



Features:

- Universal AC input / Full range
- Built-in active PFC function, PF>0.95
- High efficiency up to 89%(typ.)
- Withstand 300VAC surge input for 5 seconds
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Built-in cooling fan ON-OFF control (by load)
- With DC OK signal output
- Built-in remote ON-OFF control
- Standby 5V@0.3A
- Built-in remote sense function
- No load power consumption<0.75W
- Current sharing up to 2400W (3+1) (24V,36V,48V)
- 5 years warranty

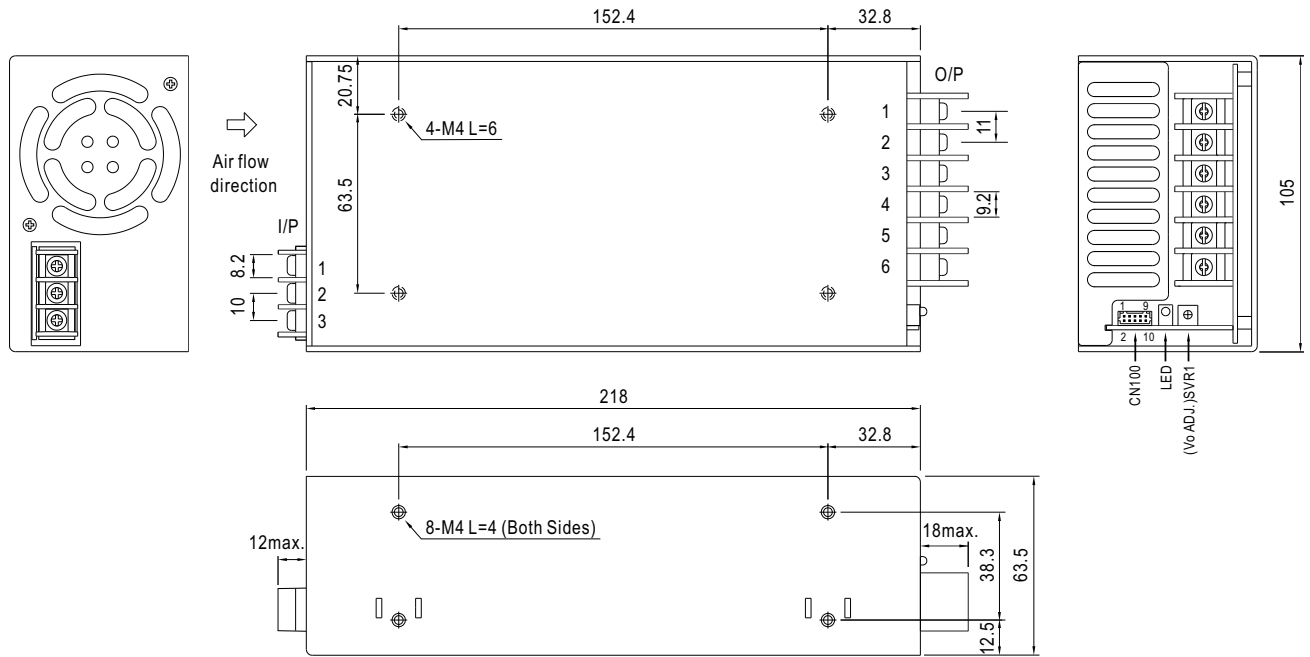


SPECIFICATION

MODEL	HRPG-600-3.3	HRPG-600-5	HRPG-600-7.5	HRPG-600-12	HRPG-600-15	HRPG-600-24	HRPG-600-36	HRPG-600-48	
OUTPUT	DC VOLTAGE	3.3V	5V	7.5V	12V	15V	24V	36V	48V
	RATED CURRENT	120A	120A	80A	53A	43A	27A	17.5A	13A
	CURRENT RANGE	0 ~ 120A	0 ~ 120A	0 ~ 80A	0 ~ 53A	0 ~ 43A	0 ~ 27A	0 ~ 17.5A	0 ~ 13A
	RATED POWER	396W	600W	600W	636W	645W	648W	630W	624W
	RIPPLE & NOISE (max.) Note.2	100mVp-p	100mVp-p	100mVp-p	120mVp-p	150mVp-p	150mVp-p	200mVp-p	240mVp-p
	VOLTAGE ADJ. RANGE	2.8 ~ 3.8V	4.3 ~ 5.8V	6.8 ~ 9V	10.2 ~ 13.8V	13.5 ~ 18V	21.6 ~ 28.8V	28.8 ~ 39.6V	40.8 ~ 55.2V
	VOLTAGE TOLERANCE Note.3	±2.0%	±2.0%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.3%	±0.3%	±0.2%	±0.2%	±0.2%
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	1000ms, 50ms/230VAC 2500ms, 50ms/115VAC at full load							
HOLD UP TIME (Typ.)	16ms/230VAC 16ms/115VAC at full load								
INPUT	VOLTAGE RANGE Note.5	85 ~ 264VAC 120 ~ 370VDC							
	FREQUENCY RANGE	47 ~ 63Hz							
	POWER FACTOR (Typ.)	PF>0.94/230VAC PF>0.99/115VAC at full load							
	EFFICIENCY (Typ.)	78.5%	82%	86%	88%	88%	88%	89%	89%
	AC CURRENT (Typ.)	8.5A/115VAC 5A/230VAC							
	INRUSH CURRENT (Typ.)	35A/115VAC 70A/230VAC							
LEAKAGE CURRENT	<1.2mA / 240VAC								
