



User's Manual



IP67

(CCC optional)



(for DA2-Type only)



(for DA-Type only)



## Features

- Constant Voltage PWM style output
- Emergency lighting application is available according to IEC61347-2-13
- Built-in active PFC function and class II/2 design
- No load power consumption <0.5W
- Fully encapsulated with IP67 level
- Function: 3 in 1 dimming(dim-to-off); DALI/DALI-2
- Minimum dimming level 0.2% for DALI type
- Typical lifetime>50000 hours and 5 years warranty

## Applications

- LED strip lighting
- Indoor LED lighting
- LED decorative lighting
- LED architecture lighting
- Industrial lighting
- Type “HL” for use in Class I, Division 2 hazardous (Classified) location.

## Description

PWM-60 series is a 60W LED AC/DC LED driver featuring the constant voltage mode with PWM style output, which is able to maintain the brightness homogeneity when driving all kinds of LED strips. PWM-60 operates from 90~305VAC and offers models with different rated voltage ranging between 12V and 48V. Thanks to the high efficiency up to 90%, with the fanless design, the entire series is able to operate for -40℃ ~ +85℃ case temperature under free air convection. The entire series is rated with IP67 ingress protection level and is suitable to work for dry, damp or wet locations. PWM-60 is equipped with dimming function that varies the duty cycle of the output, providing great flexibility for LED strips applications.

## Model Encoding

PWM - 60 - 24 □

Function options

Rated output voltage(12/24/36/48V)

Rated wattage

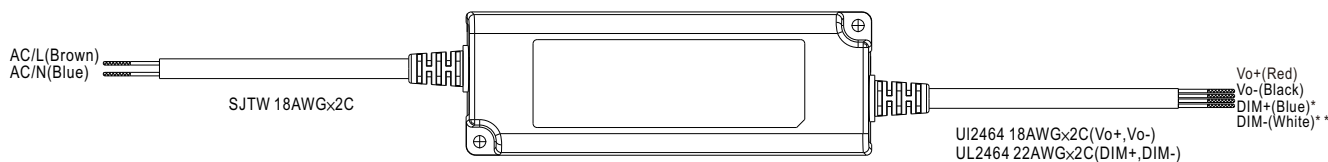
Series name

| Type  | IP Level | Function                                                         | Note     |
|-------|----------|------------------------------------------------------------------|----------|
| Blank | IP67     | 3 in 1 dimming function (0~10Vdc, 10V PWM signal and resistance) | In stock |
| DA    | IP67     | DALI control technology.(for 12V/24V with DA type only )         | In stock |
| DA2   | IP67     | DALI-2 control technology.(for 12V/24V with DA2 type only )      | In stock |

