Test Report: HLG-240H-C700

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

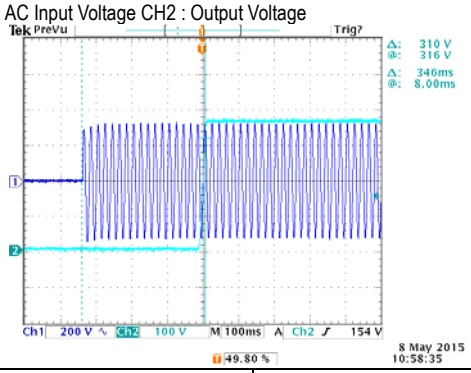
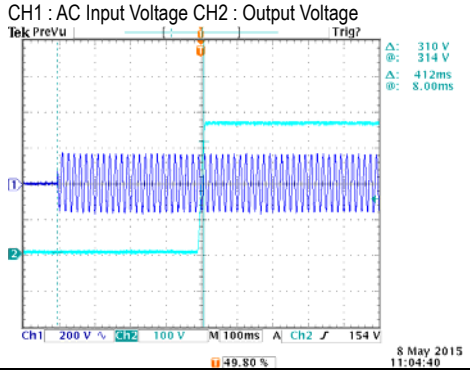
Safety Test
E.M.C. Test

■ RELIABILITY TEST

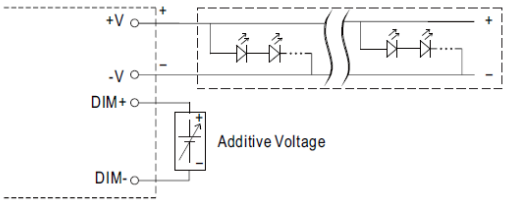
ENVIRONMENT TEST

■ DESIGN VERIFY TEST

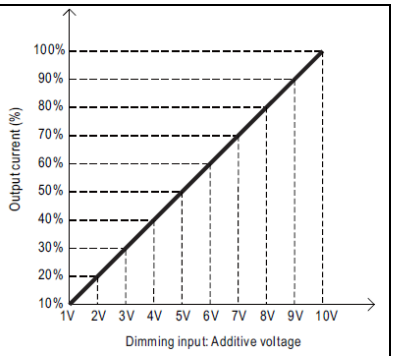
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT TOLERANCE	±5%	I/P: 230 VAC I/P:115VAC O/P:FULL LOAD Ta:25℃	0.720A /230VAC@CV MAX-2V 0.716A /230VAC@CV MIN 0.720A/115VAC@CV MAX-2V 0.715A/115VAC@CV MIN +2.85%
2	CONSTANT CURRENT REGION	CH1: 178V~ 357 V	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	68V~357 V /230VAC
3	OPEN CIRCUIT VOLTAGE (max.)	360V	I/P: 230 VAC O/P:NO LOAD Ta:25℃	357.5V
4	CURRENT ADJ. RANGE	CH1:350mA~ 700mA	I/P: 230 VAC I/P:115VAC O/P:CV MIN & CV MAX-2V Ta:25℃	0.3193A~0.7504 A /230VAC@CV MAX-2V 0.3197A~0.7504 A /230VAC@CV MIN 0.3193A~ 0.754A /115VAC@CV MAX-2V 0.3197A~ 0.7504A/115VAC@CV MIN
5	CURRENT RIPPLE	5.0% max. @rated current	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	1.73%
6	SET UP TIME (Max)	230VAC/500 ms 115VAC/1000ms	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 346ms 115 VAC/ 412ms
	INPUT=230VAC/50HZ @ FULL LOAD CH1 : AC Input Voltage CH2 : Output Voltage		INPUT=115VAC/60HZ @ FULL LOAD CH1 : AC Input Voltage CH2 : Output Voltage	
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.)		

