



# **SPECIFICATION**

## **SilverStone** **300W TFX Switching Power Supply** **With Active PFC**

### **FSP300-65LD**

#### **1. GENERAL DESCRIPTION AND SCOPE**

This is the specification of Model FSP300-65LD; AC-line powered switching power supply with active PFC (Power Factor Correction) circuit, meet EN61000-3-2 and with Full Range Input features.

The specification below is intended to describe as detailedly as possible the functions and performance of the subject power supply. Any comment or additional requirements to this specification from our customers will be highly appreciated and treated as a new target for us to approach.

#### **2. REFERENCE DOCUMENTS**

The subject power supply will meet the EMI requirements and obtain main safety approvals as following:

##### **2.1 EMI REGULATORY**

- FCC Part 15 Subpart J, Class 'B' 115 Vac operation.
- CISPR 22 Class 'B' 230 Vac operation.

## 2.2 SAFETY

- NEMKO EN 60950-1
- TUV EN60950-1 OR VDE EN60950-1
- CSA-C22.2 NO. 60950-1
- IEC 60950-1
- UL 60950-1
- CE :
  - EN 55022:1998+A1: 2000, Class B
  - EN 61000-3-2: 2000
  - EN 61000-3-3: 1995+A1: 2001
  
- CISPR22: 1997+A1: 2000, Class B
- AS/NZS CISPR 22: 2002, Class B

## 3. INPUT ELECTRICAL SPECIFICATIONS

### 3.1. AC INPUT

Parameter	Min.	Nom. <sup>(1)</sup>	Max.	Unit
V <sub>in</sub> (115VAC)	90	115	135	VAC <sub>rms</sub>
V <sub>in</sub> (230VAC)	180	230	265	VAC <sub>rms</sub>
V <sub>in</sub> Frequency	47	--	63	HZ

◆ Nominal voltages for test purposes are considered to be within  $\pm 1.0V$  of nominal.

### 3.2. INRUSH CURRENT

(Cold start – 25 deg. C)

115V	No damage
230V	No damage

Maximum inrush current from power-on (with power on at any point on the AC sine) and including, but not limited to, three line cycles, shall be limited to a level below the surge rating of the input line cord, AC switch if present, bridge rectifier, fuse, and EMI filter components. Repetitive ON/OFF cycling of the AC input voltage should not damage the power supply or cause the input fuse to blow.



### 3.3. INPUT LINE CURRENT

115V	4.0Amps – rms maximum
230V	2.0 Amps – rms maximum

### 3.4. EFFICIENCY

#### 3.4.1 General

Under the load conditions defined in Table 1 and Table 2. The loading condition for testing efficiency shown in Table 1 represents a fully loaded system. a ~ 50% (typical) loaded system. and a ~ 20% (light) loaded system.

**Table 1. Loading Table for Efficiency Measurement**

300W (loading shown in Amps)						
Loading	+12V1	+12V2	+5V	+3.3V	-12V	+5Vsb
<b>Full</b>	<b>6.0</b>	<b>10.5</b>	<b>9.0</b>	<b>13.5</b>	<b>0.3</b>	<b>1.0</b>
<b>Typical</b>	<b>3.0</b>	<b>5.3</b>	<b>4.5</b>	<b>6.8</b>	<b>0.1</b>	<b>1.0</b>
<b>Light</b>	<b>1.2</b>	<b>2.1</b>	<b>1.8</b>	<b>2.7</b>	<b>0.0</b>	<b>1.0</b>

**Table 2. Minimum Efficiency Vs Load**

Loading	Voltage	Full load	Typical load	Light load
<b>Required Minimum Efficiency</b>	<b>115V</b>	<b>70%</b>	<b>75%</b>	<b>70%</b>
<b>Required Minimum Efficiency</b>	<b>230V</b>	<b>70%</b>	<b>75%</b>	<b>70%</b>

### 3.5 MECHANICAL SPECIFICATIONS

The mechanical drawing of the subject power supply, which indicate the form factor, location of the mounting holes, location, the length of the connectors, and other physical specifications of the subject power supply. Please refer to the attachment drawing.



## 4.0. OUTPUT ELECTRICAL REQUIREMENTS

### 4.1 OUTPUT VOLTAGE AND CURRENT RATING

Output	MINIMUM LOAD	NORMAL LOAD	MAXIMUM LOAD	PEAK LOAD	LOAD REG	LINE REG.	RIPPLE & NOISE
+3.3V	0.5A	10A	20A		±5%	±1%	50mV P-P
+5V	0.5A	6A	12A		±5%	±1%	50mV P-P
+12V1DC	1.0A	3A	16A		±5%	±1%	120mV P-P
+12V2DC	1.0A	8A	16A	19A	±5%	±1%	120mV P-P
-12V	0.0A	0.15A	0.3A		±10%	±1%	120mV P-P
+5VSB	0.0A	1.0A	2.0A	2.5A	±5%	±1%	50mV P-P

- ( 1 ) +3.3V & 5V total output not exceed 110W.
- ( 2 ) +12V1 & +12V2 total output Amps not exceed 24Amps.
- ( 3 ) Total output continuous shall not exceed 300W watts.

### 4.2. LOAD CAPACITY SPECIFICATIONS

The cross regulation defined as follows, the voltage regulation limits DC include DC Output ripple & noise.

