

# 60 Watts

## VEH Series



- Energy Efficiency Level V,  $\geq 15$  V
- CEC 2008 & EISA 2007 Compliant
- China Compulsory Certification (CCC) Qualified
- Single Outputs from 12 V to 30 V
- Optional Inlet Connectors
- No Load Input Power  $< 0.5$  W
- High Power Density

### Specification

#### Input

Input Voltage	• 90-264 VAC
Input Frequency	• 47-63 Hz
Input Current	• 1.7 A max
Inrush Current	• 50 A max at 230 VAC, cold start at 25 °C
Earth Leakage Current	• $< 1$ mA at 240 VAC/50 Hz
Power Factor	• EN61000-3-2, class A
No Load Input Power	• $< 0.5$ W
Input Protection	• Internal T3.15A/250 V fuse in line

#### Output

Output Voltage	• See table
Initial Set Accuracy	• $\pm 5\%$ at 50% load
Minimum Load	• No minimum load requirement
Hold Up Time	• 8 ms min at 115 VAC, full load
Start Up Delay	• 3 s max
Start Up Rise Time	• 8 ms typical
Transient Response	• 4% maximum deviation, recovering to less than 1% within 500 $\mu$ s for a 50% step load change
Line Regulation	• $\pm 0.5\%$ max
Load Regulation	• $\pm 5\%$ max
Ripple & Noise	• 200 mv pk-pk max, 20 MHz bandwidth (see note 1)
Overvoltage Protection	• See table
Overload Protection	• 110 -180%
Short Circuit Protection	• Continuous (hiccup/trip & restart mode with auto recovery)
Temperature Coefficient	• $\pm 0.04\%/^{\circ}\text{C}$

#### General

Efficiency	• See table
Energy Efficiency	• Level V $\geq 15$ V
Isolation	• 3000 VAC Input to Output, 1500 VAC Input to Ground.
Switching Frequency	• 60 kHz $\pm 10$ kHz
MTBF	• $> 250$ kHrs to Bell Core iss. 6

#### Environmental

Operating Temperature	• 0 °C to +60 °C derate linearly from 100% load at +40 °C to 50% load at +60 °C
Storage Temperature	• -20 °C to +85 °C
Operating Humidity	• 5% to 90% RH non-condensing
Storage Humidity	• 5% to 95% RH non-condensing
Shock	• 6 random drops from 0.7 m with no damage, 50 g for 20 ms in each of 3 axes
Vibration	• 2 g variable frequency from 20 Hz to 30 Hz

#### EMC & Safety

Emissions	• EN55022, level B conducted & radiated
Harmonic Currents	• EN61000-3-2 class A
Voltage Flicker	• EN61000-3-3
ESD Immunity	• EN61000-4-2, level 3 Perf Criteria A
Radiated Immunity	• EN61000-4-3, 3 V/m Perf Criteria A
EFT/Burst	• EN61000-4-4, level 3 Perf Criteria A
Surge	• EN61000-4-5, installation class 3, Perf Criteria B
Conducted Immunity	• EN61000-4-6, level 2 Perf Criteria A
Magnetic Field	• EN61000-4-8, 3 A/m Perf Criteria A
Dips & Interruptions	• EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms Perf Criteria A, B, B
Safety Approvals	• IEC60950-1, EN60950-1, UL/cUL60950-1, China Compulsory Certification (CCC) qualified, Approved as Limited Power Source

