PRODUCTS MANUAL

R2W SERIES

High Density Redundant Power Supply

For 2U Chassis

Rev.:A1

P/N:702-10041

INDEX

1.1 INTRODUCTION

First of all, thank you for purchasing R2W Series – High-Density Redundant power supply for 2U chassis.

The R2W is a 1+1, Hot-swappable/Hot-pluggable, High-Density Redundant power supply set, it consists of:

(1) complete metal frame (nickel-plated)
(2) compact size (smaller than PSII form factor) 1+1 power modules
(3) backplane board

The R2W Series of hot swappable high-density redundant power supply offer a maximum 400/460 watts of output power. The R2W series provide Active Power Factor correction (PFC) at full range AC Input complies with IEC 1000-3-2/3 for critical applications.

The power unit's size is compact which smaller than PS II form factor and both power modules built two interior 38X28 m/m ball bearing DC fans. Each power module has designed with 6 outputs including +3.3V, +5V, +12V, -12V, -5V & 5VSB circuits and higher current availability based on Intel ATX12V / EPS12V standards. All you can see on the backplane board is just passive components and this is the key point to a greater Power Supply MTBF.

The unit features a warning sub-system, including LED display, buzzer alarm, TTL signal, etc., at the same time, it guides user the fast way to find out the power supply and DC fan Good or Fail optional conditions.

When all the power modules are at normal condition, it balances the load share through its parallel design and results the power system increase reliability.

To really discover the power and ease in using these products, we recommend that you read through this manual carefully.

1.2 PACKING

Your R2W box package should consist of the following:

(A) R2W *1
(B) Accessory pack (included 1 holding bracket for shipment)*1
(C) Products' manual *1

1.3 MODEL DESIGNATION

Model number identification:

R2W – 6ZZZP

R --- Redundant (AC Input)
2W --- suit for 2U chassis (1U = 44.4 m/m)
6 --- for 6 DC outputs (5V/12V/-5V/-12V/3.3V/5VSB) for ATX12V / EPS12V Spec.
ZZZ --- total output power, ZZZ- 400,460 etc. (unit: watt)
P --- with PFC built in (full range).

1.4 FEATURES

R2W Series --- High-Density Redundant power supply with Active Power Factor correction

1+1, Hot swappable, Hot pluggable, AC Input for 2U chassis

Easy fit into 2U , 400/460W +400/460W, ATX12V / EPS12V outputs

- Dimension : 84 (H) x 101 (W) x 300 (D) m/m
- True Redundant design (Passive backplane)
- All circuit been designed in the power module
- Hot swap, Hot plug ability
- Full range 90V~264VAC input
- Active Power Factor Correction (PFC) built in
- ATX 400/460W + 400/460W output power
- Remote sensing design
- Meet FCC, CISPR EMI regulation
- Compact size for 2U chassis
- Space save design
- Dual EMI Line Filter inlets design
- Two 38X28 m/m ball bearing DC fan on power module design
- High-Density 7.1W/in^3 (for 460W module)

