



IS 15885(Part 2/Sec13)
R-41027766
(for 12,24,48,Blank Type only)



E334687
Type HL
(for DA2 and BlankType)



(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 design
- Class 2 power unit(except PWM-90-12)
- No load power consumption <0.5W
- Fully encapsulated with IP67 level
- Function: 3 in 1 dimming (dim-to-off); DALI/DALI 2.0
- Minimum dimming level 0.2% for DALI type
- Typical lifetime>50000 hours and 5 years warranty

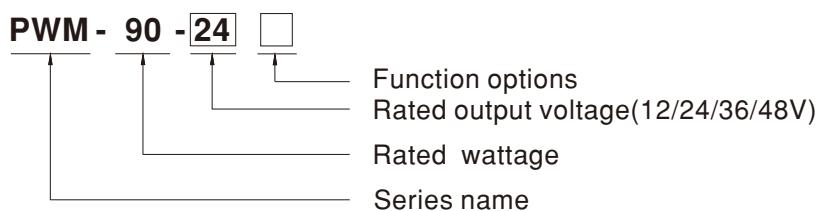
■ Applications

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

■ Description

PWM-90 series is a 90W 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-90 operates from 90~305VAC and offers models with different rated voltage ranging between 12V and 48V. Thanks to the high efficiency up to 90.5%, with the fanless design, the entire series is able to operate for -40°C ~ +85°C 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-90 is equipped with dimming function that varies the duty cycle of the output, providing great flexibility for LED strips applications.

■ Model Encoding

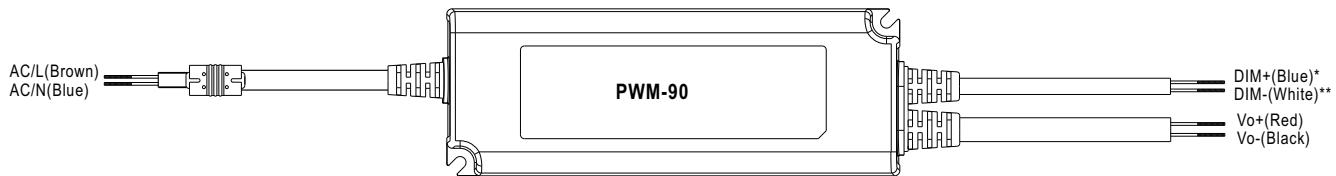


| Type | IP Level | Function | Note |
|-------|----------|------------------------------------------------------------------|----------|
| Blank | IP67 | 3 in 1 dimming function (0~10Vdc, 10V PWM signal and resistance) | In Stock |
| DA | IP67 | DALI control technology(for 12V/24V with DA type only) | In Stock |
| DA2 | IP67 | DALI 2.0 control technology(for 12V/24V/48V with DA2 type only) | In Stock |

