DESCRIPTION

This FSP202 series of AC-DC switching power supplies in a package of 3 x 5 x 1.5 inches are high efficiency design and capable of delivering 200 watts of continuous power at 5.3 CFM forced air cooling or 150 watts at convection cooling. The units are constructed on a printed circuit board with a U-bracket for mechanical support and heat sinking. They are design for information technology and industrial applications.

FSP202 SERIES

RoHS

FEATURES

- Low inrush current
- Low leakage current
- OVP, OCP, OTP protection
- Power failed indication (PFD)
- Output inhibit control
- 12V fan driver at 250mA
- Fast-on grounding pin

SAFETY STANDARD APPROVAL

UL 60950-1, CSA C22.2 No. 60950-1

TÜV EN 60950-1

INPUT SPECIFICATIONS

Input voltage:	90-264 VAC
Input frequency:	47-63 Hz
Input current:	2.5 A (rms) for 115 VAC 1.25 A (rms) for 230 VAC
Earth leakage current:	220 μA max. @ 264 VAC, 63 Hz

OUTPUT SPECIFICATIONS

Output voltage/current:	See rating chart.
Total output power:	See rating chart.
Ripple and noise:	1% peak to peak maximum
Protection:	
OVP	Latch off
OCP & Shorted	Auto recovery
OTP	Latch off
Temperature coefficient:	All outputs ±0.04% /℃ maximum
Transient response:	Maximum excursion of 4% or better on all models, recovering to 1% of final value within 500 us after a 25% step load change
Fan power:	12 V at 250 mA maximum

ENVIRONMENTAL SPECIFICATIONS

Operating temperature:	0℃ to +70℃
Storage temperature:	-20℃ to +85℃
Relative humidity:	5% to 95% non-condensing
Derating:	Derate from 100% at +50℃ linearly to 50% at +70℃, applicable to convection and forced-air cooling conditions

GENERAL SPECIFICATIONS

Switching frequency:	100 KHz (typical)
Power Factor:	0.98 typical
Efficiency:	See rating chart.
Hold-up time:	10 ms minimum at 110 VAC
Line regulation:	±0.5% maximum at full load
Inrush current:	20 A @ 115 VAC or 40 A @ 230 VAC, at 25℃ cold start
Withstand voltage:	3000 VAC from input to output, 1500 VAC from input to ground, 500 VAC from output to ground
MTBF:	300,000 hours at full load at 25℃ ambient, calculated per MIL-HDBK-217F

EMC Performance

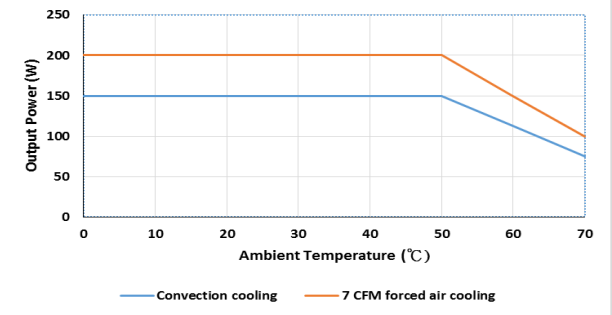
EN55022 / EN55032	Class B conducted, class B radiated
FCC:	Class B conducted, class B radiated
VCCI:	Class B conducted, class B radiated
EN61000-3-2:	Harmonic distortion, class A and D
EN61000-3-3:	Line flicker
EN61000-4-2:	ESD, ±8 KV air and ±4 KV contact
EN61000-4-3:	Radiated immunity, 3 V/m
EN61000-4-4:	Fast transient/burst, ±1 KV
EN61000-4-5:	Surge, ±1 KV diff., ±2 KV com
EN61000-4-6:	Conducted immunity, 3 Vrms
EN61000-4-8:	Magnetic field immunity, 1 A/m
EN61000-4-11:	Voltage dip immunity, 30% reduction for 500 ms, criteria A >95% reduction for 10 ms, criteria A >95% reduction for 5000 mS, criteria B

INTERFACE SIGNALS

PFD: Power failed indication
TTL high for normal operation,
low upon loss of input power,
turn-on delay time 100-1000 ms,
turn-off delay time 1 ms minimum

