



Test Report: HEP-1000-48

1000W Switching Power Supply for Harsh Environment

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Control Function Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

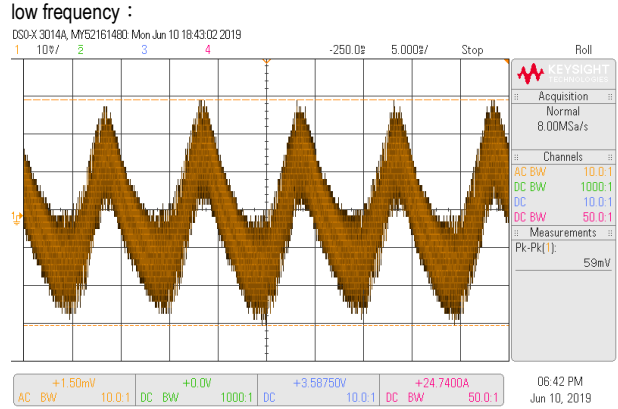
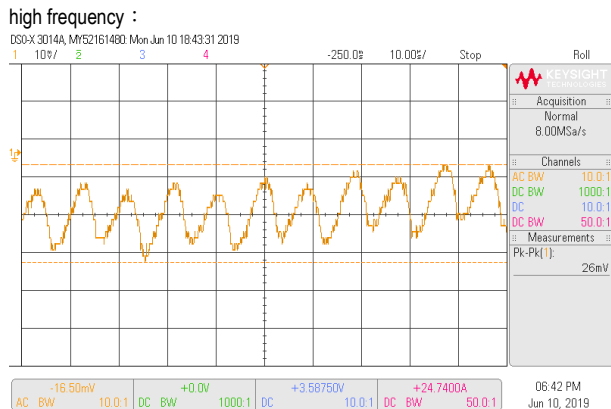
■ RELIABILITY TEST

ENVIRONMENT TEST

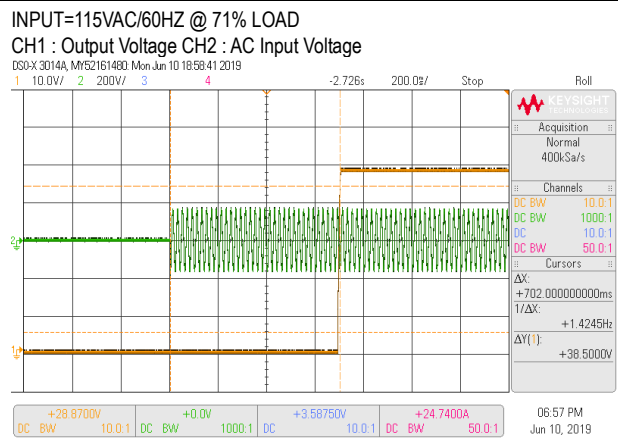
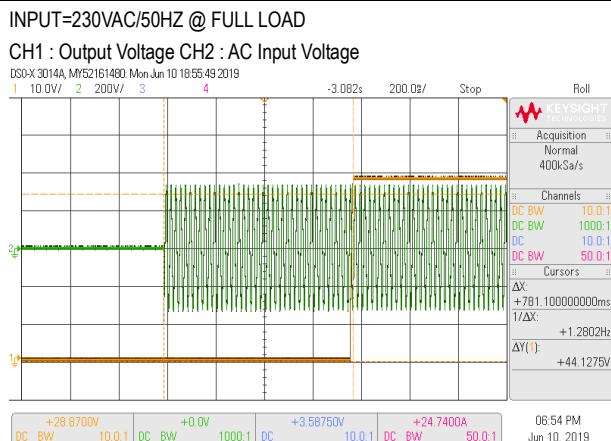
DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 48V ~ 60V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	46.567V~61.155V/230VAC 46.565V~61.14V/115VAC
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1: -1%~ +1%	I/P: 90VAC /305VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: -0.073%~ 0.073 %
3	LINE REGULATION (Max)	V1: -0.5%~ +0.5%	I/P: 180VAC~ 305VAC O/P:FULL LOAD Ta:25°C	V1: -0.041%~ 0 %
4	LOAD REGULATION(Max)	V1: -0.5%~ +0.5%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.062%~ 0.042 %
5	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	< 5 %
6	RIPPLE & NOISE(Max)	V1: 250mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1: 59mVp-p



