



SILVERSTONE[®]
Designing Inspiration

STRIDER ESSENTIAL SERIES ST70F-ES230/ST60F-ES230

Power for everything you need

High efficiency with 80 PLUS certification

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

Class-leading single +12V rail

Active PFC Circuitry

PCI-E 8pin and PCI-E 6pin connector support

Silent running 120mm fan with 18dBA

SPECIFICATION

SilverStone Strider Essential ST70F-ES230 ST60F-ES230

ATX12V Switching Power Supply
With Active PFC
PS/2

1. INPUT:

1.1 VOLTAGE

MINIMUM	NOMINAL	MAXIMUM	UNITS
180	200-240	264	Vrms

1.2 FREQUENCY

47Hz ~ 63Hz

1.3 CURRENT

5.0A max. (ST70F-ES230), 4.5A max. (ST60F-ES230)

1.4 INRUSH CURRENT

Power no damage at AC input 230Vac and 25 °C cold start.

1.5 POWER EFFICIENCY

ST70F-ES230

Loading	+12V	+5V	+3.3V	-12V	+5Vsb	Efficiency
20%	9.52A	2.76A	2.76A	0.05A	0.44A	82%
50%	23.80A	6.90A	6.90A	0.13A	1.10A	85%
100%	47.60A	13.81A	13.81A	0.26A	2.20A	82%

ST60F-ES230

Loading	+12V	+5V	+3.3V	-12V	+5Vsb	Efficiency
20%	8.02A	2.52A	2.52A	0.05A	0.44A	82%
50%	20.06A	6.30A	6.30A	0.13A	1.09A	85%
100%	40.11A	12.61A	12.61A	0.26A	2.18A	82%

1.6 LEAKAGE CURRENT

3.5mA max.

1.7 POWER FACTOR

PF > 0.95 at 230Vac input and full load

2. OUTPUT:

ST70F-ES230

Voltage	+5V	+3.3V	+12V	-12V	+5Vsb
Max load*	22.0A	22.0A	54.0A	0.3A	2.5A
Min load	0.5A	0.3A	1.0A	0.0A	0.0A
Peak load	--	--	--	--	3.0A
Combined power*	130W		--	--	--
Regulation***	+5,-5%	+5,-5%	+5,-5%	+10,-10%	+5,-5%
Ripple & Noise**	50mV	50mV	120mV	120mV	50mV

- * · The continuous total output power is 700W max.
- The combined power of +5V and +3.3V is 130W max.
- When +5V load is over 15A, +12V min load is 8A.
- When +12V load is over 30A, +5V min load is 2A.
- Peak currents may last up to 12 seconds with not more than one occurrence per minute.

** Add 0.1uF and 10uF capacitors across output terminal during ripple & noise test.

*** LOAD REGULATION TEST TABLE:

	+5V	+12V	+3.3V	-12V	+5Vsb
LOAD1	0.5A	1.0A	0.3A	0.0A	0.0A
LOAD2	6.0A	1.0A	6.0A	0.0A	0.1A
LOAD3	8.0A	4.0A	8.0A	0.1A	0.5A
LOAD4	20.0A	36.0A	6.0A	0.2A	1.0A
LOAD5	11.5A	28.0A	22.0A	0.2A	1.5A
LOAD6	7.0A	50.0A	10.0A	0.3A	2.5A
LOAD7	9.0A	52.0A	0.3A	0.3A	0.5A
LOAD8	0.5A	2.0A	0.3A	0.0A	0.0A

ST60F-ES230

Voltage	+5V	+3.3V	+12V	-12V	+5Vsb
Max load*	20.0A	20.0A	46.0A	0.3A	2.5A
Min load	0.5A	0.3A	1.0A	0.0A	0.0A
Peak load	--	--	--	--	3.0A
Combined power*	120W		--	--	--
Regulation***	+5,-5%	+5,-5%	+5,-5%	+10,-10%	+5,-5%
Ripple & Noise**	50mV	50mV	120mV	120mV	50mV

- * · The continuous total output power is 600W max.
- The combined power of +5V and +3.3V is 120W max.
- When +5V load is over 15A, +12V min load is 14A.
- When +12V load is over 30A, +5V min load is 2A.
- Peak currents may last up to 12 seconds with not more than one occurrence per minute.