PROTECTION	OVERLOAD	105 ~ 135% rated output power Protection type : Constant current limiting, recovers automatically after fault condition is removed							
	OVER VOLTAGE	3.96 ~ 4.62V	6 ~ 7V	9.4 ~ 10.9V	14.4 ~ 16.8V	18.8 ~ 21.8V	30 ~ 34.8V	41.4 ~ 48.6V	57.6 ~ 67.2V
	OVER TEMPERATURE	80°C ±5°C (TSW1) detect on heatsink of power transistor 90°C ±5°C (TSW2) detect on heatsink of power doide for 3.3V,5V,7.5V ; 100°C ±5°C (TSW2) detect on main power output choke for others Protection type : Shut down o/p voltage, recovers automatically after temperature goes down							
FUNCTION	5V STANDBY	5VSB : 5V@0.3A ; tolerance ± 5%, ripple : 50mVp-p(max.)							
	DC OK SIGNAL	PSU turn on : 3.3 ~ 5.6V ; PSU turn off : 0 ~ 1V							
	REMOTE CONTROL	RC+ / RC- : 4 ~ 10V or open = power on ; 0 ~ 0.8V or short = power off							
ENVIRONMENT	WORKING TEMP.	-30 ~ +70°C (Refer to output load derating curve)							
	WORKING HUMIDITY	20 ~ 90% RH non-condensing							
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH							
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)							
	VIBRATION	10 ~ 500Hz, 5G 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 / 25°C / 70% RH							
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B							
	HARMONIC CURRENT	Compliance to EN61000-3-2, -3							
OTHERS	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, ENV50204, EN55024, EN61000-6-2, heavy industry level, criteria A							
	MTBF	147.7K hrs min. MIL-HDBK-217F (25°C)							
	DIMENSION	218*105*63.5mm (L*W*H)							
	PACKING	1.58Kg;8pcs/13.6Kg/1.34CUFT							
NOTE	<p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C 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> <p>6. Length of set up time is measured at first cold start. Turning ON/OFF the power supply may lead to increase of the set up time.</p>								

