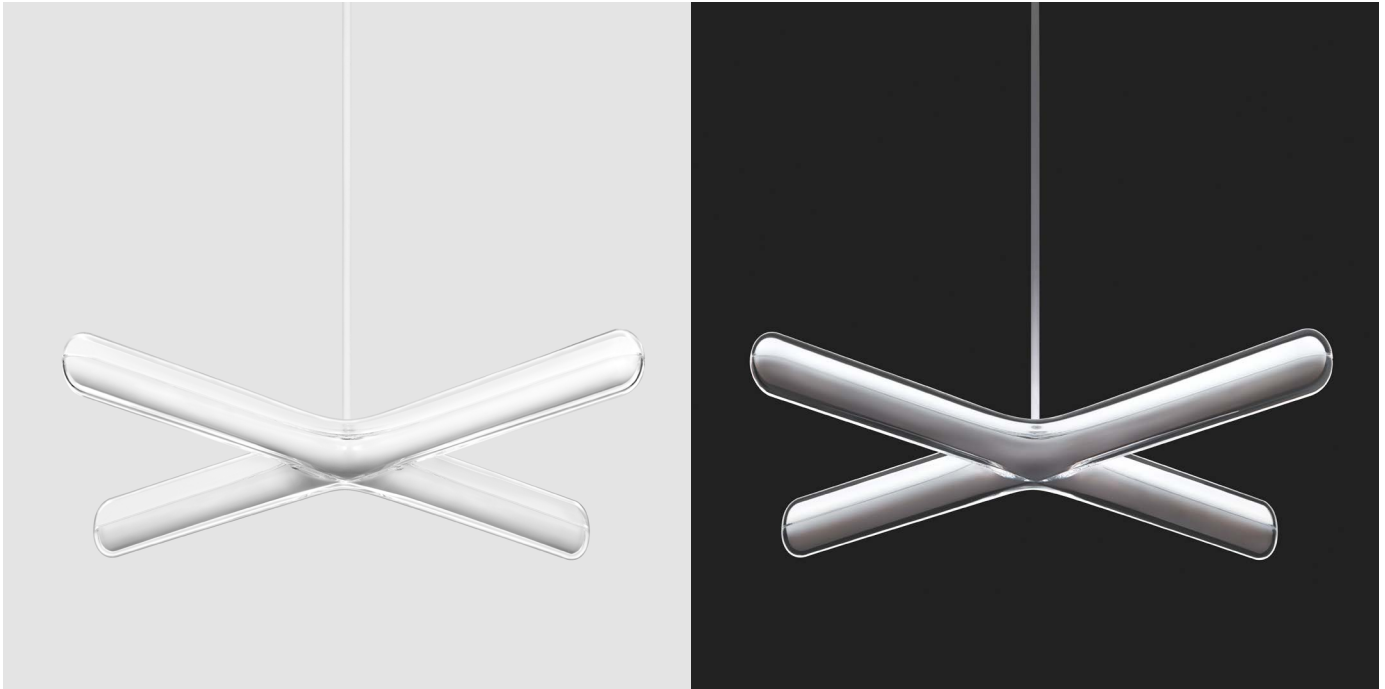


# TWO PARTS



## Calcium

By Christo Logan

### Description

Indoor Pendant Fixture - Uplight

### Fixture

Material: Acrylic + Polycarbonate

Color: Clear + White

Dims: 14.6" x 1.7 in / Span: 20.4 in

Dims: 372<sup>2</sup> x 43 mm / Span: 518 mm

### Cord

Color: White

Length: 20 ft / 6 m

### Driver

Fits in most Junction Boxes

Dimming: Triac, ELV, 0-10V

Input Voltage: 100-305V AC

### LED

Input: 13W

Output: 800 lm

User replaceable: No

Life Expectancy: 50,000 hours

Color Accuracy: CRI 95+, R9 90+

Input: 12V Constant Voltage

### Warranty

Fixture: 5 years

Driver: 3 years

### Certification

ETL Listed (UL + CSA Standards)

