



## Features

- Universal AC input / Full range (up to 305VAC)
- Built-in active PFC function
- Constant voltage PWM form output
- 0~10Vdc or PWM input signal dimming function
- Dimming range : 0~100%
- High efficiency up to 90.5%
- Protections: Short circuit / Over load / Over voltage / Over temperature
- Class II power unit, no FG
- Suitable for dry / damp / wet locations
- No load power consumption<0.5W
- 5 years warranty

## Applications

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

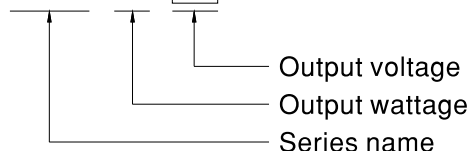
## Description

PWM-90 is one 90W waterproof constant-voltage-output LED power supply series. Differentiating from general DC output power supplies, PWM-90 transmits the output in the form of PWM, adapting to directly driving all kinds of LED lighting strips that the color temperature can be maintained and the brightness homogeneity can be assured. Adopting a universal input range between 90VAC and 305VAC and incorporating a built-in PFC function, this series is also designed with a 2 in 1 dimming function (0~10Vdc or PWM signal) that simplifies the brightness adjustment for system designers so as to achieve light reduction and energy saving.

Providing a high efficiency up to 90.5% and a low no load power consumption below 0.5W, PWM-90 can meet the energy saving demand for the new generation LED lighting. The class II design (without FG pin) and the double insulation weather-resistant cable (SJTW) make it convenient for users to flexibly install on various types of lighting systems. The enclosure design is a 94V-0 flame retardant plastic case. The interior is fully potted with silicone that enhances the heat dissipation and allows the power supply to meet the anti-vibration demand up to 5G; it also thus conforms to IP67 level, enabling PWM-90 to be used in a highly dusty and highly humid harsh environment. The entire series can operate under the temperature between -40~+70°C and comply with the relevant global lighting safety certification.

