Test Report: UHP-1500-24

1500W Conduction Cooling with PFC Switching Supply

■ DESIGN VERIFY TEST

Output Function Test
Input Function Test
Protection Function Test
Control Function Test
Component Stress Test

■ SAFETY & E.M.C. TEST

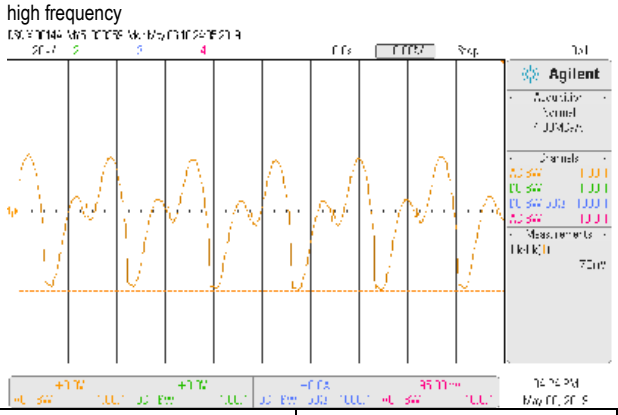
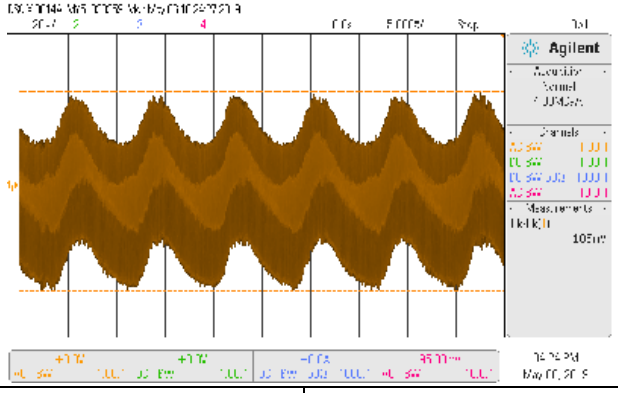
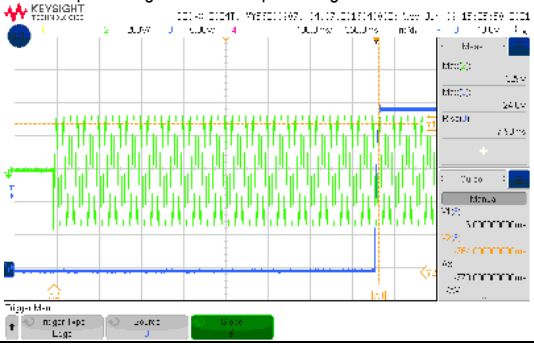
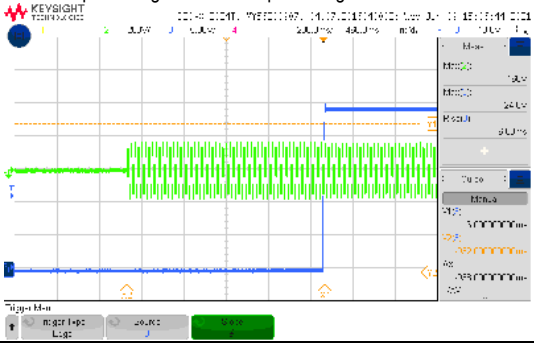
Safety Test
E.M.C. Test