## SPECIFICATION

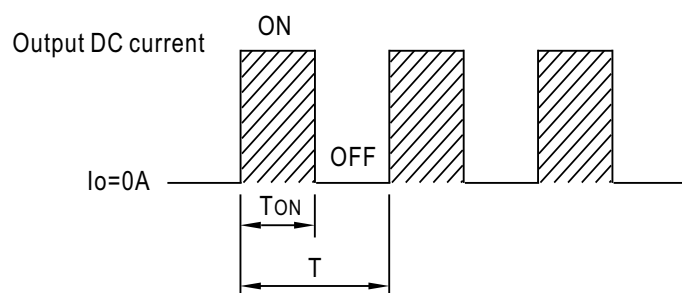
| MODEL        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PWM-60-12□                                                                                                                                                                                                                                                                                                                                                                                       | PWM-60-24□ | PWM-60-36□ | PWM-60-48□ |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|
| OUTPUT       | DC VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 12V                                                                                                                                                                                                                                                                                                                                                                                              | 24V        | 36V        | 48V        |
|              | RATED CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 5A                                                                                                                                                                                                                                                                                                                                                                                               | 2.5A       | 1.67A      | 1.25A      |
|              | RATED POWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 60W                                                                                                                                                                                                                                                                                                                                                                                              | 60W        | 60.12W     | 60W        |
|              | DIMMING RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0 ~ 100%                                                                                                                                                                                                                                                                                                                                                                                         |            |            |            |
|              | PWM FREQUENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1.47kHz for Blank/DA-Type, 2.5kHz for DA2-Type                                                                                                                                                                                                                                                                                                                                                   |            |            |            |
|              | SETUP, RISE TIME <small>Note.2<br/>Note.9</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 500ms, 80ms/ 115AC or 230VAC                                                                                                                                                                                                                                                                                                                                                                     |            |            |            |
|              | HOLD UP TIME (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 16ms/115VAC or 230VAC                                                                                                                                                                                                                                                                                                                                                                            |            |            |            |
| INPUT        | VOLTAGE RANGE <small>Note.3</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 90 ~ 305VAC      127 ~ 431VDC<br>(Please refer to "STATIC CHARACTERISTIC" section)                                                                                                                                                                                                                                                                                                               |            |            |            |
|              | FREQUENCY RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 47 ~ 63Hz                                                                                                                                                                                                                                                                                                                                                                                        |            |            |            |
|              | POWER FACTOR (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | PF>0.97/115VAC, PF>0.95/230VAC, PF>0.92/277VAC @ full load<br>(Please refer to "POWER FACTOR (PF) CHARACTERISTIC" section)                                                                                                                                                                                                                                                                       |            |            |            |
|              | TOTAL HARMONIC DISTORTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | THD< 20%(@load≥60%/115VAC, 230VAC; @load≥75%/277VAC)<br>(Please refer to "TOTAL HARMONIC DISTORTION" section)                                                                                                                                                                                                                                                                                    |            |            |            |
|              | EFFICIENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 86%                                                                                                                                                                                                                                                                                                                                                                                              | 89%        | 90%        | 90%        |
|              | AC CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.8A / 115VAC      0.4A / 230VAC      0.32A / 277VAC                                                                                                                                                                                                                                                                                                                                             |            |            |            |
|              | INRUSH CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | COLD START 50A(twidth=270μs measured at 50% Ipeak) at 230VAC; Per NEMA 410                                                                                                                                                                                                                                                                                                                       |            |            |            |
|              | MAX. NO. of PSUs on 16A CIRCUIT BREAKER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 9 units (circuit breaker of type B) / 16 units (circuit breaker of type C) at 230VAC                                                                                                                                                                                                                                                                                                             |            |            |            |
|              | LEAKAGE CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <0.25mA / 277VAC                                                                                                                                                                                                                                                                                                                                                                                 |            |            |            |
|              | NO LOAD POWER CONSUMPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <0.5W                                                                                                                                                                                                                                                                                                                                                                                            |            |            |            |
| PROTECTION   | OVERLOAD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 108 ~ 130% rated output power<br>Hiccup mode, recovers automatically after fault condition is removed                                                                                                                                                                                                                                                                                            |            |            |            |
