


  
 (for DA Type only)


110



SELV

 IP67  
(CCC optional)

 IS 15885(Part 2/Sec13)  
 R-41027766


05



CB CE EAC

## ■ Features

- Constant Voltage PWM style output with frequency 1.47kHz
- Plastic housing with class II design
- Built-in active PFC function
- 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
- Typical lifetime>50000 hours
- 5 years warranty

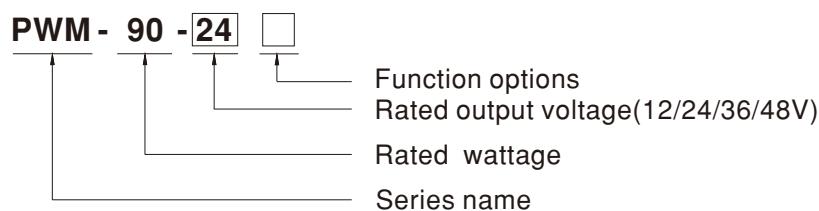
## ■ Applications

- 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



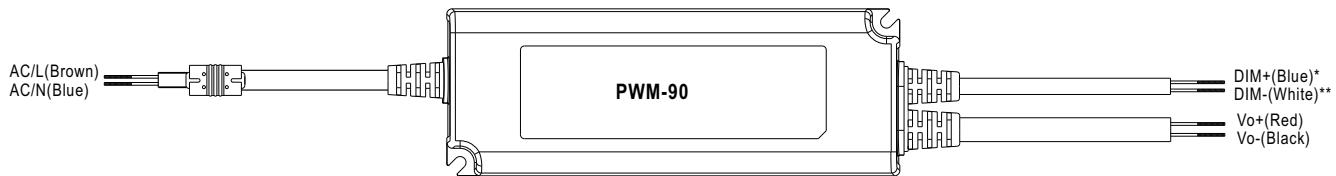
Type	IP Level	Function	Note
Blank	IP67	3 in 1 dimming function (0~10Vdc, 10V PWM signal and resistance)	In Stock
DA	IP67	DALI control technology(for 12V/24V with DA type only)	In Stock



## 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			
	SETUP, RISE TIME Note.2	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>0.94/277VAC @ full load (Please refer to "POWER FACTOR (PF) CHARACTERISTIC" section)			
	TOTAL HARMONIC DISTORTION	THD< 20%(@load $\geq$ 60%/115VAC, 230VAC; @load $\geq$ 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 $\mu$ s 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 ~ 125% 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	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	$\pm 0.03\text{%/}^{\circ}\text{C}$ (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 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			
	DALI STANDARDS	Comply with IEC62386-101, 102, 207 for DA-Type only, Device type 6(DT6)			
	WITHSTAND VOLTAGE	I/P-O/P:3.75KVAC			
	ISOLATION RESISTANCE	I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH			
	EMC EMISSION Note.6	Compliance to EN55015, EN61000-3-2 Class C (@load $\geq$ 60%) ; EN61000-3-3,GB17743 and GB17625.1,EAC TP TC 020			
OTHERS	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			
	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)			
NOTE	PACKING	0.77Kg; 18pcs/14.9Kg/0.97CUFT			
	<ol style="list-style-type: none"> <li>1. All parameters NOT specially mentioned are measured at 230VAC input, rated current and 25°C of ambient temperature.</li> <li>2. De-rating may be needed under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details.</li> <li>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.</li> <li>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.</li> <li>5. This series meets the typical life expectancy of &gt;50,000 hours of operation when Tcase, particularly (tc) point (or TMP, per DLC), is about 75°C or less.</li> <li>6. Please refer to the warranty statement on MEAN WELL's website at <a href="http://www.meanwell.com">http://www.meanwell.com</a></li> <li>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).</li> <li>8. For any application note and IP water proof function installation caution, please refer our user manual before using. <a href="https://www.meanwell.com/Upload/PDF/LED_EN.pdf">https://www.meanwell.com/Upload/PDF/LED_EN.pdf</a></li> </ol>				

