150W Constant Voltage PWM Output LED Driver SPWM-150-KN series

User's Manual



Features

- Direct KNX bus connection, Support KNX Data Secure
- Supports multiple output modes including dimming, colour temperature, RGBW
- Constant voltage PWM style output with 1 to 4 channels
- Flicker free, complying with CE ErP directive
- Plastic housing with class II and PFC design
- Standby power consumption <0.5W
- Minimum dimming level 0.1%
- Dimming frequency up to 20kHz
- Cooling by free air convection
- 5 years warranty

Applications

- LED strip lighting(CW/WW/Tunable/RGBW)
- LED decorative lighting
- LED architecture lighting
- Household lighting control system
- KNX Building automation

GTIN CODE

MW Search: https://www.meanwell.com/serviceGTIN.aspx

Description

SPWM-150-KN series is a 150W AC/DC LED driver featuring the constant voltage mode with PWM style output, which is able to maintain the color temperature and the brightness homogeneity when driving all kinds of LED strips. SPWM-150-KN operates from 100~305VAC and offers models with different rated voltage ranging include 12V and 24V. Thanks to the high efficiency up to 93%,with the fanless design,the entire series is able to operate for -20~+80℃ case temperature under free air convention.SPWM-150-KN is equipped with various function options, such as dimming methodologies with KNX, so as to provide the optimal design flexibility for LED lighting system.

Model Encoding

SPWM - 150 - 24 [ ]

- Function options(KN)
- Rated output voltage(12V/24V)
- Rated wattage
- Series name

Type	Function	Note
KN	Built-in KNX interface	In stock

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150W Constant Voltage PWM Output LED Driver SPWM-150-KN series

SPECIFICATION	SPWM-150-12□	SPWM-150-24□
OUTPUT		
DC VOLTAGE	12V	24V
RATED CURRENT(Max.)	12.5A	6.3A
RATED POWER(Max.)	150W	151.2W
VOLTAGE ADJ. RANGE	11~14V	23~26V
PWM FREQUENCY (Typ.)	200Hz~20kHz(default:3.2KHz), Set by Database	
SETUP, RISE TIME Note.3	500ms,80ms/230VAC ,1200ms,80ms/115VAC	
HOLD UP TIME (Typ.)	10ms/230VAC or 115VAC	
INPUT		
VOLTAGE RANGE Note.2	100 ~ 305VAC 156 ~ 410VDC (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<10%@load≧50%/115VAC, 230VAC; @load≧75%/277VAC (Please refer to "TOTAL HARMONIC DISTORTION" section)	
EFFICIENCY (Typ.)	92%	93%
AC CURRENT (Typ.)	1.5A / 115VAC 1A / 230VAC 0.8A / 277VAC	
INRUSH CURRENT (Typ.)	COLD START 55A(twidth=500μs measured at 50% Ipeak) at 230VAC; Per NEMA 410	
MAX. NO. of PSUs on 16A CIRCUIT BREAKER	5 units (circuit breaker of type B) / 8 units (circuit breaker of type C) at 230VAC	
LEAKAGE CURRENT	<0.25mA / 277VAC	
STANDBY POWER CONSUMPTION	Standby power consumption<0.5W (Dimming off)	
PROTECTION		
OVERLOAD	105~150%, hiccup mode, recovers automatically after fault condition is removed	
SHORT CIRCUIT	Hiccup mode, recovers automatically after fault condition is removed	
OVER VOLTAGE	15 ~ 20V	27~ 36V
	Shut down O/P voltage, re-power on to recover after fault condition is removed	
OVER TEMPERATURE	Shut down O/P voltage, re-power on to recover after fault condition is removed	
ENVIRONMENT		
WORKING TEMP.	Tcase=-20~+80℃ (Please refer to " OUTPUT LOAD vs TEMPERATURE" section)	
MAX. CASE TEMP.	Tcase=80℃	
WORKING HUMIDITY	20 ~ 95% RH non-condensing	
STORAGE TEMP., HUMIDITY	-40 ~ +80℃, 10 ~ 95% RH	
TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)	
VIBRATION	5 ~ 100Hz, 2G 12min./1cycle, each along X,Y,Z axes according to EN50090-2-2	
SAFETY & EMC		
SAFETY STANDARDS	ENEC BS EN/EN61347-1, BS EN/EN61347-2-13(EL) appendix J suitable for emergency installations(DC input 176-280VDC), BS EN/EN62384; GB/T19510.1,GB/T19510.213; EAC TP TC 004 approved; Design refer to AS/NZS 61347-1, AS/NZS 61347-2-13;	
WITHSTAND VOLTAGE	I/P-O/P:3.75kVAC	
ISOLATION RESISTANCE	I/P-O/P:100M Ohms / 500VDC / 25℃/ 70% RH	

