



**SILVERSTONE**<sup>®</sup>  
Designing Inspiration

**STRIDER**

# **ST1000-NV**

**Exceptional power and flexibility in one**

Dual +12V with continuous 70A combined output

100% modular cables with cable bag

Support dual PCI-E 8 pin connectors & six PCI-E 6 pin connectors

Silent running 135mm fan

Support for ATX 12V 2.2 & EPS 12V

Active PFC

Efficiency greater than 80%

# SPECIFICATION

## SilverStone Strider ST1000-NV Switching Power Supply With Active PFC PS/2 Modular 1000W

### 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               |      | 12-----6  |      | Arms   |

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

#### 1-2. Inrush current regulation

80 A @ 115Vrms

100 A @ 230Vrms (at 25°C ambient cold start)

### 2. DC OUTPUT

#### 2-1. DC voltage regulation

| Parameter | Range  | Min    | Nom. | Max    | Unit  |
|-----------|--------|--------|------|--------|-------|
| +3.3V     | +5/-4% | +3.16  | +3.3 | +3.47  | Volts |
| +5V       | +5/-4% | +4.8   | +5   | +5.25  | Volts |
| +12V1     | +5/-4% | +11.52 | +12  | +12.6  | Volts |
| +12V2     | +5/-4% | +11.52 | +12  | +12.6  | Volts |
| -12V      | +9/-5% | -11.40 | -12  | -13.08 | Volts |
| +5VSB     | +5/-3% | +4.85  | +5   | +5.25  | Volts |

**2-2. Load ranges**

| Parameter | Min | Nom. | Max | Peak | Unit |
|-----------|-----|------|-----|------|------|
| +3.3V     | 0.8 | -    | 25  |      | Amps |
| +5V       | 0.5 | -    | 30  |      | Amps |
| +12V1     | 1   | -    | 35  |      | Amps |
| +12V2     | 1   | -    | 35  |      | Amps |
| -12V      | 0   | -    | 0.5 |      | Amps |
| +5VSB     | 0.1 | -    | 3.0 | 3.5  | Amps |

1. Maximum continuous total DC output power should not exceed 1000W
2. Maximum continuous combined load on +3.3 VDC and +5 VDC outputs shall not exceed 200W
3. Maximum peak total DC output power should not exceed 1100 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 70A.
6. Peak current for the combined 12V outputs shall be 75A.

