\$38.00	5 VDC @ 3 A / 15 W (adjustable)	85–264 VAC / 90–350 VDC	72% @ 115 VAC, 70% @ 230 VAC	135 [0.29]	22.5 x 90 x 90 [0.88 x 3.54 x 3.54]	Metal	PDF
PSRS-12-15	\$38.00	12 VDC @ 1.2 A / 14.4 W (adjustable)		78% @ 115 VAC, 74% @ 230 VAC			Metal	PDF
PSRS-24-15	\$38.00	24 VDC @ 0.65 A / 15 W (adjustable)		75% @ 115 VAC, 75% @ 230 VAC			Plastic	PDF
PSRS-05-30	\$43.00	5 VDC @ 5 A / 25 W (adjustable)		73% @ 115 VAC, 71% @ 230 VAC	170 [0.37]	32 x 90 x 90 [1.25 x 3.54 x 3.54]	Metal	PDF
PSRS-12-30	\$43.00	12 VDC @ 2.5 A / 30 W (adjustable)		82% @ 115 VAC, 81% @ 230 VAC			Metal	PDF
PSRS-24-30	\$43.00	24 VDC @ 1.3 A / 31.2 W (adjustable)		82% @ 115 VAC, 82% @ 230 VAC			Plastic	PDF
PSRS-12-60	\$58.00	12 VDC @ 4.5 A / 54 W (adjustable)		81% @ 115 VAC, 82% @ 230 VAC	230 [0.50]	30 x 90 x 110 [1.18 x 3.54 x 4.33]	Metal	PDF
PSRS-24-60	\$58.00	24 VDC @ 2.5 A / 60 W (adjustable)		85% @ 115 VAC, 87% @ 230 VAC			Plastic	PDF
PSRS-12-120	\$83.00	12 VDC @ 10 A / 120 W (adjustable)		82% @ 115 VAC, 84% @ 230 VAC	565 [1.24]	40 x 125 x 112 [1.57 x 4.92 x 4.40]	Metal	PDF
PSRS-24-120	\$83.00	24 VDC @ 5 A / 120 W (adjustable)		86% @ 115 VAC, 89% @ 230 VAC			Plastic	PDF
PSRS-12-240	\$136.00	12 VDC @ 20 A / 240 W (adjustable)		86% @ 115 VAC, 89% @ 230 VAC	850 [1.87]	60 x 125 x 140 [2.36 x 4.92 x 5.51]	Metal	PDF
PSRS-24-240	\$136.00	24 VDC @ 10 A / 240 W (adjustable)		89% @ 115 VAC, 92% @ 230 VAC			Plastic	PDF
PSRS-48-240	\$136.00	48 VDC @ 5 A / 240 W (adjustable)		90% @ 115 VAC, 93% @ 230 VAC			Plastic	PDF
PSRS-24-480	\$236.00	24 VDC @ 20 A / 480 W (adjustable)		88% @ 115 VAC, 91% @ 230 VAC	1,350 [2.97]	95 x 125 x 140 [3.74 x 4.92 x 5.51]	Plastic	PDF
PSRS-48-480	\$236.00	48 VDC @ 10 A / 480 W (adjustable)		89% @ 115 VAC, 92% @ 230 VAC			Plastic	PDF



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General Specifications	
Indicators	Output indicator (green), output low voltage indicator (red)
Overcurrent Protection	≥ 121%
Overvoltage Protection ¹	130%
Output Short-Circuit Protection	Yes
Overheat Protection	Yes
Parallel Operation ²	Available
Insulation Resistance	Among all input terminals, all output terminals and PE ≥100 MΩ (500 VDC = megger)
Dielectric Strength	Among all input terminals and all output terminals: 3 kVAC, cutoff current = 20 mA Among all input terminals and PE: 2 kVAC, cutoff current = 20 mA Among all output terminals and PE: 1 kVAC, cutoff current = 20 mA
Vibration ³	10-55 Hz, 0.75 mm double amplitude, in each X, Y, Z direction for 2 h
Shock	150 m/s ² (15 G) in each X, Y, Z direction for 3 times
EMS	Conforms to EN61000-6-2
EMI	Conforms to EN61000-6-4
Ambient Temperature ⁴	-20 to +70 °C [-4 to +158 °F]
Storage Temperature	-25 to +80 °C [-13 to +176 °F] (no freezing or condensation)
Ambient Humidity	20 to 90% RH
Storage Humidity	20 to 90% RH (no freezing or condensation)
Mounting Type	35 mm DIN rail
Connection Type	Screw terminals
Protection Degree	IP20 (IEC standard)
Agency Approval ⁵	cULus File E477409 , CE, UKCA

¹ To reset the overvoltage protection, shut off input power for at least 5 minutes and then restart.