|              | SHORT CIRCUIT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Shut down o/p voltage, re-power on to recover(except for DA2-type)<br>Hiccup mode,recovers automatically after fault condition is removed (only for DA2-type)                                                                                                                                                                                                                                    |            |            |            |
|              | OVER VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 15 ~ 17V                                                                                                                                                                                                                                                                                                                                                                                         | 28 ~ 34V   | 41 ~ 46V   | 54 ~ 60V   |
|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Shut down o/p voltage, re-power on to recover                                                                                                                                                                                                                                                                                                                                                    |            |            |            |
|              | OVER TEMPERATURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Shut down o/p voltage, re-power on to recover                                                                                                                                                                                                                                                                                                                                                    |            |            |            |
| ENVIRONMENT  | WORKING TEMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Tcase=-40 ~ +85℃ (Please refer to " OUTPUT LOAD vs TEMPERATURE" section)                                                                                                                                                                                                                                                                                                                         |            |            |            |
|              | MAX. CASE TEMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Tcase=+85℃                                                                                                                                                                                                                                                                                                                                                                                       |            |            |            |
|              | 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 <small>Note.5</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | UL8750( type "HL" )( except for DA-Type), UL879( for 12V,24V Blank Type only), CSA C22.2 No. 250.13-12; ENEC BS EN/EN61347-1, BS EN/EN61347-2-13 independent, BS EN/EN62384, IP67,BIS IS15885(for 12,24, 48 Blank Type only), EAC TP TC 004, GB19510.1,GB19510.14 approved; Design refer to BS EN/EN60335-1; According to BS EN/EN61347 - 2 - 13 appendix J suitable for emergency installations |            |            |            |
|              | DALI STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | IEC62386-101, 102, 207,251 for DA/DA2-Type only,Device type 6(DT6)                                                                                                                                                                                                                                                                                                                               |            |            |            |
|              | WITHSTAND VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | I/P-O/P:3.75KVAC; I/P-DA:1.5KVAC; O/P-DA:1.5KVAC                                                                                                                                                                                                                                                                                                                                                 |            |            |            |
|              | ISOLATION RESISTANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | I/P-O/P:100M Ohms / 500VDC / 25℃ / 70% RH                                                                                                                                                                                                                                                                                                                                                        |            |            |            |
|              | EMC EMISSION <small>Note.6</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Compliance to BS EN/EN55015, BS EN/EN61000-3-2 Class C (@load≥60%) ; BS EN/EN61000-3-3,GB17743 and GB17625.1,EAC TP TC 020                                                                                                                                                                                                                                                                       |            |            |            |
|              | EMC IMMUNITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Compliance to BS EN/EN61000-4-2,3,4,5,6,8,11; BS EN/EN61547, light industry level (surge immunity Line-Line 2KV),EAC TP TC 020                                                                                                                                                                                                                                                                   |            |            |            |
| OTHERS       | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 996K hrs min.      Telcordia SR-332 (Bellcore) ;      271.03K hrs min.      MIL-HDBK-217F (25℃)                                                                                                                                                                                                                                                                                                  |            |            |            |
|              | DIMENSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 150*53*35mm (L*W*H)                                                                                                                                                                                                                                                                                                                                                                              |            |            |            |
|              | PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.49Kg;30pcs/15.7Kg/1.0CUFT                                                                                                                                                                                                                                                                                                                                                                      |            |            |            |
| NOTE         | 1. All parameters NOT specially mentioned are measured at 230VAC input, rated current and 25℃ of ambient temperature.<br>2. De-rating may be needed under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details.<br>3. Length of set up time is measured at first cold start. Turning ON/OFF the driver may lead to increase of the set up time.<br>4. The driver 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.<br>5. This series meets the typical life expectancy of >50,000 hours of operation when Tcase, particularly (Tc) point (or TMP, per DLC), is about 75℃ or less.<br>6. Please refer to the warranty statement on MEAN WELL's website at <a href="http://www.meanwell.com">http://www.meanwell.com</a><br>7. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).<br>8. For any application note and IP water proof function installation caution, please refer our user manual before using.<br><a href="https://www.meanwell.com/Upload/PDF/LED_EN.pdf">https://www.meanwell.com/Upload/PDF/LED_EN.pdf</a><br>9. Based on IEC 62386-101/102 DALI power on timing and interruption regulations, the set up time needs to test with a DALI controller which can support for DALI power on function, otherwise the set up time will be higher than 0.5 second for DA type.<br>※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a> |                                                                                                                                                                                                                                                                                                                                                                                                  |            |            |            |

