

TWO PARTS Driver 10/25/40W

By LTF LLC

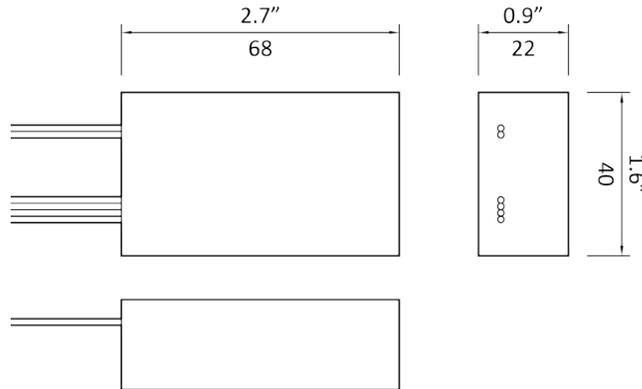
Notes _____

D10W12V-UI-UD

Power: 10W
Max Current: 833mA

Manufacturer Part
LTF DS10W12VMB1UD

Dimensions
2.7 x 1.6 x 0.9 in
68 x 40 x 22 mm



Description

Dimmable Low Voltage LED Driver

Features

Fits in most Junction Boxes
Auto-reset, Short Circuit,
Overload and Thermal
Protection

Warranty

3 year limited warranty

Input

Voltage: 100-305V AC
Frequency: 50/60Hz

Output

Type: Constant Voltage
Voltage: 12V DC

Specs

Dimming: Triac, ELV, 0-10V
Class: Class 2 Power Supply
IP Rating: IP67
Humidity: 95% RH Max

Certification

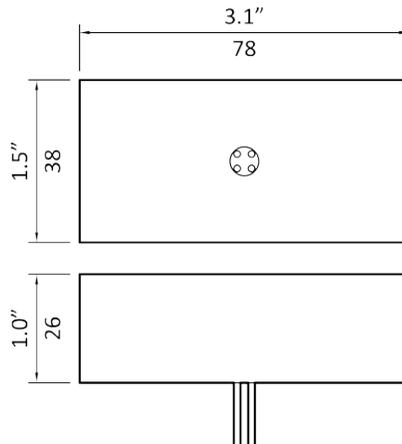
UL8750, UL1310
CE, RoHS
FCC Part 15 Class B
Compliant

