



SILVERSTONE

Gemini Series GM500

500W+500W mini redundant
80 PLUS Silver power supply

500+500W 24hour and well working performance at 50°C fully continuous power output

PS/2 mini redundant power with depth of 174mm for easy integration

1+1 redundant configuration

80 PLUS Silver Certified

Hot swappable design

Convenient pull-out handle bars

Industry-leading reliability

SPECIFICATION

SilverStone Gemini Series SST-GM500-S

500W+500W Mini Redundant Power Supply (PSII) 80 PLUS Silver

1. General Description

This specification describes the performance characteristics of a 500 watts hot swappable, 1+1 power system with +3.3V, +5V, +12V, -12V main DC outputs, and 5V standby output. The system is configured to hold two identical 500W power supply modules

2. DC output specification

2.1 Output current / loading

Minimum	Nominal	Maximum	Measure
90	100~240	264	Vac
47	50~60	63	Hz

2.2 Output current / loading

AC Input Voltage	MAX. Input Current	Inrush Current
	Per Power Supply Module	Per Power Supply Module
115Vac	10A	25A
230Vac	5A	50A

2.3. Power Factor

90Vac	115Vac	230Vac	264Vac
>0.99	>0.98	>0.95	>0.92

3. Power Efficiency

Power supply efficiency typical > 85% at normal AC main voltage and full load on all outputs.

4. Output Characteristic

4.1. Output Voltage & Current Regulation

Output Voltage	Min. Current	Rated Current	Regulation
+3.3V	1A	25A	±5%
+5V	1A	25A	±5%
+12V	1A	41A	±5%
-12V	0A	0.8A	±5%
+5VSB	0.5A	3.5A	±5%

Note : The combined total power from +5V & +3.3V shall not exceed 170W.

4.2. DC Output Ripple & Noise

Output Voltage	Ripple & Noise (Max.)
+3.3V	60mVp-p
+5V	60mVp-p
+12V	120mVp-p
-12V	120mVp-p
+5VSB	50mVp-p

Note : 1. Ripple & Noise bandwidth is set to 20MHz.

2. Use a 0.1uF ceramic capacitor in parallel with a 10uF electrolytic capacitor at output connector terminals for ripple & noise measurement.

4.3. Hold Up Time

Output Voltage	115Vac Input	230Vac Input
+3.3V	> 16ms	> 16ms
+5V	> 16ms	> 16ms
+12V	> 16ms	> 16ms
-12V	> 16ms	> 16ms
+5VSB	> 16ms	> 16ms

Note : All output shall be with full load.

4.4. Rise Time

Output Voltage	115/230Vac Input & Full Load
+3.3V	20ms (max.)
+5V	20ms (max.)
+12V	20ms (max.)
-12V	20ms (max.)
+5VSB	20ms (max.)

Note : Rise time measurement shall be with any output voltage rise from 10% to 90%..

4.5. Dynamic Load Response Time

The following shall apply to the +3.3V, +5V, and +12V output.

Output voltage for each output shall recover to within 5 % of its steady state level in less than 1 ms under the following condition :

AC Input Voltage : 90Vac ~ 264Vac			
Repetition rate of 100Hz with 50 % duty cycle			
Output	Step Load Size	Load Slew Rate	Capacitive Load
+3.3V	30% to 100% to 30% load	0.5A / μ sec	6000uF
+5V	30% to 100% to 30% load	0.5A / μ sec	6000uF
+12V	60% to 100% to 60% load	1A / μ sec	6000uF
+5VSB	0% to 100% to 0% load	0.5A / μ sec	350uF

4.6. Remote On/Off Control

Main output of this power supply (+3.3V,+5V,+12V,-12V) shall be energized when input signal*PSON is active. *PSON is an active low TTL compatible signal referenced to +5V standby common. This input signal shall be an open collector signal capable of sinking a minimum of 1.6mA. When *PSON becomes inactive, main output shall be disabled.

	PSU On	PSU Off
PSON Signal	LOW (0.8V max.)	HI (2V min.)