SPECIFICATION

| MODEL | PWM-90-12□ | PWM-90-24□ | PWM-90-36□ | PWM-90-48□ | |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|----------|
| OUTPUT | DC VOLTAGE | 12V | 24V | 36V | |
| | RATED CURRENT | 7.5A | 3.75A | 2.5A | |
| | RATED POWER | 90W | 90W | 90W | |
| | DIMMING RANGE | 0 ~ 100% | | | |
| | PWM FREQUENCY (Typ.) | 1.47kHz for Blank/DA-Type, 2.5kHz for DA2-Type | | | |
| | SETUP, RISE TIME <small>Note.2</small> <small>Note.9</small> | 500ms, 80ms/ 115VAC or 230VAC | | | |
| INPUT | HOLD UP TIME (Typ.) | 16ms/115VAC or 230VAC | | | |
| | VOLTAGE RANGE <small>Note.3</small> | 90 ~ 305VAC 127 ~ 431VDC (Please refer to "STATIC CHARACTERISTIC" section) | | | |
| | FREQUENCY RANGE | 47 ~ 63Hz | | | |
| | POWER FACTOR (Typ.) | PF>0.98/115VAC, PF>0.96/230VAC, PF>0.92/277VAC @ full load (Please refer to "POWER FACTOR (PF) CHARACTERISTIC" section) | | | |
| | TOTAL HARMONIC DISTORTION | THD<20%(@load≥60%/115VAC, 230VAC; @load≥75%/277VAC) (Please refer to "TOTAL HARMONIC DISTORTION" section) | | | |
| | EFFICIENCY (Typ.) | 88% | 90.5% | 90.5% | 90.5% |
| | AC CURRENT (Typ.) | 0.95A / 115VAC | 0.5A / 230VAC | 0.4A / 277VAC | |
| | INRUSH CURRENT (Typ.) | COLD START 60A(twidth=550 μs measured at 50% Ipeak) at 230VAC; Per NEMA 410 | | | |
| | MAX. NO. of PSUs on 16A CIRCUIT BREAKER | 3 units (circuit breaker of type B) / 6 units (circuit breaker of type C) at 230VAC | | | |
| | LEAKAGE CURRENT | <0.25mA / 277VAC | | | |
| PROTECTION | NO LOAD POWER CONSUMPTION | <0.5W | | | |
| | 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(except for DA2-type) Hiccup mode, recovers automatically after fault condition is removed (only for DA2-type) | | | |
| | OVER VOLTAGE | 15 ~ 17V | 28 ~ 34V | 41 ~ 46V | 54 ~ 60V |
| | OVER TEMPERATURE | Shut down o/p voltage, re-power on to recover | | | |
| ENVIRONMENT | WORKING TEMP. | Tcase=-40 ~ +85°C (Please refer to " OUTPUT LOAD vs TEMPERATURE" section) | | | |
| | MAX. CASE TEMP. | Tcase=+85°C | | | |
| | WORKING HUMIDITY | 20 ~ 95% RH non-condensing | | | |
| | STORAGE TEMP., HUMIDITY | -40 ~ +80°C, 10 ~ 95% RH | | | |
| | TEMP. COEFFICIENT | ±0.03%/°C (0 ~ 50°C) | | | |
| | VIBRATION | 10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes | | | |
| SAFETY & EMC | SAFETY STANDARDS <small>Note.5</small> | UL8750(except for DA-Type), CSA C22.2 No. 250.13-12; ENEC EN61347-1, EN61347-2-13 independent, EN62384, IP67, BIS IS15885(for 12,24,48 Blank Type only), EAC TP TC 004,GB19510.1,GB19510.14 approved; Design refer to EN60335-1; According to 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°C / 70% RH | | | |
| | EMC EMISSION <small>Note.6</small> | Compliance to EN55015, EN61000-3-2 Class C (@load≥60%) ; EN61000-3-3,GB17743 and GB17625.1,EAC TP TC 020 | | | |
| | EMC IMMUNITY | Compliance to EN61000-4-2,3,4,5,6,8,11; EN61547, light industry level (surge immunity Line-Line 2KV),EAC TP TC 020 | | | |
| OTHERS | MTBF | 902.4K hrs min. Telcordia SR-332 (Bellcore) ; 224.2K hrs min. MIL-HDBK-217F (25°C) | | | |
| | DIMENSION | 171*63*37.5mm (L*W*H) | | | |
| | PACKING | 0.77Kg; 18pcs/14.9Kg/0.97CUFT | | | |
| NOTE | 1. All parameters NOT specially mentioned are measured at 230VAC input, rated current and 25°C 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 (t ₀) point (or TMP, per DLC), is about 75°C 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°C/1000m with fanless models and of 5°C/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 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. ※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx | | | | |

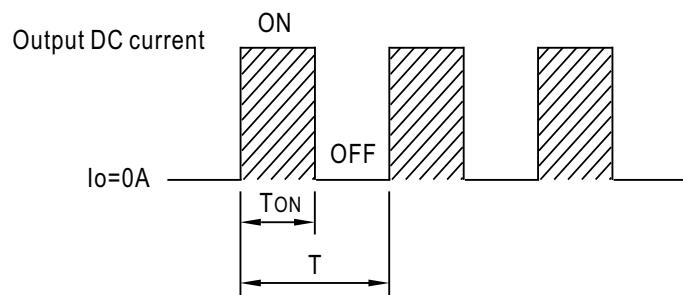
■ DIMMING OPERATION



* 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

※ Dimming principle for PWM style output

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



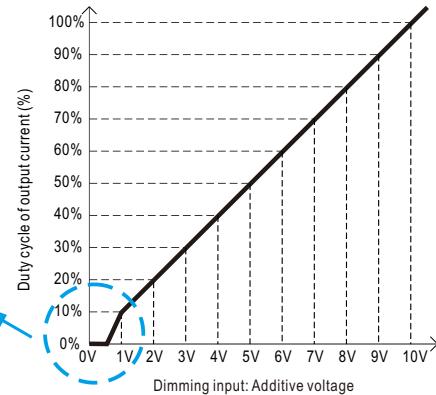
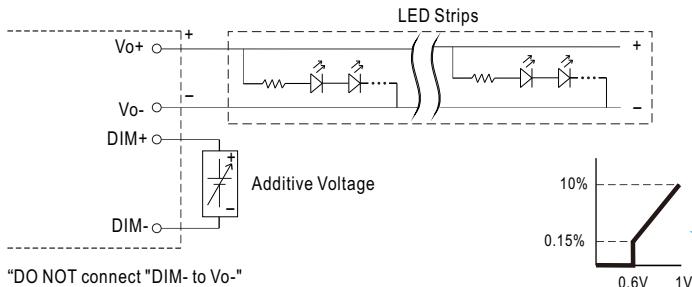
$$\text{Duty cycle}(\%) = \frac{T_{ON}}{T} \times 100\%$$

Output PWM frequency : 1.47kHz for Blank/DA-Type
 2.5kHz for DA2-Type

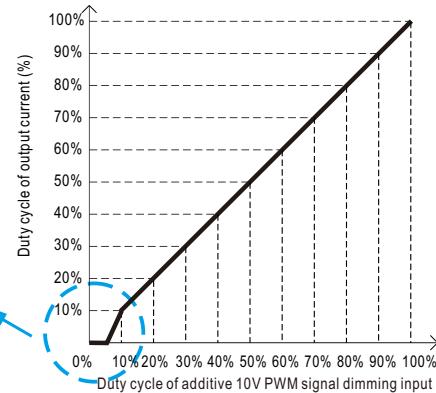
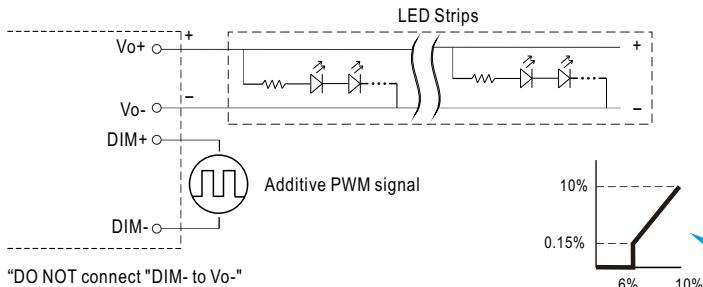
※ 3 in 1 dimming function (for Blank-Type)

- 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.)

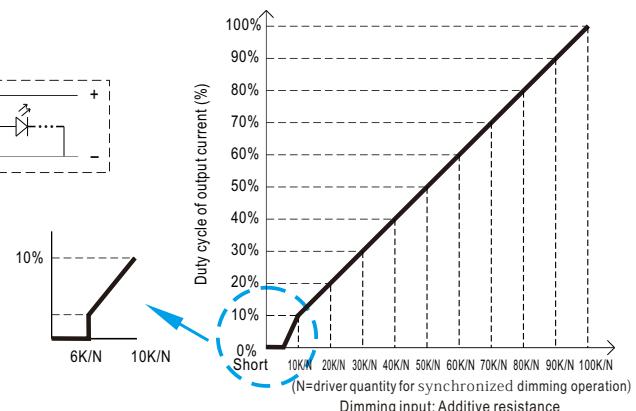
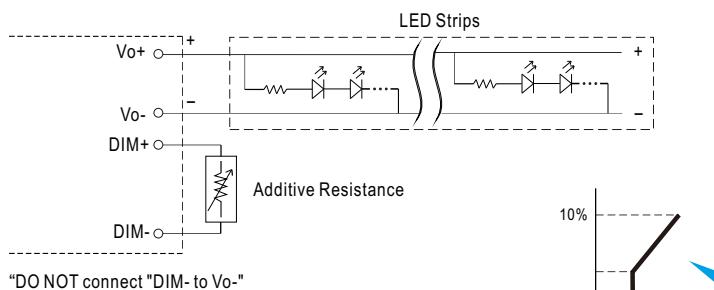
◎ Applying additive 0 ~ 10VDC