Damp Location

CE, RoHS

### Download CAD, Revit, IES

<http://two.parts/calcium>

### Light Temp

CAL-CW-27 : 2700K

CAL-CW-30 : 3000K

CAL-CW-35 : 3500K

### Cluster Size : Driver

1 : Two Parts 25W Driver

2 : Two Parts 40W Driver

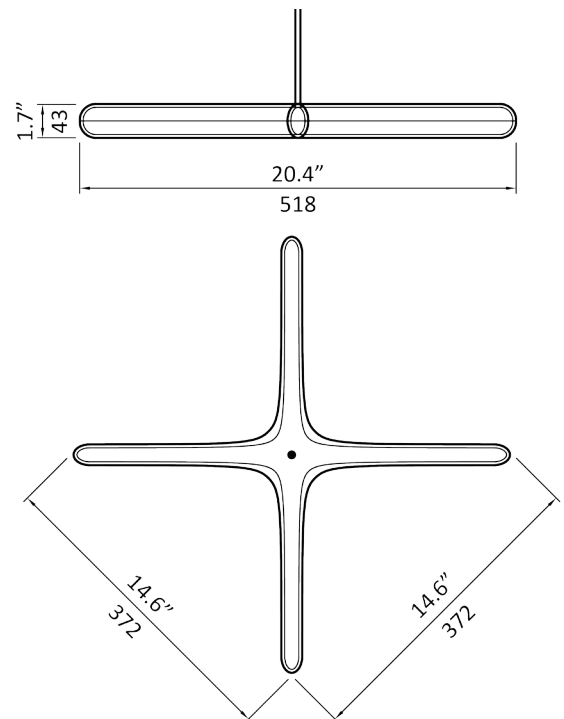
3 : Two Parts 40W Driver

4 : PWM-90-12 Driver

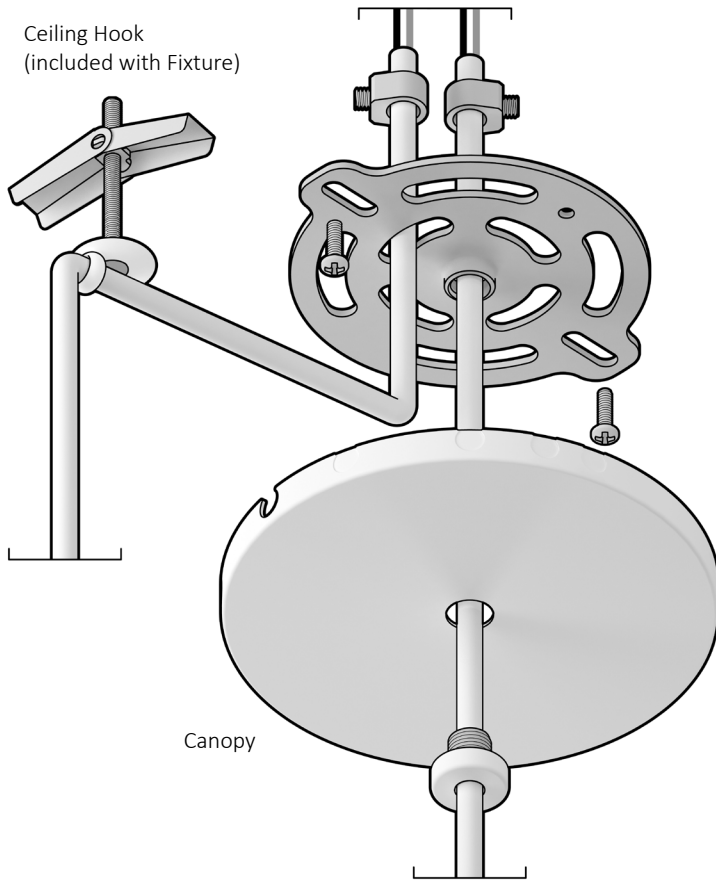
5 : PWM-90-12 Driver

6 : PWM-90-12 Driver

7 : Any 95W+ 12V CV Driver



# TWO PARTS



## Canopy01

By Christo Logan

### Part No

C01-W-7P

### Canopy

Fixtures Supported: 1- 7

Material: Steel

Color: White

Dims:  $\varnothing 4 \frac{1}{2} \times H3/8$  in

Dims:  $\varnothing 115 \times H9$  mm

### Features

Low Profile

No exposed screws

Side port knockouts

Center port cap

### Ceiling Hook

Included with Fixture

Screw size: #8 or M4 flathead

Material: Steel

Color: White

Dims:  $\varnothing 0.8 \times H0.4$  in

Dims:  $\varnothing 20 \times H11$  mm

### Certification

ETL Listed (UL & CSA Standards)

Damp Location

CE, RoHS

### Download CAD, Revit, IES

<http://two.parts/canopy01>

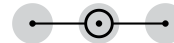
## Center & Side Mounted



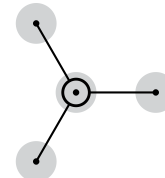
1



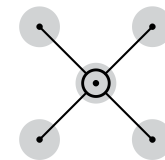
2



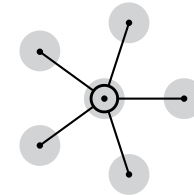
3



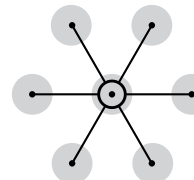
4



5

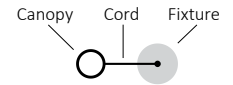


6

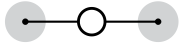


7 Fixtures

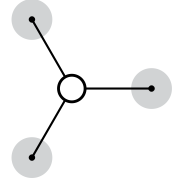
## Side Mounted Only



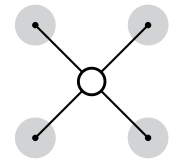
1



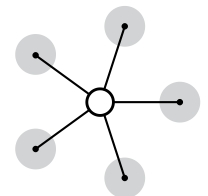
2



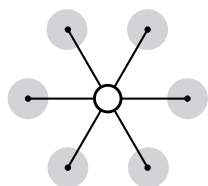
3



4



5



6



7 Fixtures

# TWO PARTS

Circuit Connector  
(customer provided)  
Must be UL/CSA/CE approved (US/Canada/  
Europe) for applicable wire gauge

LED Driver  
To be housed in accessible location  
as near as possible to Fixture.

