



## ■ 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
- IP64 design for indoor or outdoor installations
- 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

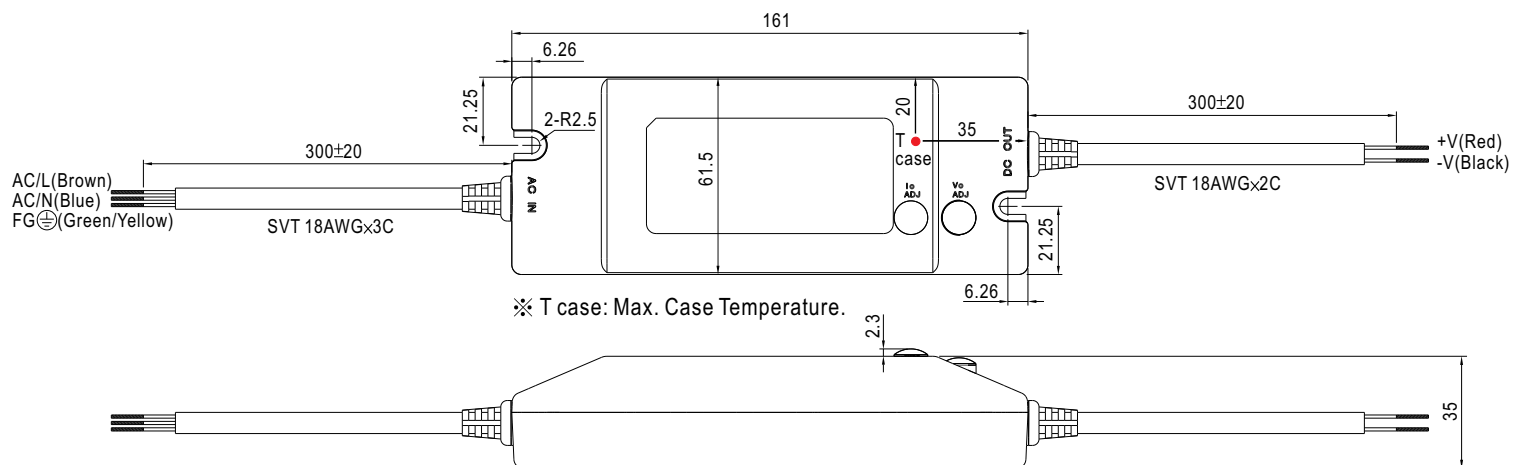
| MODEL                                  |                                                                            | HLN-60H-15                                                                                                                                                                            | HLN-60H-20 | HLN-60H-24     | HLN-60H-30 | HLN-60H-36    | HLN-60H-42   | HLN-60H-48  | HLN-60H-54   |
|----------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------|------------|---------------|--------------|-------------|--------------|
| OUTPUT                                 | DC VOLTAGE                                                                 | 15V                                                                                                                                                                                   | 20V        | 24V            | 30V        | 36V           | 42V          | 48V         | 54V          |
|                                        | CONSTANT CURRENT REGION <small>Note.4</small>                              | 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.) <small>Note.2</small>                                | 150mVp-p                                                                                                                                                                              | 150mVp-p   | 150mVp-p       | 200mVp-p   | 200mVp-p      | 300mVp-p     | 300mVp-p    | 300mVp-p     |
|                                        | VOLTAGE ADJ. RANGE <small>Note.6</small>                                   | 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 or through output cable                                                                                                                     |            |                |            |               |              |             |              |
|                                        |                                                                            | 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 <small>Note.3</small>                                    | ±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 <small>Note.7</small> | 1500ms, 80ms / 115VAC at full load      1000ms, 80ms / 230VAC at full load |                                                                                                                                                                                       |            |                |            |               |              |             |              |
| HOLD UP TIME (Typ.)                    | 16ms/230VAC      16ms/115VAC at full load                                  |                                                                                                                                                                                       |            |                |            |               |              |             |              |
| INPUT                                  | VOLTAGE RANGE <small>Note.5</small>                                        | 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.)                                                          | 87%                                                                                                                                                                                   | 88.5%      | 89%            | 89.5%      | 90%           | 90%          | 90.5%       | 90.5%        |
|                                        | AC CURRENT (Typ.)                                                          | 0.64A / 115VAC                                                                                                                                                                        |            | 0.32A / 230VAC |            | 0.3A / 277VAC |              |             |              |
|                                        | INRUSH CURRENT(Typ.)                                                       | COLD START 70A/230VAC                                                                                                                                                                 |            |                |            |               |              |             |              |
|                                        | LEAKAGE CURRENT                                                            | <0.75mA / 277VAC                                                                                                                                                                      |            |                |            |               |              |             |              |
| PROTECTION                             | OVER CURRENT <small>Note.4</small>                                         | 95 ~ 108%<br>Protection type : Constant current limiting, recovers automatically after fault condition is removed                                                                     |            |                |            |               |              |             |              |
