



## FSP250M Series

### FEATURES

- Wide input range 80-264 VAC
- Meet Energy Efficiency DOE Level VI
- No load power consumption  $\leq 0.15W$
- High altitude 5000 meters operation

### SAFETY STANDARD APPROVAL



### DESCRIPTION

The FSP250M series are high efficiency desktop adapter with IEC 320/C14 or IEC320/C18 AC inlet, which can deliver 220-250 watts continuous output power. All models meet EN55011 and FCC class B emission limits, and are designed for medical applications.

### INPUT SPECIFICATIONS

Input voltage:	80-264 VAC
Power derating:	Derate linearly from 100% at 90 VAC to 90% at 85VAC and 80% at 80 VAC
Input frequency:	47-63 Hz
Input current:	< 2.5 A (rms) / 115 VAC < 1.25 A (rms) / 230 VAC
Earth leakage current:	< 220 $\mu A$ / 264 VAC, 63 Hz
Touch current:	< 100 $\mu A$ / 264 VAC, 63 Hz

### OUTPUT SPECIFICATIONS

Output voltage/current:	See rating chart
Maximum output power:	See rating chart
Protection:	
Over voltage:	Provided on output. Set at 112% to 140% of its rated output voltage.
Over current:	The power supply will shut down without damage and enter auto-recovery mode.
Over temperature:	The power supply will shut down and latch without damage. AC main power off and on to turn-on power supply again while cooled down.
Temperature coefficient:	All outputs $\pm 0.04\%$ / $^{\circ}C$ maximum
Transient response:	Maximum excursion of 4% or better on all models, recovering to 1% of final value within 500 $\mu s$ after a 25% step load change.

### ENVIRONMENTAL SPECIFICATIONS

Operating temperature:	-20 $^{\circ}C$ to +60 $^{\circ}C$
Storage temperature:	-40 $^{\circ}C$ to +85 $^{\circ}C$
Operating humidity:	10% to 90% RH non-condensing
Storage humidity:	5% to 95% RH non-condensing
Temperature derating:	Derate from 100% at +40 $^{\circ}C$ linearly to 50% at +60 $^{\circ}C$

### GENERAL SPECIFICATIONS

Switching frequency:	50-130 KHz
Power factor:	0.98 Typical at 115 VAC
Efficiency:	See rating chart
Hold-up time:	20 ms minimum at 100 VAC
Line regulation:	$\pm 0.5\%$ maximum at full load
Inrush current:	130 A @ 115 VAC or 260 A @ 230 VAC, at 25 $^{\circ}C$ cold start
Operating altitude :	5000 meters
Withstand voltage:	4000 VAC from input to output (2 MOPP) 1500 VAC from input to ground (1 MOPP) 500 VAC from output to ground (For class-II models, 4000VAC from input to output)
MTBF:	100,000 hours at full load at 25 $^{\circ}C$ ambient , calculated per MIL-HDBK-217F
EMC Performance (IEC60601-1-2)	
EN55011:	Class B conducted, class B radiated
FCC:	Class B conducted, class B radiated
VCCI:	Class B conducted, class B radiated
EN61000-3-2:	Harmonic distortion, Class A and D
EN61000-3-3:	Line flicker
EN61000-4-2:	ESD, $\pm 15$ KV air and $\pm 8$ KV contact
EN61000-4-3:	Radiated immunity, 10 V/m
EN61000-4-4:	Fast transient/burst, $\pm 2$ KV
EN61000-4-5:	Surge, $\pm 1$ KV diff., $\pm 2$ KV com.
EN61000-4-6:	Conducted immunity, 10 Vrms
EN61000-4-8:	Magnetic field immunity, 30 A/m
EN61000-4-11:	Voltage dip immunity, 30% reduction for 500 ms, 60% reduction for 100 ms, and >95% reduction for 10 ms

