

MODEL : RSP-3000-48

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1 : 200 mVp-p (Max)	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 95 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1 : 43 V-56V	I/P : 230 VAC O/P : MIN LOAD Ta : 25°C	38.97 V~ 57.84 V/ 230 VAC 38.96 V~ 57.84 V/ 180 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1 : 1%~ -1% (Max)	I/P : 180VAC / 264 VAC O/P : FULL/ MIN LOAD Ta : 25°C	V1 : 0.03 %~ -0.03 %	P
4	LINE REGULATION	V1 : 0.5%~ -0.5% (Max)	I/P : 180VAC ~ 264 VAC O/P : FULL LOAD Ta : 25°C	V1 : 0.02 %~ -0.02 %	P
5	LOAD REGULATION	V1 : 0.5%~ -0.5% (Max)	I/P : 230 VAC O/P : FULL -MIN LOAD Ta : 25°C	V1 : 0.02 %~ -0.02 %	P
6	SET UP TIME	230VAC : 1000 ms (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 494 ms	P
7	RISE TIME	230VAC : 80 ms (Max)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 51 ms	P
8	HOLD UP TIME	230VAC : 10 ms (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 31 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 : 4800 mVp-p	I/P : 230 VAC O/P : FULL /Min LOAD 90%DUTY/1KHZ Ta : 25°C	302 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	180VAC~264 VAC	I/P : TESTING O/P : FULL LOAD Ta : 25°C	72V~264V	P
			I/P : LOW-LINE-3V= 177 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 : 180 VAC ~ 264 VAC O/P : FULL-MIN LOAD Ta : 25°C	TEST : OK	P
3	POWER FACTOR	0.95 / 230 VAC(TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	PF= 0.989 / 230 VAC	P
4	EFFICIENCY	90.5% (TYP)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	91.8 %	P
5	INPUT CURRENT	230V/ 16 A (TYP) 180V/ 20 A (TYP)	I/P : 230 VAC I/P : 180 VAC O/P : FULL LOAD Ta : 25°C	I = 14.40 A/ 230 VAC I = 18.10 A/ 180 VAC	P
6	INRUSH CURRENT	230V/ 60 A (TYP) COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 52 A/ 230 VAC	P
7	LEAKAGE CURRENT	< 2 mA / 240 VAC	I/P : 264 VAC O/P : Min LOAD Ta : 25°C	L-FG : 1.25 mA N-FG : 1.25 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	100%~112 %	I/P : 230 VAC O/P : TESTING Ta : 25°C	107.5 %/ 230 VAC Constant Current Limiting	P
2	OVER VOLTAGE PROTECTION	CH1 : 57.6V~ 67.2V	I/P : 230 VAC O/P : MIN LOAD Ta : 25°C	62.98V/ 230 VAC Shut down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC : TSW1 : 105 ± 5°C O.T.P detect on heatsink of power transistor TSW2 : 75 ± 5°C O.T.P detect on heatsink of O/P 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 CN3 PIN9-10 SHORT: Shut down Re-power ON CN3 PIN9-10 OPEN: Current Limit	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	11.838V	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"> <thead> <tr> <th colspan="2">Connection Method</th> <th>Fig1.2(a)</th> <th>Fig1.2(b)</th> <th>Fig1.2(c)</th> </tr> </thead> <tbody> <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> </tbody> </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
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3	ALARM SIGNAL OUTPUT	<p>Table2.1 Explanation of alarm</p> <table border="1"> <thead> <tr> <th>Function</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>P OK</td> <td>The signal is "Low" when the power supply is 80% of the rated output voltage-Power OK</td> </tr> <tr> <td></td> <td>The signal turns to be "High" when the power supply is under 80% of the rated output voltage-Power Fail</td> </tr> </tbody> </table>	Function	Description	P OK	The signal is "Low" when the power supply is 80% of the rated output voltage-Power OK		The signal turns to be "High" when the power supply is under 80% of the rated output voltage-Power Fail	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	<table border="1"> <thead> <tr> <th>Output of alarm (P OK, relay contact)</th> <th>Output of alarm (P OK2, TTL Signal)</th> </tr> </thead> <tbody> <tr> <td>Low (0.5V max at 500mA)</td> <td>Low (0.5V max at 10mA)</td> </tr> <tr> <td>High or open (External applied voltage 500mA max.)</td> <td>High or open (External applied voltage 10mA max.)</td> </tr> </tbody> </table>	Output of alarm (P OK, relay contact)	Output of alarm (P OK2, TTL Signal)	Low (0.5V max at 500mA)	Low (0.5V max at 10mA)	High or open (External applied voltage 500mA max.)	High or open (External applied voltage 10mA max.)	P		
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4	OUTPUT VOLTAGE PROGRAMMABLE(PV)	(1) Adjustment of output voltage is possible between 20-110%(Typ.) of the rated output which is shown in Fig. 3.1 (2) Connecting a resistor externally between PV and-S on CN1 or CN2 that is shown in Fig. 3.2	I/P : 230 VAC O/P : NOL LOAD Ta : 25°C	PV=1V , Vout= 9.790 V PV=3V , Vout=29.06 V PV=5V , Vout=48.29 V PV=5.83,Vout=56.18 V	P														
5	CURRENT SHARING	PSU1-PSU2 < 10%	I/P : 230 VAC O/P : 90%/50% LOAD Ta : 25°C	O/P : 90% LOAD PSU1 : 56A PSU2 : 55.1A PSU3 : 57.1A O/P : 50% PSU1 : 31.5A PSU2 : 30A PSU3 : 32.2A	P														
6	REMOTE SENSE	>0.25V	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	> 0.25 V	P														
7	FAN SPEED CONTROL	-----	I/P : 230 VAC O/P : FULL /NOLOAD Ta : 25°C	NO LOAD Fan Voltage= 7.351 V 100% LOAD Fan Voltage=12.480 V	P														

