



Test Report: HLG-240H-C1750

250W Single Output LED Power Supply

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

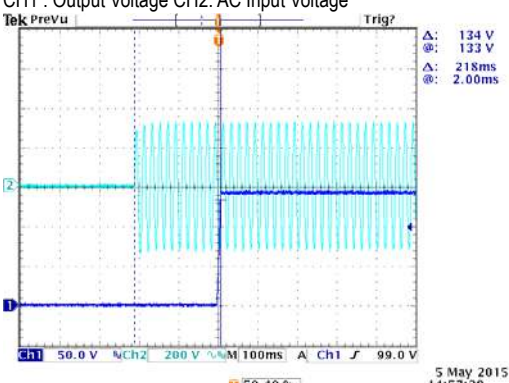
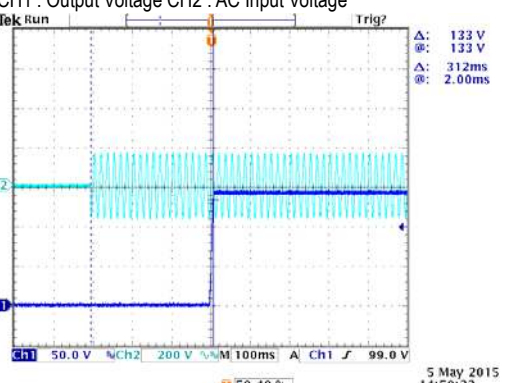
E.M.C. Test

■ RELIABILITY TEST

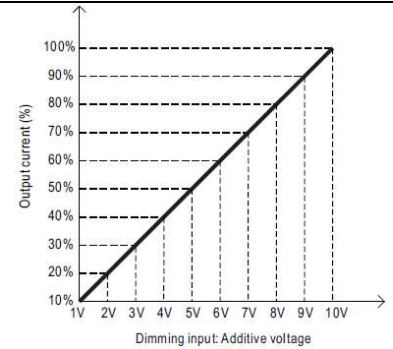
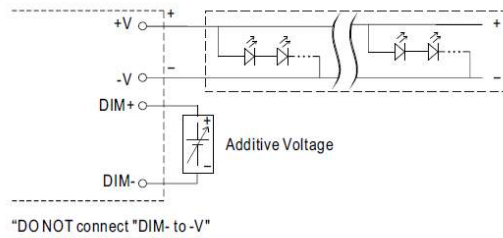
ENVIRONMENT TEST

DESIGN VERIFY TEST

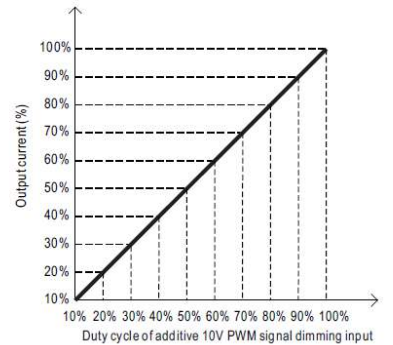
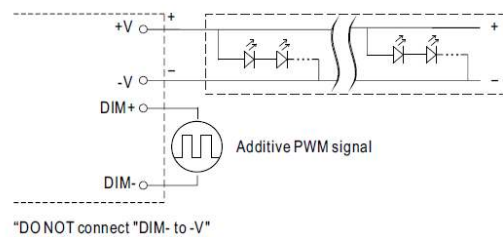
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT TOLERANCE	±5%	I/P: 230 VAC I/P:115VAC O/P:FULL LOAD Ta:25°C	1.753A /230VAC@CV MAX-2V 1.754A /230VAC@CV MIN 1.753A/115VAC@CV MAX-2V 1.754A/115VAC@CV MIN +0.23%
2	CONSTANT CURRENT REGION	CH1: 71V~ 143V	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	60V~ 142V /230VAC
3	OPEN CIRCUIT VOLTAGE (max.)	146V	I/P: 230 VAC O/P:NO LOAD Ta:25°C	143.5V
4	CURRENT ADJ. RANGE	CH1:875mA~ 1750mA	I/P: 230 VAC I/P:115VAC O/P:CV MIN & CV MAX-2V Ta:25°C	646mA~ 1953mA /230VAC@CV MAX-2V 646mA~1949m A /230VAC@CV MIN 645mA~1954m A /115VAC@CV MAX-2V 646mA~1949mA/115VAC@CV MIN
5	CURRENT RIPPLE	5.0% max. @rated current	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	1.45%
6	SET UP TIME(Max)	230VAC/500 ms 115VAC/1000ms	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 218ms 115 VAC/ 312ms
INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2: AC Input Voltage  5 May 2015 14:57:28 INPUT=115VAC/60HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage  5 May 2015 14:59:32				
7	DIMMING OPERATION (for B-Type)	※3 in 1 dimming function ※Output constant current level can be adjusted by applying one of the three methodologies between DIM+ and DIM-: 1 ~ 10VDC, or 10V PWM signal or resistance. ※Direct connecting to LEDs is suggested. It is not suitable to be used with additional drivers. ※Dimming source current from power supply: 100μ A (typ.)		