** Add 0.1uF and 10uF capacitors across output terminal during ripple & noise test.

*** LOAD REGULATION TEST TABLE:

	+5V	+12V	+3.3V	-12V	+5Vsb
LOAD1	0.5A	1.0A	0.3A	0.0A	0.0A
LOAD2	5.0A	1.0A	5.0A	0.0A	0.1A
LOAD3	8.0A	4.0A	8.0A	0.1A	0.5A
LOAD4	18.0A	32.0A	6.0A	0.2A	1.0A
LOAD5	11.0A	24.0A	20.0A	0.2A	1.5A
LOAD6	6.0A	42.0A	10.0A	0.3A	2.5A
LOAD7	8.0A	44.0A	0.3A	0.3A	0.5A
LOAD8	0.5A	2.0A	0.3A	0.0A	0.0A

2.1 REMOTE ON/OFF

TTL High/PS-OFF; TTL Low/PS-ON

VIL=0.8Vmax, IIL=-1.6mAmax @Vin=0.4V

VIH=2.0Vmin @Iin=-200uA, VIH=5.25Vmax @open ckt.

2.2 HOLD-UP TIME

10msec (minimum) at 80% of full load at 230Vac input.

2.3 POWER GOOD DELAY

100-500 msec.

2.4 POWER FAIL DELAY

> 1 msec.

2.5 TURN-ON DELAY TIME

2000 msec max. At Nominal Line Full Load.

2.6 TRANSIENT OVERSHOOT

DC output transient step sizes as below table:

Output voltage	+5V	+3.3V	+12V
Max. step size	30%	30%	30%

Load-changing repetition rate of 10m seconds.

At dynamic loading, regulation at the +5V, +3.3V, +12V outputs can go to -8%+5%

Load slew rated 1.0A/uS and capacitive load as below :

+5V	+3.3V	+12V	-12V	+5Vsb
10000uF	10000uF	10000uF	470uF	10000uF

2.7 RISE TIME

20ms max at full load.

3. PROTECTION:

When OVP, OPP or short protection is triggered, the main outputs will be latched off. The main outputs can be reset by cycling the DC remote on/off or AC power. +5Vsb output is auto recovery when fault condition removed.

3.1 OVER VOLTAGE PROTECTION

+3.3V output 4.5 Vmax.
+5.0V output 7.0 Vmax.
+12.0V output 15.6 Vmax.

3.2 SHORT PROTECTION

All output to GND.

3.3 OVER POWER PROTECTION

Foldback at 110%~150% over peak load

4. ENVIRONMENT:

4.1 OPERATING TEMP

0 °C to +40 °C

4.2 STORAGE TEMP

-20 °C to +70 °C

4.3 OPERATING HUMIDITY

20% to 90%,non-condensing

4.4 STORAGE HUMIDITY

5% to 95%, non-condensing

4.5 OPERATING ALTITUDE

0 to 10,000 feet

4.6 STORAGE ALTITUDE

0 to 50,000 feet

5. HI-POT:

5.1 PRIMARY TO SECONDARY

1800Vac for 1 minute

6. SAFETY AND EMC REQUIREMENTS

6.1 CONDUCTED EMI

1. MEET CISPR 22 : Class B

6.2 SAFETY STANDARDS

1. MEET TUV (EN60950)
2. MEET CB (IEC 950)
3. MEET CE
4. MEET CCC

6.3 HARMONIC

MEET IEC61000-3-2,Class D

7. MTBF at 25 °C(demonstrated)

100K hrs minimum

8. DIMENSIONS

150 mm (W) × 86 mm (H) × 140mm (D)

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