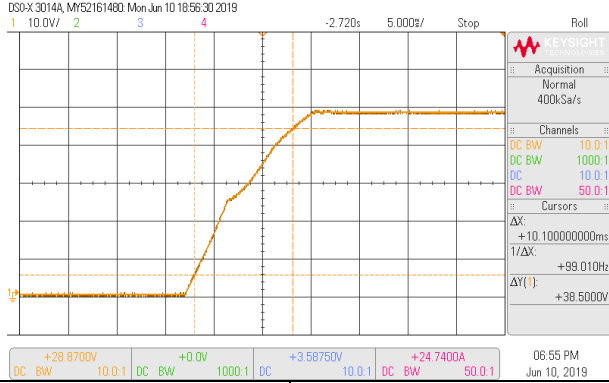
7	SET UP TIME(Max)	230VAC/1800ms 115VAC/1800ms	I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC O/P : 71% LOAD Ta : 25°C	230VAC/ 781.1 ms 115VAC/ 702 ms
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8	RISE TIME (Max)	230VAC/80ms	I/P : 230 VAC	230VAC/ 10.1 ms
		115VAC/80ms	O/P : FULL LOAD I/P : 115 VAC O/P : 71% LOAD Ta : 25°C	115VAC/ 9.6 ms

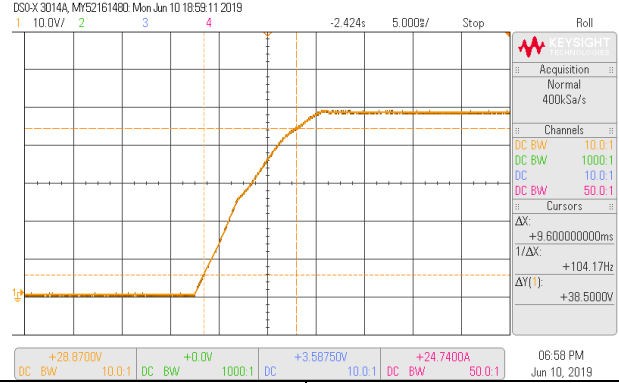
INPUT=230VAC/50HZ @ FULL LOAD

CH1 : Output Voltage



INPUT=115VAC/60HZ @ 71% LOAD

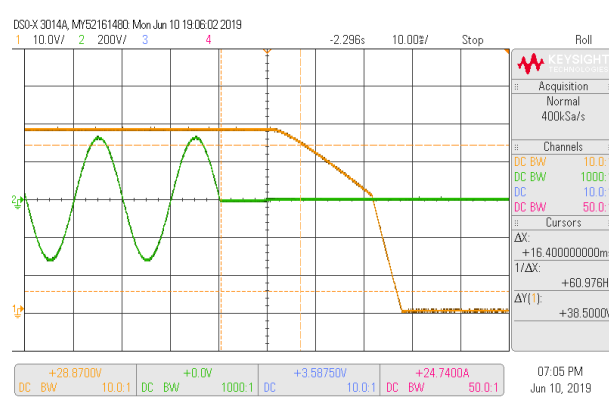
CH1 : Output Voltage



9	HOLD UP TIME (Typ.)	230VAC/12ms @FULL LOAD	I/P : 230 VAC	230VAC/ 16.4 ms@ FULL LOAD
		230VAC/16ms @75%LOAD	O/P : FULL LOAD /75% LOAD Ta : 25°C	230VAC/ 28.4 ms@75%LOAD