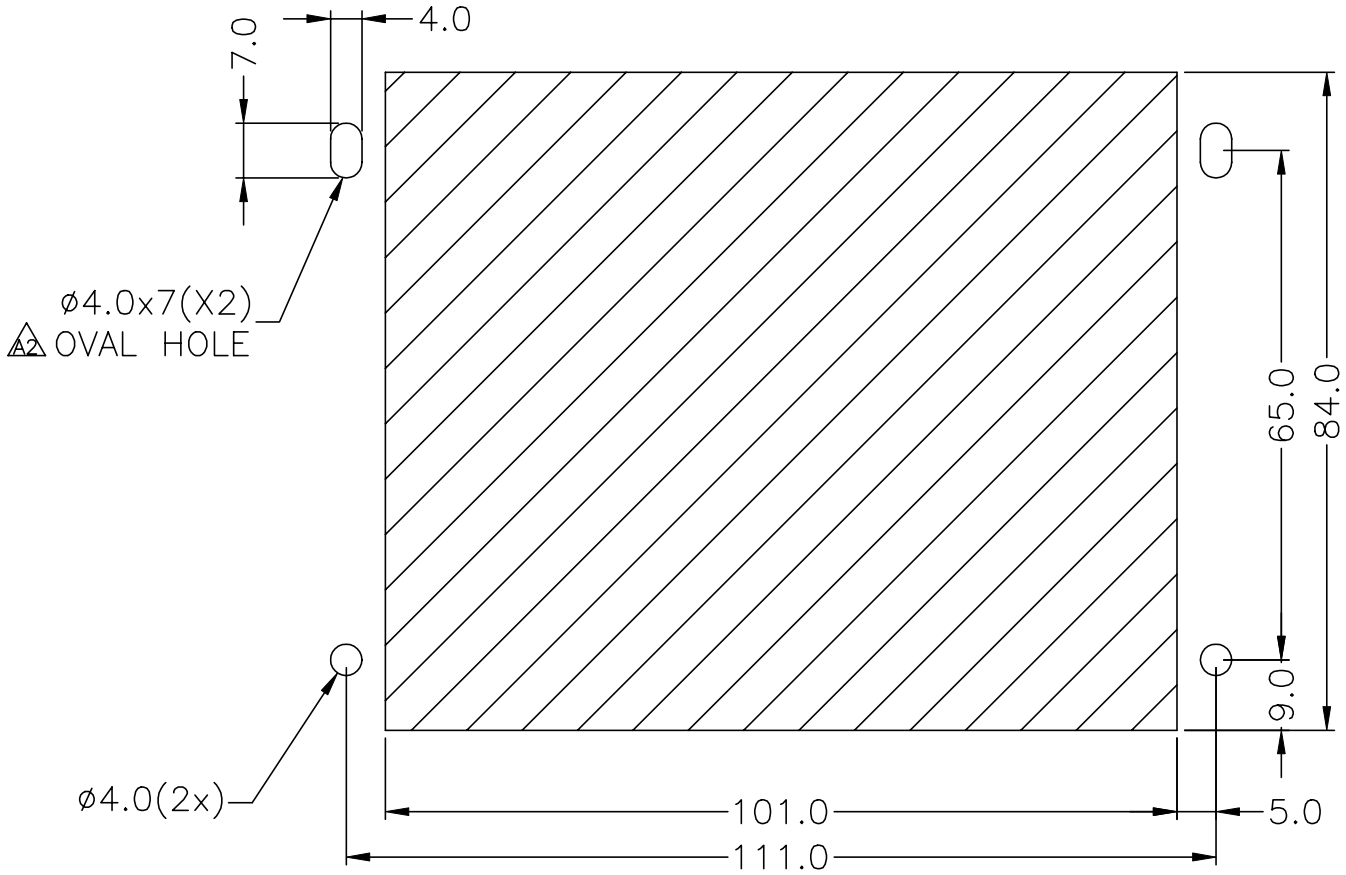
1.5 PRE-INSTALLATION

Before installing the R2W unit into the system chassis, please review the following drawings page 4 ~ 13 and find out the best way to match them.

