



- **Features :**
- **Universal AC input / Full range (up to 305VAC)**
- **Built-in active PFC function**
- **High efficiency up to 94%**
- **Protections: Short circuit / Overload / Over voltage / Over temperature**
- **Cooling by free air convection**
- **OCP point adjustable through output cable or internal potential meter**
- **IP67 / IP65 design for indoor or outdoor installations**
- **Three in one dimming function (1~10Vdc or PWM signal or resistor)**
- **Suitable for LED lighting and street lighting applications**
- **Compliance to worldwide safety regulations for lighting**
- **Suitable for dry / damp / wet locations**
- **5 years warranty (Note.10)**



HLG-150H-12 **A** Blank : IP67 rated. Cable for I/O connection.

A : IP65 rated. Output voltage and constant current level can be adjusted through internal potential meter.

B : IP67 rated. Constant current level adjustable through output cable with 1~10Vdc or 10V PWM signal or resistor.

SPECIFICATION

MODEL		HLG-150H-12	HLG-150H-15	HLG-150H-20	HLG-150H-24	HLG-150H-30	HLG-150H-36	HLG-150H-42	HLG-150H-48	HLG-150H-54	
OUTPUT	DC VOLTAGE	12V	15V	20V	24V	30V	36V	42V	48V	54V	
	CONSTANT CURRENT REGION Note.4	6 ~ 12V	7.5 ~ 15V	10 ~ 20V	12 ~ 24V	15 ~ 30V	18 ~ 36V	21 ~ 42V	24 ~ 48V	27 ~ 54V	
	RATED CURRENT	12.5A	10A	7.5A	6.3A	5A	4.2A	3.6A	3.2A	2.8A	
	RATED POWER	150W	150W	150W	151.2W	150W	151.2W	151.2W	153.6W	151.2W	
	RIPPLE & NOISE (max.) Note.2	150mVp-p	150mVp-p	150mVp-p	150mVp-p	200mVp-p	200mVp-p	200mVp-p	200mVp-p	200mVp-p	
	VOLTAGE ADJ. RANGE Note.6	10.8 ~ 13.5V	13.5 ~ 17V	17 ~ 22V	22 ~ 27V	27 ~ 33V	33 ~ 40V	38 ~ 46V	43 ~ 53V	49 ~ 58V	
	CURRENT ADJ. RANGE	Can be adjusted by internal potential meter or through output cable									
		7.5 ~ 12.5A	6 ~ 10A	4.5 ~ 7.5A	3.8 ~ 6.3A	3 ~ 5A	2.5 ~ 4.2A	2.16 ~ 3.6A	1.92 ~ 3.2A	1.68 ~ 2.8A	
	VOLTAGE TOLERANCE Note.3	±2.5%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	
LOAD REGULATION	±2.0%	±1.5%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%		
SETUP, RISE TIME Note.8	2500ms, 80ms at full load 230VAC / 115VAC ; B type 2500ms, 200ms at 95% load 230VAC / 115VAC										
HOLD UP TIME (Typ.)	16ms at full load 230VAC / 115VAC										
INPUT	VOLTAGE RANGE Note.5	90 ~ 305VAC 127 ~ 431VDC									
	FREQUENCY RANGE	47 ~ 63Hz									
	POWER FACTOR	PF ≥ 0.95/230VAC PF ≥ 0.98/115VAC at full load and rated output voltage PF ≥ 0.9 at 60 ~ 100% load									
	EFFICIENCY (Typ.)	91.5%	92%	93%	93%	93.5%	93.5%	94%	94%	94%	
	AC CURRENT	1.7A / 115VAC 0.75A / 230VAC 0.7A / 277VAC									
	INRUSH CURRENT(Typ.)	COLD START 75A/230VAC									
	LEAKAGE CURRENT	<0.75mA / 277VAC									
PROTECTION	OVER CURRENT Note.4	95 ~ 108% Protection type : Constant current limiting, recovers automatically after fault condition is removed									
	SHORT CIRCUIT	Constant current limiting, recovers automatically after fault condition is removed									
	OVER VOLTAGE	14 ~ 17V	18 ~ 21V	23 ~ 27V	28 ~ 34V	34 ~ 38V	41 ~ 46V	47 ~ 53V	54 ~ 60V	59 ~ 65V	
		Protection type : Shut down o/p voltage with auto-recovery or re-power on to recovery									
	OVER TEMPERATURE	100℃ ±10℃ (RTH2) Protection type : Shut down o/p voltage, recovers automatically after temperature goes down									
ENVIRONMENT	WORKING TEMP.	-40 ~ +60℃ @ full load ; +70℃ @ 60% load (Refer to derating curve)									
	WORKING HUMIDITY	20 ~ 95% RH non-condensing									
	STORAGE TEMP., HUMIDITY	-40 ~ +80℃, 10 ~ 95% RH									
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)									
	VIBRATION	10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes									
SAFETY & EMC	SAFETY STANDARDS Note.7	UL8750, EN61347-1, EN61347-2-13 independent IP65 or IP67 approved ; Design refer to UL60950-1, TUV EN60950-1									
	WITHSTAND VOLTAGE	I/P-O/P:3.75KVAC I/P-FG:1.88KVAC O/P-FG:0.5KVAC									
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃ / 70% RH									
	EMI CONDUCTION & RADIATION	Compliance to EN55015, EN55022 (CISPR22) Class B									
	HARMONIC CURRENT	Compliance to EN61000-3-2 Class C (≥ 60% load) ; EN61000-3-3									
OTHERS	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN61547, EN55024, heavy industry level (surge 4KV), criteria A									
	MTBF	192.2Khrs min. MIL-HDBK-217F (25℃)									
	DIMENSION	228*68*38.8mm									
	PACKING	1.15Kg; 12pcs/14.8Kg/0.76CUFT									