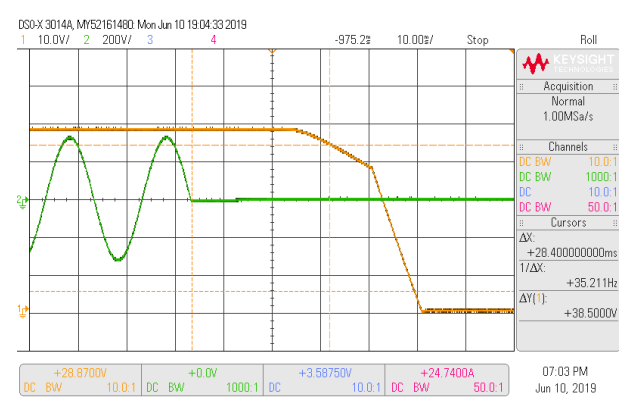
INPUT=230VAC/50HZ @ FULL LOAD

CH1 : Output Voltage CH2 : AC Input Voltage



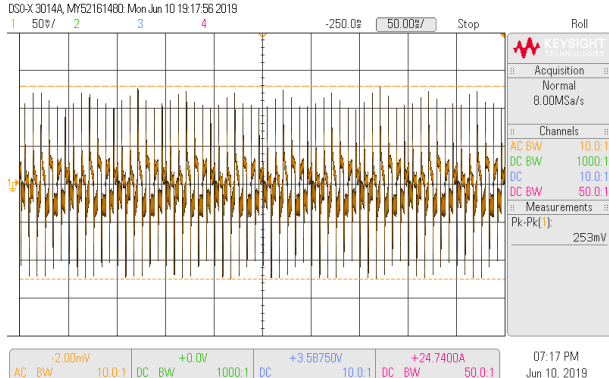
INPUT=230VAC/50HZ @ 75% LOAD

CH1 : Output Voltage CH2 : AC Input Voltage

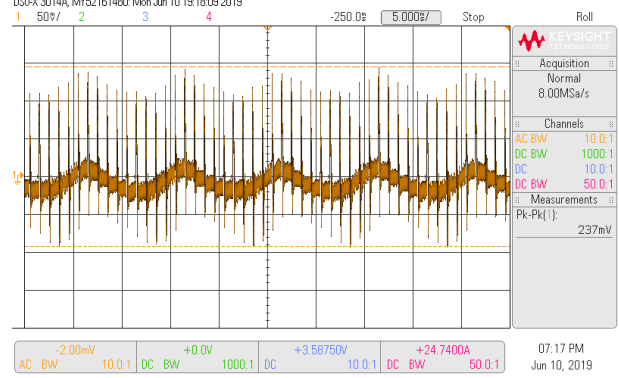


10	DYNAMIC LOAD	V1: 4800mVp-p	I/P: 230VAC	253mVp-p 237mVp-p
			O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C	

FULL /50% LOAD 50%DUTY / 120HZ

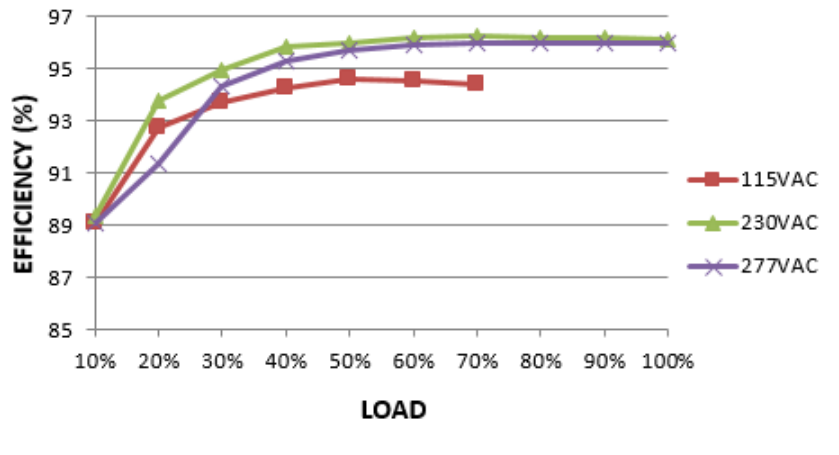


FULL /50% LOAD 50%DUTY / 1KHZ



INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																												
1	INPUT VOLTAGE RANGE	90VAC~305VAC	I/P:TESTING O/P: Full Load /Derating Load Ta:25°C	153V~305V/Full Load 78V~305V/ Derating Load																																												
			I/P: LOW-LINE-3V=87 V HIGH-LINE+15%=315 V O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE)	TEST:OK																																												
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P:90 VAC ~305 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK																																												
3	INPUT CURRENT (Typ.)	277V/ 4.5A 230V/ 5.3A 115V/ 10.1A	I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC O/P : 71% LOAD Ta : 25°C	I =3.95A/ 277VAC I =4.69A/ 230VAC I =6.63A/ 115VAC																																												
4	LEAKAGE CURRENT	<0.75 mA / 240 VAC	I/P : 240 VAC O/P : Min LOAD Ta : 25°C	L-FG : 0.48 mA N-FG : 0.5 mA																																												
5	POWER FACTOR (Typ.)	0.93/ 277VAC 0.95/ 230VAC 0.99/115VAC	I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC O/P : 71% LOAD Ta : 25°C	PF=0.969/277VAC PF=0.982/230VAC PF=0.996/115VAC																																												
<p>P.F vs LOAD</p> <table border="1"> <caption>Power Factor vs Load Data</caption> <thead> <tr> <th>Load (%)</th> <th>115VAC PF</th> <th>230VAC PF</th> <th>277VAC PF</th> </tr> </thead> <tbody> <tr><td>10%</td><td>0.99</td><td>0.76</td><td>0.62</td></tr> <tr><td>20%</td><td>0.99</td><td>0.89</td><td>0.78</td></tr> <tr><td>30%</td><td>0.99</td><td>0.94</td><td>0.86</td></tr> <tr><td>40%</td><td>0.99</td><td>0.96</td><td>0.91</td></tr> <tr><td>50%</td><td>0.99</td><td>0.97</td><td>0.94</td></tr> <tr><td>60%</td><td>0.99</td><td>0.975</td><td>0.95</td></tr> <tr><td>70%</td><td>0.99</td><td>0.98</td><td>0.96</td></tr> <tr><td>80%</td><td>0.99</td><td>0.98</td><td>0.965</td></tr> <tr><td>90%</td><td>0.99</td><td>0.98</td><td>0.968</td></tr> <tr><td>100%</td><td>0.99</td><td>0.98</td><td>0.97</td></tr> </tbody> </table>					