|                                        | SHORT CIRCUIT                                                              | Hiccup mode, recovers automatically after fault condition is removed                                                                                                                  |            |                |            |               |              |             |              |
|                                        | OVER VOLTAGE                                                               | 18 ~ 24V                                                                                                                                                                              | 23 ~ 30V   | 28 ~ 35V       | 35 ~ 43V   | 41 ~ 49V      | 48 ~ 58V     | 54 ~ 63V    | 59 ~ 68V     |
|                                        |                                                                            | Protection type : Shut down o/p voltage, re-power on to recover                                                                                                                       |            |                |            |               |              |             |              |
|                                        | OVER TEMPERATURE                                                           | 95℃ ±10℃ (RTH2)<br>Protection type : Shut down o/p voltage, re-power on to recover                                                                                                    |            |                |            |               |              |             |              |
| ENVIRONMENT                            | WORKING TEMP.                                                              | -40 ~ +50℃ (Refer to "Derating Curve")                                                                                                                                                |            |                |            |               |              |             |              |
|                                        | WORKING HUMIDITY                                                           | 20 ~ 95% RH non-condensing                                                                                                                                                            |            |                |            |               |              |             |              |
|                                        | STORAGE TEMP., HUMIDITY                                                    | -40 ~ +80℃, 10 ~ 95% RH                                                                                                                                                               |            |                |            |               |              |             |              |
|                                        | TEMP. COEFFICIENT                                                          | ±0.03%/℃ (0 ~ 40℃)                                                                                                                                                                    |            |                |            |               |              |             |              |
|                                        | 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 independent, IP64, J61347-1, J61347-2-13 approved ; design refer to UL60950-1, TUV EN60950-1, EN60335-1 |            |                |            |               |              |             |              |
|                                        | 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                                                                                                                             |            |                |            |               |              |             |              |
|                                        | 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                                                                       | 338Khrs min.    MIL-HDBK-217F (25℃)                                                                                                                                                   |            |                |            |               |              |             |              |
|                                        | DIMENSION                                                                  | 161*61.5*35mm (L*W*H)                                                                                                                                                                 |            |                |            |               |              |             |              |
|                                        | PACKING                                                                    | 0.46Kg;32pcs/15.7Kg/1.10CUFT                                                                                                                                                          |            |                |            |               |              |             |              |