Circuit Connector  
(customer provided)  
Must be UL/CSA/CE approved  
(US/Canada/Europe) for  
applicable wire gauge

Anchor  
Hole  $\varnothing$ : 9/16" or 15mm

Ceiling Hook  
Use #8 or M4 flathead  
screw located 1/2" or  
13mm shy of fixture  
location

Cord  
Side Mounted

Side Port Knockout

Building Wires  
(customer provided)

Internal Wires  
Black+ White-  
Multiple Fixtures to be wired  
in parallel to a single Driver

Cord Grip  
Tighten screw to  
ensure cord cannot  
move

Ground Screw  
Tighten around  
Ground Wire

Screw  
(customer provided)

Canopy

Center Port

Canopy Screw

Cord  
Center Mounted

## INSTALL GUIDE

All components are included  
unless otherwise noted.

### WARNING

Electric shock risk. Use caution  
when installing. Turn off  
electrical power at breaker  
before installation. Installation  
should be performed by a  
qualified electrician only.

The installer must ensure that  
the ceiling can support fixture's  
weight and reinforce ceiling  
structure by adequate means if  
necessary.

### MAINTENANCE

Wipe exposed surfaces with  
dry cloth as needed.

### INSTRUCTIONS

**1A Center Mount** Remove cap  
from Canopy Screw.

**1B Side Mount** Install Ceiling  
Hook(s) with loop facing away  
from canopy. Knock out side  
port(s) according to cluster  
configuration.

**2** Cut each Cord to desired  
length, leaving 3" (70mm) of  
exposed Internal Wires.

**3A Center Mount** Thread  
Cord through Canopy Screw,  
Canopy, Crossbar and Cord  
Grip.

**3B Side Mount** Thread Cord  
through Ceiling Hook, Crossbar  
and Cord Grip.

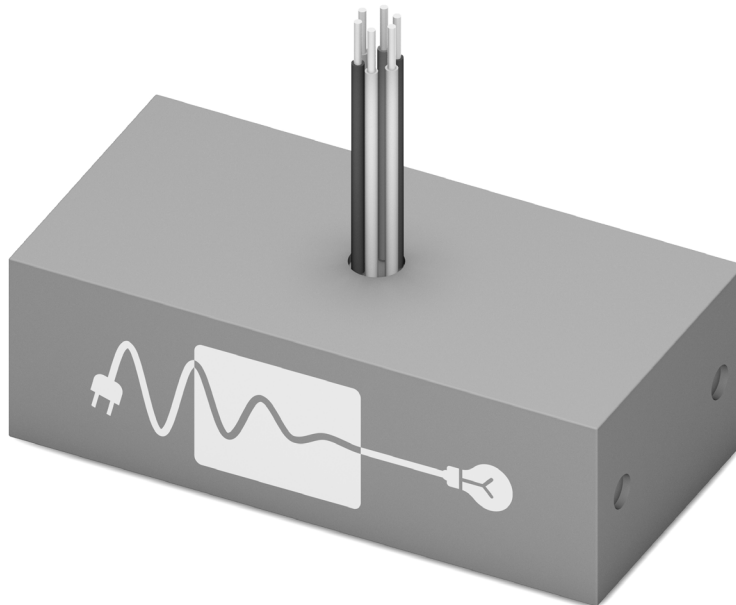
**4** Secure Cord Grip onto each  
Cord with 1/2" (10mm) of Cord  
left above.

**5** Using Circuit Connectors  
appropriate to local building  
code, connect Internal Wires  
to Driver and connect Driver to  
Building Wires.

**6** Screw Crossbar to ceiling or  
outlet box.

**7** Affix Canopy Screw to  
Crossbar with Canopy in  
between.

# TWO PARTS



## Driver 25W

By LTF LLC

### Part No

D25W12V-UI-UD

### Description

Dimmable Low Voltage LED Driver

### Manufacturer Part

LTF DS25W12VBF1UD

### 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  
Power: 25W  
Voltage: 12V DC  
Current: 2083mA

### Specs

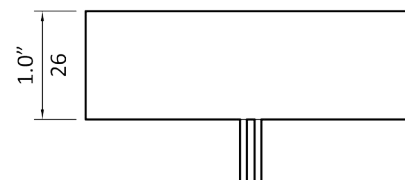
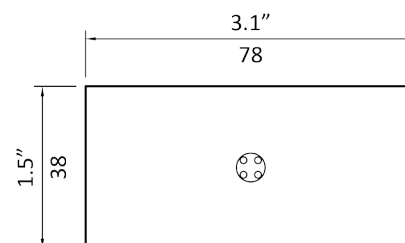
Dimming: Triac, ELV, 0-10V  
Class: Class 2 Power Supply  
IP Rating: IP67  
Humidity: 95% RH Max