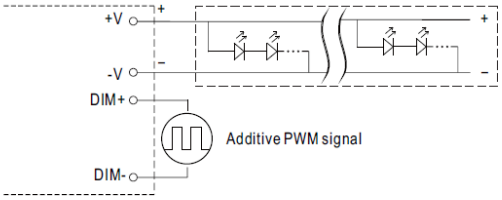
◎ Applying additive 1 ~ 10VDC



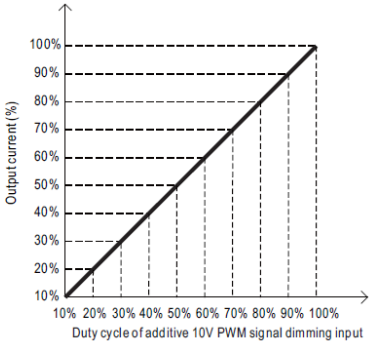
"DO NOT connect "DIM- to -V"



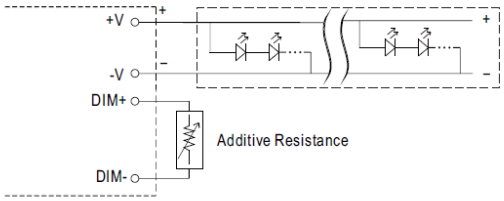
◎ Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):



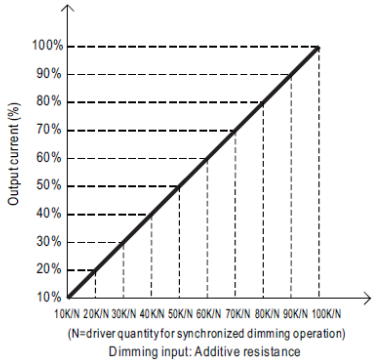
"DO NOT connect "DIM- to -V"



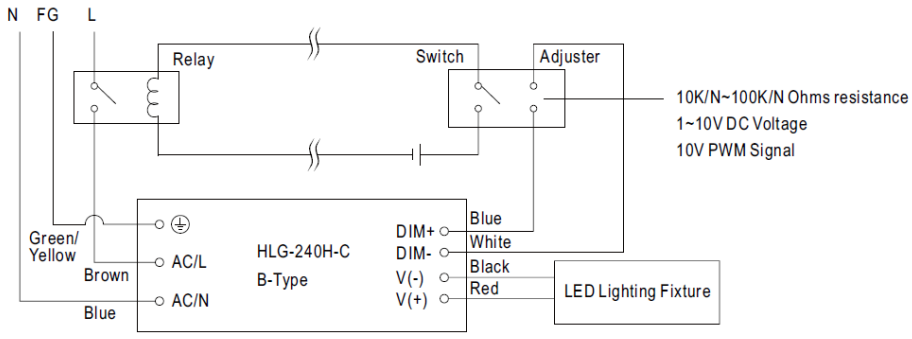
◎ Applying additive resistance:



"DO NOT connect "DIM- to -V"



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℃

R	10K	20K	30K	40K	50K	60K	70K	80K	90K	100K	OPEN
O/P CURRENT	0.073A	0.141A	0.212A	0.276A	0.350A	0.420A	0.490A	0.552A	0.627A	0.692A	0.706A
%	10.47%	20.11%	30.29%	39.37%	49.99%	60.03%	69.93%	78.79%	89.63%	98.89%	100.86%
V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN

O/P CURRENT	0.077A	0.144A	0.212A	0.286A	0.361A	0.423A	0.496A	0.565A	0.637A	0.702A	0.706A
%	11.03%	20.57%	30.29%	40.84%	51.57%	60.41%	70.89%	80.71%	90.97%	100.27%	100.86%
PWM (100HZ)	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
O/P CURRENT	0.069A	0.143A	0.214A	0.287A	0.357A	0.427A	0.496A	0.566A	0.636A	0.705A	0.706A
%	9.90%	20.39%	30.59%	40.94%	50.96%	61.03%	70.90%	80.86%	90.84%	100.70%	100.86%