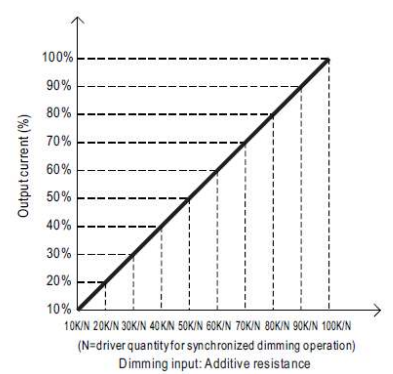
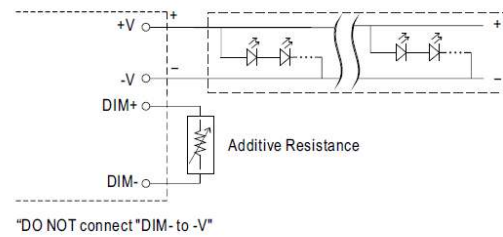
◎ Applying additive 1 ~ 10VDC



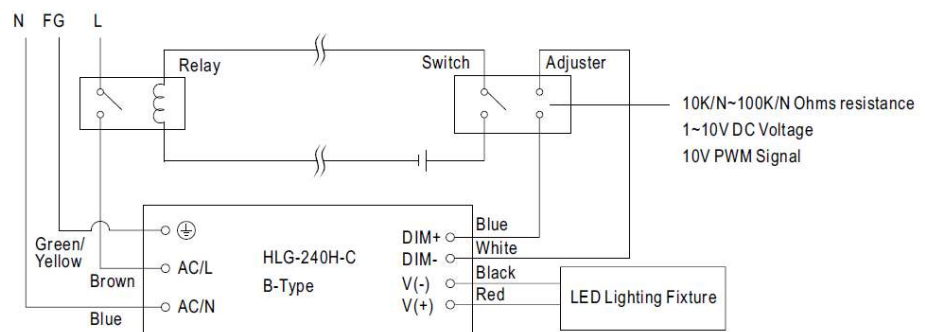
◎ Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):



◎ Applying additive resistance:



Note: In the case of turning the lighting fixture down to 0% brightness, please refer to the configuration as follow, or please contact MEAN WELL for other options.



Using a switch and relay can turn ON/OFF the lighting fixture.

