



■ Features :

- Universal AC input/Full range
- ZVS new technology
- AC input active surge current limiting
- High efficiency up to 91%
- Built-in active PFC function,PF>0.95
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Forced air cooling by built-in DC ball bearing fan
- Output voltage can be trimmed between 70~100% of the rated output voltage
- High power density 8.3W/inch³
- Current sharing up to 6000W(3+1)
- Alarm signal output
- Built-in 12V/0.1A auxiliary output for remote control
- Built-in remote ON-OFF control
- Built-in remote sense function
- 3 years warranty

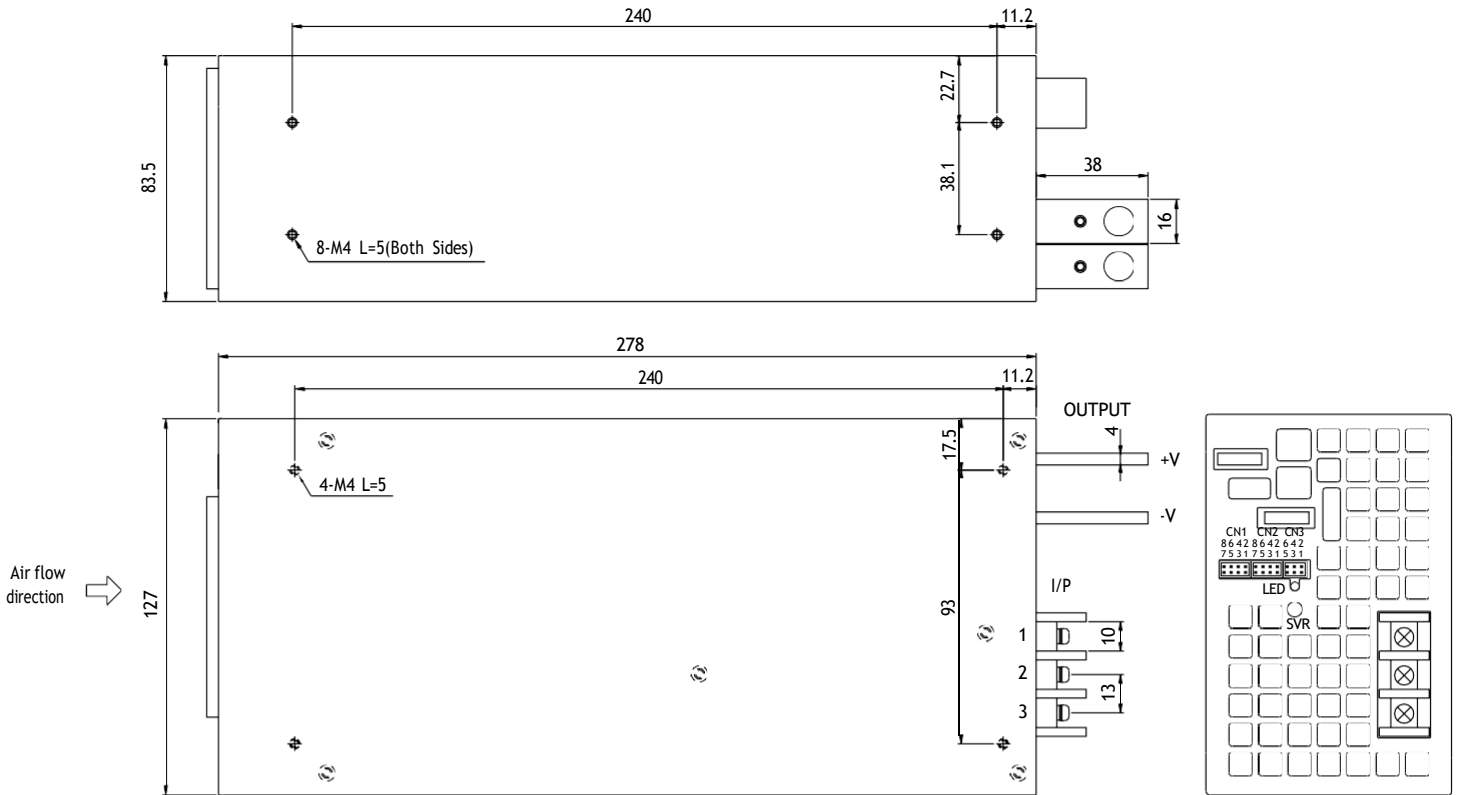


SPECIFICATION

MODEL	RSP-1500-5	RSP-1500-12	RSP-1500-15	RSP-1500-24	RSP-1500-27	RSP-1500-48	
OUTPUT	DC VOLTAGE	5V	12V	15V	24V	27V	48V
	RATED CURRENT	240A	125A	100A	63A	56A	32A
	CURRENT RANGE	0 - 240A	0 - 125A	0 - 100A	0 - 63A	0 - 56A	0 - 32A
	RATED POWER	1200W	1500W	1500W	1512W	1512W	1536W
	RIPPLE & NOISE (max.) Note.2	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p	200mVp-p
	VOLTAGE ADJ. RANGE	4.5 - 5.5V	10 - 13.5V	13.5 - 16.5V	20 - 26.4V	24 - 30V	43 - 56V
	VOLTAGE TOLERANCE Note.3	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	+2.0%	+0.5%	+0.5%	+0.5%	+0.5%	+0.5%
	SETUP, RISE TIME	1500ms, 100ms at full load					
HOLD UP TIME (Typ.)	10ms at full load		14ms at full load		16ms at full load		
INPUT	VOLTAGE RANGE	90 - 264VAC 127 - 370VDC					
	FREQUENCY RANGE	47-63Hz					
	POWER FACTOR (Typ.)	0.95/230VAC 0.98/115VAC at full load					
	EFFICIENCY (Typ.)	80%	87%	87%	90%	90%	91%
	AC CURRENT (Typ.)	17A/115VAC 8A/230VAC					
	INRUSH CURRENT (Typ.)	30A/115VAC 60A/230VAC					
LEAKAGE CURRENT	<2.0mA / 240VAC						
PROTECTION	OVERLOAD Note.5	105 -135% rated output power Protection type : Constant current limiting unit will shut down o/p voltage after 5sec. Re-power on to recover					