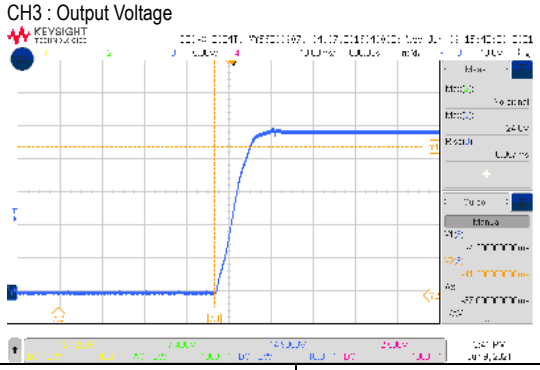
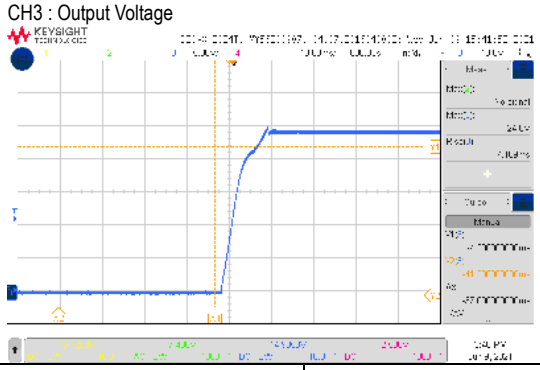
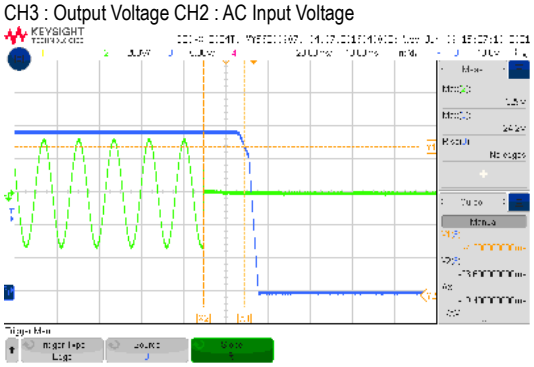
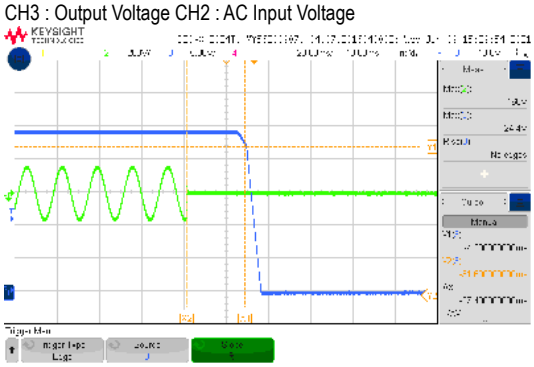
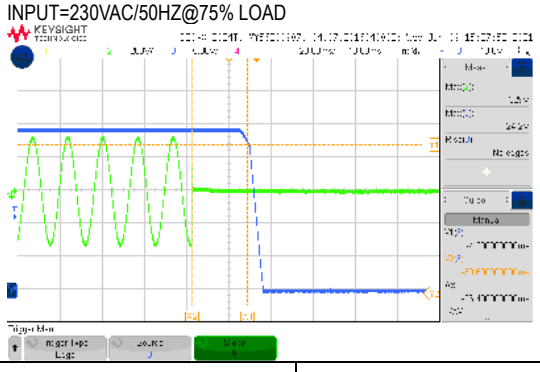
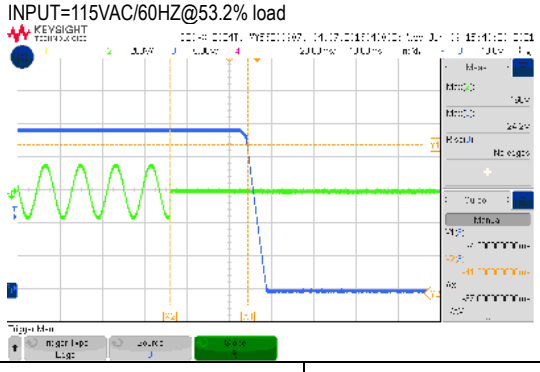
■ RELIABILITY TEST

ENVIRONMENT TEST

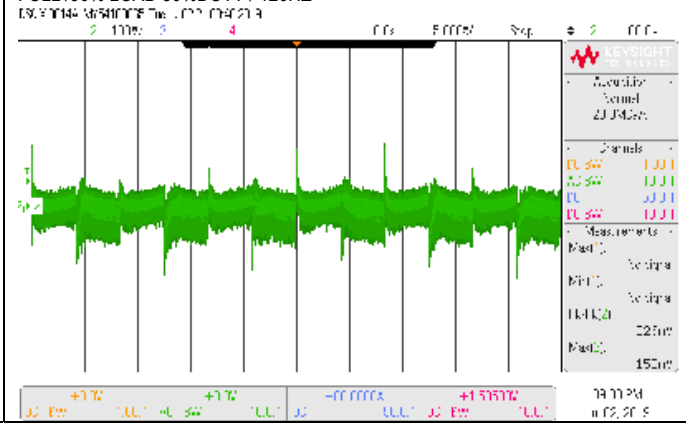
■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