Load (%)	115VAC PF	230VAC PF	277VAC PF	10%	0.99	0.76	0.62	20%	0.99	0.89	0.78	30%	0.99	0.94	0.86	40%	0.99	0.96	0.91	50%	0.99	0.97	0.94	60%	0.99	0.975	0.95	70%	0.99	0.98	0.96	80%	0.99	0.98	0.965	90%	0.99	0.98	0.968	100%	0.99	0.98	0.97
Load (%)	115VAC PF	230VAC PF	277VAC PF																																													
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100%	0.99	0.98	0.97																																													
6	EFFICIENCY(Typ.)	96%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	96.26%																																												
	EFFICIENCY vs LOAD																																															



7	INRUSH CURRENT(Typ.)	230V/40A COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I=39.9A/ 230VAC T50= 1760 us/230V
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INPUT=230VAC/50HZ @ FULL LOAD
CH2 : AC Input Voltage CH4 : Input current
030-X 3024A, MY55140430 Thu Jun 06 15:08:10 2019

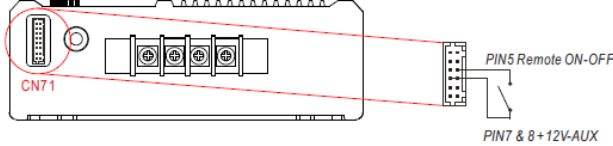
KEYSIGHT
Acquisition
Peak Detect
1.00MSa/s
Channels
DC 1.00:1
DC 100:1
DC 100:1
DC 10.0:1
Measurements
Max(2): 330V
Max(4): 39.9A
03:07 PM
Jun 06, 2019

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~ 125% PROTECTION TYPE : Constant current limiting,unit will shutdown after 5 sec,re-power on to recover.	I/P: 305VAC I/P: 230VAC I/P: 180VAC O/P:TESTING Ta:25°C	111.52%/ 305VAC 111.52%/ 230VAC 111.52%/100VAC PROTECTION TYPE : Constant current limiting,unit will shutdown after 5 sec,re-power on to recover.
2	OVER VOLTAGE PROTECTION	60V~70V Protection type : Shut down O/P voltage,re-power on to recover.	I/P: 305VAC I/P: 230VAC I/P: 90VAC O/P:MIN LOAD Ta:25°C	64.45V/ 305VAC 64.21V/ 230VAC 64.6V/ 90VAC PROTECTION TYPE : Shut down O/P voltage,re-power on to recover.
3	OVER TEMPERATURE PROTECTION	Protection type : Shut down O/P voltage,, recovers automatically after temperature goes down	I/P: 305VAC O/P:FULL LOAD I/P: 90VAC O/P:65% LOAD	O.T.P.Active Protection type : Shut down O/P voltage, recovers automatically after temperature goes down
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE PROTECTION TYPE :	I/P: 305VAC I/P: 90VAC O/P: FULL LOAD	NO DAMAGE PROTECTION TYPE : Constant current limiting,unit will shutdown

