



## ■ Features

- Constant Voltage PWM style output with user changeable frequency up to 4KHz compliant IEEE1789-2015 no risk
- Plastic housing with class II design
- Built-in active PFC function
- Standby power consumption<0.5W
- Integrated KNX control protocol
- No need KNX-DALI gateway
- Typical lifetime>50000 hours
- 5 years warranty

## ■ Applications

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

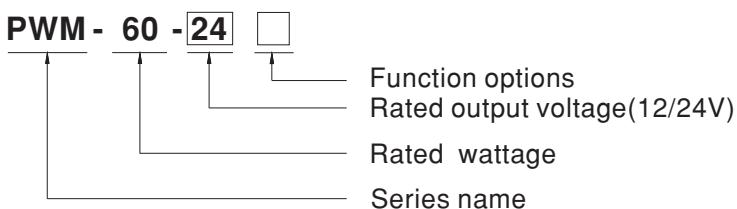
## ■ Description

PWM KN series is a 60W AC/DC LED driver featuring the constant voltage mode with PWM style output, which is able to maintain the colour temperature and the brightness homogeneity when driving all kinds of LED strips and constant voltage LED bulbs. The built-in KNX interface is to avoid using the complicated KNX-DALI gateway.

PWM KN operates from 90~305VAC and offers two models with output voltage 12V and 24V. Thanks to the high efficiency up to 89%, with the fanless design, the entire series is able to operate for -35°C ~ +90°C case temperature under free air convection.

The minimal dimming level low to 0.5% is suitable for low light level applications e.g. cinema. The output frequency is changeable up to 4KHz to compliant IEEE 1789-2015 no risk requirement providing a great solution for health concern due to light flickering.

## ■ Model Encoding

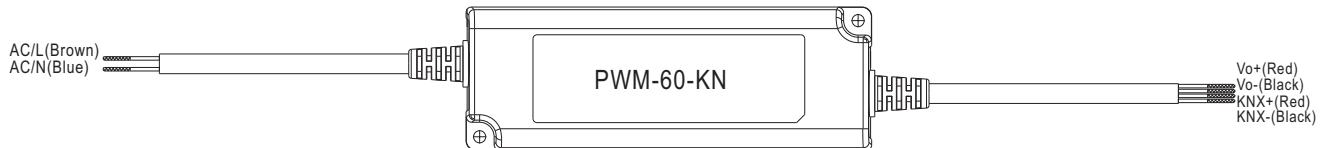


Type	Function	Note
KN	KNX control technology	In stock
KNBST	KNX control technology with BST14 connector	by request



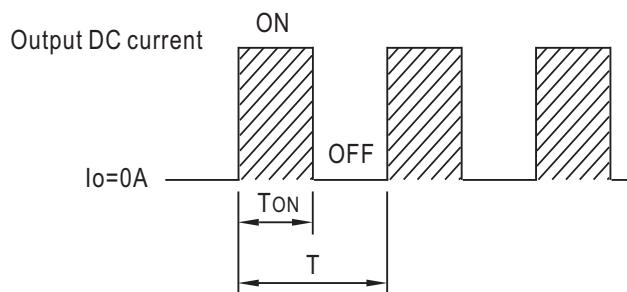
## SPECIFICATION

MODEL	PWM-60-12□	PWM-60-24□
OUTPUT	DC VOLTAGE	12V
	RATED CURRENT	5A
	RATED POWER	60W
	DIMMING RANGE	0 ~ 100%
	PWM FREQUENCY (Typ.)	200~4000Hz user changable via ETS
	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>0.97/115VAC, PF>0.95/230VAC, 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.)	86% 89%
	AC CURRENT (Typ.)	0.8A / 115VAC 0.4A / 230VAC 0.32A / 277VAC
	INRUSH CURRENT (Typ.)	COLD START 50A(twidth=350μs measured at 50% Ipeak) at 230VAC; Per NEMA 410
	MAX. NO. of PSUs on 16A CIRCUIT BREAKER	9 units (circuit breaker of type B) / 16 units (circuit breaker of type C) at 230VAC
	LEAKAGE CURRENT	<0.25mA / 277VAC
	STANDY 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
	OVER VOLTAGE	15 ~ 17V 28 ~ 34V Shut down o/p voltage, re-power on to recover
	OVER TEMPERATURE	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.	Tcase=-35 ~ +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	-35 ~ +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	ENEC EN61347-1, EN61347-2-13, EN62384 independent, GB19510.14, GB19510.1, EAC TP TC 004 approved
	KNX STANDARDS	Certified protocol
	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≥60%) ; EN61000-3-3, GB17743 and GB17625.1, EAC TP TC 020
	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
OTHERS	MTBF	996K hrs min. Telcordia SR-332 (Bellcore) ; 271.03K hrs min. MIL-HDBK-217F (25°C)
	DIMENSION	150*53*35mm (L*W*H)
	PACKING	0.45Kg;30pcs/16.0Kg/1.0CUFT
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>	