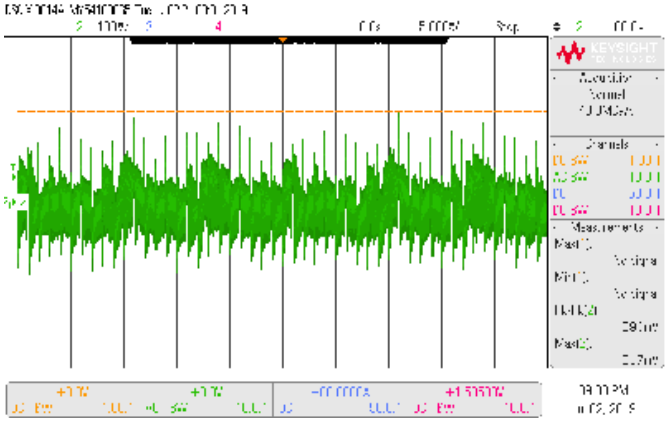
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 24 V~ 28.8 V	I/P 230 VAC I/P 115 VAC O/P MIN LOAD Ta 25 ~	23.33V~ 29.58 V/230VAC 23.33V~ 29.58 V /115VAC
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1: 1%~ -1 %	I/P: 180VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25 ~	V1: 0.17 %~ -0.17 %
3	LINE REGULATION (Max)	V1: 0.5%~ -0.5 %	I/P: 180VAC~ 264VAC O/P:FULL LOAD Ta:25 ~	V1: 0.05%~ -0.05 %
4	LOAD REGULATION(Max)	V1: 0.5%~ - 0.5%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25 ~	V1: 0.13 %~ -0.13 %
5	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230VAC O/P:FULL LOAD Ta:25 ~	< 5 %
6	RIPPLE & NOISE(Max)	V1: 240mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25 ~	V1: 105mVp-p
	high frequency 		low frequency 	
7	SET UP TIME(Max)	230VAC/1800ms 115VAC/1800ms Derating may be needed under low input voltages. Please check the derating curve and Static characteristics for more details	I/P 230 VAC O/P FULL LOAD I/P 115 VAC O/P 71% LOAD Ta 25 ~	230VAC/ 770ms 115VAC/ 938 ms
	INPUT=230VAC/50HZ @ FULL LOAD CH3: Output Voltage CH2 : AC Input Voltage 		INPUT=115VAC/60HZ @ 71% LOAD CH3 : Output Voltage CH2 : AC Input Voltage 	

8	RISE TIME (Max)	230VAC/50ms 115VAC/60ms Derating may be needed under low input voltages. Please check the derating curve and Static characteristics for more details	I/P 230 VAC O/P FULL LOAD I/P 115 VAC O/P 71% LOAD Ta 25 ~	230VAC/ 6.85 ms 115VAC/ 7.1 ms
	INPUT=230VAC/50HZ @ FULL LOAD CH3 : Output Voltage 		INPUT=115VAC/50HZ @ 71% LOAD CH3 : Output Voltage 	
9	HOLD UP TIME (Typ.)	230、115VAC/10ms at full load 230、115VAC/16ms at 75% load Derating may be needed under low input voltages. Please check the derating curve and Static characteristics for more details	I/P 230 VAC O/P FULL LOAD/75% LOAD I/P 115 VAC O/P 71% LOAD/53.2% LOAD Ta 25 ~	230VAC/ 19.4 ms at full load 230VAC/ 26.4 ms at 75% load 115VAC/ 27.4 ms at 71% load 115VAC/ 37 ms at 53.2% load
	INPUT=230VAC/50HZ @ FULL LOAD CH3 : Output Voltage CH2 : AC Input Voltage 		INPUT=115VAC/60HZ @ 71% LOAD CH3 : Output Voltage CH2 : AC Input Voltage 	
	INPUT=230VAC/50HZ@75% LOAD 		INPUT=115VAC/60HZ@53.2% load 	
10	DYNAMIC LOAD	V1: 2400 mVp-p	I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25 ~	 326mVp-p 390mVp-p

