SILVERSTONE®
Designing Inspiration

STRIDER
ST1500
The dream PSU for computer enthusiasts

1500W continuous and 1600W peak power
100% modular cables with cable bag
Efficiency 85%~88% at 20%~100% loading with 80 PLUS Silver certification
Class-leading eight +12V rails with 110A (Peak up to 120A)
1500W continuous power output with 40°C operating temperature
Strict ±3% voltage regulation
Silent running 135mm fan with 19dBA minimum
Japanese main capacitors
Four PCI-E 8pin, eight PCI-E 6pin, and twelve SATA connectors support
Support ATX 12V 2.3 & EPS 12V
Active PFC

SPECIFICATION

SilverStone STRIDER ST1500
ATX12V / EPS 12V Switching Power Supply
With Active PFC
PS/2 1500W

This specification describes the requirements of 1500Watts switching power supply with an stretch form-factor and EPS12V, +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		18----9.0		Arms

Power factor correction (PF)>0.95 at full load.

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	MIN	NOM	MAX	Units	Tolerance
+3.3V	+3.20	+3.30	+3.39	Vms	+/-3%
+5V	+4.85	+5.00	+5.15	Vms	+/-3%
+12V1,2,3,4,5,6,7,8	+11.64	+12.00	+12.36	Vms	+/-3%
-12V	-10.8	-12.20	-13.20	Vms	+/-10%
+5VSB	+4.75	+5.00	+5.25	Vms	+5/-5%

2-2. Load ranges

Load Range

Parameter	Min	Nom.	Max	Peak	Unit
+3.3V	0.8	-	40	-	Amps
+5V	0.5	-	40	-	Amps
+12V1	0.1	-	25	30	Amps
+12V2	0.1	-	25	30	Amps
+12V3	0.1	-	25	30	Amps
+12V4	0.1	-	25	30	Amps
+12V5	0.1	-	25	30	Amps
+12V6	0.1	-	25	30	Amps
+12V7	0.1	-	25	30	Amps
+12V8	0.1	-	25	30	Amps
-12V	0	-	0.5	-	Amps
+5VSB	0	-	6.0	8	Amps

1.Maximum continuous total DC output power should not exceed 1500W.

2.Maximum c.ontinuous combined load on +3.3 VDC and +5 VDC outputs shall not exceed 280W.

3.Maximum peak total DC output power should not exceed 1600 W.

4.Peak power and current loading shall be supported for a minimum of 12 second.

5.Maximum combined current for the 12 V outputs shall be 110A.

6.Peak current for the combined 12V outputs shall be 120A.

2-3. Output Ripple

2-3-1. Ripple regulation

Parameter	Ripple&Noise	Unit
+3.3V	50	mVp-p
+5V	50	mVp-p
+12V1	120	mVp-p
+12V2	120	mVp-p
+12V3	120	mVp-p
+12V4	120	mVp-p
+12V5	120	mVp-p
+12V6	120	mVp-p
+12V7	120	mVp-p
+12V8	120	mVp-p
-12V	120	mVp-p
+5VSB	50	mVp-p

2-3-2. Definition

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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