EMC EMISSION Note.4	Parameter	Standard	Test Level/Note
	Conducted	BS EN/EN55015(CISPR15) ,GB/T17743	-----
	Radiated	BS EN/EN55015(CISPR15) ,GB/T17743	-----
	Harmonic Current	BS EN/EN61000-3-2 ,GB 17625.1	Class C @load≧50%
	Voltage Flicker	BS EN/EN61000-3-3	-----

EMC IMMUNITY	BS EN/EN61547		
	Parameter	**Standard**	**Test Level/Note**
	ESD	BS EN/EN61000-4-2	Level 3, 8kV air ; Level 2, 4kV contact
	Radiated	BS EN/EN61000-4-3	Level 2
	EFT/Burst	BS EN/EN61000-4-4	Level 2
	Surge	BS EN/EN61000-4-5	Level 4, 2kV/Line-Line
	Conducted	BS EN/EN61000-4-6	Level 2
	Magnetic Field	BS EN/EN61000-4-8	Level 2
	Voltage Dips and Interruptions	BS EN/EN61000-4-11:2020	30% dip 10 periods 100% interrruption 0.5 periods

OTHERS	
KNX	Certified protocol
FLICKER Note.9	PstLM ≤ 1, SVM ≤ 0.4
MTBF	1926.4k hrs min. Telcordia SR-332 (Bellcore) ; 158.1k hrs min. MIL-HDBK-217F (25℃)
DIMENSION	340*38*28.5mm (L*W*H)
PACKING	0.38kg; 30 pcs/ 13.0 kg/ 0.66 CUFT

