Features

- Universal AC input / Full range (up to 305VAC)
- Built-in active PFC function
- Constant voltage PWM style output
- Build in 3 in 1 dimming function
  (0~10Vdc or PWM signal or resistance)
- Dimming range : 0~100%
- High efficiency up to 90.5%
- Protetions: Short circuit / Over load / Over voltage
  / Over temperature
- Class Ⅱ power unit, no FG
- Class 2 power unit (Except for PWM-90-12)
- Suitable for dry / damp / wet locations
- No load power consumption<0.5W
- 5 years warranty

Description

PWM-90 is one 90W waterproof constant-voltage output LED power supply series. Differentiating from general DC output power supplies, PWM-90 transmits PWM style output, adapting to directly driving all kinds of LED 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 the built-in PFC function, this series is also designed with a 3 in 1 dimming function (0~10Vdc or PWM signal or resistance) that simplifies the brightness adjustment for system designers so as to achieve light reduction and energy conservation.

Providing a high efficiency up to 90.5% and a low no load power consumption below 0.5W, PWM-90 can satisfy 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) on the input side 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 PWM-90 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℃ and comply with the relevant global lighting safety certification.

Model Encoding

PWM - 90-12

- Output voltage
- Output wattage
- Series name

Applications

- LED strip lighting
- Indoor LED lighting
- LED decorative lighting
- LED architecture lighting
### SPECIFICATION

<table>
<thead>
<tr>
<th>MODEL</th>
<th>DC VOLTAGE</th>
<th>RATED CURRENT</th>
<th>RATED POWER</th>
<th>DIMMING RANGE</th>
<th>PWM FREQUENCY (Typ.)</th>
<th>VOLTAGE TOLERANCE</th>
<th>SETUP, RISE TIME Note.2</th>
<th>HOLD UP TIME (Typ.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWM-90-12</td>
<td>12V</td>
<td>7.5A</td>
<td>90W</td>
<td>0 ~ 100%</td>
<td>300Hz</td>
<td>±4.0%</td>
<td>500ms, 80ms 115VAC / 230VAC at full load</td>
<td></td>
</tr>
<tr>
<td>PWM-90-24</td>
<td>24V</td>
<td>3.75A</td>
<td>90W</td>
<td>0 ~ 100%</td>
<td>300Hz</td>
<td>±3.0%</td>
<td>16ms/230VAC 16ms/115VAC at full load</td>
<td></td>
</tr>
<tr>
<td>PWM-90-36</td>
<td>36V</td>
<td>2.5A</td>
<td>90W</td>
<td>0 ~ 100%</td>
<td>300Hz</td>
<td>±2.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PWM-90-48</td>
<td>48V</td>
<td>1.88A</td>
<td>90.24W</td>
<td>0 ~ 100%</td>
<td>300Hz</td>
<td>±1.0%</td>
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<td></td>
</tr>
</tbody>
</table>

### INPUT

<table>
<thead>
<tr>
<th></th>
<th>VOLTAGE RANGE</th>
<th>FREQUENCY RANGE</th>
<th>POWER FACTOR (Typ.)</th>
<th>TOTAL HARMONIC DISTORTION</th>
<th>EFFICIENCY (Typ.)</th>
<th>AC CURRENT (Typ.)</th>
<th>INRUSH CURRENT (Typ.)</th>
<th>LEAKAGE CURRENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>90 ~ 305VAC</td>
<td>47 ~ 63Hz</td>
<td>PF&gt;0.98/115VAC, PF&gt;0.96/230VAC, PF&gt;0.94/277VAC at full load (Please refer to &quot;Power Factor Characteristic&quot; curve)</td>
<td>THD&lt; 20% when output loading≥60% at 115VAC/230VAC input and output loading≥75% at 277VAC input</td>
<td>88%</td>
<td>0.95A / 115VAC</td>
<td>&lt;0.25mA / 277VAC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>127 ~ 431VDC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.5A / 230VAC</td>
<td>0.4A / 277VAC</td>
<td></td>
</tr>
</tbody>
</table>

### PROTECTION

| OVER LOAD | 108 ~ 120% rated output power |
| SHORT CIRCUIT | Hiccup mode, recovers automatically after fault condition is removed |
| OVER VOLTAGE | Protection type : 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. | -40 ~ +70°C (Refer to "Derating Curve") |
| 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 | UL8750, CSA C22.2 No. 250.13-12, 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 |
| EMC EMISSION | Compliance to EN55015, EN61000-3-2 Class C (≥60% load) ; EN61000-3-3 |
| EMC IMMUNITY | Compliance to EN65015, EN61000-4-2,3,4,5,6,8,11; EN61547, light industry level(surge L- N : 2KV), criteria A |

### OTHERS

| MTBF | 224.2K hrs min. MIL-HDBK-217F (25°C) |
| DIMENSION | 171*63*37.5mm (L"W"H) |
| PACKING | 0.77Kg; 18pcs/14.9Kg/0.82CUFT |

### NOTE

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
2. Length of setup time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the setup time.
90W PWM output LED power supply

PWM-90 series

Block Diagram

Derating Curve

Static Characteristics

Power Factor Characteristic

Constant Voltage Mode

File Name: PWM-90-SPEC 2014-10-21
**EFFICIENCY vs LOAD (48V Model)**

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

![EFFICIENCY GRAPH](image)

**DIMMING OPERATION**

The PWM style output is a simple switching of supply 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 is expressed in percentage, 100% being fully on (maximal brightness) and a low duty cycle corresponding to lower brightness.

Built-in 3 in 1 dimming function. The duty of the PWM style output can be adjusted through output cable by connecting a 0~10Vdc or 10V PWM signal or resistance between DIM+ and DIM-.

**Connection**

![Connection Diagram](image)

※DO NOT connect "DIM- to -V"
Duty cycle of output current VS Dimming input

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

0V 1V 2V 3V 4V 5V 6V 7V 8V 9V 10V

Non-Linear 100% when DIM+/DIM- are open circuit.

Duty cycle of 10V PWM (frequency range = 100~3KHz)

0~10Vdc 0~100Ω resistance

PWM Style Output

Output DC current

ON

OFF

I_o = 0A

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

Output PWM frequency: 300Hz fixed (Typ.)

Mechanical Specification

Case No. PWM-90P

AC/L(Brown) AC/N(Blue) SJTW 16AWG × 2C UL2464 18AWG × 2C

AC/L(Brown) AC/N(Blue) SJTW 16AWG × 2C

300 ± 20 300 ± 20

4.5

+V(Red) -V(Black) DIM+(Blue) DIM-(White)

85.5

171

37.5

ψ

T case: Max. Case Temperature.

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 for details.