

## VEP Series



GREEN XP POWER

- Efficiency Efficiency Level V (24 W Level IV)
- CEC2008 & EISA 2007 Compliant
- IT & Medical Approvals
- Interchangeable Input Connectors
- Output Voltages from 5 V to 24 V Available
- Class II Construction
- Low Cost

## Specification

## Input

Input Voltage	<ul style="list-style-type: none"> <li>• 8 &amp; 15W: 80-264 VAC</li> <li>• 24 W: 80-264 VAC, derate output power 25% &lt;90 VAC</li> <li>• 36 W: 90-264 VAC</li> </ul>
Input Frequency	<ul style="list-style-type: none"> <li>• 47-63 Hz</li> </ul>
Input Current	<ul style="list-style-type: none"> <li>• 8 W: 0.3 A max at 90 VAC</li> <li>• 15 W: 0.5 A max at 90 VAC</li> <li>• 24 W: 0.6 A max at 90 VAC</li> <li>• 36 W: 0.9 A max at 90 VAC</li> </ul>
Inrush Current	<ul style="list-style-type: none"> <li>• 70 A max at 230 VAC, cold start at 25 °C</li> </ul>
Power Factor	<ul style="list-style-type: none"> <li>• EN61000-3-2, class A</li> </ul>
No Load Input Power	<ul style="list-style-type: none"> <li>• &lt;0.3 W</li> </ul>

## Output

Output Voltage	<ul style="list-style-type: none"> <li>• See tables</li> </ul>
Initial Set Accuracy	<ul style="list-style-type: none"> <li>• <math>\pm 5\%</math> at 50% load</li> </ul>
Minimum Load	<ul style="list-style-type: none"> <li>• No minimum load required</li> </ul>
Start Up Delay	<ul style="list-style-type: none"> <li>• 2 s typical</li> </ul>
Start Up Rise Time	<ul style="list-style-type: none"> <li>• 8 &amp; 15 W: 100 ms typical,</li> <li>• 24 &amp; 36 W: 50 ms typical</li> </ul>
Hold Up Time	<ul style="list-style-type: none"> <li>• 5 ms typical at full load and 115 VAC</li> </ul>
Line Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 0.5\%</math> max</li> </ul>
Load Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 5\%</math> max</li> </ul>
Transient Response	<ul style="list-style-type: none"> <li>• 4% max. deviation, recovery to &lt;1% within 500 <math>\mu</math>s for a 50% step load change at 0.2 A/<math>\mu</math>s</li> </ul>
Ripple & Noise	<ul style="list-style-type: none"> <li>• See tables</li> </ul>
Overvoltage Protection	<ul style="list-style-type: none"> <li>• See tables</li> </ul>
Overload Protection	<ul style="list-style-type: none"> <li>• 120-280%</li> </ul>
Short Circuit Protection	<ul style="list-style-type: none"> <li>• Trip and restart (hiccup mode)</li> </ul>
Temperature Coefficient	<ul style="list-style-type: none"> <li>• 0.2 %/°C</li> </ul>

## General

Efficiency	<ul style="list-style-type: none"> <li>• See tables</li> </ul>
Energy Efficiency	<ul style="list-style-type: none"> <li>• Level V</li> <li>• Level IV (24 W versions)</li> </ul>
Isolation	<ul style="list-style-type: none"> <li>• 8 - 24 W: 4000 VAC Input to Output,</li> <li>• 36 W: 3000 VAC Input to Output</li> </ul>
Switching Frequency	<ul style="list-style-type: none"> <li>• 8 &amp; 15 W: 132 kHz typical,</li> <li>• 24 &amp; 36 W: 65 kHz typical</li> </ul>
MTBF	<ul style="list-style-type: none"> <li>• 8 - 24 W: 250 kHrs, 36 W: 200 kHrs to MIL-HDBK-217F at 25°C, GB</li> </ul>