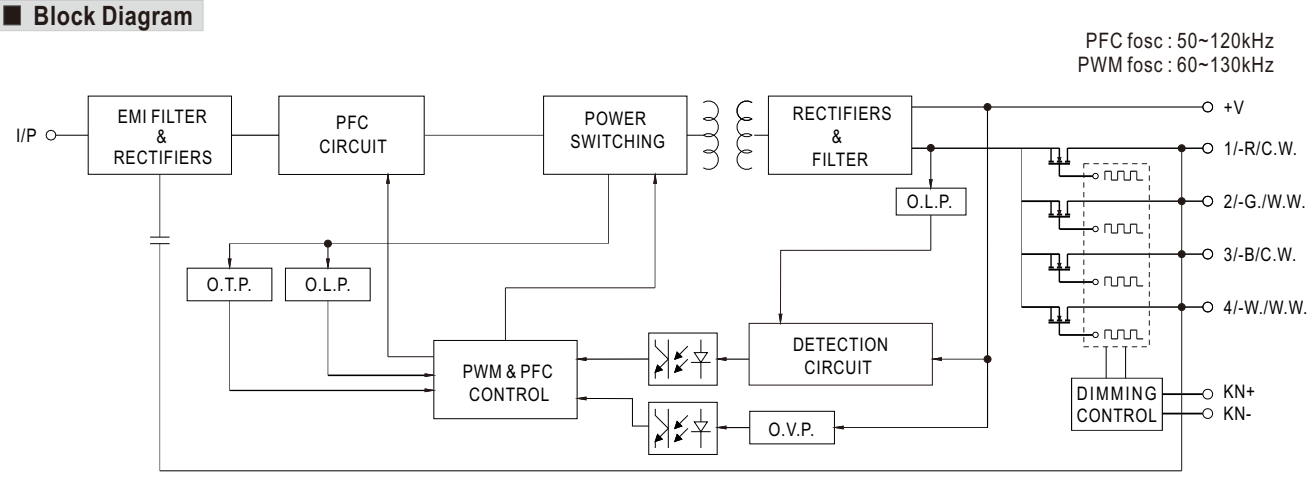
NOTE

1. All parameters NOT specially mentioned are measured at 230VAC input, rated current and 25℃ of ambient temperature.
2. De-rating may be needed under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details.
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.
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.
5. This series meets the typical life expectancy of >50,000 hours of operation when Tcase, particularly (tc) point (or TMP, per DLC), is about 75℃ or less.
6. Please refer to the warranty statement on MEAN WELL's website at http://www.meanwell.com
7. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).
8. It is not recommended to connect to capacitive loads.
9. Flicker is measured at full load with the light source provided by MEAN WELL.
10. RCM is on a voluntary basis. Non IC classification Independent LED control gear is not suitable for resisdential installations.

※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx

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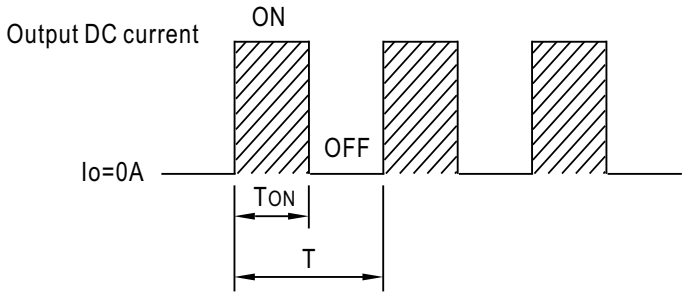
■ Block Diagram



■ DIMMING OPERATION

※ **Dimming principle for PWM style output**

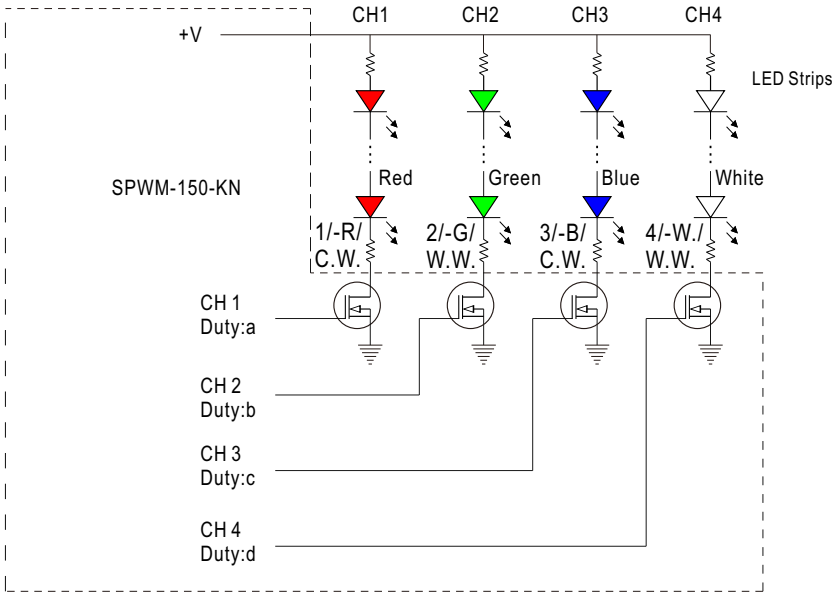
・Dimming is achieved by varying the duty cycle of the output current.



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

Output PWM frequency : 200Hz-20kHz(default:3.2kHz)

※ **Dimming principle for colour temperature dimming and brightness dimming**



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※ KNX dimming function

- The application program(database) can be downloaded via Online Catalogs from ETS or via http://www.meanwell.com/productCatalog.aspx

Parametrization options	Description
Operating mode	• 4x dimming channels • 2x colour temperature • 1x RGBW • 1x colour temperature + 2 dimming channels
Enable channels	• The channels of each mode can be flexibly enabled
General	• Template function • PWM frequency • Day/Night function • Operating hours • Telegram rate limitation • KNX Bus power-down behaviour setting • Channel swap • Emergency lighting • Temperature measurement

Specialized parameters	• **For colour temperature**
	  • cold white ratio in precent or light temperature in kelvin
	  • Dim-2-warm
	  • total brightness 100% or brightness 100% per channels
	• **For RGBW**
	  • HSV or RGB or RGBW model

