

MODEL : TS-1000-248

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RATED POWER (TYP)	1000W	IP: 48VDC Ta:25°C	1000 W	P
2	WAVEFORM	True sine wave (THD<3%)	IP: 52VDC OP: FULL LOAD/NO LOAD Ta:25°C	FULL LOAD: 1.89 % NO LOAD: 1.34 %	P
3	FREQUENCY	50HZ ± 0.1HZ	IP: 48VDC OP: FULL LOAD/NO LOAD Ta:25°C	FULL LOAD: 50.02 HZ NO LOAD: 49.99 HZ	P
4	AC REGULATION (TYP)	3%~3%	IP: 48VDC OP: FULL LOAD/NO LOAD Ta:25°C	0.4% ~ -0.4%	P
5	SAVING MODE TO NORMAL	≤6S (5W-25W)	IP: 48VDC OP: TESTING Ta:25°C	≥13 W 5 SEC	P
6	NORMAL TO SAVING MODE	≤6S (5W-15W)	IP: 48VDC OP: TESTING Ta:25°C	<10 W 5SEC	P
7	MAXIMUM OUTPUT POWER (TYP)	1150W/180sec 1500w/10sec 2000W / 30cycle	IP: 48VDC OP:TESTING LOAD Ta:25°C	1100 W 180 SEC 1400 W 10SEC 2046 W 30 cycle Shut down o/p voltage , re-power on to recover	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	DC CURRENT (TYP)	25A	IP: 48VDC OP:FULL LOAD Ta:25°C	22.8A	P
2	NO LOAD DISSIPATION	≤ 6W @ saving mode	IP: 48VDC OP:NO LOAD Ta:25°C	5.33W	P
3	OFF MODE DRAW CURRENT	≤1mA	IP: SW OFF OP:NO LOAD Ta:25°C	0.45mA	P
4	VOLTAGE RANGE (TYP)	42VDC-60VDC	IP: TESTING OP:NO LOAD Ta:25°C	42VDC~ 60.2VDC	P
5	EFFICIENCY (TYP)	92%	IP: 52VDC OP: 750W Ta:25°C	92.6%	P

INPUT PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	BAT LOW ALARM	45VDC \pm 4%	IP: TESTING OP: NO LOAD SW:ON Ta:25°C	44.6V	P
2	BAT LOW SHUT DOWN	42VDC \pm 4%	IP: TESTING OP: NO LOAD SW:ON Ta:25°C	42V Shut down Recovery	P
3	BAT. RECOVERY VOLTAGE	48VDC-60VDC	IP: TESTING OP: NO LOAD SW:ON Ta:25°C	52V	P
4	BAT POLARITY	BY INTERNAL FUSE	IP: 48VDC OP: NO LOAD SW:ON Ta:25°C	OK	P

OUTPUT PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER TEMPERATURE	65 °C \pm 5 °C (RTH3) detect on heatsink of power transistor	IP: 48VDC OP: FULL LOAD SW:ON Ta:25°C	O.T.P Active Shut down o/p voltage , re-power on to recover	P
2	OUTPUT SHORT	Shut-off :Shut down o/p voltage , re-power onto recover	IP: 48VDC OP: FULL LOAD SW:ON Ta:25°C	Shut down o/p voltage , re-power on to recover	P
3	OVER LOAD (TYP)	105%-115% LOAD for 180sec 115%-150% LOAD for 10sec	IP: 48VDC OP:TESTING Ta:25°C	<u>1100 W 180 SEC</u> <u>1400 W 10SEC</u> Shut down o/p voltage , re-power on to recover	P

APPLICATION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INDUCTION MOTOR	0.5HP	IP: 48VDC OP:0.5HP SW:ON Ta:25°C	INVERTER TURN ON/OFF :OK INDUCTION MOTOR ON/OFF:OK	P
2	SWITCHING POWER SUPPLY	RSP-1500-48(Pin=1000W)	IP: 48VDC OP: RSP-1500-48 SW:ON Ta:25°C	INVERTER TURN ON/OFF :OK INDUCTION MOTOR ON/OFF:OK	P
3	INCANDESCENT LAMPS	1000W	IP: 48VDC OP: 1000W SW:ON Ta:25°C	INVERTER TURN ON/OFF :OK INDUCTION MOTOR ON/OFF:OK	P

LED CONTROL TEST

LED IS TREECOLOR LIGHT (●●●)	PANEL
● ● ●	Status Battery Load

Status LIGHT	CONDITION	RESULT
●	Inverter Ok	OK
★ flash per second	Saving mode	OK

Battery LIGHT	CONDITION	RESULT
●	V_{in} <44.4V	<45.5V
●	---	46.8V-48V
●	V_{in} >50.4V	>49.2V

Load LIGHT	CONDITION	RESULT
●	LOAD > 850W	>790W
●	LOAD=550W~750W	500W-770W
●	LOAD < 450W	<485W

VOLTAGE AND SAVING MODE SETTING CODES

★ flash per second. ● Light on. ○ Light off.