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



◎ Applying additive resistance:

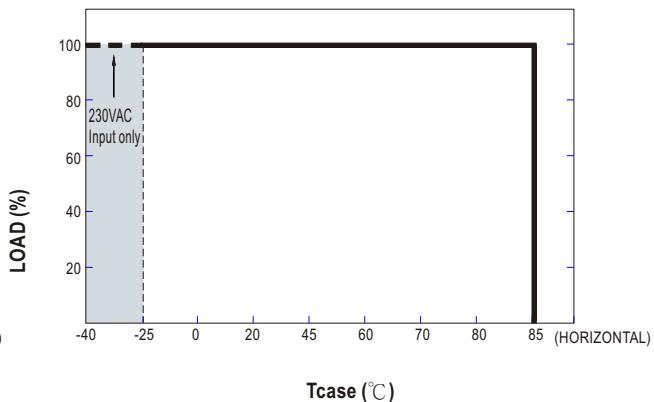
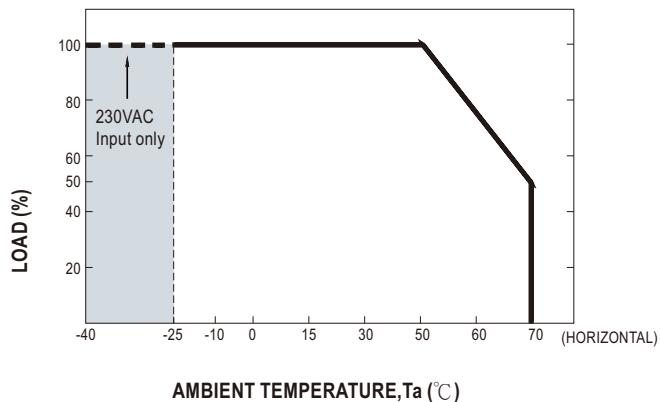


Note : 1. Min. duty cycle of output current is about 0.15%, and the dimming input is about $6K\Omega$ or 0.6VDC, or 10V PWM signal with 6% duty cycle.
 2. The duty cycle of output current could drop down to 0% when dimming input is less than $6K\Omega$ or less than 0.6VDC, or 10V PWM signal with duty cycle less than 6%.

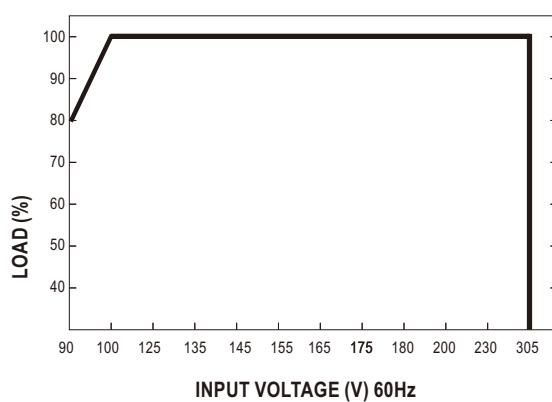
✕ DALI Interface (primary side; for DA/DA2-Type)