### Certification

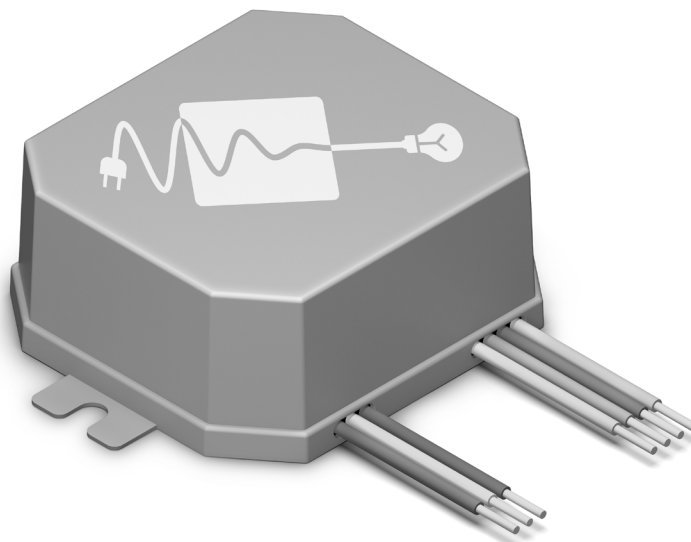
UL8750, UL1310  
CE, RoHS  
FCC Part 15 Class B Compliant

### Dimensions

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



# TWO PARTS



## Driver 40W

By LTF LLC

### Part No

D40W12V-UI-UD

### Description

Dimmable Low Voltage LED Driver

### Manufacturer Part

LTF DS40W12VOCUD

### 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  
Power: 40W  
Voltage: 12V DC  
Current: 3333mA

### Specs

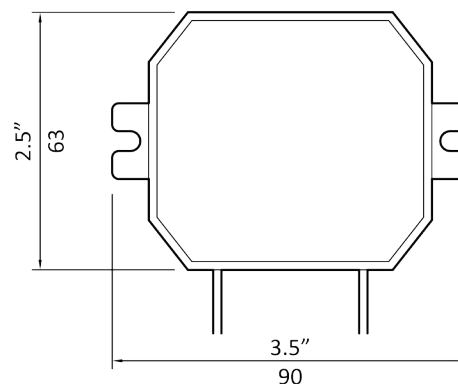
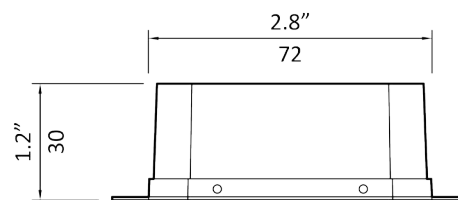
Dimming: Triac, ELV, 0-10V  
Class: Class 2 Power Supply  
IP Rating: IP67  
Humidity: 95% RH Max

### Certification

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

### 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

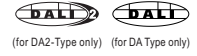
1	Lutron DIVA CL	DVCL-153P-WH
2	Lutron DIVA ELV	DVELV-303P
3	Lutron Home Works	HQRD-6A
4	Lutron Home Works	HQRD-6NA
5	Leviton	Model 6615
6	Leviton	Model 6672
7	Leviton	Model 6674/IPL06
8	Leviton	Model IPE04
9	Leviton	Model IPI06
10	Leviton	Model VP106
11	Leviton	Model VPE04
12	Leviton	VPM06
13	Leviton	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

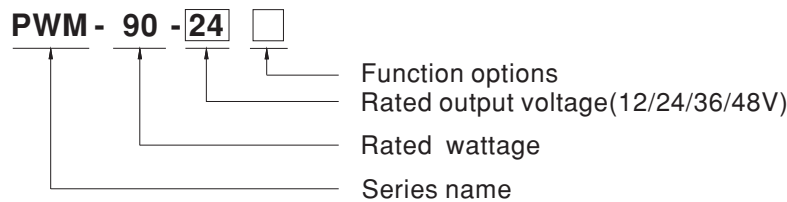
### ■ Applications

- 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



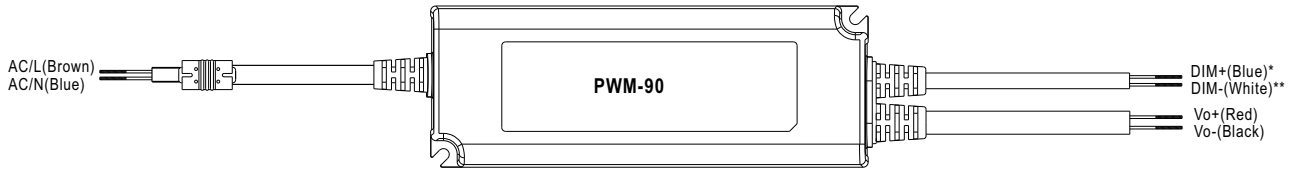
Type	IP Level	Function	Note
Blank	IP67	3 in 1 dimming function (0~10Vdc, 10V PWM signal and resistance)	In Stock
DA	IP67	DALI control technology(for 12V/24V with DA type only)	In Stock
DA2	IP67	DALI-2 control technology(for 12V/24V/48V with DA2 type only)	In Stock