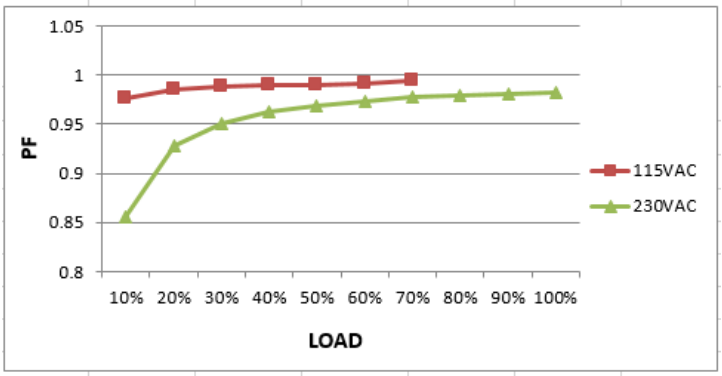
FULL /50% LOAD 50%DUTY / 120HZ

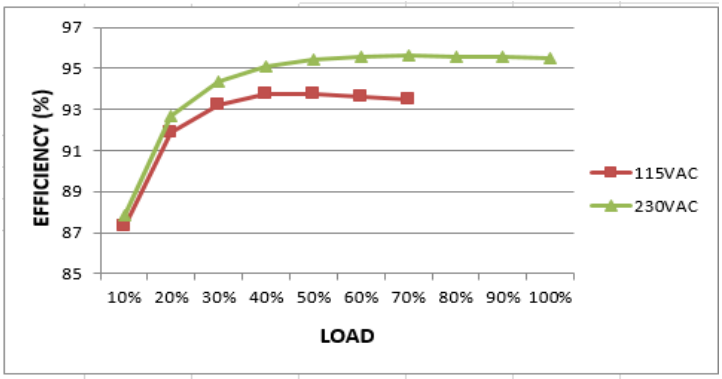
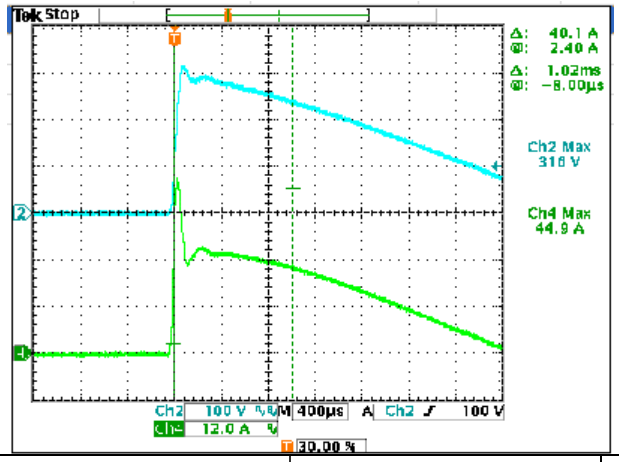
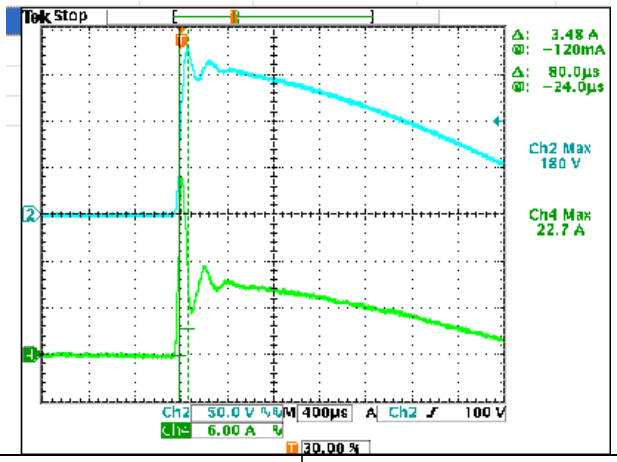


FULL /50% LOAD 50%DUTY / 1KHZ



INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	90VAC~264VAC	I/P:TESTING O/P:FULL LOAD/ Derating Load Ta:25 ~	160V~264 V/ FULL LOAD 77V~264 V/ Derating Load
			I/P: LOW-LINE-3V=177 V HIGH-LINE+15%=300 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 ~264 VAC O/P:FULL~MIN LOAD Ta:25 ~	TEST: OK
3	INPUT CURRENT (Typ.)	230V/ 8A	I/P 230 VAC O/P FULL LOAD Ta 25 ~	I = 7.07A/ 230 VAC
4	LEAKAGE CURRENT	< 0.75mA / 240 VAC	I/P 240 VAC O/P Min LOAD Ta 25 ~	L-FG 0.58 mA N-FG 0.58 mA
5	POWER FACTOR (Typ.)	0.95/ 230VAC	I/P 230 VAC O/P FULL LOAD Ta 25 ~	PF=0.984 /230 VAC
	P.F vs LOAD 			
6	EFFICIENCY(Typ.)	95%	I/P:230 VAC O/P:FULL LOAD Ta:25 ~	95.3%