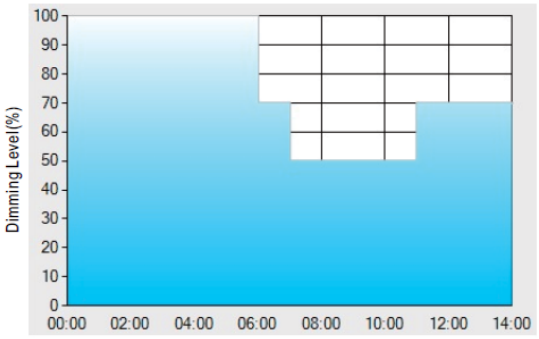
TEST RESULT：OK

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.

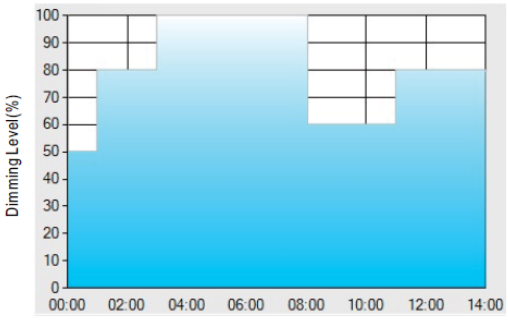
Ex：◎ D01-Type: the profile recommended for residential lighting



Set up for D01-Type in Smart timer dimming software program:

	T1	T2	T3	T4
TIME**	06:00	07:00	11:00	---
LEVEL**	100%	70%	50%	70%

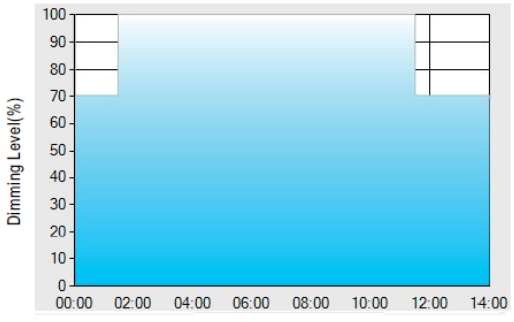
Ex: ◎ D02-Type: the profile recommended for street lighting



Set up for D02-Type in Smart timer dimming software program:

	T1	T2	T3	T4	T5
TIME**	01:00	03:00	8:00	11:00	---
LEVEL**	50%	80%	100%	60%	80%

Ex: ◎ D03-Type: the profile recommended for tunnel lighting

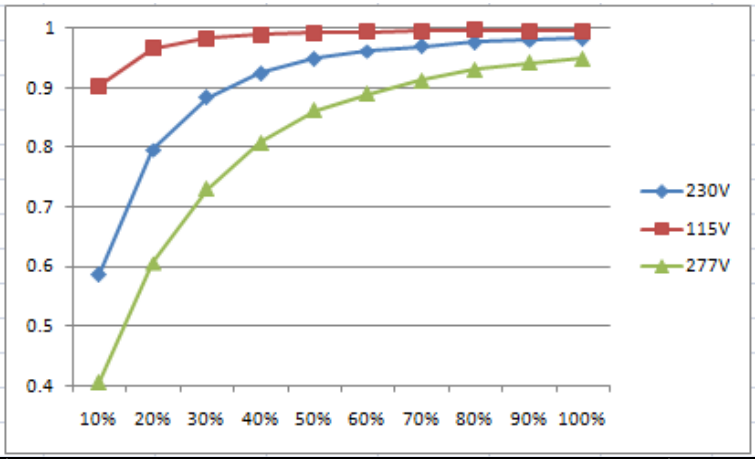
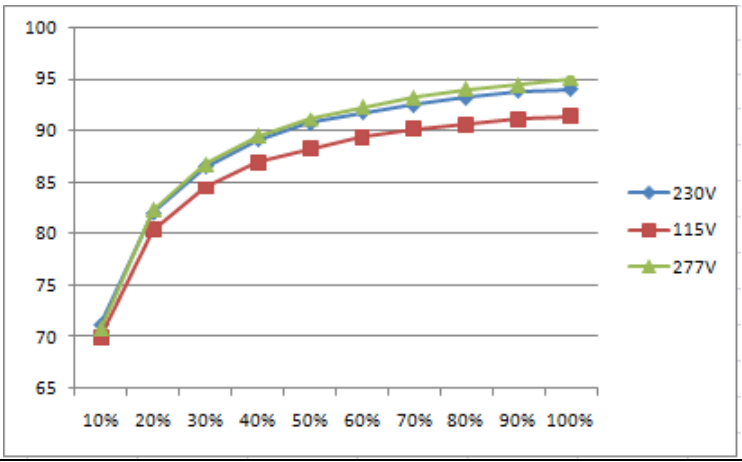