## Mechanical Specification

Case No.HLN-60A

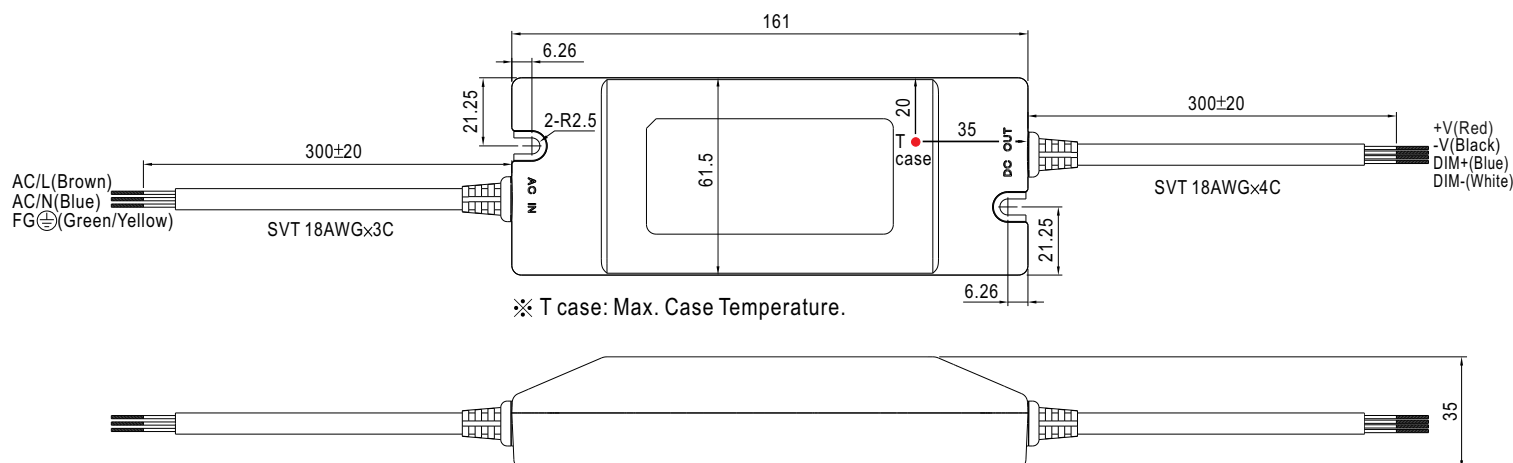
Unit:mm

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



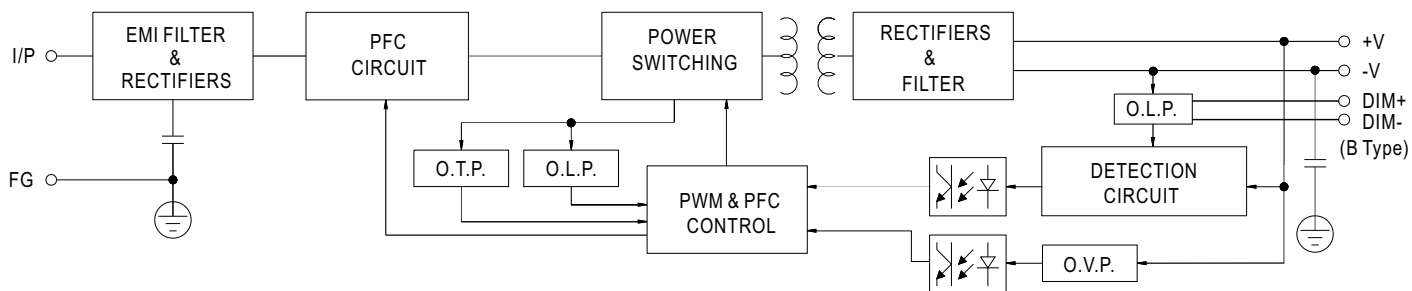
※IP64 rated. Output voltage and constant current level can be adjusted through internal potentiometer.  
(can access by removing the rubber stopper on the case).

