

FSP300M-K36 Series

FEATURES

- Compact size 3 x 6 x 1.38 inches
- Certified medical safety IEC 60601-1
- Low earth leakage current 220 μ A
- High altitude 5000 meters operation
- Power Fail Detect (PFD) signal
- Inhibit – TTL high to disable output
- BF Class insulation
- Meet EN55011 and FCC Class B
- Over voltage protection
- Over current protection
- Compliant with RoHS requirement

SAFETY STANDARD APPROVAL



DESCRIPTION

The FSP300M-K36 series is Class-I design in 3 x 6 inches, AC/DC switching power supplies are capable of delivering 300 watts of continuous output power at 10 CFM forced air cooling or 200 watts at convection cooling. The unit is constructed on a printed circuit board, which could with a L-bracket or enclosed form for mechanical support. All models meet EN55011 and FCC class B emission limits, and are designed for medical applications.

INPUT SPECIFICATIONS

Input voltage:	90-264 VAC
Input frequency:	47-63 Hz
Input current:	< 4.0 A (rms) for 115 VAC < 2.0 A (rms) for 230 VAC
Earth leakage current:	< 220 μ A @ 264 VAC, 63 Hz
Touch current:	< 100 μ 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 nominal output voltage.
Over current:	The power supply will shut down without damage and enter auto-recovery mode.
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 μ s after a 25% step load change.
Fan power:	12 V at 1.0 A maximum (isolated)
Standby power:	5 V at 2.0 A maximum

ENVIRONMENTAL SPECIFICATIONS

Operating temperature:	0 $^{\circ}$ C to +70 $^{\circ}$ 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 +50 $^{\circ}$ C linearly to 50% at +70 $^{\circ}$ C, applicable to convection and forced-air cooling conditions

GENERAL SPECIFICATIONS

Switching frequency:	100 KHz (typical)
Power factor:	0.98 typical
Efficiency:	See rating chart
Turn on delay time:	3 s maximum at 100 VAC
Hold-up time:	10 ms minimum at 110 VAC
Line regulation:	$\pm 0.5\%$ maximum at full load
Inrush current:	20 A @ 115 VAC, or 40 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) 1500 VAC from output to ground
MTBF:	250,000 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, ± 15 KV air and ± 8 KV contact
EN61000-4-3:	Radiated immunity, 10 V/m
EN61000-4-4:	Fast transient/burst, ± 2 KV
EN61000-4-5:	Surge, ± 1 KV diff., ± 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 ⁽¹⁾	Output								Average Active Efficiency (typical) @ 115 / 230 VAC
	V1	Min. Current	Max. Current at convection	Max. Current at 10 CFM	Peak Current ⁽²⁾	Tolerance	Ripple & Noise ⁽³⁾	Max. Power ⁽⁴⁾	
FSP300M-K36-12A	12 V	0 A	16.67 A	25.00 A	30.00 A	±2%	120 mV	200 W / 300 W	89% / 91%
FSP300M-K36-15A	15 V	0 A	13.34 A	20.00 A	24.00 A	±2%	150 mV	200 W / 300 W	89% / 92%
FSP300M-K36-19A	19 V	0 A	10.53 A	15.80 A	18.90 A	±2%	190 mV	200 W / 300 W	89% / 91%
FSP300M-K36-24A	24 V	0 A	8.34 A	12.50 A	14.50 A	±2%	240 mV	200 W / 300 W	89% / 92%
FSP300M-K36-30A	30 V	0 A	6.67 A	10.00 A	11.00 A	±2%	300 mV	200 W / 300 W	89% / 92%
FSP300M-K36-36A	36 V	0 A	5.56 A	8.34 A	9.60 A	±2%	360 mV	200 W / 300 W	89% / 92%
FSP300M-K36-48A	48 V	0 A	4.17 A	6.25 A	7.50 A	±2%	480 mV	200 W / 300 W	90% / 92%

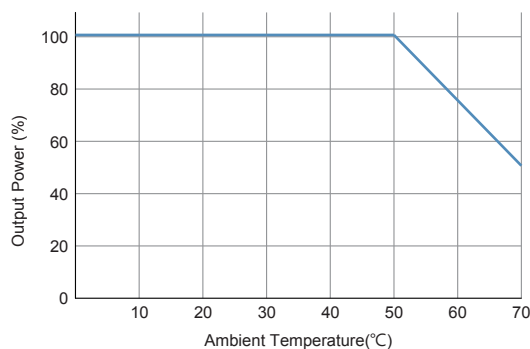
NOTES:

- Suffix "A" in model numbers denotes PCB constructed form. Change suffix "A" to "B" for L-bracket form, e.g. FSP300M-K36-12B. Change "B" to "C" for enclosed form with cover and fan assembly, e.g. FSP300M-K36-12C.
- Peak output current with 10% duty cycle maximum for less than 15 seconds, average power not to exceed maximum power rating.
- 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 10 μ F tantalum capacitor in parallel with a 0.1 μ F ceramic capacitor across the output.
- 200 W of max. output power is at convection cooling, 300 W is with 10 CFM forced air provided by user for "A" and "B" version. 300 W for "C" version with cover and fan assembly.