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

**SPECIFICATION**

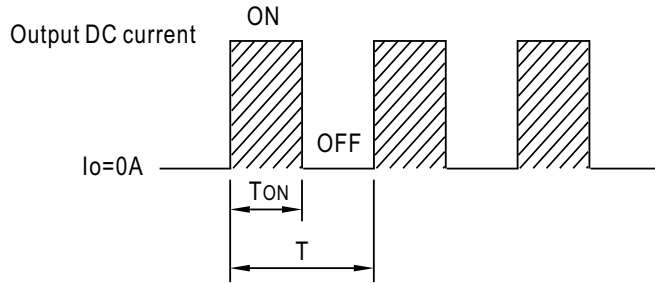
MODEL	PWM-90-12□	PWM-90-24□	PWM-90-36□	PWM-90-48□	
OUTPUT	DC VOLTAGE	12V	24V	36V	48V
	RATED CURRENT	7.5A	3.75A	2.5A	1.88A
	RATED POWER	90W	90W	90W	90.24W
	DIMMING RANGE	0 ~ 100%			
	PWM FREQUENCY (Typ.)	1.47kHz for Blank/DA-Type, 2.5kHz for DA2-Type			
	SETUP, RISE TIME <sup>Note.2</sup> <sub>Note.9</sub>	500ms, 80ms/ 115VAC or 230VAC			
	HOLD UP TIME (Typ.)	16ms/115VAC or 230VAC			
INPUT	VOLTAGE RANGE <sup>Note.3</sup>	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 <sup>Note.5</sup>	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 <sup>Note.6</sup>		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 &gt;50,000 hours of operation when Tcase, particularly (Tc) 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 <a href="http://www.meanwell.com">http://www.meanwell.com</a></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. <a href="https://www.meanwell.com/Upload/PDF/LED_EN.pdf">https://www.meanwell.com/Upload/PDF/LED_EN.pdf</a></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 <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a></p>				

**■ DIMMING OPERATION**



※ Dimming principle for PWM style output

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



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

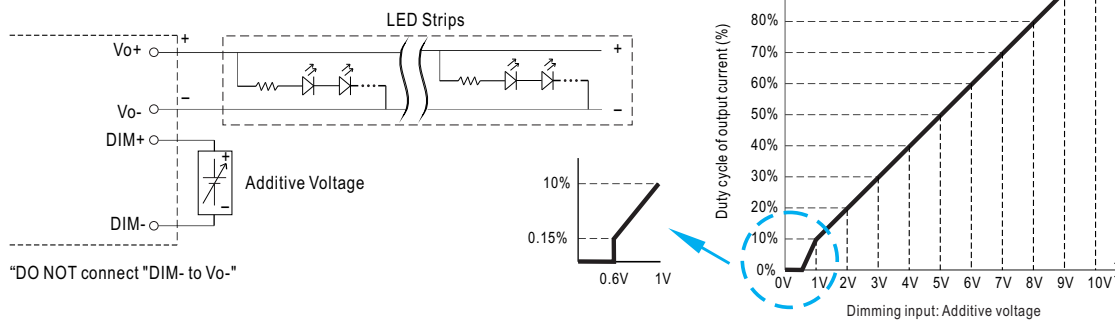
Output PWM frequency : 1.47kHz for Blank/DA-Type  
2.5kHz for DA2-Type

\* 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)

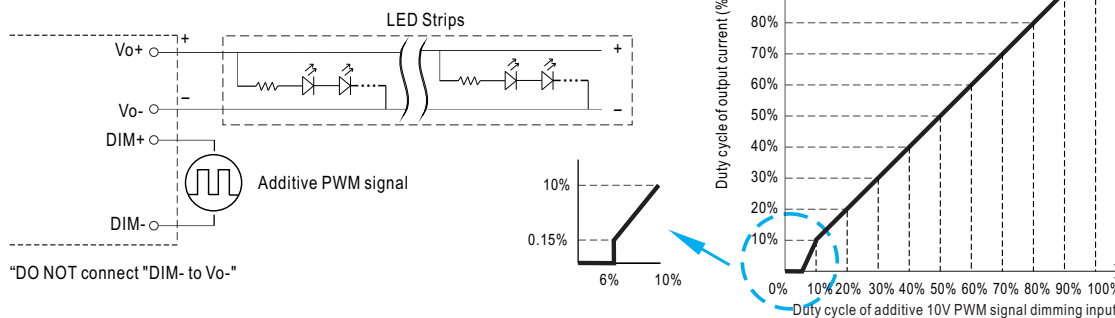
- Apply one of the three methodologies between DIM+ and DIM-: 0 ~ 10VDC, or 10V PWM signal or resistance.
- Dimming source current from power supply: 100μA (typ.)

