



SILVERSTONE[®]
Designing Inspiration

STRIDER GOLD S SERIES

SST-ST85F-GS /SST-ST75F-GS

World's smallest, full-modular ATX power supplies

Compact design with a depth of 150mm for easy integration

80 PLUS Gold certification

100% modular cables

24/7 continuous power output with 40°C operating temperature

Class-leading single +12V rail

Strict $\pm 3\%$ voltage regulation and low ripple & noise

Silent running 120mm fan with 18dBA minimum

SPECIFICATION

SilverStone Strider Gold

ST85F-GS

ST75F-GS

ATX12V / EPS 12V Switching Power Supply

With Active PFC

80Plus Gold

PS/2

This specification describes the requirements of 750W,850Watts switching power supply with an stretch ATX form-factor and EPS 12V, +5V standby voltage,remote on/off control, full range line input capability and forced air cooling characteristics.

1. AC INPUT

1.1 AC input requirements

The input voltage, current, and frequency requirements for continuous operation are stated below.

Table 1 AC Input Line Requirements

Parameter	Min.	Nom.	Max.	Unit
Vin(Full range)	90	100---240	264	VACrms
Vin Frequency	47	60-----50	63	Hz
Iin(750W)		10-----5		Arms
Iin(850W)		11-----5.5		Arms

Power factor correction (PF)>0.90 at full load.

1.2 Inrush current regulation

The power supply must meet inrush requirements for any rated AC voltage, during turn on at any phase of AC voltage, during a single cycle AC dropout condition, during repetitive ON/OFF cycling of AC, and over the specified temperature range (Top). The peak inrush current shall be less than the ratings of its critical components (including input fuse, bulk rectifiers, and surge limiting device).

2. DC OUTPUT

2.1 DC voltage regulation

Parameter	Range	Min	Nom.	Max	Unit
+3.3V	+/-3%	+3.20	+3.30	+3.40	Volts
+5V	+/-3%	+4.85	+5.00	+5.15	Volts
+12V	+/-3%	+11.64	+12.00	+12.36	Volts
-12V	+/-10%	-13.20	-12.00	-10.80	Volts
+5VSB	+/-5%	+4.75	+5.00	+5.25	Volts

Note:

- 1.Voltage tolerance is required at main connector and S-ATA connector(if used)
- 2.Output transient response tested DC voltage regulation range +5V,+12V,+3.3V \pm 5%

2.2 Load ranges

2.2.1: SST-ST75F-GS Load Range

Parameter	Min(optional)	Nom.	Max	Unit
+3.3V	0.5	-	22	Amps
+5V	0.3	-	25	Amps
+12V	1.0	-	62	Amps
-12V	0	-	0.3	Amps
+5VSB	0.1	-	3.5	Amps

- 1.Maximum continuous total DC output power should not exceed 750W.
- 2.Maximum continuous combined load on +3.3VDC and +5VDC outputs shall not exceed 150W.
- 3.Maximum combined current for the +12V outputs shall be 62A(744W).
- 4.When +12V is load to 28A , -12V minimum load is 0.02A.
- 5.Peak total DC output power should not exceed 800W.
- 6.Peak power can be supported for 12 second.

2.2.2: SST-ST85F-GS Load Range

Parameter	Min	Nom.	Max	Unit
+3.3V	0.5	-	22	Amps
+5V	0.3	-	25	Amps
+12V	1	-	70	Amps
-12V	0	-	0.3	Amps
+5VSB	0.1	-	3.5	Amps

1. Maximum continuous total DC output power should not exceed 850W.
2. Maximum continuous combined load on +3.3VDC and +5VDC outputs shall not exceed 150W.
3. Maximum combined current for the +12V outputs shall be 70A(840W).
4. When +12V is load to 28A, -12V minimum load is 0.02A.
5. Peak total DC output power should not exceed 900W.
6. Peak power can be supported for 12 second.

2.3 Output Ripple

2.3.1 Ripple regulation

Parameter	Ripple&Noise	Unit
+3.3V	50	mVp-p
+5V	50	mVp-p
+12V	120	mVp-p
-12V	120	mVp-p
+5VSB	50	mVp-p

2.3.2 Definition

The ripple voltage of the outputs shall be measured at the pins of the output connector when terminated in the load impedance specified in figure 1. Ripple and noise are measured at the connectors with a 0.1uF ceramic capacitor and a 10uF electrolytic capacitor to simulate system loading. Ripple shall be measured under any condition of line voltage, output load, line frequency, operation temperature.