**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 |
| -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

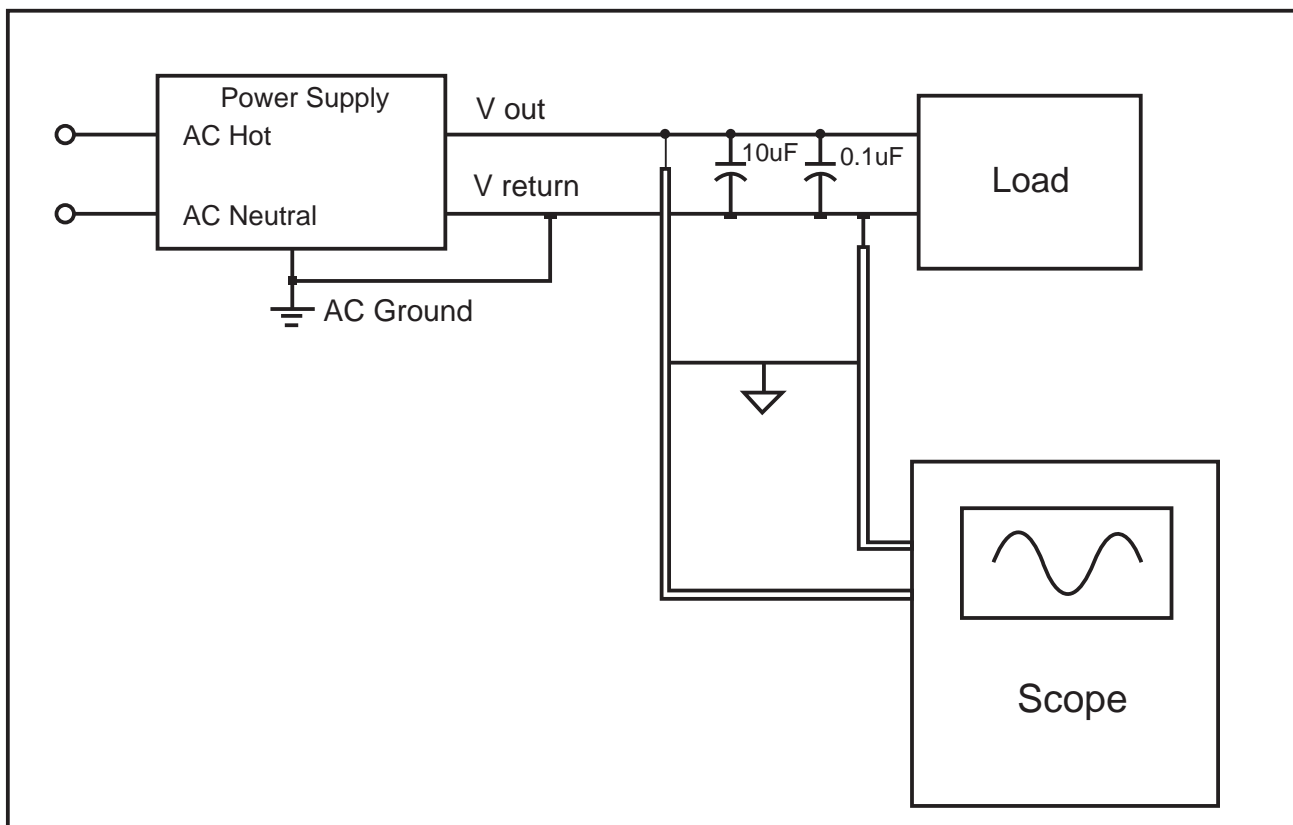


Figure 1. Ripple voltage test circuit

### 2-4. Overshoot

Any overshoot at turn on or turn off shall be less 10% of the normal 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 80% 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 +3.3V,+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.

| Voltage | Over Current Limit (Iout limit) |
|---------|---------------------------------|
| +12V1   | 40A minimum; 50A maximum        |
| +12V2   | 40A minimum; 50A maximum        |
| +5V     | 33A minimum; 48A maximum        |
| +3.3V   | 30A minimum; 50A 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 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  | 13.4    | 15.0    | 15.6    | Volts |
| +5 VDC   | 5.74    | 6.3     | 7.0     | Volts |
| +3.3 VDC | 3.76    | 4.2     | 4.3     | 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.

