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NO.2-1, DAAN ROAD, SHULIN .DIST., NEW TAIPEI CITY 238, TAIWAN

# **SPECIFICATION**

**Model Name :**

**R4S-400G1V2**

**Description :**

**400W+400W Mini Redundant Power Supply (PSII)**

**Version : A1**

**Issued Date : 20140801**



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## 1. General Description

This specification describes the performance characteristics of a 400 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, **SURE STAR** model R4S-400G1V2.

## 2. Input Characteristic

### 2.1. AC Input Voltage and Frequency

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

### 2.2. Input Current and Inrush Current

AC Input Voltage	MAX. Input Current	Inrush Current
	Per Power Supply Module	Per Power Supply Module
115Vac	8A	25A
230Vac	4A	50A

### 2.3. Power Factor

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

## 3. Power Efficiency

The minimum efficiency of power supply is 80% with full load and 115Vac/60Hz input.



## 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	33A	±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 / $\mu$ sec	6000uF
+5V	30% to 100% to 30% load	0.5A / $\mu$ sec	6000uF
+12V	60% to 100% to 60% load	1A / $\mu$ sec	6000uF
+5VSB	0% to 100% to 0% load	0.5A / $\mu$ 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 $\mu$ 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	$\geq 36.3A$	49.5A	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

Note : Short circuit protection should be tested with other rated load.

#### 6.5. Thermal Protection

The power supply shall go into thermal protection as the case temperature exceeds 75°C (±5°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
	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. Safety

CB 、 CE 、 TUV 、 UL 、 BSMI 、 CCC 。

Please visit our website and get the latest safety certificate.



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## **11. EMC**

CE 、 FCC 、 BSMI 、 CCC ◦ (Class B)

Please visit our website and get the latest EMC certificate.

## **12. Environmental Requirement**

### **12.1. Temperature**

Operating : 0°C to +50°C

Non Operating : -20°C to +70°C

### **12.2. Humidity**

Operating : 5% to 95% , non-condensing

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

### **12.3. Altitude**

Altitude during operation : Up to 5000m

Altitude of test laboratory : Below 2000m

### **12.4. Cooling Method**

By ball bearing DC fan.

## **13. Reliability**

### **13.1. MTBF**

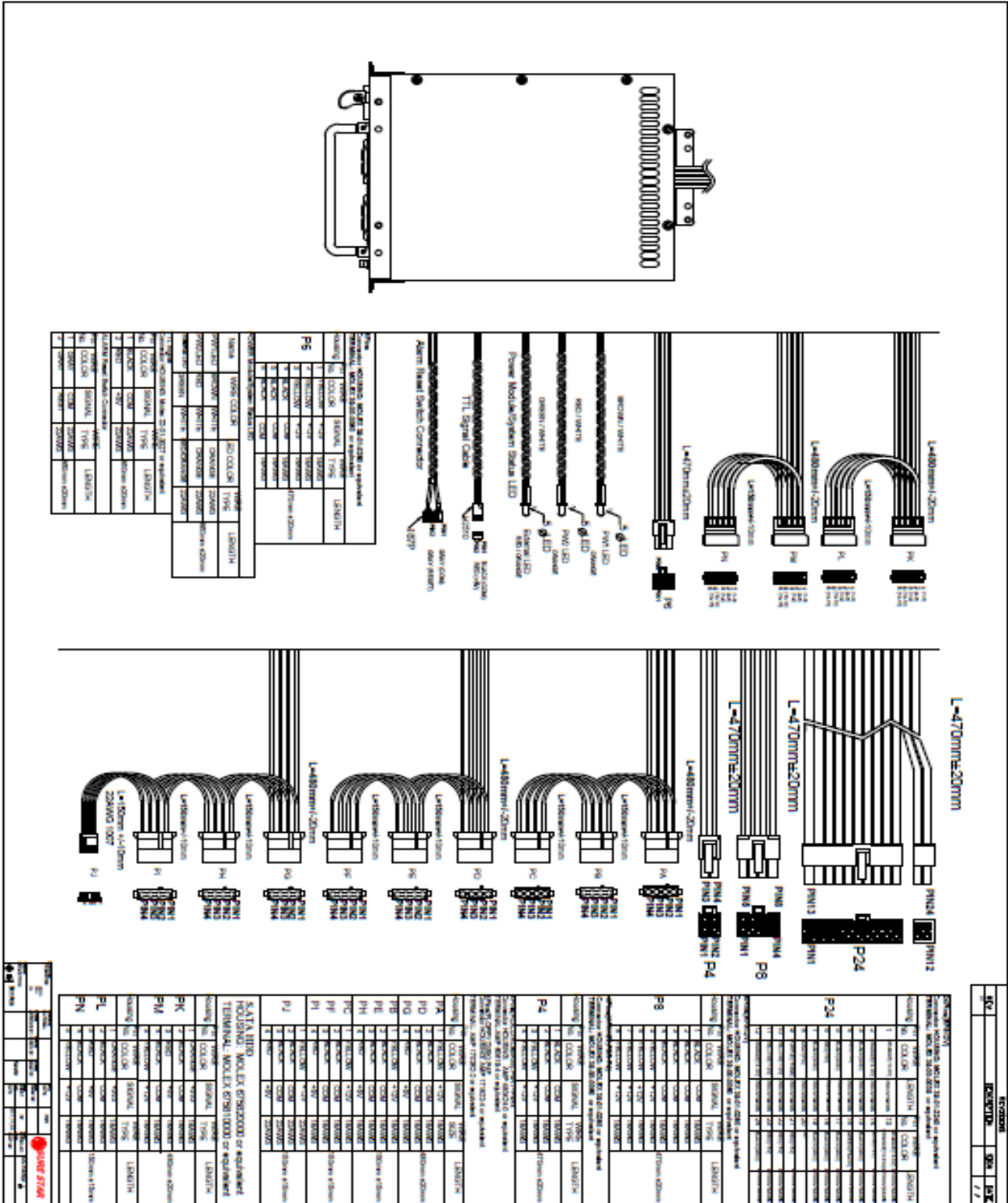
Using MIL - HDBK -217F the calculated MTBF > 100,000 hours at 25°C.

## **14. Mechanical 2D Drawing and Output Cable**





14.2. Output Cable (could be customization) :





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#### 14.3. Customization Note :

Customization note shall be listed here.

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