1.6 DRAWING (page 5 ~ 6)

1.7 SPECIFICATIONS (page 7 ~ 9)

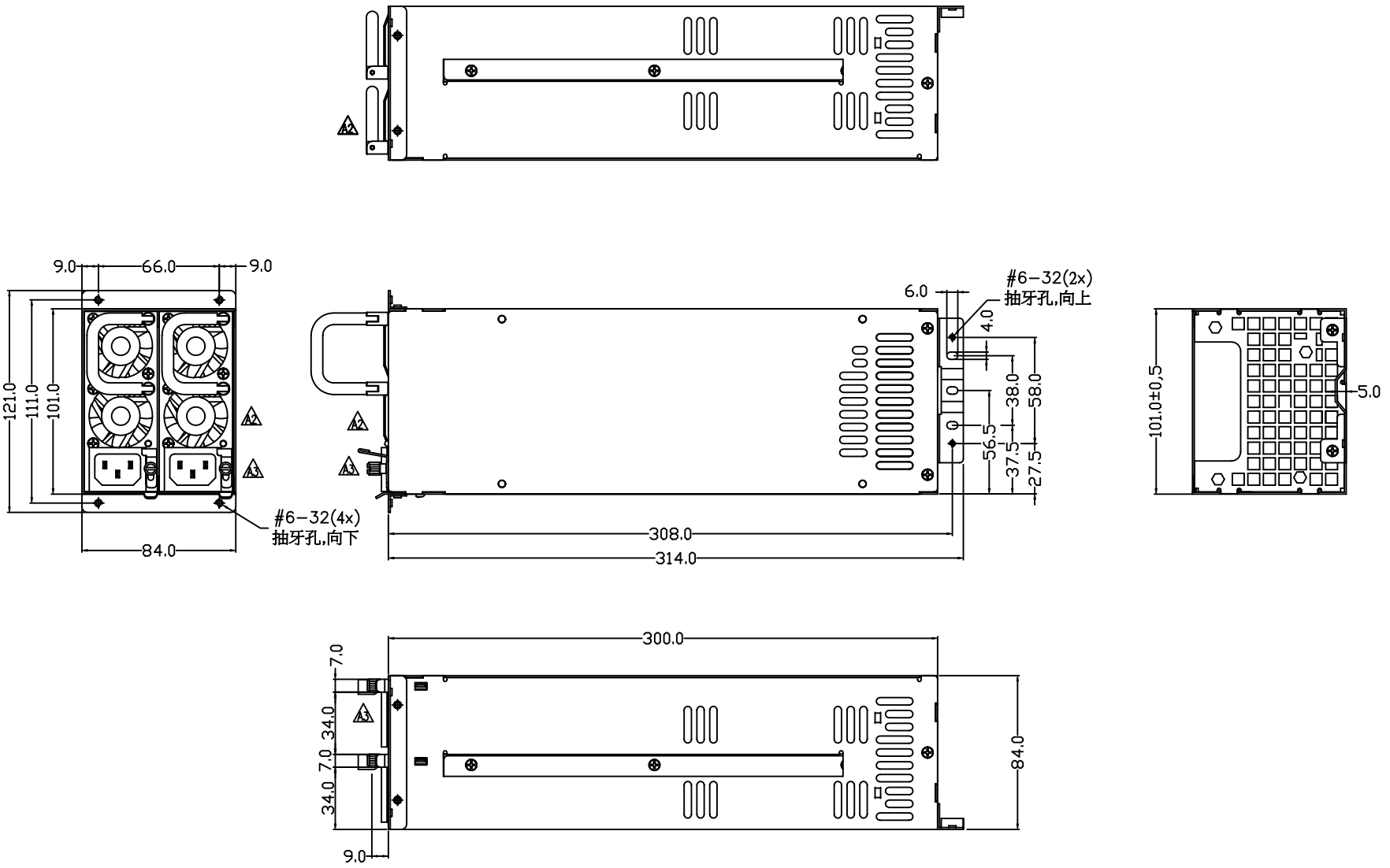
修訂 REVISIONS		
版次 REV.	記述 DESCRIPTION	日期 DATE
A2	修改標註敘述	SEP-04-2002



NOTE: WITH SIDE BRACKET

容許公差: TOLERANCES: .XXX ±.025 .XX ±.100 .X ±.250	材料規格: MATERIAL:		品名: MODEL NO: R2W OPENING AREA
	核准者: APPROVE BY:	日期: DATE:	料號: PART NO:
投影法: PROJECTION:	審核者: CHECK BY:	日期: DATE:	圖號: DRAW NO: R2W0MA01 / 檔號: FILE NO: R2W0MA01
	繪圖者: DRAW BY:	日期: DATE: SEP-04-2002	單位: UNITS: mm / 版次: REV. NO: A2 / 規格: SPEC.: A4 / 編號: SHEET: OF

修訂 REVISIONS		
版次 REV.	記述 DESCRIPTION	日期 DATE
A2	增加風扇網凸出高度	AUG-12-2002
A3	故定片設計變更	DEC-20-2002



TOLERANCES:±0.5mm

容許公差: TOLERANCES: .XXX ±.025 .XX ±.100 .X ±.250	材料規格: MATERIAL:		新巨企業股份有限公司 ZIPPY TECHNOLOGY CORP. POWER DIVISION
	核准者: APPROVE BY:	日期: DATE:	品名: MODEL NO: R2W 外觀尺寸圖
投影法: PROJECTION: 第三角法	審核者: CHECK BY:	日期: DATE:	料號: PART NO:
	繪圖者: DRAW BY:	日期: DATE: DEC-20-2002	圖號: DRAW NO: R2W0MA00 檔號: FILE NO: R2W0MA00
			單位: UNITS: mm 版次: REV. NO: A3 規格: SPEC.: A1 編號: SHEET: OF

INPUT CHARACTERISTICS: R2W-6400P

- VOLTAGE: 90 ~ 264 VAC FULL RANGE
- FREQUENCY : 47 ~ 63 Hz
- INPUT CURRENT: 8.0 / 4.0 A FOR 115 / 230 VAC
- INRUSH CURRENT: 60A / 80A MAX. FOR 115 / 230 VAC PER POWER MODULE

OUTPUT CHARACTERISTICS:

