



E-Star Power Development Co., Ltd. (E-STAR)
 1F., No.40, Juren Ln., Sec. 2, Sanmin Rd., Banciao Dist., New Taipei City
 22069, Taiwan (R.O.C.)
 Phone : 886-2-2957 5580 Fax : 886-2-2957 7473

120W LED Driver power supply < NPF-120D



Features

- Rastic housing with class II design
- Built-in active PFC function
- Standby power consumption <0.5W
- P67 rating for indoor or outdoor installations
- Function options: 3 in 1 dimming (dim-to-off); Auxiliary DC output
- Typical lifetime >50000hours
- 5 years warranty

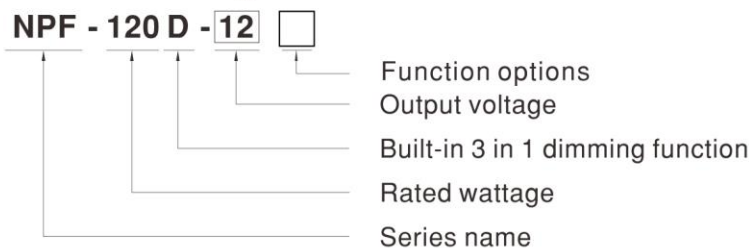
Applications

- LED panel lighting
- LED downlight
- LED decorative lighting
- Moving sign
- Type "HL" for use in Class I, Division 2 hazardous (Classified) location

Description

NPF-120D series is a 120W AC/DC LED driver featuring the constant current mode output. NPF-120D operates from 90~305VAC and offers models with different rated voltage ranging between 12V and 54V. Thanks to the high efficiency up to 90%, with the fanless design, the entire series is able to operate for -40~+90°C case temperature under free air convection. The entire series is rated with IP67 ingress protection level and is suitable to work for a variety of applications at dry, damp or wet locations. NPF-120D is equipped with the 3 in 1 dimming function so as to provide the design flexibility for LED lighting system.

Model Encoding



Type	IP Level	Function	Note
Blank	IP67	3 in 1 dimming function (0~10Vdc, 10V PWM signal and resistance)	In Stock
BE	IP67	3 in 1 dimming function and Auxiliary DC output	In Stock