D25W12V-UI-UD

Power: 25W
Max Current: 2083mA

Manufacturer Part
LTF DS25W12VBF1UD

Dimensions
3.1 x 1.5 x 1.0 in
78 x 38 x 26 mm

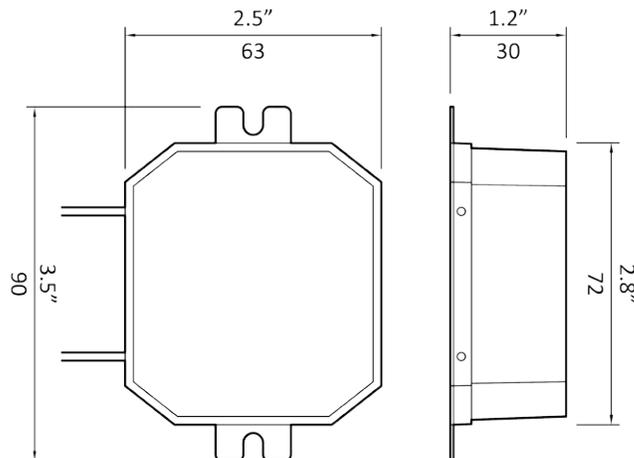


D40W12V-UI-UD

Power: 40W
Max Current: 3333mA

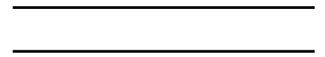
Manufacturer Part
LTF DS40W12VOCUD

Dimensions
3.5 x 2.5 x 1.2 in
90 x 63 x 30 mm



TWO PARTS Driver 90/120/200W

By Mean Well



PWM-90-12

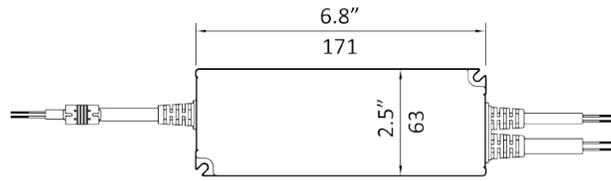
Power: 90W
Max Current: 7.5A

Manufacturer Part

Mean Well PWM-200-12

Dimensions

6.8 x 2.5 x 1.5 in
171 x 63 x 37.5 mm



Description

Dimmable Low Voltage LED Driver

Features

Protections: short circuit, over load, over voltage, over temperature

Warranty

3 year limited warranty

Input

Voltage: 100-305V AC
Frequency: 50/60Hz

Output

Type: Constant Voltage
Voltage: 12V DC

Specs

Dimming: 0-10V, 10V PWM
IP Rating: IP67
Humidity: 95% RH Max

Certification

UL8750
CSA C22.2 No. 250.13-12

PWM-120-12

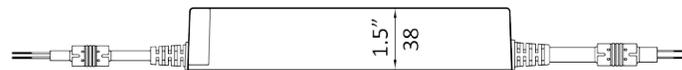
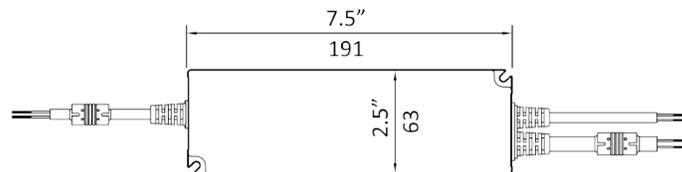
Power: 120W
Max Current: 2083mA

Manufacturer Part

Mean Well PWM-200-12

Dimensions

3.1 x 1.5 x 1.0 in
78 x 38 x 26 mm



PWM-200-12

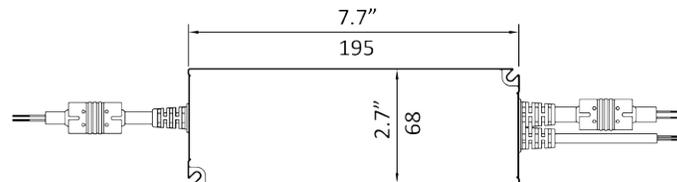
Power: 200W
Max Current: 3333mA

Manufacturer Part

Mean Well PWM-200-12

Dimensions

3.5 x 2.5 x 1.2 in
90 x 63 x 30 mm



LTF Drivers Dimmer Compatibility List

Dimmer brand: Lutron, Crestron, Leviton

| | | |
|----|-------------------------|------------------|
| 1 | Lutron DIVA CL | DVCL-153P-WH |
| 2 | Lutron DIVA ELV | DVELV-303P |
| 3 | Lutron Home Works | HQRD-6A |
| 4 | Lutron Home Works | HQRD-6NA |
| 5 | Leviton | Model 6615 |
| 6 | Leviton | Model 6672 |
| 7 | Leviton | Model 6674/IPL06 |
| 8 | Leviton | Model IPE04 |
| 9 | Leviton | Model IPI06 |
| 10 | Leviton | Model VP106 |
| 11 | Leviton | Model VPE04 |
| 12 | Leviton | VPM06 |
| 13 | Leviton | VRE04 |
| 14 | Leviton | Model VRM10 |
| 15 | Lutron MAESTRO | MRF2-6ELV-120-WH |
| 16 | Lutron NOVA T | NTELV-600-WH |
| 17 | Lutron NOVA | NVELV-600-WH |
| 18 | Lutron SKYLARK | SELV-600-WH |
| 19 | Lutron | MRF2-6ELV-120-WH |
| 20 | Lutron Vierti | VTELV-600-XXX |
| 21 | Lutron NOVA T | NTELV-300 |
| 22 | Lutron MAESTRO | MAELV-600 |
| 23 | Lutron MAESTRO | MSCELV-600M |
| 24 | Lutron MAESTRO IR | MIRELV-600 |
| 25 | Lutron MAESTRO WIRELESS | MRF2-6ELV-120 |