## Model Encoding

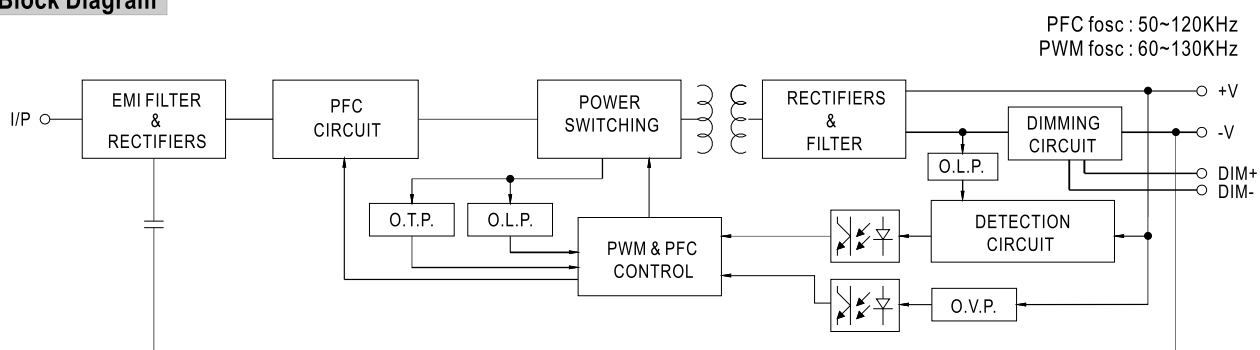
**PWM - 90 - 12**



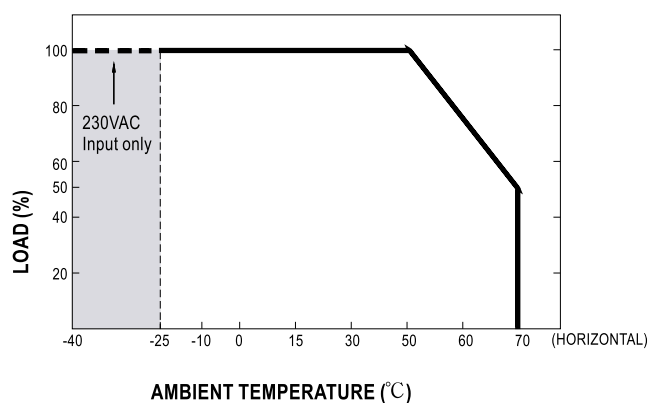
**SPECIFICATION**

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.)	300Hz			
	VOLTAGE TOLERANCE	± 4.0%	± 3.0%	± 2.0%	± 1.0%
	SETUP, RISE TIME <small>Note.2</small>	500ms, 80ms 115VAC / 230VAC at full load			
INPUT	HOLD UP TIME (Typ.)	16ms/230VAC 16ms/115VAC at full load			
	VOLTAGE RANGE	90 ~ 305VAC 127 ~ 431VDC			
	FREQUENCY RANGE	47 ~ 63Hz			
	POWER FACTOR (Typ.)	PF>0.98/115VAC, PF>0.96/230VAC, PF>0.94/277VAC at full load (Please refer to "Power Factor Characteristic" curve)			
	TOTAL HARMONIC DISTORTION	THD< 20% when output loading ≥ 60% at 115VAC/230VAC input and output loading ≥ 75% at 277VAC input			
	EFFICIENCY (Typ.)	88%	90.5%	90.5%	90.5%
	AC CURRENT (Typ.)	0.95A / 115VAC 0.5A / 230VAC 0.4A / 277VAC			
PROTECTION	INRUSH CURRENT (Typ.)	COLD START 60A(twidth=550μs measured at 50% Ipeak) at 230VAC			
	LEAKAGE CURRENT	<0.25mA / 277VAC			
	OVER LOAD	108 ~ 120% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed			
	SHORT CIRCUIT	Hiccup mode, recovers automatically after fault condition is removed			
	OVER VOLTAGE	15 ~ 17V	28 ~ 34V	41 ~ 46V	54 ~ 60V
ENVIRONMENT		Protection type : Shut down o/p voltage, re-power on to recover			
	OVER TEMPERATURE	Shut down o/p voltage, re-power on to recover			
	WORKING TEMP.	-40 ~ +70°C (Refer to "Derating Curve")			
	WORKING HUMIDITY	20 ~ 95% RH non-condensing			
	STORAGE TEMP., HUMIDITY	-40 ~ +80°C, 10 ~ 95% RH			
SAFETY & EMC	TEMP. COEFFICIENT	± 0.03%/°C (0 ~ 50°C)			
	VIBRATION	10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes			
	SAFETY STANDARDS	UL8750, CSA C22.2 No. 250.13-12(except for 48V), ENEC EN61347-1, EN61347-2-13, EN62384 independent, IP67 approved ; Design refer to EN60335-1			
	WITHSTAND VOLTAGE	I/P-O/P:3.75KVAC			
	ISOLATION RESISTANCE	I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH			
OTHERS	EMC EMISSION	Compliance to EN55015, EN61000-3-2 Class C (≥ 60% load) ; EN61000-3-3			
	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; EN61547, light industry level(surge L-N : 2KV), criteria A			
	MTBF	224.2K hrs min. MIL-HDBK-217F (25°C)			
	DIMENSION	171*63*37.5mm (L*W*H)			
NOTE	PACKING	0.77Kg; 18pcs/14.9Kg/0.82CUFT			
		1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.			

