

VEH Series



- Energy Efficiency Level V
- CEC 2008 & EISA 2007 Compliant
- No Load Input Power <0.3 W
- 5000 m Operating Altitude
- Single Outputs from 12 V to 24 V
- +60 °C Operating Temperature
- Low Cost

Specification

Input

Input Voltage	• 90-264 VAC
Input Frequency	• 47-63 Hz
Input Current	• 2.0 A max at 90 VAC
Inrush Current	• 110 A max at 230 VAC, cold start at 25 °C
Earth Leakage Current	• <500 µA at 230 VAC/50 Hz
Power Factor	• >0.95 at 230 VAC and full load
No Load Input Power	• <0.3 W
Input Protection	• Internal T3.15A/250 V fuse in line

Output

Output Voltage	• See table
Initial Set Accuracy	• ±5% at 50% load
Minimum Load	• No minimum load requirement
Hold Up Time	• 20 ms typical at 115 VAC, full load
Start Up Delay	• 3 s max
Start Up Rise Time	• 60 ms max
Overshoot	• 3% max
Transient Response	• 4% maximum deviation, recovering to less than 1% within 500 µs for a 50% step load change
Line Regulation	• ±0.5% max
Load Regulation	• 3% max
Ripple & Noise	• 1% pk-pk max, 20 MHz bandwidth (see note 1)
Overshoot Protection	• See table
Overload Protection	• 130-180%
Short Circuit Protection	• Continuous (hiccup/trip & restart mode with auto recovery)
Temperature Coefficient	• ±0.04%/°C

General

Efficiency	• See table
Energy Efficiency	• Level V
Isolation	• 3000 VAC Input to Output, 1500 VAC Input to Ground Negative output is connected to Ground
Switching Frequency	• PFC: 38-380 kHz, PWM: 47-70 kHz
Power Density	• 4.3 W/in ³
MTBF	• >145 kHrs to MIL STD 217F at 25 °C GB

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
Shock	• 6 Random drops from 0.7 m with no damage, 50 g for 20 ms in each of 3 axes
Operating Altitude	• 5000 m
Vibration	• Operating: 10-250 Hz, 1/4 g pk-pk, 3 axes, 15 min sweep Non Operating: 10-300 Hz, 2 g pk-pk, 3 axes, 15 min sweep
Storage Humidity	• 5% to 95% RH non-condensing

EMC & Safety

Emissions	• EN55022, level B conducted & radiated
Harmonic Currents	• EN61000-3-2 class A, EN61000-3-2 class C >60% load
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 2 Perf Criteria A
Surge	• EN61000-4-5, installation class 3, Perf Criteria A
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	• EN60950-1, UL/cUL60950-1

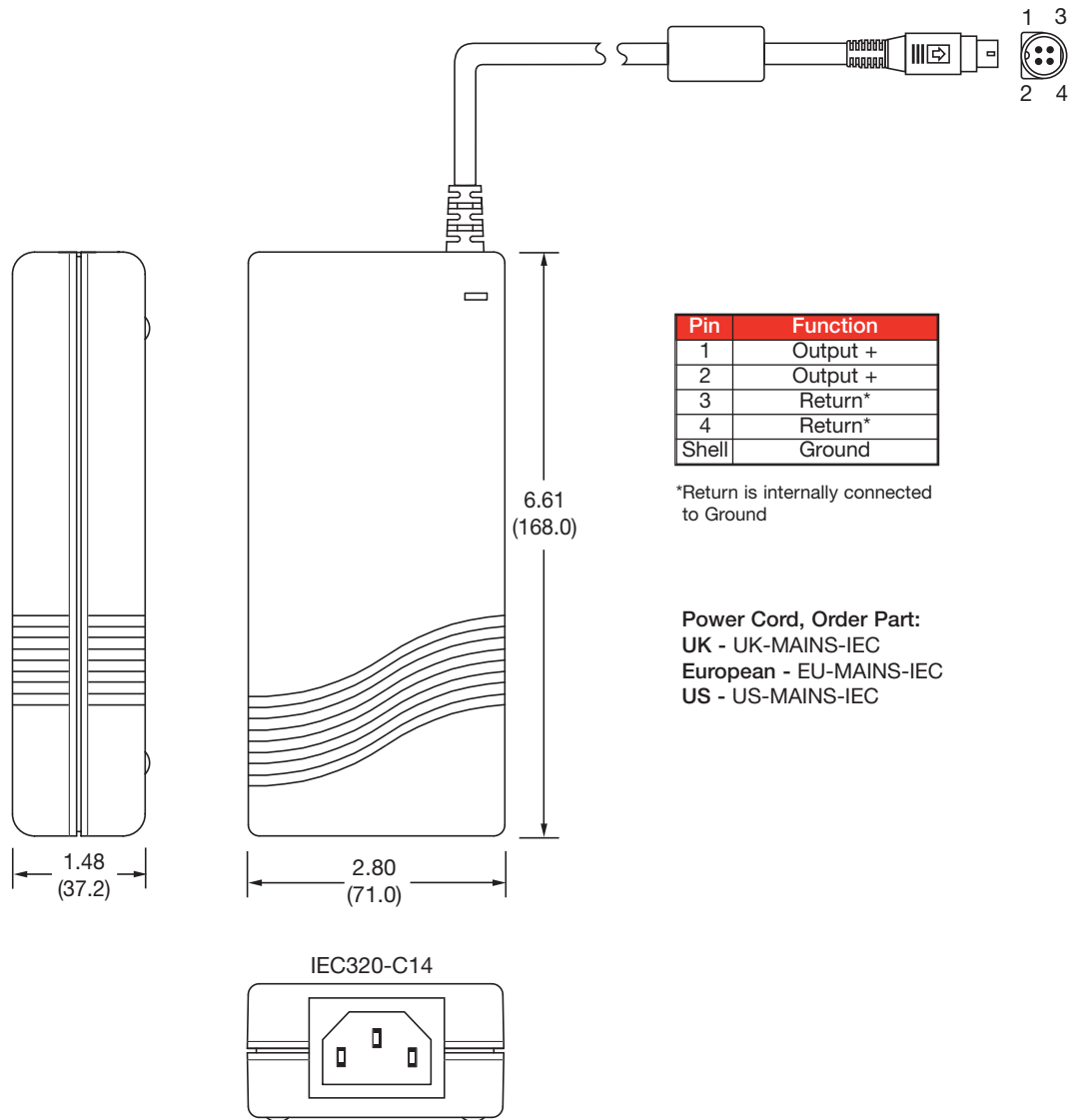
Models and Ratings

Output Power	Output Voltage	Output Current	OVP Setting ⁽²⁾	Efficiency ⁽³⁾	Model Number ⁽⁴⁾
120 W	12.0 V	10.00 A	16.0 V	89%	VEH120PS12
120 W	19.0 V	6.315 A	26.0 V	89%	VEH120PS19
120 W	24.0 V	5.00 A	32.0 V	90%	VEH120PS24

Notes

1. Measured at the output connector with a 0.1 μ F ceramic capacitor and a 10 μ F electrolytic capacitor at room temperature.
2. Typical values.
3. Average of efficiencies measured at 25%, 50%, 75% and 100% load and 230 VAC input.

Mechanical Details



Notes

1. All dimensions shown in inches (mm). Tolerance is 0.02 (0.5) maximum, except output cable length.
2. Weight 1.57 lbs (710 g) approx.
3. Cable length is 47.2" \pm 0.8" (1200 \pm 20 mm) approx.
4. Output connector (Power Mini Din) mates with Kycon KPJ-4S or equivalent.