VES90 Series

AC-DC Power Supplies

XP Power

90 Watts

- Energy Efficiency Level VI
- European CoC Tier 2
- High Power Density
- Single Outputs from 12 V to 48 V
- <0.15 W Standby Power
- China Compulsory Certification (CCC) Qualified
- 0 °C to 60 °C Operation
- Optional Output Connector
- Low Cost



GREEN XP POWER

Dimensions:

VES90:
5.47 x 2.28 x 1.22" (139.0 x 58.0 x 31.0 mm)

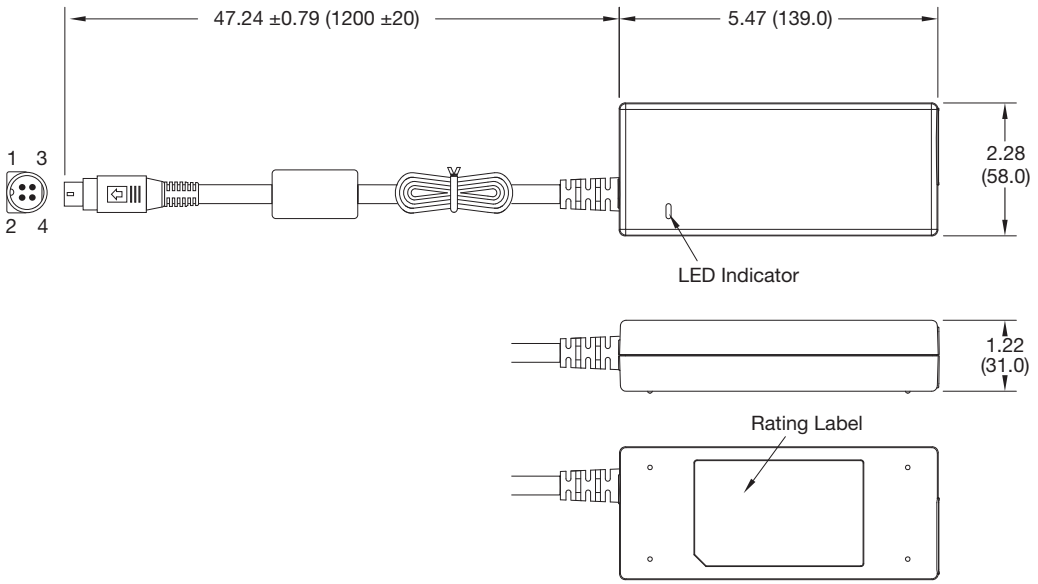
Models & Ratings

Output Power	Output Voltage	Output Current	Total Regulation	Efficiency[1]	Model Number[2]
90 W	12.0 V	7.50 A	±5%	89%	VES90PS12
	19.0 V	4.74 A		89%	VES90PS19
	24.0 V	3.75 A		89%	VES90PS24
	48.0 V	1.875 A		89%	VES90PS48

Notes

1. Typical average of efficiencies measured at 25%, 50%, 75% and 100% load and 230 VAC input.
2. For optional Barrel Jack Connector, 2.5 mm inner positive, 5.5 mm outer negative, 11 mm length add suffix '-B' e.g. VES90US24-B.

Mechanical Details



Pin	Function
1	Output +
2	Output +
3	Return
4	Return
Shell	Connected to output return and input ground

Notes

1. All dimensions shown in inches (mm). Tolerance is 0.02 (0.5) maximum, except output cable length.
2. Output connector: Power Mini DIN, mates with Kycon KPJ-4S or equivalent.
3. Weight: 0.82 lbs (370 g) approx.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage	90		264	VAC	
Input Frequency	47		63	Hz	
Input Current		1.5/0.6		A	Measured at 115/230 VAC
Inrush Current			130	A	230 VAC, cold start at 25 °C
Power Factor					EN61000-3-2 Class A
Earth Leakage Current			3.5	mA	264 VAC, 60 Hz
No Load Input Power			0.15	W	
Input Protection	T3.15A/250 VAC internal fuse in line				