| | | |
|----|------------------------|---------------|
| 26 | Lutron CASETA WIRELESS | PD-6WCL |
| 27 | Lutron MAESTRO RF | RRA-6D |
| 28 | Lutron MAESTRO RF | RRA-6NA |
| 29 | Lutron MAESTRO RF | RRA-6ND |
| 30 | Skylark Contour | CTELV-303P |
| 31 | CRESTON | SELV-300P |
| 32 | CRESTON | CLS-C6 |
| 33 | CRESTON | CLS-C6M |
| 34 | CRESTON | CLS-C6EX |
| 35 | CRESTON | CLS-C6MEX |
| 36 | CRESTON | CLS-C6MRF |
| 37 | CRESTON | CLS-C6RF |
| 38 | CRESTON | CLS-EXP-DIM |
| 39 | CRESTON | CLS-EXP-DIMU |
| 40 | CRESTON | CLX-1DIM4 |
| 41 | CRESTON | CLX-1DIM8 |
| 42 | CRESTON | CLX-2DIM2 |
| 43 | CRESTON | CLX-2DIM8 |
| 44 | CRESTON | CLX-1DELV4 |
| 45 | CRESTON | DIN-1DIM4 |
| 46 | CRESTON | DIN-1DIMU4 |
| 47 | CRESTON | CLW-DIMEX-E |
| 48 | CRESTON | CLW-DIMEX-P |
| 49 | CRESTON | CLW-DIMSWEX-E |
| 50 | CRESTON | CLW-DIMSWEX-P |

| | | |
|----|-------------|----------------|
| 51 | CRESTON | P-DIMEX |
| 52 | CRESTON | GLX-DIM6 |
| 53 | CRESTON | GLXX-2DIM8 |
| 54 | CRESTON | CLW-DELVEX-E |
| 55 | CRESTON | CLW-DELVEX-P |
| 56 | Lutron Diva | 0-10V DVSTV |
| 57 | Lutron Diva | 0-10V DVTV |
| 58 | Leviton | IP710 |
| 59 | Leviton | DS710 |
| 60 | Leviton | DD710 |
| 61 | Crestron | CLX-2DIMFLV8 |
| 62 | Crestron | DIN-4DIMFLV4 |
| 63 | Crestron | CLS-EXP-DIMFLV |
| 64 | Crestron | GLX-DIMFLV8 |

* These are a few examples of dimmers tested for compatability.
There are many other dimmers that are compatable on the market.



■ 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
- Minimum dimming level 0.2% for DALI type
- Typical lifetime>50000 hours and 5 years warranty

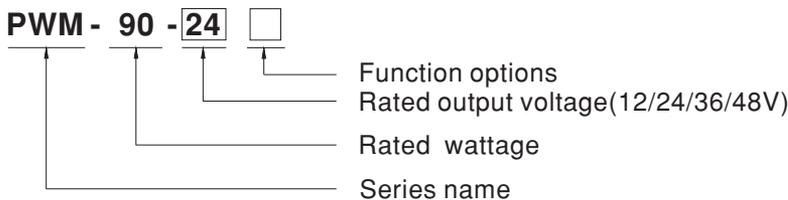
■ Applications

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

■ 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



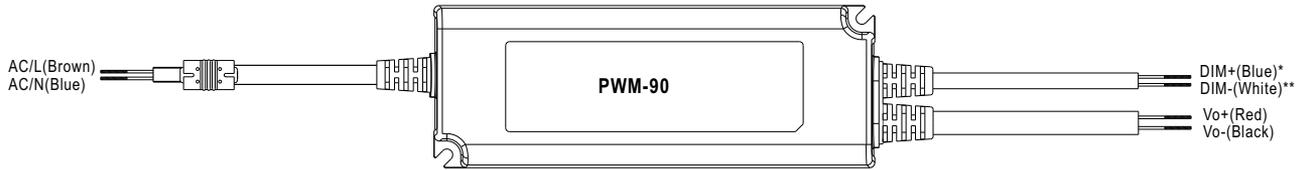
| Type | IP Level | Function | Note |
|-------|----------|--|----------|
| Blank | IP67 | 3 in 1 dimming function (0~10Vdc, 10V PWM signal and resistance) | In Stock |
| DA | IP67 | DALI control technology(for 12V/24V with DA type only) | In Stock |
| DA2 | IP67 | DALI-2 control technology(for 12V/24V/48V with DA2 type only) | In Stock |