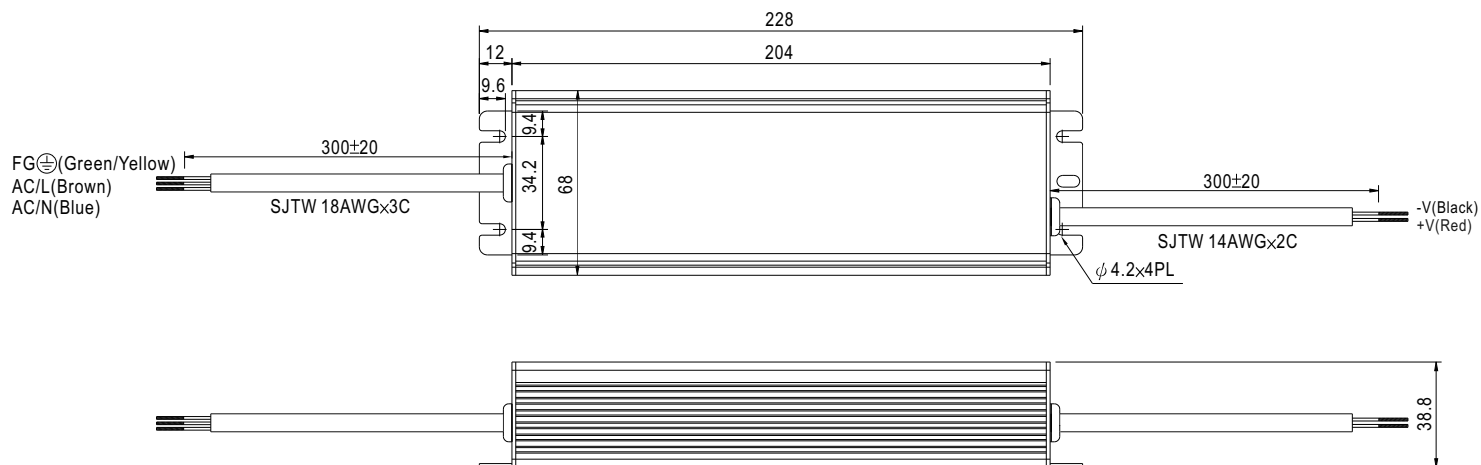
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. Constant current operation region is within 60% ~100% rated output voltage. This is the suitable operation region for LED related applications, but please reconfirm special electrical requirements for some specific system design. 5. Derating may be needed under low input voltages. Please check the static characteristics for more details. 6. Type A and type C only. 7. Safety and EMC design refer to EN60598-1, subject 8750(UL), CNS15233, GB7000.1, FCC part18. 8. Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time. 9. The power supply is considered as a component that will be operated in combination with final equipment. Since EMC performance will be affected by the complete installation, the final equipment manufacturers must re-qualify EMC Directive on the complete installation again. 10. Refer to warranty statement.
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Mechanical Specification

Case No.954D

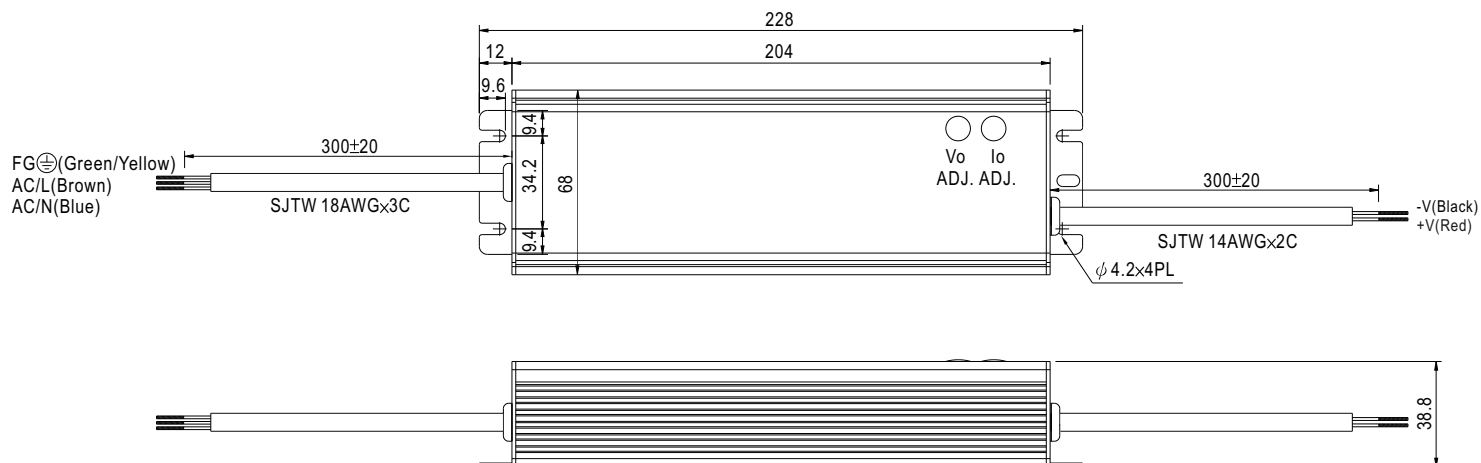
Unit:mm

Blank:(HLG-150H)



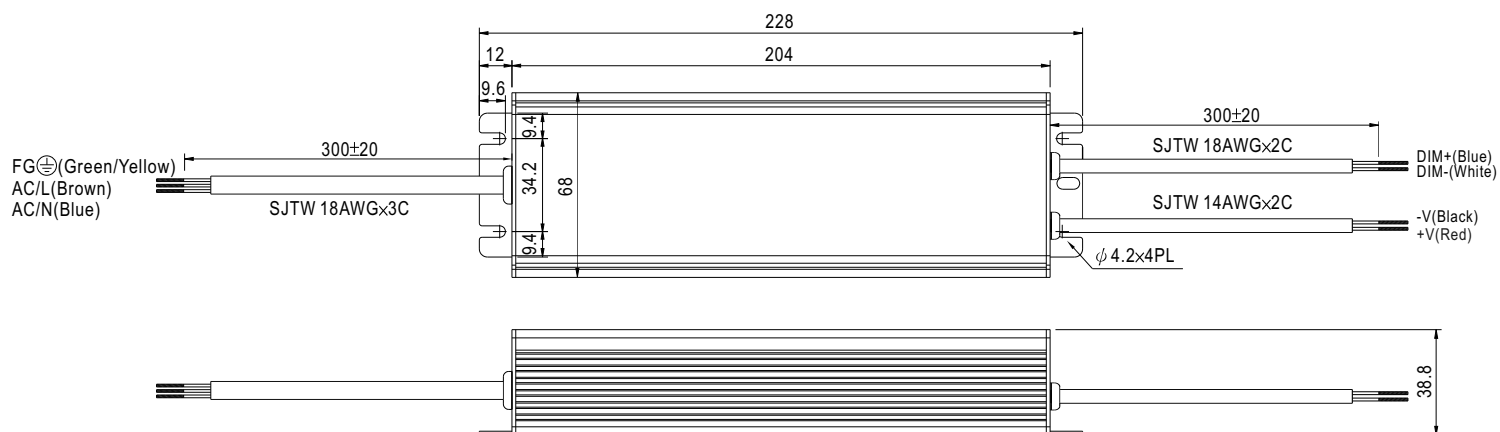
※IP67 rated. Cable for I/O connection.

