



FSP1000M-60PG

FEATURES

- ATX size with 165 x 150 x 86 mm
- IEC 60601-1 & IEC 62368-1 certified
- Intel ATX12V V3.0 compliance
- Meet 80 Plus Gold efficiency
- Meet EN55011 Class B
- BF class isolation

SAFETY STANDARD APPROVAL



Please check certificate schedule before design

DESCRIPTION

This PSU of AC/DC switching power supplies in an ATX form factor 165 x 150 x 86 mm is capable of delivering 1000 watts of continuous power. PSU built-in DC/DC converter at +3.3V and +5V output rails to enhance load regulation. High-efficiency the design complies with 80PLUS GOLD efficiency.

INPUT SPECIFICATIONS

Input voltage:	90-264 VAC
Input frequency:	47-63 Hz
Input current:	12 A (rms) @ 115Vac, 60Hz 7 A (rms) @ 230Vac, 50Hz

Earth leakage current:	400 μ A max. @ 264 VAC, 63 Hz
Touch current:	100 μ A max. @ 264 VAC, 63 Hz

OUTPUT SPECIFICATIONS

Output voltage/current:	See rating chart.
Maximum output power:	See rating chart.
Ripple and noise:	See rating chart.
Protection	
OVP:	Latch off
OCP & Shorted:	Auto recovery
OTP:	Latch off

ENVIRONMENTAL SPECIFICATIONS

Operating temperature:	0°C to +50°C
Storage temperature:	-20°C to +80°C
Relative humidity:	10% to 95% non-condensing
Derating:	Derate from 100% at +50°C linearly to 50% at +70°C

GENERAL SPECIFICATIONS

Turn-on delay time:	3 Sec maxi.
Power factor:	0.9 minimum
Efficiency:	Meet 80PLUS Gold (87%, 90%, 87%)
Hold-up time:	17 mS minimum at 115VAC 17 mS minimum at 230 VAC
Line regulation:	\pm 1% maximum at full load
Inrush current:	50 A @ 115 VAC at 25°C cold start 100 A @ 230 VAC at 25°C cold start
Withstand voltage:	4000 VAC from input to output (2 MOPP) 1500 VAC from input to ground (1 MOPP) 1500 VAC from output to ground

EMC Performance (IEC60601-1-2)

EN55011/ EN55022:	Class B conducted, Class B radiated
EN61000-3-2:	Harmonic distortion, Class A
EN61000-3-3:	Line flicker
EN61000-4-2:	ESD, \pm 15 KV air and \pm 8 KV contact
EN61000-4-3:	Radiated immunity, 9-28 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, 3-6 Vrms
EN61000-4-8:	Magnetic field immunity, 30 A/m
EN61000-4-11:	Voltage dip immunity, 30% reduction for 500 ms, >100% reduction for 10 ms

OUTPUT VOLTAGE/CURRENT RATING CHART

Outputs	Rating	FSP1000M-60PG		Load Regulation	Ripple & Noise ²
		Mini. Load	Maxi. Load		
+3.3 V		0 A	25 A	±5%	50 mV P-P
+5 V		0 A	25 A	±5%	50 mV P-P
+12 V1		0 A	83.3 A	±5%	120 mV P-P
-5 V ¹		0 A	0.2 A	±10%	100 mV P-P
-12 V		0 A	0.5 A	±10%	120 mV P-P
+5 Vsb		0 A	3.5 A	±5%	50 mV P-P
+3.3 V & +5 V Combine Output Power	150W Maxi.				
+12V Total Output Power Maxi.	1000W				
Total Output Power	1000W				

NOTES:

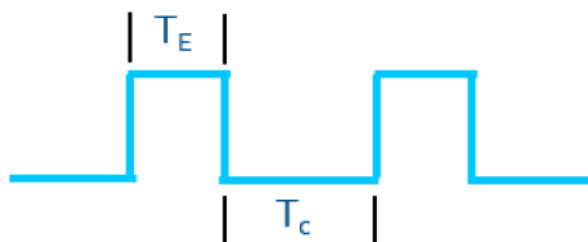
1. -5V is not for standard model but upon request.

2. Ripple and noise measurements shall be made under all specified load conditions through a single pole low pass filter with 20MHz cutoff frequency. Outputs shall be bypassed at the connector with a 0.1uF ceramic disk capacitor and a 10uF electrolytic capacitor to simulate system loading.

