



### ■ Features :

- Universal AC input / Full range (up to 305VAC)
- Built-in active PFC function
- Protections: Short circuit / Over current / Over voltage / Over temperature
- Cooling by free air convection
- Output constant current level adjustable
- Class 2 power unit
- Three in one dimming function (1~10Vdc or PWM signal or resistance)
- Suitable for built in LED lighting system
- Suitable for dry / damp locations
- 100% full load burn-in test
- 3 years warranty

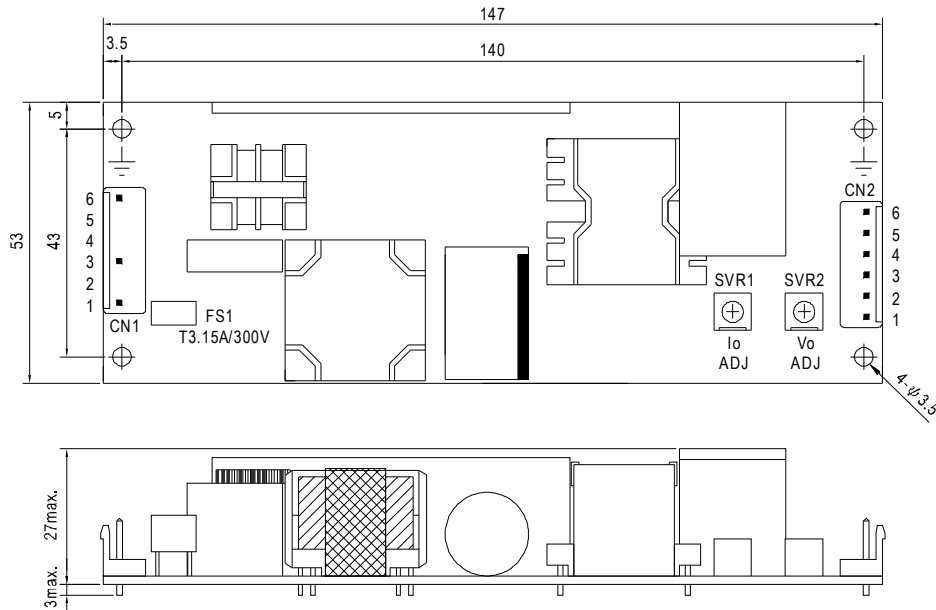


### SPECIFICATION

MODEL	HLP-60H-15	HLP-60H-20	HLP-60H-24	HLP-60H-30	HLP-60H-36	HLP-60H-42	HLP-60H-48	HLP-60H-54									
OUTPUT	DC VOLTAGE	15V	20V	24V	30V	36V	42V	48V	54V								
	CONSTANT CURRENT REGION Note.4	9 ~ 15V	12 ~ 20V	14.4 ~ 24V	18 ~ 30V	21.6 ~ 36V	25.2 ~ 42V	28.8 ~ 48V	32.4 ~ 54V								
	RATED CURRENT	4A	3A	2.5A	2A	1.7A	1.45A	1.3A	1.15A								
	RATED POWER	60W	60W	60W	60W	61.2W	60.9W	62.4W	62.1W								
	RIPPLE & NOISE (max.) Note.2	150mVp-p	150mVp-p	150mVp-p	200mVp-p	200mVp-p	300mVp-p	300mVp-p	300mVp-p								
	VOLTAGE ADJ. RANGE	13.5 ~ 17V	17 ~ 22V	22 ~ 27V	27 ~ 33V	33 ~ 40V	40 ~ 46V	44 ~ 53V	49 ~ 58V								
	CURRENT ADJ. RANGE	Can be adjusted by internal potentiometer															
		2.4 ~ 4A	1.8 ~ 3A	1.5 ~ 2.5A	1.2 ~ 2A	1 ~ 1.7A	0.87 ~ 1.45A	0.78 ~ 1.3A	0.69 ~ 1.15A								
	VOLTAGE TOLERANCE Note.3	± 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%								
LOAD REGULATION	± 1.5%	± 1.0%	± 0.5%	± 0.5%	± 0.5%	± 0.5%	± 0.5%	± 0.5%									
SETUP, RISE TIME Note.6	500ms, 80ms at full load 230VAC /115VAC																
HOLD UP TIME (Typ.)	16ms/230VAC 16ms/115VAC at full load																
INPUT	VOLTAGE RANGE Note.5	90 ~ 305VAC		127 ~ 431VDC													
	FREQUENCY RANGE	47 ~ 63Hz															
	POWER FACTOR (Typ.)	PF>0.98/115VAC, PF>0.95/230VAC, PF>0.92/277VAC at full load (Please refer to "Power Factor Characteristic" curve)															
	EFFICIENCY (Typ.)	88%	89%	89.5%	90%	90%	90%	90.5%	90.5%								
	AC CURRENT (Typ.)	0.64A / 115VAC		0.32A / 230VAC		0.3A / 277VAC											
	INRUSH CURRENT (Typ.)	COLD START 55A(twidth=265µs measured at 50% Ipeak) at 230VAC															
	LEAKAGE CURRENT	<0.75mA / 277VAC															
PROTECTION	OVER CURRENT Note.4	95 ~ 108%															
	SHORT CIRCUIT	Protection type : Constant current limiting, recovers automatically after fault condition is removed															
	OVER VOLTAGE	18 ~ 24V		23 ~ 30V		28 ~ 35V		35 ~ 43V		41 ~ 49V		48 ~ 58V		54 ~ 65V		59 ~ 68V	
