



## ■ 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
- OCP point adjustable through output cable or internal potentiometer
- Fully isolated plastic case with IP64 level
- Class 2 power unit
- Three in one dimming function (1~10Vdc or PWM signal or resistance)
- Suitable for LED lighting and moving sign applications
- Compliance to worldwide safety regulations for lighting
- Suitable for dry / damp locations or outdoor application
- 3 years warranty



HLN-60H-15 [A] A : IP64 rated. Output voltage and constant current level can be adjusted through internal potentiometer.  
 B : IP64 rated. Constant current level adjustable through output cable with 1~10Vdc or 10V PWM signal or resistance.

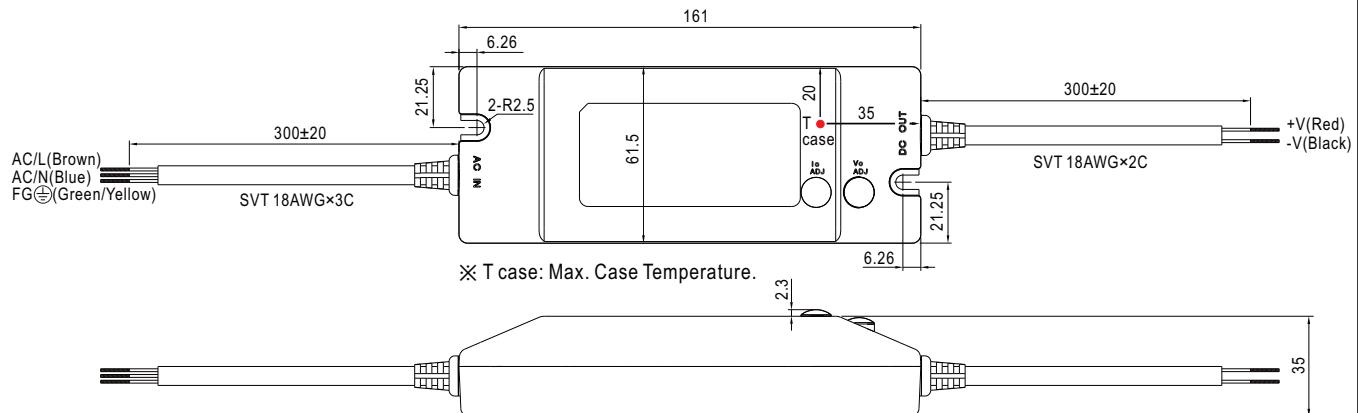
## SPECIFICATION

MODEL	HLN-60H-15	HLN-60H-20	HLN-60H-24	HLN-60H-30	HLN-60H-36	HLN-60H-42	HLN-60H-48	HLN-60H-54
OUTPUT	<b>DC VOLTAGE</b>	15V	20V	24V	30V	36V	42V	48V
	<b>CONSTANT CURRENT REGION Note.4</b>	9 ~ 15V	12 ~ 20V	14.4 ~ 24V	18 ~ 30V	21.6 ~ 36V	25.2 ~ 42V	28.8 ~ 48V
	<b>RATED CURRENT</b>	4A	3A	2.5A	2A	1.7A	1.45A	1.3A
	<b>RATED POWER</b>	60W	60W	60W	60W	61.2W	60.9W	62.4W
	<b>RIPPLE &amp; NOISE (max.) Note.2</b>	150mVp-p	150mVp-p	150mVp-p	200mVp-p	200mVp-p	300mVp-p	300mVp-p
	<b>VOLTAGE ADJ. RANGE Note.6</b>	13.5 ~ 17V	17 ~ 22V	22 ~ 27V	27 ~ 33V	33 ~ 40V	40 ~ 46V	44 ~ 53V
	<b>CURRENT ADJ. RANGE</b>	Can be adjusted by internal potentiometer A type only						
		2.4 ~ 4A	1.8 ~ 3A	1.5 ~ 2.5A	1.2 ~ 2A	1 ~ 1.7A	0.87 ~ 1.45A	0.78 ~ 1.3A
	<b>VOLTAGE TOLERANCE Note.3</b>	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	<b>LINE REGULATION</b>	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
INPUT	<b>LOAD REGULATION</b>	±1.5%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	<b>SETUP, RISE TIME Note.7</b>	500ms, 80ms at full load 230VAC / 115VAC						
	<b>HOLD UP TIME (Typ.)</b>	16ms/230VAC 16ms/115VAC at full load						
	<b>VOLTAGE RANGE Note.5</b>	90 ~ 305VAC 127 ~ 431VDC						
	<b>FREQUENCY RANGE</b>	47 ~ 63Hz						
	<b>POWER FACTOR (Typ.)</b>	PF>0.98/115VAC, PF>0.95/230VAC, PF>0.92/277VAC at full load (Please refer to "Power Factor Characteristic" curve)						
	<b>EFFICIENCY (Typ.)</b>	87%	88.5%	89%	89.5%	90%	90%	90.5%
	<b>AC CURRENT (Typ.)</b>	0.64A / 115VAC	0.32A / 230VAC	0.3A / 277VAC				