File Name:PWM-90-SPEC 2021-08-02

SPECIFICATION

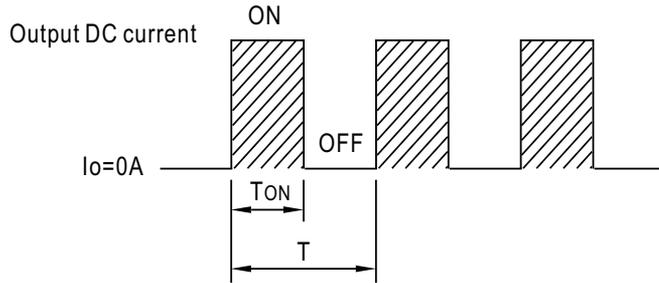
| MODEL | PWM-90-12□ | PWM-90-24□ | PWM-90-36□ | PWM-90-48□ | |
|--------------------------------|--|---|---|------------|----------|
| OUTPUT | DC VOLTAGE | 12V | 24V | 36V | 48V |
| | RATED CURRENT | 7.5A | 3.75A | 2.5A | 1.88A |
| | RATED POWER | 90W | 90W | 90W | 90.24W |
| | DIMMING RANGE | 0 ~ 100% | | | |
| | PWM FREQUENCY (Typ.) | 1.47kHz for Blank/DA-Type, 2.5kHz for DA2-Type | | | |
| | SETUP, RISE TIME ^{Note.2} _{Note.9} | 500ms, 80ms/ 115VAC or 230VAC | | | |
| | HOLD UP TIME (Typ.) | 16ms/115VAC or 230VAC | | | |
| INPUT | VOLTAGE RANGE ^{Note.3} | 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 | | | |
| | NO LOAD 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(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 | | | |
| | WORKING TEMP. | Tcase=-40 ~ +85°C (Please refer to " OUTPUT LOAD vs TEMPERATURE" section) | | | |
| ENVIRONMENT | 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 ^{Note.5} | UL8750(except for DA-Type), 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°C / 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 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 | 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 | <p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated current and 25°C of ambient temperature.</p> <p>2. De-rating may be needed under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details.</p> <p>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.</p> <p>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.</p> <p>5. This series meets the typical life expectancy of >50,000 hours of operation when Tcase, particularly (Ⓢ) point (or TMP, per DLC), is about 75°C or less.</p> <p>6. Please refer to the warranty statement on MEAN WELL's website at http://www.meanwell.com</p> <p>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).</p> <p>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</p> <p>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.</p> <p>※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx</p> | | | | |

■ DIMMING OPERATION



※ Dimming principle for PWM style output

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



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

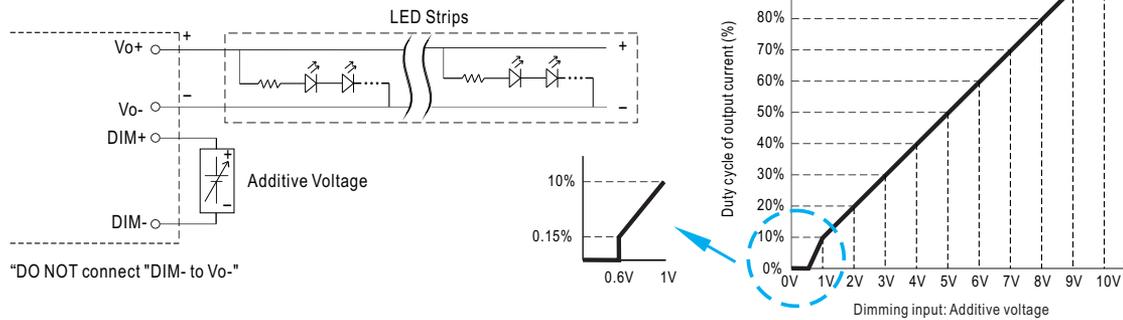
Output PWM frequency : 1.47kHz for Blank/DA-Type
2.5kHz for DA2-Type

* 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)