	OVER VOLTAGE	5.75 - 6.75V	13.8 - 16.8V	17 - 20.5V	27.6 - 32.4V	31 - 36.5V	57.6 - 67.2V
	OVER TEMPERATURE	95℃+5℃ (TSW2) detect on heatsink of power transistor Protection type : Shut down o/p voltage, recovers automatically after temperature goes down					
FUNCTION	AUXILIARY POWER(AUX)	12V@0.1A(Only for Remote ON/OFF control)					
	REMOTE ON/OFF CONTROL	Please see the Function Manual					
	ALARM SIGNAL OUTPUT	Please see the Function Manual					
	OUTPUT VOLTAGE TRIM	Please see the Function Manual					
	CURRENT SHARING	Please see the Function Manual					
ENVIRONMENT	WORKING TEMP.	-20 - +70℃ (Refer to output load derating curve)					
	WORKING HUMIDITY	20-90% RH non-condensing					
	STORAGE TEMP., HUMIDITY	-40 - +85℃, 10 - 95% RH					
	TEMP. COEFFICIENT	±0.05%/℃ (0 - 50℃)					
VIBRATION	10 - 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes						
SAFETY & EMC (Note 4)	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 approved					
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC					
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC					
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22)					
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3					
EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, light industry level, criteria A						
OTHERS	MTBF	62.6K hrs min. MIL-HDBK-217F (25℃)					
	DIMENSION	278*127*83.5mm (L*W*H)					
	PACKING	2.6Kg; 6pcs/16.6Kg/1.54CUFT					
NOTE	<p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.</p> <p>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.</p> <p>3. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.</p> <p>5. Derating may be needed under low input voltages. Please check the derating curve for more details.</p>						

Mechanical Specification

Case No.943A Unit:mm



AC Input Terminal Pin No. Assignment

Pin No.	Assignment
1	FG
2	AC/N
3	AC/L

Control Pin No. Assignment(CN1,CN2) :