**■ DIMMING OPERATION**

## ※ Dimming principle for PWM style output

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



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

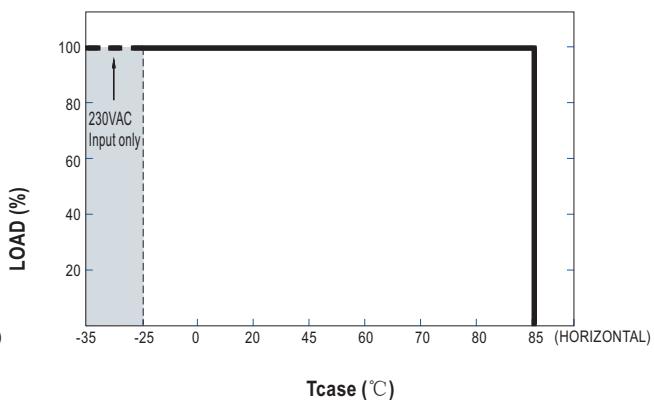
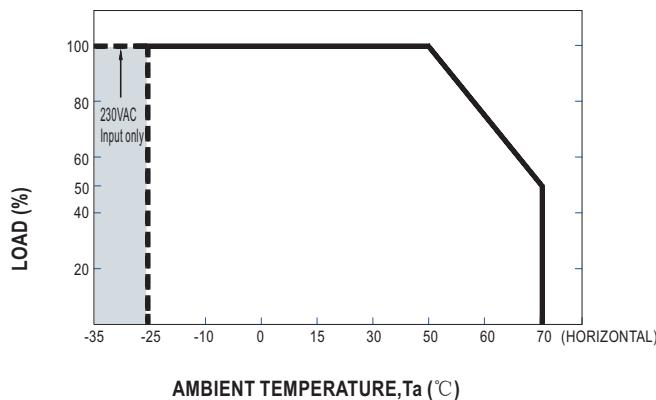
Output PWM frequency up to 4KHz

## ※ KNXInterface

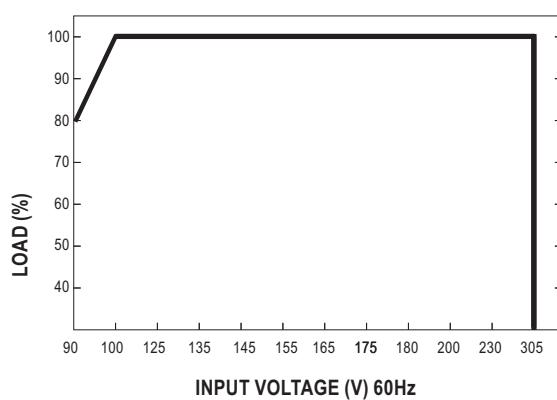
- Apply KNX signal between KNX+ and KNX-.
- The application program(database) can be downloaded via Online Catalogs from ETS or via <http://www.meanwell.com/productCatalog.aspx>

Parametrization options	Description
Switch functions	<ul style="list-style-type: none"><li>• Turn on brightness</li><li>• Dimming speed for turn on/off</li><li>• Switch telegram and status</li><li>• Switch on/off delay</li></ul>
Dimming	<ul style="list-style-type: none"><li>• Dimming speed for 0~100%</li><li>• Allow switch on via relative dimming</li></ul>
Brightness value	<ul style="list-style-type: none"><li>• Dimming speed for transition brightness values</li><li>• Permit set switch on and off brightness via value</li><li>• Brightness value and status</li></ul>
Fault message	<ul style="list-style-type: none"><li>• Lamp fault</li></ul>
Other functions	<ul style="list-style-type: none"><li>• Reaction on KNX voltage failure/recovery</li><li>• Power-On level</li><li>• Dimming curve select(linear/log)</li><li>• Block function(Block1&amp;Block2)</li><li>• Staircase lighting function(multi-stage switch-off)</li><li>• Output PWM frequency value</li></ul>
General function	<ul style="list-style-type: none"><li>• Cyclic monitoring telegram(In operation)</li></ul>
8 Scenes	<ul style="list-style-type: none"><li>• Recall and save via KNX with 8-bit telegram</li></ul>
Operating hours & CLO	<ul style="list-style-type: none"><li>• Operating hours counter</li><li>• Constant light out(5 scheduled divisions)</li></ul>
Power consumption feedback	<ul style="list-style-type: none"><li>• Power consumption report</li></ul>
Temperature measurement	<ul style="list-style-type: none"><li>• Temperature report,optional to report Tunit/Tamb temperature</li><li>• Tunit:Unit internal temperature</li><li>• Tamb:Conver Tunit to ambient temperature</li><li>• Temperature Alarm protection</li><li>• Eliminate temperature Alarm protection via object/automatic</li></ul>