OUTPUT VOLTAGE	OUTPUT CURRENT			REGULATION		OUTPUT
	MIN.[A]	MAX.[A]	PEAK(A)	LOAD	LINE	RIPPLE & NOISE MAX. [P-P]
5V	3.5	26		± 5%	± 1%	50mV
12V	2	28		± 6%	± 1%	120mV
-5V	0.05	0.7		+5/-10%	± 1%	120mV
-12V	0.05	0.7		+5/-10%	± 1%	150mV
3.3V	1.0	24		± 5%	± 1%	50mV
+5VSB	0.1	2.0		+ 6%	± 1%	50mV

REMARKS: TOTAL CURRENT OF +5V AND + 3.3V NOT EXCEED 43 A;

Total output power not exceed 400w

- TEMPERATURE RANGE : OPERATING 0^0C --- 40^0C, STORAGE –20^0C --- 70^0C
- HOLD UP TIME: 16 ms MINIMUM AT FULL LOAD & 90 VAC INPUT VOLTAGE
- DIELECTRIC WITHSTAND: INPUT / OUTPUT 1500 VAC FOR 1 MINUTE
  INPUT TO FRAME GROUND 1500 VAC FOR 1 MINUTE
- EFFICIENCY: 68% TYPICAL, AT FULL LOAD 115V
- POWER GOOD SIGNAL: ON DELAY 100 ms TO 500 ms, OFF DELAY 1 ms
- OVER LOAD PROTECTION: 110 ~ 160% MAX.
  OVER VOLTAGE PROTECTION: **+5V → 5.7V ~ 6.5V, 3.3V → 3.9 ~ 4.3V, 12V → 13.3 ~ 14.3V**
- OVER CURRENT PROTECTION
  EMI NOISE FILTER: FCC CLASS B, CISPR22 CLASS B
- SAFETY: UL 1950, CSA 22.2 NO/ 950, TÜV IEC 950
- REMOTE ON / OFF CONTROL
- FAULTY ALARM METHODS : LED, BUZZER, TTL SIGNAL
- HOT-SWAPPABLE / HOT-PLUGGABLE REDUNDANCY FUNCTION
- REMOTE SENSING DESIGN
- ISOLATION: BUILT-IN IN THE POWER MODULE
- MEET IEC-1000-3-2 CLASS D (ACTIVE PFC)
- DIMENSION: 84(H) X 101(W) X 300 (D) mm
- COOLING : TWO 38x38x28 mm DC FANS (MODULE)
- AC INLET IN EACH MODULE

INPUT CHARACTERISTICS: R2W-6460P

- VOLTAGE: 90 ~ 264 VAC FULL RANGE
- FREQUENCY : 47 ~ 63 Hz
- INPUT CURRENT: 8.0 / 4.0 A FOR 115 / 230 VAC
- INRUSH CURRENT: 60A / 80A MAX. FOR 115 / 230 VAC PER POWER MODULE

OUTPUT CHARACTERISTICS:

OUTPUT VOLTAGE	OUTPUT CURRENT			REGULATION		OUTPUT
	MIN.[A]	MAX.[A]	PEAK(A)	LOAD	LINE	RIPPLE & NOISE MAX. [P-P]
5V	2.0	30		± 5%	± 1%	50mV
12V	2	32		± 5%	± 1%	120mV
-5V	0.05	0.7		+5/-10%	± 1%	120mV
-12V	0.05	0.7		+5/-10%	± 1%	120mV
3.3V	1.0	24		± 5%	± 1%	50mV
+5VSB	0.1	2.0		+ 6/-5%	± 1%	50mV

REMARKS: TOTAL CURRENT OF +5V AND + 3.3V NOT EXCEED 43 A; total output power not exceed 460w

