

# Specification for Approval

Product Name: 60W Non-isolated LED Driver

Product Model: MNC-060M240   
MNC-060V240

Rev. A.1

Sample Date:

CUSTOMER AUTHORIZED SIGNATURE		
Tested By	Checked By	Approved By
(Company seal)Return one copy to MOSO with approved signature and company seal.		

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Prepared By	Checked By	Approved By







**Product Features:**

- Input voltage range: 90~305Vac;
- Constant current design;
- THD<15%;
- 3-in-1 dimmable: 1~10Vdc, PWM, Resistor;
- Output current adjustable by potentiometer;
- Output and Dimming Signal Isolating;
- Surge protection: 4KV line-line, 6KV line-earth;
- Protections: Output OVP, SCP, OTP;
- IP67 design for indoor and outdoor applications;
- Suitable for dry / damp / wet locations;
- 5 years warranty.

**Application:**

- Suitable for LED roadway lighting, plant lighting, industrial lighting, landscape lighting, etc.

**DESCRIPTION**

The MNC-60 series is a 60W non-isolated constant-current, IP67 LED driver that operates from 90-305Vac input with excellent power factor and low THD. It is created for industrial lights, tunnel and street lights. The high efficiency of these drivers and compact metal case enable them to run cooler, significantly improving reliability and extending product life. To ensure trouble-free operation, protection is provided against input surge, output over voltage, output over temperature, and short circuit.

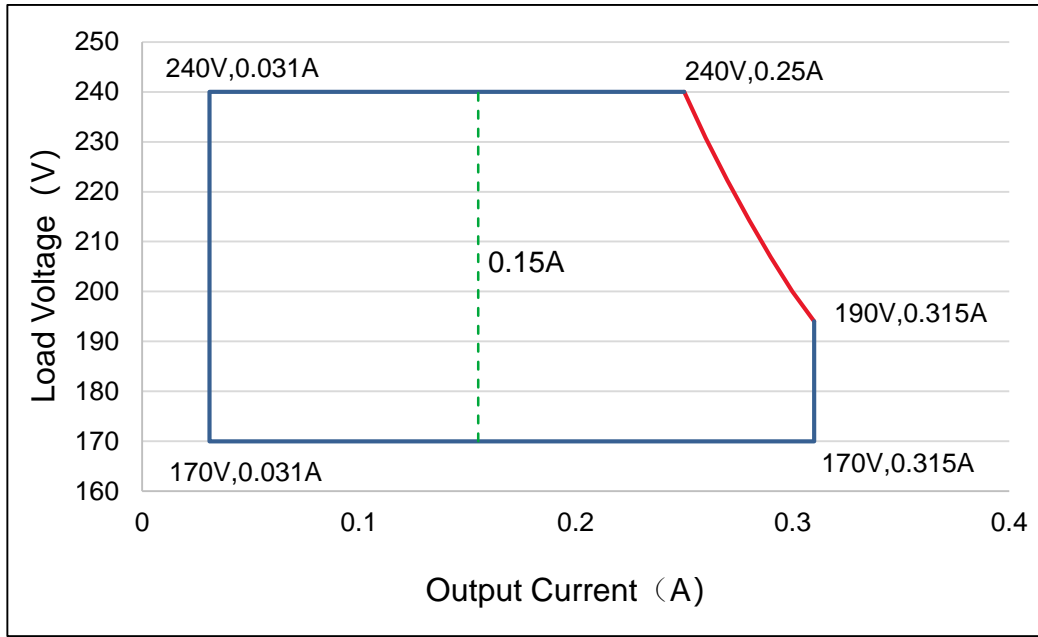
**MODELS**

Model Number	Input voltage range(Vac)	Max Output Power (W)	Output Voltage Range (Vdc)	Default Output	Typical Efficiency	Typical THD	Typical PF	
							120Vac	230Vac
MNC-060X240	90-305	60	170-240	170-240V/0.25A	94%	15%	0.99	0.97

**Notes:**

1. X can be M or V, X=M means dimmable. X=V means non-dimmable.
2. All specifications are measured at 25°C ambient temperature, input voltage 230Vac, and the typical value tested by full load, if no specific note.

**OPERATING AREA I-V**



Note: At full range output voltage, the maximum power output is 60W, output current setting suitable for the right area of the dotted line.