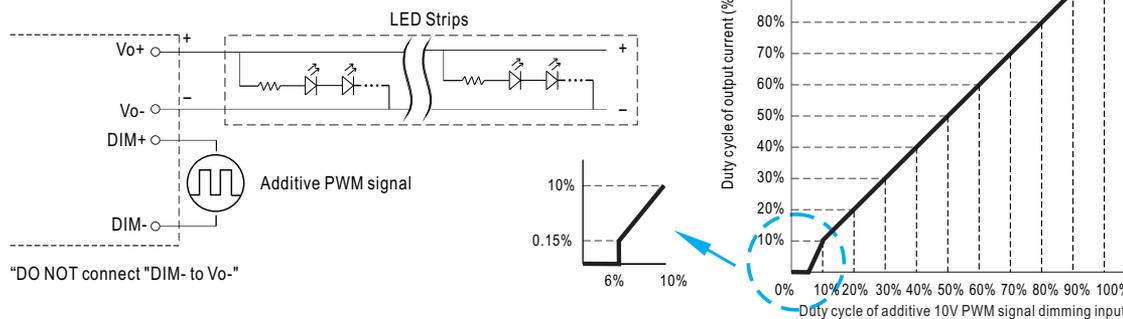
- Apply one of the three methodologies between DIM+ and DIM-: 0 ~ 10VDC, or 10V PWM signal or resistance.
- Dimming source current from power supply: 100μA (typ.)

◎ Applying additive 0 ~ 10VDC



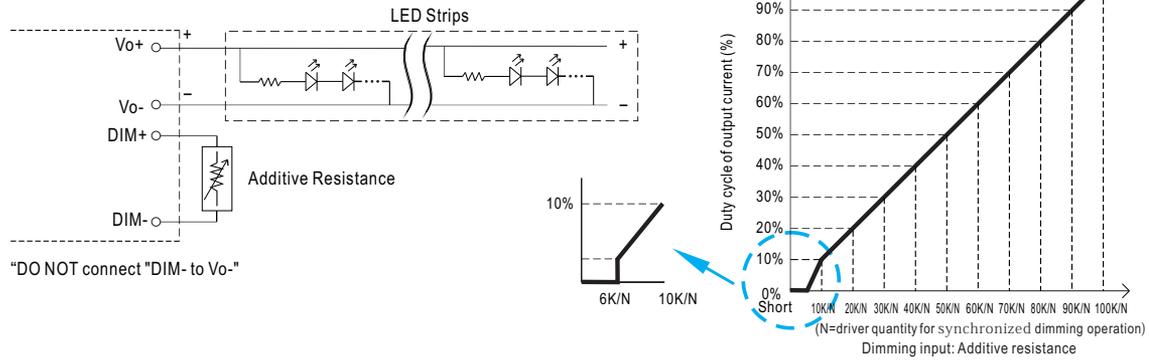
"DO NOT connect "DIM- to Vo-"

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



"DO NOT connect "DIM- to Vo-"

⊙ Applying additive resistance:

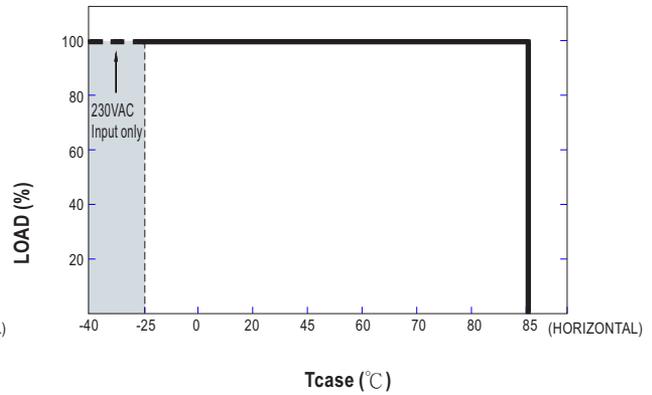
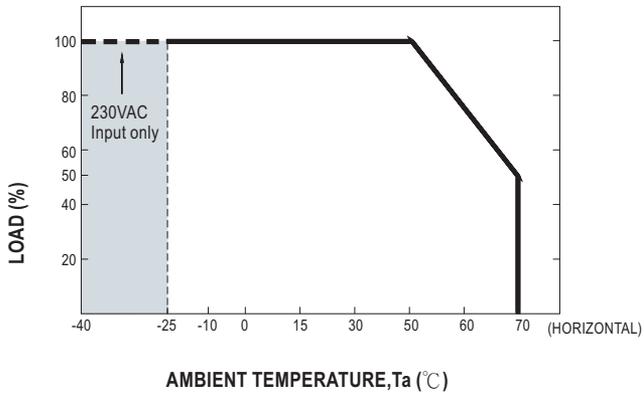