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SPECIFICATION

MODEL		NPF-120D-12	NPF-120D-15	NPF-120D-20	NPF-120D-24	NPF-120D-30	NPF-120D-36	NPF-120D-42	NPF-120D-48	NPF-120D-54	
OUTPUT	RATED CURRENT	10A	8A	6A	5A	4A	3.4A	2.9A	2.5A	2.3A	
	RATED POWER	120W	120W	120W	120W	120W	122.4W	121.8W	120W	124.2W	
	CONSTANT CURRENT REGION	7.2 ~ 12V	9 ~ 15V	12 ~ 20V	14.4 ~ 24V	18 ~ 30V	21.6 ~ 36V	25.2 ~ 42V	28.8 ~ 48V	32.4 ~ 54V	
	CURRENT RIPPLE	5.0% max. @rated current									
	CURRENT TOLERANCE	±5.0%									
	AUXILIARY DC OUTPUT <small>Note.4</small>	Nominal 12V(deviation 11.4~12.6V)@0.2A for BE-Type only									
	SET UP TIME <small>Note.3</small>	500ms/115VAC, 230VAC									
INPUT	VOLTAGE RANGE <small>Note.2</small>	90 ~ 305VAC 127 ~ 431VDC (Please refer to "STATIC CHARACTERISTIC" section)									
	FREQUENCY RANGE	47 ~ 63Hz									
	POWER FACTOR (Typ.)	PF ≥ 0.97/115VAC, PF ≥ 0.96/230VAC, PF ≥ 0.94/277VAC@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(THD)" section)									
	EFFICIENCY (Typ.)	BLANK-TYPE	87.5%	88%	89%	89.5%	89%	89.5%	89.5%	90%	90%
		BE-TYPE <small>(Note.5)</small>	87.5%	87.5%	88.5%	89%	88.5%	89%	89%	89%	89%
	AC CURRENT (Typ.)	1.3A / 115VAC			0.65A / 230VAC			0.55A / 277VAC			
	INRUSH CURRENT(Typ.)	COLD START60A(twidth=520μs measured at 50% Ipeak) at 230VAC; Per NEMA 410									
	MAX. NO. of PSUs on 16A CIRCUIT BREAKER	4 units (circuit breaker of type B) / 6 units (circuit breaker of type C) at 230VAC									
	LEAKAGE CURRENT	<0.25mA / 277VAC									
STANDBY POWER CONSUMPTION	<0.5W										
PROTECTION	OVER CURRENT	95 ~ 108% Constant current limiting, recovers automatically after fault condition is removed									
	SHORT CIRCUIT	Hiccup mode, recovers automatically after fault condition is removed									
	OVER VOLTAGE	15 ~ 17V	17.5 ~ 21V	23 ~ 27V	28 ~ 34V	34 ~ 40V	41 ~ 46V	46 ~ 54V	54 ~ 60V	59 ~ 66V	
	OVER TEMPERATURE	Shut down o/p voltage, re-power on to recover									
ENVIRONMENT	WORKING TEMP.	Tcase=-40 ~ +90°C (Please refer to " OUTPUT LOAD vs TEMPERATURE" section)									
	MAX. CASE TEMP.	Tcase=+90°C									
	WORKING HUMIDITY	20 ~ 95% RH non-condensing									
	STORAGE TEMP., HUMIDITY	-40 ~ +80°C, 10 ~ 95% RH									
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 40°C)									
	VIBRATION	10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes									
SAFETY & EMC	SAFETY STANDARDS	UL8750(type"HL"), CSA C22.2 No. 250.13-12, 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									
	EMC EMISSION	Compliance to EN55015, EN61000-3-2 Class C (@ load ≥ 60%) ; EN61000-3-3									
OTHERS	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; EN61547, light industry level(surge immunity Line-Line 2KV)									
	MTBF	877.8K hrs min. Telcordia SR-332 (Bellcore) ; 233.9K hrs min. MIL-HDBK-217F (25°C)									
	DIMENSION	191*63*37.5mm (L*W*H)									
	PACKING	0.97Kg; 15pcs/15.6Kg/0.87CUFT									
NOTE	<ol style="list-style-type: none"> All parameters NOT specially mentioned are measured at 230VAC input, rated current and 25°C of ambient temperature. De-rating may be needed under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details. 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. The Auxiliary DC output is defined between AUX+ and DIM-. The efficiency for BE-Type is measured when the Auxiliary DC output is 100% loaded at 12V, 0.2A. 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-quality EMC Directive on the complete installation again. The model certified for CCC(GB19510.14, GB19510.1, GB17743 and GB17625.1) is an optional model . 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°C or less. 										



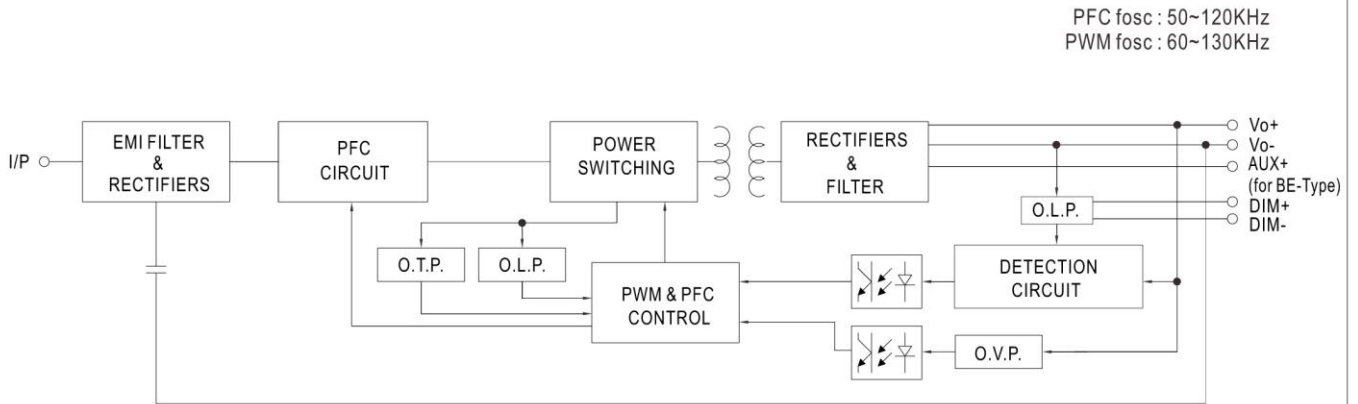
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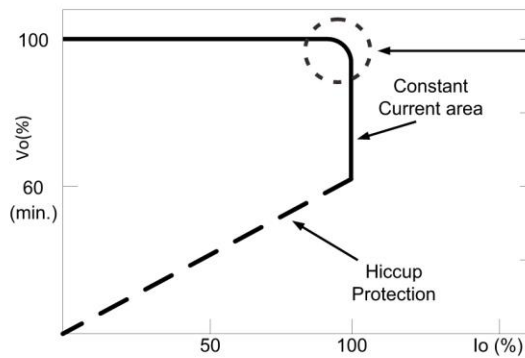
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■ BLOCK DIAGRAM