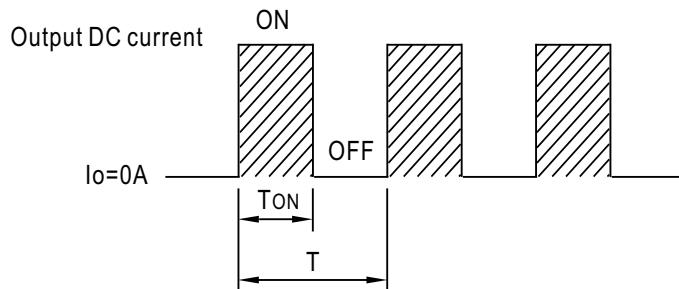
## ■ DIMMING OPERATION



## ※ Dimming principle for PWM style output

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

\* DIM+ for Blank-Type  
 DA+ for DA-type  
 \*\* DIM- for Blank-Type  
 DA- for DA-type  
 NOTE: DA Type is no distinction between "+" and "-" poles



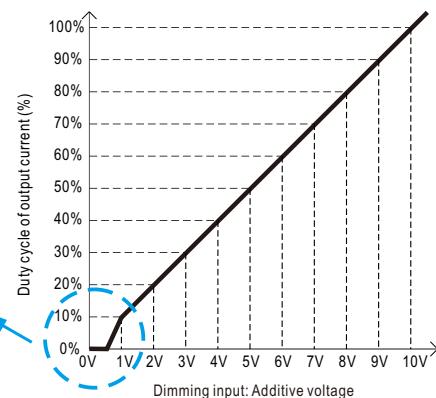
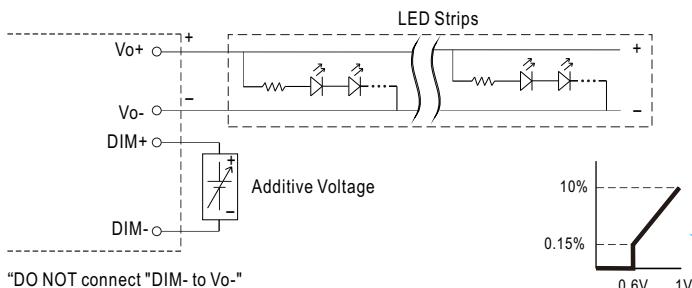
$$\text{Duty cycle}(\%) = \frac{T_{ON}}{T} \times 100\%$$

Output PWM frequency : 1.47kHz fixed (Typ.)

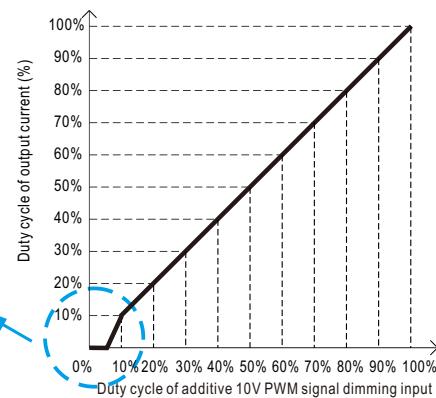
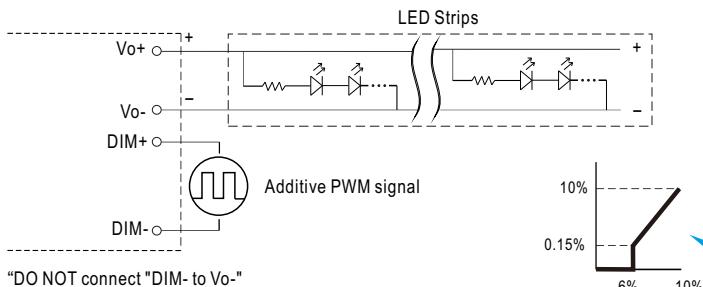
## ※ 3 in 1 dimming function (for Blank-Type)

- 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.)

