# 60W Constant Voltage PWM Output KNX LED Driver PWM-60-KN series

User's Manual

## ■ Features

- Constant Voltage PWM style output with user changeable frequency up to 4KHz compliant IEEE1789-2015 and EU Ecodesign SVM requirement
- Min. dimming level 0.01%
- Plastic housing with class II design
- Standby power consumption<0.5W
- Integrated KNX control protocol
- No need KNX-DALI gateway
- Typical lifetime>50000 hours
- 5 years warranty

## ■ Applications

- LED strip lighting
- Indoor LED lighting
- LED decorative lighting
- LED architecture lighting

## ■ GTIN CODE

MW Search: https://www.meanwell.com/serviceGTIN.aspx

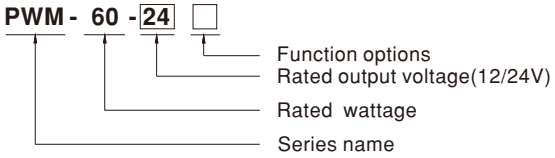
## ■ Description

PWM KN series is a 60W AC/DC LED driver featuring the constant voltage mode with PWM style output, which is able to maintain the colour temperature and the brightness homogeneity when driving all kinds of LED strips and constant voltage LED bulbs.The built-in KNX interface is to avoid using the complicated KNX-DALI gateway.

PWM KN operates from 90~305VAC and offers two models with output voltage 12V and 24V.Thanks to the high efficiency up to 89%, with the fanless design, the entire series is able to operate for -35°C ~ +90°C case temperature under free air convection.

The minimal dimming level low to 0.01% is suitable for low light level applications e.g. cinema. The output frequency is changeable up to 4KHz complaint IEEE1789-2015 no risk requirement and EU Ecodesign stroboscopic visibility measure(SVM) requirement providing a great solution for health concern due to light fickering.

## ■ Model Encoding




| Type | Function | Note |
|---|---|---|
| KN | KNX control technology | In stock |
| KNBST | KNX control technology with BST14 connector | by request |

## SPECIFICATION

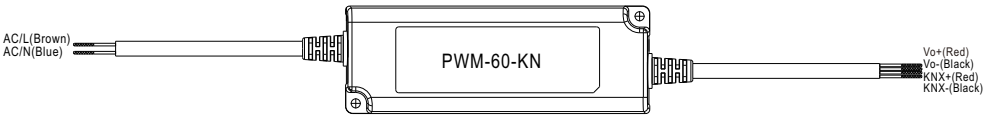
| MODEL | | PWM-60-12□ | PWM-60-24□ |
|---|---|---|---|
| OUTPUT | DC VOLTAGE | 12V | 24V |
| | RATED CURRENT | 5A | 2.5A |
| | RATED POWER | 60W | 60W |
| | DIMMING RANGE | 0 ~ 100% | |
| | PWM FREQUENCY (Typ.) | 200~4000Hz user changable via ETS | |
| | SETUP, RISE TIME Note.2 | 500ms, 80ms/ 115AC or 230VAC | |
| | HOLD UP TIME (Typ.) | 16ms/115VAC or 230VAC | |
| INPUT | VOLTAGE RANGE Note.3 | 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% |
| | AC CURRENT (Typ.) | 0.8A / 115VAC 0.4A / 230VAC 0.32A / 277VAC | |
| | INRUSH CURRENT (Typ.) | COLD START 50A(twidth=350μs 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 | |
| | STANDY POWER CONSUMPTION | <0.5W | |
| PROTECTION | OVERLOAD | 108 ~ 130% rated output power | |
| | | Hiccup mode, recovers automatically after fault condition is removed | |
| | SHORT CIRCUIT | Shut down o/p voltage, re-power on to recover | |
| | OVER VOLTAGE | 15 ~ 17V | 28 ~ 34V |
| | | 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=-35 ~ +85℃ (Please refer to " OUTPUT LOAD vs TEMPERATURE" section) | |
| | MAX. CASE TEMP. | Tcase=+85℃ | |
| | WORKING HUMIDITY | 20 ~ 95% RH non-condensing | |
| | STORAGE TEMP., HUMIDITY | -35 ~ +80℃, 10 ~ 95% RH | |
| | TEMP. COEFFICIENT | ±0.03%/℃ (0 ~ 50℃) | |
| | VIBRATION | 10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes | |
| SAFETY & EMC | SAFETY STANDARDS Note.5 | ENEC BS EN/EN61347-1, BS EN/EN61347-2-13, BS EN/EN62384 independent, GB19510.14,GB19510.1,<br>EAC TP TC 004 approved | |
| | KNX STANDARDS | Certified protocol | |
| | WITHSTAND VOLTAGE | I/P-O/P:3.75KVAC | |
| | ISOLATION RESISTANCE | I/P-O/P:100M Ohms / 500VDC / 25℃/ 70% RH | |
| | EMC EMISSION Note.6 | Compliance to BS EN/EN55015, BS EN/EN61000-3-2 Class C (@load≧60%) ; BS EN/EN61000-3-3,GB17743<br>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<br>2KV),EAC TP TC 020 | |
| OTHERS | MTBF | 2135.2K hrs min. Telcordia SR-332 (Bellcore) ; 247.7K hrs min. MIL-HDBK-217F (25℃) | |
| | DIMENSION | 150*53*35mm (L*W*H) | |
| | PACKING | 0.45Kg;30pcs/16.0Kg/1.0CUFT | |