## DIMMING OPERATION



### ※ Dimming principle for PWM style output

- Dimming is achieved by varying the duty cycle of the output current.



$$\text{Duty cycle(\%)} = \frac{T_{ON}}{T} \times 100\%$$

Output PWM frequency :

1.47kHz for Blank/DA-Type fixed (Typ.)

2.5kHz for DA2-Type fixed (Typ.)

\* DIM+ for Blank-Type  
DA+ for DA/DA2-type

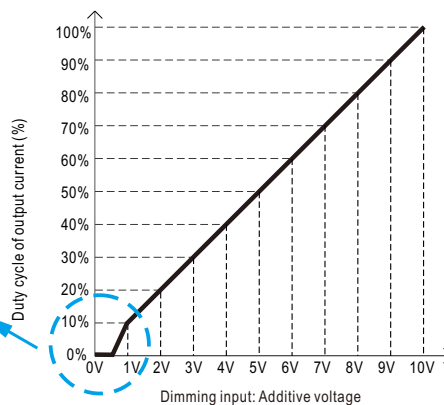
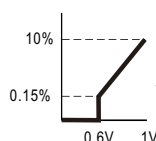
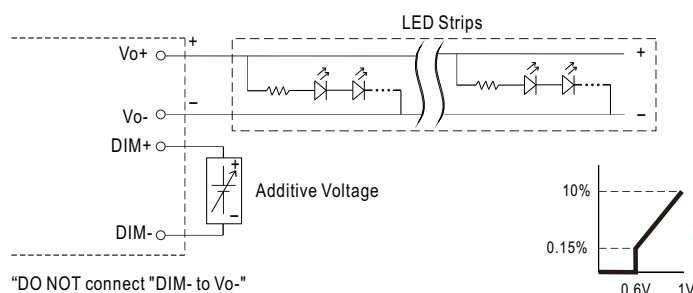
\*\* DIM- for Blank-Type  
DA- for DA/DA2-type

NOTE: DA/DA2 Type is no distinction between "+" and "-" poles

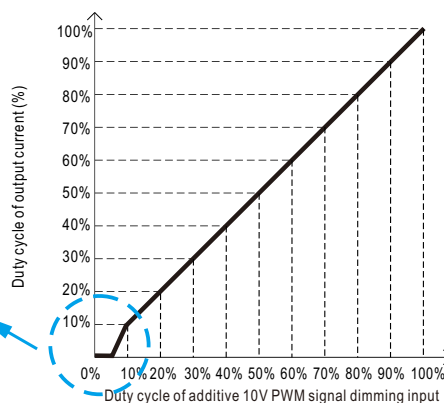
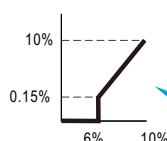
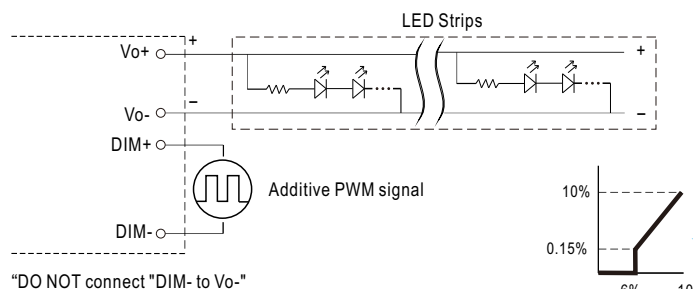
### ※ 3 in 1 dimming function (for Blank-Type)

- Apply one of the three methodologies between DIM+ and DIM-: 0 ~ 10VDC, or 10V PWM signal or resistance.
- Dimming source current from power supply: 100μA (typ.)