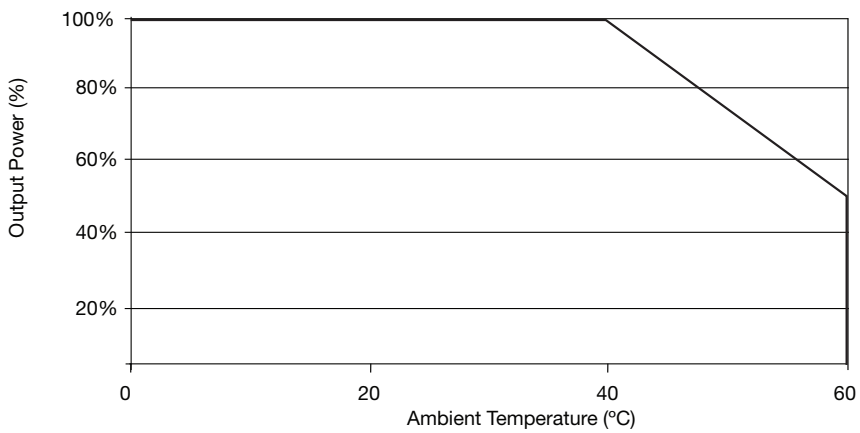
Output

Characteristic	Min.	Typ.	Max.	Units	Notes & Conditions
Output Voltage	12		48	VDC	See Models and Ratings table
Initial Set Accuracy			±2	%	At 50% load
Minimum Load					No minimum load required
Start Up Delay			3	s	
Start Up Rise Time			50	ms	
Hold Up Time	8/16			ms	Full load and 115 VAC/230 VAC
Line Regulation			±0.5	%	
Total Regulation			±5	%	
Transient Response			10	%	Maximum deviation, recovering to less than 1% within 500 µs for 50% step load
Ripple and Noise			2/1	% pk-pk	2% for 12/19/24 V, 1% for 48 V, 20 MHz bandwidth, measured with 20 MHz Bandwidth and 10 µF electrolytic in parallel with 0.1 µF ceramic capacitor.
Overshoot		5		%	At turn on / turn off
Overload Protection	120		200	%	
Overvoltage Protection			180	%	Recycle mains to reset
Short Circuit Protection	Trip and restart (hiccup), auto resetting				
Temperature Coefficient		0.04		%/°C	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	0		+60	°C	Derate from 100% load at 40 °C to 50% load at 60 °C
Cooling	Natural convection				
Operating Humidity	10		90	%RH	Non-condensing
Storage Temperature	-40		+70	°C	
Operating Altitude			5000	m	
Shock	IEC68-2-27, 30 g, 30 ms half sine, 3 times in each of 6 axes				
Vibration	IEC68-2-6, 10-500 Hz, 0.25 g 10 mins/sweep, 60 mins for each of 3 axes				

Derating Curve

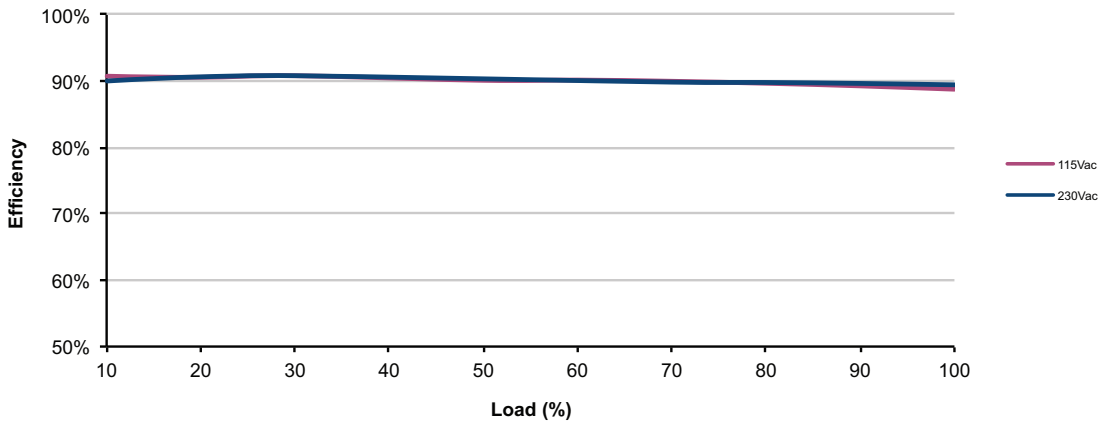


General

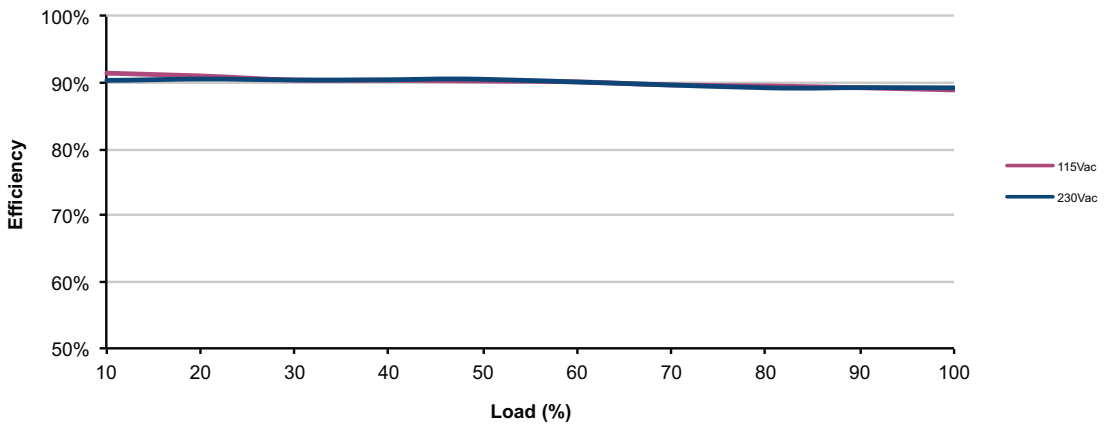
Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		89		%	See Models and Ratings table and curves.
Isolation: Input to Output	3000			VAC	
Input to Ground	1500			VAC	
Output to Ground				VDC	Output return is connected to input ground
Switching Frequency		55		kHz	At full load
Power Density		5.9		W/in^3	
Mean Time Between Failure		>100		kHrs	MIL-HDBK-217F at 25 °C GB
Weight		0.82 (370)		lb (g)	