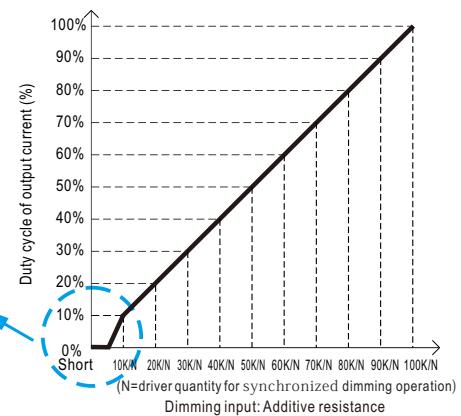
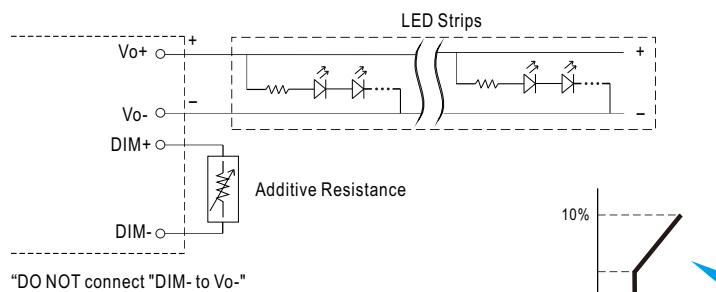
## ◎ Applying additive 0 ~ 10VDC



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



◎ Applying additive resistance:

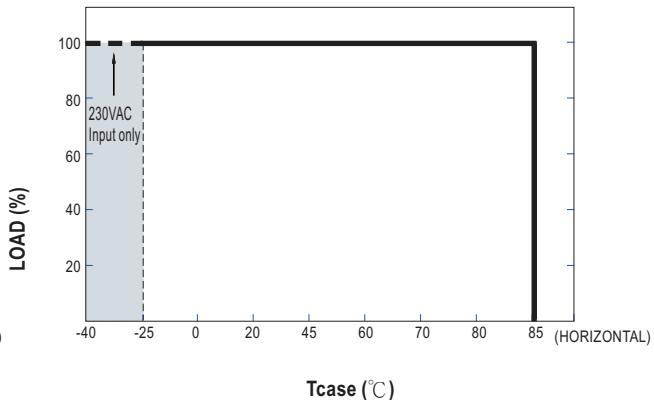
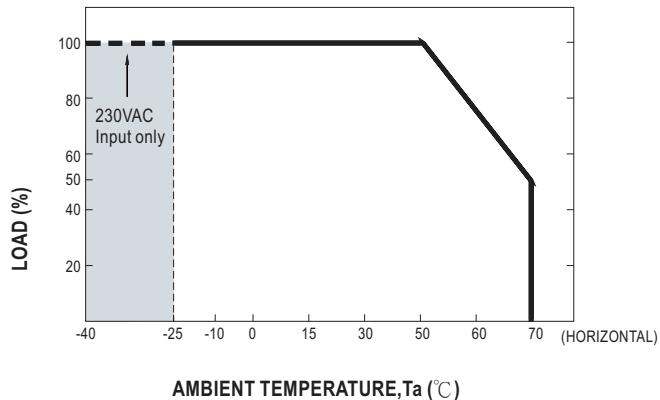


Note : 1. Min. duty cycle of output current is about 0.15%, and the dimming input is about 6K $\Omega$  or 0.6VDC, or 10V PWM signal with 6% duty cycle.  
 2. The duty cycle of output current could drop down to 0% when dimming input is less than 6K $\Omega$  or less than 0.6VDC,  
 or 10V PWM signal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