**INPUT SPECIFICATIONS**

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	90Vac	100-277Vac	305Vac	
Input Frequency	47Hz	50/60	63Hz	
Leakage Current	-	-	0.75mA	277Vac/60Hz
Input AC Current	-	-	0.8A	120-277Vac & full load
Inrush Current	-	-	60A	230Vac input, Ta=25°C (cold start)
Power Factor	0.97	0.99	-	120Vac, 50-60Hz, full load
	0.95	0.97	-	230Vac, 50-60Hz, full load
	0.92	0.94	-	277Vac, 50-60Hz, full load
THD	-	10%	15%	120-230Vac, 50-60Hz, 60%-100% load
	-	15%	20%	277Vac, 50-60Hz, 60%-100% load

**OUTPUT SPECIFICATIONS**

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-8%	±5%	+8%	Iset=0.25A
Output current set range(A)	0.15		0.315	
Total Output Current Ripple(pk-pk)	-	-	20%	20MHz BW, full load& LED load, the ripple would be tiny different under different LED load.
Startup Overshoot Current	-	-	10%	120~277Vac & 100% Load, load is LED
No Load Output Voltage(V)	-	290	300	
Line Regulation	-1%	-	+1%	25°C±10°C ambient temperature, input voltage changes from 120Vac to 277Vac.
Load Regulation	-3%	-	+3%	25°C±10°C ambient temperature, Input Voltage 230Vac, load changes from 80% to 100%.
Turn-on Delay Time	-	1	3S	120Vac, 100% load
	-	0.5	2S	230Vac, 100% load

**GENERAL SPECIFICATIONS**

Parameter	Min.	Typ.	Max.	Notes
Efficiency @120Vac	88%	92%		Measured at full load and 25°C ambient temperature
Efficiency @230Vac	92%	94%		Measured at full load and 25°C ambient temperature
Efficiency @277Vac	92%	94%		Measured at full load and 25°C ambient temperature
Dielectric Strength	Input-PE	-	1650Vac	10mA/60S
	Output-PE	-	1650Vac	
Grounding Resistance	-	-	0.1Ω	25A/60S, under 25°C±10°C ambient temperature
Insulation Resistance	10MΩ	-	-	Input-PE, Output-PE, 500Vdc/60S/25°C /70%RH
MTBF	-	200000Hrs	-	25°C±10°C ambient temperature, 230Vac, 80% load (MIL-HDBK-217F)
Lifetime	-	50000Hrs	-	230Vac&100% load, 75°C case temperature, refer to lifetime curve for details
Operating Case Temperature for Safety Tc_s	-40°C	-	+90°C	
Ambient Temperature	-40°C	-	+55°C	230Vac&100% load
Operating Case Temperature for Warranty Tc_s	-40°C	-	+75°C	5 years warranty case temperature Humidity: 10% to 95% RH
Storage Temperature	-40°C	-	+85°C	Humidity: 5% to 100% RH
Dimensions (L*W*H)mm	L124*W62*H31mm			
Net Weight	600±50g/PCS			
Package	L575xW375xH205mm; 12PCS//Ctn.; Gross Weight:7.5KG			

**DIMMING**

Parameter		Min.	Typ.	Max.	Notes
0~10V Absolute Maximum Voltage on the Vdim (+) Pin		-	10V	20V	
0~10V Source Current on Vdim(+)Pin		-	1mA	2mA	
Dimming Output Range	MNC-060M240	10%Imax	-	100%Imax	
Recommended Dimming Range for 0-10V		0V	-	10V	Default 0-10V/ PWM Dimming
PWM_in High Level		9.7V	-	10.3V	
PWM_in Low Level		0V	-	0.3V	
PWM_in Frequency Range		300Hz		2KHz	
PWM_in Duty Cycle		1%	-	99%	

**SAFTY STANDARDS**

Safety Category	Country / Territory	Standards	Approved
CCC	China	GB19510.1, GB19510.14	√
CE	Europe	EN61347-1, EN61347-2-13	√
		EN62493	√
		EN62384	
ENEC			
CB	CB Countries	IEC61347-1, IEC61347-2-13	√
BIS	India	IS 15885(PART 2/SEC 13)	
UL	USA	UL 8750	
CUL	Canada	CSA C22.2 No.250.13	
KC	South Korea	K61347-1, K61347-2-13	
PSE	Japan	J61347-1, J61347-2-13	
SAA	Australia	AS/NZS IEC 61347.2.13	
		AS/NZS 61347.1	