Efficiency Curves

VES90PS12



VES90PS24



EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Emissions	EN55022	Level B	Conducted & Radiated
Harmonic Current	EN61000-3-2	Class A	
Voltage Flicker	EN61000-3-3		

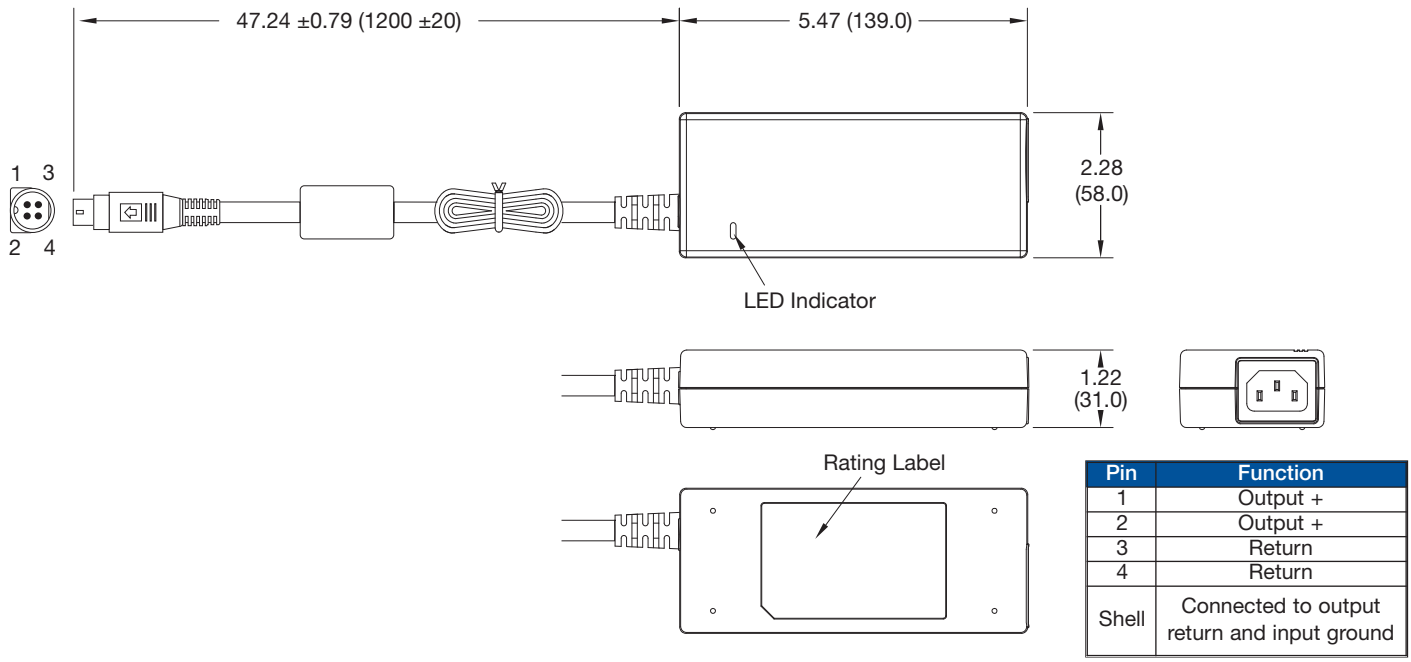
EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD	EN61000-4-2	±15 kV Air, ±8 kV contact	A	
Radiated	EN61000-4-3	3 V/m	A	
EFT/Burst	EN61000-4-4	2	A	
Surge	EN61000-4-5	Installation Class 3	A	
Conducted	EN61000-4-6	3 V	A	
Magnetic Fields	EN61000-4-8	3 A/m	A	
Dips and Interruptions	EN61000-4-11	Dip: 30% 500 ms	A/B	High Line/Low Line
		Dip: 60% 200 ms	A/B	High Line/Low Line
		Dip: 100% 5000 ms	B	
		Int: 100% 10 ms	A	

Safety Approvals

Safety Agency	Safety Standard	Notes & Conditions
UL	UL60950-1	ITE. 19, 24 & 47 V models meets LPS
TUV	EN60950-1	
CB	IEC60950-1	
CCC	China Compulsory Certification (CCC) Qualified	

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