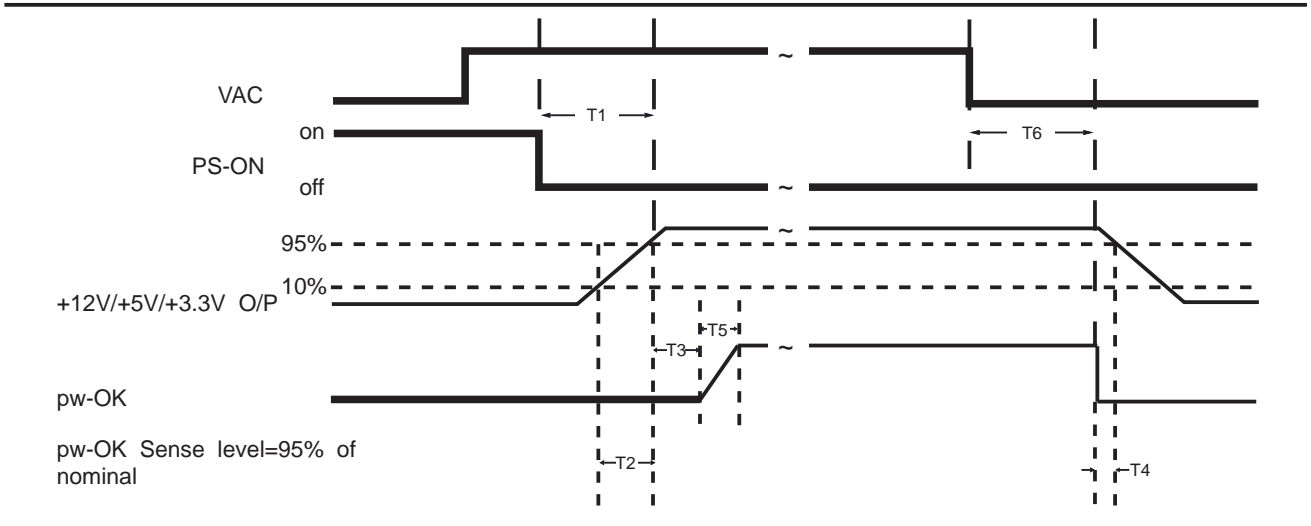


Figure 2. PW-OK Timing Sequence

- (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 (17ms 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°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. 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.**

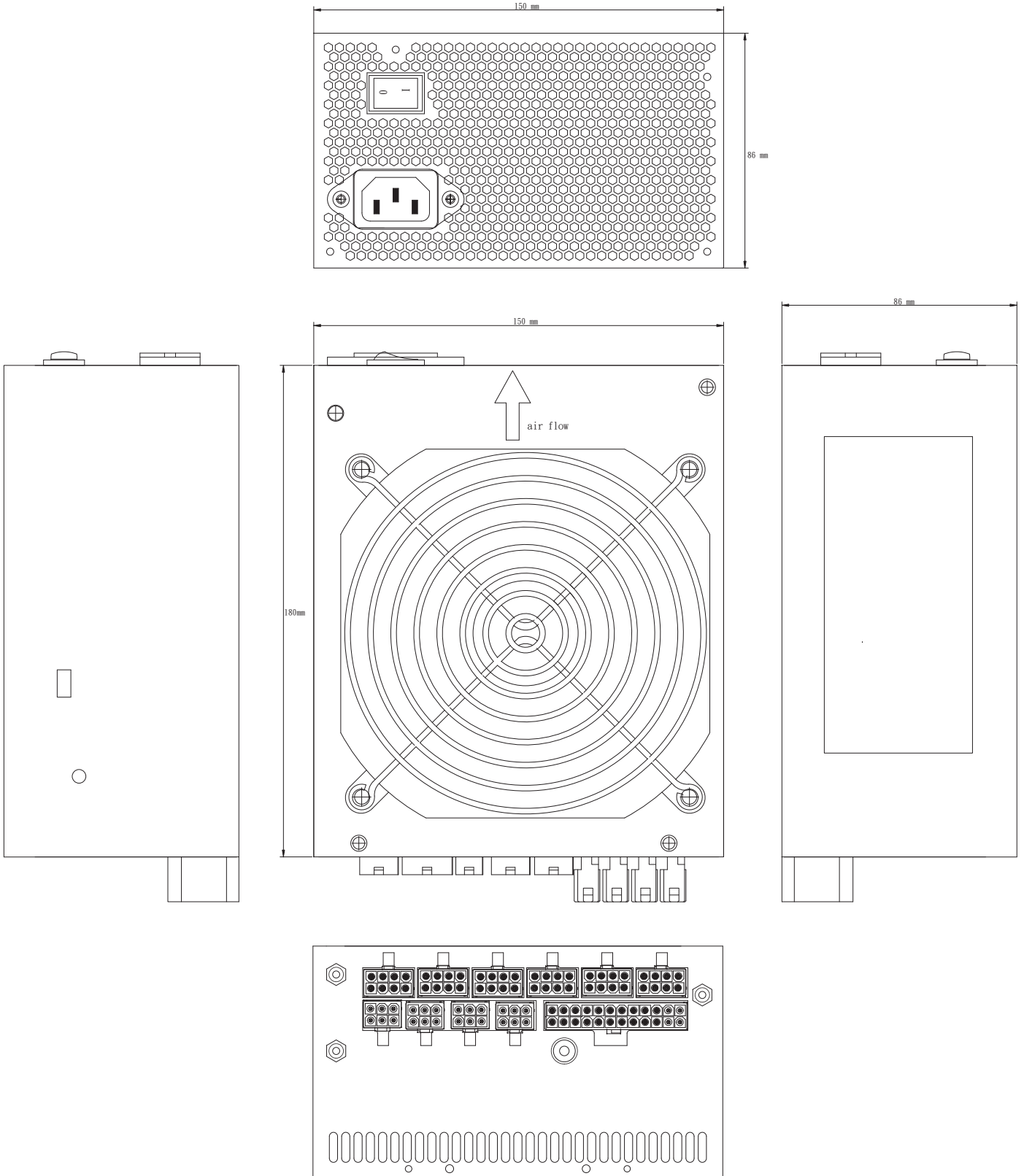
If applicable to sales in Japan or Europe, the power supply shall meet the requirements of EN 61000-3-2 class D and the guidelines for the suppression of harmonics in appliances and general use equipment class D for harmonic line current content at full-rated power.