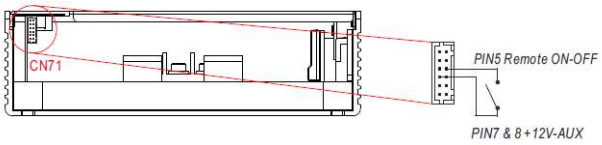
	EFFICIENCY vs LOAD 			
7	INRUSH CURRENT(Typ.)	230V/60A 115V/30A COLD START	I/P 230 VAC I/P 115 VAC O/P FULL LOAD Ta 25 ~	I =44.9 A/ 230VAC T50= 1020 us I =22.7 A/ 115VAC
	INPUT=230VAC/50HZ @ FULL LOAD CH1 : AC Input Voltage CH2 : Input current 		INPUT=115VAC/60HZ @ FULL LOAD CH1 : AC Input Voltage CH2 : Input current 	
8	NO LOAD CONSUMPTION	---	I/P：115VAC I/P：230VAC O/P：NO LOAD Ta：25℃	14.6 W/115VAC 10.6 W/230VAC

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~ 125 %(180VAC~264VAC) 60%~70%(90VAC) Protection type : Constant current limiting, unit will shutdown after 5 sec, re-power on to recover.	I/P: 264VAC I/P: 230VAC I/P: 180VAC I/P: 90VAC O/P:TESTING Ta:25 ~	110.1%/ 264VAC 110.3%/ 230VAC 108.7%/180VAC 64.5%/90VAC PROTECTION TYPE Constant current limiting, unit will shutdown after 5 sec, re-power on to recover.
2	OVER VOLTAGE PROTECTION	30V~35V Protection type : Shut down O/P voltage,re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 90VAC O/P:MIN LOAD Ta:25 ~	32.44V/ 264VAC 32.44V/ 230VAC 32.42V/ 90VAC PROTECTION TYPE Shut down O/P voltage,re-power on to recover

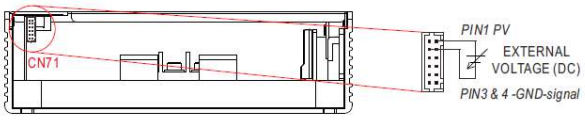
3	OVER TEMPERATURE PROTECTION	Protection type : Shut down O/P voltage, recovers automatically after temperature goes down	I/P: 264VAC I/P: 90VAC O/P:FULL LOAD	O.T.P. Active Protection type : Shut down O/P voltage, recovers automatically after temperature goes down
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE Protection type : Constant current limiting, unit will shutdown after 5 sec, re-power on to recover.	I/P: 264VAC I/P: 90VAC O/P: FULL LOAD Ta:25 ~	NO DAMAGE PROTECTION TYPE Constant current limiting, unit will shutdown after 5 sec, re-power on to recover.

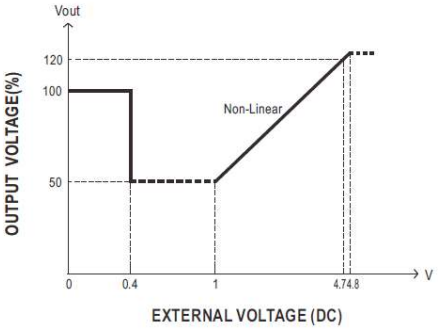
CONTROL FUNCTION TEST

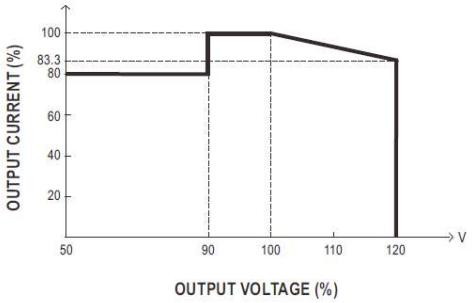
<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECIFICATION</th><th>TEST CONDITION</th><th>RESULT</th></tr>
<tr><td>1</td><td>AUXILIARY POWER (AUX)</td><td colspan="3">I/P: 230 VAC
O/P:FULL LOAD
Ta:25℃
Test Result
<table>
<tr><th>AUX</th><th>TOLERANCE</th><th>RIPPLE</th><th>TEST RESULT</th></tr>
<tr><td>12V / 0.4A</td><td>10.8~13.2 V</td><td>150mVp-p</td><td>11.525 V/ 32 mVp-p</td></tr>
</table></td></tr>
<tr><td>2</td><td>REMOTE ON/OFF CONTROL</td><td colspan="3">The power supply can be turned ON/OFF individually or along with other units in parallel by using the "Remote ON-OFF" function.
 

