

## AFE220 Series



- Energy Efficiency Level V
- CEC2008, EISA2007 & ErP Compliant
- High Power Density
- Single Outputs from 12 V to 48 V
- High Efficiency
- Low Earth Leakage Current
- 3 Year Warranty

## Specification

## Input

Input Voltage	• 90-264 VAC
Input Frequency	• 47-63 Hz
Input Current	• 2.1 A rms at 115 VAC, 1.1 A rms at 230 VAC
Inrush Current	• 110 A typical at 115 VAC, cold start +25 °C
Power Factor	• 0.95 typical at full load, 230 VAC
Earth Leakage Current	• 400 µA max at 264 VAC, 60 Hz
Input Protection	• Internal T4 A/250 V fuse
Standby Power Consumption	• <0.5 W

## Output

Output Voltage	• See table
Output Voltage Trim	• Not user-adjustable
Initial Set Accuracy	• ±2% maximum at 100% load
Minimum Load	• No minimum load required
Start Up Delay	• 3 s maximum at 100 VAC
Hold Up Time	• 5 ms minimum at 100 VAC
Line Regulation	• ±0.5% maximum
Load Regulation	• See table
Transient Response	• 4% max. deviation, recovery to within 1% in 500 µs for a 25% load change
Ripple & Noise	• 2% max pk-pk (see note 1)
Overvoltage Protection	• 110-140% Vnom, recycle input to reset
Overtemperature Protection	• Unit shuts down, auto recovery
Overload Protection	• 110-150%, auto recovery
Short Circuit Protection	• Trip and restart (Hiccup mode)
Temperature Coefficient	• 0.04%/°C maximum

## General

Efficiency	• See table
Energy Efficiency	• Level V
Isolation	• 3000 VAC Input to Output 1500 VAC Input to Ground Output return is electrically connected to Input Earth
Switching Frequency	• PFC: 40 kHz typical PWM: 120-160 kHz
Power Density	• 5.0 W/In <sup>3</sup>
MTBF	• >100 kHrs to MIL-HDBK-217F at 25 °C, GB

## Environmental

Operating Temperature	• 0 °C to 60 °C, derate from 100% power at 40 °C to 50% power at 60 °C
Operating Humidity	• 10-95% RH, non-condensing
Storage Temperature	• -20 °C to +80 °C
Operating Altitude	• 3000 m
Shock	• 30 g, 10 ms on 3 axes
Vibration	• 5-100 Hz, 2.31 m/s <sup>2</sup> , 20 mins, 3 axes

## EMC &amp; Safety

Emissions	• EN55022, Class B conducted EN55022, Class B radiated
Harmonic Currents	• EN61000-3-2, Class A
Voltage Flicker	• EN61000-3-3
ESD Immunity	• EN61000-4-2, ±8 kV contact, ±15 kV air discharge 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 A
Conducted Immunity	• EN61000-4-6, 3 Vrms Perf Criteria A
Magnetic Field	• EN61000-4-8, 1 A/m Perf Criteria A
Dips & Interruptions	• EN55024, 100% for 10 ms, 30% 500 ms, 100% 5000 ms, Perf Criteria A, A, B High line, A,B,B Low line
Safety Approvals	• EN60950-1, UL60950-1, CSA22.2 No. 60950-1 per cUL, CE Mark

**Models and Ratings**

Output Power	Output Voltage	Output Current	Total Regulation <sup>(2)</sup>	Efficiency <sup>(4)</sup>	Model Number
180 W	12 V	15.00 A	5%	90%	AFE220PS12 <sup>(3)</sup>
220 W	19 V	11.57 A	5%	91%	AFE220PS19
220 W	24 V	9.16 A	5%	91%	AFE220PS24
220 W	48 V	4.58 A	5%	93%	AFE220PS48