	100V (200V)	110V (220V)	115V (230V)	120V (240V)
50Hz	● ○ ○	● ○ ●	● ● ○	● ● ●
RESULT	OK	OK	OK	OK
60Hz	★ ○ ○	★ ○ ●	★ ● ○	★ ● ●
RESULT	OK	OK	OK	OK

Saving Status	LIGHT	RESULT
Enable	★ ★ ●	OK
Disable	★ ★ ○	OK

ERROR CODE LED

Error Code	LIGHT	EXTRAORDINARY	RESULT
001	○ ○ ★	OLP 105±5%~115±5% error code	P
010	○ ★ ○	OLP 115%±5%~ 150±10% error code	P
011	○ ★ ★	OLP 150% error code	P
100	★ ○ ○	OTP error code	P
110	★ ★ ○	INV fault error code	P
111	★ ★ ★	Battery Shut Down (Low: No Alarm)	P

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																																																													
1	TEMPERATURE RISE TEST	MODEL : TS-1000-224 1. ROOM AMBIENT BURN-IN : 3 HRS I/P: 12 VDC O/P: FULL LOAD Ta= 36.2°C 2. HIGH AMBIENT BURN-IN : 2.5 HRS I/P: 12 VDC O/P: FULL LOAD Ta= 44.3 °C																																																																																																																																
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>P/N</th> <th>ROOM AMBIENT Ta= 36.2°C</th> <th>HIGH AMBIENT Ta= 44.3°C</th> </tr> </thead> <tbody> <tr><td>6</td><td>C302</td><td>680u/35V 105°C KY</td><td>64.4°C</td><td>80.7°C</td></tr> <tr><td>7</td><td>L301</td><td>TF-1620</td><td>67.5°C</td><td>85.5°C</td></tr> <tr><td>8</td><td>C309</td><td>565/250V</td><td>66.0°C</td><td>82.2°C</td></tr> <tr><td>9</td><td>T301</td><td>TF-1626</td><td>76.4°C</td><td>94.6°C</td></tr> <tr><td>10</td><td>C416</td><td>150U/450V 105°C HU</td><td>62.4°C</td><td>77.9°C</td></tr> <tr><td>11</td><td>L13</td><td>TR-749</td><td>84.0°C</td><td>98.9°C</td></tr> <tr><td>12</td><td>L1</td><td>TR-750</td><td>40.4°C</td><td>55.6°C</td></tr> <tr><td>13</td><td>D401</td><td>YG975C6R 20A/600V</td><td>50.7°C</td><td>67.8°C</td></tr> <tr><td>14</td><td>Q309</td><td>CEP540A 30A/100V</td><td>52.2°C</td><td>66.6°C</td></tr> <tr><td>15</td><td>Q300</td><td>STP80NF10 80A/100V</td><td>53.3°C</td><td>68.9°C</td></tr> <tr><td>16</td><td>U307</td><td>TL3845P</td><td>49.6°C</td><td>63.8°C</td></tr> <tr><td>17</td><td>C328</td><td>100U/25V 105°C YXG</td><td>47.3°C</td><td>60.9°C</td></tr> <tr><td>18</td><td>D307</td><td>HER203 2A/200V</td><td>46.1°C</td><td>59.8°C</td></tr> <tr><td>19</td><td>Q10</td><td>HGTG12N60A4D 12A/600V</td><td>46.5°C</td><td>60.8°C</td></tr> <tr><td>20</td><td>RTH3</td><td>10KΩ 1%</td><td>47.3°C</td><td>61.4°C</td></tr> <tr><td>21</td><td>RG300</td><td>LM317T 1.5A</td><td>42.1°C</td><td>56.4°C</td></tr> <tr><td>22</td><td>Q601</td><td>IRF540N 27A/100V</td><td>44.1°C</td><td>58.7°C</td></tr> <tr><td>23</td><td>RG601</td><td>LM317T 1.5A</td><td>40.6°C</td><td>55.3°C</td></tr> <tr><td>24</td><td>D630</td><td>21DQ10 2A/100V</td><td>42.8°C</td><td>56.5°C</td></tr> <tr><td>25</td><td>C506</td><td>2.2U/50V 105°C KY</td><td>38.9°C</td><td>53.3°C</td></tr> <tr><td>26</td><td>U501</td><td>PIC18F65J10</td><td>40.2°C</td><td>53.6°C</td></tr> <tr><td>27</td><td>C7</td><td>505/250V</td><td>41.1°C</td><td>56.6°C</td></tr> <tr><td>28</td><td>內 TA</td><td>C416 上方</td><td>66.0°C</td><td>82.6°C</td></tr> <tr><td>29</td><td>CASE</td><td>CASE 上方</td><td>47.0°C</td><td>59.5°C</td></tr> </tbody> </table>	NO	Position	P/N	ROOM AMBIENT Ta= 36.2°C	HIGH AMBIENT Ta= 44.3°C	6	C302	680u/35V 105°C KY	64.4°C	80.7°C	7	L301	TF-1620	67.5°C	85.5°C	8	C309	565/250V	66.0°C	82.2°C	9	T301	TF-1626	76.4°C	94.6°C	10	C416	150U/450V 105°C HU	62.4°C	77.9°C	11	L13	TR-749	84.0°C	98.9°C	12	L1	TR-750	40.4°C	55.6°C	13	D401	YG975C6R 20A/600V	50.7°C	67.8°C	14	Q309	CEP540A 30A/100V	52.2°C	66.6°C	15	Q300	STP80NF10 80A/100V	53.3°C	68.9°C	16	U307	TL3845P	49.6°C	63.8°C	17	C328	100U/25V 105°C YXG	47.3°C	60.9°C	18	D307	HER203 2A/200V	46.1°C	59.8°C	19	Q10	HGTG12N60A4D 12A/600V	46.5°C	60.8°C	20	RTH3	10KΩ 1%	47.3°C	61.4°C	21	RG300	LM317T 1.5A	42.1°C	56.4°C	22	Q601	IRF540N 27A/100V	44.1°C	58.7°C	23	RG601	LM317T 1.5A	40.6°C	55.3°C	24	D630	21DQ10 2A/100V	42.8°C	56.5°C	25	C506	2.2U/50V 105°C KY	38.9°C	53.3°C	26	U501	PIC18F65J10	40.2°C	53.6°C	27	C7	505/250V	41.1°C	56.6°C	28	內 TA	C416 上方	66.0°C	82.6°C	29	CASE	CASE 上方	47.0°C	59.5°C	P
NO	Position	P/N	ROOM AMBIENT Ta= 36.2°C	HIGH AMBIENT Ta= 44.3°C																																																																																																																														
6	C302	680u/35V 105°C KY	64.4°C	80.7°C																																																																																																																														