A Type:(HLG-150H- _A)



※ IP65 rated. Output voltage and constant current level can be adjusted through internal potential meter.
(Can access by removing the rubber stopper on the case.)

B Type:(HLG-150H-_B)



※ IP67 rated. Output constant current level can be adjusted through output cable by connecting a resistor or 1 ~ 10Vdc or 10V PWM signal between DIM+ and DIM-.

※ Please DO NOT connect "DIM-" to "-V".

※ Reference resistance value for output current adjustment (Typical)

Resistance value	10K Ω	20K Ω	30K Ω	40K Ω	50K Ω	60K Ω	70K Ω	80K Ω	90K Ω	100K Ω	OPEN
Percentage of rated current	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	102%~108%

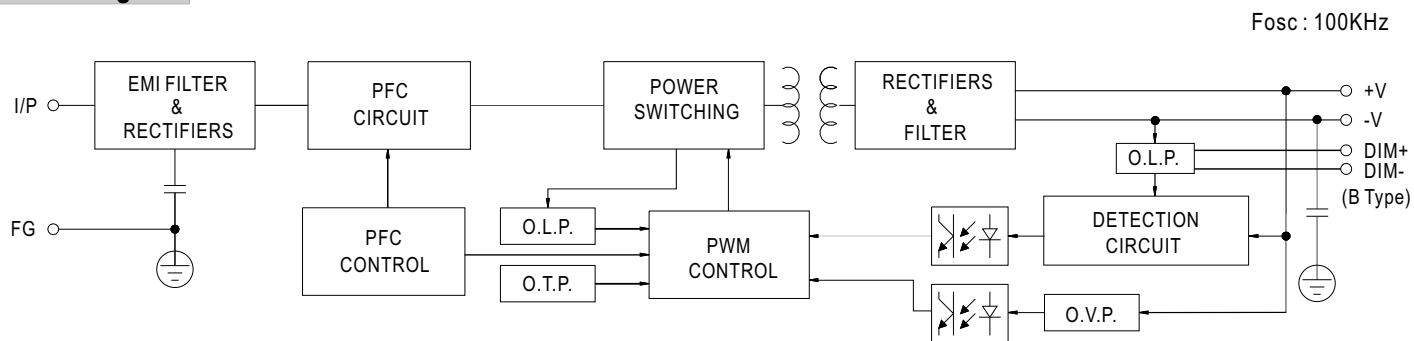
※ 1 ~ 10V dimming function for output current adjustment (Typical)

Dimming value	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
Percentage of rated current	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	102%~108%

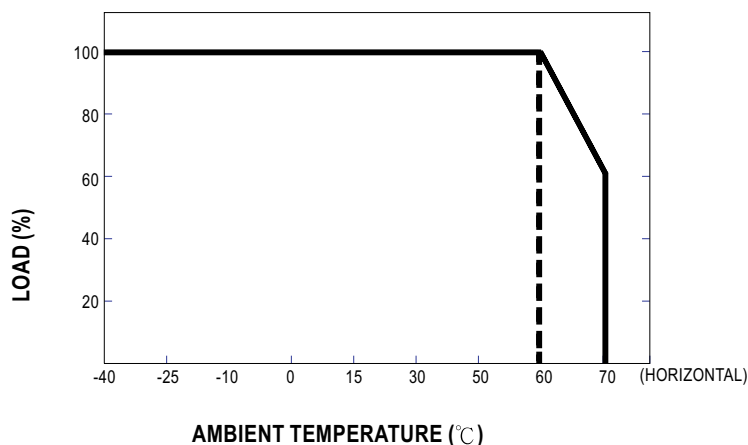
※ 10V PWM signal for output current adjustment (Typical): Frequency range : 100Hz ~ 3KHz

Duty value	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	OPEN
Percentage of rated current	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	102%~108%