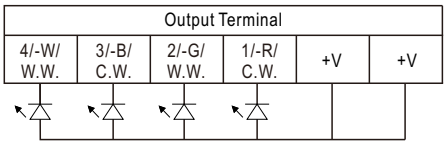
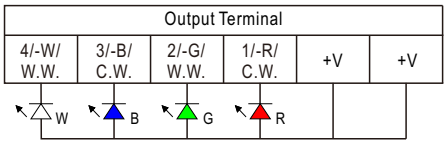
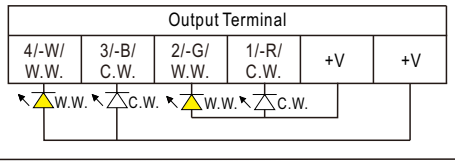
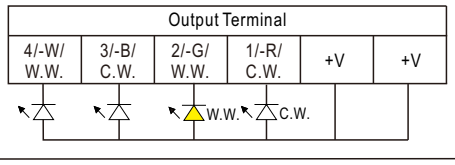
Staircase light	• Prewarning mode • Permanent mode • Configurable duration time
Lock function	• Lock/Unlock behavior configurable • Release time configurable
Scenes	• Learn scene • Scene1~Scene8
Quick scene	• Quick scene1~Quick scene5
Auto-dimming over time	• Optional gradient dimming
Sequence	• Sequence1~Sequence5 • Step1~Step5
More parameters can be found in the ETS applicatiion databass and instruction manual	

The device is equipped with KNX Data Secure. KNX Data Secure offers protection against manipulation in building automation and can be configured in the ETS project. Detailed specialist knowledge is required. A device certificate, which is attached to the device, is required for the first configuration. After configuration and ready for runtime (daily) operation, it is recommended to remove the certificate from the device and to store it securely. For details, please refer to the instruction manual.



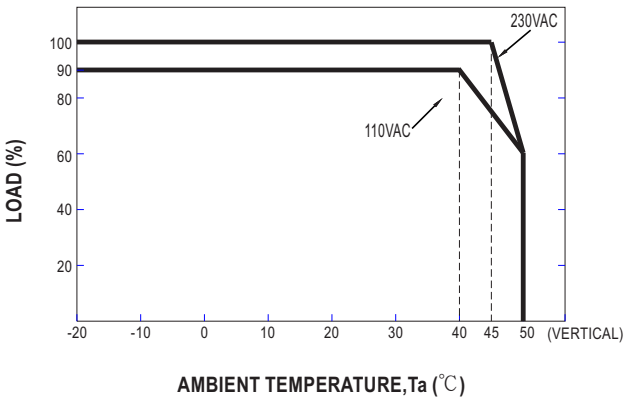
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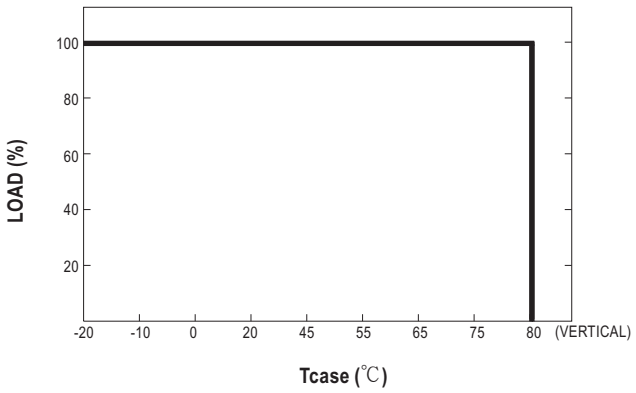
• Operating mode(Via database)

Application	Output channels	Output connections schematic diagram
4x dimmning channel	1 to 4 channels	
1x RGBW (Channel W is optional)	3 channels or 4 channels	
2x colour temperature	2 channels or 4 channels	
1x colour temperature 2x dimmning channel	1 to 4 channels	