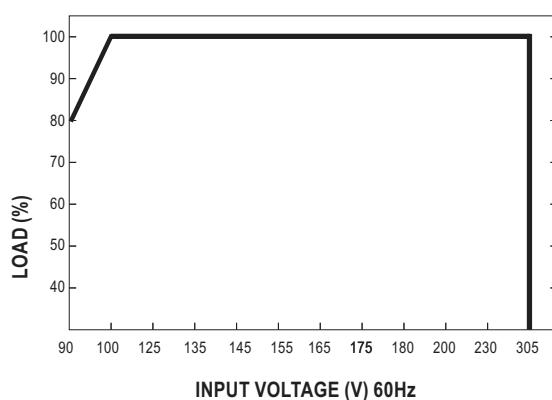
※ DALI Interface (primary side; for DA-Type)

- 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

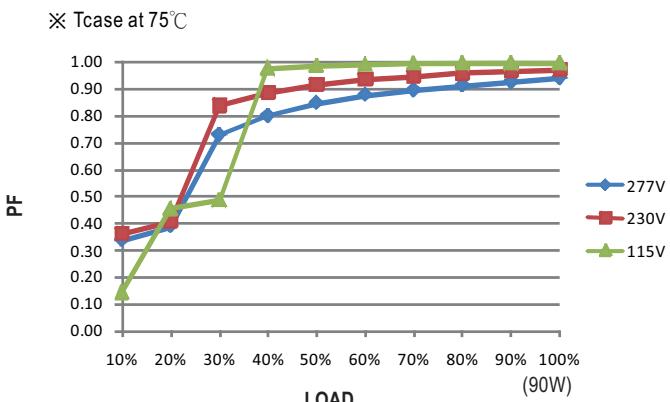


## ■ STATIC CHARACTERISTIC



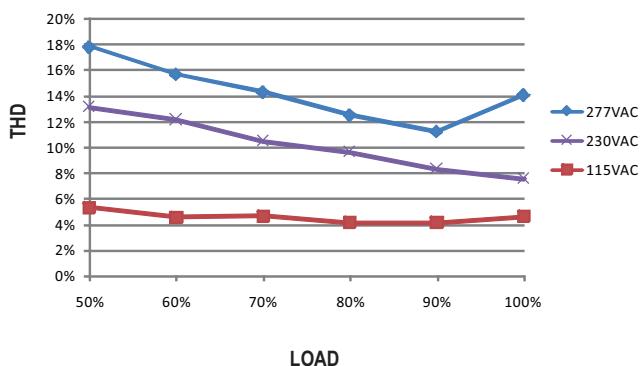
※ De-rating is needed under low input voltage.