Note : 1. Min. duty cycle of output current is about 0.15%, and the dimming input is about 6K Ω or 0.6VDC, or 10V PWM signal with 6% duty cycle.
2. The duty cycle of output current could drop down to 0% when dimming input is less than 6K Ω or less than 0.6VDC, or 10V PWM signal with duty cycle less than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

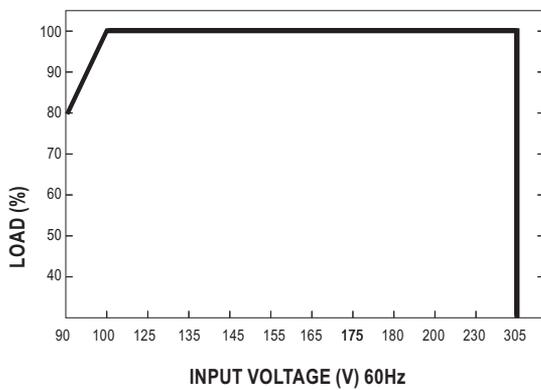
※ DALI Interface (primary side; for DA/DA2-Type)

- 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

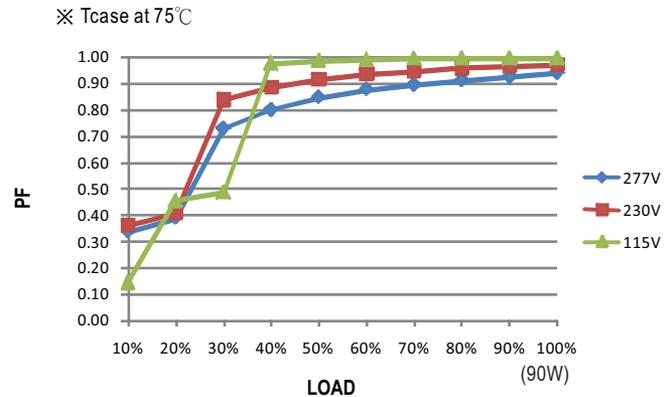


STATIC CHARACTERISTIC



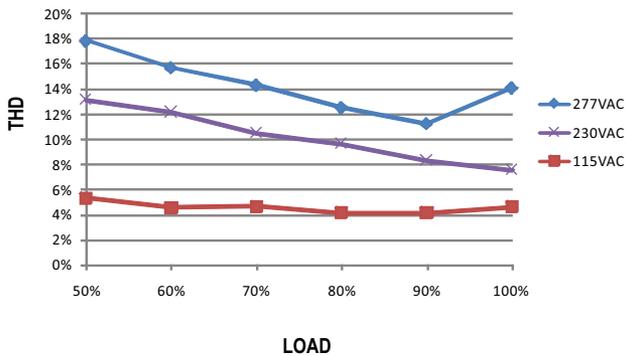
※ De-rating is needed under low input voltage.

POWER FACTOR (PF) CHARACTERISTIC



TOTAL HARMONIC DISTORTION (THD)