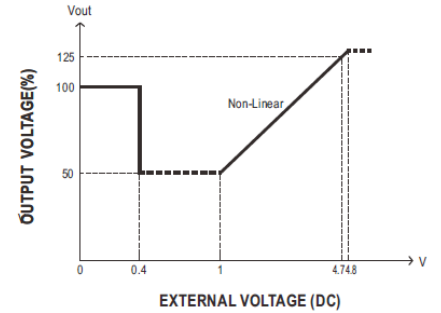
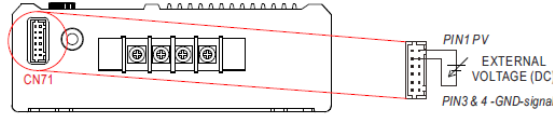
	Constant current limiting, unit will shutdown after 5 sec, re-power on to recover.	Ta:25°C	after 5 sec, re-power on to recover.
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CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT												
1	AUXILIARY POWER (AUX)	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C Test Result : <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>AUX</th> <th>TOLERANCE</th> <th>RIPPLE</th> <th>TEST RESULT</th> </tr> </thead> <tbody> <tr> <td>12V / 0.5A</td> <td>10.8~13.2 V</td> <td>150mVp-p</td> <td>11.79V/33mvp-p</td> </tr> </tbody> </table>	AUX	TOLERANCE	RIPPLE	TEST RESULT	12V / 0.5A	10.8~13.2 V	150mVp-p	11.79V/33mvp-p						
AUX	TOLERANCE	RIPPLE	TEST RESULT													
12V / 0.5A	10.8~13.2 V	150mVp-p	11.79V/33mvp-p													
2	REMOTE ON/OFF CONTROL	The power supply can be turned ON/OFF individually or along with other units in parallel by using the "Remote ON-OFF" function.  <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Remote ON-OFF</th> <th>Power Supply Status</th> </tr> </thead> <tbody> <tr> <td>Short circuit</td> <td>ON</td> </tr> <tr> <td>Open circuit</td> <td>OFF</td> </tr> </tbody> </table> I/P: 230 VAC O/P: FULL LOAD Ta: 25°C Test Result : <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Between ON/OFF and +5V-AUX</th> <th>Power Supply Status</th> </tr> </thead> <tbody> <tr> <td>SW SHORT</td> <td>ON</td> </tr> <tr> <td>SW OPEN</td> <td>OFF</td> </tr> </tbody> </table>	Remote ON-OFF	Power Supply Status	Short circuit	ON	Open circuit	OFF	Between ON/OFF and +5V-AUX	Power Supply Status	SW SHORT	ON	SW OPEN	OFF		
Remote ON-OFF	Power Supply Status															
Short circuit	ON															
Open circuit	OFF															
Between ON/OFF and +5V-AUX	Power Supply Status															
SW SHORT	ON															
SW OPEN	OFF															

3 OUTPUT VOLTAGE PROGRAMMABLE(PV)

※ In addition to the adjustment via the built-in potentiometer, the output voltage can be trimmed by applying EXTERNAL VOLTAGE.

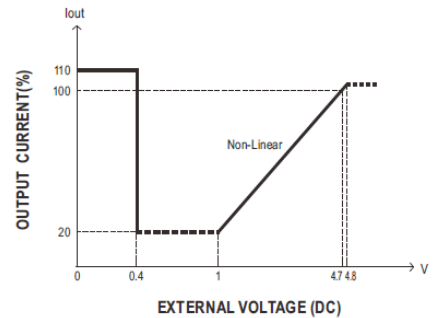
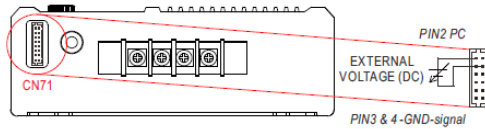


I/P: 230 VAC
O/P:FULL LOAD
Ta:25°C
TEST RESULT :

MODEL \ PV	<0.4V	1V	4.7V	5V
SPEC	48V±5%	24V±5%	60V±5%	60.96V±5%
Vout	47.94V	23.82V	59.83V	60.94V

4 OUTPUT CURRENT PROGRAMMABLE (PC)

※ The output current can be trimmed to 20~100% of the rated current by applying EXTERNAL VOLTAGE.