Pin No.	Assignment	Pin No.	Assignment	Mating Housing	Terminal
1	RCG	4	TRIM	HRS DF11 or equivalent	HRS DF11 or equivalent
2	RC2	6	LS(Current Share)		
3,5,7	-S	8	+S		

RCG: Remote ON/OFF Ground

TRIM: Adjustment of Output Voltage

RC2: Remote ON/OFF

LS: Load Share

-S : -Remote Sensing

+S: +Remote Sensing

Control Pin No. Assignment(CN3) :

Pin No.	Assignment	Pin No.	Assignment	Mating Housing	Terminal
1	P OK GND	4	AUXG	HRS DF11 or equivalent	HRS DF11 or equivalent
2	P OK	5	RC1		
3	RCG	6	AUX		

P OK GND: Power OK Ground

AUXG: Auxiliary Ground

P OK: Power OK Signal

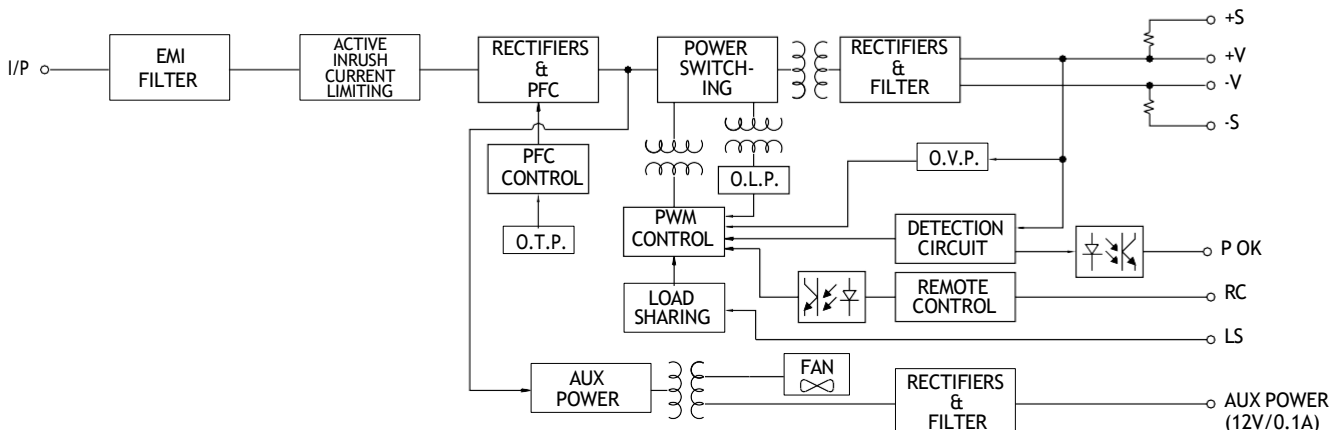
RC1: Remote ON/OFF

RCG: Remote ON/OFF Ground

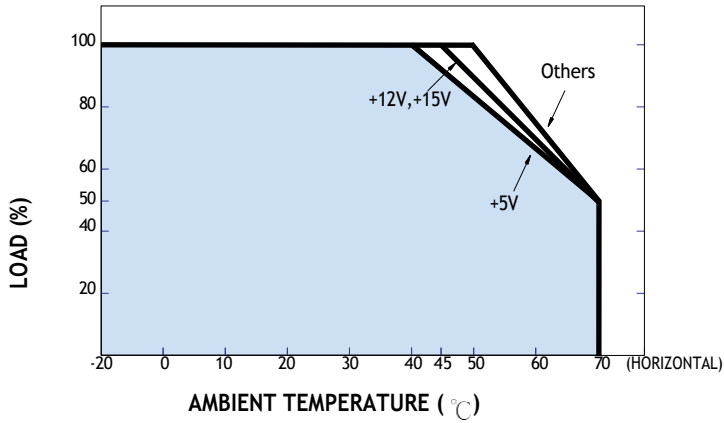
AUX: Auxiliary Output

Block Diagram

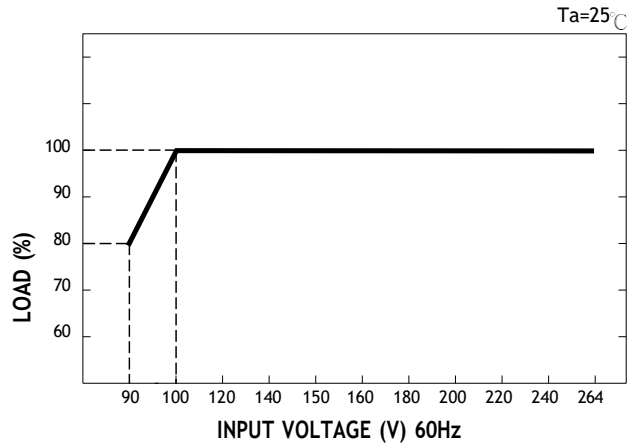
PFC fosc : 70KHz
PWM fosc : 100KHz



Derating Curve



Static Characteristics



Function Manual

1. Remote ON/OFF

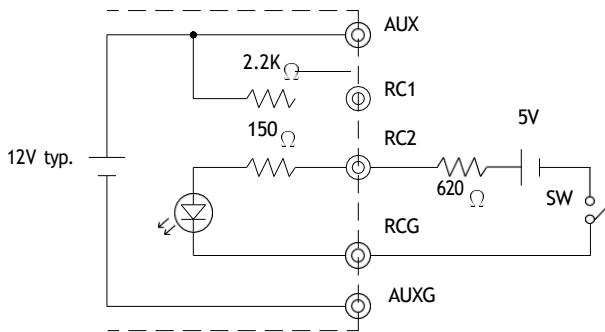
- (1) Remote ON/OFF control becomes available by applying voltage in CN1 & CN2 & CN3
- (2) Table 1.1 shows the specification of Remote ON/OFF function