7	L301	TF-1620	67.5°C	85.5°C																																																																																																																														
8	C309	565/250V	66.0°C	82.2°C																																																																																																																														
9	T301	TF-1626	76.4°C	94.6°C																																																																																																																														
10	C416	150U/450V 105°C HU	62.4°C	77.9°C																																																																																																																														
11	L13	TR-749	84.0°C	98.9°C																																																																																																																														
12	L1	TR-750	40.4°C	55.6°C																																																																																																																														
13	D401	YG975C6R 20A/600V	50.7°C	67.8°C																																																																																																																														
14	Q309	CEP540A 30A/100V	52.2°C	66.6°C																																																																																																																														
15	Q300	STP80NF10 80A/100V	53.3°C	68.9°C																																																																																																																														
16	U307	TL3845P	49.6°C	63.8°C																																																																																																																														
17	C328	100U/25V 105°C YXG	47.3°C	60.9°C																																																																																																																														
18	D307	HER203 2A/200V	46.1°C	59.8°C																																																																																																																														
19	Q10	HGTG12N60A4D 12A/600V	46.5°C	60.8°C																																																																																																																														
20	RTH3	10KΩ 1%	47.3°C	61.4°C																																																																																																																														
21	RG300	LM317T 1.5A	42.1°C	56.4°C																																																																																																																														
22	Q601	IRF540N 27A/100V	44.1°C	58.7°C																																																																																																																														
23	RG601	LM317T 1.5A	40.6°C	55.3°C																																																																																																																														
24	D630	21DQ10 2A/100V	42.8°C	56.5°C																																																																																																																														
25	C506	2.2U/50V 105°C KY	38.9°C	53.3°C																																																																																																																														
26	U501	PIC18F65J10	40.2°C	53.6°C																																																																																																																														
27	C7	505/250V	41.1°C	56.6°C																																																																																																																														
28	內 TA	C416 上方	66.0°C	82.6°C																																																																																																																														
29	CASE	CASE 上方	47.0°C	59.5°C																																																																																																																														
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	IP: 12VDC OP: FULL LOAD Ta= -5°C	TEST : OK	P																																																																																																																													
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 40°C NO DAMAGE	IP: 13.6VDC OP: FULL LOAD Ta:= 40°C HUMIDITY= 95 %R.H	TEST : OK	P																																																																																																																													
5	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (3) Sweep Time: 10min/sweep cycle (5) Test Time: 1 hour in each axis (X.Y.Z)	(2) Frequency: 10-500Hz (4) Acceleration: 3G (6) Ta: 25°C	TEST : OK	P																																																																																																																													