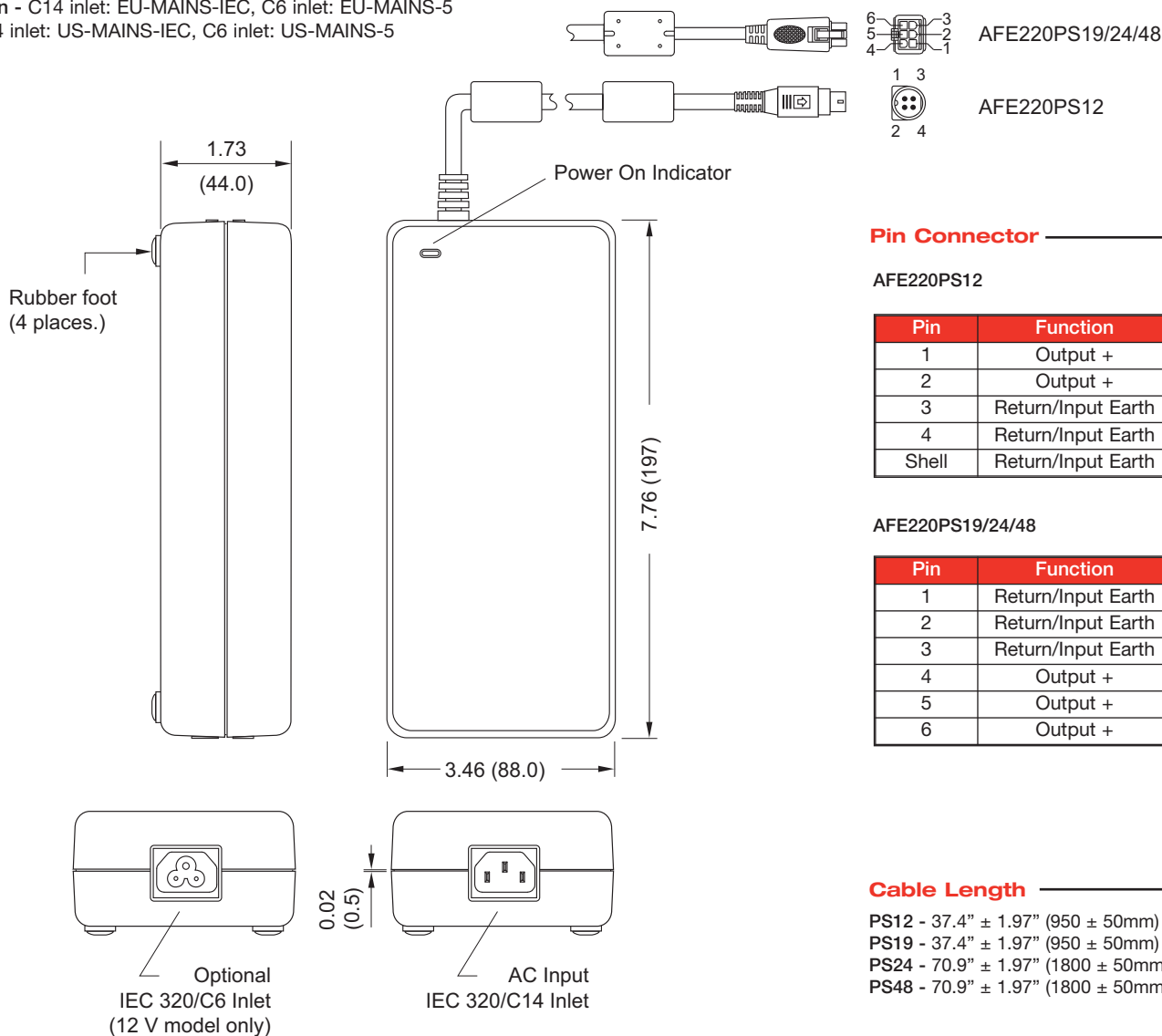
**Notes**

1. Ripple and noise measured at 20 MHz bandwidth with a 47 μF tantalum and 0.1 μF ceramic cap connected at the measurement point.
2. Total regulation includes initial set accuracy, line and load regulation.
3. For optional IEC320-C6 input connector, add suffix ' C6' to end of part number (Available on 12 V model only).
4. Average of efficiencies measured at 25%, 50%, 75% and 100% load and 230 VAC input.

**Mechanical Details**

**Mains Leads Order Part:**

- UK - C14 inlet: UK-MAINS-IEC, C6 inlet: UK-MAINS-5
- European - C14 inlet: EU-MAINS-IEC, C6 inlet: EU-MAINS-5
- US - C14 inlet: US-MAINS-IEC, C6 inlet: US-MAINS-5



**Pin Connector**

**AFE220PS12**

Pin	Function
1	Output +
2	Output +
3	Return/Input Earth
4	Return/Input Earth
Shell	Return/Input Earth

**AFE220PS19/24/48**

Pin	Function
1	Return/Input Earth
2	Return/Input Earth
3	Return/Input Earth
4	Output +
5	Output +
6	Output +

**Cable Length**

- PS12 - 37.4" ± 1.97" (950 ± 50mm)
- PS19 - 37.4" ± 1.97" (950 ± 50mm)
- PS24 - 70.9" ± 1.97" (1800 ± 50mm)
- PS48 - 70.9" ± 1.97" (1800 ± 50mm)

**Notes**

1. Dimensions shown in inches (mm). Tolerance is 0.02 (0.5) maximum, except output cable length.
2. Weight: 2.31 lb (1050 g).
3. Optional output connectors available. Consult sales.
4. Output connector for AFE220PS12 is non locking 4 pin DC power plug and mates with Kycon KPJX-4S or equivalent. Output connector for AFE220PS19/24/48 is molex Mini-Fit part number 39-01-2060 with 5556 terminals and mates with molex plug 39-01-2066 and 5558 terminals or equivalent.
5. Mains lead length is 76" (1930 mm) approx