- (3) Fig. 1.2 shows the example to connect Remote ON/OFF control function

Table 1.1 Specification of Remote ON/OFF

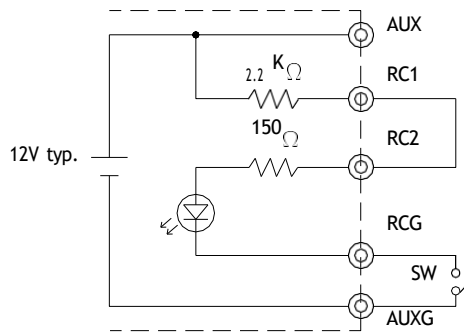
Connection Method		Fig. 1.2(A)	Fig. 1.2(B)	Fig. 1.2(C)
SW Logic	Output on	SW Open	SW Open	SW Close
	Output off	SW Close	SW Close	SW Open

Fig.1.2 Examples of connecting remote ON/OFF

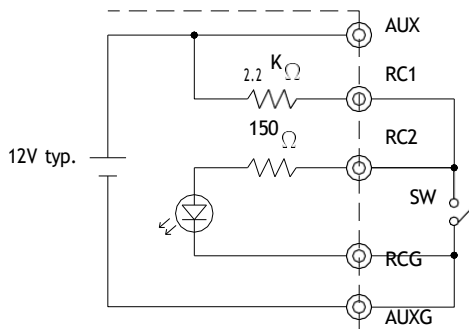
(A) Using external voltage source



(B) Using internal 12V auxiliary output



(C) Using internal 12V auxiliary output



2. Alarm Signal Output

- (1) Alarm signal is sent out through "P OK" & "P OK GND" pins
- (2) An external voltage source is required for this function. The maximum applied voltage is 50V and the maximum sink current is 10mA
- (3) Table 2.1 explain the alarm function built-in the power supply

Function	Description	Output of alarm(P OK)
P OK	The signal is "Low" when the power supply is above 65% of the rated output voltage-Power OK	Low (0.5V max at 10mA)
	The signal turns to be "High" when the power supply is under 65% of the rated output voltage-Power Fail	High or open (External applied voltage 10mA max.)