## Environmental

Operating Temperature	<ul style="list-style-type: none"> <li>• 0 °C to +40 °C</li> </ul>
Cooling	<ul style="list-style-type: none"> <li>• Natural convection</li> </ul>
Operating Humidity	<ul style="list-style-type: none"> <li>• 5-95% RH, non-condensing</li> </ul>
Storage Temperature	<ul style="list-style-type: none"> <li>• -20 °C to +60 °C</li> </ul>
Shock	<ul style="list-style-type: none"> <li>• Able to survive 1 m drop onto concrete on each of 6 axes</li> </ul>
Vibration	<ul style="list-style-type: none"> <li>• 10-300 Hz, 1 g 15 mins/sweep. 30 mins for each of 3 axes</li> </ul>

## EMC &amp; Safety

Emissions	<ul style="list-style-type: none"> <li>• EN55022, class B conducted &amp; radiated</li> </ul>
Harmonic Currents	<ul style="list-style-type: none"> <li>• EN61000-3-2, class A</li> </ul>
Voltage Flicker	<ul style="list-style-type: none"> <li>• EN61000-3-3</li> </ul>
ESD Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-2, <math>\pm 4</math> kV contact, <math>\pm 8</math> kV air, Perf Criteria A</li> </ul>
Radiated Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-3, 3 V/m, Perf Criteria A</li> </ul>
EFT/Burst	<ul style="list-style-type: none"> <li>• EN61000-4-4, level 2, Perf Criteria A</li> </ul>
Surge	<ul style="list-style-type: none"> <li>• EN61000-4-5, installation class 3, Perf Criteria A</li> </ul>
Conducted Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-6, 3 V, Perf Criteria A</li> </ul>
Magnetic Field	<ul style="list-style-type: none"> <li>• EN61000-4-8, 1 A/m, Perf Criteria A</li> </ul>
Dips & Interruptions	<ul style="list-style-type: none"> <li>• EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms, Perf Criteria A, B, B</li> </ul>
Safety Approvals	<ul style="list-style-type: none"> <li>• 8 &amp; 15 W: EN60950-1, cUL60950-1, IEC60950-1, EN60601-1, cUL60601-1, IEC60601-1;</li> <li>• 24 W: EN60950-1, cCSAus60950-1, IEC60950-1, CSA60950-01-03, cCSAus60601-1, UL60601-1, IEC60601-1, CSA C22.2 No601.1,</li> <li>• 36 W: IEC60950-1, EN60950-1, UL60950-1</li> </ul>