■ DRIVING METHODS OF LED MODULE

※ This series works in constant current mode to directly drive the LEDs.

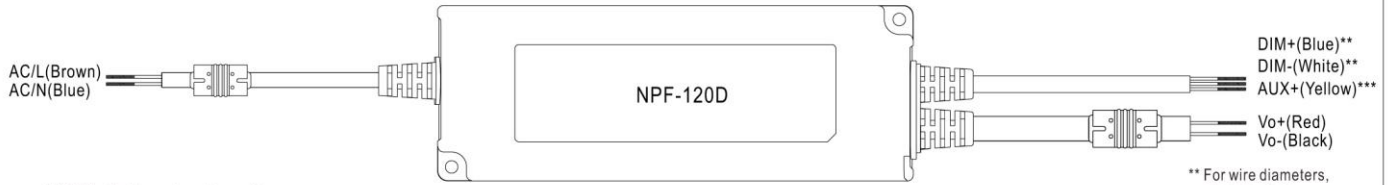


In the constant current region, the highest voltage at the output of the driver depends on the configuration of the end systems.

Typical LED power supply I-V curve

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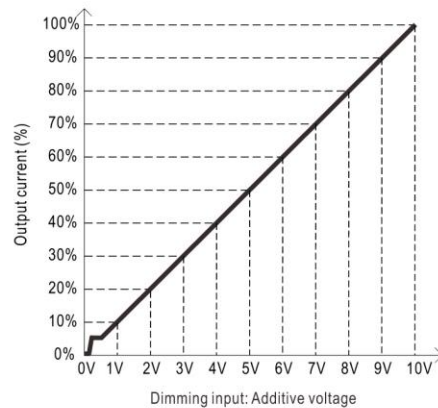
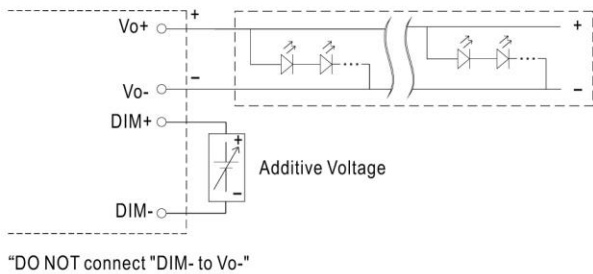
DIMMING OPERATION



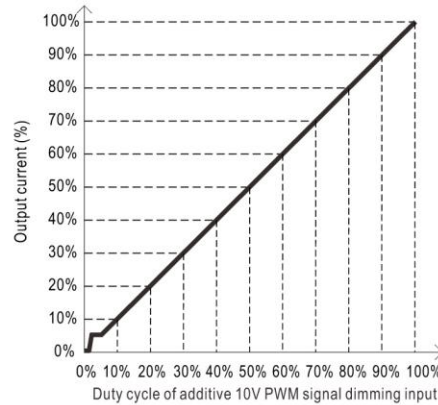
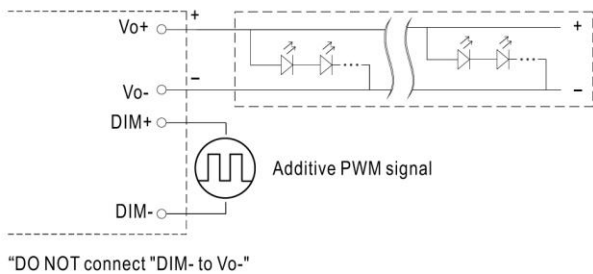
** For wire diameters, please refer to Mechanical Specification