## ■ POWER FACTOR (PF) CHARACTERISTIC



## ■ TOTAL HARMONIC DISTORTION (THD)

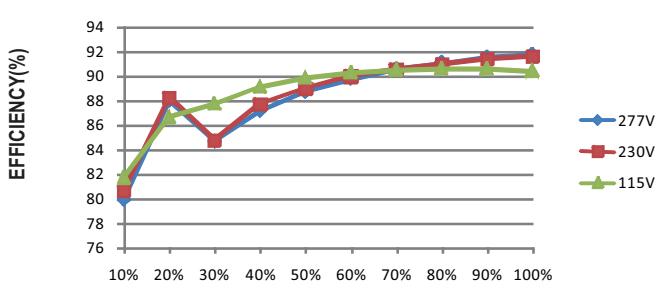
※ 48V Model, Tcase at 75°C

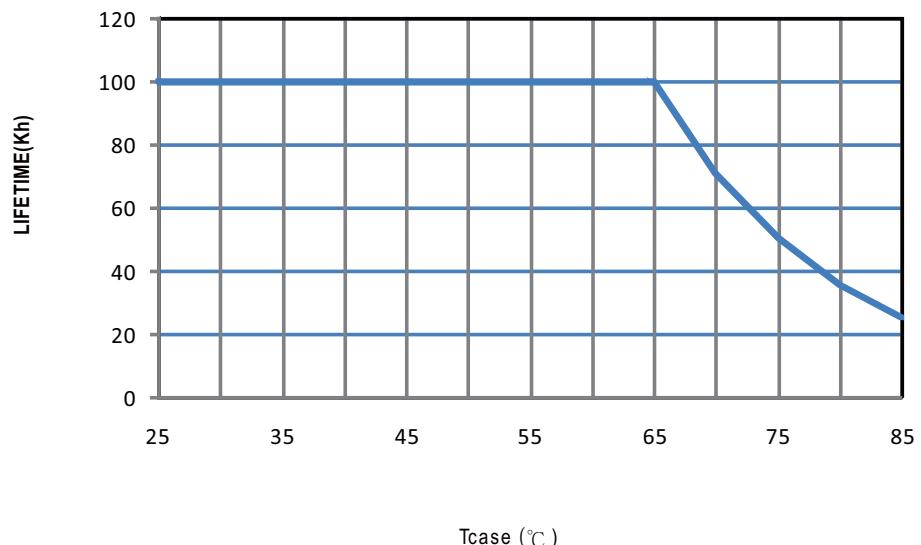


## ■ EFFICIENCY vs LOAD

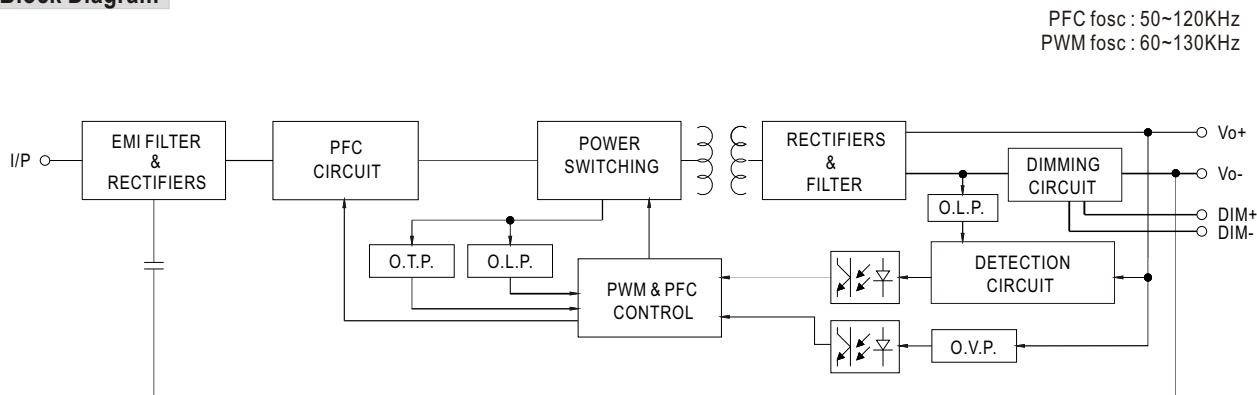
PWM-90 series possess superior working efficiency that up to 90.5% can be reached in field applications.

