

SPECIFICATION

Model: P6550E FE2

550 Watts
7 Output ATX, EPS12
Industrial Grade Power Supply
With Active PFC
(Extended PS/2 type)



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1.0 General

This specification describes the physical, functional and electrical characteristics of a 550 watt power supply with power factor correction

2.0 Input Characteristics**2.1 Input Voltage**

100 to 240 VAC

2.2 Input Waveform

The unit is capable of operating with a 10% distorted sine wave input as measured by a distortion analyzer. Its flattopping clipped 10% from the peak value of standard sine wave.

2.3 Input Frequency

47 Hz to 63 Hz

2.4 Input Current

10Amps – 5Amp

2.5 Power Factor Correction

The Power Supply shall incorporate universal power input with active power factor correction, which shall reduce line harmonic current in accordance with the EN61000-3-2 and JETI MITI standards.

2.5.1 Power Factor

PF \geq 0.95

2.5.2 Harmonic Distortion

Meet the EN61000-3-2 standards

2.6 In-Rush Current**CONDITION**

132/264 VAC, Full load.
Turn off 1 sec; turn on at
peak of input voltage cycle.
25°C Air Ambient cold star

LIMITS

50A Max. at 115VAC
80A Max. at 230VAC
No damage shall occur or over stressed
input fuse shall not blow

2.7 Line Regulation

CONDITIONS

Full load, 100 to 240VAC

LIMITS

+/-1%

2.8 Input Leakage Current

Input leakage current from line to ground will be less than 3.5 mA rms. Measurement will be made at 240 VAC and 60Hz.

2.9 Isolation (Hi-pot)

1500Vrms, 50Hz for one (1) minute between each input AC line and the grounding conductor.

3000Vrms, 50Hz for one (1) Minute between the input AC lines and secondary low voltage outputs and shields.

All isolation transformers will have been tested prior to assembly into a power supply unit. Any such transformers without a grounded shield will be tested to 3750 Vrms

3.0 Output Characteristics

3.1 DC Output Characteristics

There are two choices as below, to be met under all combinations of loading.

Output #	V1	V2	V3	V4	V4	V5	V6
Voltage	+5V	+3.3V	+12V1	+12V2	-5V	-12V	5VSB
Max. Load	40A	30A	18A	18A	1A	1A	2A
Min. Load	1A	1A	1A	1A	0A	0A	0A
Load Reg.	±5 %	±5 %	±5 %	±5 %	±5 %	±5 %	±5 %
Cross Reg.	±5 %	+/-5 %	±5 %	±5 %	±10%	±10 %	±5%
Line Reg.	+1%	+1%	+1%	+1%	+1%	+1%	+1%
Ripple & Noise	+1%	+1%	+1%	+1%	+1%	+1%	+1%

Note 1: The +5V & +3.3V combine 280W

Note 2: The +5V & +3.3V & +12V total output shall not exceed 533Watts.

Note 3: The +12V1 & +12V2 combine 30A (max)

3.2 Remote Sensing

The +3.3V, +5V, +12V outputs should have provision for remote sensing to compensate for 200mV of cable, connector, and PCB trace drops.

3.4 Overshoot

Any output overshoot at TURN-ON shall not exceed 10% of nominal voltage value.

3.5 Efficiency

68% minimum at full load and nominal AC input.

4.0 Time Sequence

4.1 Hold-Up Time

Unit shall continue to supply regulated DC outputs and power good signal for at least 16 milliseconds at 115/230 VAC full load after a loss of AC input voltage, which shall be represented by a short circuit at the AC input.

4.2 Power Good Signal

When the power supply is turned off for a minimum of 1.0 second and turned on, the power-good signal as described below will be generated.

The power supply shall provide a power-good signal to indicate proper operation of the power supply. This signal shall be a TTL compatible high level for normal operation; low level for fault conditions.

Power-good shall go to a low level at least 1 ms before the +5V output voltage falls below the regulation limits described in 3.1 DC output Characteristics. The operation point used as a reference for measuring the 1ms shall be minimum line voltage and maximum load.

All waveform transitions shall be smooth and monotony, i.e. no oscillations.