- 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

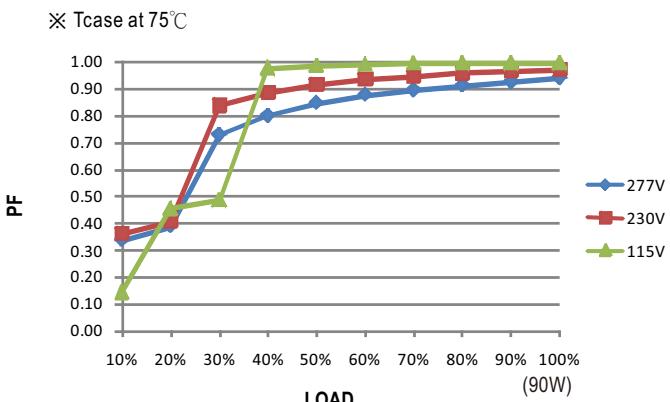


■ STATIC CHARACTERISTIC



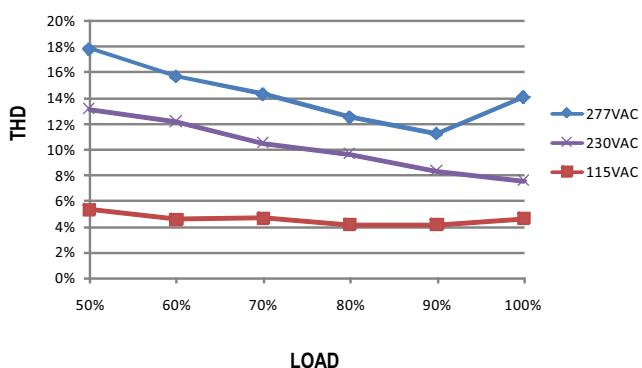
※ De-rating is needed under low input voltage.

■ POWER FACTOR (PF) CHARACTERISTIC



■ TOTAL HARMONIC DISTORTION (THD)