## ■ OUTPUT LOAD vs TEMPERATURE

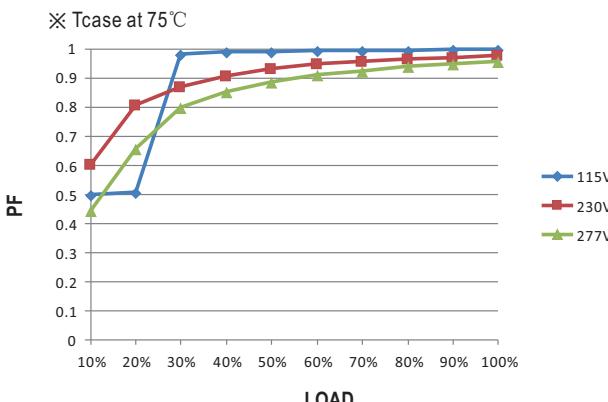


## ■ STATIC CHARACTERISTIC



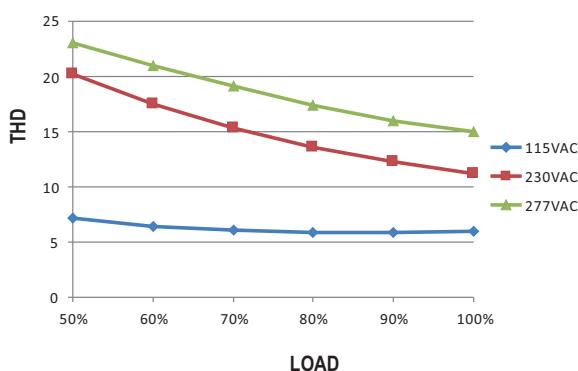
※ De-rating is needed under low input voltage.

## ■ POWER FACTOR (PF) CHARACTERISTIC



## ■ TOTAL HARMONIC DISTORTION (THD)

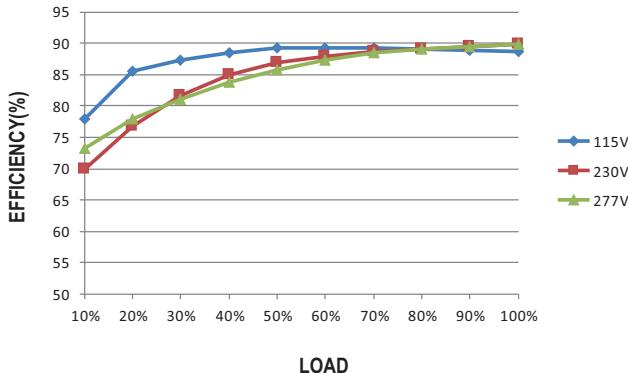
※ 24V Model,  $T_{\text{case}}$  at  $75^{\circ}\text{C}$