Power Excursion

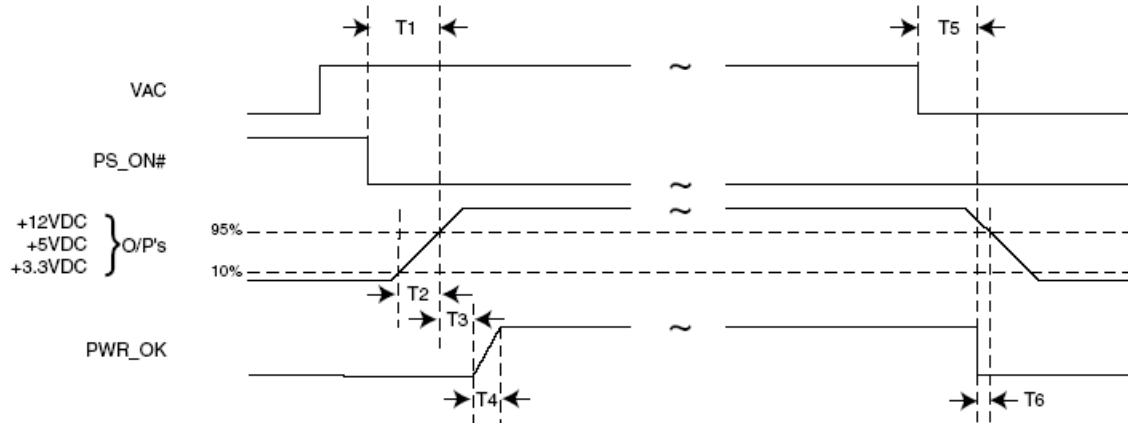
Based on the power budgets and peak power of both the Processor detailed and the PCIe* Add-in Cards, the following Peak Power Requirements are defined for the Power Supply.

Power Excursion % of PSU Rated Size	Time for Power Excursion (TE)	Testing Duty Cycle	Time Constant (TC)
100%	Infinite		
120%	100ms	25%	300ms
160%	10ms	12.5%	70ms
180%	1ms	8%	11.5ms
200%	100us	5%	1900us