### OUTPUT VOLTAGE/CURRENT RATING CHART

Model <sup>(1)</sup>		Output						Average Active Efficiency (typical) @ 115 / 230 VAC
Class-I	Class-II	V <sub>o</sub>	Min. Current	Max. Current	Tolerance	Ripple & Noise <sup>(2)</sup>	Max. Power	
FSP250M-KHA	FSP250M-KHD	12 V	0 A	18.34 A	±5%	120 mV	220 W	89% / 89%
FSP250M-KBA	FSP250M-KBD	19 V	0 A	13.16 A	±5%	190 mV	250 W	89% / 89%
FSP250M-KAA	FSP250M-KAD	24 V	0 A	10.42 A	±5%	240 mV	250 W	90% / 90%
FSP250M-KLA	FSP250M-KLD	30 V	0 A	8.34 A	±5%	300 mV	250 W	90% / 90%
FSP250M-KEA	FSP250M-KED	36 V	0 A	6.95 A	±5%	360 mV	250 W	90% / 90%
FSP250M-KFA	FSP250M-KFD	48 V	0 A	5.21 A	±5%	480 mV	250 W	90% / 90%

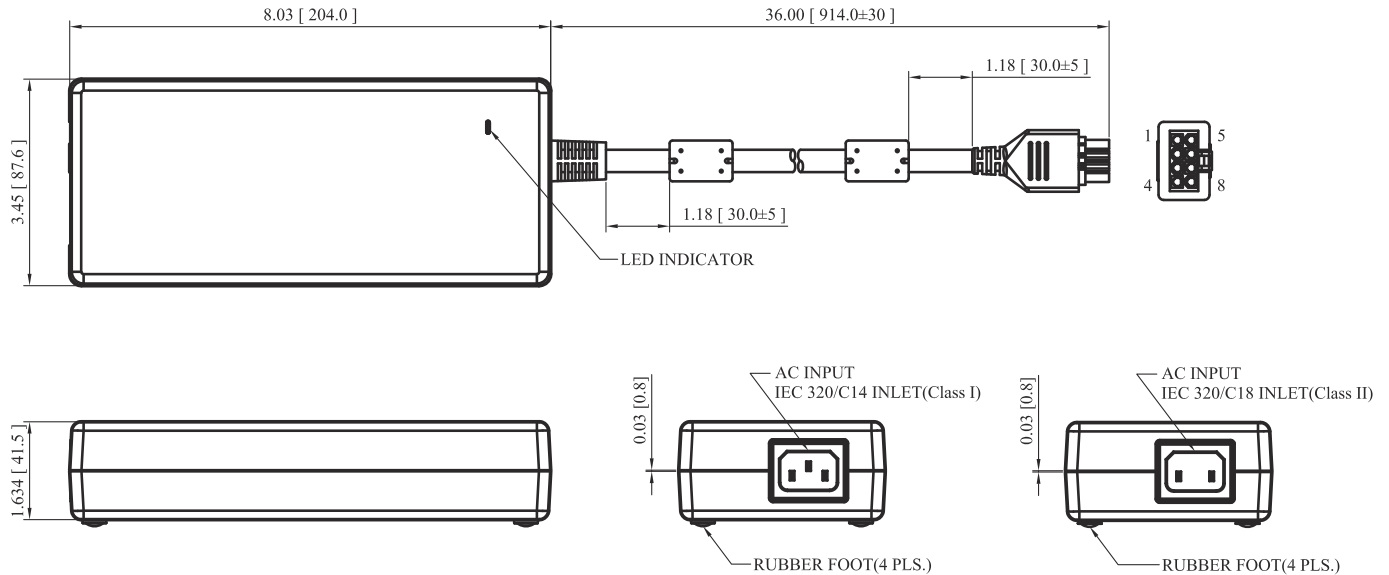
**NOTES:**

1. Class-I models are equipped with IEC320/C14 inlet, and Class-II models with IEC320/C18 inlet.

2. Ripple and noise is maximum peak to peak voltage value measured at output within 20 MHz bandwidth, at rated line voltage and output load ranges, and with a 47 µF electrolytic capacitor in parallel with a 0.1 µF ceramic capacitor across the output.