※ 3 in 1 dimming function

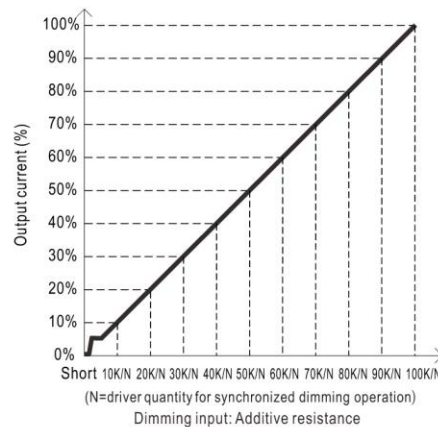
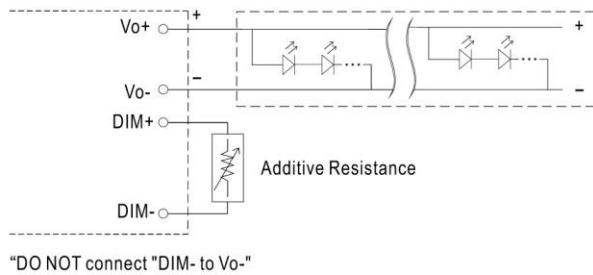
- Output constant current level can be adjusted by applying one of the three methodologies between DIM+ and DIM-:
 0 ~ 10VDC, or 10V PWM signal or resistance.
 - Direct connecting to LEDs is suggested. It is not suitable to be used with additional drivers.
 - Dimming source current from power supply: 100 μ A (typ.)
- ◎ Applying additive 0 ~ 10VDC



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



- ◎ Applying additive resistance:



Note : 1. Min. dimming level is about 6% and the output current is not defined when 0% < Iout < 6%.
 2. The output current could drop down to 0% when dimming input is about 0k Ω or 0Vdc, or 10V PWM signal with 0% duty cycle.

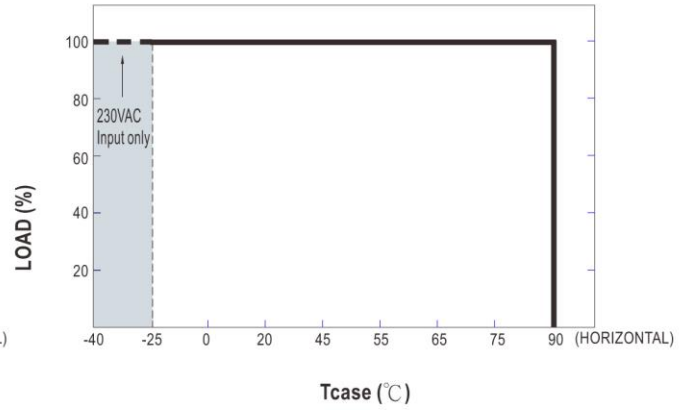
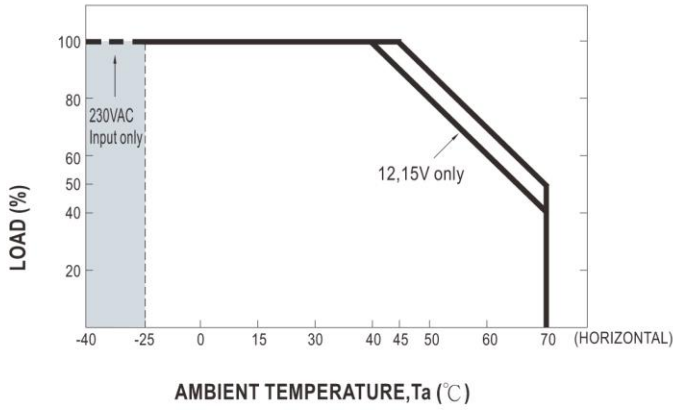
※ Auxiliary DC operation (for BE-type)

- AUX+, with mark ***, is added for BE-Type, used as the Auxiliary DC output with respect to DIM-.