◎ Applying additive 0 ~ 10VDC



"DO NOT connect "DIM- to Vo-"

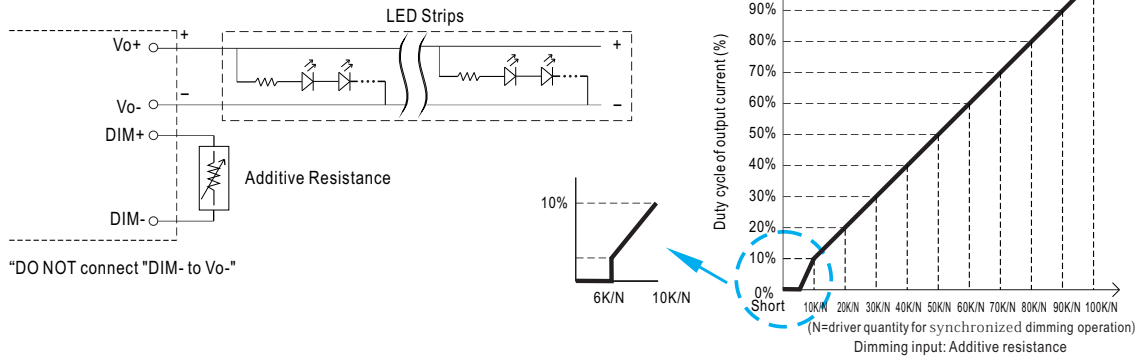
◎ Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):



"DO NOT connect "DIM- to Vo-"

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

⊙ Applying additive resistance:

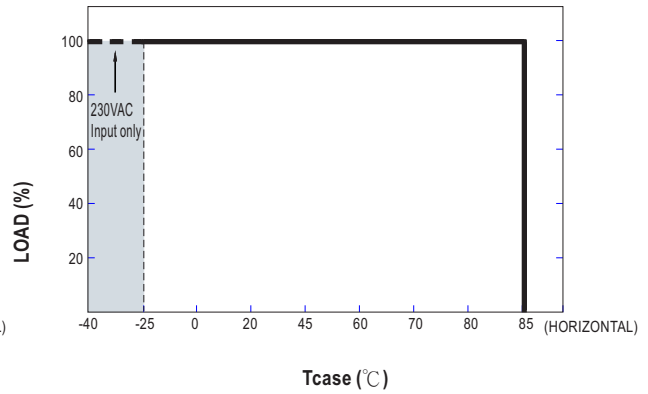
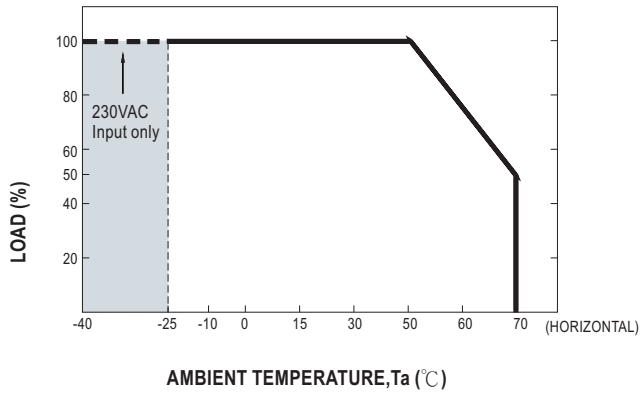


Note : 1. Min. duty cycle of output current is about 0.15%, and the dimming input is about 6K $\Omega$  or 0.6VDC, or 10V PWM signal with 6% duty cycle.  
2. The duty cycle of output current could drop down to 0% when dimming input is less than 6K $\Omega$  or less than 0.6VDC, or 10V PWM signal with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

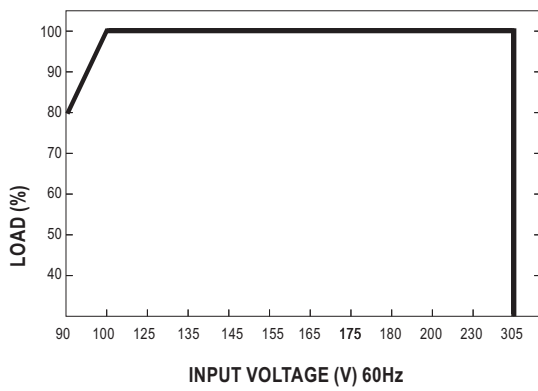
※ DALI Interface (primary side; for DA/DA2-Type)

- 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**

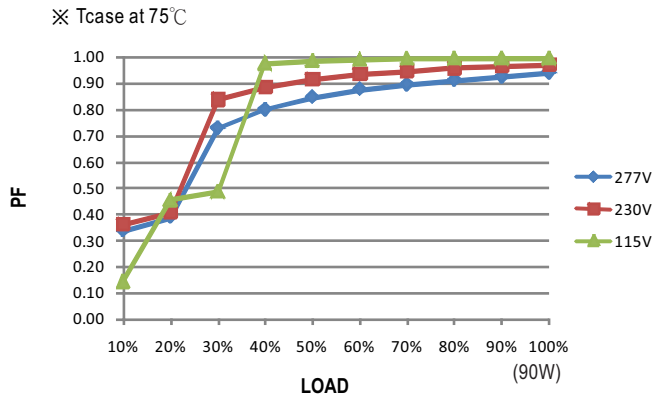


**STATIC CHARACTERISTIC**



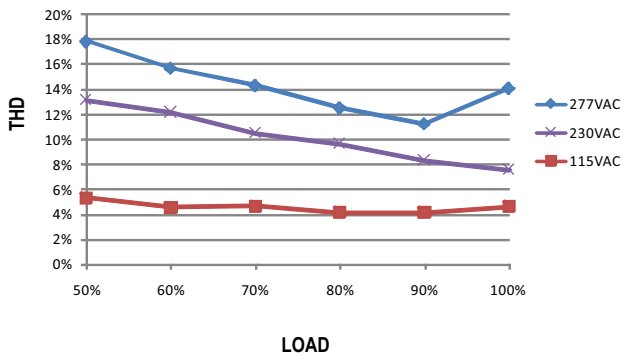
※ De-rating is needed under low input voltage.