	<b>INRUSH CURRENT(Typ.)</b>	COLD START 55A(twidth=265μs measured at 50% Ipeak) at 230VAC						
	<b>LEAKAGE CURRENT</b>	<0.75mA / 277VAC						
PROTECTION	<b>OVER CURRENT Note.4</b>	95 ~ 108%						
		Protection type : Constant current limiting, recovers automatically after fault condition is removed						
	<b>SHORT CIRCUIT</b>	Hiccup mode, recovers automatically after fault condition is removed						
	<b>OVER VOLTAGE</b>	18 ~ 24V	23 ~ 30V	28 ~ 35V	35 ~ 43V	41 ~ 49V	48 ~ 58V	54 ~ 65V
ENVIRONMENT	<b>OVER TEMPERATURE</b>	Protection type : Shut down o/p voltage, re-power on to recover						
	<b>WORKING TEMP.</b>	-40 ~ +50°C (Refer to "Derating Curve")						
	<b>WORKING HUMIDITY</b>	20 ~ 95% RH non-condensing						
	<b>STORAGE TEMP., HUMIDITY</b>	-40 ~ +80°C, 10 ~ 95% RH						
	<b>TEMP. COEFFICIENT</b>	±0.03%/°C (0 ~ 40°C)						
SAFETY & EMC	<b>VIBRATION</b>	10 ~ 500Hz, 2G 12min./1cycle, period for 72min. each along X, Y, Z axes						
	<b>SAFETY STANDARDS</b>	UL8750, CSA C22.2 No. 250.0-08 (except for 48V, 54V), EN61347-1, EN61347-2-13 independent, IP64, J61347-1, J61347-2-13 approved ; design refer to UL60950-1, TUV EN60950-1, EN60335-1						
	<b>WITHSTAND VOLTAGE</b>	I/P-O/P:3.75KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC						
	<b>ISOLATION RESISTANCE</b>	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH						
	<b>EMC EMISSION</b>	Compliance to EN55015, EN61000-3-2 Class C (≥60% load) ; EN61000-3-3						
OTHERS	<b>EMC IMMUNITY</b>	Compliance to EN61000-4-2,3,4,5,6,8,11; EN61547, EN55024, light industry level (surge 4KV), criteria A						
	<b>MTBF</b>	338Khrs min. MIL-HDBK-217F (25°C)						
	<b>DIMENSION</b>	161*61.5*35mm (L*W*H)						
NOTE	<b>PACKING</b>	0.46Kg;32pcs/15.7Kg/1.10CUFT						
	1.	All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C 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.	Please refer to "DRIVING METHODS OF LED MODULE".						
	5.	Derating may be needed under low input voltages. Please check the static characteristics for more details.						
	6.	A type only.						
	7.	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.						
	8.	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.						
	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.						