Inhibit: TTL high level to turn off output

OUTPUT POWER DERATING CURVE



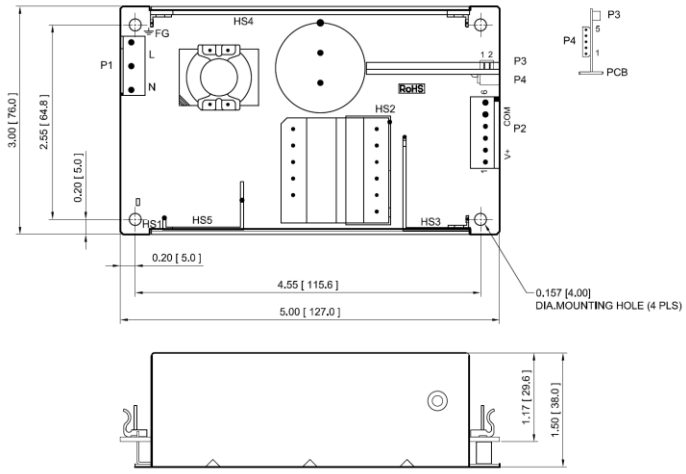
OUTPUT VOLTAGE/CURRENT RATING CHART

Model(1)	Output							
	V1	Min. Current(3)	Max. Current at convection	Max. Current at 5.3 CFM (1)	Tol.	Ripple & Noise(2)	Max. Power(1)	Efficiency (typical) 115/230 Vac
FSP202-1K20B	12 V	0.1 A	12.50 A	16.67 A	±2%	120 mV	150W / 200W	87 / 90%
FSP202-1K30B	15 V	0.1 A	10.00 A	13.34 A	±2%	150 mV	150W / 200W	87 / 90%
FSP202-1K31B	18 V	0.1 A	8.34 A	11.12 A	±2%	180 mV	150W / 200W	87 / 90%
FSP202-1K40B	24 V	0.1 A	6.25 A	8.34 A	±2%	240 mV	150W / 200W	87 / 90%
FSP202-1K50B	28 V	0.1 A	5.36 A	7.15 A	±2%	280 mV	150W / 200W	87 / 90%
FSP202-1K70B	36 V	0.1 A	4.17 A	5.56 A	±2%	360 mV	150W / 200W	87 / 90%
FSP202-1K80B	48 V	0.1 A	3.13 A	4.17 A	±2%	480 mV	150W / 200W	88 / 91%

NOTES:
1. 150 W without moving air or 200 W with 5.3 CFM forced air provided by user for “B” version. The adequacy of cooling air is judged by the measured core temperature of transformer T1 below 75℃ at 25℃ ambient, or below 100℃ at 50℃ ambient.
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 10 μF tantalum capacitor in parallel with a 0.1 μF ceramic capacitor across the output.
3. All models may be operated at no-load without damage. At no load, output voltage fluctuates beyond 5% due to the burst-mode operation of the control IC in them for energy saving.

MECHANICAL SPECIFICATIONS

U-bracket Form



NOTES:
1. Dimensions shown in inches [mm]
2. Tolerance 0.02 [0.5] maximum
3. Input connector P1: Molex header 09-65-2058 or equivalent, mating with Molex housing 09-50-1051 or equivalent.
4. Output connector P2: Molex header 09-65-2068 or equivalent, mating with Molex housing 09-50-1061 or equivalent.
5. Fan connector P3: JST header S2B-ZR-3.4 or equivalent, mating with JST housing ZHR-2 or equivalent.
6. Connectors P4: Molex header 22-05-7055 or equivalent, mating with Molex housing 50-37-5053 or equivalent.
7. Fixing of units to end equipment is through standoffs and the four mounting holes in PCB.
8. Ground tab is 0.25 [6.35] × 0.032 [0.8] fast-on connector.
9. Weight: : 390 grams (0.86 lbs.) approx.

PIN CHART

Connector	P1					P2						P3	
Pin No.	1	2	3	4	5	1	2	3	4	5	6	1	2
Polarity	Ground	-	Live	-	Neutral	+V1			Common Return			+12V Fan	Common Return

Connector	P4				
Pin No.	1	2	3	4	5
Polarity	-Sense	+Sense	PFD	Inhibit	Common Return