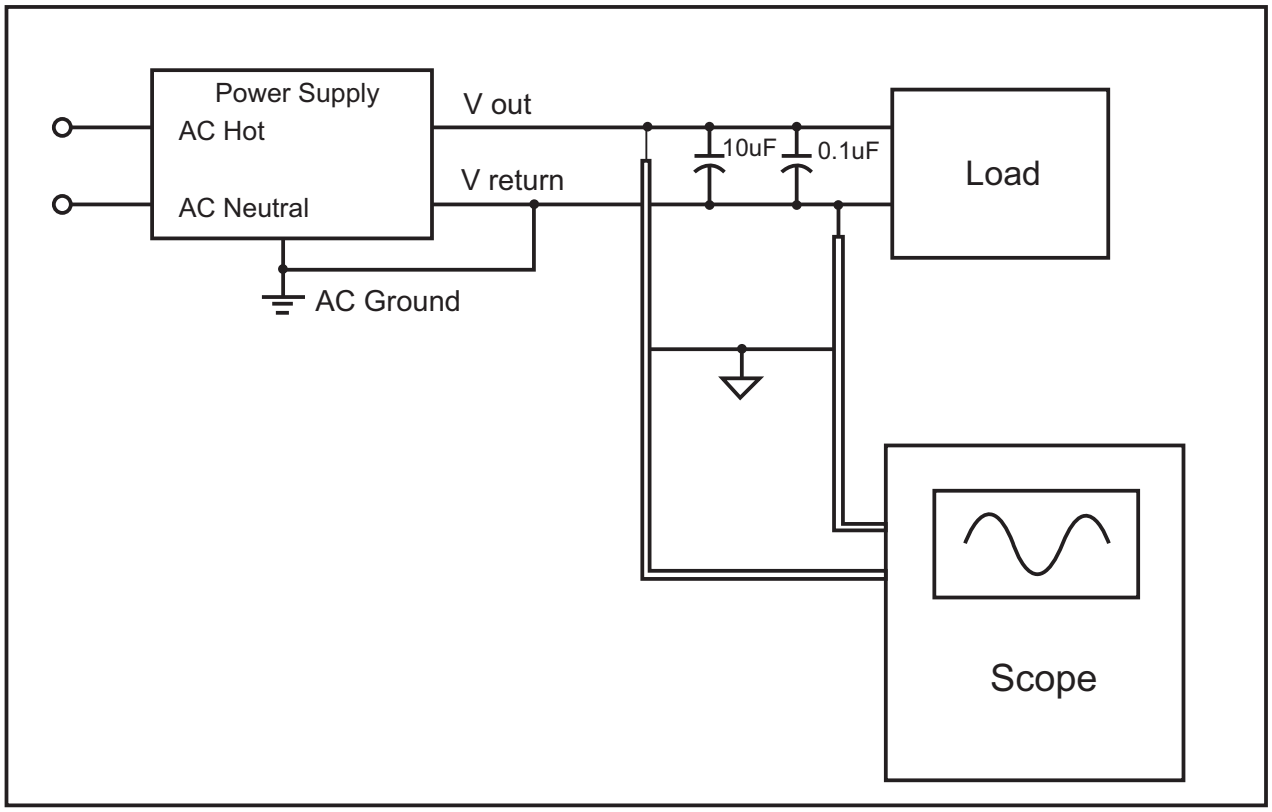

Figure 1. Ripple voltage test circuit

2-4. Overshoot

Any overshoot at turn on or turn off shall be less 10% of the norminal 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 > 85% at normal AC main voltage and 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. PROTECTION

3-1. Over current protection

The power supply shall have current limit to prevent the +3.3 V, +5 V, and +12 V outputs from exceeding the values shown in Table 28. If the current limits are exceeded the power supply shall shutdown and latch off. The latch will be cleared by toggling the PSON# signal or by an AC power interruption. The power supply shall not be damaged from repeated power cycling in this condition. -12 V and 5 VSB shall be protected under over current or shorted conditions so that no damage can occur to the power supply. All outputs shall be protected so that no damage occurs to the power supply under a shorted output condition.

Voltage	Over Current Limit (Iout limit)	
+3.3 V	110% minimum	150% maximum
+5 V	110% minimum	150% maximum
+12 V	110% minimum	150% maximum

3-2. 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 it's maximum value.

3-3. Over voltage protection

The over voltage sense circuitry and reference shall reside in packages that are separate and distinct from the regulator control circuity 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	13.4	15.0	16.6	Volts
+5 VDC	5.74	6.3	7	Volts
+3.3 VDC	3.76	4.2	4.50	Volts

3-4. 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.

3-5. 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.