Table 2.1 Explanation of alarm

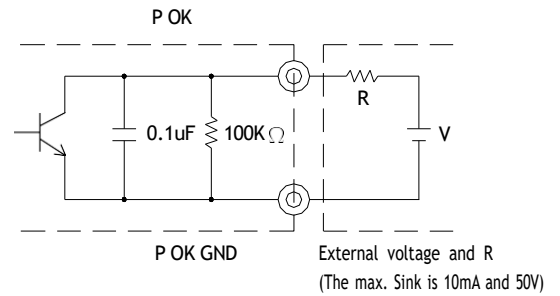


Fig. 2.2 Internal circuit of P OK (Open collector method)

3. Output Voltage TRIM

- (1) Adjustment of output voltage is possible between 70-100%(Typ.) of the rated output which is shown in Fig. 3.1
- (2)Connecting a resistor externally between TRIM and-S on CN1 or CN2 that is shown in Fig. 3.2.

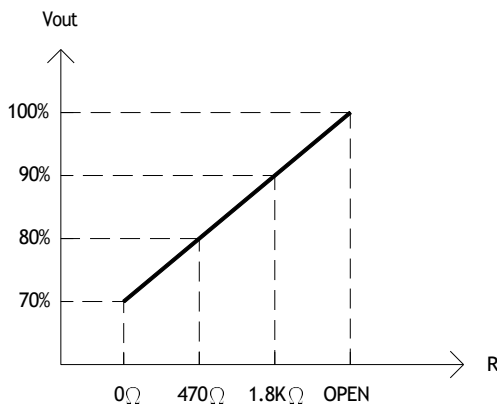


Fig. 3.1 External Resistor (Typical)

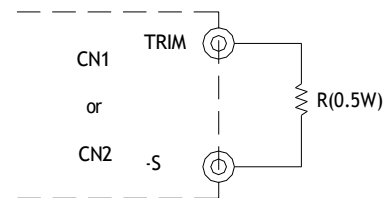
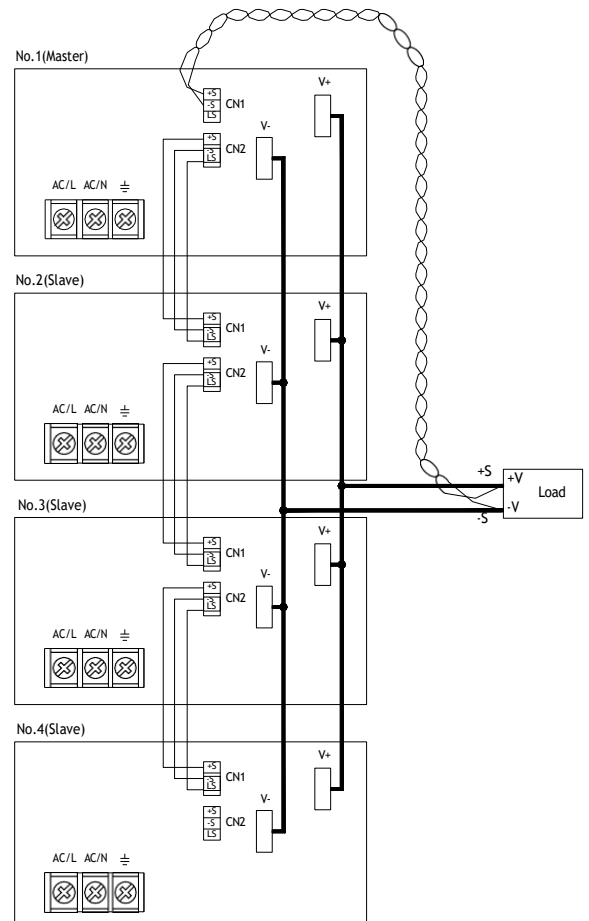


Fig. 3.2 Output voltage trimming

4. Current Sharing

- (1)Parallel operation is available by connecting the units shown as below (+S, -S and LS are connected mutually in parallel):
- (2) The voltage difference among each output should be minimized that less than $\pm 2\%$ is required
- (3) The total output current must not exceed the value determined by the following equation (Output current at parallel operation)=(The rated current per unit) x (Number of unit) x 0.9
- (4) In parallel operation 4 units is the maximum, please consult the manufacture for other applications
- (5) When remote sensing is used in parallel operation, the sensing wire must be connected only to the master unit