ENVIRONMENT TEST

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1	TEMPERATURE RISE TEST	MODEL : RSP-3000-24 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 45.4 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 51.2 °C																																																																																																																																																																																																																					
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YXM</td><td>67.4°C</td><td>80.4°C</td></tr> <tr><td>11</td><td>U1</td><td>TNY280</td><td>76.0°C</td><td>82.3°C</td></tr> <tr><td>12</td><td>C82</td><td>220u/25V UL7Kh 8*11.5 KY</td><td>72.3°C</td><td>74.3°C</td></tr> <tr><td>13</td><td>ZD80</td><td>TVS P6KE200A</td><td>77.9°C</td><td>84.4°C</td></tr> <tr><td>14</td><td>T2</td><td>TF-1806A</td><td>81.9°C</td><td>88.0°C</td></tr> <tr><td>15</td><td>C306</td><td>47u/25V UL10Kh YXM</td><td>72.9°C</td><td>80.3°C</td></tr> <tr><td>16</td><td>RG1</td><td>RG L7812CV 1.0A/12V</td><td>74.2°C</td><td>84.4°C</td></tr> <tr><td>17</td><td>U223</td><td>UCC2895DW</td><td>63.1°C</td><td>70.1°C</td></tr> <tr><td>18</td><td>T6</td><td>TF-1813</td><td>72.7°C</td><td>80.7°C</td></tr> <tr><td>19</td><td>T7</td><td>TF-1813</td><td>71.3°C</td><td>78.9°C</td></tr> <tr><td>20</td><td>Q51</td><td>FCH47N60F 47A/600V</td><td>82.4°C</td><td>87.8°C</td></tr> <tr><td>21</td><td>D980</td><td>BYC8-600 8A/600V</td><td>66.7°C</td><td>73.4°C</td></tr> 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3-4	TF-905	51.4°C	57.8°C	4	L1	TF-1804	80.3°C	88.4°C	5	T1 1-2	TF-905	49.0°C	55.5°C	6	D2	STTH3006DPI 30A/600V	72.5°C	77.0°C	7	O5	TK40J60T 40A/600V	61.3°C	70.1°C	8	C7	470u/420V 105°C 30*45 HU	64.7°C	70.7°C	9	U900	UCC2818	60.8°C	67.3°C	10	C83	10u/50V UL10Kh 5*11 YXM	67.4°C	80.4°C	11	U1	TNY280	76.0°C	82.3°C	12	C82	220u/25V UL7Kh 8*11.5 KY	72.3°C	74.3°C	13	ZD80	TVS P6KE200A	77.9°C	84.4°C	14	T2	TF-1806A	81.9°C	88.0°C	15	C306	47u/25V UL10Kh YXM	72.9°C	80.3°C	16	RG1	RG L7812CV 1.0A/12V	74.2°C	84.4°C	17	U223	UCC2895DW	63.1°C	70.1°C	18	T6	TF-1813	72.7°C	80.7°C	19	T7	TF-1813	71.3°C	78.9°C	20	Q51	FCH47N60F 47A/600V	82.4°C	87.8°C	21	D980	BYC8-600 8A/600V	66.7°C	73.4°C	22	L2	TF-1805	90.6°C	97.6°C	23	D981	BYC8-600 8A/600V	75.9°C	79.0°C	24	T5	TF-1811	99.9°C	106.2°C	25	D100	60CPQ150 60A/150V	67.0°C	72.1°C	26	D104	60CPQ150 60A/151V	78.8°C	84.1°C	27	L101	TF1808	69.7°C	76.4°C	28	C110	1500u/35V UL10Kh ZLH	70.4°C	78.0°C	29	C114	1500u/35V UL10Kh ZLH	75.0°C	81.4°C	30	C116	1500u/35V UL10Kh ZLH	73.2°C	79.9°C	31	C118	1500u/35V UL10Kh ZLH	71.8°C	78.2°C	32	C253	22uF/16V 20% 6032(C)	68.6°C	75.3°C	33	C257	22uF/16V 20% 6033(C)	68.5°C	75.6°C	34	C510	47u/25V UL10Kh 5*11 YXM	73.3°C	81.5°C	35	C512	47u/25V UL10Kh 5*12 YXM	73.6°C	82.2°C	36	Q530	STP60NF06L 60A/60V	78.1°C	85.0°C	37	C701	330u/25V UL8Kh ZLH	49.4°C	55.5°C	38	Q702	TIP42C -5A/100V	50.8°C	57.1°C	39	TSW2	ST-22 85°C	79.7°C	86.0°C	40	U530	PIC16F684	67.0°C	73.4°C	41	TSW1	ST-22 110°C	85.3°C	90.5°C	P
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32	C253	22uF/16V 20% 6032(C)	68.6°C	75.3°C																																																																																																																																																																																																																			
33	C257	22uF/16V 20% 6033(C)	68.5°C	75.6°C																																																																																																																																																																																																																			
34	C510	47u/25V UL10Kh 5*11 YXM	73.3°C	81.5°C																																																																																																																																																																																																																			
35	C512	47u/25V UL10Kh 5*12 YXM	73.6°C	82.2°C																																																																																																																																																																																																																			
36	Q530	STP60NF06L 60A/60V	78.1°C	85.0°C																																																																																																																																																																																																																			
37	C701	330u/25V UL8Kh ZLH	49.4°C	55.5°C																																																																																																																																																																																																																			
38	Q702	TIP42C -5A/100V	50.8°C	57.1°C																																																																																																																																																																																																																			
39	TSW2	ST-22 85°C	79.7°C	86.0°C																																																																																																																																																																																																																			
40	U530	PIC16F684	67.0°C	73.4°C																																																																																																																																																																																																																			
41	TSW1	ST-22 110°C	85.3°C	90.5°C																																																																																																																																																																																																																			