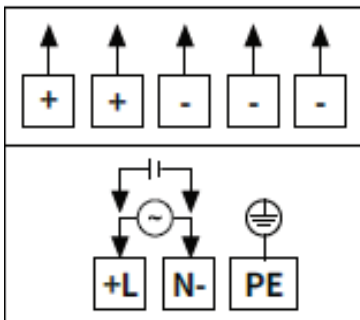
² For more information, refer to the product manual.

³ Applies when the device is installed vertically to the ground. For non-vertical installation, secure the product to withstand vibration and shock.

⁴ UL approved ambient temperature 40°C, refer to the "Derating Curve".

⁵ It is for 100–240 VAC/VDC power input only.

Wiring



Pinout	
Mark	Function
+	Output power (+)
-	Output power (-)
+L, N-	Input power
	Protective earth (PE)

Wire Specifications					
Part Number	Output	Input	PE	Terminal	Torque
<u>PSRS-05-15</u>	AWG 20–12	AWG 24–12	AWG 14–12	M2.5	0.3 to 0.5 N·m
<u>PSRS-12-15</u>	AWG 22–12				
<u>PSRS-24-15</u>	AWG 24–12				
<u>PSRS-05-30</u>	AWG 18–12	AWG 24–12			
<u>PSRS-12-30</u>	AWG 20–12				
<u>PSRS-24-30</u>	AWG 22–12				
<u>PSRS-12-60</u>	AWG 18–12	AWG 22–12			
<u>PSRS-24-60</u>	AWG 20–12				
<u>PSRS-12-120</u>	AWG 14–10	AWG 22–10	AWG 14–10	M3	
<u>PSRS-24-120</u>	AWG 18–10				
<u>PSRS-12-240</u>	AWG 12–10	AWG 20–10			
<u>PSRS-24-240</u>	AWG 14–10				
<u>PSRS-48-240</u>	AWG 18–10	AWG 16–10			
<u>PSRS-24-480</u>	AWG 12–10				
<u>PSRS-48-480</u>	AWG 14–10				



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Part Number		PSRS-05-15	PSRS-12-15	PSRS-24-15	PSRS-05-30	PSRS-12-30	PSRS-24-30
Input							
Voltage		85–264 VAC / 90–350 VDC					
Current (Typical)	115 VAC	0.32 A	0.29 A	0.31 A	0.54 A	0.57 A	0.58 A
	230 VAC	0.21 A	0.19 A	0.2 A	0.33 A	0.36 A	0.36 A
Frequency		50 / 60 Hz (allowable frequency 47–63 Hz)					
Efficiency (Typical)	115 VAC	0.72	0.78	0.75	0.73	0.82	0.82
	230 VAC	0.70	0.74	0.75	0.71	0.81	0.82
Power Factor (Typical)	115 VAC	0.56	0.56	0.57	0.5	0.51	0.53
	230 VAC	0.44	0.47	0.45	0.44	0.41	0.43
Power Factor Correction Circuit (PFC)		Not available					
Inrush Current (Typical)	115 VAC	16 A					
	230 VAC	32 A					
Leakage Current (Typical)	115 VAC	0.21 mA			0.16 mA		
	230 VAC	0.28 mA			0.25 mA		
Output							
Voltage Range		4.5–5.75 VDC	10.8–13.8 VDC	21.6–27.6 VDC	4.5–5.75 VDC	10.8–13.8 VDC	21.6–27.6 VDC
Current		3 A	1.2 A	0.65 A	5 A	2.5 A	1.3 A
Power		15 W	14.4 W	15.6 W	25 W	30 W	31.2 W
Power Boost		120% of rated current up to 10 s					
Voltage Adjustment Range		-10 to 15% (with V adjust)					
Ripple		260 mV _{pp}	150 mV _{pp}	170 mV _{pp}	120 mV _{pp}	120 mV _{pp}	150 mV _{pp}
Input Variation		≤ 0.5%					
Load Variation		≤ 3.0%	≤ 2.0%	≤1.5%	≤ 3.0%	≤ 2.0%	≤1.5%
Temperature Variation		≤0.05% /°C					
Start-up Time (Typical)	115 VAC	720 ms	810 ms	820 ms	580 ms	650 ms	850 ms
	230 VAC	330 ms	400 ms	650 ms	670 ms	510 ms	710 ms
Hold-up Time (Typical)	115 VAC	32 ms	33 ms	43 ms	33 ms	29 ms	28 ms
	230 VAC	136 ms	146 ms	140 ms	149 ms	131 ms	129 ms
Output Low Voltage Indicate		4.2 V (±10%)	9.6 V (±10%)	20.0 V (±10%)	4.2 V (±10%)	9.6 V (±10%)	20.0 V (±10%)