MODEL : RSP-1500-27

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 150 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25°C	V1: 43 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 24V~30 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	22.7 V~ 32.43 V/ 230 VAC 22.7 V~ 32.43 V/ 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 1 %~ -1 % (Max)	I/P: 100 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.1 %~ -0.1 %	P
4	LINE REGULATION	V1: 0.5 %~ -0.5 % (Max)	I/P: 100 VAC ~ 264 VAC O/P:FULL LOAD Ta:25°C	V1: 0.03 %~ -0.03 %	P
5	LOAD REGULATION	V1: 0.5 %~ -0.5 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.1 %~ -0.1 %	P
6	SET UP TIME	230VAC: 1500 ms (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 691 ms	P
7	RISE TIME	230VAC: 100 ms (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 56 ms	P
8	HOLD UP TIME	230VAC: 16 ms (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 16.2 ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: <5 %	P
10	DYNAMIC LOAD	V1: 2700 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	339 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	100VAC~264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	88V~264V	P
			I/P: LOW-LINE-3V= 97 V HIGH-LINE+15%=300 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST: OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P: 90 VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK	P
3	POWER FACTOR	0.95 / 230 VAC(TYP) 0.98 / 115 VAC(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	PF= 0.97 / 230 VAC PF= 0.99 / 115 VAC	P
4	EFFICIENCY	90 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	90.9 %	P
5	INPUT CURRENT	230V/ 8 A (TYP) 115V/ 17 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 7.55 A/ 230 VAC I = 15.5 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 60 A (TYP) 115V/ 30 A (TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 51 A/ 230 VAC I = 26 A/ 115 VAC	P
7	LEAKAGE CURRENT	< 2 mA / 240 VAC	I/P: 254 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.9 mA N-FG: 0.9 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105 %~ 135 %	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25°C	121%/ 230 VAC 121%/ 115 VAC Constant Current Limiting unit will shut down o/p voltage after 5sec Re-power on to recover	P
2	OVER VOLTAGE PROTECTION	CH1: 31V~ 36.5 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	33.3 V/ 230 VAC 33.3 V/ 115 VAC Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: TSW2 : 95 ± 5°C O.T.P. NO DAMAGE	I/P: 264 VAC O/P:FULL LOAD	O.T.P. Active Shut down o/p voltage · recovers automatically after temperature goes down	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P:FULL LOAD Ta:25°C	NO DAMAGE Constant Current Limiting unit will shut down o/p voltage after 5sec Re-power on to recover	P

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT														
1	AUXILIARY POWER (AUX)	12V @ 0.1A (Only for Remote ON/OFF control)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	12.39V	P														
2	REMOTE CONTROL	Table1.1 Fig1.2(a)(b)(c) Specification of Remote ON/OFF	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	<table border="1"> <tr> <td colspan="2">Connection Method</td> <td>Fig1.2(a)</td> <td>Fig1.2(b)</td> <td>Fig1.2(c)</td> </tr> <tr> <td rowspan="2">SW Logic</td> <td>Output on</td> <td>SW Open</td> <td>SW Open</td> <td>SW Close</td> </tr> <tr> <td>Output off</td> <td>SW Close</td> <td>SW Close</td> <td>SW Open</td> </tr> </table>	Connection Method		Fig1.2(a)	Fig1.2(b)	Fig1.2(c)	SW Logic	Output on	SW Open	SW Open	SW Close	Output off	SW Close	SW Close	SW Open	P
Connection Method		Fig1.2(a)	Fig1.2(b)	Fig1.2(c)															
SW Logic	Output on	SW Open	SW Open	SW Close															
	Output off	SW Close	SW Close	SW Open															
3	ALARM SIGNAL OUTPUT	<p>Table2.1 Explanation of alarm</p> <table border="1"> <tr> <td>Pin</td> <td>POK Alarm</td> </tr> <tr> <td>P OK</td> <td>The signal is "LOW"when ther power supply is above 65%of the rated output voltage</td> </tr> <tr> <td>P OK GND</td> <td>The signal turns to be "HIGH" when ther power supply is under 65%of the rated output voltage</td> </tr> </table>	Pin	POK Alarm	P OK	The signal is "LOW"when ther power supply is above 65%of the rated output voltage	P OK GND	The signal turns to be "HIGH" when ther power supply is under 65%of the rated output voltage	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	<table border="1"> <tr> <td colspan="2">Output of alarm</td> </tr> <tr> <td>Good:Low</td> <td>(0.5V max at 10mA)</td> </tr> <tr> <td>Fail:High or open</td> <td>(50V 10mA max)</td> </tr> </table>	Output of alarm		Good:Low	(0.5V max at 10mA)	Fail:High or open	(50V 10mA max)	P		
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Output of alarm																			
Good:Low	(0.5V max at 10mA)																		
Fail:High or open	(50V 10mA max)																		
4	OUTPUT VOLTAGE TRIM	Adjustment of output voltage is possible between 75~100% of the rated output by following	I/P: 230 VAC O/P:NOL LOAD Ta:25°C	70%~100%	P														
5	CURRENT SHARING	PSU1-PSU2 < 10%	I/P: 230 VAC O/P:FULL/50% LOAD Ta:25°C	O/P:100% PSU1: 1719 W PSU2: 1678 W <hr/> O/P:50% PSU1: 869 W PSU2: 836 W	P														
6	REMOTE SENSE	>0.3V	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	> 0.3 V	P														