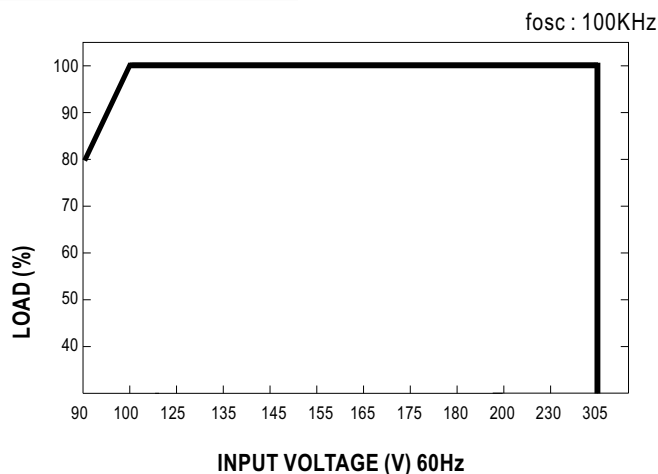
Block Diagram



Derating Curve



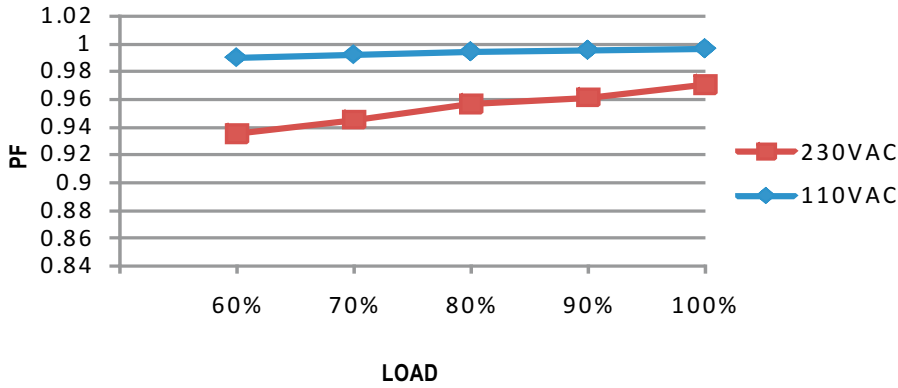
Static Characteristics



Power Factor Characteristic

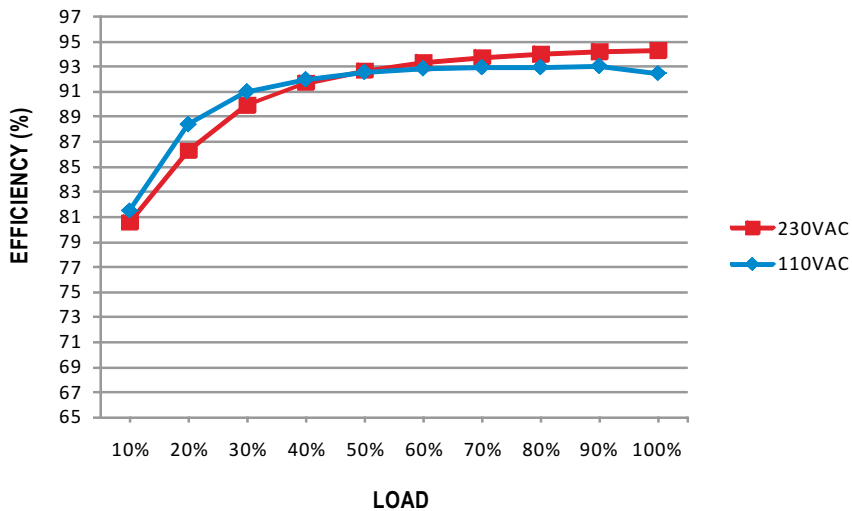
Power factor will be higher than 0.9 when output loading is 60% or higher.

Constant Current Mode



EFFICIENCY vs LOAD (48V Model)

HLG-150H series possess superior working efficiency that up to 94% can be reached in field applications.

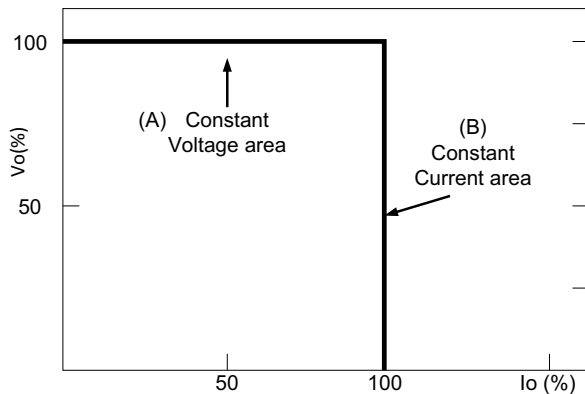


DRIVING METHODS OF LED MODULE

There are two major kinds of LED drive method "direct drive" and "with LED driver".

A typical LED power supply may either work in "constant voltage mode (CV)" or constant current mode (CC)" to drive the LEDs.

Mean Well's LED power supply with CV+ CC characteristic can be operated at both CV mode (with LED driver, at area (A)) and CC mode (direct drive, at area (B)).



Typical LED power supply I-V curve

◎ Direct driving :

Under direct driving, the power supply will work in "constant current mode (CC)" and output voltage of the power supply will be clamped by sum of forward voltage (V_f) of the LED strip.

The total forward voltage of series connecting LEDs is suggested for 60%~95% of power supply rated output voltage due to concern of the best PF value and efficiency.

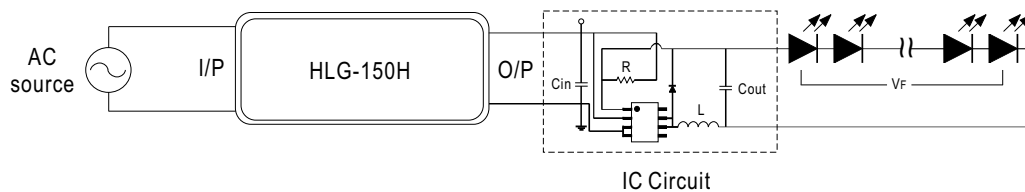


◎ With LED driver :

Using additional driver, the power supply will work in "constant voltage mode (CV)" and output voltage of the power supply will be kept in rated value.

In this drive mode, several design issues need to be considered:

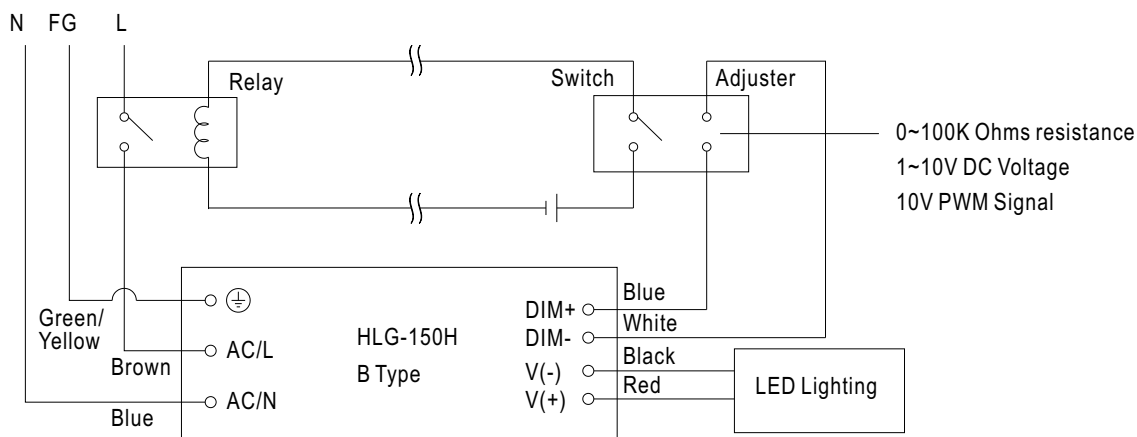
1. Output voltage of PSU must be higher than total forward voltage of series connecting LEDs by 3V minimum.
2. Input capacitor (C_{in}) of LED driver circuit should use 47uF ~ 100uF (typ.) of rating depends on the operating frequency of the LED driver.
The higher the operating frequency is used, the smaller value of C_{in} should be chosen, and vice versa.
3. Do not use B type with LED driver.