I/P : 230VAC

O/P : DIMMING TEST

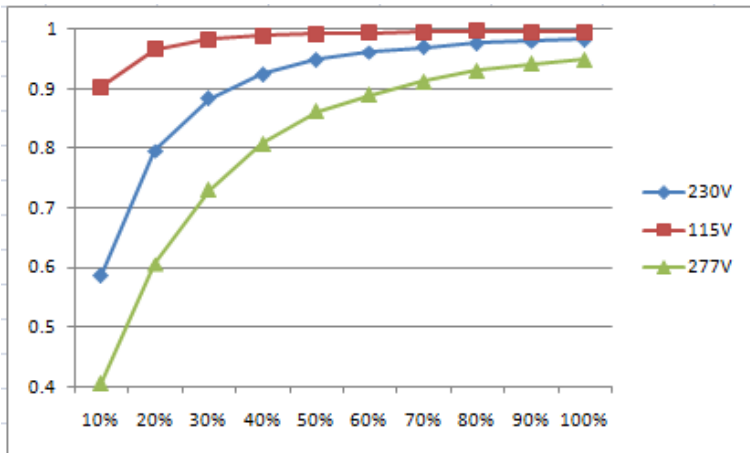
TA : 25°C

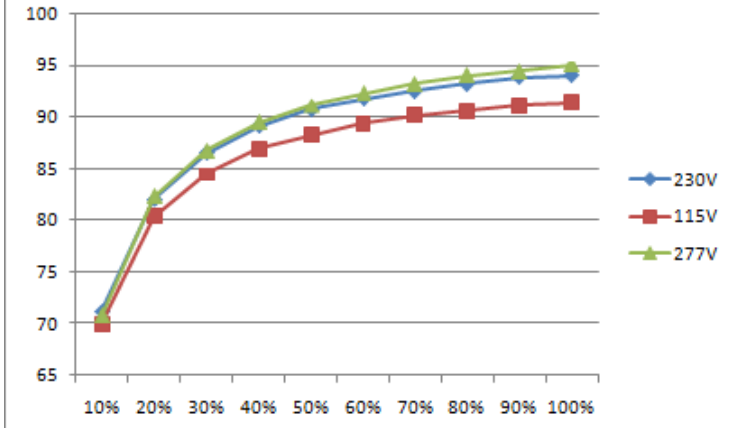
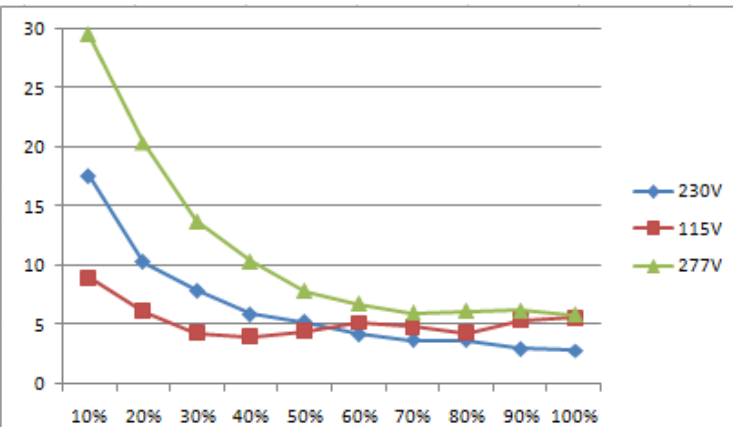
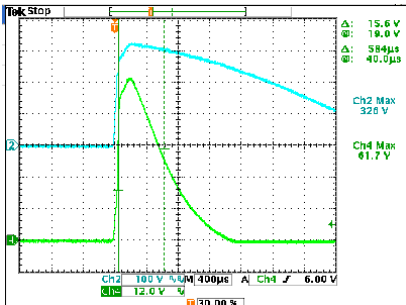
R	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
O/P CURRENT	0.178A	0.354A	0.534A	0.712A	0.891A	1.071A	1.245A	1.422A	1.618A	1.752A	1.761A
%	10.17%	20.23%	30.51%	40.69%	50.91%	61.20%	71.14%	81.26%	92.46%	100.11%	100.63%
V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN

		<table><tr><td>O/P CURRENT</td><td>0.178A</td><td>0.362A</td><td>0.547A</td><td>0.725A</td><td>0.888A</td><td>1.066A</td><td>1.244A</td><td>1.423A</td><td>1.592A</td><td>1.750A</td><td>1.749A</td></tr><tr><td>%</td><td>10.17%</td><td>20.69%</td><td>31.26%</td><td>41.43%</td><td>50.74%</td><td>60.91%</td><td>71.09%</td><td>81.31%</td><td>90.97%</td><td>100.00%</td><td>99.91%</td></tr><tr><td>PWM (100HZ)</td><td>10%</td><td>20%</td><td>30%</td><td>40%</td><td>50%</td><td>60%</td><td>70%</td><td>80%</td><td>90%</td><td>100%</td><td>OPEN</td></tr><tr><td>O/P CURRENT</td><td>0.177A</td><td>0.335A</td><td>0.528A</td><td>0.703A</td><td>0.879A</td><td>1.053A</td><td>1.227A</td><td>1.401A</td><td>1.575A</td><td>1.750A</td><td>1.751A</td></tr><tr><td>%</td><td>10.11%</td><td>19.15%</td><td>30.17%</td><td>40.17%</td><td>50.23%</td><td>60.17%</td><td>70.11%</td><td>80.06%</td><td>90.00%</td><td>100.00%</td><td>100.06%</td></tr></table>	O/P CURRENT	0.178A	0.362A	0.547A	0.725A	0.888A	1.066A	1.244A	1.423A	1.592A	1.750A	1.749A	%	10.17%	20.69%	31.26%	41.43%	50.74%	60.91%	71.09%	81.31%	90.97%	100.00%	99.91%	PWM (100HZ)	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN	O/P CURRENT	0.177A	0.335A	0.528A	0.703A	0.879A	1.053A	1.227A	1.401A	1.575A	1.750A	1.751A	%	10.11%	19.15%	30.17%	40.17%	50.23%	60.17%	70.11%	80.06%	90.00%	100.00%	100.06%
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		TEST RESULT : OK																																																												