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Part Number		PSRS-12-60	PSRS-24-60	PSRS-12-120	PSRS-24-120
Input					
Voltage		85–264 VAC / 90–350 VDC			
Current (Typical)	115 VAC	1.05 A	1.1 A	1.3 A	1.3 A
	230 VAC	0.6 A	0.7 A	0.7 A	0.7 A
Frequency		50 / 60 Hz (allowable frequency 47–63 Hz)			
Efficiency (Typical)	115 VAC	0.81	0.85	0.82	0.86
	230 VAC	0.82	0.87	0.84	0.89
Power Factor (Typical)	115 VAC	0.54	0.54	0.99	0.99
	230 VAC	0.46	0.46	0.92	0.91
Power Factor Correction Circuit (PFC)		Not available		Available	
Inrush Current (Typical)	115 VAC	16 A			
	230 VAC	32 A			
Leakage Current (Typical)	115 VAC	0.16 mA		0.3 mA	
	230 VAC	0.3 mA		0.38 mA	
Output					
Voltage Range		10.8–13.8 VDC	21.6–27.6 VDC	10.8–13.8 VDC	21.6–27.6 VDC
Current		4.5 A	2.5 A	10 A	5 A
Power		54 W	60 W	120 W	120 W
Power Boost		120% of rated current up to 10 s			
Voltage Adjustment Range		-10 to 15% (with V adjust)			
Ripple		460 mV _{pp}	110 mV _{pp}	470 mV _{pp}	310 mV _{pp}
Input Variation		≤0.05%			
Load Variation		≤ 2.0%	≤1.5%	≤ 2.0%	≤1.5%
Temperature Variation		≤0.05% /°C			
Start-up Time (Typical)	115 VAC	635 ms	830 ms	740 ms	990 ms
	230 VAC	655 ms	770 ms	710 ms	930 ms
Hold-up Time (Typical)	115 VAC	23 ms	22 ms	32 ms	34 ms
	230 VAC	106 ms	103 ms	31 ms	32 ms
Output Low Voltage Indicate		9.6 V (±10%)	20.0 V (±10%)	9.6 V (±10%)	20.0 V (±10%)



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Part Number		PSRS-12-240	PSRS-24-240	PSRS-48-240	PSRS-24-480	PSRS-48-480
Input						
Voltage		85–264 VAC / 90–350 VDC				
Current (Typical)	115 VAC	2.5 A			4.8 A	
	230 VAC	1.3 A			2.4 A	
Frequency		50 / 60 Hz (allowable frequency 47–63 Hz)				
Efficiency (Typical)	115 VAC	0.86	0.89	0.90	0.88	0.89
	230 VAC	0.89	0.92	0.93	0.91	0.92
Power Factor (Typical)	115 VAC	0.99			0.99	
	230 VAC	0.9			0.97	
Power Factor Correction Circuit (PFC)		Available				
Inrush Current (Typical)	115 VAC	16 A			40 A	
	230 VAC	32 A			55 A	
Leakage Current (Typical)	115 VAC	0.14 mA			0.13 mA	
	230 VAC	0.25 mA			0.24 mA	
Output						
Voltage Range		10.8–13.8 VDC	21.6–27.6 VDC	43.2–55.2 VDC	21.6–27.6 VDC	43.2–55.2 VDC
Current		20 A	10 A	5 A	20 A	10 A
Power		240 W			480 W	
Power Boost		120% of rated current up to 10 s				
Voltage Adjustment Range		-10 to 15% (with V adjust)				
Ripple		430 mV _{pp}	300 mV _{pp}	360 mV _{pp}	270 mV _{pp}	320 mV _{pp}
Input Variation		≤0.05%				
Load Variation		≤ 2.0%	≤1.5%			
Temperature Variation		≤0.05% /°C				
Start-up Time (Typical)	115 VAC	290 ms	310 ms	390 ms	430 ms	290 ms
	230 VAC	250 ms	250 ms	290 ms	300 ms	260 ms
Hold-up Time (Typical)	115 VAC	36 ms	40 ms	36 ms	31 ms	22 ms
	230 VAC	39 ms	38 ms	36 ms	36 ms	21 ms
Output Low Voltage Indicate		9.6 V (±10%)	20.0 V (±10%)	43.0 V (±10%)	20.0 V (±10%)	43.0 V (±10%)