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

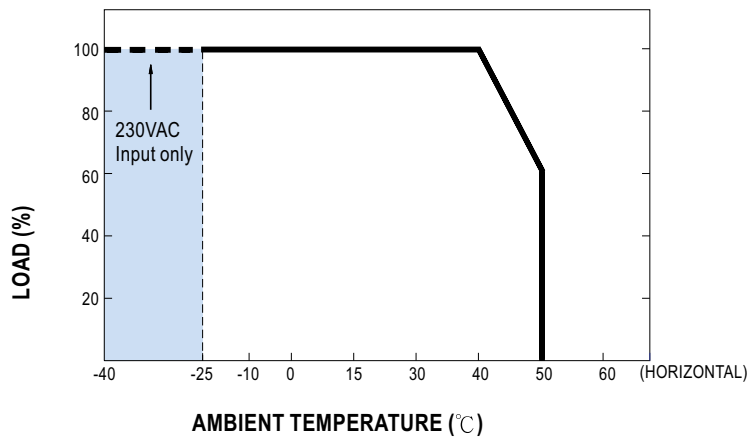


## Block Diagram

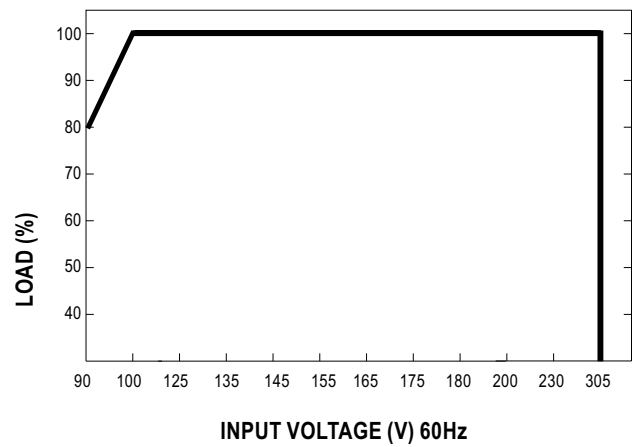
fosc : 100KHz



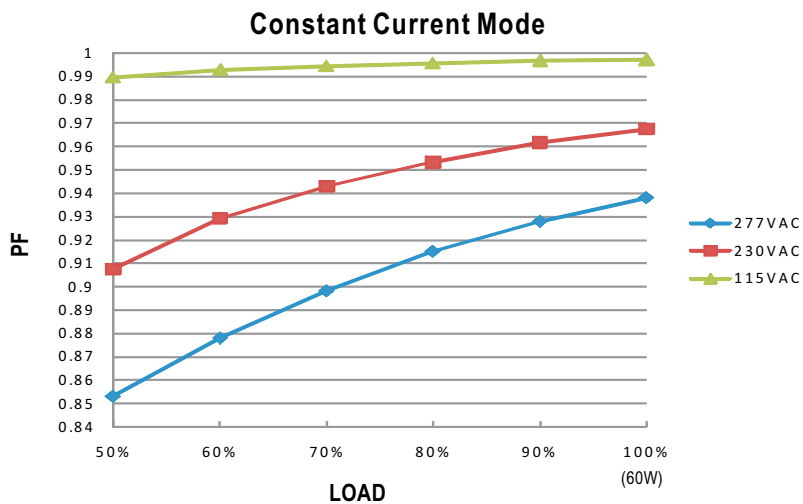
## Derating Curve



## Static Characteristics

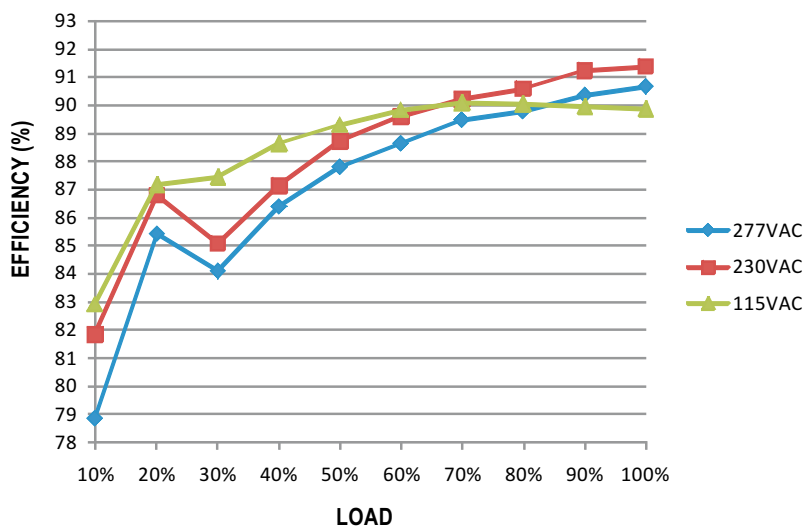


## Power Factor Characteristic



## EFFICIENCY vs LOAD (48V Model)

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

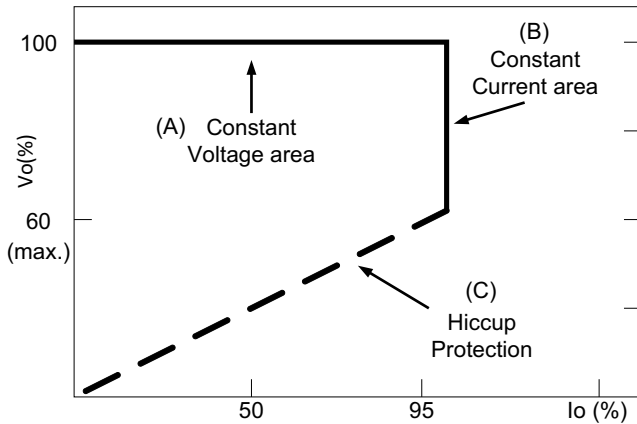


## DRIVING METHODS OF LED MODULE

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

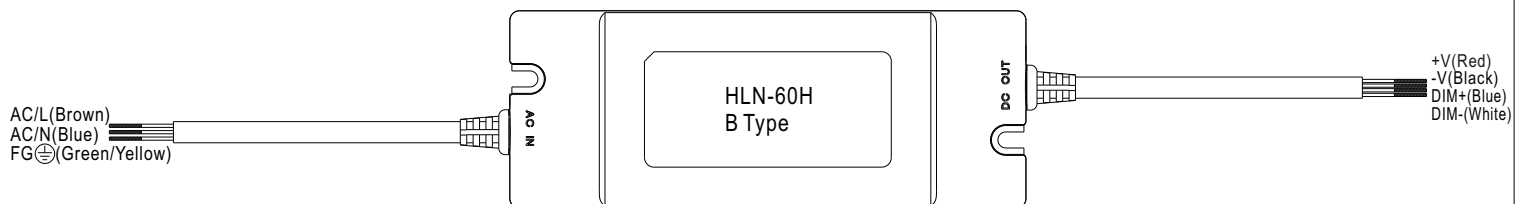
A typical LED power supply may either work in "constant voltage mode (CV) or constant current mode (CC)" to drive the LEDs.

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)).



Typical LED power supply I-V curve

## DIMMING OPERATION(for B-type only)



※  $V_o$  and  $I_o$  can not be adjusted (B type)

※ 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                                                              | 10K $\Omega$    | 20K $\Omega$    | 30K $\Omega$    | 40K $\Omega$    | 50K $\Omega$    | 60K $\Omega$    | 70K $\Omega$    | 80K $\Omega$    | 90K $\Omega$    | 100K $\Omega$    | OPEN     |