**NOTE**

1. All parameters NOT specially mentioned are measured at 230VAC input, rated current and 25℃ of ambient temperature.
2. De-rating may be needed under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details.
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.
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.
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.
6. Please refer to the warranty statement on MEAN WELL's website at http://www.meanwell.com
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).
8. For any application note and IP water proof function installation caution, please refer our user manual before using. https://www.meanwell.com/Upload/PDF/LED_EN.pdf

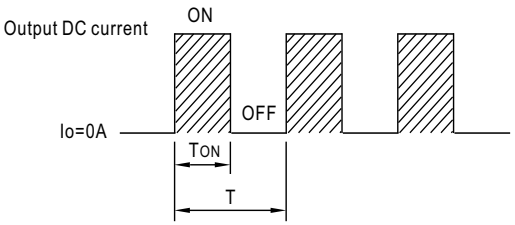
※ Product Liability Disclaimer：For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx

## ■ DIMMING OPERATION




※ **Dimming principle for PWM style output**

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



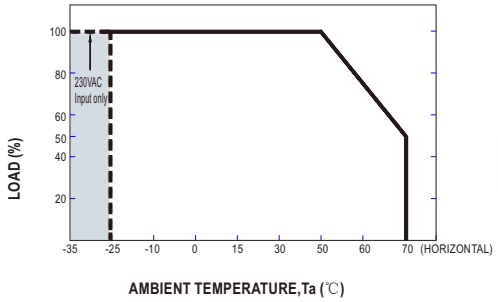

$$\text{Duty cycle}(\%) = \frac{T_{ON}}{T} \times 100\%$$

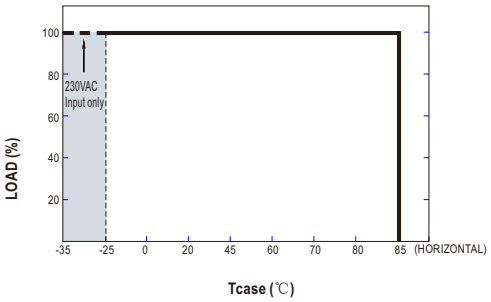
Output PWM frequency up to 4KHz

※ KNXInterface

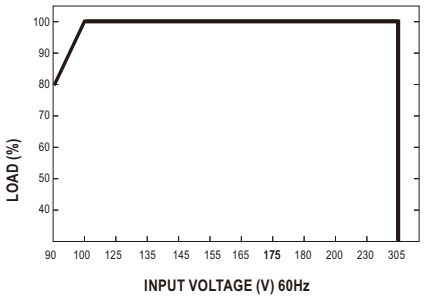
- Apply KNX signal between KNX+ and KNX-.
- The application program(database) can be downloaded via Online Catalogs from ETS or via http://www.meanwell.com/productCatalog.aspx

