

# SPECIFICATION

**P/N: P6451G FX**

**450W PS2 ATX PFC  
Industrial Grade Power Supply**



Specification subject to change without prior notice.



3261 Keller St.  
Santa Clara, CA 95054  
Tel: 408-980-9813  
Fax: 408-980-8626  
E-mail: [infor@topmicro.com](mailto:infor@topmicro.com)

## 1. INTROCUCTION

### 1.1 GENERAL REAQUIREMENTS

This power supply is designed for electronic data processing equipment. It has six DC outputs: +5V, +12V, -5V, -12V, +3.3V & +5V<sub>SB</sub>, to provide power to all system components.

### 1.2 NEW FOR ATX12V AS COMPARED WITH ATX POWER SUPPLY

#### 1.2.1 A new superset of the original ATX power supply has been defined.

Named "ATX12V", this new power supply is comprised of a standard ATX unit plus the following enhancements: Increased +12 VDC output capability. Motherboard components with unique voltage requirements are increasingly expected to be powered via DC/DC converters off the +12VDC power supply output. This trend is due primarily to the higher power conversion and transmission efficiencies of +12VDC relative to +5 VDC or +3.3VDC. ATX12V power supplies should be designed to accommodate these increased +12VDC current requirements and to address associated issues such as cross-regulation, capacitive loading, transient surge tolerance, cable voltage drop, and cooling.

#### 1.2.2 Increased +5V<sub>SB</sub> Current to output

Trends in PC system power management solutions are driving a need for increased +5V<sub>SB</sub> current capability for all ATX-family power supplies. The previous +5V<sub>SB</sub> output requirement is being raised to 1.0 amps, with 2.5 amps preferred. Recommendations for momentary peak current have also been added to enable USB "wake on " devices.

## 2. INPUT REQUIREMENTS

This power supply shall operate from 100 to 240Vrms.

The power supply shall operate from an AC mains frequency of 50 or 60Hz.

Inrush current regulation:

50 amps maximum/115Vrms.

100 amps maximum/230Vrms(at 25°C ambient cold start).

The AC mains steady-state RMS. Input current shall be:

10.0 amps maximum/115Vrms, 60Hz.

5.5 amps maximum/230Vrms, 50Hz.

### 3. POWER FACTOR

Active Power Factor Correction (the advanced technology most used in high power SMPS) used a pre-regulator before the main PWM convert circuit, applied the current feedback technology. Regulated current drawing flow AC sinusoidal wave. Therefore, the THD less than 5%, and the power factor increase to 0.99 or higher. This method of PFC known as Active Power Factor Correction because applied active components and circuit inside. It can provide high power factor (up to 0.95-1), can operate in world wide input range (100-240AC). An intelligent solution for high regulation, high power density power designs.

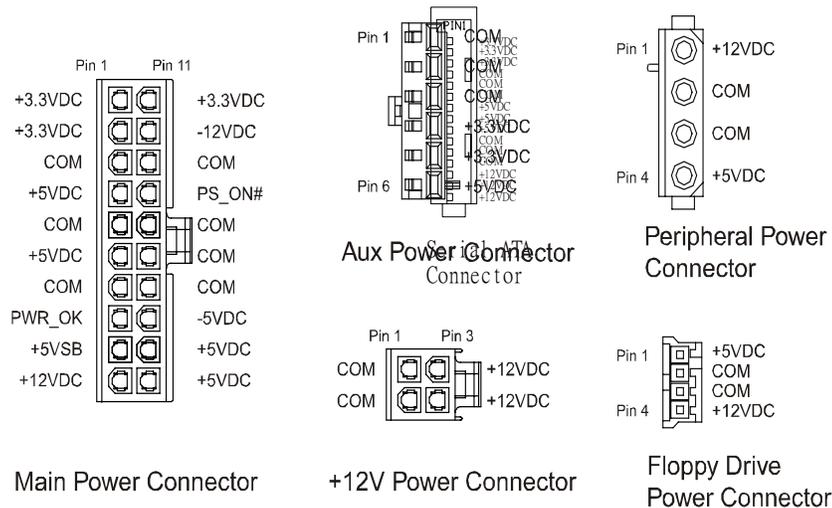
### 4. DC OUTPUT

#### 4.1 VOLTAGE/CURRENT

OUTPUT Voltage	MIN. Load	MAX. Load	Load Reg.	Cross Reg.	Line Reg.	Ripple & Noise
+3.3V	0.5A	30A	±5%	±5%	±1%	100mV p.p
+5V	0.5A	45A	±5%	±5%	±1%	100mV p.p
+12V	1A	22A	+8%, -5%	+8%, -5%	±1%	150mV p.p
-5V	0A	0.5A	±10%	±10%	±2%	200mV p.p
-12V	0A	1A	±10%	±10%	±2%	200mV p.p
+5V <sub>SB</sub>	0A	2.5A	±5%	±5%	±1%	100mV p.p

The +3.3V and +5V total output shall not exceed 250 watts, the +3.3V, +5V and +12V total output shall not exceed 423 watts, and the total output for this subject power supply is 450 watts. 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 0.1µF ceramic disk capacitor and a 10µF electrolytic capacitor to simulate: system loading.