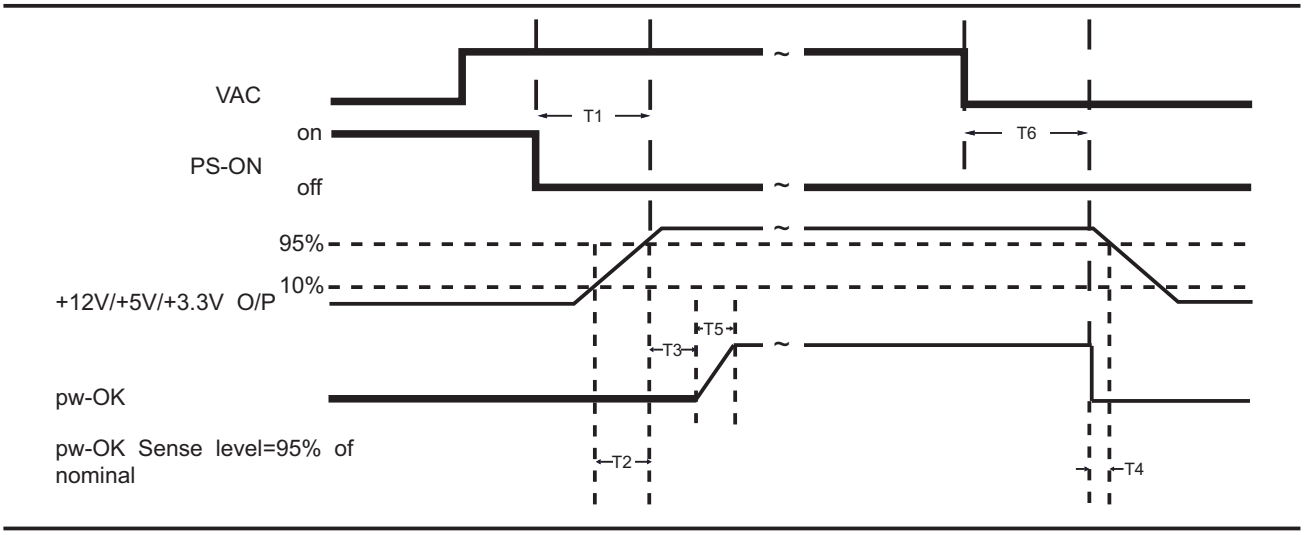

Figure 2. PW-OK Timing Sequence

(1)T3: Power good signal turn on delay time (100ms~500ms)

(2)T4: Power good signal turn off delay time (1ms min)

(3)T5: Rise time (5~70ms max)

(4)T6: Hold up time (16ms min)

4-2. Hold up time

When the power loss its input power, it shall maintain 17ms in regulation limit at normal input voltage. (AC:115V/60Hz or 230V/50Hz)

5. ENVIRONMENT

5-1. Operation

Temperature	0 to 40℃
Relative Humidity	10 to 85%, non-condensing

5-2. Shipping and Storage

Temperature	-40 to 70℃
Relative Humidity	5 to 90%, 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. IEC 1000-4-2 ESD LEVEL X20KV4.

7-2. IEC 1000-4-3 radiated electrical field requirement.

7-3. IEC 1000-4-4 BURST.

7-4. IEC 1000-4-5 surge Voltages.

7-5. EN61000-3-2 harmonic current emissions.

If applicable to sales in Japan or 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.

7-6. EN55024 class B radio interference (CISPR 22)

7-7. 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 25℃,full 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) × 220 mm (D)

9-2. Connectors(Pin definition)

M/B 24PIN connector

	Signal	Pin	Pin	Signal	
Orange	+3.3V	13	1	+3.3V	Orange
Orange	+3.3Vsense	13			
Blue	-12VDC	14	2	+3.3V	+3.3V
Black	COM	15	3	COM	COM
Green	PS-ON	16	4	+5VDC	+5VDC
Black	COM	17	5	COM	COM
Black	COM	18	6	+5VDC	+5VDC
Black	COM	19	7	COM	COM
White	N/C	20	8	PWRGOOD	PWRGOOD
Red	+5VDC	21	9	+5Vsb	+5Vsb
Red	+5VDC	22	10	+12V3	Yellow
Red	+5Vsense	22			
Red	+5VDC	23	11	+12V3	+12V3
Black	COM	24	12	+3.3V	+3.3V

EPS 12V 8PIN connector #1 & #2

	Signal	Pin	Pin	Signal	
Yellow	+12V2	5	1	COM	Black
Yellow	+12V2	6	2	COM	Black
Yellow	+12V1	7	3	COM	Black
Yellow	+12V1	8	4	COM	Black

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

	Signal	Pin	Pin	Signal	
Black	GND	1	3	+12V1/2	Yellow
Black	GND	2	4	+12V1/2	Yellow

4PIN peripheral connector (HDD)

4PIN floppy connector (FDD)

	Signal	Pin	Pin	Signal	
Yellow	+12V3/4	1	1	+5VDC	Red
Black	COM	2	2	COM	Black
Black	COM	3	3	COM	Black
Red	+5VDC	4	4	+12V3/4	Yellow

SATA connector

	Signal	Pin
Orange	+3.3V	5
Black	COM	4
Red	+5V	3
Black	COM	2
Yellow/White stripe	+12V4	1

8PIN PCI Express connector #1 & #2 & #3 & #4

	Signal	Pin	Pin	Signal	
Yellow	+12V5/6/7/8	1	5	COM	Black
Yellow	+12V5/6/7/8	2	6	COM	Black
Yellow	+12V5/6/7/8	3	7	COM	Black
Black sense1	COM	4	8	COM	Black

6PIN PCI Express connector #1 & #2 & #3 & #4 & #5 & #6 & #7 & #8

	Signal	Pin	Pin	Signal	
Yellow	+12V5/6/7/8	1	4	COM	Black
Yellow	+12V5/6/7/8	2	5	COM	Black
Yellow	+12V5/6/7/8	3	6	COM	Black

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