Mechanical Specification

Case No. 977A Unit:mm



AC Input Terminal Pin No. Assignment

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

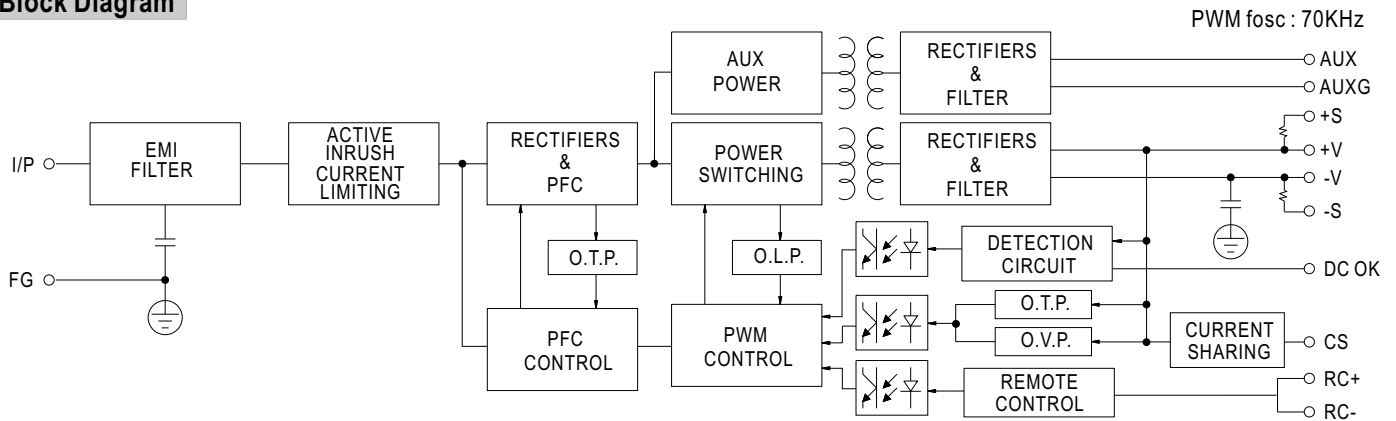
DC Output Terminal Pin No. Assignment

Pin No.	Assignment
1~3	-V
4~6	+V

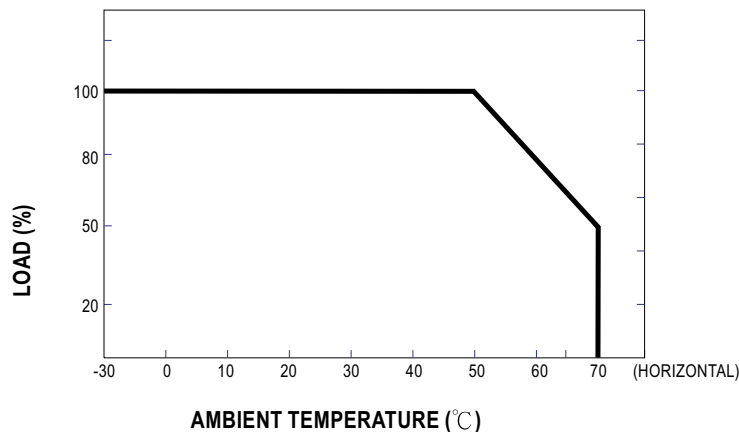
Connector Pin No. Assignment(CN100) : HRS DF11-10DP-2DS or equivalent

Pin No.	Assignment	Pin No.	Assignment	Mating Housing	Terminal
1	AUXG	6,8	GND	HRS DF11-10DS or equivalent	HRS DF11-**SC or equivalent
2	AUX	7	DC-OK		
3	RC+	9	+S		
4	RC-	10	-S		
5	CS				

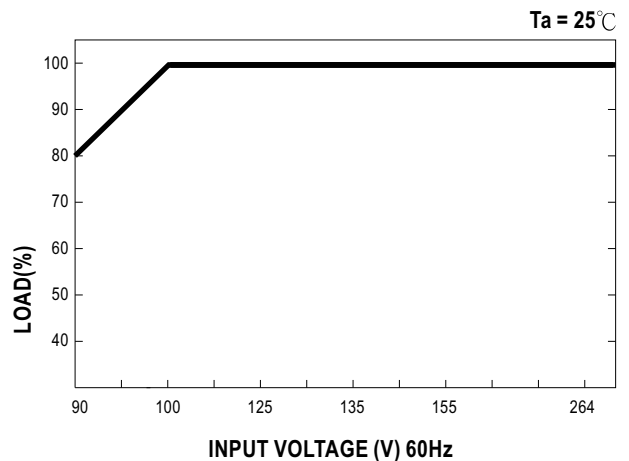
Block Diagram



Derating Curve



Output Derating VS Input Voltage



Function Description of CN100

Pin No.	Function	Description
1	AUXG	Auxiliary voltage output ground. The signal return is isolated from the output terminals (+V & -V).
2	AUX	Auxiliary voltage output, 4.6~5.25V, referenced to pin 1(AUXG). The maximum load current is 0.3A. This output has the built-in oring diodes and is not controlled by the "remote ON/OFF control".
3	RC+	Turns the output on and off by electrical or dry contact between pin 4 (RC-), Short: Power OFF, Open: Power ON.
4	RC-	Remote control ground.
5	CS	Current sharing signal. When units are connected in parallel, the CS pins of the units should be connected to allow current balance between units.
6,8	GND	This pin connects to the negative terminal(-V). Return for DC-OK signal output.
7	DC-OK	DC-OK signal is a TTL level signal, referenced to pin8(DC-OK GND). High when PSU turns on.
9	+S	Positive sensing. The +S signal should be connected to the positive terminal of the load. The +S and -S leads should be twisted in pair to minimize noise pick-up effect. The maximum line drop compensation is 0.5V.
10	-S	Negative sensing. The -S signal should be connected to the negative terminal of the load. The -S and +S leads should be twisted in pair to minimize noise pick-up effect. The maximum line drop compensation is 0.5V.

Function Manual

1. Remote Sense

The remote sensing compensates voltage drop on the load wiring up to 0.5V.