<table>
<tr><th>Remote ON-OFF</th><th>Power Supply Status</th></tr>
<tr><td>Short circuit</td><td>ON</td></tr>
<tr><td>Open circuit</td><td>OFF</td></tr>
</table>
I/P: 230 VAC
O/P:FULL LOAD
Ta:25℃
Test Result
<table>
<tr><th>Between ON/OFF and +5V-AUX</th><th>Power Supply Status</th></tr>
<tr><td>SW SHORT</td><td>ON</td></tr>
<tr><td>SW OPEN</td><td>OFF</td></tr>
</table></td></tr>
</table>

3	OUTPUT VOLTAGE PROGRAMMABLE(PV)	**1.Output Voltage Programming (or, PV / remote voltage programming / remote adjust / margin programming / dynamic voltage trim)** ※ In addition to the adjustment via the built-in potentiometer, the output voltage can be trimmed by applying EXTERNAL VOLTAGE.



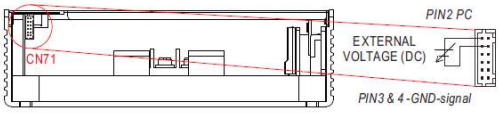


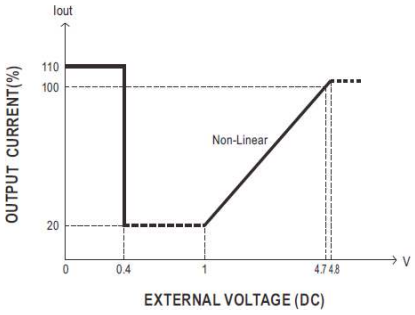


I/P: 230 VAC
O/P:FULL LOAD
Ta:25℃
TEST RESULT

PV / MODEL	0.4V	1V	4.7V	5V
SPEC	24V±5%	12V±5%	28.8V±5%	30V±5%
Vout	24.09V	132	28.8V	29.32V

4	OUTPUT CURRENT PROGRAMMABLE (PC)	**2.Output Current Programming (or, PC / remote current programming / dynamic current trim)** ※ The output current can be trimmed to 20~100% of the rated current by applying EXTERNAL VOLTAGE.

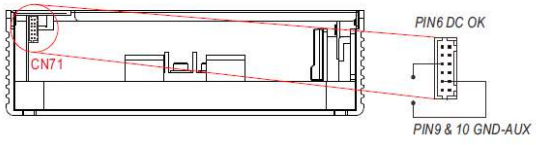




I/P: 230 VAC
O/P:TESTING
Ta:25℃

ADJ V	<0.4V	1V	4.7V	5V
SPEC	110%±5%	20%±5%	100%±5%	100%±5%
TEST	110.2%	20.09%	99.93%	102.52%

5	DC OK CONTACT RATINGS	DC-OK signal is a TTL level signal. The maximum sink current is 10mA and the maximum external voltage is 5.6V.



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

		I/P: 230 VAC O/P:TESTING Ta:25℃

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

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q903 Rated : 22A/ 650V VGS : | 25V	AC ON/OFF I/P:High-Line +3V =267V 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. I/P:Low-Line -3V = 177V 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. Ta:25	 VDS: (1) 452V (2) 452V (3) 448V (4) 472V (5) 480V (6) 444V/ (7) 440V VDS: (1) 480V (2) 460V (3) 480V (4) 480V (5) 480V (6) 468V (7) 440V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q 52 Rated 31A/ 600V	I/P:High-Line +3V =267 V AC ON/OFF 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. I/P:Low-Line -3V = 177V AC ON/OFF O/P: (1)Full Load	 VDS: (1) 416V (2) 420V (3) 416V (4) 416V (5) 416V (6) 408V (7) 388V VDS: (1) 432V (2) 444V

			(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. Ta:25 ~	(3) 428V (4) 428V (5) 424V (6) 424V (7) 392V
3	P.F.C DIODE	D 10 Rated 6 A/ 650V	I/P:High-Line +3V =267 V AC ON/OFF O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz I/P:Low-Line -3V = 177V AC ON/OFF O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz Ta:25 ~	(1) 400V (2) 412V (3) 396V (4) 396V (1) 412V (2) 388V (3) 404V (4) 392V
4	Diode Peak Voltage	Q101 Rated 100A/ 80V Q105 Rated 100A/ 80V Q109 Rated 100A/ 80V Q113 Rated 100A/ 80V	AC ON/OFF I/P:High-Line +3V =267 V 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 (9) burst Mode Ta:25 ~	Q101: VDS: (1) 55.7V (2) 55.7V (3) 65.3V (4) 70.2V (5)68.2V (6) 57V (7) 53.6V (8) 53.4V (9) 54.2V Q105: VDS: (1) 61.4V (2)60.6V (3) 70.6V (4) 72.1V (5) 73.7V (6) 54.4V (7) 56V (8) 54.4V (9)56.6 V Q109: VDS: (1)58.5 V (2) 54.4V (3) 61.7V (4) 66.5V (5) 64.1V (6)56V (7) 54.4V (8)54.4 V (9) 54.4V Q113: VDS: (1) 63.3V (2) 60.1V (3) 63.3V (4) 77.8V (5) 72.1V (6)55.2V (7) 56.9V (8) 55.2V (9) 55.2V
5	Input Capacitor Voltage	C5 Rated: 220u/450V -55~105 ~	I/P:High-Line +3V =267V O/P: (1)Full Load input on/off (2) Min load input on /Off (3)Full Load /Min load Change (4)Full load continue Ta:25 ~	(1) 400V (2) 392V (3) 408V (4) 396V