## 4.2 DC CONNECTORS



**Typical ATX and ATX12V Power Supply Connectors**  
(Pin-side view, not to scale)

**REMARK: Serial ATA Connector is Optional.**

## 4.3 EFFICIENCY

The power supply is 70% efficient under typical load. The “Energy Star” efficiency of the power supply is a minimum of 50% when the AC input power is 30W.

## 4.4 REMOTE ON/OFF CONTROL

The power supply DC output (with the exception of +5 VSB which is always available) is enabled with an active-low, TTL-compatible signal (“PS-ON”). When PS-ON is pulled to TTL low, the DC outputs are enabled. When PS-ON is pulled to TTL high or open-circuited, the DC outputs are disabled. PS-ON may be active by either electronic means or a mechanical switch.

## 4.5 OVERSHOOT AT TURN-ON/TURN-OFF

The output voltage overshoot upon the application or removal of the input voltage is less than 10%.

#### 4.6 HOLD-UP TIME

The power supply will maintain output regulation despite a loss of a minimum of 16 ms while under full load. Test to be performed at nominal input voltage.

#### 4.7 POWER GOOD SIGNAL

A “power good” signal is asserted by the supply to indicate that the +5VDC output is within regulation limits.

Power Good Signal Characteristics:

Signal Type:	Open collector TTL compatible
Logic level low:	<0.8V while sinking 5mA
Logic level high:	>2.4V while sourcing 500uA
High state impedance:	1K (from output to common)
POK delay:	100-500ms
Power fall warning time:	1ms minimum

### 5. PROTECTION

#### 5.1 OVER VOLTAGE PROTECTION

The power supply prods latch-mode over-voltage protection as defined below:

Nominal output voltage	Trigger voltage
+5V	5.6-6.2V

#### 5.2 SHORT CIRCUIT PROTECTION

A short circuit on any DC output will cause the power to latch. The power supply will withstand a continuous short circuit to the output without damage or overseers to the unit. The +5VSB can be shorted indefinitely and will recover automatically when the short is removed.

#### 5.3 NO LOAD OPERATION

No hazardous conditions or damage to the supply will occur with all of the DC output connectors disconnected from the load.

**5.4 OVER POWER PROTECTION (OPP)**

The power supply shall go shutdown when the total output load is over 110~160% of rating.

**6 PHYSICAL ENVIRONMENT**

**6.1 OPERATING CONDITIONS**

The power supply shall be capable of continuous operation and meet all electrical specification without need for adjustment when subjected to the following environmental conditions:

	Temperature	Humidity
Operation	0°~30° @Full Load	10%~90%RH
	30° @90% Rated Load	
	50° @80% Rated Load	
Storage	-20°~80°	5%~90%rh

\* No degradation of the power supply shall occur during shipping or storage at the specified condition.

**6.2 SHOCK AND VIBRATION**

The power supply will withstand the following imposed conditions without experiencing non-recoverable failure or deviation from specified output characteristics.

Storage -40G, 11mSec. Half-sine wave pulse in both directions on three mutually perpendicular axes.

Operating -10G, 11mSec. Half-sine wave pulse in both directions on three mutually perpendicular axes.

Vibration Operation-Sine wave excited, 0.25G maximum acceleration, 10-250 Hz, swept at one octave/mine. Fifteen-minute dwell at all frequencies at which the device under test experience excursions two times large than non-resonant excursions.

## **7. REGULATORY COMPLIANCE**

### **7.1 SAFETY REQUIREMENTS/ DESIGNED TO MEET**

- CSA
- UL
- CE
- TUV
- FCC CLASS B

### **7.2 DIELECTRIC STRENGTH**

Primary to Secondary: 1500 VAC for 1~3 seconds.

Primary to Frame Ground: 1500 VAC for 1~3 seconds.

### **7.3 INSULATION RESISTANCE**

Primary to Secondary: 20 Meg. ohms Minimum.

Primary to Frame Ground: 20 Meg. ohms Minimum.

### **7.4 GROUND LEAKAGE CURRENT**

The power supply ground leakage current shall be less than 3.5mA.

### **7.5 GROUNDING CONTINUITY**

The power supply grounding continuity shall be less than 100mΩ when the test current is at 25A.

## **8. INPUT LINE CURRENT HARMONIC CONTENT (optional)**

The power supply meets the requirements of IEC 1000-3-2; class D, at full rated power.