8	DIMMING OPERATION (for Dxx-Type by User definition)	※Smart timer dimming function (for Dxx-Type by User definition) MEAN WELL Smart timer dimming primarily provides the adaptive proportion dimming profile for the output constant current level to perform up to 14 consecutive hours. 3 dimming profiles hereunder are defined accounting for the most frequently seen applications. If other options may be needed,please contact MEAN WELL for details. Ex : ☉ D01-Type: the profile recommended for residential lighting 100 90 80 70 60 50 40 30 20 10 0 00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 Operating Time(HH:MM) Set up for D01-Type in Smart timer dimming software program: <table><tr><td></td><td>T1</td><td>T2</td><td>T3</td><td>T4</td></tr><tr><td>TIME**</td><td>06:00</td><td>07:00</td><td>11:00</td><td>---</td></tr><tr><td>LEVEL**</td><td>100%</td><td>70%</td><td>50%</td><td>70%</td></tr></table> Ex : ☉ D02-Type: the profile recommended for street lighting 100 90 80 70 60 50 40 30 20 10 0 00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 Operating Time(HH:MM) Set up for D02-Type in Smart timer dimming software program: <table><tr><td></td><td>T1</td><td>T2</td><td>T3</td><td>T4</td><td>T5</td></tr><tr><td>TIME**</td><td>01:00</td><td>03:00</td><td>8:00</td><td>11:00</td><td>---</td></tr><tr><td>LEVEL**</td><td>50%</td><td>80%</td><td>100%</td><td>60%</td><td>80%</td></tr></table> Ex : ☉ D03-Type: the profile recommended for tunnel lighting 100 90 80 70 60 50 40 30 20 10 0 00:00 02:00 04:00 06:00 08:00 10:00 12:00 14:00 Operating Time(HH:MM) Set up for D03-Type in Smart timer dimming software program: <table><tr><td></td><td>T1</td><td>T2</td><td>T3</td></tr><tr><td>TIME**</td><td>01:30</td><td>11:00</td><td>---</td></tr><tr><td>LEVEL**</td><td>70%</td><td>100%</td><td>70%</td></tr></table> I/P : 230VAC O/P : DIMMING TEST TA : 25℃ TEST RESULT : OK		T1	T2	T3	T4	TIME**	06:00	07:00	11:00	---	LEVEL**	100%	70%	50%	70%		T1	T2	T3	T4	T5	TIME**	01:00	03:00	8:00	11:00	---	LEVEL**	50%	80%	100%	60%	80%		T1	T2	T3	TIME**	01:30	11:00	---	LEVEL**	70%	100%	70%
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LEVEL**	70%	100%	70%																																												