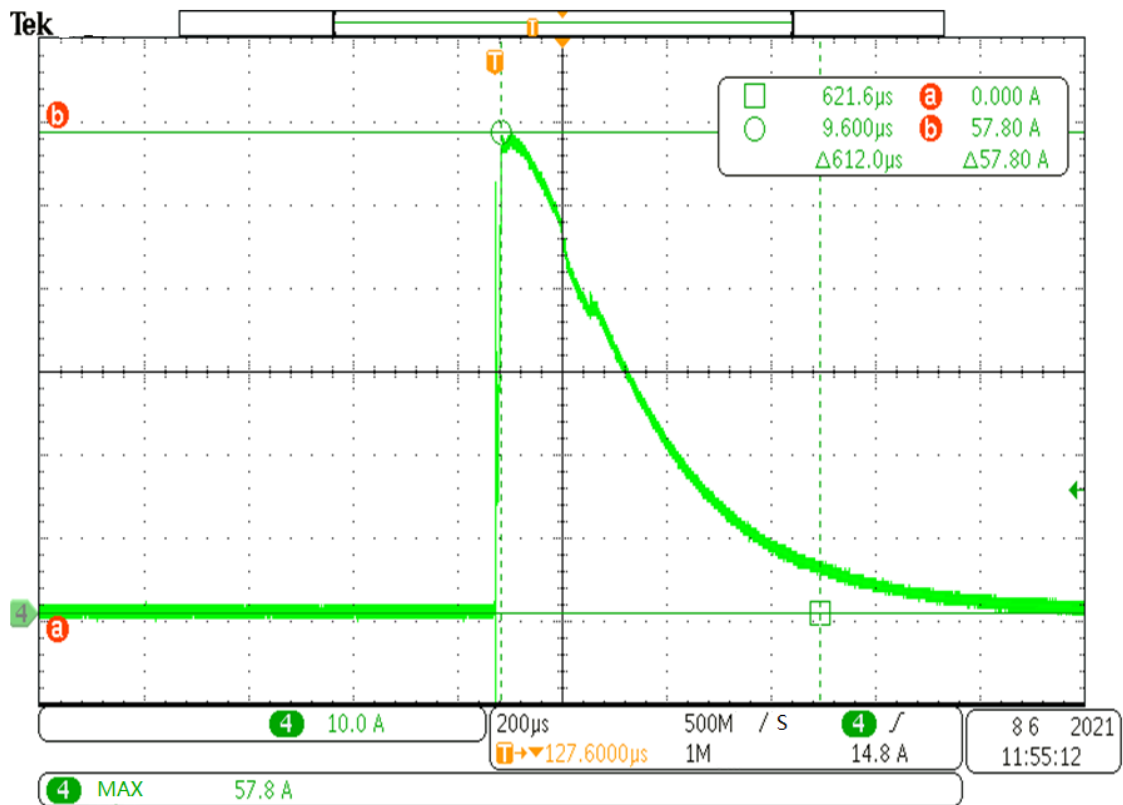
**EMC COMPLIANCE**

EMC Category	Country / Territory	Standards	Approved
CCC	China	GB/T 17743, GB 17625.1	√
CE	Europe	EN 55015	√
		EN 61000-3-2, EN 61000-3-3	√
		EN61000-4-2,3,4,5,6,11	√
		EN 61547	√
KC	South Korea	K61547	
		K00015	
PSE	Japan	J55015	
FCC	USA	FCC part 15	