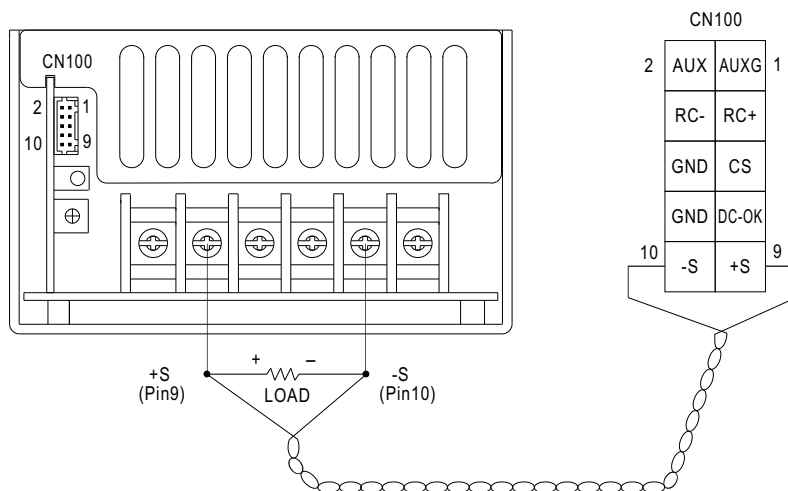


Fig 1.1

2. DC-OK Signal

DC-OK signal is a TTL level signal. High when PSU turns on.

Between DC-OK(pin4) and GND(pin3)	Output Status
3.3 ~ 5.6V	ON
0 ~ 1V	OFF

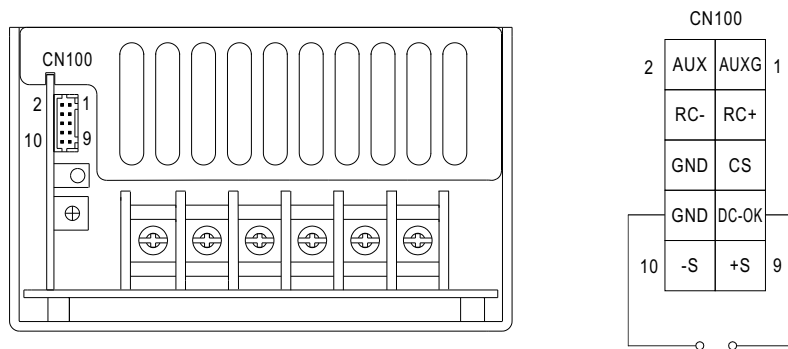


Fig 2.1

3.Remote Control

The PSU can be turned ON/OFF by using the "Remote Control" function.

Between RC+(pin3) and RC-(pin4)	Output Status
SW ON (Short)	OFF
SW OFF (Open)	ON

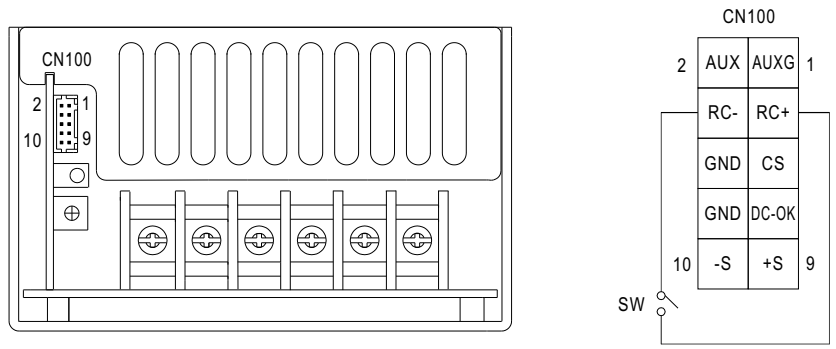


Fig 3.1

4.Current Sharing with Remote Sensing (Only for 24V, 36V and 48V)

HRPG-600 has the built-in active current sharing function and can be connected in parallel to provide higher output power :

- Parallel operation is available by connecting the units shown as below.
(+S,-S,CS and GND are connected mutually in parallel).
- Difference of output voltages among parallel units should be less than 2%.
- The total output current must not exceed the value determined by the following equation.
(output current at parallel operation)=(Rated current per unit) \times (Number of unit) \times 0.9
- In parallel operation 2 units is the maximum, please consult the manufacturer for applications of more connecting in parallel.
- The power supplies should be paralleled using short and large diameter wiring and then connected to the load.