5. Power Good Signal

This power supply shall have an active high TTL compatible signal capable of sinking 1mA and sourcing 100 μ A. The signal shall become active within 100 to 500 ms from the instant +5V output reaches a steady state level within the specified regulation limit. It shall become inactive at least 1 ms before +5V drops to below the lower regulation limit.

Power good @ 115/230VAC , Full Load	200ms ~ 500ms
Power Fail @ 115/230VAC , Full Load	1ms (min.)

6. Protection

6.1. Over Voltage Protection

Output	Min.	Max.	Comment
+3.3V	3.75V	4.3V	PSU shutdown
+5V	5.7V	6.9V	PSU shutdown
+12V	13V	14.3V	PSU shutdown

Note : Power supply shall be tested with minimum load.

6.2. Under Voltage Protection

Output	Min.	Max.	Comment
+3.3V	2.0V	2.4V	PSU shutdown
+5V	3.3V	3.7V	PSU shutdown
+12V	8.5V	9.5V	PSU shutdown

Note : Power supply shall be tested with minimum load.

6.3. Over Current Protection

Output	Over Current (Type)	Over Current (Max.)	Comment
+3.3V	$\geq 27.5A$	37.5A	PSU shutdown
+5V	$\geq 27.5A$	37.5A	PSU shutdown
+12V	$\geq 45.1A$	61.5A	PSU shutdown

Note : Over current protection should be tested with other rated load.

6.4. Short Circuit Protection

Output	Comment
+3.3V	PSU shutdown
+5V	PSU shutdown
+12V	PSU shutdown

6.5 Short Circuit Protection

The power supply shall go into thermal protection as the case temperature exceeds $86^{\circ}C (\pm 5^{\circ}C)$. The output shall recover only when temperature becomes normal and input power is turned on again.

7. Power System Signal Status

7.1. Buzzer Status

Power Supply Condition	Buzzer Status
No AC power to all PSU	OFF
AC present/only standby output on	OFF
Power supply DC outputs ON and OK	OFF
Power supply failure	Beeping

7.2. LED indicator

Power Supply Condition	Power System Status		Per Power Module Status
LED Color	RED	GREEN	ORANGE
No AC power to all PSU	OFF	OFF	OFF
AC present/only standby output on	ON	OFF	OFF
Power supply DC output ON and OK	OFF	ON	ON
Power supply failure	OFF	Blinking	OFF

7.3. TTL Signal

Power Supply Condition	Output Condition	
	Min.	Max.
Normal (Power Supply ON)	3V	5.25V
Failure (Power Supply OFF)	0V	1V

8. Load Sharing

Output Voltage	Load Current	Load Share Voltage
+12V	1A	+0.48V ~ +0.52V

9. Isolation

9.1. Insulation Resistance

Input To Output	500Vdc · 50M ohm Min. (at room temperature)
Input To FG	500Vdc · 50M ohm Min. (at room temperature)
Output To FG	Not Available

9.2. Dielectric Withstand Voltage

Input To Output	3000Vac (10mA) for 1 minute
Input To FG	1800Vac (10mA) for 1 minute
Output To FG	Not Available

9.3. Leakage current

Maximum 3.5mA at 240Vac/60Hz.

10. Environmental Requirement

10.1. Temperature

Operating : 0°C to +50°C

Non Operating : -20°C to +70°C

10.2. Humidity

Operating : 5% to 95% , non-condensing

Non Operating : 20% to 90% , non-condensing

10.3. Altitude

Altitude during operation : Up to 5000m

Altitude of test laboratory : Below 2000m

10.4. Cooling Method

By ball bearing DC fan.

11. Reliability

11.1. MTBF

Using MIL - HDBK -217F the calculated MTBF > 100,000 hours at 25°C.

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

the power supply is only suitable for Information Technology & Audio/Video equipment.

※付属の電源コードは当該製品専用です。他の機器に使用しないでください。

Please refer to SilverStone website for latest specifications updates.

SilverStone Technology Co., Ltd.

www.silverstonetek.com

support@silverstonetek.com