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																												
1	INPUT VOLTAGE RANGE	90VAC~305 VAC	I/P:TESTING O/P:FULL LOAD Ta:25℃	70V~305V																																												
			I/P: (1)LOW-LINE-3V=87 V HIGH-LINE+10V=315 V O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec . OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE) (2) I/P:230Vac ON: 0.5 Sec . OFF: 0.5 Sec 20MIN	(1).TEST:OK (2).TEST :OK																																												
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P: 110 VAC ~305VAC O/P:FULL~MIN LOAD Ta:25℃	OK																																												
3	INPUT CURRENT (TYP)	277VAC/ 1.1 A 230 VAC/ 1.3 A 115 VAC/ 2.5 A	I/P: 277VAC/230 VAC/115 VAC O/P:FULL LOAD Ta:25℃	I= 1.000A/277VAC I = 1.173A/230VAC I = 2.401A/115VAC																																												
4	POWER FACTOR(TYP)	0.95/230 VAC FULL LOAD 0.98/115 VAC FULL LOAD 0.92/277 VAC FULL LOAD	I/P: 230 VAC/115VAC/277VAC O/P:FULL LOAD Ta:25℃	PF=0.9825 /230V/100%LOAD PF=0.9961/115V/100%LOAD PF=0.9488 /277V/100%LOAD																																												
5	P.F vs LOAD  <table><caption>P.F vs LOAD Data</caption><thead><tr><th>Load (%)</th><th>230V P.F</th><th>115V P.F</th><th>277V P.F</th></tr></thead><tbody><tr><td>10%</td><td>0.58</td><td>0.90</td><td>0.40</td></tr><tr><td>20%</td><td>0.78</td><td>0.95</td><td>0.60</td></tr><tr><td>30%</td><td>0.88</td><td>0.98</td><td>0.72</td></tr><tr><td>40%</td><td>0.92</td><td>0.99</td><td>0.80</td></tr><tr><td>50%</td><td>0.95</td><td>1.00</td><td>0.85</td></tr><tr><td>60%</td><td>0.96</td><td>1.00</td><td>0.88</td></tr><tr><td>70%</td><td>0.97</td><td>1.00</td><td>0.90</td></tr><tr><td>80%</td><td>0.97</td><td>1.00</td><td>0.92</td></tr><tr><td>90%</td><td>0.98</td><td>1.00</td><td>0.94</td></tr><tr><td>100%</td><td>0.98</td><td>1.00</td><td>0.95</td></tr></tbody></table>				Load (%)	230V P.F	115V P.F	277V P.F	10%	0.58	0.90	0.40	20%	0.78	0.95	0.60	30%	0.88	0.98	0.72	40%	0.92	0.99	0.80	50%	0.95	1.00	0.85	60%	0.96	1.00	0.88	70%	0.97	1.00	0.90	80%	0.97	1.00	0.92	90%	0.98	1.00	0.94	100%	0.98	1.00	0.95
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5	EFFICIENCY (TYP)	94 %	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	94.2%																																												
	EFFICIENCY vs LOAD																																															

				
6	TOTAL HARMONIC DISTORTION	Total harmonic distortion will be lower than 20% when output loading is 50% or higher at 230VAC / 115VAC Total harmonic distortion will be lower than 20% when output loading is 75% or higher at 277VAC	I/P : 230VAC I/P : 115VAC O/P : 50% LOAD Ta : 25°C I/P : 277VAC O/P : 75% LOAD Ta : 25°C	THD : 5.2732 % THD : 4.0143 % THD : 6.6690 %
			THD&LOAD 	
7	INRUSH CURRENT (TYP)	230 V/ 75A COLD START (twidh=700us measured at 50% Ipeak) COLD START	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I = 61.7 A/ 230VAC T50= 584 us
			INPUT=230VAC/50HZ @ FULL LOAD CH2 : AC Input Voltage CH4 : Input current (1V=1A) 	

ROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	V1: 150V~ 165V	I/P: 305VAC I/P: 230VAC I/P: 90VAC O/P: MIN LOAD Ta: 25°C	157.93V/ 305VAC 156.72V/ 230VAC 156.70V/ 90VAC PROTECTION TYPE : Shut down and latch off o/p voltage, re-power on to recover
2	OVER TEMPERATURE PROTECTION	PROTECTION TYPE : Shut down o/p voltage, recovers automatically after temperature goes down	I/P: 305 VAC I/P: 90 VAC O/P: FULL LOAD	O.T.P. Active PROTECTION TYPE : Shut down o/p voltage, recovers automatically after temperature goes down
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 305VAC I/P: 90 VAC O/P: FULL LOAD Ta: 25°C	NO DAMAGE PROTECTION TYPE : Constant current limiting, recovers automatically after fault condition is removed