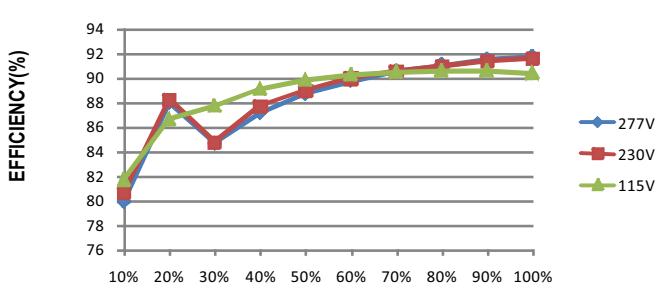
※ 48V Model, Tcase at 75°C

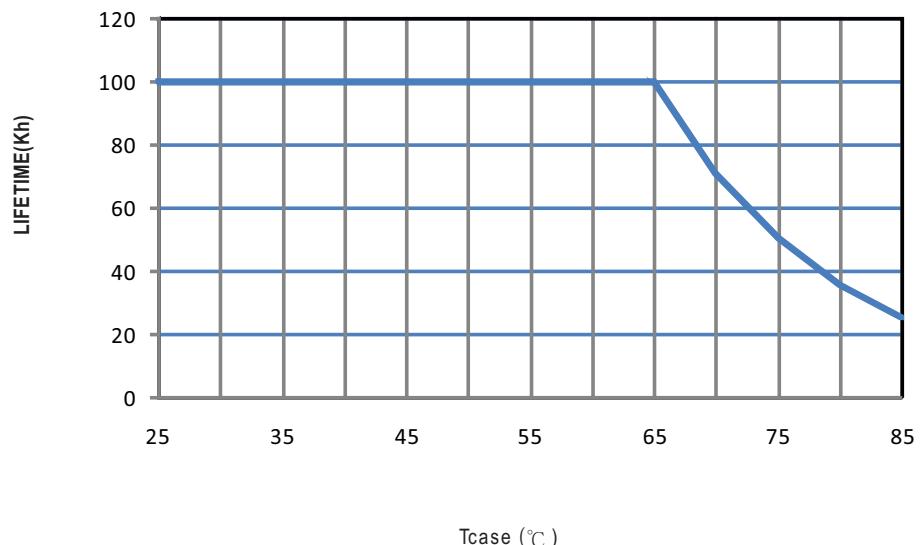


■ EFFICIENCY vs LOAD

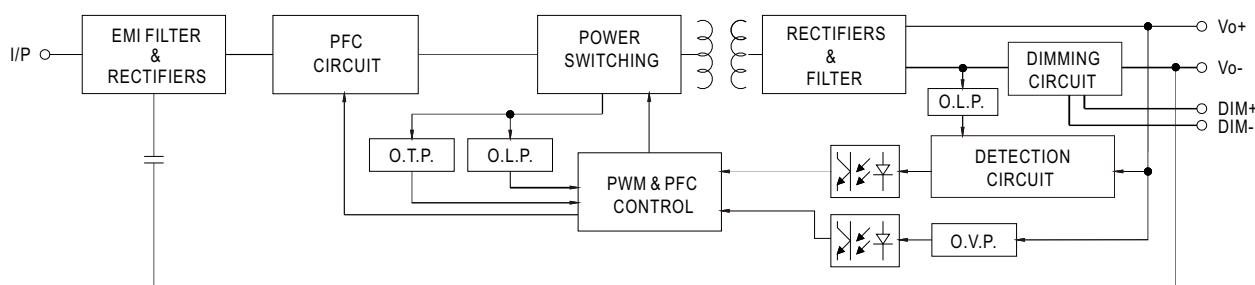
PWM-90 series possess superior working efficiency that up to 90.5% can be reached in field applications.