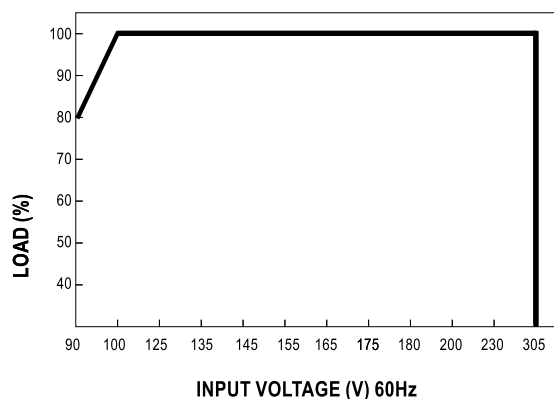
### ■ Block Diagram



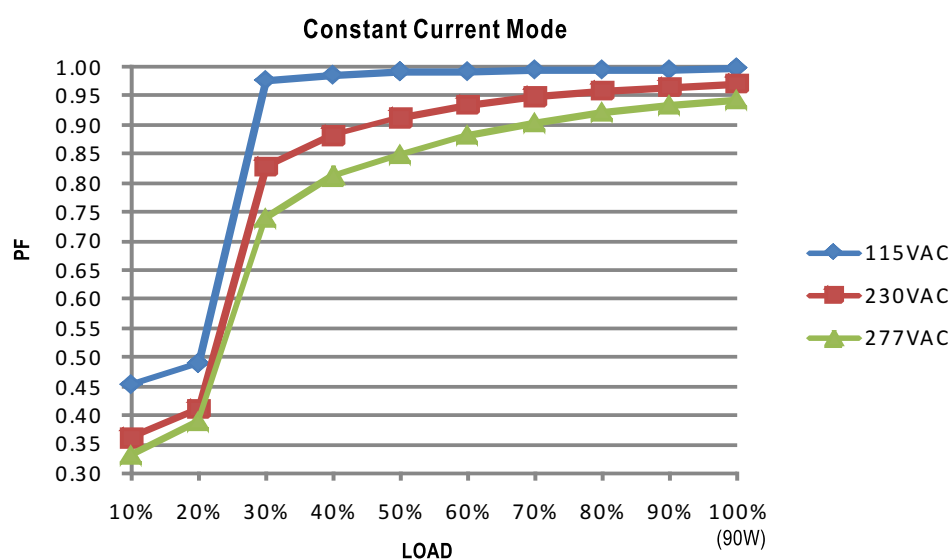
### Derating Curve



### ■ Static Characteristics

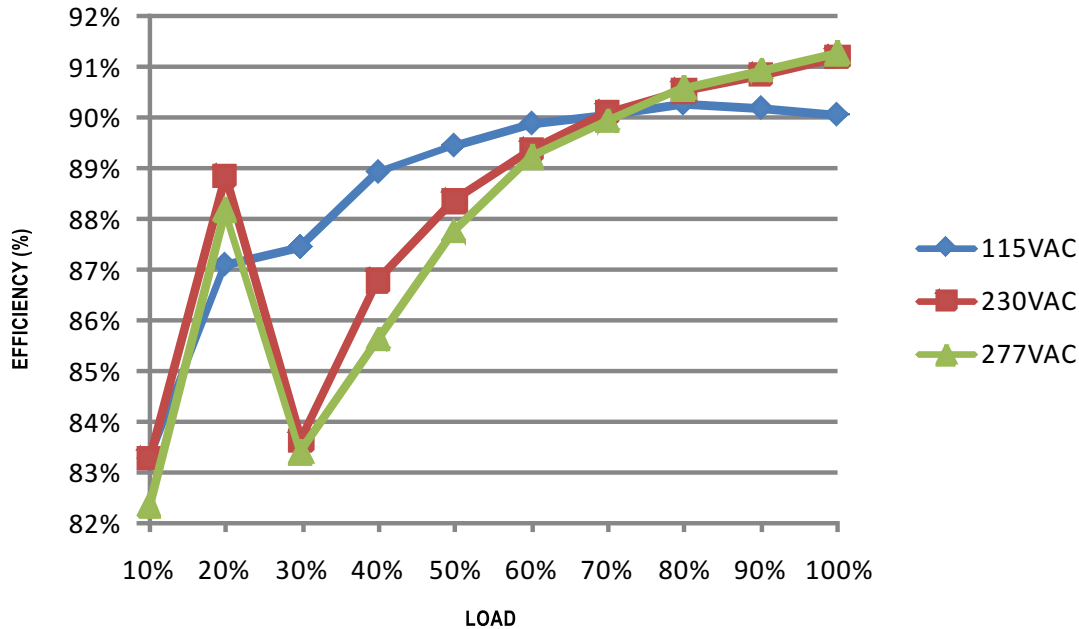


### ■ Power Factor Characteristic



## ■ EFFICIENCY vs LOAD (48V Model)

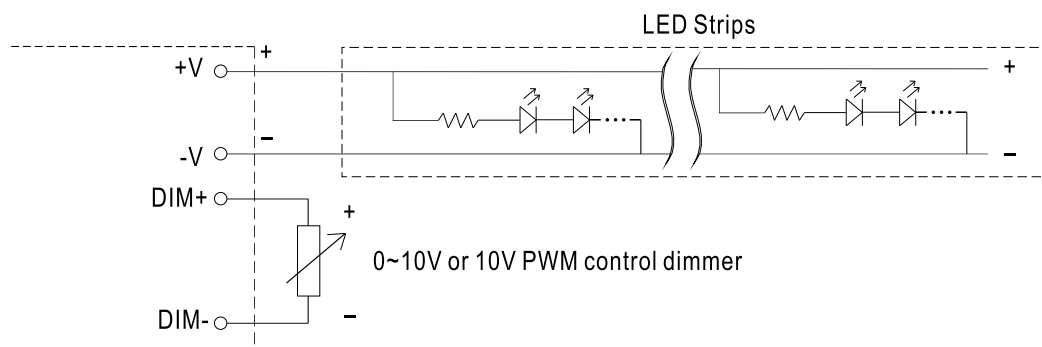
PWM-90 series possess superior working efficiency that up to 90.5% can be reached in field applications.