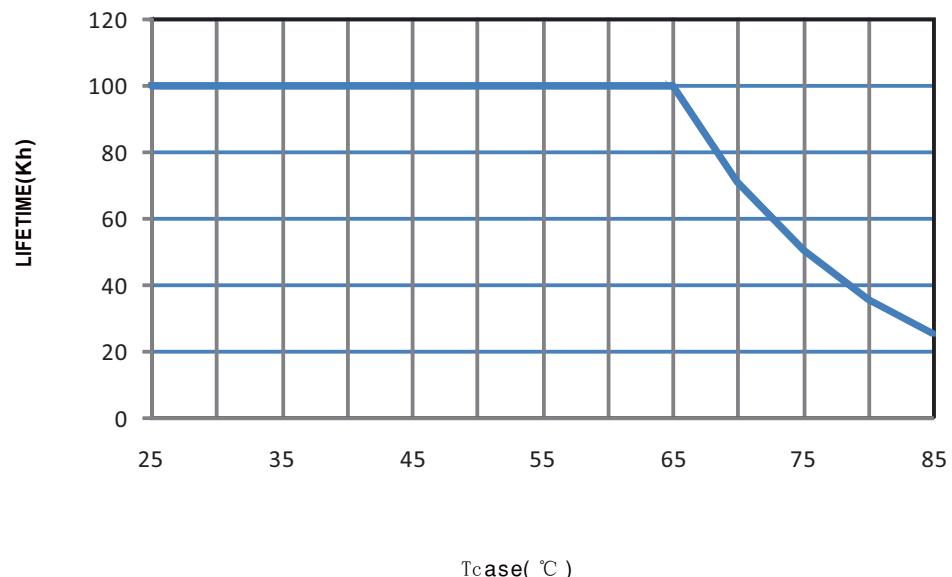


## ■ EFFICIENCY vs LOAD

PWM-60-KN series possess superior working efficiency that up to 89% can be reached in field applications.

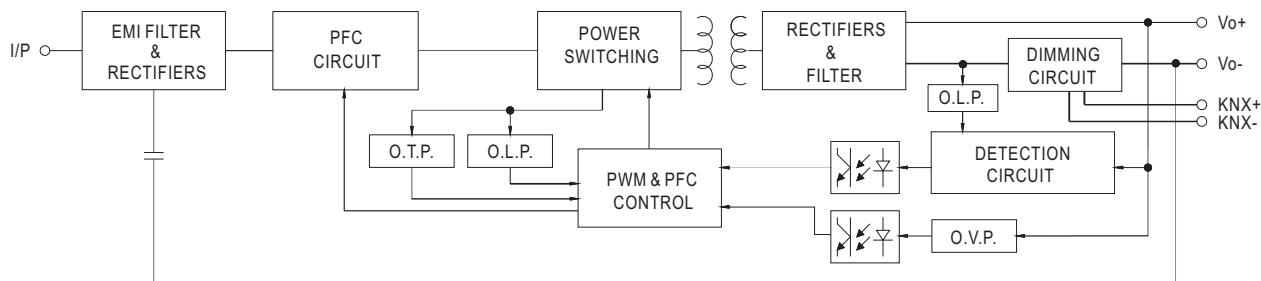
※ 24V Model,  $T_{\text{case}}$  at  $75^{\circ}\text{C}$



**LIFE TIME**

## ■ Block Diagram

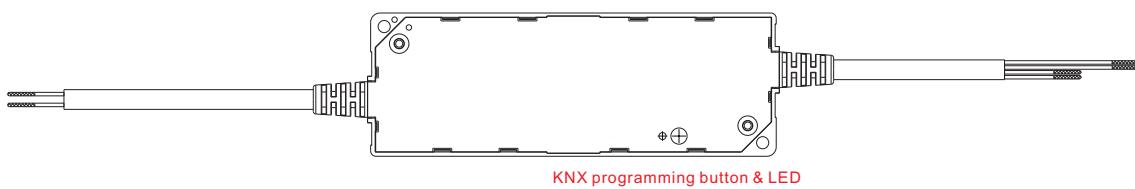
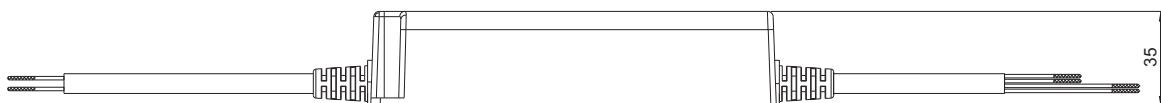
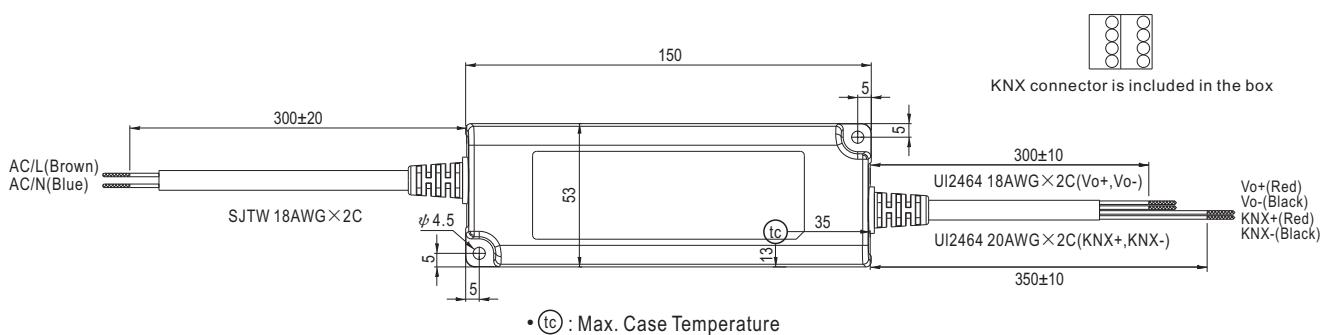
PFC fosc : 50~120KHz  
 PWM fosc : 60~130KHz