## ■ OUTPUT LOAD vs TEMPERATURE



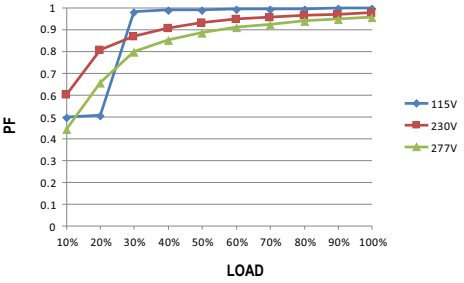

## ■ STATIC CHARACTERISTIC




※De-rating is needed under low input voltage.

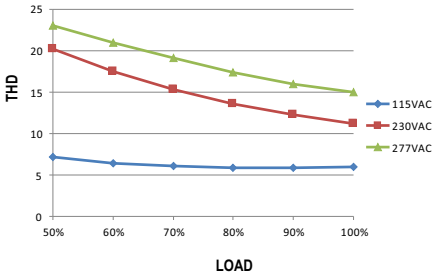
## ■ POWER FACTOR (PF) CHARACTERISTIC

※ Tcase at 75℃




## ■ TOTAL HARMONIC DISTORTION (THD)

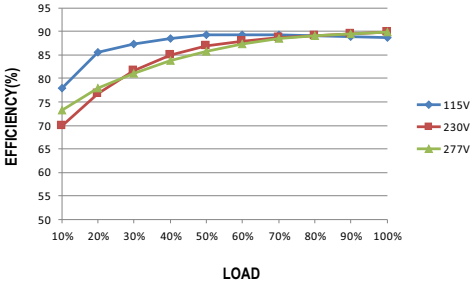
※ 24V Model, Tcase at 75℃



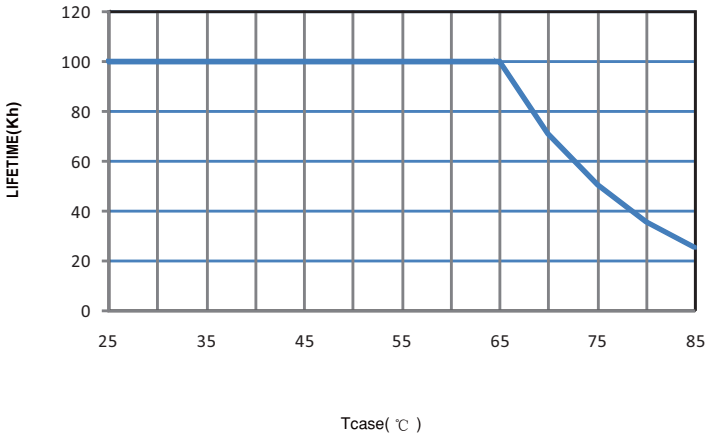

## ■ EFFICIENCY vs LOAD

PWM-60-KN series possess superior working efficiency that up to 89% can be reached in field applications.