■ DIMMING OPERATION(for B-type only)

Using the built-in dimming function on B-type model can't turn the lighting fixture totally dark. Please refer to the connection method below to achieve 0% brightness of the lighting fixture connecting to the LED power supply unit.

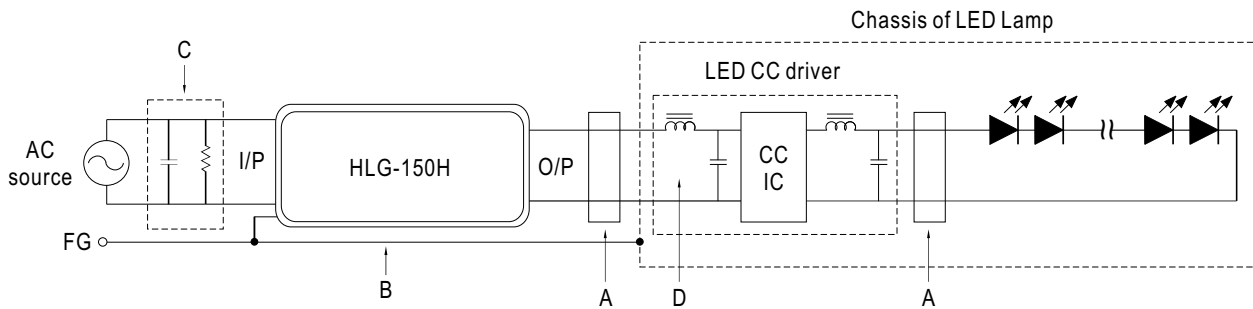
◎ Dimming connection diagram for turning the lighting fixture ON/OFF :



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

1. Output constant current level can be adjusted through output cable by connecting a resistor or 1~10Vdc or 10V PWM signal between DIM+ and DIM-.
2. The LED lighting fixture can be turned ON/OFF by the switch.

EMI DEBUG SUGGESTION

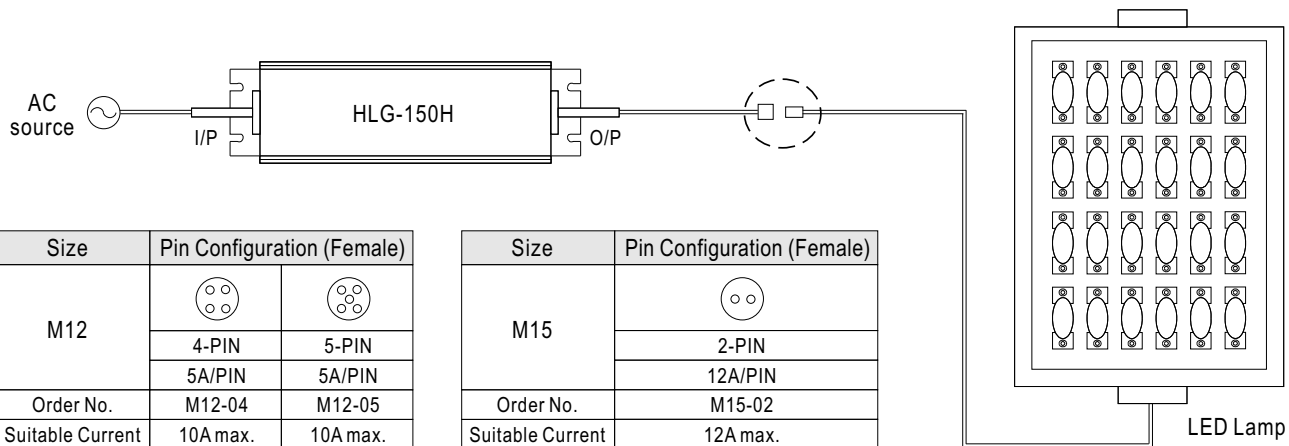


- A. Add a common mode ferrite choke on output wires to reduce the common emission between 10M ~ 300MHz per lighting EMI regulation.
- B. Chassis of LED lamp and chassis of HLG-150H or the FG wire should be connected to the safety ground to reduce the EMI noise, including the conduction and radiation emission.
- C. The additional X-Cap and discharge resistor can reduce the low frequency conduction noise between 9K ~ 1MHz per lighting EMI regulation.
- D. L-C filter should be added at the DC input of LED constant current driver to avoid the differential emission and high frequency noise generated by the CC driver.