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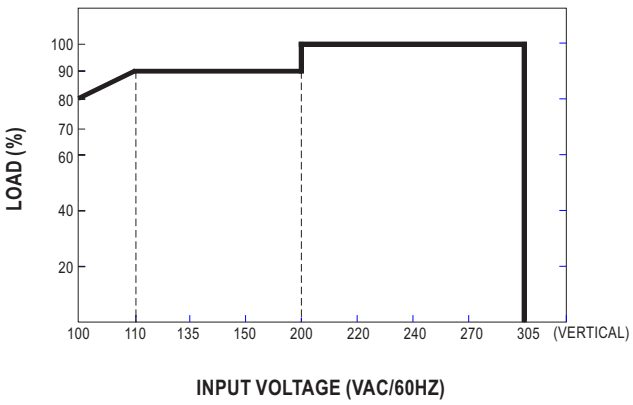
■ OUTPUT LOAD vs TEMPERATURE





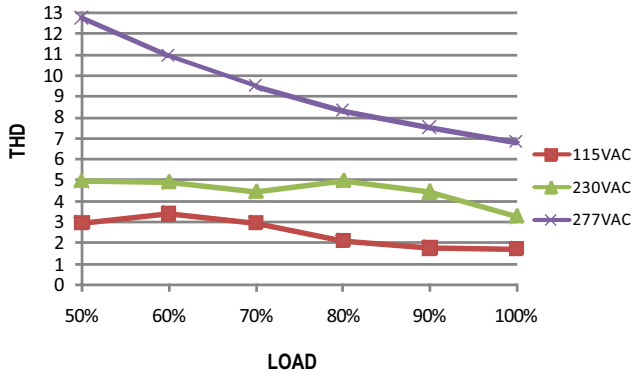
Note: Below 110Vac @-20℃ there may has restart situation within 5s after power-on.

■ STATIC CHARACTERISTICS



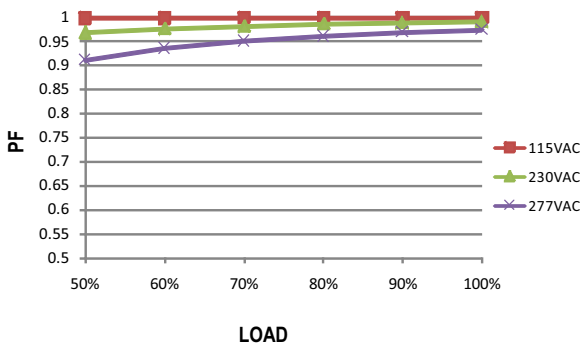
■ TOTAL HARMONIC DISTORTION (THD)

※ 24V Model, Tcase at 70℃



■ POWER FACTOR (PF) CHARACTERISTIC

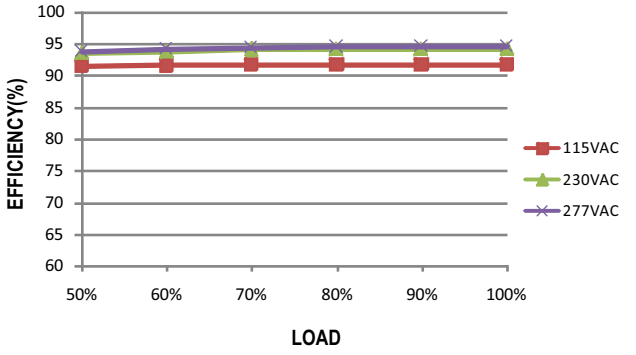
※ Tcase at 70℃



■ EFFICIENCY vs LOAD

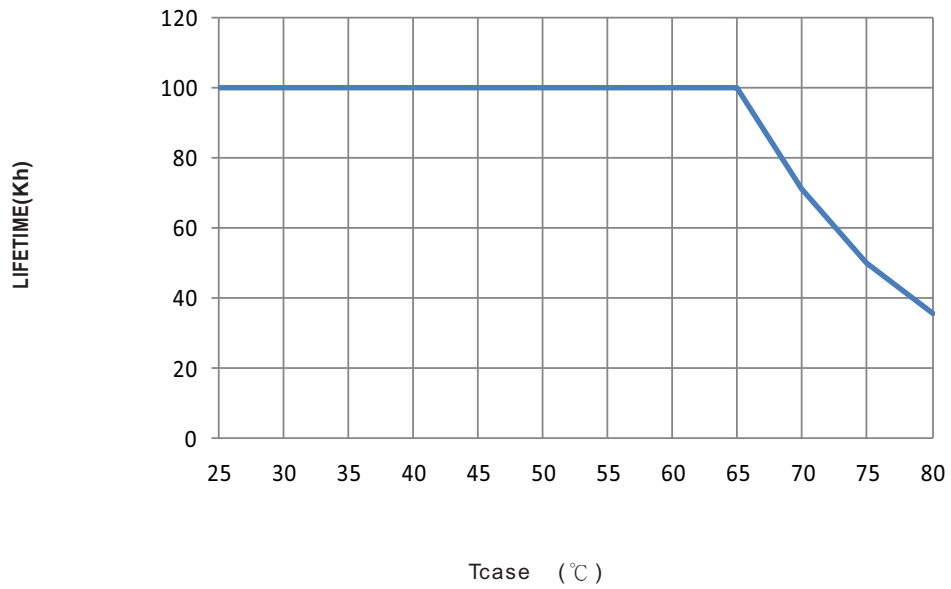
SPWM-150-KN series possess superior working efficiency that up to 93% can be reached in field applications.