2.3.3 Ripple voltage test circuit

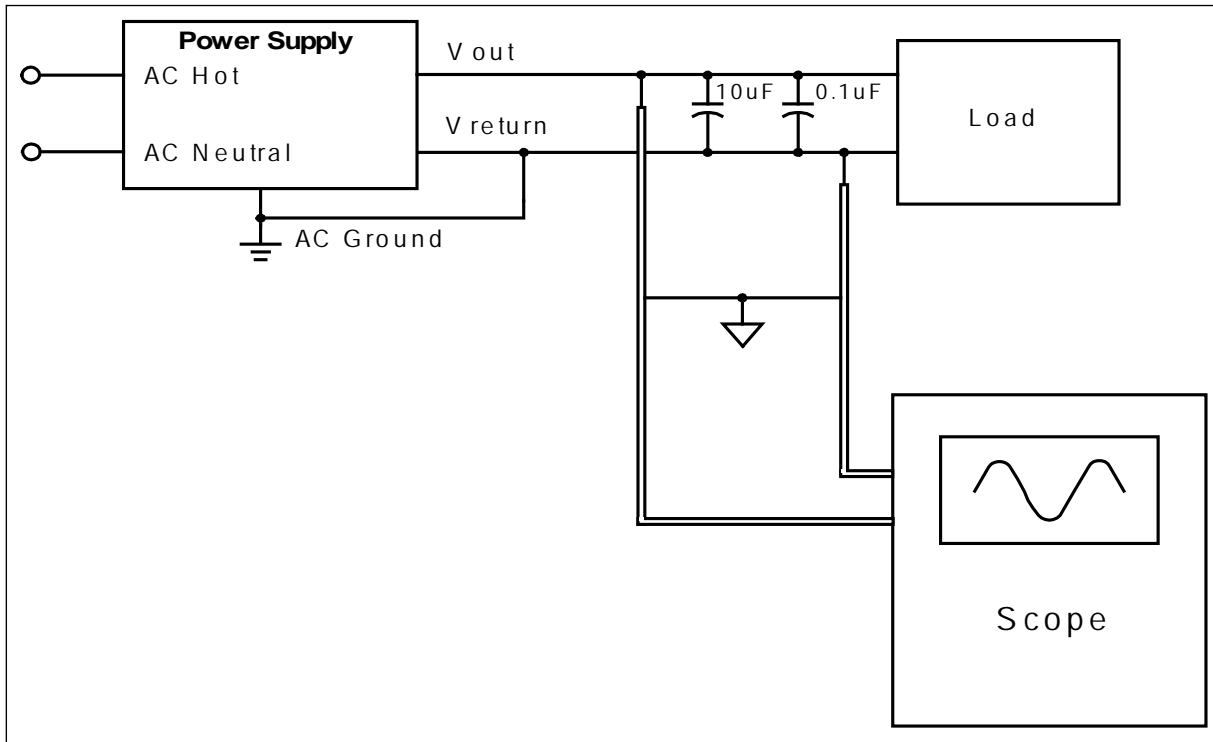


Figure 1. Ripple voltage test circuit

2.4 Overshoot

Any overshoot at turn on or turn off shall be less 10% of the nominal voltage value, all outputs shall be within the regulation limit of section 2.0 before issuing the power good signal of section 5.0.

2.5 Efficiency

Power supply efficiency typical 87% for 750W 850W normal voltage at full load on all outputs.

2.6 Remote ON/OFF control

When the logic level "PS-ON" is low, the DC outputs are to be enabled.

When the logic level is high or open collector, the DC outputs are to be disabled.

3.0 PROTECTION

3.1 Over current protection

The power supply shall have current limit to prevent the +3.3V,+5V,and +12V1,+12V2 outputs from exceeding the values shown in the following Table.If the current limits are exceeded the power supply shall shutdown and latch off.

SST-ST75F-GS

Voltage	Over Current Limit (lout limit)
+12V	65A minimum; 95A maximum
+5V	28A minimum; 45A maximum
+3.3V	24A minimum; 40A maximum

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Voltage	Over Current Limit (lout limit)
+12V	72A minimum; 105A maximum
+5V	28A minimum; 45A maximum
+3.3V	24A minimum; 40A maximum

3.2 Over Temperature Protection

The power supply will be protected against over temperature conditions caused by loss of fan cooling or excessive ambient temperature. In an OTP condition the PSU will shutdown. When the power supply temperature drops to within specific limits, the power supply shall restore power automatically. The OTP circuit must have built in hysteresis such that the power supply will not oscillate on and off due to temperature recovering condition.