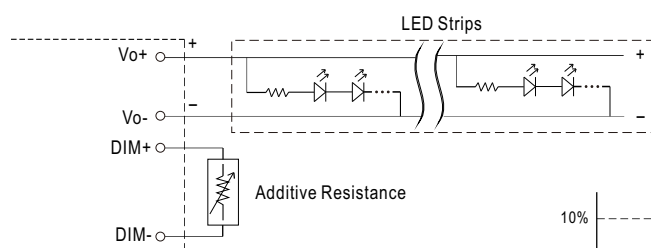
#### ◎ Applying additive 0 ~ 10VDC



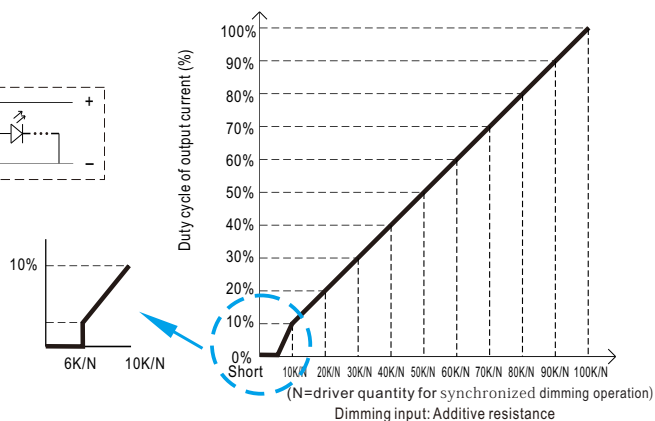
#### ◎ Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):



◎ Applying additive resistance:



"DO NOT connect "DIM-" to Vo-"

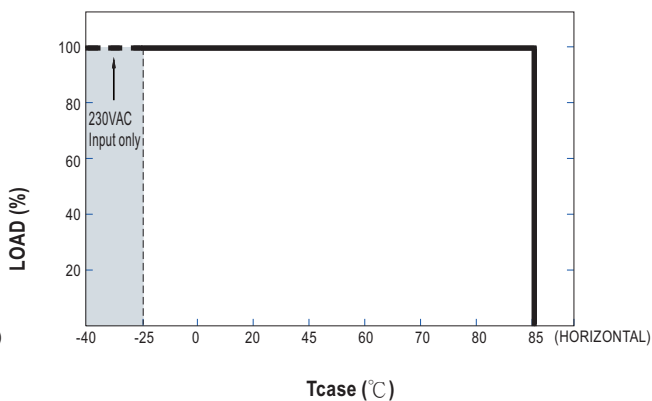
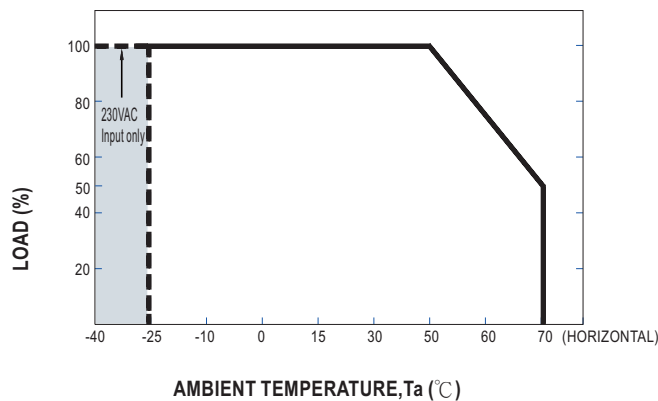


Note : 1. Min. duty cycle of output current is about 6% and the output current is not defined when  $0\% < I_{out} < 6\%$ .  
 2. The duty cycle of output current could drop down to 0% when dimming input is about  $0k\Omega$  or 0Vdc, or 10V PWM signal with 0% duty cycle.

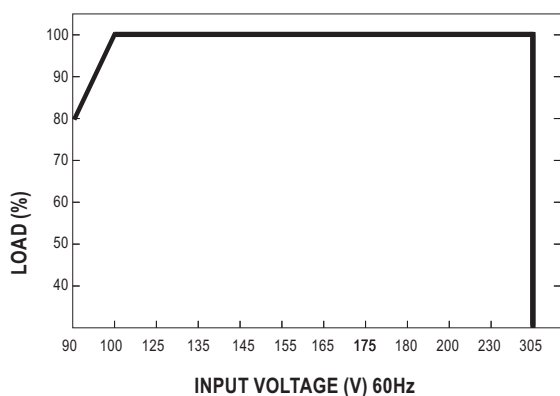
※ DALI Interface (primary side; for DA/DA2-Type)