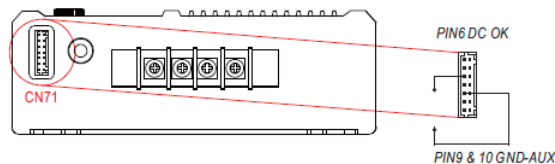


I/P: 230 VAC
O/P:TESTING
Ta:25°C

ADJ V	<0.4V	1V	4.7V	5V
SPEC	110%±5%	20%±5%	100%±5%	100%±5%
TEST	110.38%	19.95%	99.76%	102.67%

5 DC-OK SIGNAL

DC-OK signal is a TTL level signal. The maximum source current is 10mA and the maximum external voltage is 5.5V.



DC-OK signal	Power Supply Status
"High" >4.4~5.5V	ON
"Low" <-0.5~0.5V	OFF

I/P:230VAC
O/P:FULL LOAD
Ta:25°C

DC-OK signal	Power Supply Status
"High" >4.5~5.5V	ON(5.05v)
"Low" <-0.5~0.5V	OFF(-0.142V)

CHARGER MODE

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	BOOST CHARGE VOLTAGE	57.6V±0.48V	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	57.58V
2	FLOAT CHARGE VOLTAGE	55.2V±0.48V	I/P: 230 VAC O/P:BAT. LOAD Ta:25°C	55.21V
3	OUTPUT CURRENT	17.5A±0.44A	I/P: 230 VAC O/P:BAT.LOAD Ta:25°C	17.55A

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT CURRENT (TYP)	277 V/ 4.5 A 230 V/ 5.3 A 115 V/ 10.1 A	I/P: 230 VAC I/P: 115 VAC O/P:BAT. LOAD Ta:25°C	I =4.56A/ 230VAC I =6.82A/ 115VAC
2	POWER FACTOR (TYP)	0.95/ 230 VAC 0.99/ 115 VAC	I/P: 230 VAC I/P: 115 VAC O/P:BAT. LOAD Ta:25°C	PF= 0.99/ 230VAC PF= 0.99/ 115VAC
3	EFFICIENCY (TYP)	96%	I/P: 230 VAC O/P: C.V MODE-1V Ta:25°C	96.27%

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q903 Rated 16A/ 650V	AC ON/OFF I/P:High-Line +3V =308V VDS: O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load.	VDS (1)458 V (2) 458V (3) 450V (4) 450V (5) 454V (6) 450V (7) 454V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q51 Rated 16A/ 650V	I/P:High-Line +3V =308V AC ON/OFF O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/	VDS (1) 450V (2) 442V (3) 450V

			Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. Ta:25°C	(4) 446V (5) 450V (6) 450V (7) 450V
3	P.F.C DIODE	D56 Rated 8A/ 650V	I/P:High-Line +3V =308V AC ON/OFF O/P: (1)Full Load (2)Output Short Ta:25°C	(1) 390V (2) 410V
4	Diode Peak Voltage	Q101 Rated 100 A/ 150V	AC ON/OFF I/P:High-Line +3V =308V O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8).NO LOAD Ta:25°C	Q101: VDS: (1)103.7 V (2)104.6V (3) 104.6V (4) 106.6V (5) 104.6V (6) 104.6V (7) 105.4V (8) 105.4V
5	Input Capacitor Voltage	C5 Rated: : 220μ/ 450 V 105 °C/ TXW Series	I/P:High-Line +3V =308V O/P: (1) Min load continue (2)Full load continue Ta:25°C	(1)430 V (2) 442V

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC/min I/P-FG :2KVAC/min O/P-FG:1.25KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:1.5 KVAC/min Ta:25°C	I/P-O/P: 7.51mA I/P-FG: 7.43mA O/P-FG: 5.82mA NO DAMAGE
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: 10.9GΩ I/P-FG: 10.6GΩ O/P-FG: 6.53GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	22 mΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS
2	CONDUCTION	EN55032 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
3	RADIATION	EN55032 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
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
5	E.F.T	EN61000-4-4 INDUSTRY INPUT : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	IEC61000-6-2 INDUSTRY L-N : 2KV L,N-PE : 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
7	Test by certified Lab & Test Report Prepare. Any contradictions of the test results, please refer to the latest EMC test report.			