## ■ Mechanical Specification

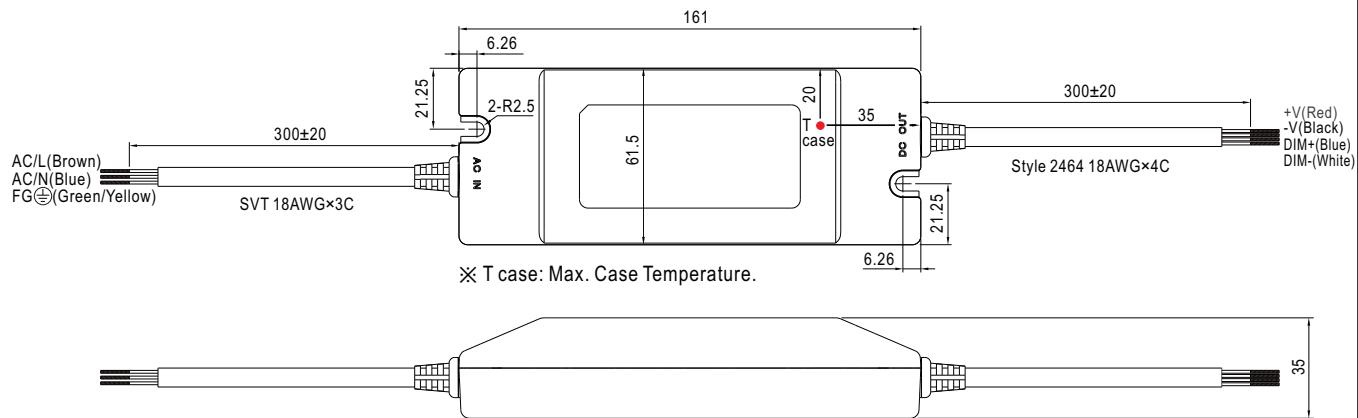
Case No.HLN-60A Unit:mm

## A Type:(HLN-60H-\_A)

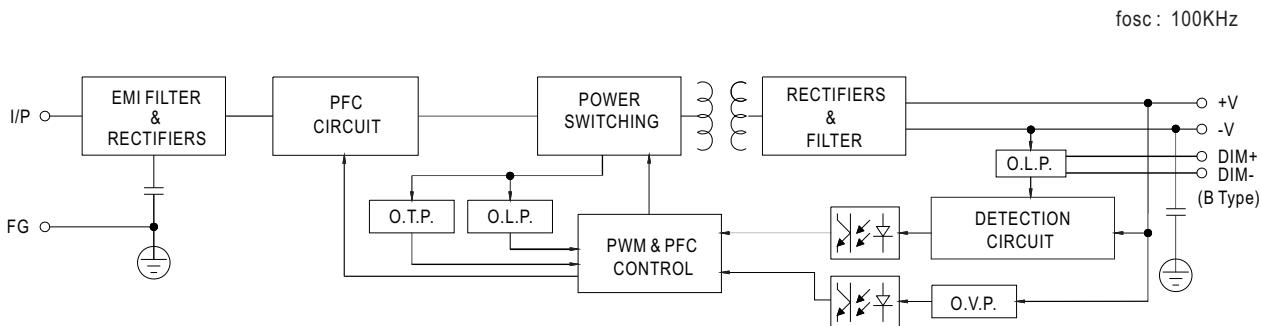


※IP64 rated. Output voltage and constant current level can be adjusted through internal potentiometer.  
(can access by removing the rubber stopper on the case).