※ 48V Model, Tcase at 75°C



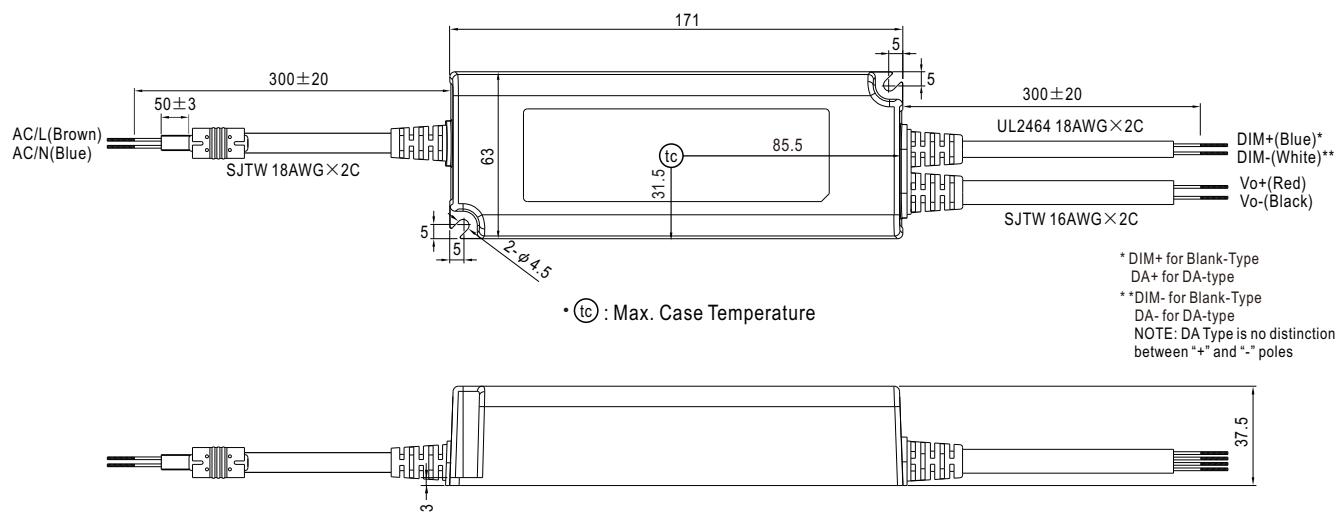
**LIFE TIME**

## ■ Block Diagram

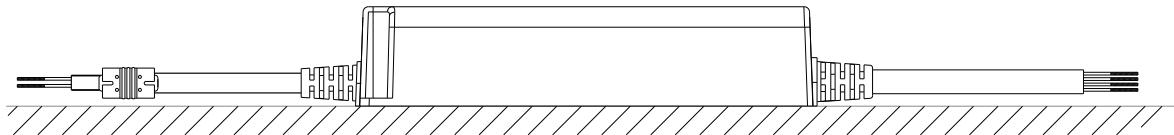


## ■ Mechanical Specification

Case No. PWM-90P Unit:mm

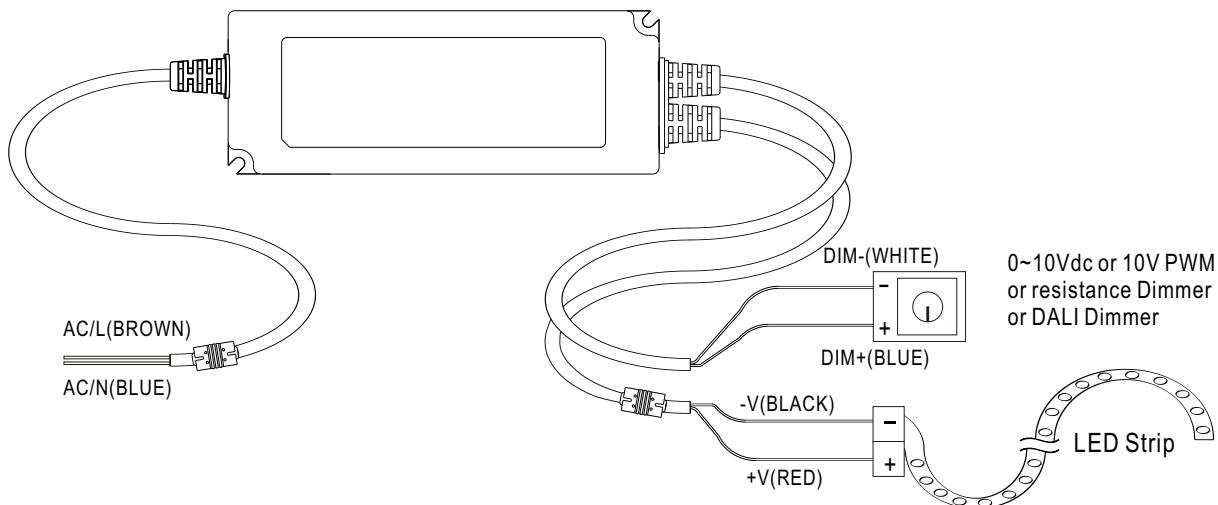


## ■ Recommend Mounting Direction



## ■ 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.
- For more information about installation, please refer to [www.meanwell.com/webnet/search/installationsearch.html](http://www.meanwell.com/webnet/search/installationsearch.html) for details.