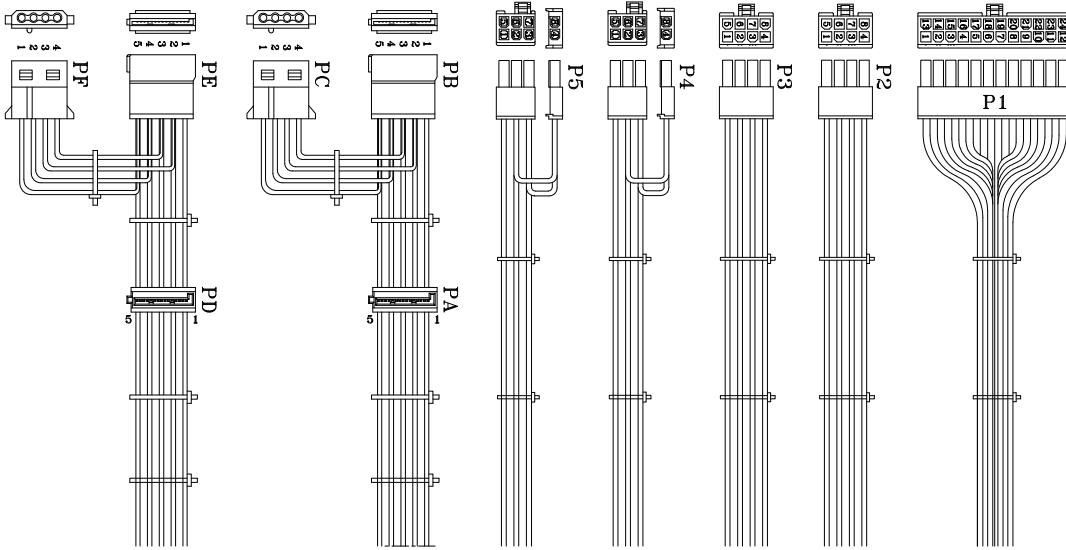
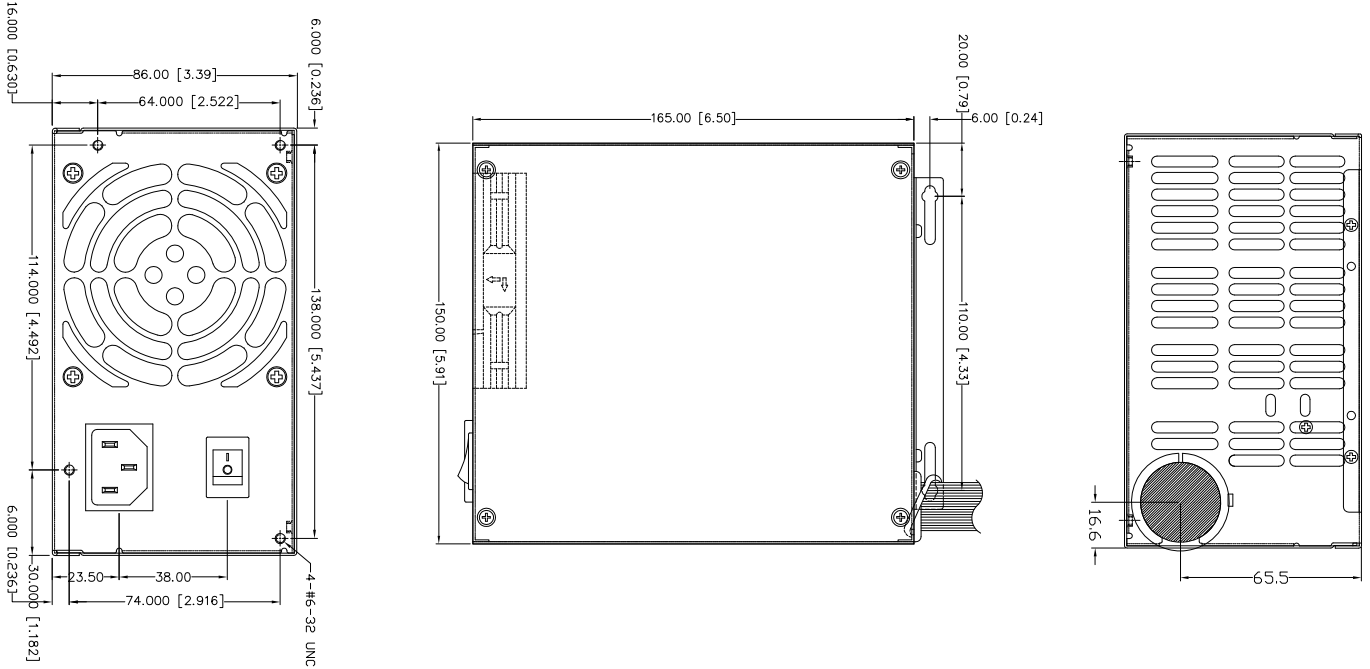
INTERFACE SIGNALS

The electrical and timing characteristics of the PWR_OK signal are given in table.



Signal Type	+5 V TTL compatible
Logic level low	< 0.4 V while sinking 4 mA
Logic level high	Between 2.4 V and 5 V output while sourcing 200 μ A
High-state output impedance	1 k Ω from output to common
Power-on time	$T_1 < 200$ ms
Rise time	0.1 ms $\leq T_2 \leq 20$ ms
PWR_OK delay	100 ms $< T_3 < 250$ ms
PWR_OK rise-time	$T_4 \leq 10$ ms
AC loss to PWR_OK hold-up time	$T_5 \geq 17$ ms
Power-down warning	$T_6 \geq 1$ ms

MECHANICAL SPECIFICATIONS



Output connectors	Connector ID.	Cable Length	Output connectors (equivalent)
Mother board 24 pin	P1	500 mm	WST P24-I42002
CPU 8 pin	P2, P3	500 mm * 2	WST P8-I42002
PCI-e 6+2 pin	P4, P5	(500+70 mm) * 2	WST P8-I42002, K21B-B
SATA + PATA	PA + PB + PC PD + PE + PF	(500+155+155 mm) * 2	MOLEX SD-67926-0311 MOLEX SD-67582-001 WST P4-A10202

Weight: 2.4 Kg