## ■ DIMMING OPERATION

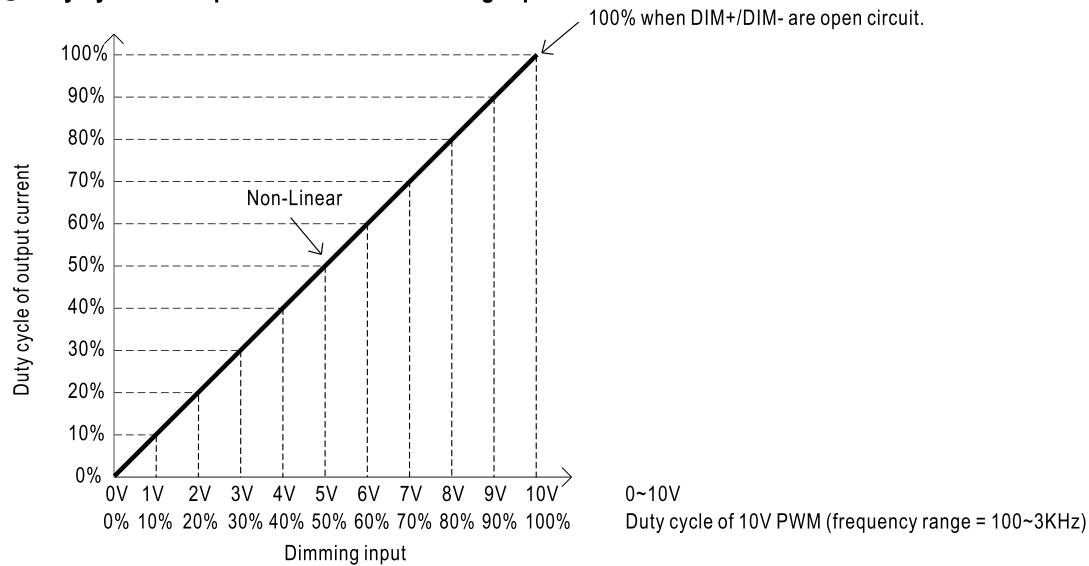
Output PWM control is simple switching of output voltage on/off at a rate so fast that the human eye cannot see led flickering. Duty cycle describes the proportion of time when output voltage is on relative to the entire period of time. It's expressed in percent, 100% being full on (max. brightness) and low duty cycle corresponding to lower brightness. Output PWM control built-in 2 in 1 dimming function, output constant voltage PWM duty can be adjusted through output cable by 0~10Vdc or 10V PWM signal between DIM+ and DIM-.

### ◎Connection



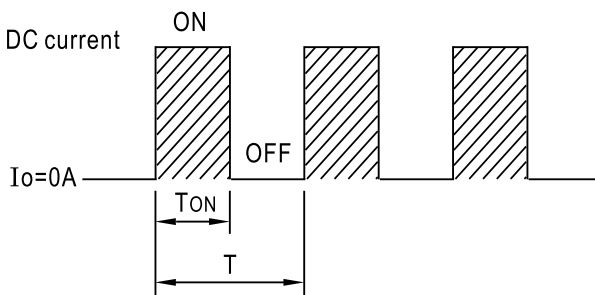
※DO NOT connect "DIM-" to "-V"