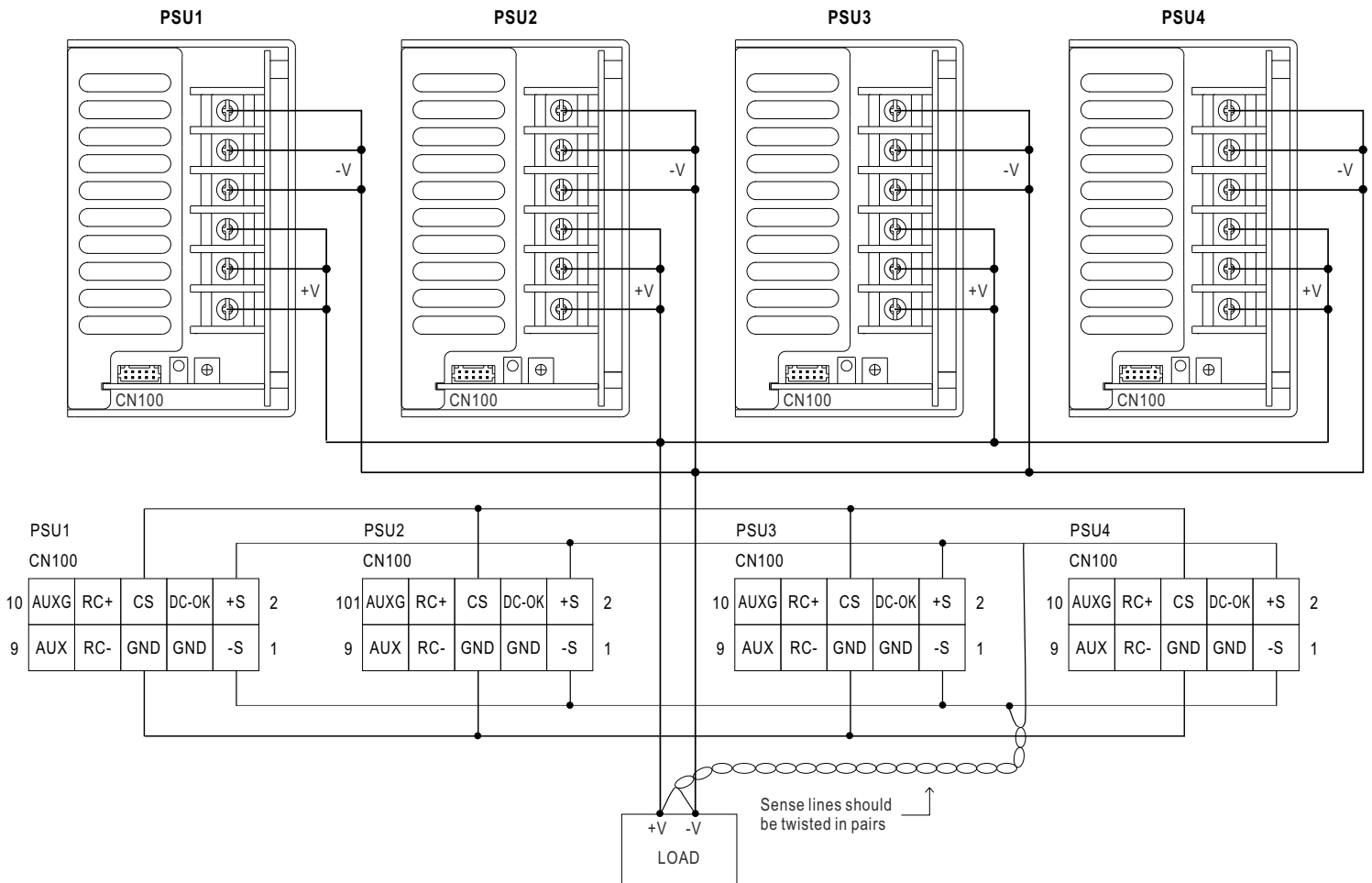


Fig 4.1

Note : 1. In parallel connection, maybe only one unit (master) operate if the total output load is less than 2% of rated load condition.
The other PSU (slave) may go into standby mode and its output LED and relay will not turn on.
2.2% min. of dummy load is required.