3.3 Over-power protection

The power supply will be shutdown and latch off when output power within 110~180% of rated DC output.

Note: Assurance machine can work at low voltage, full load won't damage machine.

3.4 Under voltage protection

In an under voltage fault occurs, the supply will latch all DC outputs into a shutdown state when +12V, +5V & +3.3V outputs under 85% of its maximum value.

3.5 Over voltage protection

The over voltage sense circuitry and reference shall reside in packages that are separate and distinct from the regulator control circuitry and reference. No single point fault shall be able to cause a sustained over voltage condition on any or all outputs. The supply shall provide latch-mode over voltage protection as defined in Table.

output	Minimum	Nominal	Maximum	Unit
+12 VDC	13	15	17	Volts
+5 VDC	5.5	6	7	Volts
+3.3 VDC	3.6	4	5	Volts

3.6 Short circuit

An output short circuit is defined as any output impedance of less than 0.1 ohms. The power supply shall shut down and latch off for shorting the +3.3 VDC, +5 VDC, or +12 VDC rails to return or any other rail. Shorts between main output rails and +5VSB shall not cause any damage to the power supply. The power supply shall either shut down and latch off or fold back for shorting the negative rails. +5VSB must be capable of being shorted indefinitely, but when the short is removed, the power supply shall recover automatically or by cycling PS_ON#. The power supply shall be capable of withstanding a continuous short-circuit to the output without damage or overstress to the unit.

3.7 No load operation

No damage or hazardous condition should occur with all the DC output connectors disconnected from the load. The power supply may latch into the shutdown state.

4. TIMING

4.1 Signal timing drawing

Figure 2. is a reference for signal timing for main power connector signals and rails.

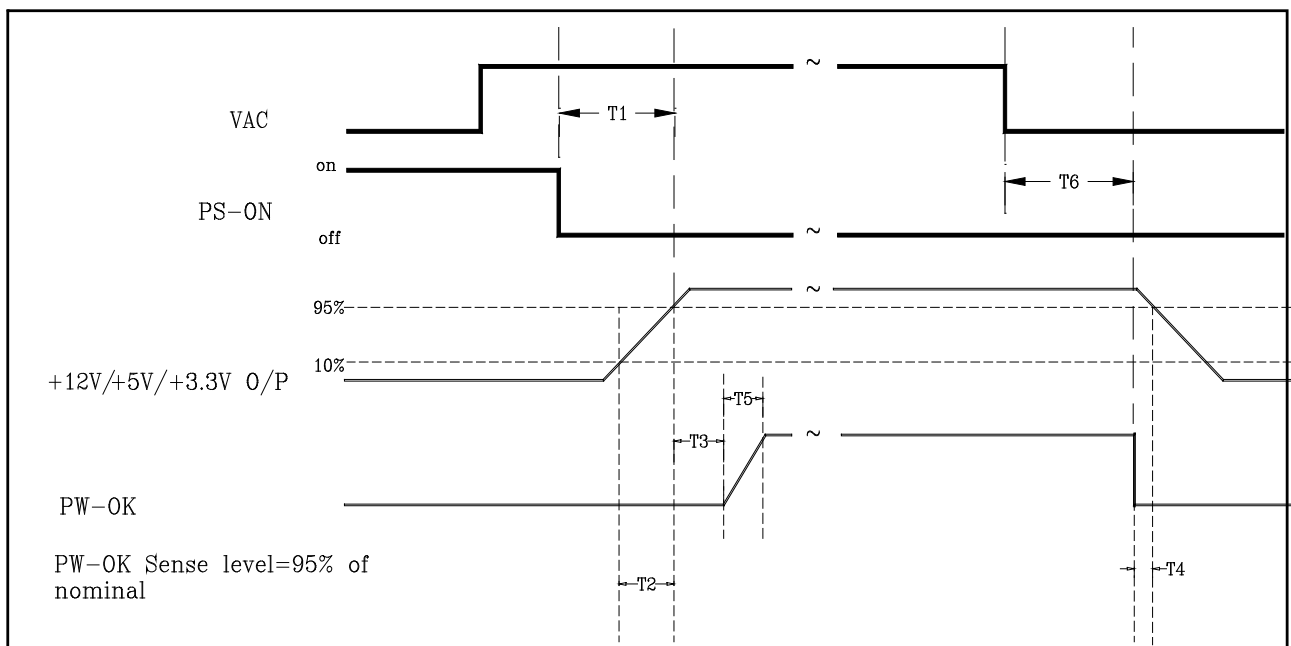


Figure 2. PS-OK Timing Sequence

- (1) T3: Power good signal turn on delay time (100ms~500ms)
- (2) T4: Power good signal turn off delay time (1ms min)
- (3) T2: Rise time (0.1~70ms)
- (4) T6: Hold up time

4.2 Hold up time

When the power loss its input power, it shall maintain 17ms in regulation limit at normal input voltage. (Tested at 75% of maximum load and 100-240VAC input).