- Apply DALI signal between DA+ and DA-.
- DALI protocol comprises 16 groups and 64 addresses.
- First step is fixed at 0.2% of output

## OUTPUT LOAD vs TEMPERATURE



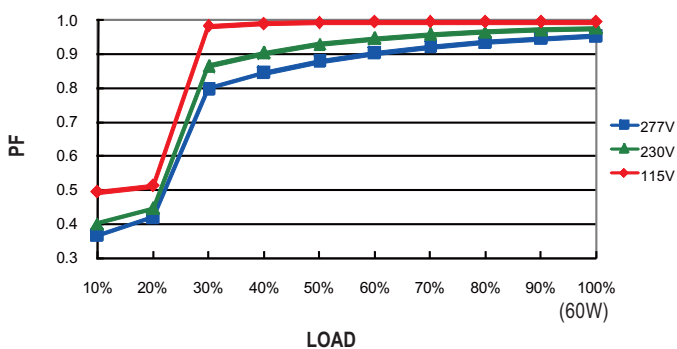
## STATIC CHARACTERISTIC



※ De-rating is needed under low input voltage.

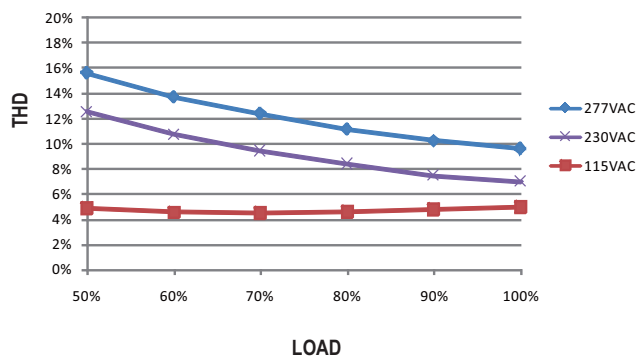
## POWER FACTOR (PF) CHARACTERISTIC

※  $T_{case}$  at 75°C



## TOTAL HARMONIC DISTORTION (THD)

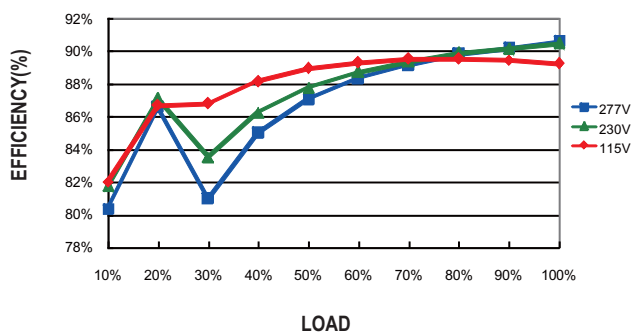
※ 48V Model,  $T_{case}$  at 75°C



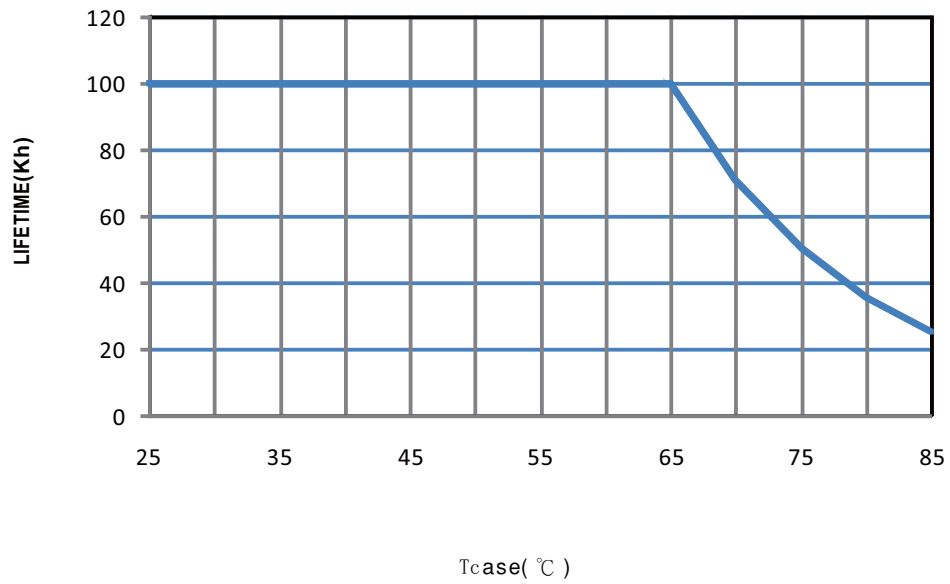
## EFFICIENCY vs LOAD

PWM-60 series possess superior working efficiency that up to 90% can be reached in field applications.