	OVER TEMPERATURE	Protection type : Shut down o/p voltage, re-power on to recover															
ENVIRONMENT	WORKING TEMP.	-40 ~ +70°C (Refer to "Derating Curve")															
	WORKING HUMIDITY	20 ~ 95% RH non-condensing															
	STORAGE TEMP., HUMIDITY	-40 ~ +80°C, 10 ~ 95% RH															
	TEMP. COEFFICIENT	± 0.03%/°C (0 ~ 50°C)															
	VIBRATION	10 ~ 500Hz, 2G 12min./1cycle, period for 72min. each along X, Y, Z axes															
SAFETY & EMC	SAFETY STANDARDS	UL8750, CSA C22.2 No. 250.0-08 (except for 48V, 54V), EN61347-1, EN61347-2-13 approved ; design refer to UL60950-1, TUV EN60950-1, EN60335-1															
	WITHSTAND VOLTAGE	I/P-O/P:3.75KVAC			I/P-FG:2KVAC			O/P-FG:0.5KVAC									
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH															
	EMC EMISSION	Compliance to EN55015, EN61000-3-2 Class C (≥60% load) ; EN61000-3-3															
	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; EN61547, EN55024, light industry level (surge 4KV), criteria A															
OTHERS	MTBF	288.5K hrs min. MIL-HDBK-217F (25°C)															
	DIMENSION	147*53*27mm (L*W*H)															
	PACKING	0.2Kg;72pcs/15.4Kg/1.09CUFT															
NOTE	<ol style="list-style-type: none"> <li>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</li> <li>2. Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf &amp; 47uf parallel capacitor.</li> <li>3. Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>4. Please refer to "DRIVING METHODS OF LED MODULE".</li> <li>5. Derating may be needed under low input voltages. Please check the static characteristics for more details.</li> <li>6. 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.</li> <li>7. 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.</li> <li>8. Direct connecting to LEDs is suggested, but is not suitable for using additional drivers.</li> <li>9. To fulfill requirements of the latest ErP regulation for lighting fixtures, this LED power supply can only be used behind a switch without permanently connected to the mains.</li> </ol>																

### Mechanical Specification

Unit:mm



AC Input Connector (CN1) : JST B6P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	AC/L	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2,4,5	No Pin		
3	AC/N		
6	FG $\perp$		

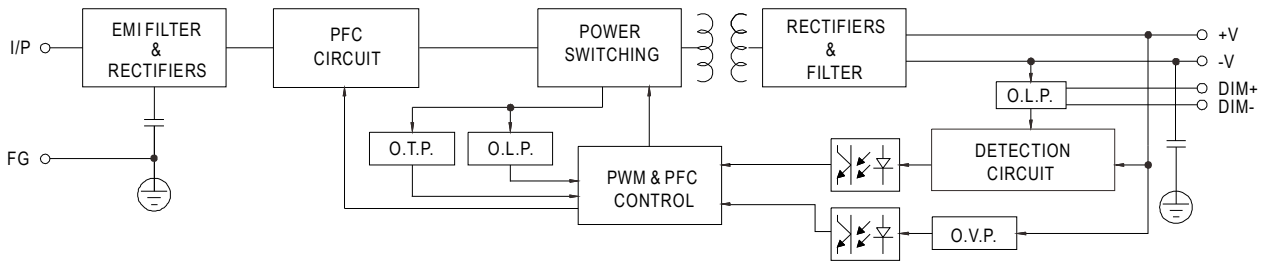
DC Output Connector (CN2) : JST B6P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	DIM+	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2	DIM-		
3,4	-V		
5,6	+V		

