VES90 series

90W External desktop

AC-DC power supplies

The 90W VES90 with Energy Efficiency Level VI and CoC Tier 2 these desktop/external AC-DC power supplies are designed for high volume/low cost applications.

With class I construction the VES90 are fitted with an IEC320-C14 inlet and have a voltage input range of 90 to 264VAC.

The DC lead is fitted with a 4 pin power mini DIN connector as standard, alternatively a 5.5 x 2.5mm barrel jack connector can be specified as an option.



Features

- Single outputs from 12V to 48VDC
- Energy efficiency level VI
- European CoC tier 2
- <0.15W standby power
- China compulsory certification (CCC) qualified
- High power density
- Optional output connector
- 0°C to +60°C operation
- 1 year warranty

Applications

Industrial electronics

Instrumentation

Technology

Dimensions

139.0 x 58.0 x 31.0mm (5.47" x 2.28" x 1.223")

Documentation

For further information click the link or scan the code

→ xppower.com

Models & ratings

Model number	Output voltage	Output current	Total regulation	Efficiency[1]	Output power
VES90US12	12.0VDC	7.50A	±5%	89%	90W
VES90US19	19.0VDC	4.74A		89%	
VES90US24	24.0VDC	3.75A		89%	
VES90US48	48.0VDC	1.875A		89%	

Notes:

1. Typical average of efficiencies measured at 25%, 50%, 75% and 100% load and 230VAC input.
2. For optional Barrel Jack Connector, 2.5mm inner positive, 5.5mm outer negative, 11mm length add suffix '-B' e.g. VES90PS24-B.

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 115/230VAC
Inrush current			130		230VAC, cold start at +25°C
Power factor	EN61000-3-2 Class A				
Earth leakage current			3.5	mA	264 VAC, 60Hz
No load input power			0.15	W	
Input protection	T3.15A/250 VAC internal fuse in line				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output Voltage	12		48	VDC	See models & ratings
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	%	Including initial set accuracy
Transient Response			4	%	Maximum deviation, recovering to less than 1% within 500µs for 25% step load change
Ripple and Noise			2/1	% pk-pk	2% for 12/19/24VDC,1% for 48VDC, 20MHz bandwidth, measured with 20MHz bandwidth and 10µF electrolytic in parallel with 0.1µF 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	

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency		89		%	See models and ratings table and curves
Isolation	3000			VAC	Input to output
	1500			VAC	Input to ground
	Output return is connected to input ground				Output to ground
Switching frequency		55		kHz	At full load
Power density		96.68 (5.9)		W/cm^3 (W/in^3)	
Mean time between failure		>100		khrs	MIL-HDBK-217F, 25°C GB
Weight		370 (0.82)		g (lb)	

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
Storage temperature	-40		+70	°C	
Cooling	Natural convection				
Operating humidity	10		90	%	RH, non-condensing
Operating altitude			5000	m	
Shock	IEC68-2-27, 30g, 30ms 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				

EMC: Emissions

Phenomenon	Standard	Test Level	Notes & conditions
Conducted	EN55032	Level B	
Radiated	EN55032	Level B	
Harmonic currents	EN61000-3-2	Class A	
Voltage flicker	EN61000-3-3		

EMC: Immunity

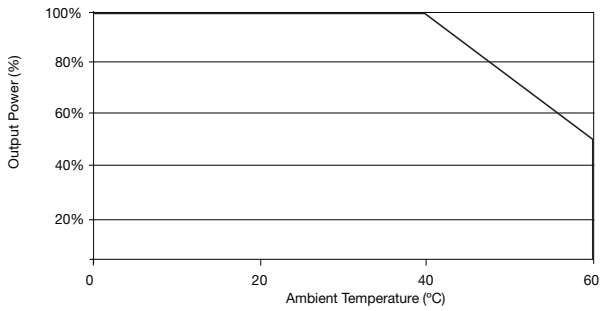
Phenomenon	Standard	Test Level	Criteria	Notes & conditions
ESD immunity	EN61000-4-2	±15kV Air, ±8kV contact	A	
Radiated immunity	EN61000-4-3	3 V/m	A	
EFT/burst	EN61000-4-4	2	A	
Surge	EN61000-4-5	Installation Class 3	A	
Conducted	EN61000-4-6	3V	A	
Magnetic fields	EN61000-4-8	3A/m	A	
Dips and interruptions	EN61000-4-11	Dip: 30% 500ms	A/B	High line/low line
		Dip: 60% 200ms	A/B	High line/low line
		Dip: 100% 5000ms	B	
		Int: 100% 10ms	A	