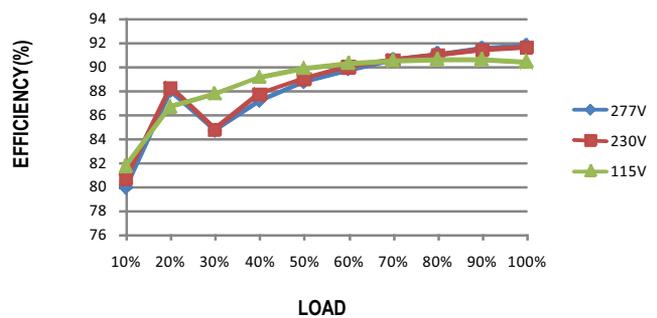
※ 48V Model, Tcase at 75°C



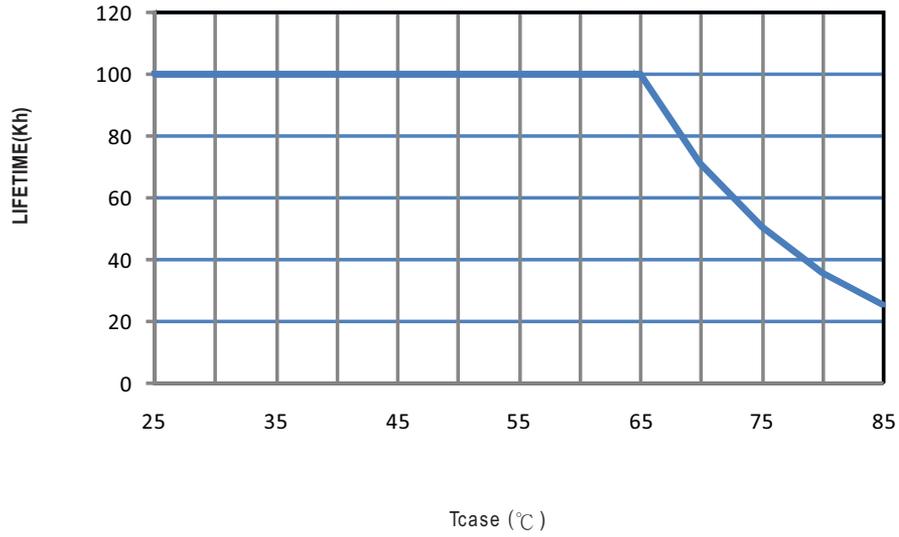
EFFICIENCY vs LOAD

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

※ 48V Model, Tcase at 75°C

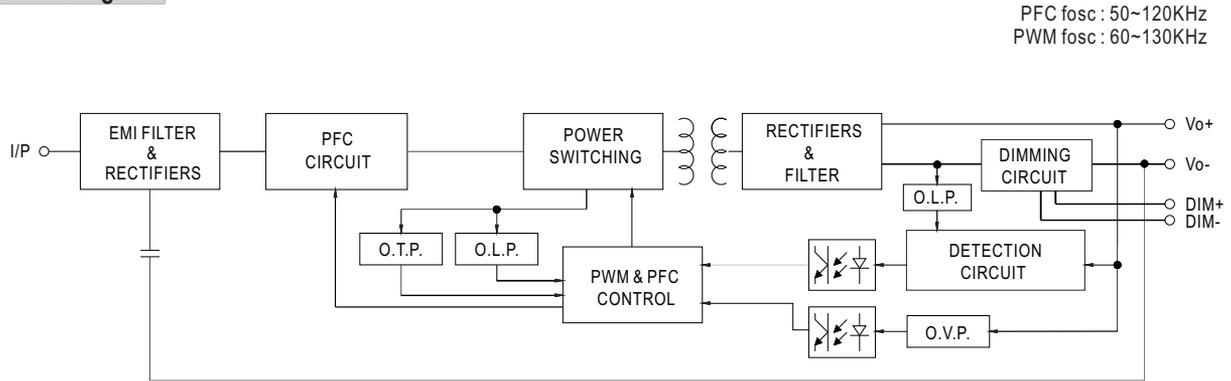


■ LIFE TIME



File Name: PWM-90-SPEC 2021-08-02

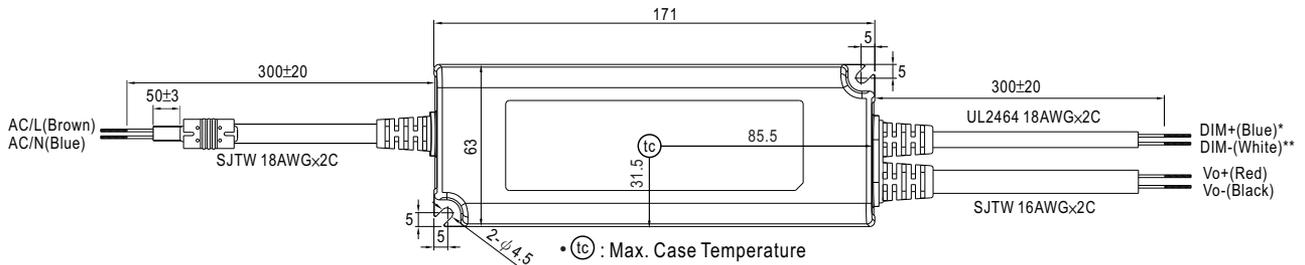