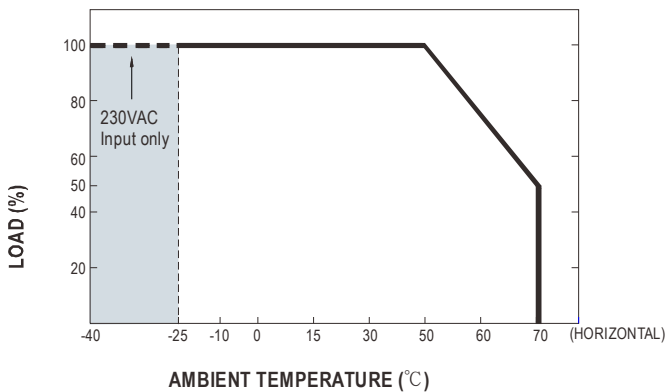
$\perp$  : Grounding required

### Block Diagram

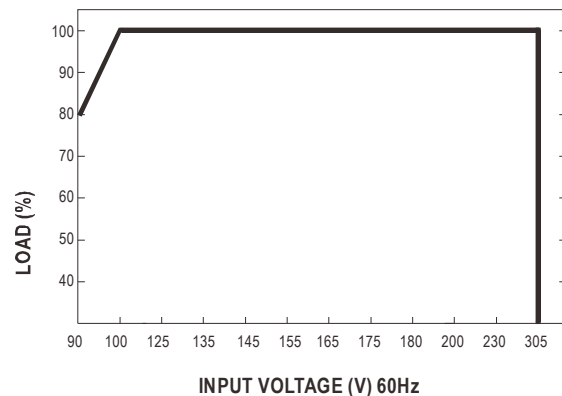
fosc : 100KHz



### Derating Curve

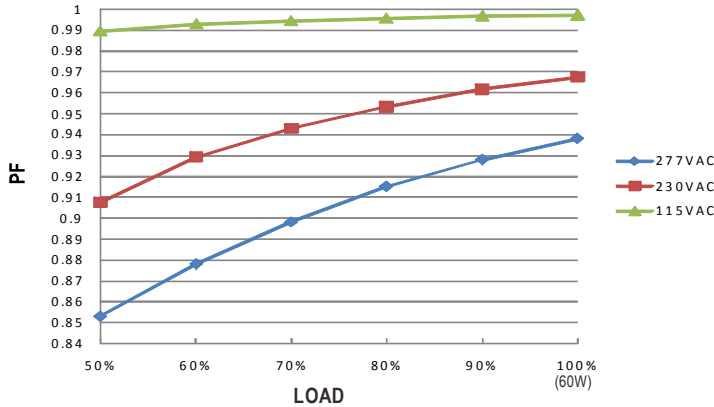


### Static Characteristics



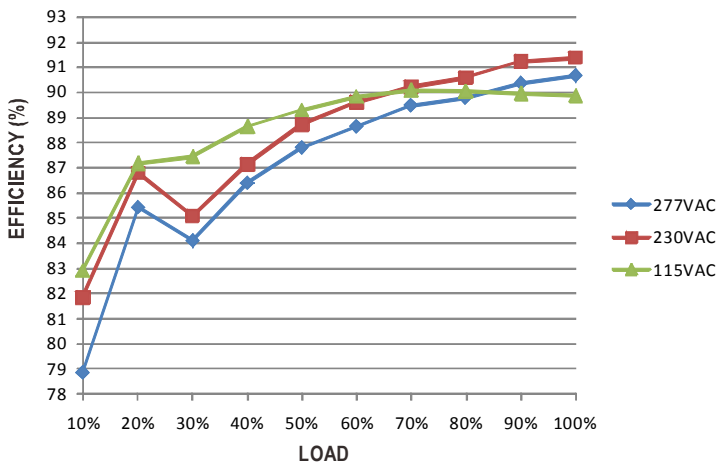
### Power Factor Characteristic

Constant Current Mode



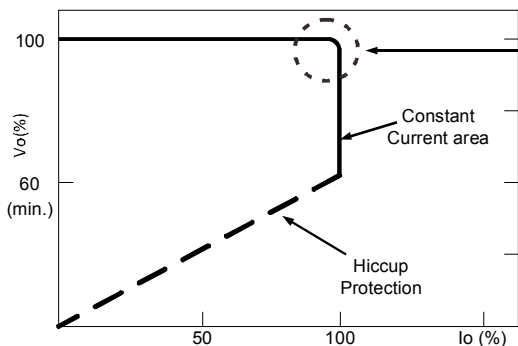
### EFFICIENCY vs LOAD (48V Model)

HLP-60H series possess superior working efficiency that up to 90.5% can be reached in field applications.



### DRIVING METHODS OF LED MODULE

This LED power supply is suggested to work in constant current mode area (CC) to drive the LEDs.

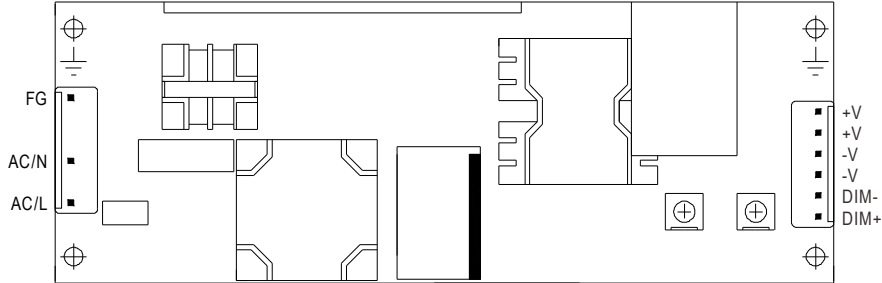


In the constant current region, the highest voltage at the output of the driver depends on the configuration of the end systems.

Should there be any compatibility issues, please contact MEAN WELL.

Typical LED power supply I-V curve

**■ DIMMING OPERATION**



※ Output constant current level can be adjusted through output connector by 1~10VDC, PWM signal, or connecting a resistance between DIM+ and DIM-.