Safety approvals

Certification	Standard	Notes & conditions
UL	UL60950-1, IEC62368-1	
EN	EN60950-1, EN62368-1	
CB	IEC60950-1	
AU/NZ	AU/NZ 60950.1	
CCC	China Compulsory Certification, GB4943	
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

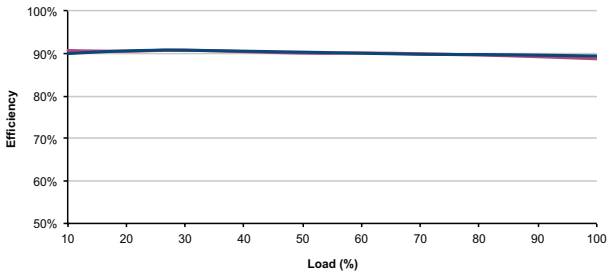
VES90 series

Derating curve

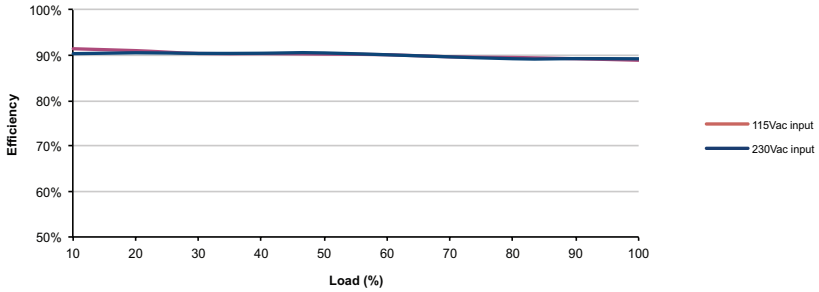


Efficiency curve

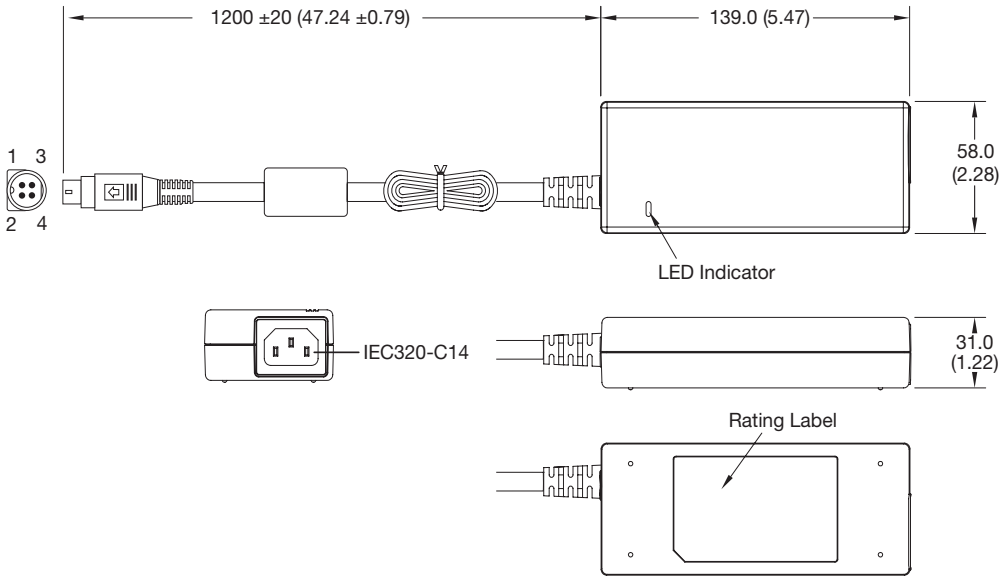
VES90US12



VES90US24



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