**POWER FACTOR (PF) CHARACTERISTIC**



**TOTAL HARMONIC DISTORTION (THD)**

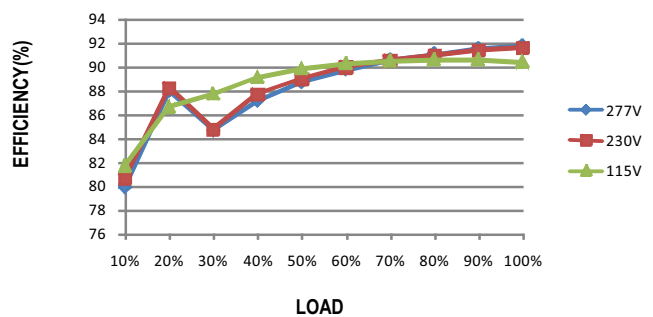
※ 48V Model, Tcase at 75°C



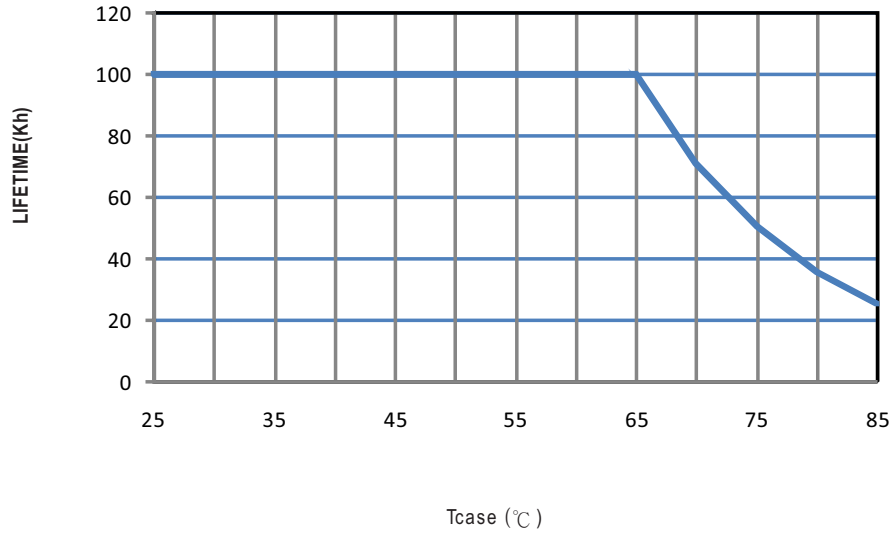
**EFFICIENCY vs LOAD**

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

※ 48V Model, Tcase at 75°C

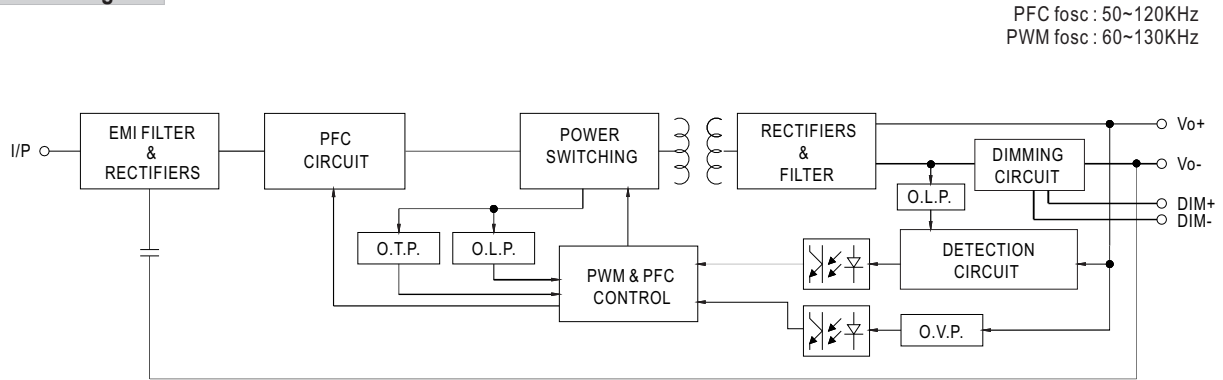


■ LIFE TIME



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