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	TEMPERATURE RISE TEST	MODEL : RSP-1500-24 1. ROOM AMBIENT BURN-IN : 2HRS I/P: 230VAC O/P: FULL LOAD Ta= 29 °C 2. HIGH AMBIENT BURN-IN : 3 HRS I/P: 230VAC O/P: FULL LOAD Ta= 51.4 °C			P
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P: 230 VAC O/P: 119 % LOAD Ta:25°C	TEST : OK	P
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 230 VAC O/P: 100 % LOAD Ta= -20°C	TEST : OK	P
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK	P
5	TEMPERATURE COEFFICIENT	± 0.05 %(0~50°C)	I/P: 230 VAC O/P:FULL LOAD	± 0.01 %(0~50°C)	P
6	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (2) Frequency:10~500Hz (3) Sweep Time:10min/sweep cycle (4) Acceleration:2G (5) Test Time:1 hour in each axis (X.Y.Z) (6) Ta:25°C		TEST : OK	P

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG: 0.5 KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25°C	I/P-O/P: 11.58 mA I/P-FG: 8.77 mA O/P-FG: 15.81 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C	I/P-O/P: 2 GΩ I/P-FG: 2 GΩ O/P-FG: 3 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25°C	9 mΩ	P
4	APPROVAL	TUV: Certificate NO : R50063850 UL: File NO : E183223			P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :1KV L,N-PE:2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C 114 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 109840 HRS I/P: 230VAC O/P:FULL LOAD Ta= 50 °C LIFE TIME= 188843 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 62.6K HRS			P



COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q900 Rated FQA24N50 : 500V 24 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 398 V (2) 392 V (3) 414 V	P
2	Diode Peak Voltage	D102 Rated 60CPQ150 : 150V 60A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3) Output Short Ta:25°C	(1) 96 V (2) 108 V (3) 98 V	P
3	Input Capacitor Voltage	C15 Rated : 150 u / 450V/ 105°C	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3) Full Load /Min load Change (4) Burn in 1hour Ta:25°C	(1) 442 V (2) 460 V (3) 408 V (4) 394 V	P
4	Control IC Voltage Test	U100 Rated UCC2895W : 18 V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3) Full Load /Min load Change Ta:25°C	(1) 12.8 V (2) 12.8 V (3) 12.8 V	P
5	PFC Power Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated 20N60C3 : 600V 20 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 400 V (2) 444 V (3) 398 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2005/4/19	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2005/7/29	PRODUCT SAMPLE W0505A40	PASS	VINCENT TSENG	MAX LIN
2005/9/3	PRODUCT SAMPLE W0507C27	PASS	VINCENT TSENG	MAX LIN
2005/9/21	PRODUCT SAMPLE W0509B35	PASS	VINCENT TSENG	MAX LIN
2005/10/6	PRODUCT SAMPLE W0509C31	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023