※ 24V Model, Tcase at 75℃

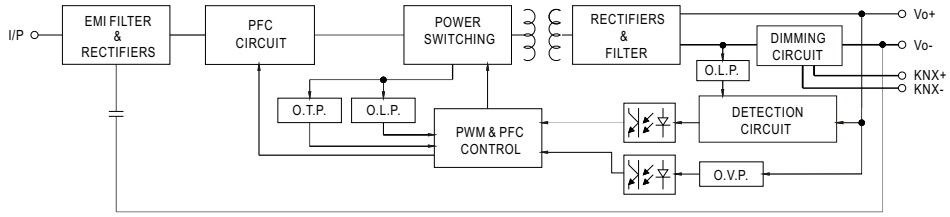


## ■ LIFE TIME



## ■ Block Diagram

PFC fosc : 50~120KHz
PWM fosc : 60~130KHz

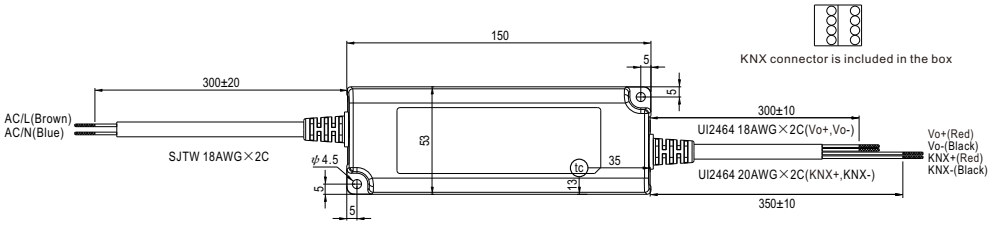



Note: PWM fosc here is not related to ouput PWM dimming

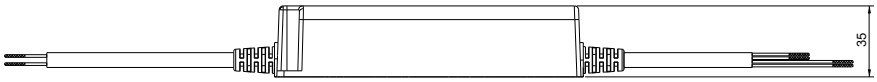
## ■ Mechanical Specification

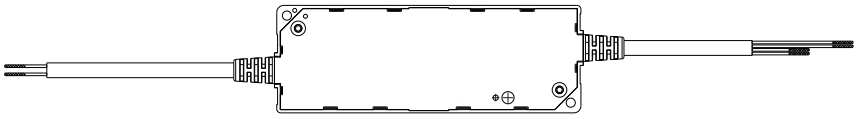
Case No. PWM-60KN Unit:mm

KNX connector is included in the box



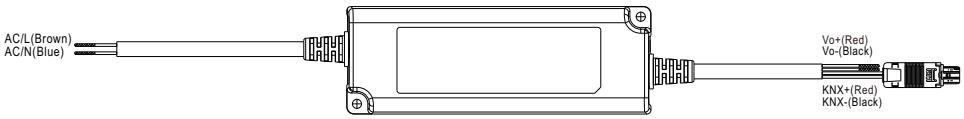

• tc : Max. Case Temperature



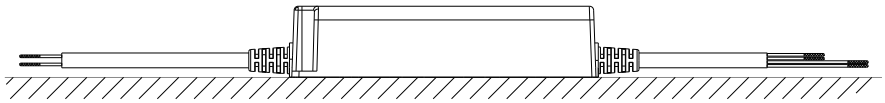



KNX programming button & LED

## ■ Mechanical view of by request

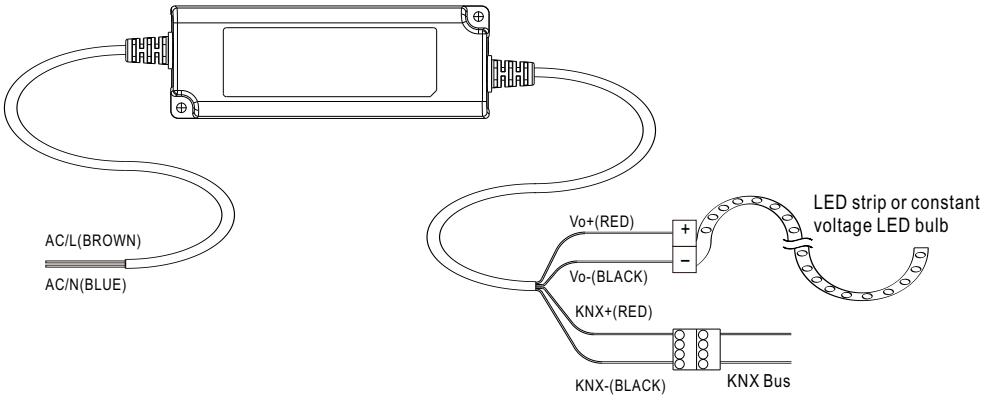


## ■ Recommend Mounting Direction



## ■ Installation Manual

### ◎Connection for KNX-type




PWM KN series can be ETS adressing/programming WITHOUT connecting to AC mains

### ◎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.
- Tc max. is identified on the product label. Please make sure that temperature of Tc point will not exceed limit.
- DO NOT connect "KNX- to Vo-".
- 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.