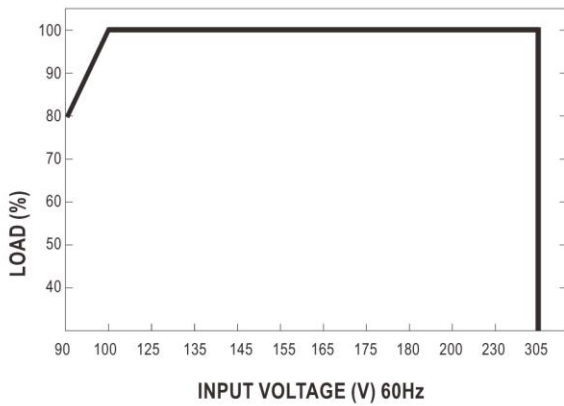


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OUTPUT LOAD vs TEMPERATURE



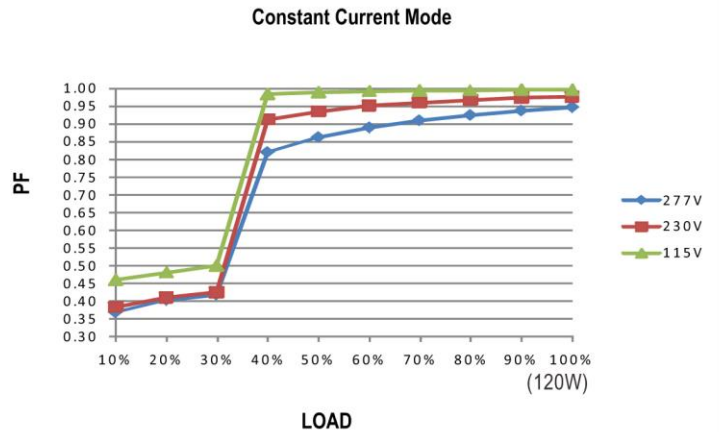
STATIC CHARACTERISTIC



※ De-rating is needed under low input voltage.

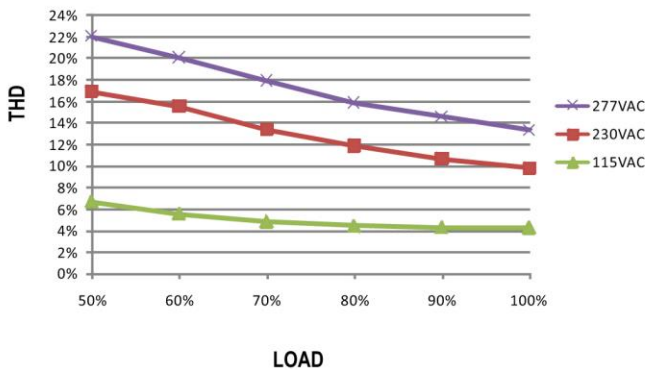
POWER FACTOR (PF) CHARACTERISTIC

※ T_{case} at 80°C



TOTAL HARMONIC DISTORTION (THD)

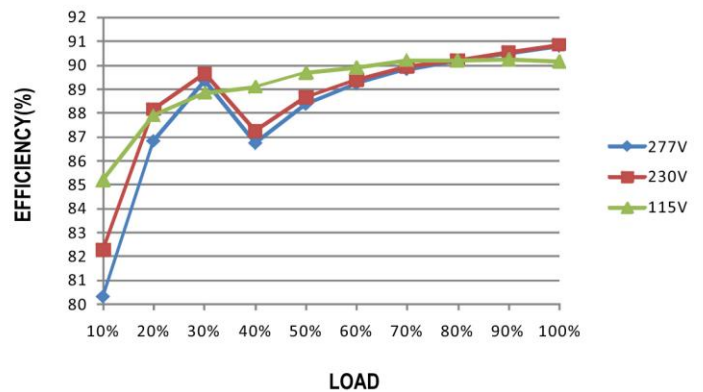
※ 48V Blank-Type Model, T_{case} at 80°C



EFFICIENCY vs LOAD

NPF-120D series possess superior working efficiency that up to 90% can be reached in field applications.