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	TEMPERATURE RISE TEST	MODEL : HEP-1000-24 1. ROOM AMBIENT BURN-IN : 1.5 HRS I/P : 230VAC O/P : FULL LOAD Ta= 25 °C 2. HIGH AMBIENT BURN-IN : 3 HRS I/P : 230VAC O/P : FULL LOAD Ta= 50 °C		

		NO	Position	ROOM AMBIENT Ta= 25 °C	HIGH AMBIENT Ta= 50°C
		1	BD2	75.3°C	98.5°C
		2	BD1	76.0°C	99.1°C
		3	LF3	68.8°C	92.4°C
		4	ZNR2	66.1°C	89.6°C
		5	C13	70.0°C	93.4°C
		6	C2	65.1°C	88.6°C
		7	D10	76.2°C	100.1°C
		8	Q51	70.7°C	94.1°C
		9	Q65	72.5°C	95.7°C
		10	T51	71.3°C	95.0°C
		11	T52	70.3°C	94.0°C
		12	C417	63.8°C	89.9°C
		13	C8	67.7°C	91.6°C
		14	C964	70.1°C	93.9°C
		15	L2	70.7°C	94.8°C
		16	L3	76.4°C	102.2°C
		17	Q901	72.5°C	97.0°C
		18	Q903	71.9°C	96.6°C
		19	T1	74.5°C	99.9°C
		20	T1core	72.5°C	97.7°C
		21	T2	73.0°C	98.0°C
		22	T2core	71.7°C	96.5°C
		23	Q103	74.8°C	100.0°C
		24	Q113	75.5°C	100.7°C
		25	C114	74.3°C	99.3°C
		26	C118	73.2°C	98.2°C
		27	LF10	75.7°C	101.0°C
		28	U601	78.5°C	99.3°C
		29	U100	71.8°C	96.2°C
		30	RT21	67.3°C	90.3°C
		31	RTH4	69.6°C	93.5°C
		32	RTH5	70.1°C	93.9°C
		33	RG61	78.8°C	103.8°C
		34	T601	79.9°C	104.3°C
		35	C652	74.5°C	98.6°C
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)		I/P : 230 VAC O/P : 107 % LOAD Ta : 25°C	TEST : OK
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR		I/P : 264VAC/180VAC/90VAC O/P : 100 % / 65% LOAD Ta= -45 °C	TEST : OK
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
5	TEMPERATURE COEFFICIENT	± 0.03 %/°C (0~50°C)		I/P : 230 VAC O/P : FULL LOAD	± 0.001%/°C (0~50°C)
6	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -45°C~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : STATIC			OK

7	THERMAL SHOCK TEST	1. Thermal shock Temperature : -45°C~ +55°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 16 CYCLE 5. Input/Output condition : 15cycle:230V/ FULL LOAD AC ON 3sec/AC OFF 1sec TEST 1cycle:230V/ FULL LOAD Burn In Test	OK
8	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 10G (5) Test Time : 72min in each axis (X.Y.Z) (6) Ta : 25°C	TEST : OK
9	CAPACITOR LIFE CYCLE	SUPPOSE C120 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25°C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 50°C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50°C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50°C LIFE TIME	(1) 100217HRS (2) 17716HRS (3) 54180HRS (4) 114992HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 583.7K hrs min. Telcordia SR-332 (Bellcore) ; 52.3K hrs min. MIL-HDBK-217F (25°C)	
11	Ongoing reliability test	I/P : 230VAC O/P : FULL LOAD TA=50 °C Demonstration Mean Time Between Failure : 55000 hours	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	DANIEL GAO	SANFORD SU	VINCENT TSENG

2018.4.30 GP-A50-F010