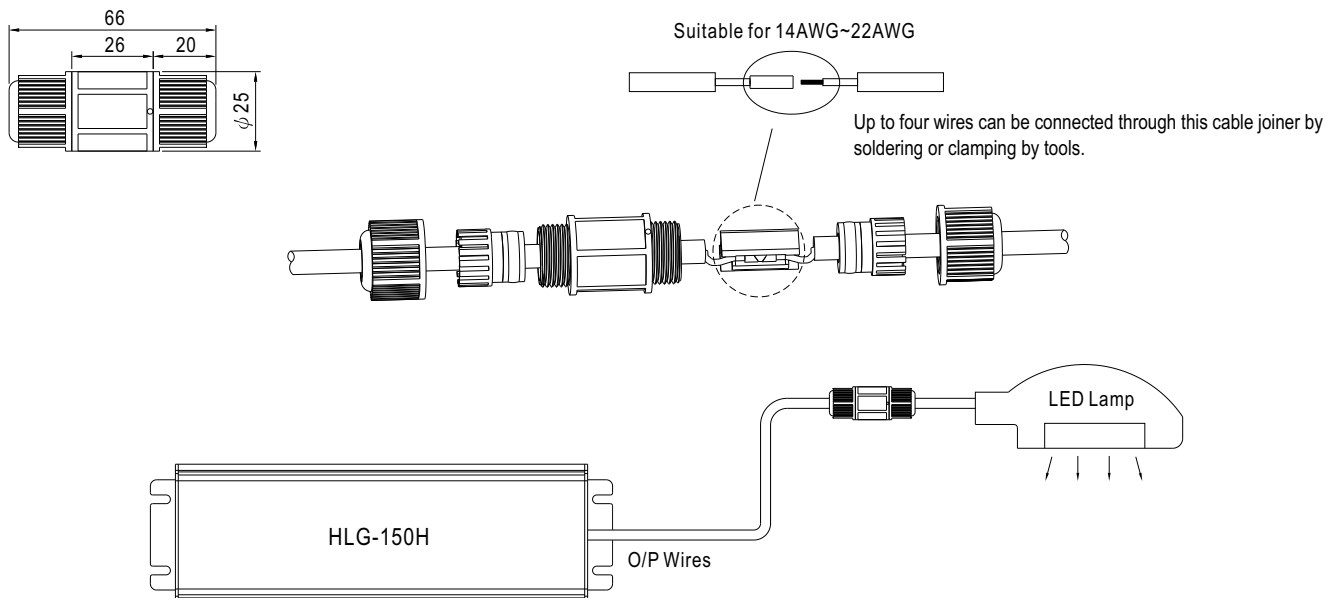
WATERPROOF CONNECTION

Waterproof connector

Waterproof connector can be assembled on the output cable of HLG-150H to operate in dry/wet/damp or outdoor environment.



Cable Joiner





Test Report: HLG-150H-15

150W Single Output Switching Power Supply

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Other Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

■ RELIABILITY TEST

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 150 mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	V1: 17.2 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 13.5V~17 V	I/P: 230 VAC I/P:115VAC O/P:MIN LOAD Ta:25°C	13.095 V~17.390 V /230VAC 13.099 V~17.390 V/115VAC	P
3	CURRENT ADJ RANGE	5.75A~11.5A	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	3.59 A~ 12.70 A	P
4	CONSTANT CURRENT REGION	7.5V~15V	I/P: 230 VAC O/P:CV MODE Ta:25°C	O/P=7.5V: 12.23 A O/P=14V: 12.25 A	P
5	OUTPUT VOLTAGE TOLERANCE	V1: -2 % ~ 2 % (Max)	I/P: 100 VAC /305VAC O/P:FULL/ 0 % LOAD Ta:25°C	V1: -0.5 %~0.5 %	P
6	LINE REGULATION	V1: - 0.5% ~ 0.5 % (Max)	I/P:100 VAC ~305 VAC O/P:FULL LOAD Ta:25°C	V1: 0 %~ 0 %	P
7	LOAD REGULATION	V1: - 1.5% ~ 1.5 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.5 %~ 0.5 %	P
8	SET UP TIME	230VAC/ 2500 ms (Max) 115VAC/ 2500 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 876 ms 115 VAC/ 1752 ms	P
9	RISE TIME	230VAC/ 80 ms (Max) 115VAC/ 80 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 4.8 ms 115 VAC/ 4.9 ms	P
10	HOLD UP TIME	230VAC/ 16 ms (Typ) 115VAC/ 16 ms (Typ)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 21 ms 115 VAC/ 21 ms	P
11	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST:< 5 %	P
12	DYNAMIC LOAD	V1: 1500 mVp-p	I/P: 230 VAC O/P:(1)FULL /Min LOAD 90%DUTY/1KHZ (2)FULL /Min LOAD 90%DUTY/120HZ Ta:25°C	102 mVp-p 1220 mVp-p	P

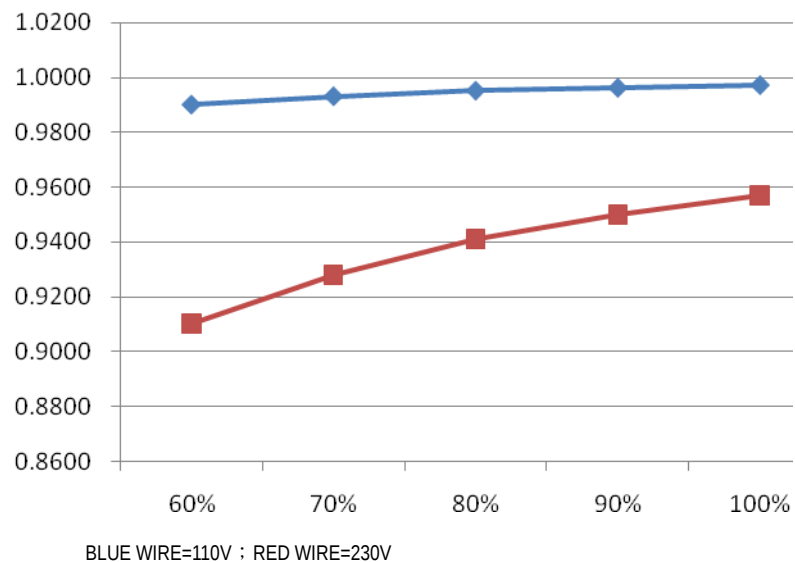
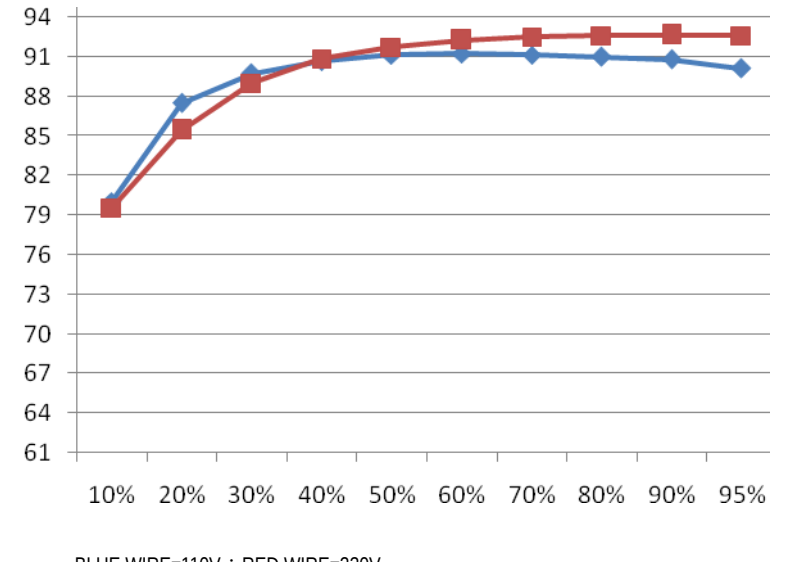
INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90VAC~305 VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	78 V~305V	P
			I/P: (1)LOW-LINE=3V=87 V (2)HIGH-LINE=305 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST: OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P: 100 VAC ~305VAC O/P:FULL~MIN LOAD Ta:25°C	OK	P
3	POWER FACTOR	0.95/ 230 VAC FULL LOAD (TYP) 0.98/ 115 VAC FULL LOAD (TYP) 0.9/ 230 VAC 60% LOAD (TYP) 0.9/ 115 VAC 60%LOAD (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD / 60% LOAD Ta:25°C	PF=0.957 /230V/100%LOAD PF=0.996 /115V/100%LOAD PF=0.91 /230V/60%LOAD PF=0.99 /115V/60%LOAD	P
4	EFFICIENCY	92% (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	92.44 %	P
5	INPUT CURRENT	277V/ 0.7 A 230 V/ 0.75 A 115 V/ 1.7 A	I/P: 277 VAC I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 0.63 A/ 277VAC I = 0.73 A/ 230VAC I = 1.49 A/ 115VAC	P
6	INRUSH CURRENT	230 V/ 75A (Typ) COLD START	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	I = 57 A/ 230VAC	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	95 %~108 %	I/P: 305VAC I/P: 230 VAC I/P: 100 VAC O/P:TESTING Ta:25°C	106 %/305VAC 106 %/ 230VAC 106 %//100VAC Constant current limiting, recovers automatically after fault condition is removed	P
2	OVER VOLTAGE PROTECTION	V1: 18V~ 21V	I/P: 305VAC I/P: 230 VAC I/P: 90 VAC O/P:MIN LOAD Ta:25°C	19.62 V/ 305VAC 19.62 V/ 230VAC 19.62 V/ 100VAC Shut down o/p voltage with auto recovery or re-power on to recovery	P
3	OVER TEMPERATURE PROTECTION	SPEC: RTH2: 100±10°C O.T.P. NO DAMAGE	I/P: 230 VAC O/P:FULL LOAD	O.T.P. Active Shut down o/p voltage with auto recovery or re-power on to recovery	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 305VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE Hiccup Mode	P