|-----------------------------|----------------------------------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|----------|
|                             | Multiple drivers<br>(N=driver quantity for synchronized dimming operation) | 10K $\Omega$ /N | 20K $\Omega$ /N | 30K $\Omega$ /N | 40K $\Omega$ /N | 50K $\Omega$ /N | 60K $\Omega$ /N | 70K $\Omega$ /N | 80K $\Omega$ /N | 90K $\Omega$ /N | 100K $\Omega$ /N | -----    |
| Percentage of rated current |                                                                            | 10%             | 20%             | 30%             | 40%             | 50%             | 60%             | 70%             | 80%             | 90%             | 100%             | 95%~105% |

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

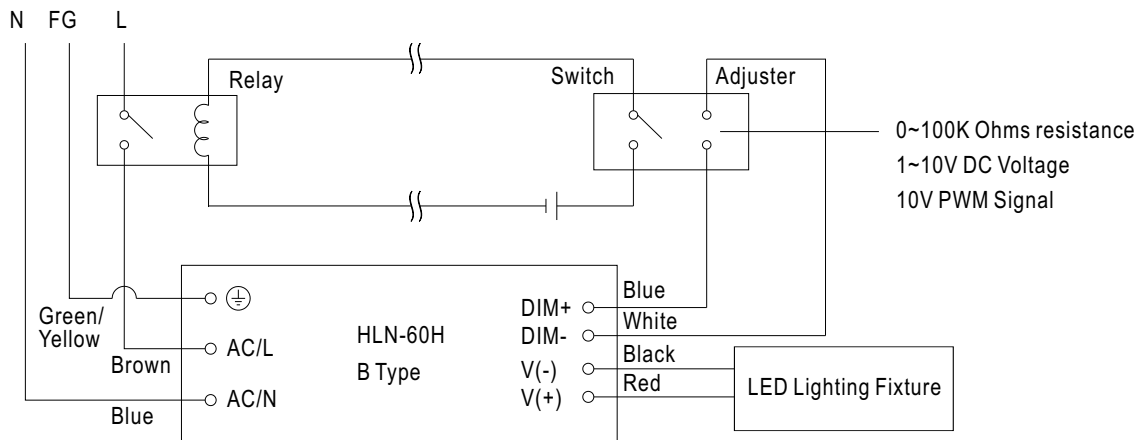
| Dimming value               | 1V  | 2V  | 3V  | 4V  | 5V  | 6V  | 7V  | 8V  | 9V  | 10V  | OPEN     |
|-----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|----------|
| Percentage of rated current | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% | 95%~105% |

※ 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%~105% |

※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 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.