5. ENVIRONMENT

5.1 Operation

Temperature	0 to 40°C
Relative Humidity	10 to 90%, non-condensing

5.2 Shipping and Storage

Temperature	-20 to 60°C
Relative Humidity	5 to 95%, non-condensing

5.3 Altitude

Operating	10,000FT max
Storage	50,000FT max

6. SAFETY

6.1 Underwriters Laboratory (UL) recognition.

The power supply designed to meet UL 1950.

6.2 The power supply must bear the German Bauart Mark from TUV.

7. ELECTROMAGNETIC COMPATIBILITY (EMC)

7.1 ELECTROSTATIC DISCHARGE (ESD) - EN 61000 – 4 - 2 : 2008

7.2 ELECTRICAL FAST TRANSIENT / BURST (EFT/B) – EN 61000 – 4 - 4 : 2010

7.3 SURGE – EN 61000 – 4 - 5 : 2005

7.4 POWER FREQUENCY MAGNETIC FIELD – EN 61000 – 4 - 8 : 2009

7.5 VOLTAGE DIPS – RN 61000 – 4 - 11 : 2004

7.6 RADIATED SUSCEPTIBILTY – EN 61000 – 4 – 3 : 2006

7.7 CONDUCTED SUSCEPTIBILTY – EN 61000 – 4 - 6 : 2008

7.8 VOLTAGE FLUCTUATION - EN 61000 – 3 – 3 : 2008

7.9 EN61000-3-2 harmonic current emissions.

If applicable to sales in Europe, the power supply shall meet the requirements of EN 61000-3-2 Class D and the Guidelines for the Suppression of Harmonics in Appliances and General Use Equipment Class D for harmonic line current content at full-rated power.

7.10 EN55022 Class B Radio interference (CISPR 22).

7.11 FCC Part 15, Subpart J class B 115VAC operation.

8. MTBF

8.1 MTBF (mean time between failures) calculation

The demonstrated MTBF shall be 100,000 hours of continuous operation at 25oC, at 80% load, and nominal line. The MTBF of the power supply be calculated in accordance with MIL-HDBK-217F. The DC FAN is not included.

9. MECHANICAL REQUIREMENTS

9.1 Physical Dimension

150 mm (W) × 86 mm (H) × 150mm (D)

9.2 Connectors

M/B 24PIN connector

	Signal	Pin	Pin	Signal	
Orange	+3.3V	13	1	+3.3V	Orange
Blue	-12VDC	14	2	+3.3V	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	N/C	20	8	PWRGOOD	Grey
Red	+5VDC	21	9	+5Vsb	Purple
Red	+5VDC	22	10	+12V	Yellow
Red	+5VDC	23	11	+12V	Yellow
Black	COM	24	12	+3.3V	Orange

EPS 12V 8PIN connector

	Signal	Pin	Pin	Signal	
Yellow	+12V	5	1	COM	Black
Yellow	+12V	6	2	COM	Black
Yellow	+12V	7	3	COM	Black
Yellow	+12V	8	4	COM	Black

ATX 12V 4PIN (4+4PIN EPS 12V in split mode)

	Signal	Pin	Pin	Signal	
Black	GND	1	3	+12V	Yellow
Black	GND	2	4	+12V	Yellow

4PIN peripheral connector (HDD) 4PIN floppy connector (FDD)

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

SATA connector

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

8PIN PCI Express connector

	Signal	Pin	Pin	Signal	
Yellow	+12V	1	5	COM	Black
Yellow	+12V	2	6	COM	Black
Yellow	+12V	3	7	COM	Black
Black sense1	COM	4	8	COM	Black

6PIN PCI Express connector

	Signal	Pin	Pin	Signal	
Yellow	+12V	1	4	COM	Black
Yellow	+12V	2	5	COM	Black
Yellow	+12V	3	6	COM	Black

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