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

※ Reference resistance value for output current adjustment (Typical)

Resistance value	Single driver	10K Ω	20K Ω	30K Ω	40K Ω	50K Ω	60K Ω	70K Ω	80K Ω	90K Ω	100K Ω	OPEN
	Multiple drivers (N=driver quantity for synchronized dimming operation)	10K Ω/N	20K Ω/N	30K Ω/N	40K Ω/N	50K Ω/N	60K Ω/N	70K Ω/N	80K Ω/N	90K Ω/N	100K Ω/N	----
Percentage of rated current		10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	95%~108%

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

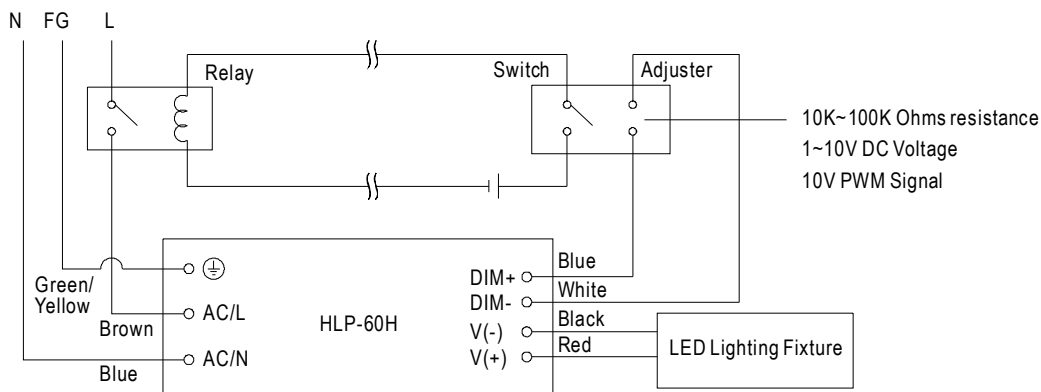
Dimming value	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V	OPEN
Percentage of rated current	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	95%~108%

※ 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%	95%~108%

※Using the built-in dimming function 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 connector by connecting a resistance or 1~10Vdc or 10V PWM signal between DIM+ and DIM-.
2. The LED lighting fixture can be turned ON/OFF by the switch.