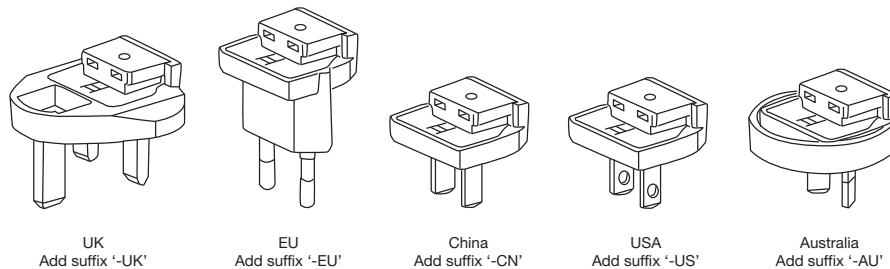
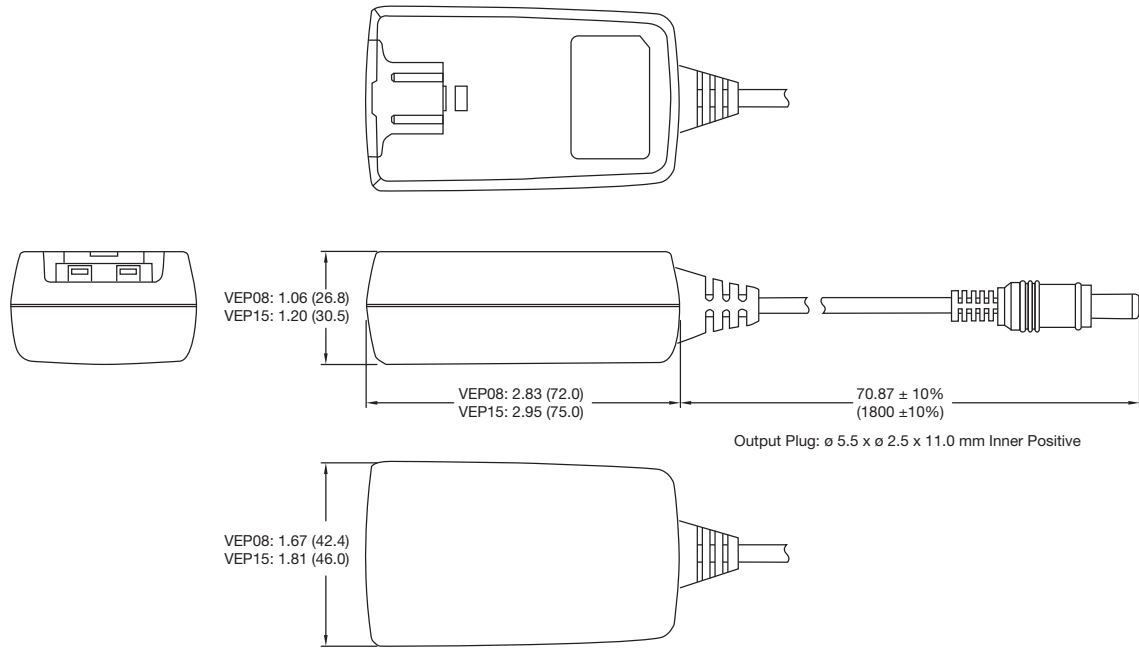
**Models and Ratings**

Output Power	Output Voltage <sup>(2)</sup>	Output Current	Ripple & Noise <sup>(1)</sup>	Oversvoltage Trip <sup>(5)</sup>	Efficiency <sup>(4)</sup>	Model Number <sup>(3)</sup>
8.0 W	5.0 V	1.60 A	150 mV	10.0 V	74%	VEP08US05
8.0 W	9.0 V	0.88 A	200 mV	18.0 V	77%	VEP08US09
8.0 W	12.0 V	0.66 A	200 mV	20.0 V	77%	VEP08US12
8.0 W	15.0 V	0.53 A	200 mV	25.0 V	78%	VEP08US15
10.0 W	5.0 V	2.00 A	50 mV	9.0 V	75%	VEP15US05
12.6 W	9.0 V	1.40 A	100 mV	15.0 V	80%	VEP15US09
15.0 W	12.0 V	1.25 A	100 mV	20.0 V	82%	VEP15US12
15.0 W	15.0 V	0.90 A	150 mV	25.0 V	84%	VEP15US15
15.0 W	24.0 V	0.63 A	200 mV	35.0 V	83%	VEP15US24

**Notes**

1. Measured at end of DC output lead using 20 MHz bandwidth and 0.1  $\mu$ F ceramic capacitor in parallel with 10  $\mu$ F electrolytic capacitor placed at connector terminals.
2. VEP08 models: Other voltages between 3.0 V and 18.0 V are available on request, consult sales for details.  
VEP15 models: Other voltages between 3.0 V and 24.0 V are available on request, consult sales for details.
3. A suffix denoting the type of mains plug required must be added to the part number. See below.
4. Efficiency given is the average of efficiencies measured with output loads of 25%, 50%, 75% and 100%.
5. VEP08 models: Typical trip point, VEP15 models: Maximum trip point.