**NOTE:**

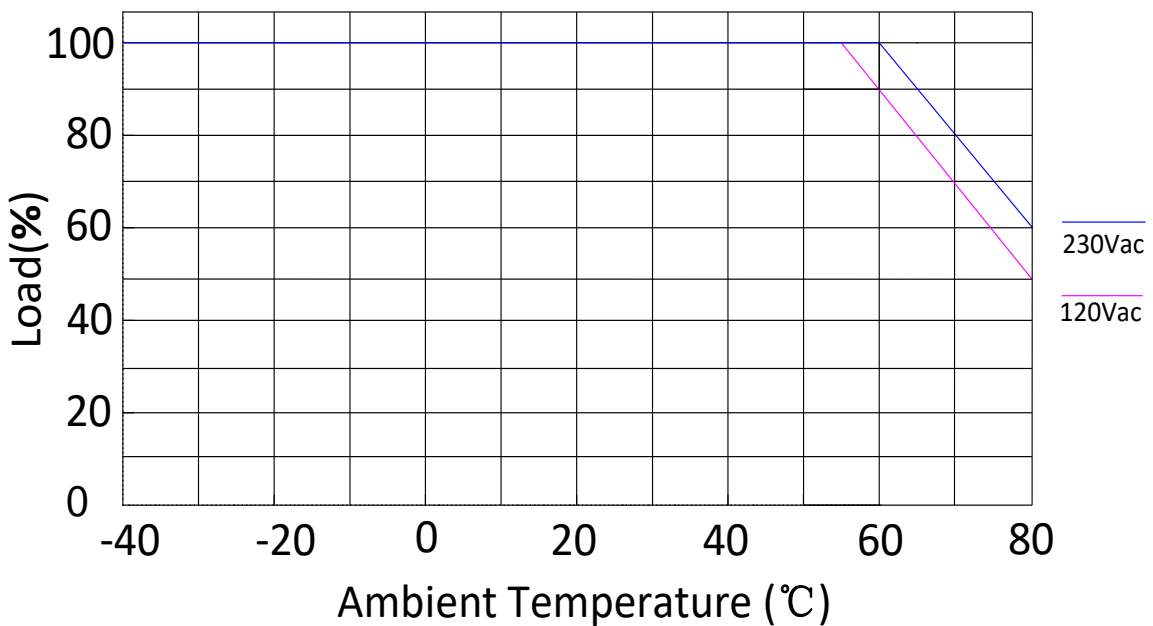
This LED driver meets the EMI specifications above, but as a component of a luminaire, end customer need to identify the EMI performance of a luminaire including LED driver, other devices connected to the driver and on the luminaire itself.