※ 24V Model, Tcase at 70℃



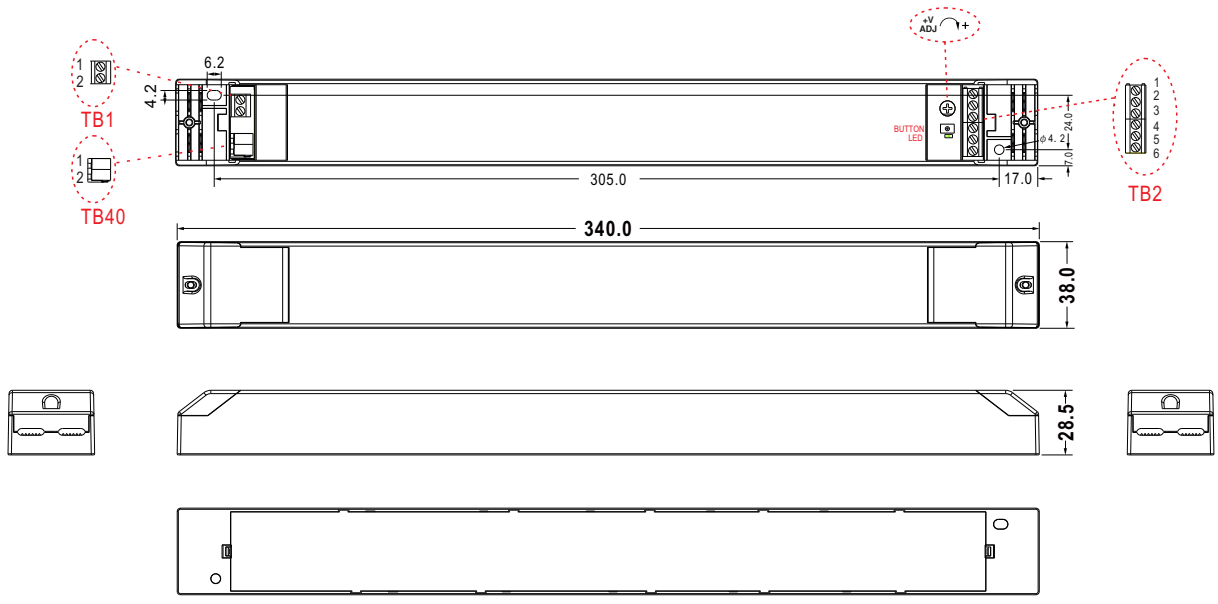
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■ LIFE TIME



■ Mechanical Specification

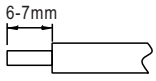
Case No. SPWM-150-KN Unit:mm Tolerance:±1



Terminal Pin No. Assignment (TB1) :

Pin No.	Assignment
1	AC/L
2	AC/N

TB1 wiring:

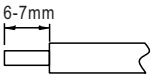


☐ **0.75-2.50mm²**

Terminal Pin No. Assignment (TB2) :

Pin No.	Assignment
1	+V
2	+V
3	1/-R/C.W.
4	2/-G/W.W.
5	3/-B/C.W.
6	4/-W/W.W.

TB2 wiring:



☐ **0.75-2.50mm²**

Terminal Pin No. Assignment(TB40)

Pin No.	Assignment
1	KN-
2	KN+

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