**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°C, 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



## 9-2. Pin definition

M/B 24PIN connector

| 16AWG wire    | Signal     | Pin | Pin | Signal  | 16AWG wire    |
|---------------|------------|-----|-----|---------|---------------|
| Orange        | +3.3V      | 13  | 1   | +3.3V   | Orange        |
| Orange(22AWG) | +3.3Vsense | 13  |     |         |               |
| 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         |
| N/C           | N/C        | 20  | 8   | PWRGOOD | Grey (20AWG)  |
| Red           | +5VDC      | 21  | 9   | +5Vsb   | Purple(18AWG) |
| Red           | +5VDC      | 22  | 10  | +12V1   | Yellow        |
| Red           | +5VDC      | 23  | 11  | +12V1   | Yellow        |
| Black         | COM        | 24  | 12  | +3.3V   | Orange        |

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      | GND    | 4   |
| Red        | +5V    | 3   |
| Black      | GND    | 2   |
| Yellow     | +12V1  | 1   |

### EPS 12V 8PIN Connector

| 18AWG wire | Signal | Pin | Pin | Signal | 18AWG wire |
|------------|--------|-----|-----|--------|------------|
| Yellow     | +12V1  | 5   | 1   | COM    | Black      |
| Yellow     | +12V1  | 6   | 2   | COM    | Black      |
| Yellow     | +12V1  | 7   | 3   | COM    | Black      |
| Yellow     | +12V1  | 8   | 4   | COM    | Black      |

### 8PIN PCI Express Connector

| 18AWG wire   | Signal    | Pin | Pin | Signal | 18AWG wire |
|--------------|-----------|-----|-----|--------|------------|
| Yellow/Black | +12V2     | 1   | 5   | GND    | Black      |
| Yellow/Black | +12V2     | 2   | 6   | GND    | Black      |
| Yellow/Black | +12V2     | 3   | 7   | GND    | Black      |
| Black        | GND sense | 4   | 8   | GND    | Black      |

### 6PIN PCI Express Connector

| 18AWG wire   | Signal | Pin | Pin | Signal    | 18AWG wire |
|--------------|--------|-----|-----|-----------|------------|
| Yellow/Black | +12V2  | 1   | 4   | GND       | Black      |
| Yellow/Black | +12V2  | 2   | 5   | GND sense | Black      |
| Yellow/Black | +12V2  | 3   | 6   | GND       | Black      |

## 10.FAN SPEED CONTROL

Fan voltage varies with the ambient temperature or output power



To be valid, this sheet must be filled out by  
your salesperson at the time of purchase.

Store :

Purchaser :

Purchase date :

Model No. :

Serial No. :

SILVERSTONE

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