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated 600V/19A	I/P: High-Line +3V = 308V AC ON/OFF VDS: O/P: (1) Full Load (2) Output Short (3) FULL LOAD CONTINUE I/P: Low-Line -3V = 107V AC ON/OFF VDS: O/P: (1) Full Load (2) Output Short (3) FULL LOAD CONTINUE Ta: 25°C	VDS: (1) 501V (2) 466V (3) 506V VDS: (1) 514V (2) 466V (3) 512V
2	PWM Transistor (D to S) or (C to E) Peak Voltage	Q3 Rated 20A/600V	I/P: High-Line +3V = 308V AC ON/OFF VDS: O/P: (1) Full Load (2) Output Short (3) FULL LOAD CONTINUE I/P: Low-Line -3V = 107V AC ON/OFF VDS: O/P: (1) Full Load (2) Output Short (3) FULL LOAD CONTINUE Ta: 25°C	VDS: (1) 535V (2) 490V (3) 442V VDS: (1) 470V (2) 465V (3) 456V

3	Diode Peak Voltage	D102 Rated 10A/400V D103 Rated 10A/400V	I/P:High-Line +3V = 308 V AC ON/OFF VDS: O/P: (1)Full Load (2)Output Short (3)FULL LOAD CONTINUE VDS: (1)Full Load (2)Output Short (3)FULL LOAD CONTINUE Ta:25°C	D102: VDS: (1)316V (2)31V (3)314V D103: VDS: (1)323V (2)36.8V (3)319V
4	Input Capacitor Voltage	C5 Rated: 150u/450V SURGE POWER :495V	I/P:High-Line +3V =308 V O/P: (1)Full Load input on/off (2) Min load input on /Off (3)Full Load /Min load Change Ta:25°C	(1)444V (2)454V (3)446V
5	Control IC Voltage Test	PWM IC U70 Rated 8.85V~16V	I/P:High-Line +3V =308 V AC ON/OFF O/P:(1)FULL LOAD (2) Output Short (3)O.L.P (4)O.V.P. (5)NO (LOW LINE) Ta:25°C	(1) 15.3V (2) 14.6V (3) 14.7V (4) 15.3V (5) 15.2V

SAFETY & EMC TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	IEC60950-1 I/P-O/P: 3.75KVAC/min I/P-FG: 2 KVAC/min<4.5mA O/P-FG:1.5KVAC/min	I/P-O/P: 4.125 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG: 1.8 KVAC/min Ta:25°C	I/P-O/P:4.05 mA I/P-FG: 4.16mA O/P-FG:3.51 mA 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:15.5 GΩ I/P-FG: 7.4G Ω O/P-FG: 30G Ω NO DAMAGE
3	GROUNDING CONTINUITY	IEC60950-1 FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	30 mΩ
4	LEAKAGE CURRENT	IEC60950-1 < 0.75mA / 277VAC	I/P: 277 VAC O/P:Min LOAD Ta:25°C	L-FG:0.33 mA N-FG:0.33 mA

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A CLASS C	I/P: 230VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS
2	CONDUCTION	EN55015 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab

3	RADIATION	EN55015 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 LIGHT 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	IEC61000-4-5 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 : HLG-240H-C1400		
		1. ROOM AMBIENT BURN-IN : 3 HRS I/P : 230VAC O/P : FULL LOAD Ta= 29.2 °C		
		2. HIGH AMBIENT BURN-IN : 6 HRS I/P : 230VAC O/P : FULL LOAD Ta= 55.7 °C		

3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60 °C NO DAMAGE	I/P : 305 VAC O/P : FULL LOAD Ta= 60 °C HUMIDITY= 95 %R.H	TEST : OK
4	TEMPERATURE COEFFICIENT	± 0.03 %/°C (0~60°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.022 %/°C (0~60°C)
5	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 : 5 CYCLE 5. Input/Output condition : STATIC		OK
6	THERMAL SHOCK TEST	1. Thermal shock Temperature : -45°C~+65°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 : 230VAC/Full Load AC ON/OFF TEST turn on 58sec ; turn off 2sec		OK
7	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 5G (5) Test Time : 72min in each axis (X.Y.Z) (6) Ta : 25°C		TEST : OK
8	CAPACITOR LIFE CYCLE	HLG-240H-C1400 :SUPPOSE C102 IS THE MOST CRITICAL COMPONENT (2) I/P : 230VAC O/P : FULL LOAD Tc= 75 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Tc= 75 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Tc= 75 °C LIFE TIME		(1) 129737 HRS (2) 93030 HRS (3) 97466 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 180K hrs min. MIL-HDBK-217F (25°C)		
10	Ongoing Reliability Test	I/P : 230VAC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 62,000 hours		

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