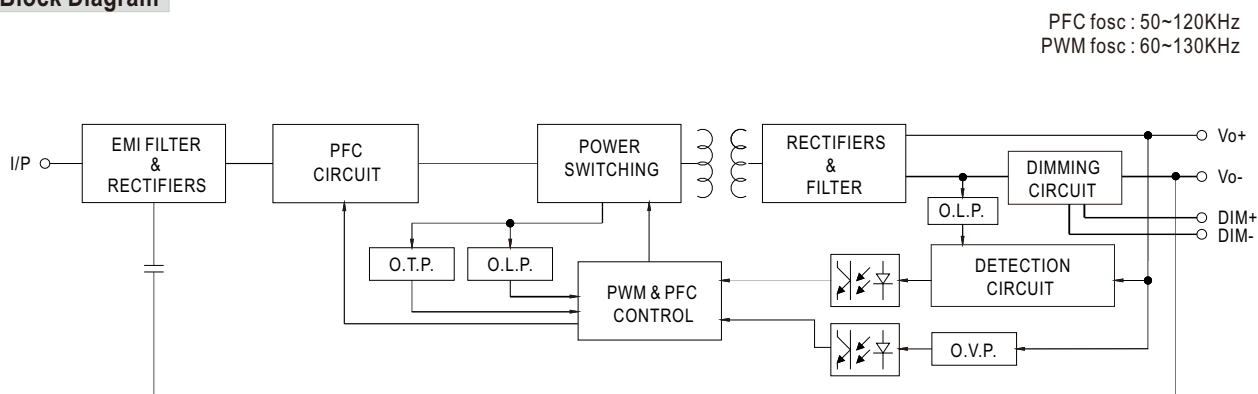
※ 48V Model,  $T_{case}$  at 75°C



■ LIFE TIME

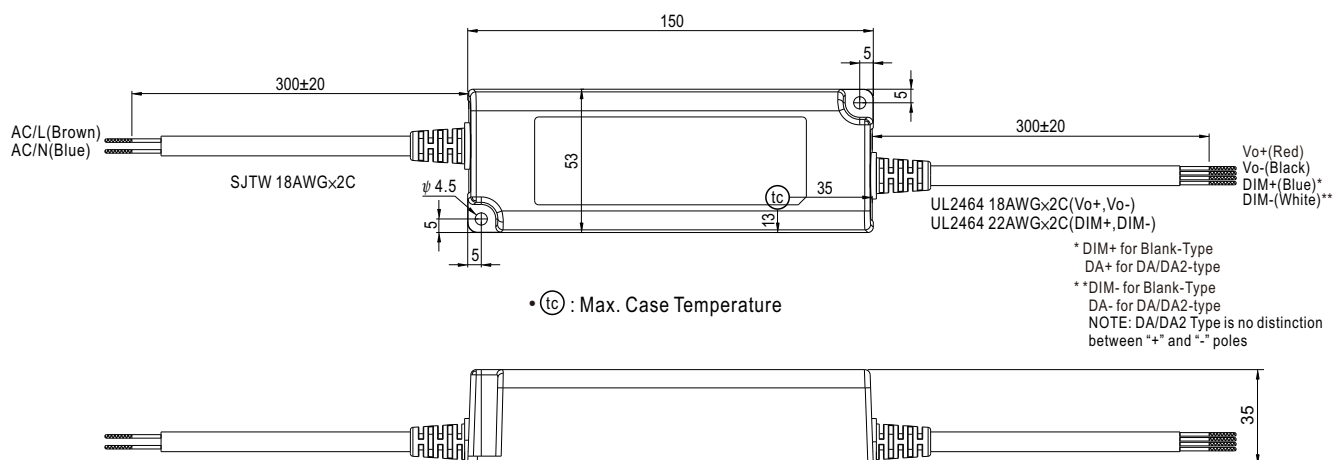


## Block Diagram



## Mechanical Specification

Case No. NPF-60A Unit:mm

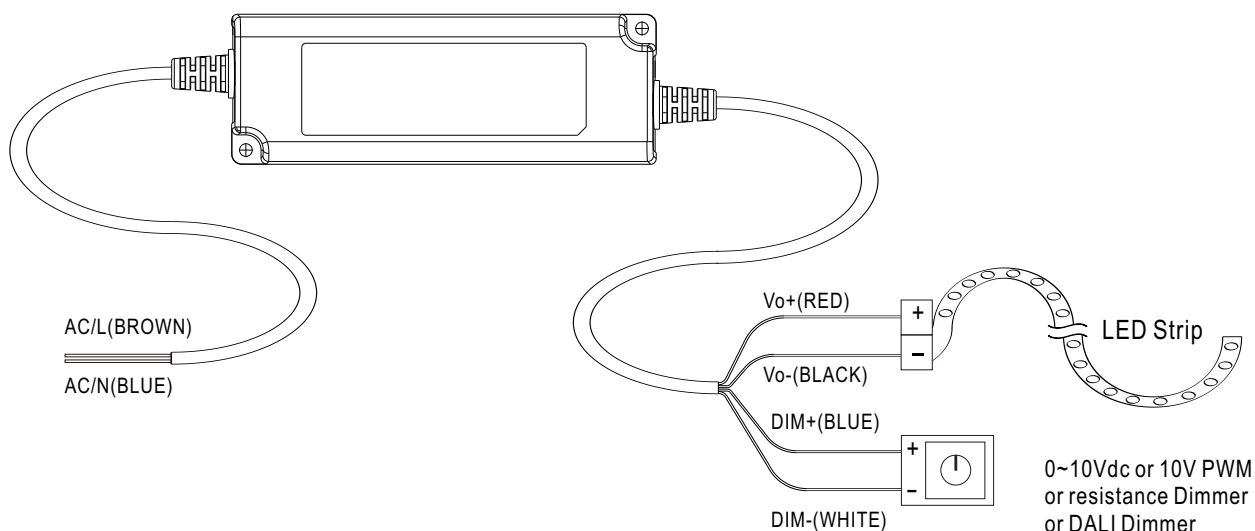


## Recommend Mounting Direction



## ■ Installation Manual

### ◎ Connection for Blank-type



### ◎ Cautions

- Before commencing any installation or maintenance work, please disconnect the power supply from the utility. Ensure that it cannot be re-connected inadvertently!
- Keep proper ventilation around the unit and do not stack any object on it. Also a 10-15 cm clearance must be kept when the adjacent device is a heat source.
- Mounting orientations other than standard orientation or operate under high ambient temperature may increase the internal component temperature and will require a de-rating in output current.
- Current rating of an approved primary /secondary cable should be greater than or equal to that of the unit. Please refer to its specification.
- For LED drivers with waterproof connectors, verify that the linkage between the unit and the lighting fixture is tight so that water cannot intrude into the system.
- For dimmable LED drivers, make sure that your dimming controller is capable of driving these units. PWM series require 0.15mA each unit.
- Tc max. is identified on the product label. Please make sure that temperature of Tc point will not exceed limit.
- DO NOT connect "DIM- to Vo-".
- Suitable for indoor use or outdoor use without direct sunlight exposure. Please avoid immerse in the water over 30 minutes.
- 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.