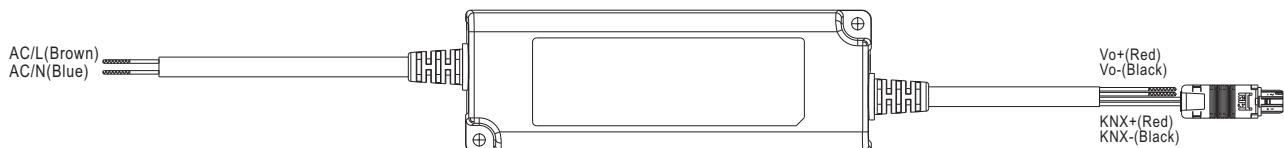
Note: PWM fosc here is not related to output PWM dimming

## ■ Mechanical Specification

Case No. PWM-60KN      Unit:mm



## ■ Mechanical view of by request

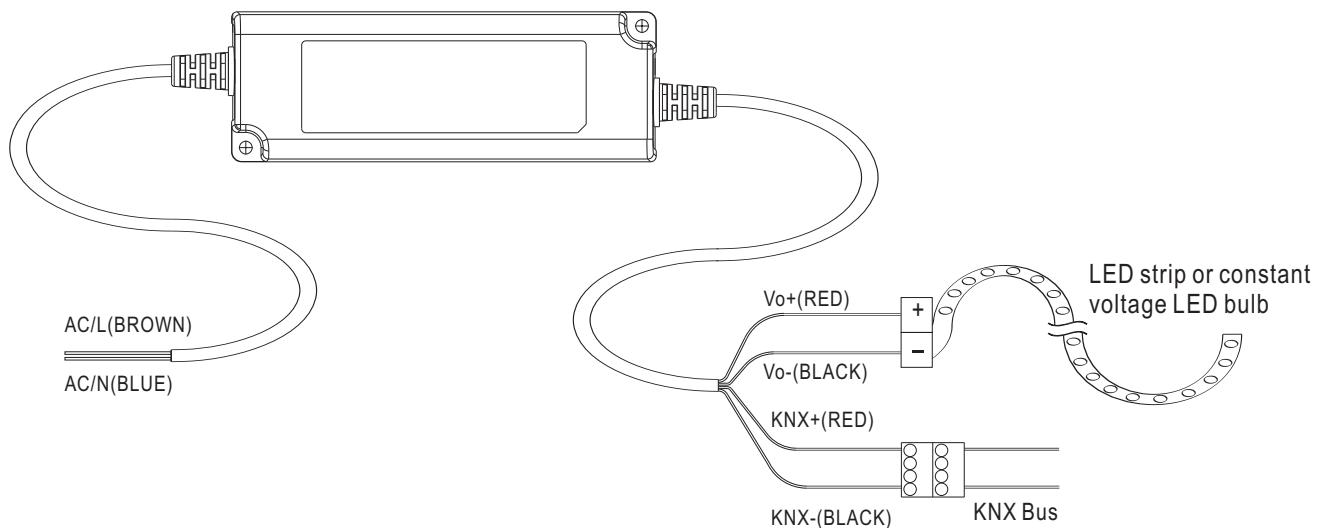


■ Recommend Mounting Direction



■ Installation Manual

◎ Connection for KNX-type



PWM KN series can be ETS addressing/programming WITHOUT connecting to AC mains

◎ 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.
- $T_c$  max. is identified on the product label. Please make sure that temperature of  $T_c$  point will not exceed limit.
- DO NOT connect "KNX- to  $V_o^-$ ".
- 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 : <http://www.meanwell.com/manual.html> for details.