**Mechanical Details**



**Notes**

1. All dimensions in inches (mm). Tolerance is  $\pm 0.04$  ( $\pm 1$ ) maximum, except output cable length.
2. Weight: VEP08 - 0.18 lbs (80 g) approx., VEP15 - 0.26 lbs (120 g) approx.
3. Case material is PC Class 94 V-0
4. Output Lead: UL2468 18-24 AWG
5. Mains plugs can be ordered separately. Part numbers are: VEP PLUG UK, VEP PLUG EU, VEP PLUG CN<sup>^</sup>, VEP PLUG US or VEP PLUG AU<sup>^</sup>

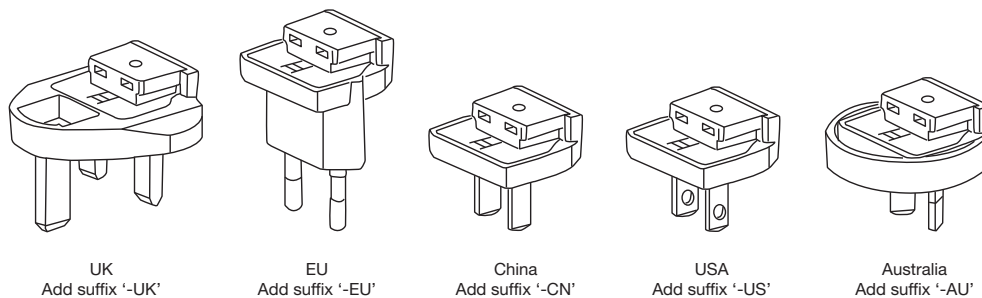
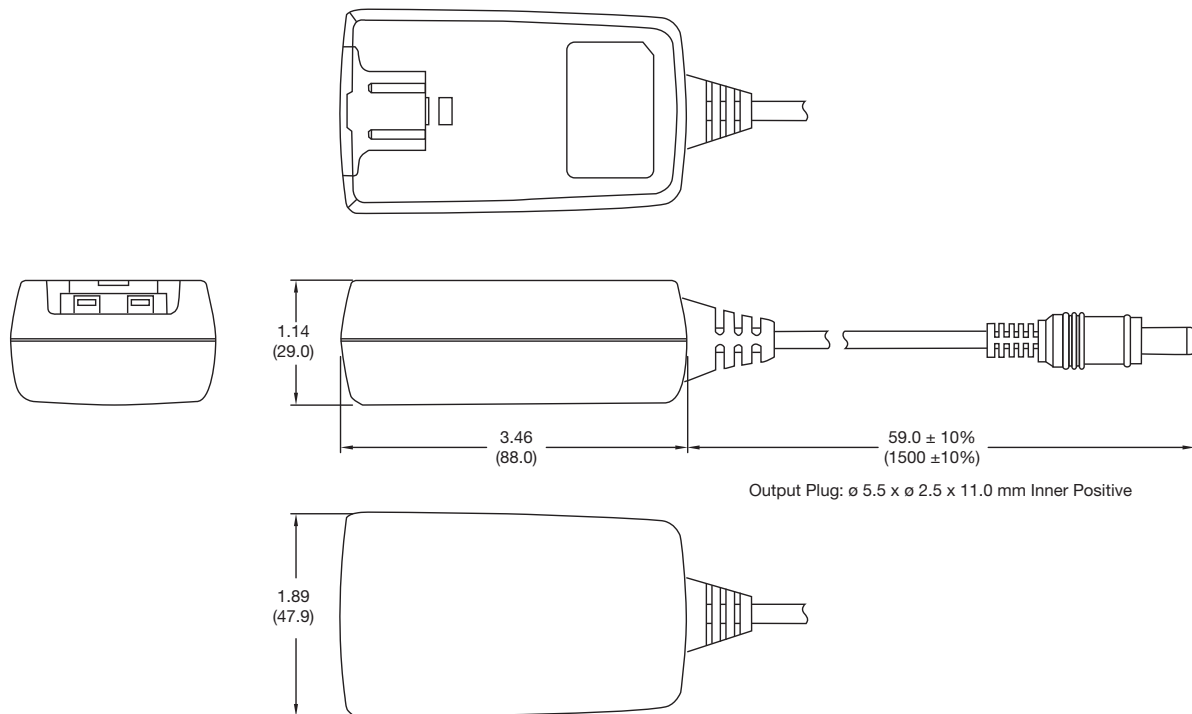
Models and Ratings