**INRUSH CURRENT WAVEFORM**

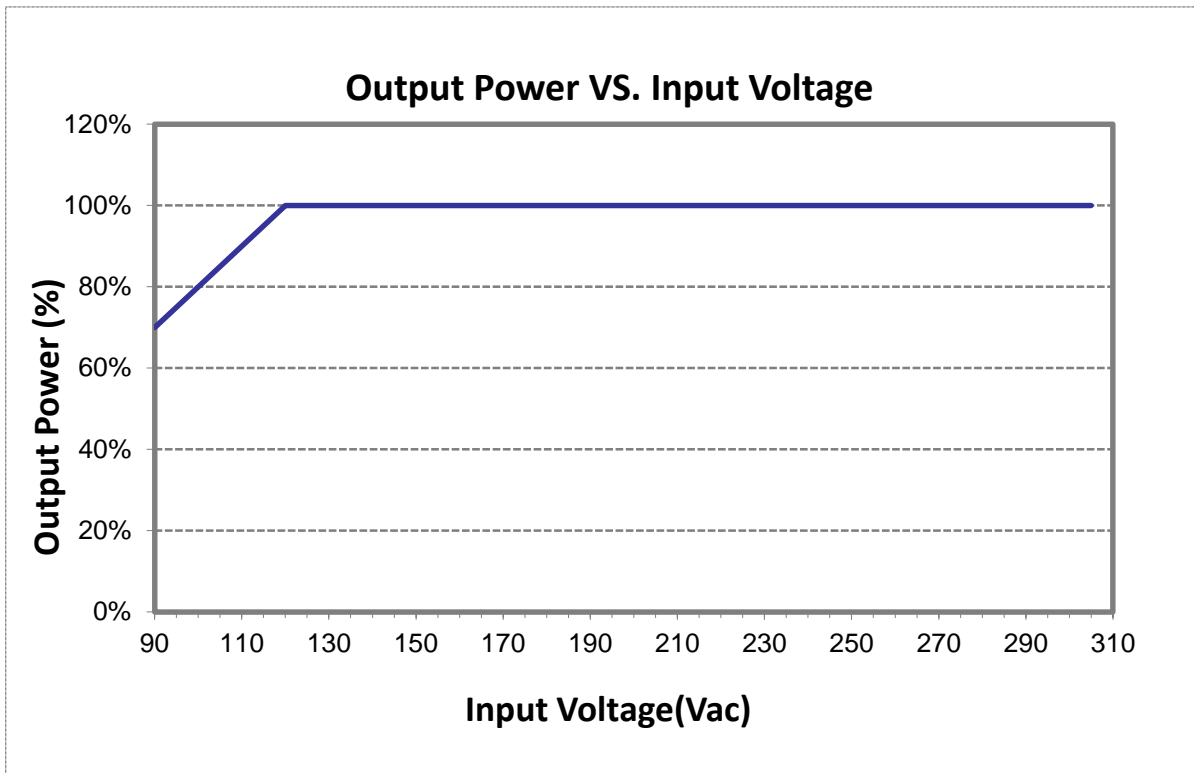


**DERATING CURVE**

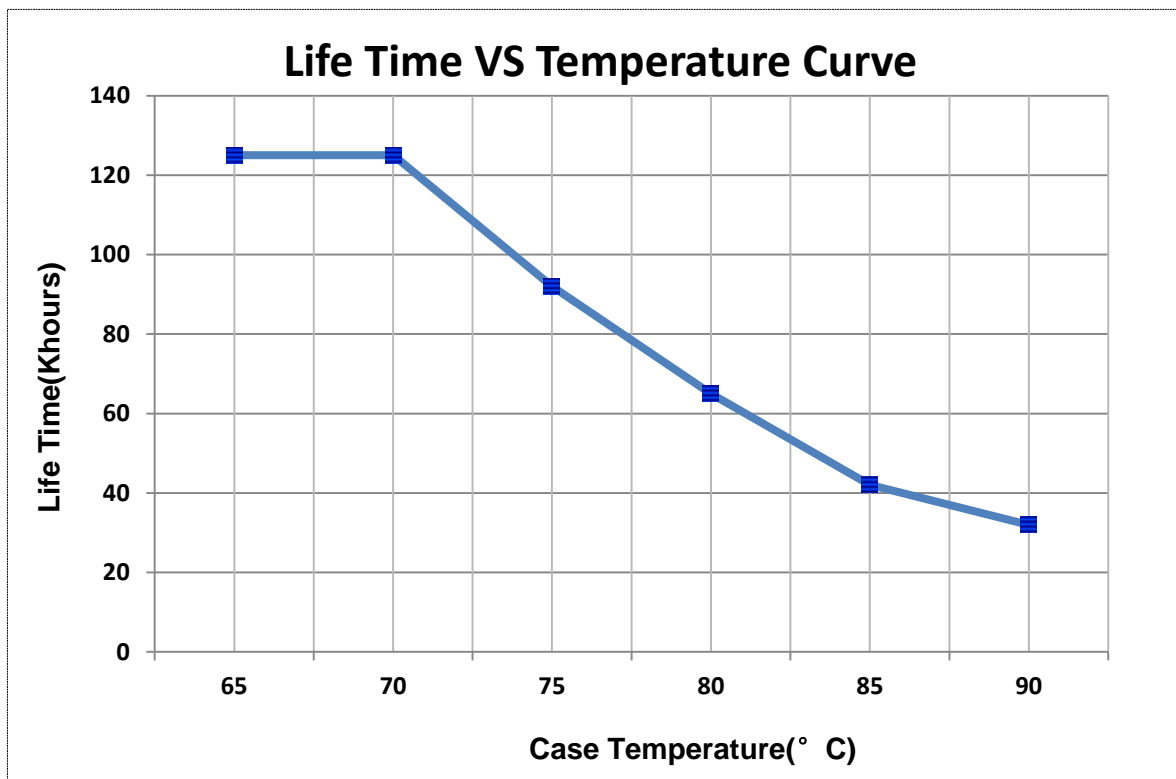
Derating Curve