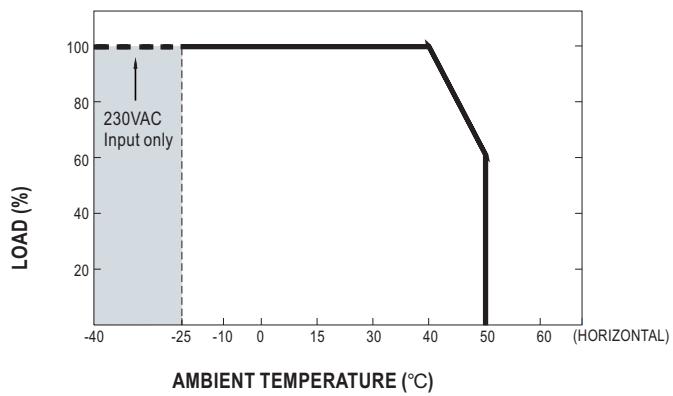
## B Type:(HLN-60H-\_B)



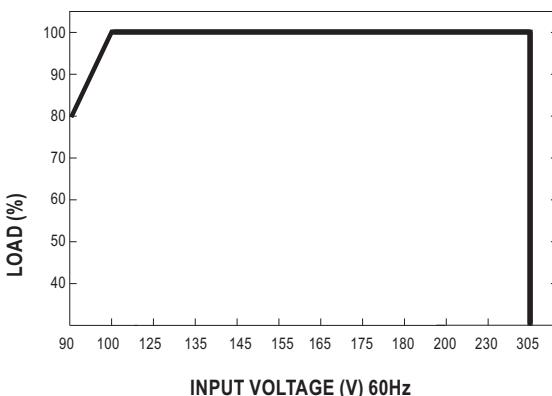
## ■ Block Diagram



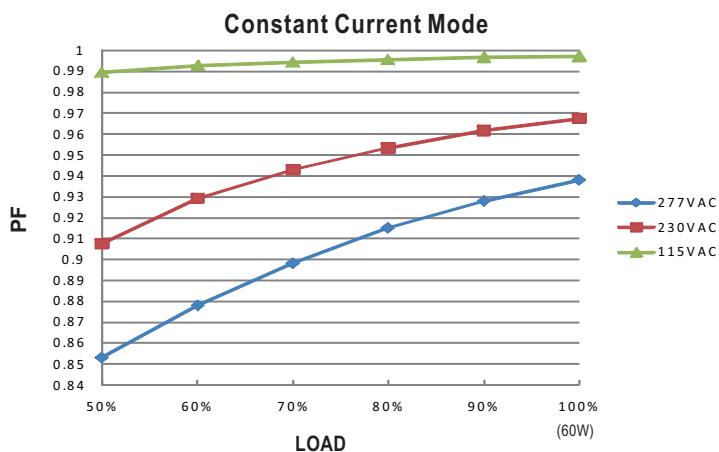
## ■ Derating Curve



## ■ Static Characteristics

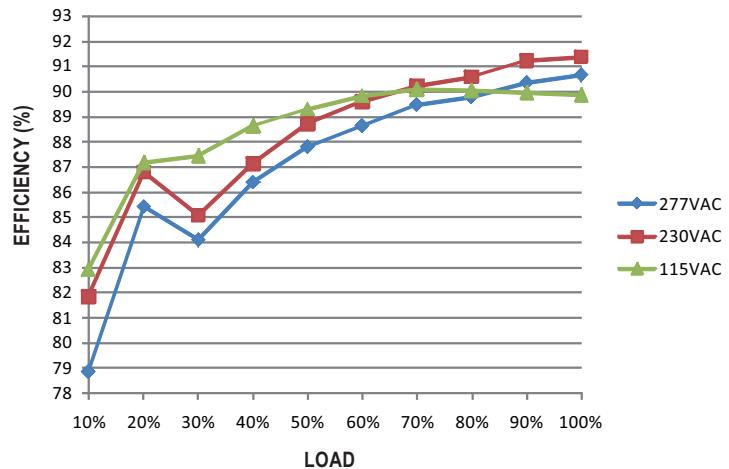


## ■ Power Factor Characteristic



## ■ EFFICIENCY vs LOAD (48V Model)

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

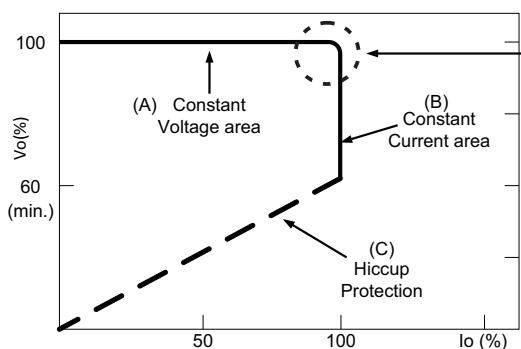


### ■ DRIVING METHODS OF LED MODULE

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).

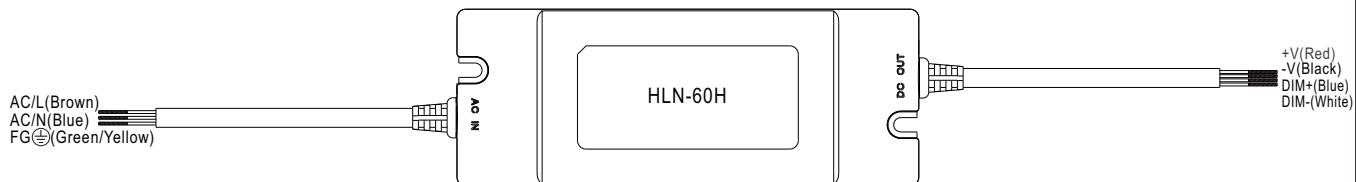


In the constant current region, the highest voltage at the output of the driver depends on the configuration of the end systems.

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

Typical LED power supply I-V curve