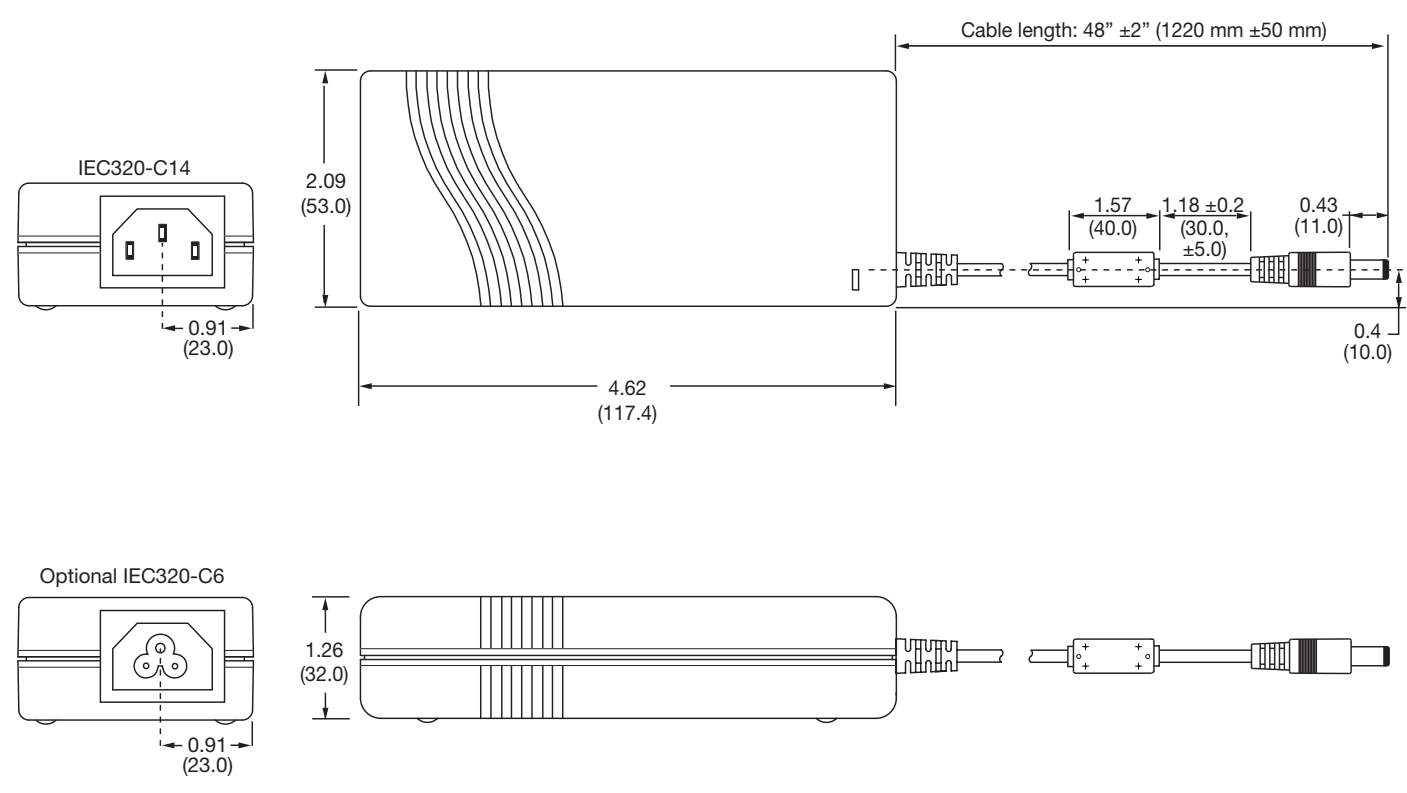
## Models and Ratings

Output Power	Output Voltage <sup>(5)</sup>	Output Current	OVP Setting <sup>(2)</sup>	Efficiency <sup>(6)</sup>	Model Number <sup>(4)</sup>
60 W	12.0 V	5.00 A	16.0 V	85%	VEH60US12†^
60 W	15.0 V	4.00 A	18.0 V	87%	VEH60US15 <sup>(6)</sup> †^
60 W	19.0 V	3.16 A	25.0 V	87%	VEH60US19 <sup>(6)</sup>
60 W	24.0 V	2.50 A	30.0 V	87%	VEH60US24 <sup>(6)</sup> †^
60 W	30.0 V	2.00 A	36.0 V	87%	VEH60US30 <sup>(6)</sup>

### Notes

1. Measured at the output connector with a 0.1 μF ceramic capacitor and a 10 μF electrolytic capacitor.
2. Typical values.
3. Average of efficiencies measured at 25%, 50%, 75% and 100% load and 230 VAC input.
4. For optional IEC320-C6 input connector, add suffix 'C6' to end of the part number, e.g. VEH60US24C6. Contact sales for details.
5. Other voltages between 12 V and 30 V available on request, contact sales for details.
6. Energy Efficiency Level V.

## Mechanical Details



**Power Cord for C14 inlet, Order Part:**  
 UK - UK-MAINS-IEC  
 European - EU-MAINS-IEC  
 US - US-MAINS-IEC

**Power Cord for C6 inlet, Order Part:**  
 UK - UK-MAINS-5  
 European - EU-MAINS-5  
 US - US-MAINS-5

### Notes

1. All dimensions are shown in inches (mm), Tolerance is 0.04" (±1.0) max except output lead.
2. Weight: 0.76 lbs (345 g) approx.
3. Output connector is barrel type with 11 mm length, 5.5 mm dia. outer, 2.5 mm dia. inner with center + and outer shell - polarity.
4. Optional output connectors available.