■ Block Diagram



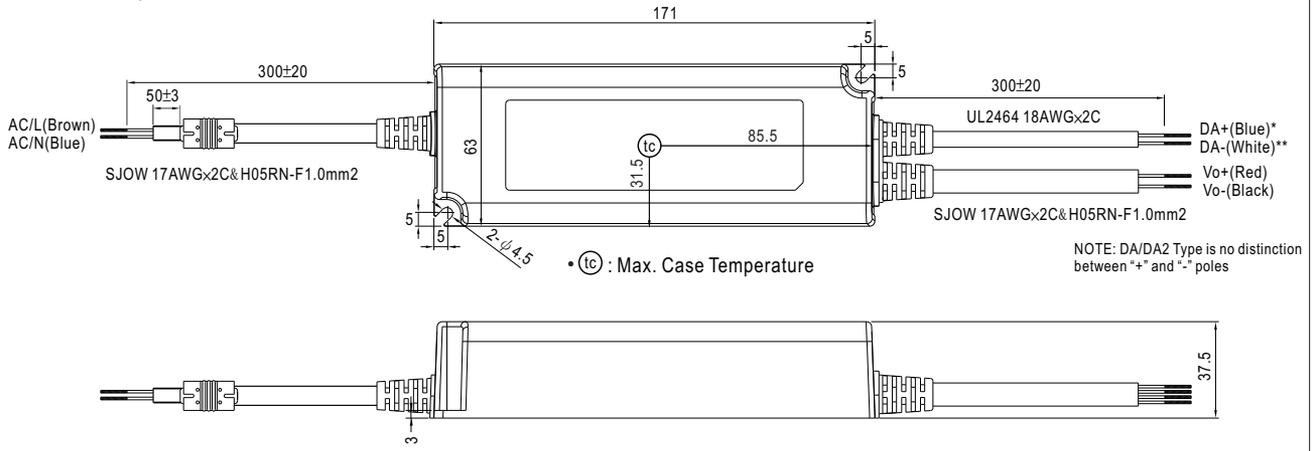
■ Mechanical Specification

Case No. PWM-90P Unit:mm

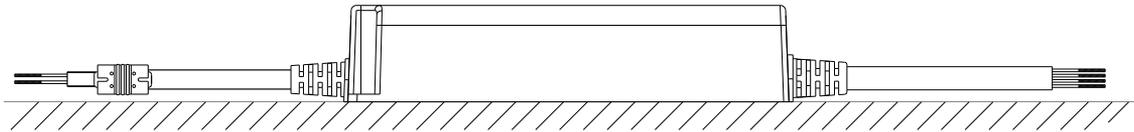
Blank-Type



DA/DA2-Type

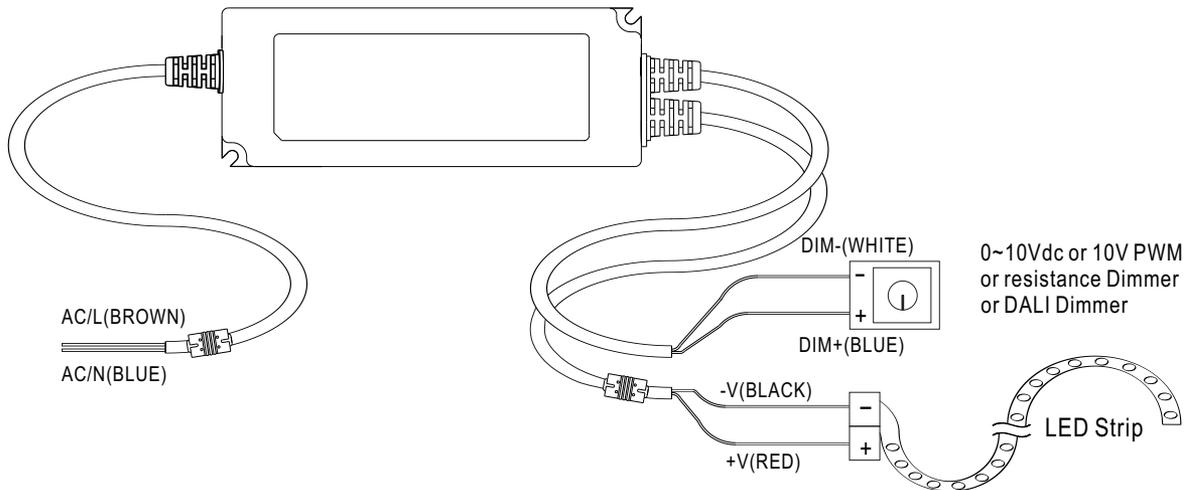


■ Recommend Mounting Direction



■ 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.