INTERFACE SIGNALS

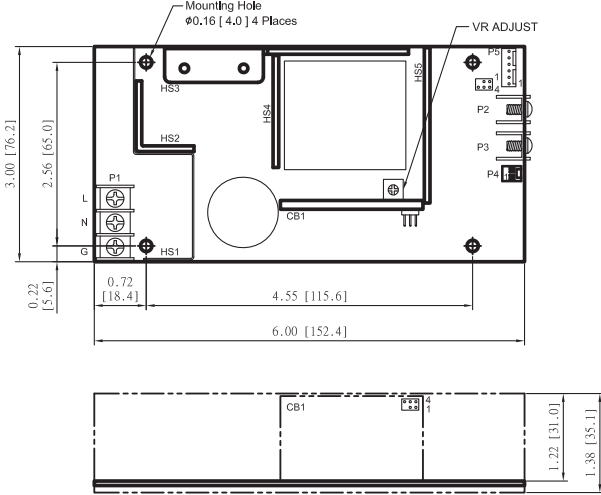
PFD	TTL logic high for normal operation and TTL logic low upon loss of input power. This signal appears at least 1ms prior to V1 output dropping 5% below its nominal value. This signal also provides a minimum delay of 100 ms after V1 is within regulation.
Inhibit	Requires an external TTL high level signal to inhibit outputs.

OUTPUT POWER DERATING CURVE

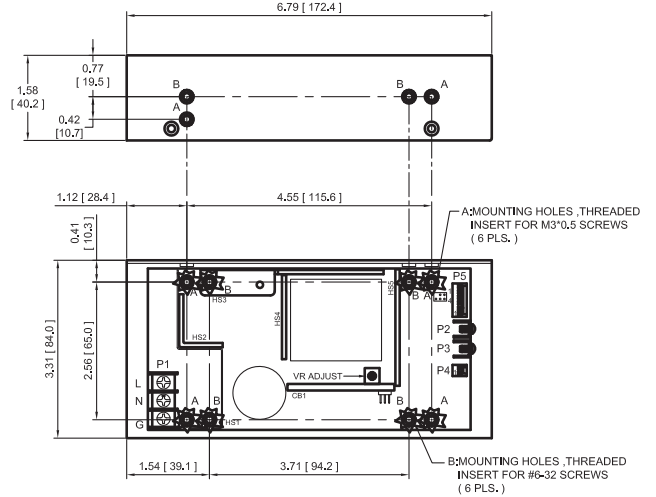


MECHANICAL SPECIFICATIONS

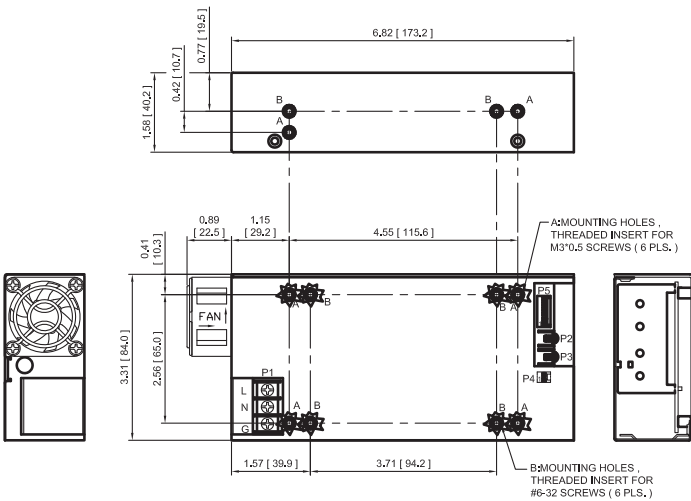
PCB Constructed Form



L-bracket Form



Enclosed Form



NOTES:

1. Dimensions shown in inches [mm].
2. Tolerance 0.02 [0.5] maximum.
3. Input connector P1 is Dinkle DT-35-B01W-03 with M3, nickel-plated screws.
4. Output connector P2 and P3: M3 x 0.5 screw connections.
5. Fan connector P4: Molex header 22-04-1021 or equivalent, mating with Molex housing 22-01-1022 or equivalent.
6. Connectors P5: Molex header 22-04-1061 or equivalent, mating with Molex housing 22-01-1062 or equivalent.
7. Maximum penetration depth of fixing screws is 4 mm from the outer surface of chassis.
8. Weight: 510 grams (1.12 lbs.) approx. for PCB form, 612 grams (1.35 lbs.) approx. for L-bracket form, 744 grams (1.64 lbs.) approx. for enclosed form.

PIN CHART

Connector	P1			P2	P3	P4	
	Pin No.	1	2			3	1
Polarity	Live	Neutral	Ground	+V1	Common Return	+12V Fan (isolated)	Fan Return (isolated)

Connector	P5					
Pin No.	1	2	3	4	5	6
Polarity	-Sense	+Sense	PFD	Inhibit	+5V/+12V Standby	Common Return