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	BAT I/P-AC O/P: 3 KVAC/min AC O/P-FG: 1.5 KVAC/min	BAT I/P-AC O/P: 3.6 KVAC/min AC O/P-FG: 1.8 KVAC/min Ta:25°C	BAT I/P-AC O/P: 6.41 mA AC O/P-FG: 4.54 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	BAT I/P-AC O/P:500VDC>100MΩ BAT I/P-FG: 500VDC>100MΩ	BAT I/P-AC O/P: 500 VDC BAT I/P-FG: 500 VDC Ta:25°C	BAT I/P-AC O/P: 2.1GΩ BAT I/P-FG: 2.58GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25°C	8 mΩ	P
4	APPROVAL	TUV: Certificate NO : UL: File NO :			N

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RADIATION	EN 55022 CLASS B	I/P:48 VDC O/P: :FULL/50% LOAD Ta:25°C	PASS	P
2	E.S.D	EN 61000-4-2 LIGHT INDUSTRY AIR:8KV / Contact:4KV	I/P: 48VDC O/P:100 %LOAD Ta:25°C	CRITERIA A	P
3	E.F.T	EN 61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 48VDC O/P:100 %LOAD Ta:25°C	CRITERIA A	P
4	SURGE	EN 61000-4-5 LIGHT INDUSTRY L-N :1KV L,N-PE:1KV	I/P: 48VDC O/P:100 %LOAD Ta:25°C	CRITERIA A	P
5	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	TS-1000-224 : SUPPOSE C302 IS THE MOST CRITICAL COMPONENT I/P: 12VDC O/P:FULL LOAD Ta= 25°C LIFE TIME= 407812 HRS I/P: 12VDC O/P:FULL LOAD Ta= 40°C LIFE TIME= 126450 HRS			P



COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	DC TO DC Power Transistor (D to S) or (C to E) Peak Voltage	Q 300 Rated STP40N20 40A/200V	I/P:59VDC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 157 V (2) 153 V	P
2	DCTO DC Diode Peak Voltage	D 400 Rated YG975C6R 20A/600V	I/P:59 VDC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 480 V (2) 472 V	P
3	DC BUS Capacitor Voltage	C415 Rated 150u/450V 105°C	I/P:59VDC O/P: (1)Full Load Turn SW On /Off (2) Min load Turn SW On /Off Ta:25°C	(1) 438 V (2) 454 V	P
4	DC TO AC Power Transistor (D to S) or (C to E) Peak Voltage	Q 11 Rated HGTG12N60A4D 12A/600V	I/P:59 VDC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 524 V (2) 540 V	P
7	DC TO FAN Power Transistor (D to S) or (C to E) Peak Voltage	Q 309 Rated 2SK2508 12A/250V	I/P:59VDC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 163 V (2) 127 V	P
8	DCTO FAN Diode Peak Voltage	D 450 Rated HER303 3A/200V	I/P:59VDC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 58 V (2) 55 V	P
9	FAN TO CPU Power Transistor (D to S) or (C to E) Peak Voltage	Q601 Rated IRF540N 27A/100V	I/P:59VDC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 42 V (2) 38 V	P
10	FAN TO CPU Diode Peak Voltage	D 630 Rated 21DQ10 2A/100V	I/P:59 VDC O/P: (1)Full Load Turn On (2) Output Short Ta:25°C	(1) 57 V (2) 57 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2007/11/13	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2008/3/24	PRODUCT SAMPLE W0712B58	PASS	SANFORD SU	VINCENT TSENG
2008/6/17	PRODUCT SAMPLE W0804C23	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023