The power-good signal shall stay low (during POWER-ON) until all output voltages are stable within regulation limits. The power-good signal shall have a TURN-ON delay greater than 100 ms but less than 500 ms.

4.2.1 Fanout

Power Good output circuit shall consist of an active pull down component and a passive pull up resistor.

Power Good output voltage to be met under recommended loading conditions.

CONDITIONS

$I_{OH} = -200\mu\text{A}$ Min.

$I_{OL} = 4\text{mA}$ Min.

LIMITS

$V_{OH} = 2.7\text{V}$ Min.

$V_{OL} = 0.4\text{V}$ Max.

4.3 Output Rise Time

The +5 Volt and +3.3 Volt output shall have a turn-on rise time of less than 100 ms under all load conditions. Rise time is measured between 0.0 and 2.48/4.75 volts.

4.4 Start-up timing

All outputs shall be stable and in regulation in less than 2.0 second under all load and line conditions. Start-up time is measured between the AC turn-on and 4.75 volts on +5V output. See Figure 1.

4.5 Dynamic Load Response Time

Transient response is measured by switching the output load from 70 to 100 to 70 percent of its full value at a frequency of 100 Hz and 50% duty cycle, step load change is 0.5A/us, The magnitude V_r is less than +/- 5% of +5V, +3.3V and +12V outputs, the recovery time T_r is less than 1ms.

5.0 Protection

5.1 Over Current Protection

This power supply shut down all DC outputs when +5 VDC, +3.3 VDC and +12 VDC outputs are overloaded to the limit. The power supply logic shall into off state and auto restart when the circumstance dispelled. The +5VSB outputs will be internally current limited.

+5 VDC

CONDITIONS

100/240 VAC input

LIMITS

when output current is over to 110% - 140%

+3.3 VDC

CONDITIONS

100/240 VAC input

LIMITS

when output current is over to 110% - 140%

+12 VDC

CONDITIONS

100/240 VAC input

LIMITS

when output current is over to 110% - 140%

5.2 Over Voltage Protection

The power supply shall latch off if the +5 VDC or 3.3VDC or +12 VDC maximum voltage exceeds the limits shown. The AC must be recycled to restart.

+5 VDC

CONDITIONS

All operating

LIMITS

5.6 VDC – 6.5 VDC

+3.3 VDC

CONDITIONS

All operating

LIMITS

3.8 VDC – 4.3 VDC

+12 VDC

CONDITIONS

All operating

LIMITS

13.6 VDC – 15.6 VDC

5.3 Short Circuit Protection

A short circuit placed on any output shall cause no damage to this unit. The power supply shall shutdown and latch off if the short circuit shown. This latch shall be cleared by toggling the PSON signal or by an AC power interruption.

5.4 No Load Operation

When the primary power is applied, with no load on any output voltage, no damage or hazardous conditions shall occur. In such a case, the power supply shall power up and stabilize.

5.5 +5VSB (Standby)

The +5VSB output is always on (+5V Standby) when AC power is applied and power switch is turned on. The +5VSB line is capable of delivering at a maximum of 2.0A for PC board circuit to operate.

5.6 Over Power Protection

The power supply shall shut down all DC outputs when outputs power are overloaded to 110~150%

5.7 PS-ON

PS-ON is an active low signal that turns on all of the main power rails including +3.3V, +5V, +12V & -12V, -5V power rails. When this signal is held by the PC board or left open circuited, outputs of the power rails should not deliver current and should be held at a zero potential with respect to ground. Power should only be delivered to the rails if PS-ON signal is held at ground potential. This signal should be held at +5VDC by a pull-up resistor internal to the power supply.

Power Status	PS-ON
ON	L
OFF	H

6.0 Remote Sense

A remote +3.3VDC sense line connector allow for accurate control of the +3.3VDC line directly at load. Due to potential voltage drops across the connector and traces leading to the PCB components, it may be advantageous to implement a +3.3V sense line that remotely monitors the +3.3VDC power level at the load.

7.0 Physical Characteristics

7.1 Size

W x H x D: 150 x 86 x 160mm

7.2 Mounting Requirements

See attachment

7.3 Cooling

Airflow from the power supply should be in exhaust direction and shall be rated at 10 CFM minimum.