Output Power	Output Voltage <sup>(3)</sup>	Output Current	Ripple & Noise <sup>(1)</sup>	Oversvoltage Trip <sup>(5)</sup>	Efficiency <sup>(4)</sup>	Model Number <sup>(2)</sup>
12.5 W	5.0 V	2.5 A	100 mV	10.0 V	73%	VEP24US05
19.8 W	9.0 V	2.2 A	100 mV	18.0 V	77%	VEP24US09
24.0 W	12.0 V	2.0 A	100 mV	20.0 V	78%	VEP24US12
24.0 W	15.0 V	1.6 A	100 mV	25.0 V	78%	VEP24US15
24.0 W	24.0 V	1.0 A	100 mV	35.0 V	78%	VEP24US24

Notes

1. Measured at end of DC output lead using 20 MHz bandwidth and 0.1 μF ceramic capacitor in parallel with 10 μF electrolytic capacitor placed at connector terminals.
2. A suffix denoting the type of mains plug required must be added to the part number. See below.
3. Other voltages between 3.0 V and 24.0 V are available on request, consult sales for details.
4. Efficiency given is the average of efficiencies measured with output loads of 25%, 50%, 75% and 100%.
5. Typical trip point.

Mechanical Details



Notes

1. All dimensions in inches (mm). Tolerance is ±0.04 (±1) maximum, except output cable length
2. Weight: 0.35 lbs (160 g) Approx
3. Case material is PC Class 94 V-0
4. Output Lead: UL2468 18-24 AWG
5. Mains plugs can be ordered separately. Part numbers are: VEP PLUG UK, VEP PLUG EU, VEP PLUG CN, VEP PLUG US or VEP PLUG AU