6	Control IC Voltage Test	PWM IC U800 Rated 8.85 V~ 16V PFC IC U401 Rated 10.6V~ 21 V O/P IC U151 Rated 8V~ 24V MCU IC U701 Rated -0.3V~ 4V	AC ON/OFF I/P:High-Line +3V =267 V O/P(1)FULL LOAD (2) Output Short (3)O.L.P (4)O.V.P. (5)NO LOAD VRmin(LOW LINE) Ta:25 ~	U800: U151: (1) 13.24V (1) 12.36V (2) 12.68V (2) 12.52V (3) 12.12V (3) 11.96V (4) 12.68V (4) 12.04V (5) 12.44V (5) 11.88V U401: U701: (1) 14.93V (1) 3.37V (2) 12.28V (2) 3.12V (3) 12.44V (3) 3.12V (4) 12.6V (4) 3.2V (5) 11.88V (5) 3.16V
8	TOP SWITCHING STAND BY POWER	U601 Rated 11.5A/ 800V	AC ON/OFF I/P:High-Line +3V =267 V O/P: (1)Full Load (2)Remote On/Off I/P:Low-Line -3V =177 V O/P: (1)Full Load (2)Remote On/Off Ta:25 ~	U601 (1) 550V (2) 546V (1) 522V (2) 530 V
9	Capacitor Voltage	C652 Rated 25V C682 Rated 25V	AC ON/OFF I/P:High-Line +3V =267V O/P: (1)Full Load input on/off (2) Min load input on /Off (3)Full Load /Min load Change (4)Full load continue Ta:25 ~	C652: (1) 13.82V (2) 13.42V (3) 13.42V (4) 13.02V C682 (1) 15.1V (2) 15.15V (3) 14.26V (4) 14.18V

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3.75KVAC/min I/P-FG :2KVAC/min O/P-FG:1..25KVAC/min	I/P-O/P: 4.125 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:1.5KVAC/min Ta:25 ~	I/P-O/P: 9.09mA I/P-FG: 7.56mA O/P-FG:8.35m A 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 ~	I/P-O/P: 11.6GΩ I/P-FG: 10.8GΩ O/P-FG: 3.58GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25 ~	13 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℃	PASS
2	CONDUCTION	EN55032 CLASS B	I/P 230 VAC (50HZ) O/P FULL/50% LOAD Ta 25℃	PASS Test by certified Lab

3	RADIATION	EN55032 CLASS A	I/P 230 VAC (50HZ) O/P FULL LOAD Ta 25℃	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 ~	CRITERIA A
5	E.F.T	EN61000-4-4 INDUSTRY INPUT 2KV	I/P 230 VAC/50HZ O/P FULL LOAD Ta 25 ~	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 ~	CRITERIA A
7	Test by certified Lab Test Report Prepare			

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	TEMPERATURE RISE TEST	MODEL UHP-1500-24 (AMBIENT TEMPERATURE WITH CONDUCTION COOLING) 1. ROOM AMBIENT BURN-IN 2 HRS I/P 230VAC O/P FULL LOAD Ta=25 ~ 2. HIGH AMBIENT BURN-IN 2 HRS I/P 230VAC O/P FULL LOAD Ta= 45 ~		

NO	Position	ROOM AMBIENT Ta= 25 ~	HIGH AMBIENT Ta= 45 ~
1	BD1	72.8 ~	88.3 ~
2	BD2	76.9 ~	92.6 ~
3	ZNR2	61.6 ~	76.9 ~
4	LF1	58.4 ~	73.4 ~
5	LF2	64.7 ~	80.0 ~
6	LF3	69.9 ~	85.4 ~
7	C2	57.4 ~	72.5 ~
8	T51	69.9 ~	88.1 ~
9	T52	68.5 ~	90.6 ~
10	L1	72.3 ~	88.8 ~
11	L2	78.1 ~	97.5 ~
12	L3	81.9 ~	101.1 ~
13	C960	69.4 ~	86.6 ~
14	Q51	66.2 ~	82.3 ~
15	Q65	67.6 ~	84.7 ~
16	RY1	64.1 ~	80.1 ~
17	C417	67.4 ~	84.4 ~
18	C6	65.4 ~	82.0 ~
19	C964	67.8 ~	84.1 ~
20	C967	75.6 ~	86.7 ~
21	T1-1 COIL	79.2 ~	97.1 ~
22	T1CORE	77.7 ~	96.0 ~