※ 48V Model, Tcase at 75°C



LIFE TIME

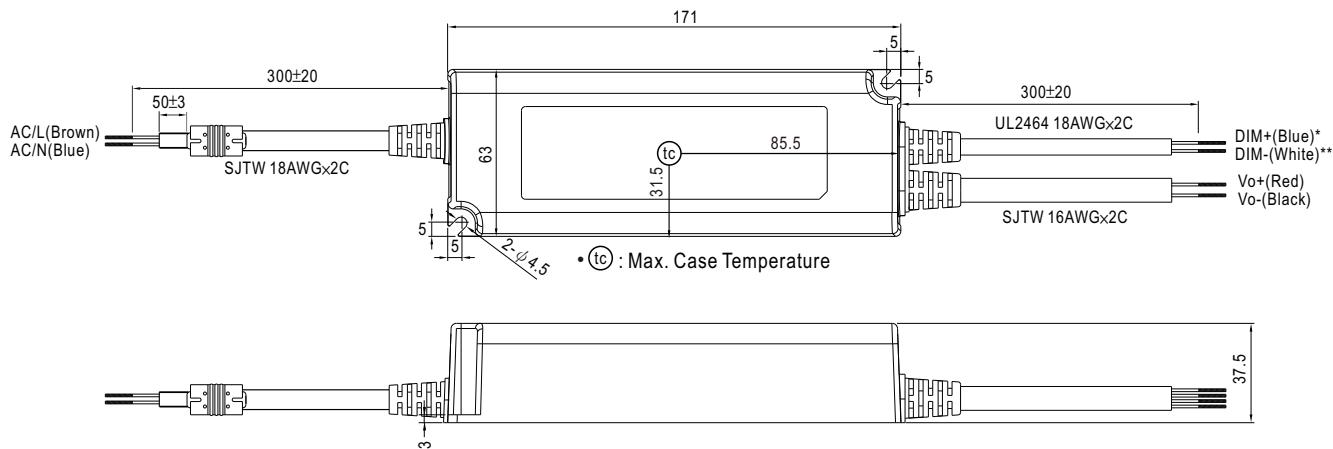
■ Block Diagram

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


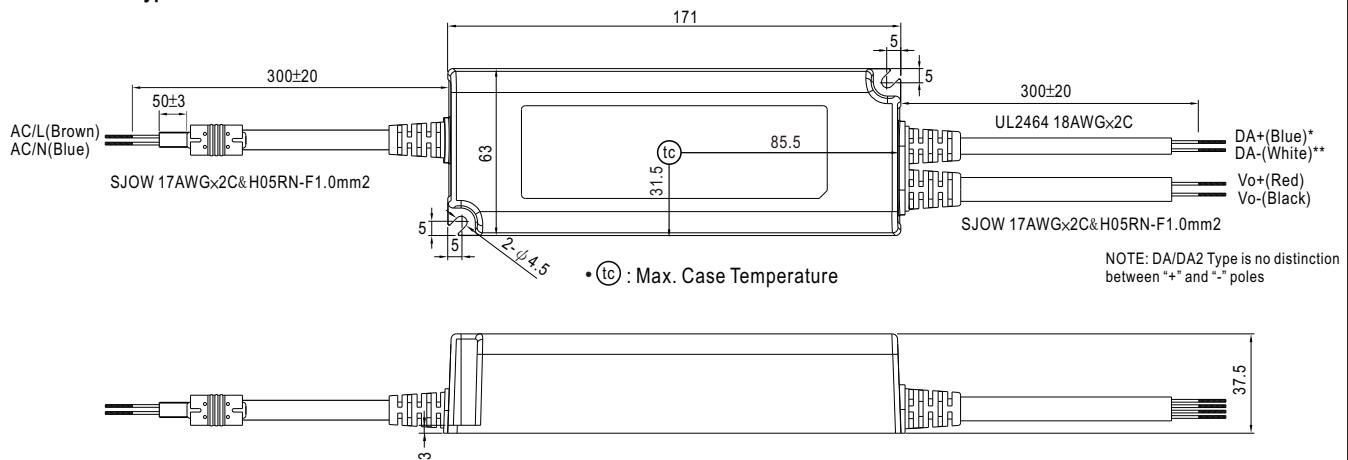
■ Mechanical Specification

Case No. PWM-90P Unit:mm

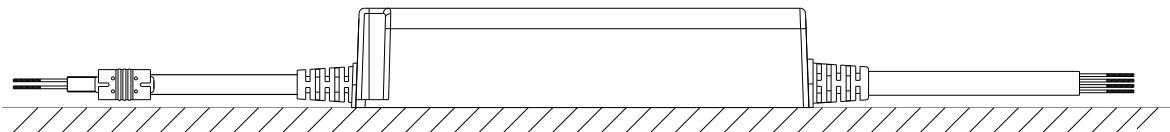
Blank-Type



DA/DA2-Type

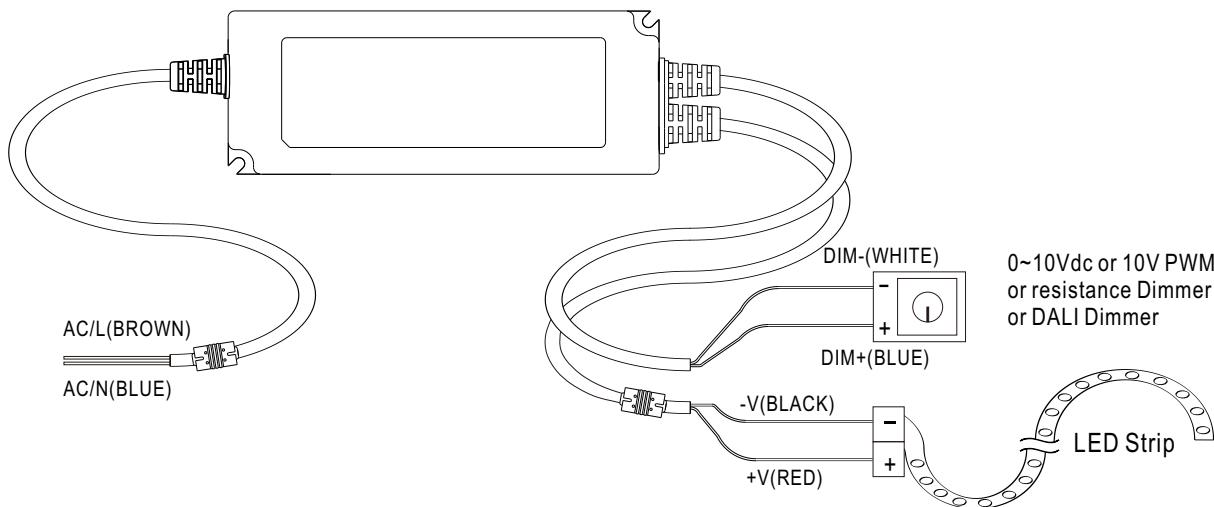


■ Recommend Mounting Direction



■ 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.
- For more information about installation, please refer to www.meanwell.com/webnet/search/installationsearch.html for details.