2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 104 % 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= -25°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	± 0.003 %(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 : 2 KVAC/min O/P-FG : 0.5 KVAC/min	I/P-O/P : 3.6 KVAC/min I/P-FG : 2.4 KVAC/min O/P-FG : 0.6 KVAC/min Ta : 25°C	I/P-O/P : 11.25 mA I/P-FG : 10.30 mA O/P-FG : 8 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 : 7.16 GΩ I/P-FG : 6.26 GΩ O/P-FG : 2.49 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta : 25°C / 70%RH	20 mΩ	P
4	APPROVAL	TUV : Certificate NO : UL : File NO :			N/A

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2,-3 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 A	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	RSP-3000-24 : SUPPOSE C116 I/P : 230VAC O/P : FULL LOAD I/P : 230VAC O/P : FULL LOAD	IS THE MOST CRITICAL COMPONENT Ta= 25 °C LIFE TIME= 448730 HRS Ta= 50 °C LIFE TIME= 74527 HRS		P
2	MTBF	Conducted by Parts Stress Analysis Prediction 223.8K hrs min. Telcordia SR-332 (Bellcore) ; 75.1K hrs min. MIL-HDBK-217F (25°C)			P
3	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure : Above 50,000 hours @ TA 50°C			P



COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q50 Rated FCH47N60F 47A/600V	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2) Output Short Ta : 25°C	(1) 496 V (2) 512 V	P
2	Diode Peak Voltage	D100 Rated S20LC30 20A/300V	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2)Output Short Ta : 25°C	(1) 195 V (2) 190 V	P
3	Input Capacitor Voltage	C5 Rated 470u/420V 105°C 30*45 HU	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) 396.4 V (2) 396.3 V (3) 396.3 V	P
4	Control IC Voltage Test	U223 Rated UCC2895DW : 11.8V-17V	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) 12.872 V (2) 12.877 V (3) 12.878 V	P
5	Power Transistor (D to S) or (C to E) Peak Voltage	Q5 Rated TK40J60T 40A/600V	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2) Output Short Ta : 25°C	(1) 568 V (2) 434 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2008/12/3	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2009/3/11	PRODUCT SAMPLE W0812E52	PASS	SANFORD SU	VINCENT TSENG
2009/6/10	PRODUCT SAMPLE W0904A38	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023