MODEL : HRPG-600-5

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1 : 100 mVp-p (Max)	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 36 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1 : 4.3 V~ 5.8 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	4.332 V~ 6.045 V/ 230 VAC 4.330 V~ 6.042 V/ 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1 : 2 %~ -2 % (Max)	I/P : 100 VAC / 264 VAC O/P : FULL/ MIN LOAD Ta : 25°C	V1 : 0.74 %~ -0.74 %	P
4	LINE REGULATION	V1 : 0.5 %~ -0.5 % (Max)	I/P : 100 VAC ~ 264 VAC O/P : FULL LOAD Ta : 25°C	V1 : 0.23 %~ -0.23 %	P
5	LOAD REGULATION	V1 : 1 %~ -1 % (Max)	I/P : 230 VAC O/P : FULL ~MIN LOAD Ta : 25°C	V1 : 0.61 %~ -0.61 %	P
6	SET UP TIME	230VAC : 1000 ms (Max) 115 VAC : 2500 ms (Max)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 484 ms 115VAC/ 968 ms	P
7	RISE TIME	230VAC : 50 ms (Max) 115VAC : 50 ms (Max)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 17.4 ms 115VAC/ 17.46 ms	P
8	HOLD UP TIME	230VAC : 16 ms (TYP) 115VAC : 16 ms(TYP)	I/P : 230 VAC I/P : 115VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 16.5 ms 115VAC/ 11 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 : 1000 mVp-p	I/P : 230 VAC O/P : FULL /Min LOAD 90%DUTY/1KHZ Ta : 25°C	738 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	85VAC~264 VAC	I/P : TESTING O/P : FULL LOAD Ta : 25°C	59.4 V~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 : 100 VAC ~ 264 VAC O/P : FULL-MIN LOAD Ta : 25°C	TEST : OK	P
3	POWER FACTOR	0.94 / 230 VAC(TYP) 0.99 / 115 VAC(TYP)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	PF= 0.956 / 230 VAC PF= 0.99 / 115 VAC	P
4	EFFICIENCY	82% (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	82.6 %	P
5	INPUT CURRENT	230V/ 5 A(TYP) 115V/ 8.5 A(TYP)	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I = 3.486 A/ 230 VAC I = 7.09 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 70 A(TYP) 115V/ 35 A(TYP) COLD START	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I = 70 A/ 230 VAC I = 35 A/ 115 VAC	P
7	LEAKAGE CURRENT	< 1.2 mA / 240 VAC	I/P : 264 VAC O/P : Min LOAD Ta : 25°C	L-FG : 1.1 mA N-FG : 0.42 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105 %~ 135 %	I/P : 230 VAC I/P : 115 VAC O/P : TESTING Ta : 25°C	123 %/ 230 VAC 123 %/ 115 VAC Constant current limiting, recovers automatically after fault condition is removed	P
2	OVER VOLTAGE PROTECTION	CH1 : 6V~ 7 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	6.8V/ 230 VAC 6.8V/ 115 VAC Shut down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC : TSW1 : 80 ± 5°C detect on heatsink of power transistor TSW2 : 90 ± 5°C detect on heatsink of power diode NO DAMAGE	I/P : 230 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, recovers automatically after fault condition is removed	P

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	DC OK SIGNAL	PSU turn on : 3.3 ~ 5.6V; PSU turn off : 0 ~ 1V	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	PSU turn on : 5.187 V PSU turn off : -0.066 V	P
2	REMOTE CONTROL	Rc+ / Rc- 4 ~ 10V or open = power on 0 ~ 0.8V or short = power off	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	3.55 V ~ 104 V POWER ON 0 V ~ 3 V POWER OFF	P
3	REMOTE SENSE	>0.5V	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	> 0.5 V	P
4	AUX POWER	4.75V~5.25V / 0.3A Ripple : 50mV	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	4.995V/0.3A Ripple : 16 mv	P
5	No load power consumption	<0.75W	I/P : 230 VAC O/P : NO LOAD Ta : 25°C	0.4W	P
6	FAN ON/OFF control test	----	I/P : 230 VAC O/P : TESTING Ta : 25°C	> 35 %LOAD FAN ON < 28 %LOAD FAN OFF	P