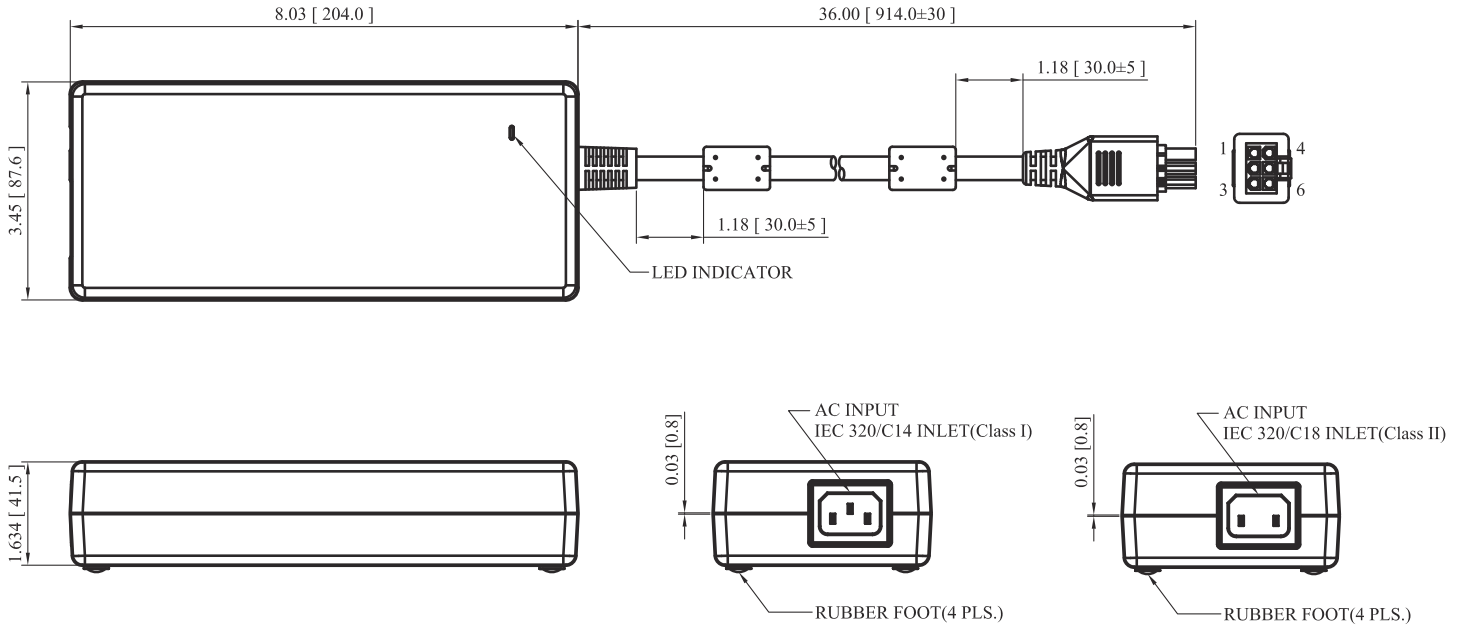
### MECHANICAL SPECIFICATIONS

Output 12 V



### MECHANICAL SPECIFICATIONS

Output 19 V to 48 V



#### NOTES:

Dimensions shown in inches [mm].

Tolerance 0.02 [0.5] maximum.

Output connector is Molex Mini - Fit receptacle, P/N: 39-01-2060 (or P/N: 39-01-2080) with female terminal #5556 or equivalent, mating with Molex plug 39-01-2066 (or P/N: 39-01-2086) and male terminal #5558 or equivalent. It also mates with Molex headers #5566, #5569, or equivalent.

### PIN CHART

Pin No.		1	2	3	4	5	6	7	8
Polarity	Output 12 V	Vo(+)	Return	Return	Return	Vo(+)	Vo(+)	Vo(+)	Return
	Output 19 V to 48 V	Vo(+)	Return	Return	Vo(+)	Vo(+)	Return	-	-