Set up for D03-Type in Smart timer dimming software program:

	T1	T2	T3
TIME**	01:30	11:00	---
LEVEL**	70%	100%	70%

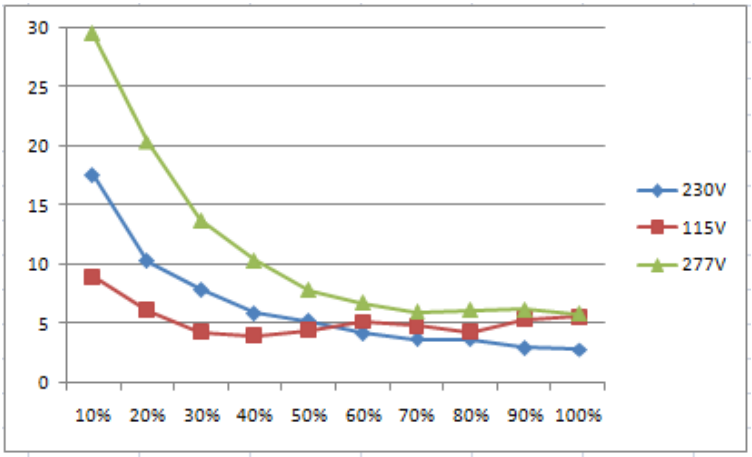
I/P：230VAC
O/P：DIMMING TEST
TA：25℃
TEST RESULT：OK

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= 1.01A/277VAC I = 1.2 A/ 230VAC I = 2.45A/ 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=0.9842 /230V/100%LOAD PF=0.9971/115V/100%LOAD PF=0.9531 /277V/100%LOAD
	P.F vs LOAD 			
5	EFFICIENCY (TYP)	93.5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	93.64 %
	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 at277VAC	I/P： 230VAC I/P： 115VAC O/P：50% LOAD Ta：25℃ I/P： 277VAC O/P：75% LOAD Ta：25℃	THD： 7.066 % THD： 6.536 % THD： 6..714 %

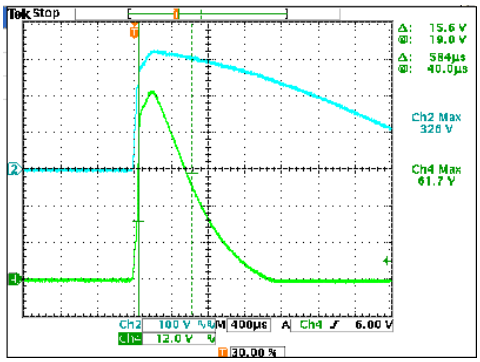
THD&LOAD



7	INRUSH CURRENT (TYP)	230 V/ 75A COLD START (twidth=700 us measured at 50% Ipeak) COLD START	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	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: 375 V~ 410 V	I/P: 305VAC I/P: 230VAC I/P: 90VAC O/P:MIN LOAD Ta:25℃	389.93V/ 305VAC 391.64V/ 230VAC 391.21V/ 90VAC PROTECTION TYPE： Shut down and latch off o/p voltage, re-power on to recover