※ 48V Blank-Type Model, T_{case} at 80°C

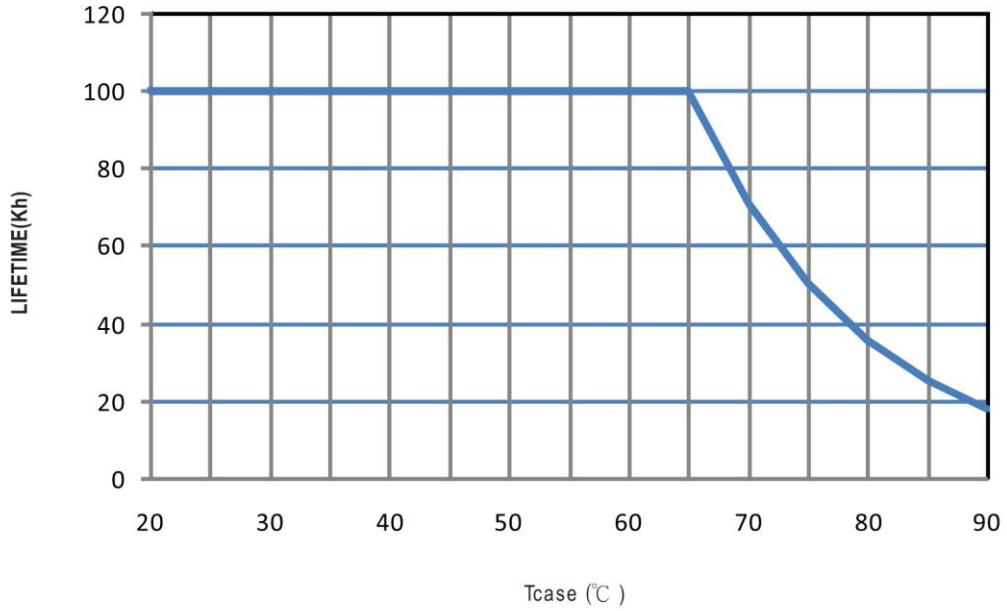




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■ LIFE TIME





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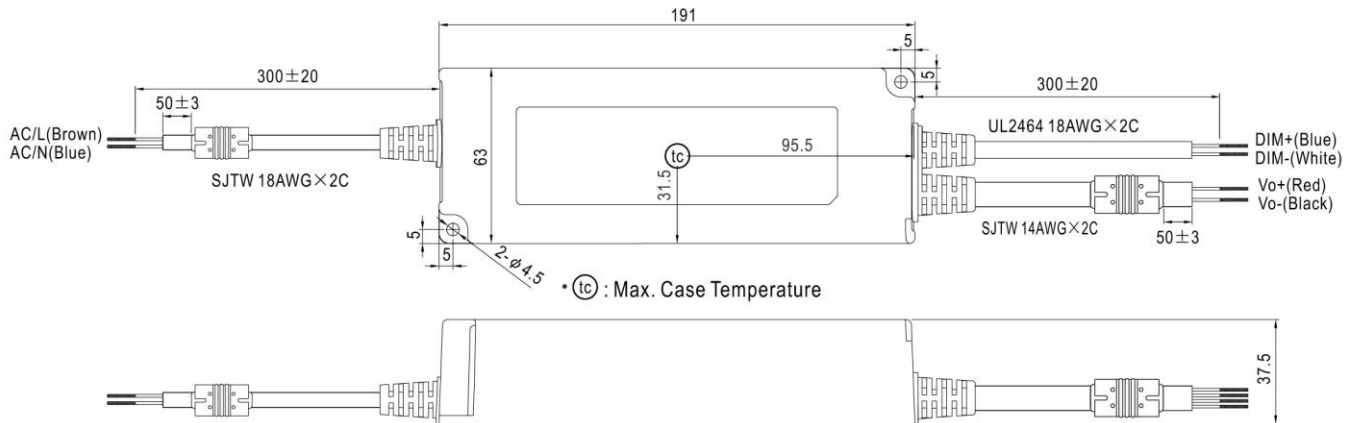
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MECHANICAL SPECIFICATION

Case No. PWM-120

Unit:mm

※ Blank-Type



※ BE-Type