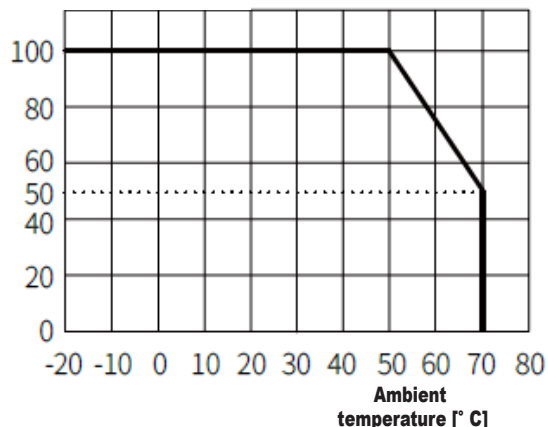
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Derating Curves by Ambient Temperature

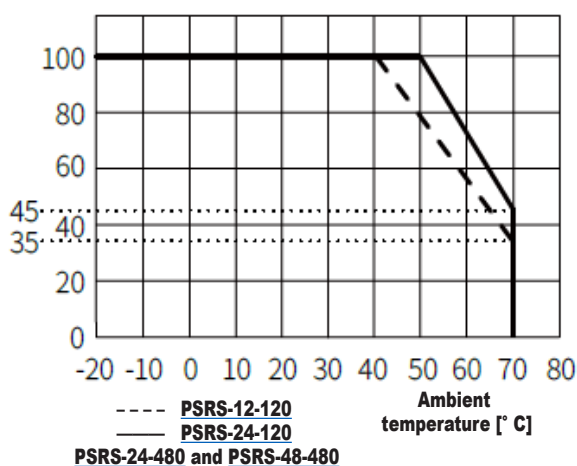
Part numbers ending with -15, -30, -60, -240

Load Ratio [10%]



Part numbers ending with -120, -480

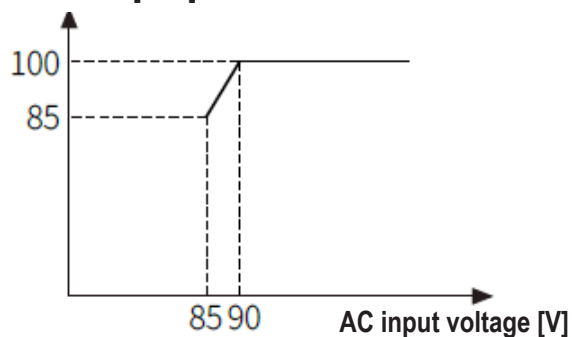
Load Ratio [10%]



Derating Curves by Ambient Temperature

Part numbers ending with -15, -30, -60, -120, -240

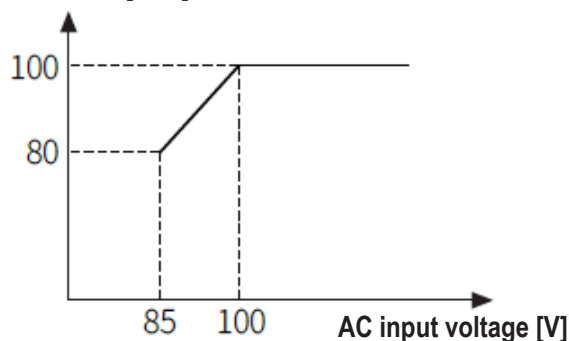
Load Ratio [10%]



When the input voltage is 90 VAC or less,
the load ratio is reduced to 3%/V.

Part numbers ending with -480

Load Ratio [10%]



When the input voltage is 100 VAC or less,
the load ratio is reduced to 1.34 %/V.

Fuse Specifications

Fuse Specifications	
Parts ending with -15, -30	≥ 350 VDC, 4 A
Parts ending with -60, -120	≥ 350 VDC, 6 A
Parts ending with -240, -480	≥ 350 VDC, 12 A

Based on 100% load.