- TEMPERATURE RANGE : OPERATING 0^0C --- 40^0C, STORAGE –20^0C --- 70^0C
- HOLD UP TIME: 16 ms MINIMUM AT FULL LOAD & 90 VAC INPUT VOLTAGE
- DIELECTRIC WITHSTAND: INPUT / OUTPUT 1500 VAC FOR 1 MINUTE
  INPUT TO FRAME GROUND 1500 VAC FOR 1 MINUTE
- EFFICIENCY: 68% TYPICAL, AT FULL LOAD 115V
- POWER GOOD SIGNAL: ON DELAY 100 ms TO 500 ms, OFF DELAY 1 ms
- OVER LOAD PROTECTION: 110 ~ 160% MAX.
  OVER VOLTAGE PROTECTION:
  +5V → 5.7V ~ 6.5V, 3.3V → 3.9 ~ 4.3V, 12V → 13.3 ~ 14.3V
- OVER CURRENT PROTECTION
  EMI NOISE FILTER: FCC CLASS B, CISPR22 CLASS B
- SAFETY: UL 1950, CSA 22.2 NO/ 950, TÜV IEC 950
- REMOTE ON / OFF CONTROL
- FAULTY ALARM METHODS : LED, BUZZER, TTL SIGNAL
- HOT-SWAPPABLE / HOT-PLUGGABLE REDUNDANCY FUNCTION
- REMOTE SENSING DESIGN
- ISOLATION: BUILT-IN IN THE POWER MODULE
- MEET IEC-1000-3-2 CLASS D (ACTIVE PFC)
- DIMENSION: 84(H) X 101(W) X 300 (D) mm
- COOLING : TWO 38x38x28 mm DC FANS (MODULE)
- AC INLET IN EACH MODULE

INPUT CHARACTERISTICS: R2W-6500P

- VOLTAGE: 105 ~ 264 VAC FULL RANGE
- FREQUENCY : 47 ~ 63 Hz
- INPUT CURRENT: 8.0 / 4.0 A FOR 115 / 230 VAC
- INRUSH CURRENT: 60A / 80A MAX. FOR 115 / 230 VAC PER POWER MODULE

OUTPUT CHARACTERISTICS:

OUTPUT VOLTAGE	OUTPUT CURRENT			REGULATION		OUTPUT
	MIN.[A]	MAX.[A]	PEAK(A)	LOAD	LINE	RIPPLE & NOISE MAX. [P-P]
5V	2.0	30		± 5%	± 1%	50mV
12V	2	32		± 5%	± 1%	120mV
-5V	0.05	0.7		+5/-10%	± 1%	120mV
-12V	0.05	0.7		+5/-10%	± 1%	120mV
3.3V	1.0	24		± 5%	± 1%	50mV
+5VSB	0.1	2.0		+ 6/-5%	± 1%	50mV

REMARKS: TOTAL CURRENT OF +5V AND + 3.3V NOT EXCEED 43 A; total output power not exceed 500w

- TEMPERATURE RANGE : OPERATING 0^0C --- 40^0C, STORAGE –20^0C --- 70^0C
- HOLD UP TIME: 16 ms MINIMUM AT FULL LOAD & 90 VAC INPUT VOLTAGE
- DIELECTRIC WITHSTAND: INPUT / OUTPUT 1500 VAC FOR 1 MINUTE
  INPUT TO FRAME GROUND 1500 VAC FOR 1 MINUTE
- EFFICIENCY: 68% TYPICAL, AT FULL LOAD 115V
- POWER GOOD SIGNAL: ON DELAY 100 ms TO 500 ms, OFF DELAY 1 ms
- OVER LOAD PROTECTION: 110 ~ 160% MAX.
  OVER VOLTAGE PROTECTION:
  +5V → 5.7V ~ 6.5V, 3.3V → 3.9 ~ 4.3V, 12V → 13.3 ~ 14.3V
- OVER CURRENT PROTECTION
  EMI NOISE FILTER: FCC CLASS B, CISPR22 CLASS B
- SAFETY: UL 1950, CSA 22.2 NO/ 950, TÜV IEC 950
- REMOTE ON / OFF CONTROL
- FAULTY ALARM METHODS : LED, BUZZER, TTL SIGNAL
- HOT-SWAPPABLE / HOT-PLUGGABLE REDUNDANCY FUNCTION
- REMOTE SENSING DESIGN
- ISOLATION: BUILT-IN IN THE POWER MODULE
- MEET IEC-1000-3-2 CLASS D (ACTIVE PFC)
- DIMENSION: 84(H) X 101(W) X 300 (D) mm
- COOLING : TWO 38x38x28 mm DC FANS (MODULE)
- AC INLET IN EACH MODULE

1.8 INSTALLATION & TESTING

Turn off (Remote off) the on/off switch.

Mount the power supply in the system chassis using the proper mounting tool, the mounting holes in the power supply should match those in the case. Attach the connectors to the M/B by following the M/B instructions, there are various connectors / pin-outs on both power supply and M/B. They should match each other; otherwise the connection will cause undetectable harms.

Attach all the remaining power supply connections to the various peripherals as needed. These connectors are “keyed”, so there will be only one possible way to connect them.