### ■ DIMMING OPERATION(for B-type only)



※ Built-in 3 in 1 dimming function, IP64 rated. Output constant current level can be adjusted through output cable by connecting a resistance 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	Single driver	10KΩ	20KΩ	30KΩ	40KΩ	50KΩ	60KΩ	70KΩ	80KΩ	90KΩ	100KΩ	OPEN
Multiple drivers (N=driver quantity for synchronized dimming operation)	10KΩ/N	20KΩ/N	30KΩ/N	40KΩ/N	50KΩ/N	60KΩ/N	70KΩ/N	80KΩ/N	90KΩ/N	100KΩ/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%

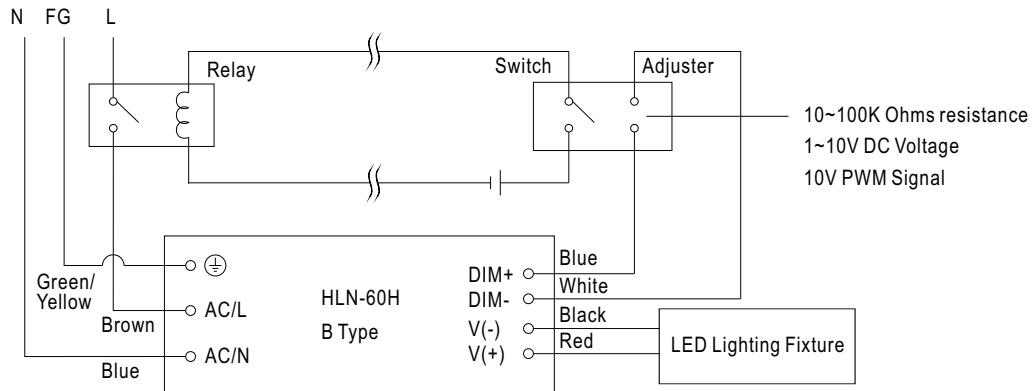
※ 10V PWM signal for output current adjustment (Typical): Frequency range:100Hz ~ 3KHz

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 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.

※Direct connecting to LEDs is suggested, but is not suitable for using additional drivers.

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 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.

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