OTHER TEST

NO	TEST ITEM	RESULT
1	POWER FACTOR CHARACTERISTIC CONSTANT CURRENT MODE	CONSTANT CURRENT MODE I/P:230V/110V O/P:100/90/80/70/60% LOAD Ta:25°C  BLUE WIRE=110V ; RED WIRE=230V
2	EFFICIENCY VS LOAD	I/P:230V/110V O/P:100/90/80/70/60/50/40/30/20/10% LOAD Ta:25°C  BLUE WIRE=110V ; RED WIRE=230V

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q5 Rated STF13NM50N 12A/500V	I/P : High-Line +3V = 308V O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue Ta : 25°C	(1) 472 V (2) 448 V (3) 448 V	P
2	Diode Peak Voltage	Q101 Rated 1018EPbF 79A/60V	I/P : High-Line +3V =308V O/P : (1)Full Load Turn on (2)Output Short (3)Full load continue Ta : 25°C	(1) 42 V (2) 17.2 V (3) 40 V	P
		Q102 Rated 1018EPbF 79A/60V	I/P : High-Line +3V = 308 V O/P : (1)Full Load Turn on (2)Output Short (3)Full load continue Ta : 25°C	(1) 40 V (2) 20.8 V (3) 37.6 V	
3	Input Capacitor Voltage	C5 Rated: 100u/450V 5Kh 105°C KXG	I/P : High-Line +3V = 308V O/P : (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta : 25°C	(1) 434.9 V (2) 435.2 V (3) 435.2 V	P
4	Control IC Voltage Test	U 900 Rated L6599AD 8.85V~16V	I/P : High-Line +3V = 308V O/P : (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta : 25°C	(1) 12.518 V (2) 12.456 V (3) 12.449 V	P
5	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated STP21NM60N 17A/600V	I/P : High-Line +3V = 308 V O/P : (1)Full Load Turn on (2)Output Short (3)Full load continue Ta : 25°C	(1) 486 V (2) 448 V (3) 458 V	P

SAFETY & EMC TEST

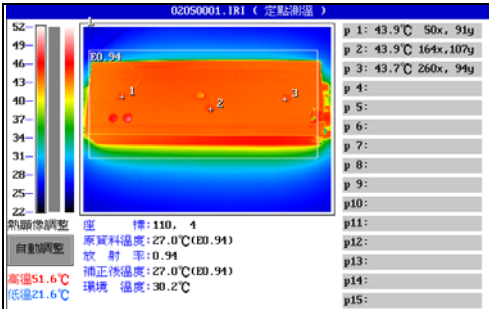
SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	IEC60950-1 I/P-O/P: 3.75KVAC/min<10mA I/P-FG:1.88 KVAC/min<10mA O/P-FG:1.5KVAC/min<10mA	I/P-O/P: 4 KVAC/min I/P-FG: 2.256KVAC/min O/P-FG: 1.8 KVAC/min Ta:25°C	I/P-O/P: 2.615 mA I/P-FG: 2.258 mA O/P-FG: 3.26 mA NO DAMAGE	P
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: 11.3 GΩ I/P-FG: 20 GΩ O/P-FG: 30 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	IEC60950-1 FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	9 mΩ	P
4	LEAKAGE CURRENT	IEC60950-1 < 0.75 mA / 240VAC	I/P: 240 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.2 mA N-FG: 0.2 mA	P
5	APPROVAL	TUV: Certificate NO : E334940 UL: File NO : R50185176			P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A CLASS C CLASS D	I/P: 240VAC/50HZ LOAD:LED/ELECTRONIC LOAD O/P:100%/50% LOAD Ta:25°C	PASS	P
2	CONDUCTION	EN55022 EN55015 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab	P
3	RADIATION	EN55022 EN55015 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	P
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	P
5	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
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	P