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																																																																											
1	TEMPERATURE RISE TEST	MODEL : HRPG-600-5 1. ROOM AMBIENT BURN-IN : 1.5 HRS I/P : 230VAC O/P : FULL LOAD Ta= 31 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 50 °C			P																																																																																																																																											
		<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>P/N</th> <th>ROOM AMBIENT Ta= 31 °C</th> <th>HIGH AMBIENT Ta=50 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF1</td><td>TR385-R6</td><td>31.5°C</td><td>52.9°C</td></tr> <tr><td>2</td><td>BD1</td><td>BD-001A-M4S RH3.5*3*1.5</td><td>40.2°C</td><td>61.0°C</td></tr> <tr><td>3</td><td>L3</td><td>TR854-R1</td><td>36.8°C</td><td>58.0°C</td></tr> <tr><td>4</td><td>Q1</td><td>IRFP460A 20A/500V</td><td>37.3°C</td><td>58.3°C</td></tr> <tr><td>5</td><td>D1</td><td>BYC10-600 10A/600V</td><td>45.5°C</td><td>66.7°C</td></tr> <tr><td>6</td><td>C5</td><td>470u/400V 105°C 30*45 MXG</td><td>30.7°C</td><td>50.6°C</td></tr> <tr><td>7</td><td>C18</td><td>100u/35V L7Kh 8*11.5 YXF</td><td>37.4°C</td><td>58.6°C</td></tr> <tr><td>8</td><td>TSW1</td><td>ST-22W-R2 80°C 90mm H</td><td>32.7°C</td><td>53.1°C</td></tr> <tr><td>9</td><td>U1</td><td>CM6800GIP PDIP-16</td><td>33.5°C</td><td>54.5°C</td></tr> <tr><td>10</td><td>T1</td><td>TF1817</td><td>61.3°C</td><td>84.8°C</td></tr> <tr><td>11</td><td>Q3</td><td>IRFP460A 20A/500V</td><td>41.9°C</td><td>63.8°C</td></tr> <tr><td>12</td><td>Q100</td><td>STP80NF03L-04 80A/30V</td><td>56.0°C</td><td>80.1°C</td></tr> <tr><td>13</td><td>L100</td><td>TR855</td><td>61.7°C</td><td>85.9°C</td></tr> <tr><td>14</td><td>C106</td><td>4700u/10V UL10Kh ZLH</td><td>35.3°C</td><td>57.0°C</td></tr> <tr><td>15</td><td>C150</td><td>47u/50V L5Kh 6.3*11 YXF</td><td>41.4°C</td><td>63.8°C</td></tr> <tr><td>16</td><td>RG1</td><td>RG L7812CV 1.0A/12V</td><td>36.5°C</td><td>58.1°C</td></tr> <tr><td>17</td><td>C152</td><td>47u/50V L5Kh 6.3*11 YXF</td><td>36.2°C</td><td>58.2°C</td></tr> <tr><td>18</td><td>HS3</td><td>ST-22W-R0 90°C 145mm</td><td>46.8°C</td><td>70.5°C</td></tr> <tr><td>19</td><td>T900</td><td>TF1593-R2</td><td>33.0°C</td><td>53.7°C</td></tr> <tr><td>20</td><td>L900</td><td>0.55Φ 6.8uH</td><td>31.2°C</td><td>51.9°C</td></tr> <tr><td>21</td><td>ZD900</td><td>TVS ST02D-200 AX078</td><td>35.8°C</td><td>56.9°C</td></tr> <tr><td>22</td><td>D22</td><td>SBYV26C 1A/600V</td><td>43.0°C</td><td>66.1°C</td></tr> <tr><td>23</td><td>C956</td><td>100u/10V L4Kh 5*11 YXG</td><td>34.7°C</td><td>56.1°C</td></tr> <tr><td>24</td><td>C911</td><td>10u/50V L5Kh 5*11 YXF</td><td>30.9°C</td><td>51.5°C</td></tr> <tr><td>25</td><td>U900</td><td>TNY275PN</td><td>34.4°C</td><td>55.7°C</td></tr> <tr><td>26</td><td>Q103</td><td>STP80NF03L-04 80A/30V</td><td>61.2°C</td><td>84.9°C</td></tr> <tr><td>27</td><td>RTH1</td><td>NTC SCK15056MIY</td><td>30.0°C</td><td>50.5°C</td></tr> </tbody> </table>	NO	Position		P/N	ROOM AMBIENT Ta= 31 °C	HIGH AMBIENT Ta=50 °C	1	LF1	TR385-R6	31.5°C	52.9°C	2	BD1	BD-001A-M4S RH3.5*3*1.5	40.2°C	61.0°C	3	L3	TR854-R1	36.8°C	58.0°C	4	Q1	IRFP460A 20A/500V	37.3°C	58.3°C	5	D1	BYC10-600 10A/600V	45.5°C	66.7°C	6	C5	470u/400V 105°C 30*45 MXG	30.7°C	50.6°C	7	C18	100u/35V L7Kh 8*11.5 YXF	37.4°C	58.6°C	8	TSW1	ST-22W-R2 80°C 90mm H	32.7°C	53.1°C	9	U1	CM6800GIP PDIP-16	33.5°C	54.5°C	10	T1	TF1817	61.3°C	84.8°C	11	Q3	IRFP460A 20A/500V	41.9°C	63.8°C	12	Q100	STP80NF03L-04 80A/30V	56.0°C	80.1°C	13	L100	TR855	61.7°C	85.9°C	14	C106	4700u/10V UL10Kh ZLH	35.3°C	57.0°C	15	C150	47u/50V L5Kh 6.3*11 YXF	41.4°C	63.8°C	16	RG1	RG L7812CV 1.0A/12V	36.5°C	58.1°C	17	C152	47u/50V L5Kh 6.3*11 YXF	36.2°C	58.2°C	18	HS3	ST-22W-R0 90°C 145mm	46.8°C	70.5°C	19	T900	TF1593-R2	33.0°C	53.7°C	20	L900	0.55Φ 6.8uH	31.2°C	51.9°C	21	ZD900	TVS ST02D-200 AX078	35.8°C	56.9°C	22	D22	SBYV26C 1A/600V	43.0°C	66.1°C	23	C956	100u/10V L4Kh 5*11 YXG	34.7°C	56.1°C	24	C911	10u/50V L5Kh 5*11 YXF	30.9°C	51.5°C	25	U900	TNY275PN	34.4°C	55.7°C	26	Q103	STP80NF03L-04 80A/30V	61.2°C	84.9°C	27	RTH1	NTC SCK15056MIY	30.0°C	50.5°C	
NO	Position	P/N	ROOM AMBIENT Ta= 31 °C	HIGH AMBIENT Ta=50 °C																																																																																																																																												
1	LF1	TR385-R6	31.5°C	52.9°C																																																																																																																																												
2	BD1	BD-001A-M4S RH3.5*3*1.5	40.2°C	61.0°C																																																																																																																																												
3	L3	TR854-R1	36.8°C	58.0°C																																																																																																																																												
4	Q1	IRFP460A 20A/500V	37.3°C	58.3°C																																																																																																																																												
5	D1	BYC10-600 10A/600V	45.5°C	66.7°C																																																																																																																																												
6	C5	470u/400V 105°C 30*45 MXG	30.7°C	50.6°C																																																																																																																																												
7	C18	100u/35V L7Kh 8*11.5 YXF	37.4°C	58.6°C																																																																																																																																												
8	TSW1	ST-22W-R2 80°C 90mm H	32.7°C	53.1°C																																																																																																																																												