			23	T2-1 COIL	84.6 ~ 101.3 ~
			24	T2CORE	79.6 ~ 95.9 ~
			25	C114	63.7 ~ 80.2 ~
			26	C115	60.2 ~ 76.5 ~
			27	C122	63.0 ~ 79.6 ~
			28	C123	66.0 ~ 82.5 ~
			29	RTH4	67.2 ~ 82.4 ~
			30	RTH5	69.9 ~ 88.1 ~
			31	RTH21	69.3 ~ 90.6 ~
			32	Q102	69.0 ~ 83.8 ~
			33	Q106	74.1 ~ 90.6 ~
			34	Q111	68.5 ~ 82.9 ~
			35	Q113	69.3 ~ 83.7 ~
			36	Q901	79.6 ~ 108.2 ~
			37	Q904	81.5 ~ 99.7 ~
			38	D14	77.4 ~ 94.3 ~
			39	D10	69.5 ~ 86.2 ~
			40	U153	68.1 ~ 83.6 ~
			41	U151	66.3 ~ 83.1 ~
			41	D7	64.0 ~ 80.6 ~
			42	U401	63.2 ~ 80.0 ~
			43	T601	73.7 ~ 90.3 ~
			44	C682	70.8 ~ 87.6 ~
			45	C652	73.0 ~ 89.4 ~
			46	RG61	70.8 ~ 87.7 ~
			47	U701	66.2 ~ 82.5 ~
			48	RG52	55.1 ~ 71.1 ~
			49	C632	68.8 ~ 84.4 ~
			50	RG65	70.2 ~ 86.2 ~
			51	U900	64.1 ~ 79.9 ~
			52	U601	69.0 ~ 84.6 ~

2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P 230 VAC O/P 110 LOAD Ta 25 ~	TEST OK
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P 264VAC/180VAC O/P 100 LOAD Ta= -35 ~/-30 ~	TEST OK
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 ~/95 %R.H NO DAMAGE	I/P 272 VAC O/P FULL LOAD Ta= 50 ~ HUMIDITY= 95 %R.H	TEST OK
5	TEMPERATURE COEFFICIENT	± 0.03 %/ ~(0~45 ~)	I/P 230 VAC O/P FULL LOAD	± 0.005 %/ ~(0~45 ~)
6	STORAGE TEMPERATURE TEST	-40~85℃	1. Thermal shock Temperature： -45℃~ +90℃ 2. Temperature change rate ：25℃ / MIN 3. Dwell time low and high temperature ： 30 MIN/EACH 4. Total test cycle：10 CYCLE 5. Input/Output condition： STATIC	

7	THERMAL SHOCK TEST	-30~45℃	1. Thermal shock Temperature： -35℃~ +50℃ 2. Temperature change rate ：25℃ / 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	
8	VIBRATION TEST	10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform Sine Wave (2) Frequency 10~500Hz (3) Sweep Time 12min/sweep cycle (4) Acceleration 6G (5) Test Time 180min in each axis (X.Y.Z) (6) Ta 25℃	
9	CAPACITOR LIFE CYCLE	SUPPOSE C123 IS THE MOST CRITICAL COMPONENT (1) I/P 230VAC O/P FULL LOAD Ta= 25 ~ LIFE TIME (2) I/P 230VAC O/P FULL LOAD Ta= 45 ~ LIFE TIME (3) I/P 230VAC O/P 75% LOAD Ta= 45 ~ LIFE TIME (4) I/P 230VAC O/P 50% LOAD Ta= 45 ~ LIFE TIME		(1) 185636HRS (2) 62091HRS (3) 126459HRS (4) 234220HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 181.47K hrs min. Telcordia SR-332 (Bellcore) ; 56.72K hrs min. MIL-HDBK-217F (25 ~)		
11	Ongoing Reliability Test	I/P 230VAC O/P FULL LOAD TA=50℃ Demonstration Mean Time Between Failure : 50,000 hours		

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

2018.4.30 GP-A50-F010