Reliability Test

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																																				
1.	THERMO TRACER TEST Before potted (ROOM AMBIENT)	MODEL: HLG-185H-24 TEST CONDITION: 230 VAC FULL LOAD ROOM AMBIENT = 25 °C  <table><tr><th></th><th>Position</th><th>Temp</th></tr><tr><td>P1</td><td>CASE O/P</td><td>43.9°C</td></tr><tr><td>P2</td><td>UP CASE</td><td>43.9°C</td></tr><tr><td>P3</td><td>CASE AC I/P</td><td>43.7°C</td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table>				Position	Temp	P1	CASE O/P	43.9°C	P2	UP CASE	43.9°C	P3	CASE AC I/P	43.7°C																																					p																																																				
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2	TEMPERATURE RISE TEST	MODEL : HLG-185H-12 1. ROOM AMBIENT BURN-IN : 15.5 HRS I/P : 230VAC O/P : FULL LOAD Ta= 29 °C °C 2. HIGH AMBIENT BURN-IN : 7 HRS I/P : 230VAC O/P : FULL LOAD Ta=61.1 °C °C <table><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 29 °C</th><th>HIGH AMBIENT Ta= 61.1 °C</th></tr><tr><td>1</td><td>BD1</td><td>4A/800V GLASS GBU408</td><td>60.0°C</td><td>86.1°C</td></tr><tr><td>2</td><td>Q1</td><td>STP21NM60N 17A/600V TO220</td><td>62.2°C</td><td>87.9°C</td></tr><tr><td>3</td><td>L2</td><td>CK TF1991</td><td>63.8°C</td><td>89.8°C</td></tr><tr><td>4</td><td>Q5</td><td>STF13NM50N 12A/500V TO220F</td><td>64.3°C</td><td>90.1°C</td></tr><tr><td>5</td><td>D2</td><td>YG971S6R 8A/600V TO220F</td><td>68.1°C</td><td>92.5°C</td></tr><tr><td>6</td><td>RTH2</td><td>NTC 330KΩ 3Φ TTC3A334F4573EY 1%</td><td>62.6°C</td><td>88.1°C</td></tr><tr><td>7</td><td>T1</td><td>TF2062</td><td>70.0°C</td><td>95.7°C</td></tr><tr><td>8</td><td>Q101</td><td>IRF1404PbF 202A/40V TO220</td><td>69.1°C</td><td>96.1°C</td></tr><tr><td>9</td><td>D9</td><td>BYV26EGP 1A/1KV DO-204AC</td><td>62.7°C</td><td>88.3°C</td></tr><tr><td>10</td><td>C102</td><td>2200u/16V UL10Kh 12.5*20 ZLH</td><td>63.5°C</td><td>90.6°C</td></tr><tr><td>11</td><td>C201</td><td>47u/50V UL10Kh 6.3*11 YXM</td><td>64.6°C</td><td>91.0°C</td></tr><tr><td>12</td><td>C16</td><td>47u/50V UL10Kh 6.3*11 YXM</td><td>61.6°C</td><td>87.3°C</td></tr><tr><td>13</td><td>C106</td><td>470u/16V UL8Kh 8*11.5 ZLH</td><td>58.6°C</td><td>85.7°C</td></tr><tr><td>14</td><td>C38</td><td>100u/25V UL10Kh 6.3*11 YXM</td><td>63.2°C</td><td>89.0°C</td></tr><tr><td>15</td><td>LF100</td><td>TR891-R1</td><td>62.7°C</td><td>89.8°C</td></tr><tr><td>16</td><td>U900</td><td>L6599AD SO-16N</td><td>62.0°C</td><td>87.6°C</td></tr><tr><td>17</td><td>U1</td><td>NCP1608B SOIC-8</td><td>63.8°C</td><td>89.7°C</td></tr><tr><td>18</td><td>CASE</td><td>UP CASE</td><td>50.5°C</td><td>79.4°C</td></tr><tr><td>19</td><td>C5</td><td>100u/450V 5Kh 105°C 18*35 KXG</td><td>48.2°C</td><td>80.3°C</td></tr></table>			NO	Position	P/N	ROOM AMBIENT Ta= 29 °C	HIGH AMBIENT Ta= 61.1 °C	1	BD1	4A/800V GLASS GBU408	60.0°C	86.1°C	2	Q1	STP21NM60N 17A/600V TO220	62.2°C	87.9°C	3	L2	CK TF1991	63.8°C	89.8°C	4	Q5	STF13NM50N 12A/500V TO220F	64.3°C	90.1°C	5	D2	YG971S6R 8A/600V TO220F	68.1°C	92.5°C	6	RTH2	NTC 330KΩ 3Φ TTC3A334F4573EY 1%	62.6°C	88.1°C	7	T1	TF2062	70.0°C	95.7°C	8	Q101	IRF1404PbF 202A/40V TO220	69.1°C	96.1°C	9	D9	BYV26EGP 1A/1KV DO-204AC	62.7°C	88.3°C	10	C102	2200u/16V UL10Kh 12.5*20 ZLH	63.5°C	90.6°C	11	C201	47u/50V UL10Kh 6.3*11 YXM	64.6°C	91.0°C	12	C16	47u/50V UL10Kh 6.3*11 YXM	61.6°C	87.3°C	13	C106	470u/16V UL8Kh 8*11.5 ZLH	58.6°C	85.7°C	14	C38	100u/25V UL10Kh 6.3*11 YXM	63.2°C	89.0°C	15	LF100	TR891-R1	62.7°C	89.8°C	16	U900	L6599AD SO-16N	62.0°C	87.6°C	17	U1	NCP1608B SOIC-8	63.8°C	89.7°C	18	CASE	UP CASE	50.5°C	79.4°C	19	C5	100u/450V 5Kh 105°C 18*35 KXG	48.2°C	80.3°C	p
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3	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 305 VAC O/P : O/P SHORT TEST Ta : 25°C	TEST : OK	P
4	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 305 VAC/100VAC O/P : 95% LOAD Ta= -40 °C	TEST : OK	P
5	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 : 95% LOAD Ta= 60 °C HUMIDITY= 95 %R.H	TEST : OK	P
6	TEMPERATURE COEFFICIENT	± 0.03 %(0~50°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.063%(0~50°C)	P
7	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	P
8.	THERMAL SHOCK TEST	1. Thermal shock Temperature : -35°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 TURN ON/58 SEC;TURN OFF/2 SEC.		OK	P
9	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	P
10	CAPACITOR LIFE CYCLE	HLG-185H-12:SUPPOSE C102 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= 60 °C LIFE TIME		(1) 286548.9 HRS (2) 35833.9 HRS	P
11	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE : 192.2K HRS		OK	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2010/3/3	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2010/5/10	PRODUCT SAMPLE	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023