Before applying power to the system, make sure there are no loose or incorrect connectors. You do not need to worry about the setting of AC Input because of the units’ full range features. Double check that all connections to the M/B are matched properly. Maybe you would like to test the redundancy function before you put back the cover of your system chassis. Remote on the on/off switch, you will notice that if the power unit is operating properly, the individual LEDs and external warning LEDs (please refer to Sec. 1.10 for detail explanation) are lit Green. Now remove one of the power modules, the warning buzzer in the power system will sound and the external warning LED which displays the status of the total power supply system will change color to Red, the individual LEDs (on the front of power module) indicating the power supply’s status will not light. Meanwhile, the power supply will continue to backup the power output without affecting the computer system’s operation.

When the warning buzzer sounds, the user can reset the warning buzzer by pressing the buzzer reset or use the reset switch of the system chassis. The reset switch can be connected by wires lead provided from the power supply system (please refer to Sec. 1.10). Insert the power module which is removed for testing earlier, the sound of the warning buzzer will disappear, the external warning LED will turn Green again. The LED indicating the status of the power supply will light again when testing another power supply by performing the similar procedure.

If everything works out fine, then turn off (remote off) the power system. Now put back the cover of the case and tighten with the screws that you have retained earlier. Now you have completed the installation of the R2W redundant power supply system.

1.9 HOT-SWAP PROCEDURES

Please refer to the following when either power module or the fan found defective.

A) Locate the defective power module by examining the individual LED (if LED without light, it indicates the power module is defective).

***WARNING:

Please perform the above step carefully otherwise it may cause shut down the whole system.

***WARNING:

Please do not remove the defective power module until you have worn gloves to keep from be burned. This is due to the cover of the power module is used as heat sink for cooling, usually the temperature is around 50 ~ 60 degree Celsius under full load condition.

B) Loosen the bracket screws of the power module
C) Remove the defective power module by pulling out method

***WARNING:

Please put aside the power module await for cooling down. Keep from other people tough it until it is cool.

D) Replace a new Good power module, insert the power module into the power system to the end.
E) Check the LED of the power module light Green.
F) Check the LED indicating the total power system status. It should be from twinkle to Green.
G) Tighten the screws of the power module to fix it.
H) If you want to test this new power module in simulating defective situation. Please refer to the Section 1.8 Installation & Testing Section.

Remarks: If the DC fan of the power module fail, you have to replace the power module. Please follow with the Hot-Swap procedures of the power module.

1.10 PINOUTS AND FUNCTION OF THE CONNECTORS

***** Please be aware of the polarity*****

THE POWER SIGNAL CONNECTOR OF TOTAL POWER

PIN#	COLOR	CONDITION
1	RED	POWER FAIL
2	BLACK	GND
3	GREEN	POWER OK

THE BUZZER RESET SWITCH CONNECTOR

PIN#	COLOR	LEVEL
1	YELLOW	+5VSB(PULL HIGH)
2	BLACK	GND

THE SIGNAL CONNECTOR OF POWER RESET

PIN#	COLOR	VOLTAGE
1	RED	TTL SIGNAL (OPEN COLLECTOR)
2	BLACK	GND

TTL signal :

Sink current max. 5mA

Source current max. 50uA

Low Active --- Defective

High --- Normal

1.11 TROUBLE SHOOTING

If you have followed these directions correctly, there should be no problem occurred. Some common symptoms are: the system doesn't work, buzzer sounds, work for a very short period, etc., please try the following steps to verify and correct it:

1. Check all the connections (correct pinouts, loose connections, wrong direction, etc).
2. Check for short-circuits or defective peripherals by unhooking each peripheral once at a time. When the systems functions again, you have solved the problem.
3. Once you hear the buzzer sound or see the LED with RED light, please be aware of :

a. If the load is under the minimum / over the maximum load of each channel (please refer the Sec. 1.7 specification)?
b. If each power cord been well plugged into the inlet?

Suppose the above conditions happen, please unplug the power cords, wait for 2 ~ 3 minutes for releasing the protection state, then test it again.

c. If buzzer still sounds or the LED shows power module is defective, please locate the defective power module, perform hot-swap procedure (please refer to the Sec. 1.9 Hot-swap procedures), sent the defective power module to your vendor for RMA operation.

d. If you can not fix the problem, please contact with your vendor for supporting.

The “RELIABILITY “ solution to E-application

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POWER DIVISION

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Note:

**The description stated herein is subject to change without prior notice.*