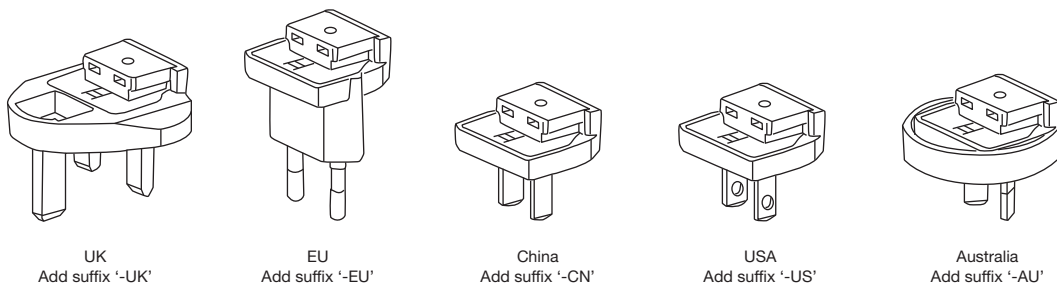
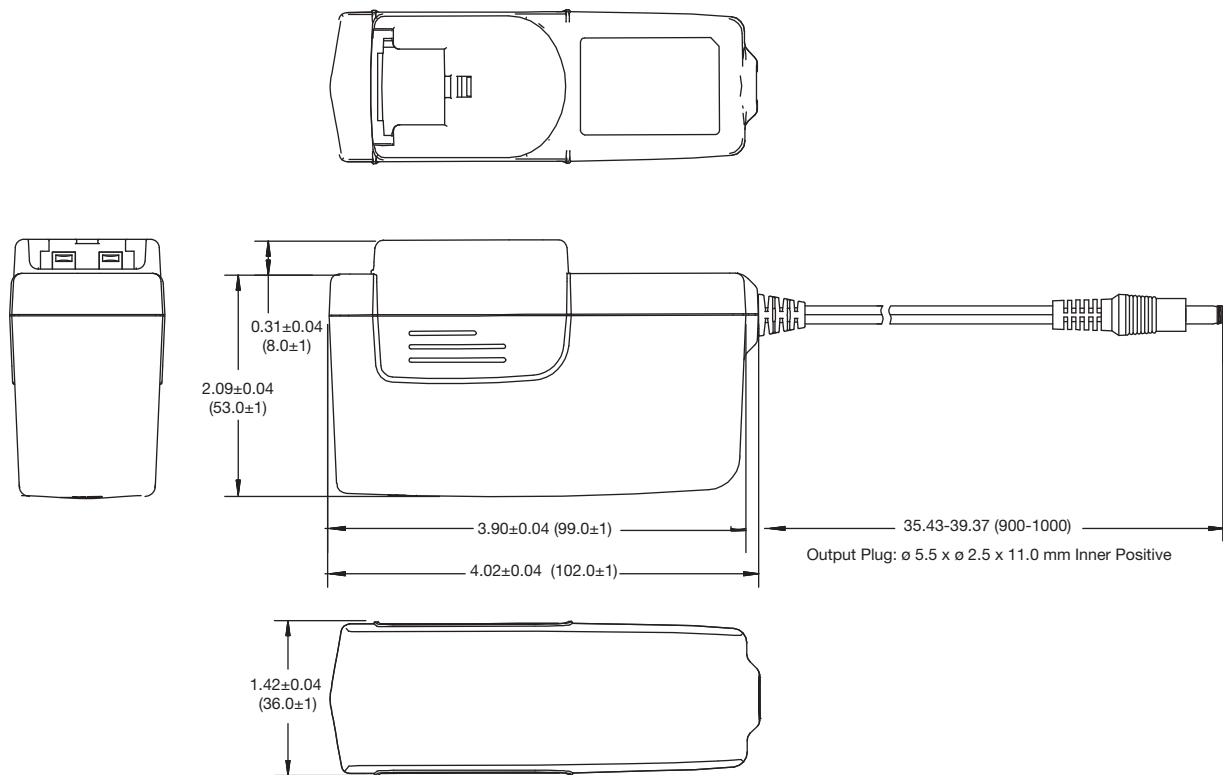
Models and Ratings

Output Power	Output Voltage <sup>(3)</sup>	Output Current	Ripple & Noise <sup>(1)</sup>	Oversvoltage Trip <sup>(4)</sup>	Efficiency <sup>(3)</sup>	Model Number <sup>(2)</sup>
27 W	9.0 V	3.0 A	200 mV	25.0 V	82%	VEP36US09
36 W	12.0 V	3.0 A	200 mV	28.0 V	84%	VEP36US12
36 W	15.0 V	2.4 A	200 mV	28.0 V	84%	VEP36US15
36 W	24.0 V	1.5 A	200 mV	42.0 V	84%	VEP36US24

Notes

1. Measured at end of DC output lead using 20 MHz bandwidth and 0.1 μF ceramic capacitor in parallel with 10 μF electrolytic capacitor placed at connector terminals.
2. A suffix denoting the type of mains plug required must be added to the part number. See below.
3. Efficiency given is the average of efficiencies measured with output loads of 25%, 50%, 75% and 100%.
4. Typical trip point.

Mechanical Details



Notes

1. All dimensions in inches (mm). Tolerance is ±0.04 (±1) maximum, except output cable length
2. Weight: 0.57 lbs (260 g) Approx
3. Case material is PC Class 94 V-0
4. Output Lead: UL2468 18-24 AWG
5. Mains plugs can be ordered separately. Part numbers are: VEP PLUG UK, VEP PLUG EU, VEP PLUG CN, VEP PLUG US or VEP PLUG AU