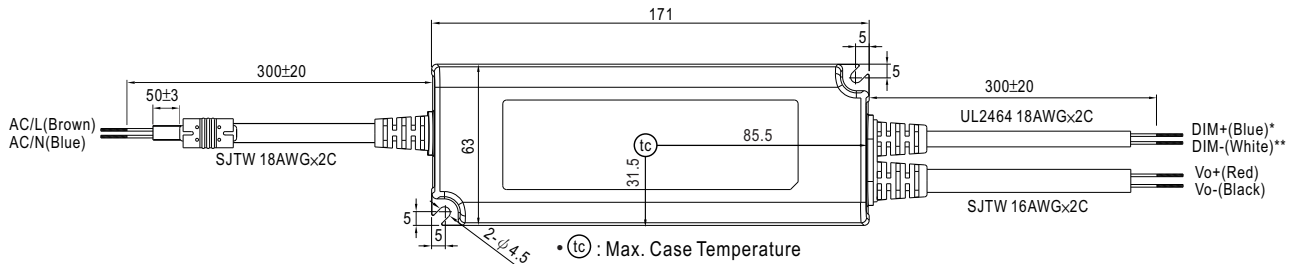
■ Block Diagram



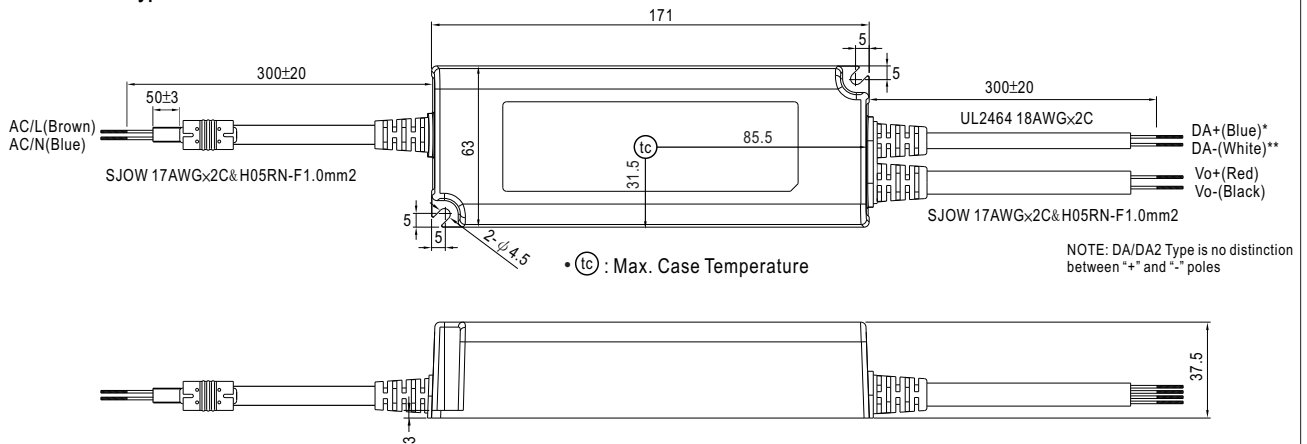
■ Mechanical Specification

Case No. PWM-90P Unit:mm

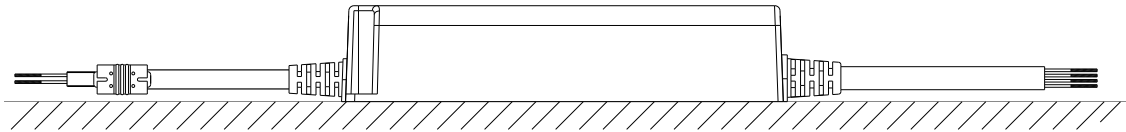
Blank-Type



DA/DA2-Type

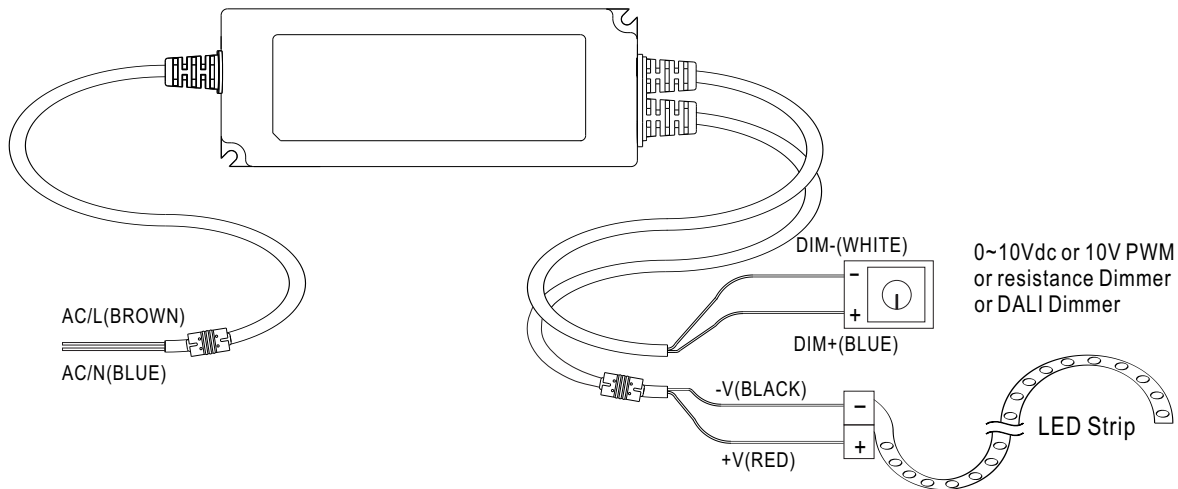


■ Recommend Mounting Direction



■ 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.