LOAD	STM.	+3.3V	+5V	+12V1 DC	+12V2 DC	-12V	+5VSB
FULL LOAD	HMHMH	20	8.5	4.7	10	0.3	2
FULL LOAD	MHMH	15	12	1	13.7	0.3	2
+3.3V MAX other MIN	HLLLL	20.0 A	0.5 A	1.0A	1.0A	0A	0A
+5V MAX other MIN	LHLLL	0.5A	12 A	1.0A	1.0A	0A	0A
+12VDC MAX Other MIN	LLHLL	0.5 A	1.5A	6.0A	16.0A	0A	0A
-12V MAX other MIN	LLLLH	0.5A	0.5A	1.0A	1.0A	0.3A	0A
+5VSB MAX other MIN	LLLLH	0.5A	0.5A	1.0A	1.0A	0A	2A
ALL MIN	LLLLL	0.5A	0.5 A	1.0A	1.0A	0A	0A

### 4.3. HOLD-UP TIME (@FULL LOAD)

115V / 60Hz : 17 mSec. Minimum.

230V / 50Hz : 17mSec. Minimum.

The output voltage will remain within specification, in the event that the input power is removed or interrupted, for the duration of one cycle of the input frequency. The interruption may occur at any point in the AC voltage cycle. The power good signal shall remain high during this test.



#### 4.4.OUTPUT RISE TIME

(10% TO 90% OF FINAL OUTPUT VALUE, @FULL LOAD)

115V-rms or 230V-rms + 5Vdc : 20ms Maximum

#### 4.5.OVER VOLTAGE PROTECTION

Voltage Source	Protection Point
+3.3V	3.76V-4.8V
+5V	5.6V-7.0V
+12V	13.0V-15.6V

#### 4.6.OVER-CURRENT PROTECTION

OUTPUT VOLTAGE	Max. overcurrent limit
+3.3V	45A
+5V	45A
+12V1 DC	22A
+12V2 DC	22A

#### 4.7.SHORT CIRCUIT PROTECTION

Output short circuit is defined to be a short circuit load of less than 0.1 ohm.

In the event of an output short circuit condition on +3.3V, +5V or +12V output, the power supply will shutdown and latch off without damage to the power supply. The power supply shall return to normal operation after the short circuit has been removed and the power switch has been turned off for no more than 2 seconds.

In the event of an output short circuit condition on -12V output, the power supply will not be damaged. The power supply shall return to normal operation as soon as the short circuit has been removed. and the power switch has been turned off for no more than 2 seconds.

#### 4.8. POWER SIGNAL

POWER GOOD @ 115/230V,FULL LOAD	100 -500mSec.
POWER FAIL @ 115/230V, FULL LOAD	1 mSec. minimum



## 5.0 FAN NOISE REQUIREMENTS

5.1. The subject power supply is cooled by a self-contained, 80mm, 12VDC fan.

## 6.0 ENVIRONMENTAL REQUIREMENTS

The power supply will be compliant with each item in this specification for the following Environmental conditions.

### 6.1. TEMPERATURE RANGE

Operating	0 to +50 deg. C
Storage	-20 to +80 deg. C

### 6.2. HUMIDITY

Operating	85% RH, Non-condensing
Storage	95% RH, Non-condensing

### 6.3. VIBRATION

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

Vibration Operating – Sine wave excited, 0.25 G maximum acceleration, 10-250 Hz swept at one octave / min. Fifteen minute dwell at all resonant points, where resonance is defined as those exciting frequencies at which the device under test experiences excursions two times large than non-resonant excursions.

Plane of vibration to be along three mutually perpendicular axes.

## 7. MECHANICAL REQUIREMENTS

### 7.1 Physical Dimension

65 mm (W) × 85 mm (H) × 175 mm (D)



## 7.2 Connectors Define

### M/B 24PIN connector (M/B 20PIN in split mode)

18AWG wire	Signal	Pin	Pin	Signal	18AWG wire
Orange	+3.3V	13	1	+3.3V	Orange
Orange(22AWG)	+3.3Vsense	13	2	+3.3V	Orange
Blue (18AWG)	-12VDC	14	3	COM	Black
Black	COM	15	4	+5VDC	Red
Green(18AWG)	PS-ON	16	5	COM	Black
Black	COM	17	6	+5VDC	Red
Black	COM	18	7	COM	Black
Black	COM	19	8	PWRGOOD	Grey (18AWG)
White	N/C	20	9	+5Vsb	Purple
Red	+5VDC	21	10	+12V1	Yellow
Red	+5VDC	22	11	+12V1	Yellow
Red (22AWG)	+5Vsense	22	12	+3.3V	Orange
Red	+5VDC	23			
Black	COM	24			

### ATX 12V 4PIN

18AWG wire	Signal	Pin	Pin	Signal	18AWG wire
Black	GND	1	3	+12V2	Yellow
Black	GND	2	4	+12V2	Yellow

### 4PIN peripheral connector (HDD)

### 4PIN floppy connector (FDD)

18 AWG wire	Signal	Pin	Pin	Signal	22AWG wire
Yellow	+12V1	1	1	+5VDC	Red
Black	COM	2	2	COM	Black
Black	COM	3	3	COM	Black
Red	+5VDC	4	4	+12V1	Yellow

### SATA connector

18AWG wire	Signal	Pin
Orange	+3.3V	5
Black	COM	4
Red	+5V	3
Black	COM	2
Yellow	+12V1	1