2	OVER TEMPERATURE PROTECTION	SPEC: 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℃	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	Q1Rated 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℃	VDS: (1)510V (2)454V (3)494V VDS: (1)510V (2)438V (3)506V
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℃	VDS: (1)458V (2)498V (3)452V VDS: (1)452V (2)484V (3)446V

3	Diode Peak **Voltage**	D101 Rated 3A/600V D102 Rated 4A/600V	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℃	D101: VDS: (1)370V (2)8V (3)368V D102: VDS: (1)372V (2)8V (3)370V
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℃	(1)448V (2)454V (3)448V
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 LOAD (LOW LINE) Ta:25℃	(1) 15.3V (2) 14.7V (3) 14.7V (4) 15.3V (5) 15.3V

■ 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℃	I/P-O/P: 3.93mA I/P-FG: 4.20 mA O/P-FG:3.33 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℃	I/P-O/P: 23.7GΩ I/P-FG: 11.1G 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℃	30 mΩ
4	LEAKAGE CURRENT	IEC60950-1 < 0.75mA / 277VAC	I/P: 277 VAC O/P:Min LOAD Ta:25℃	L-FG:0.32mA N-FG:0.32 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℃	PASS

2	CONDUCTION	EN55015 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab
3	RADIATION	EN55015 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	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℃	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	IEC61000-4-5 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. 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-C700 1. ROOM AMBIENT BURN-IN：3 HRS I/P： 230VAC O/P： FULL LOAD Ta= 29.2 ℃ 2. HIGH AMBIENT BURN-IN： 6 HRS I/P： 230VAC O/P： FULL LOAD Ta= 55.7 ℃		

NO	Position	ROOM AMBIENT	HIGH AMBIENT
1	BD1	65.7℃	89.0℃
2	C14	62.6℃	86.3℃
3	LF2	61.6℃	84.8℃
4	Q1	64.7℃	88.6℃
5	D3	63.9℃	87.7℃
6	L2	62.2℃	85.9℃
7	L1	63.5℃	88.6℃
8	D2	63.9℃	87.7℃
9	TSW1	62.2℃	85.9℃
10	Q4	63.6℃	87.4℃
11	C5	61.6℃	84.9℃
12	C35	63.9℃	86.9℃
13	C37	63.9℃	86.9℃
14	D102	63.9℃	87.5℃
15	T1	81.1℃	101.8℃
16	C201	61.3℃	85.2℃
17	C102	60.2℃	83.9℃
18	U1	61.3℃	84.9℃
19	D101	71.9℃	96.6℃
20	U201	63.5℃	88.0℃

2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P： 305VAC/110VAC O/P： 100 % LOAD Ta= -40℃	TEST：OK
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60 ℃ NO DAMAGE	I/P： 305 VAC O/P：FULL LOAD Ta= 60 ℃ HUMIDITY= 95 %R.H	TEST：OK
4	TEMPERATURE COEFFICIENT	± 0.03 %/℃(0~60℃)	I/P： 230 VAC O/P：FULL LOAD	± 0.011 %/℃(0~60℃)
5	STORAGE TEMPERATURE TEST	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：5 CYCLE 5. Input/Output condition： STATIC		OK
6	THERMAL SHOCK TEST	1. Thermal shock Temperature： -45℃~ +65℃ 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： 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℃		TEST：OK
8	CAPACITOR LIFE CYCLE	HLG-240H-C700:SUPPOSE C102 IS THE MOST CRITICAL COMPONENT (1 I/P： 230VAC O/P：FULL LOAD Tc=75℃ LIFE TIME (2 I/P： 230VAC O/P：75% LOAD Tc=75℃ LIFE TIME (3 I/P： 230VAC O/P：50% LOAD Tc=75℃ LIFE TIME		(1) 85205 HRS (2) 86966 HRS (3) 91020 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 180K hrs min. MIL-HDBK-217F (25℃)		
10	Ongoing Reliability Test	I/P：230VAC O/P：FULL LOAD TA=50℃ Demonstration Mean Time Between Failure : 62,000 hours		

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

12.10.30 A50-F031