## ◎Duty cycle of output current VS Dimming input



## ◎PWM Output

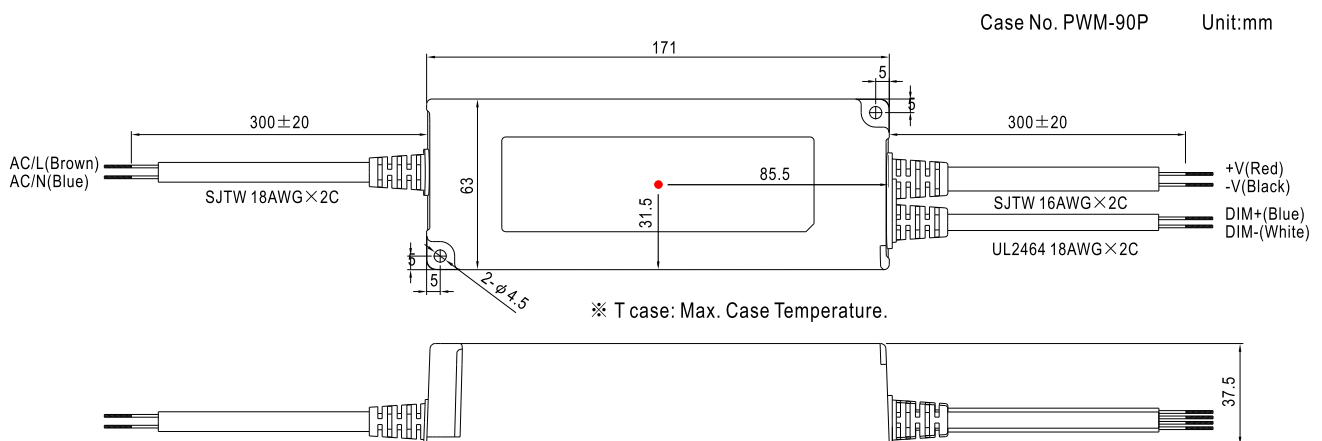
Output DC current



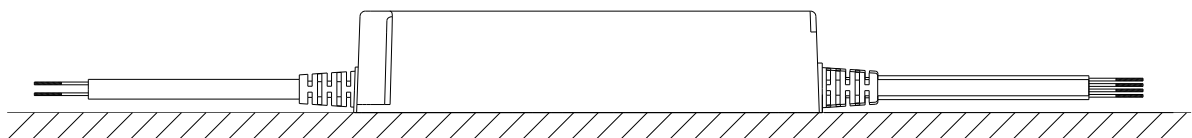
$$\text{Duty cycle(\%)} = \frac{T_{ON}}{T} \times 100\%$$

Output PWM frequency : 300Hz fixed (Typ.)

## ■ Mechanical Specification

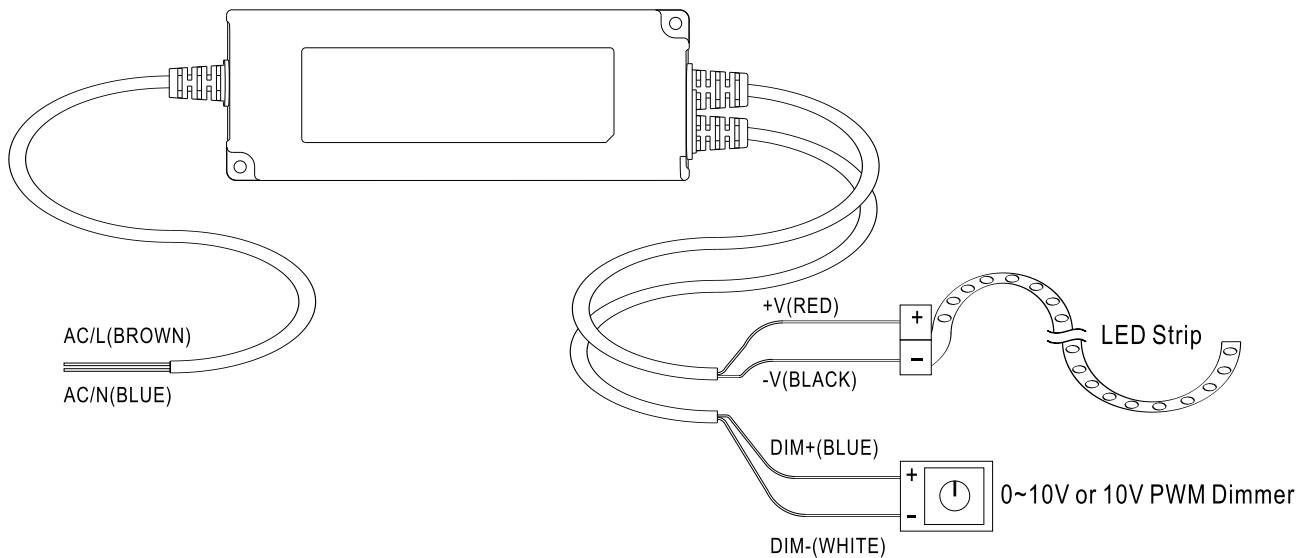


## ■ Recommend Mounting Direction



## ■ Installation Manual

### ◎ Connection



### ◎ 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 power supplies 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 power supplies, 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 -V".
- 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.