9	U1	CM6800GIP PDIP-16	33.5°C	54.5°C																																																																																																																																												
10	T1	TF1817	61.3°C	84.8°C																																																																																																																																												
11	Q3	IRFP460A 20A/500V	41.9°C	63.8°C																																																																																																																																												
12	Q100	STP80NF03L-04 80A/30V	56.0°C	80.1°C																																																																																																																																												
13	L100	TR855	61.7°C	85.9°C																																																																																																																																												
14	C106	4700u/10V UL10Kh ZLH	35.3°C	57.0°C																																																																																																																																												
15	C150	47u/50V L5Kh 6.3*11 YXF	41.4°C	63.8°C																																																																																																																																												
16	RG1	RG L7812CV 1.0A/12V	36.5°C	58.1°C																																																																																																																																												
17	C152	47u/50V L5Kh 6.3*11 YXF	36.2°C	58.2°C																																																																																																																																												
18	HS3	ST-22W-R0 90°C 145mm	46.8°C	70.5°C																																																																																																																																												
19	T900	TF1593-R2	33.0°C	53.7°C																																																																																																																																												
20	L900	0.55Φ 6.8uH	31.2°C	51.9°C																																																																																																																																												
21	ZD900	TVS ST02D-200 AX078	35.8°C	56.9°C																																																																																																																																												
22	D22	SBYV26C 1A/600V	43.0°C	66.1°C																																																																																																																																												
23	C956	100u/10V L4Kh 5*11 YXG	34.7°C	56.1°C																																																																																																																																												
24	C911	10u/50V L5Kh 5*11 YXF	30.9°C	51.5°C																																																																																																																																												
25	U900	TNY275PN	34.4°C	55.7°C																																																																																																																																												
26	Q103	STP80NF03L-04 80A/30V	61.2°C	84.9°C																																																																																																																																												
27	RTH1	NTC SCK15056MIY	30.0°C	50.5°C																																																																																																																																												
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 118 % 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= -35 °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	± 0.03 %(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 : 5G (5) Test Time : 1 hour in each axis (X.Y.Z) (6) Ta : 25°C	TEST : OK	P
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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 : 6.3 mA I/P-FG : 5.92 mA O/P-FG : 3.85 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 / 70%RH	I/P-O/P : 304 GΩ I/P-FG : 15.8 GΩ O/P-FG : 304 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta : 25°C / 70%RH	11 mΩ	P
4	APPROVAL	TUV : Certificate NO : R 50153202 UL : File NO : E183223			P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A CLASS D	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 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 INDUSTRY INPUT : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	P
6	SURGE	IEC61000-4-5 INDUSTRY L-N : 2KV L,N-PE : 4KV	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	HRPG-600-5 : SUPPOSE C106 I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME= 2114922.6 HRS I/P : 230VAC O/P : FULL LOAD Ta= 50 °C LIFE TIME= 310081.8 HRS	IS THE MOST CRITICAL COMPONENT		P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE : 147.7K 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	Q3 Rated SPW20N60C3 : 20.7A/600V	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2) Output Short Ta : 25°C	(1) 480 V (2) 464 V	P
2	Diode Peak Voltage	Q100 Rated STP80NF03L-04 : 80A/30V Q103 Rated STP80NF03L-04 : 80A/30V	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2)Output Short Ta : 25°C	(1) 21.8 V (2) 21 V (1) 31 V (2) 34 V	P
3	Input Capacitor Voltage	C5 Rated 470u/400V 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 Ta : 25°C	(1) 376.7 V (2) 380.6 V (3) 380.8 V	P
4	Control IC Voltage Test	U1 Rated CM6800GIP : 10V~20V	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) 14.231 V (2) 14.023 V (3) 14.051 V	P
5	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated IRFP460A 20A/500V	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2) Output Short Ta : 25°C	(1) 492 V (2) 426 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2009/3/17	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2009/6/22	PRODUCT SAMPLE W0904A29	PASS	SANFORD SU	VINCENT TSENG
2009/8/31	PRODUCT SAMPLE W0907D37	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023