8.0 Connections

8.1 AC Input Connector

IEC 320 AC Inlet with EMI Filter, 10A/250V

8.2 DC Output Wire Harness List

(1) 24 PIN (For ATX motherboard) (Optional)

Connector: Molex 39-01-2200 18AWG

Wire Color	Signal	Pin	Pin	Signal	Wire Color
Orange	+3.3VDC	13	1	+3.3VDC	Orange
Blue	-12VDC	14	2	+3.3VDC	Orange
Black	COM	15	3	COM	Black
Green	PS-ON	16	4	+5VDC	Red
Black	COM	17	5	COM	Black
Black	COM	18	6	+5VDC	Red
Black	COM	19	7	COM	Black
White	-5VDC	20	8	PG	Gray
Red	+5VDC	21	9	+5VSB	Purple
Red	+5VDC	22	10	+12VDC	Yellow
Red	+5VDC	23	11	+12VDC	Yellow
Black	COM	24	12	+3.3VDC	Orange

(2) P12、P13、P14、P15(For Hard Drive.) See Appendix B.

Connector: AMP 1-480424-0 or Molex 8981-04P or approved equivalent.

Pin	Signal	Wire Color
1	+12VDC	Yellow
2	COM	Black
3	COM	Black
4	+5VDC	Red

(3) P11(For Floppy Disk or Control Board) see Appendix B.

Connector: AMP 171822-4 or approved equivalent.

Pin	Signal	Wire Color
1	+5VDC	Red
2	COM	Black
3	COM	Black
4	+12VDC	Yellow

(4) +12V Power Connector. See Appendix B

Connector: Molex 39-01-2040 or equivalent P4 (for ATX12V Configurations Only)
(Option)

Pin	Signal	20AWG Wire
1	COM	Black
2	COM	Black
3	+12V	Yellow
4	+12V	Yellow

(5) 8-Pin Molex 39-01-2080 or Equivalent (For SSI motherboard.)

PIN	SIGNAL	18AWG	PIN	SIGNAL	18AWG
1	Com	Black	5	+12 V1	Yellow
2	Com	Black	6	+12 V1	Yellow
3	Com	Black	7	+12 V1	Yellow
4	Com	Black	8	+12 V1	Yellow

9.0 Environmental**9.1 Temperature****Operating**

50 to 122 °F (0 to 40 °C)

Non-Operating

-20 to 60°C

9.2 Relative Humidity**Operating**

20 to 90 % non-condensing at 104°F (40 °C)

Non-Operating

5 to 95 % non-condensing at 122°F (50°C)

9.3 Altitude**Operating**

Sea level to 10,000 feet

Non-Operating

Sea level to 40,000 feet

9.4 Shock**Operating**

The power supply shall exhibit no signs of damage or degradation of performance when subjected to a shock of 5g's for 11 ms, with a 1/2 sine wave for each of the perpendicular axes X, Y and Z.

Non-Operating

The power supply shall exhibit no signs of damage or degradation of performance when subjected to a shock of 30g's for 11 ms, with a 1/2 sine wave for each of the perpendicular axes X, Y and Z.

9.5 Power Line Transient (Drop Out)

With a full cycle input voltage drop out at 50Hz, the unit shall operate within the prescribed voltages with a dropout cycle repetition rate of 500ms.

CONDITIONS

Full load, Nom. Input AC Voltage

LIMITS

Meet all requirements

10.0 Regulatory Agency Certification

10.1 RFI/EMI Standards

The power supply, when installed in system, shall comply with the following radiated and conducted emissions standards:

- a) Meet FCC part 15, Subpart B, Class B computing devices.
- b) CISPR22 (EN55022) Class B.

10.2 Safety Standards

The power supply shall be certified with the following safety standards,

- a) UL 1950 (Information Processing/Business equipment).
- b) TUV Certification to IEC 950 1st edition with Amendment #1, #2, and EN60950
- c) CE Certificate & Test report.

11.0 Reliability

11.1 Mean Time Between failures (MTBF)

Using MIL217E the calculated MTBF more than 100,000 hours at 25°C

11.2 Misc

Date code indicating week and year of manufacture.

Technical information in this specification is subject to change without notice.

The revision of specification will be marked on the cover.