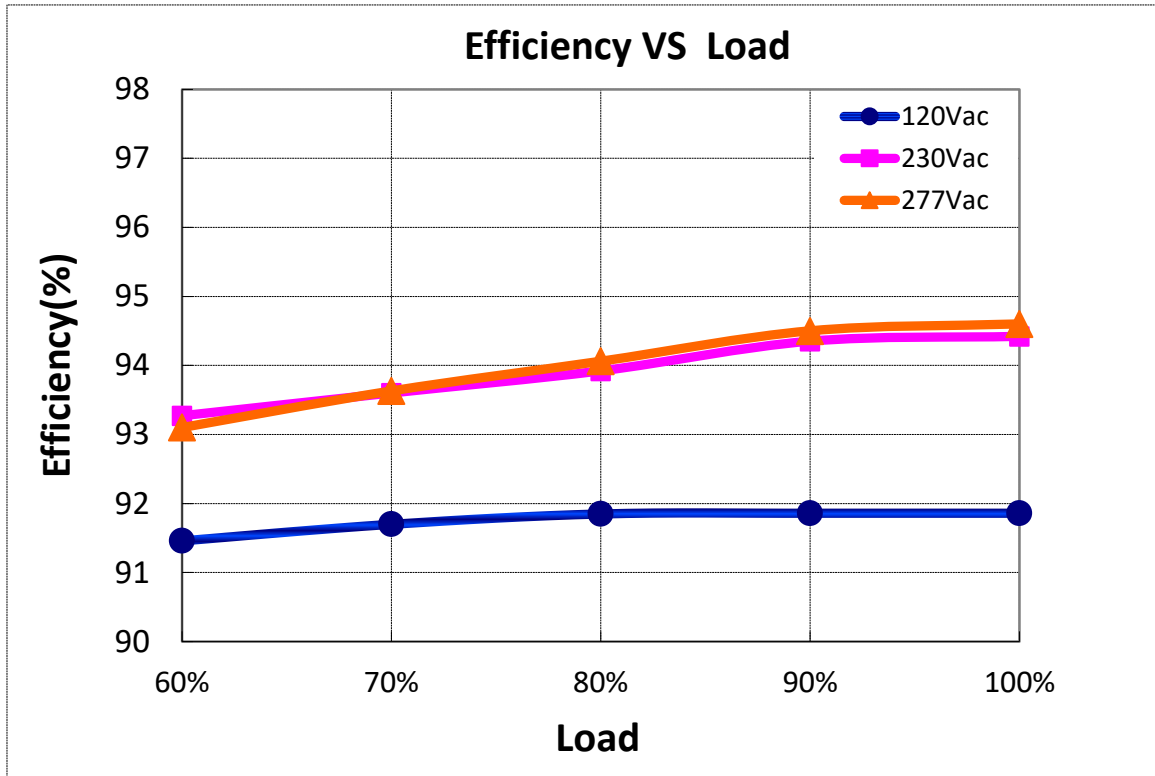
**OUTPUT POWER VS INPUT VOLTAGE**



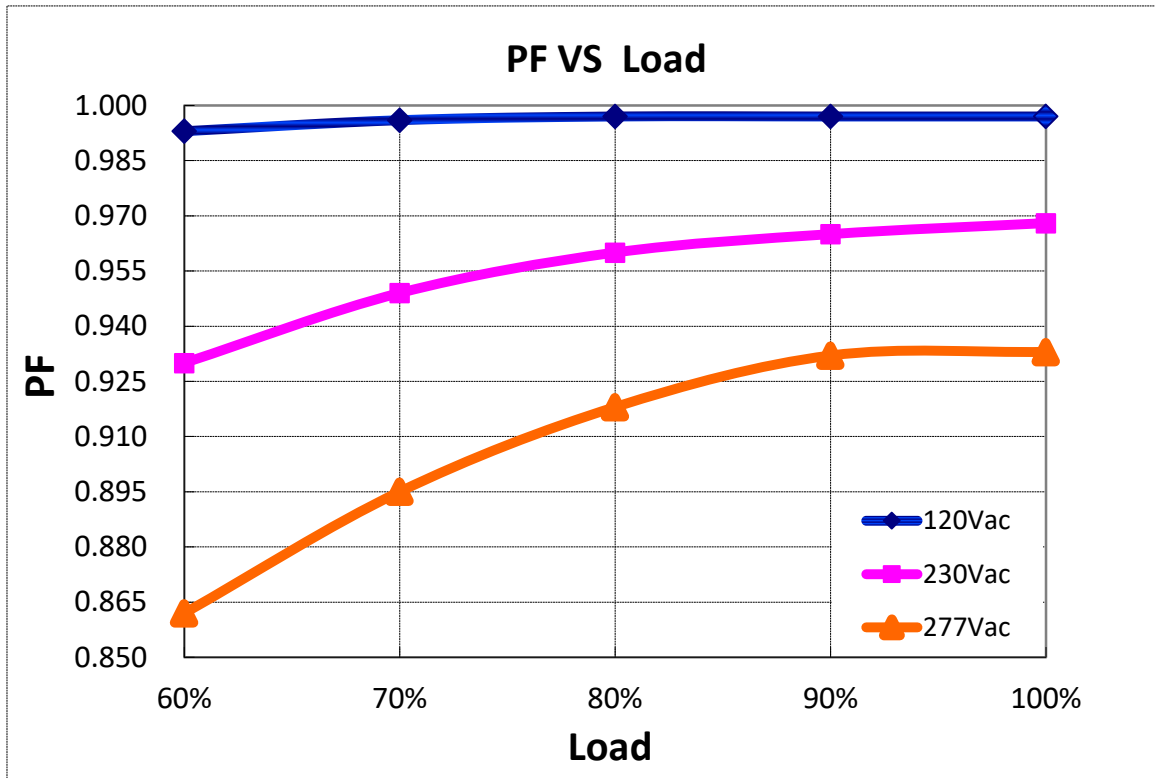
**LIFETIME VS CASE TEMPERATURE**



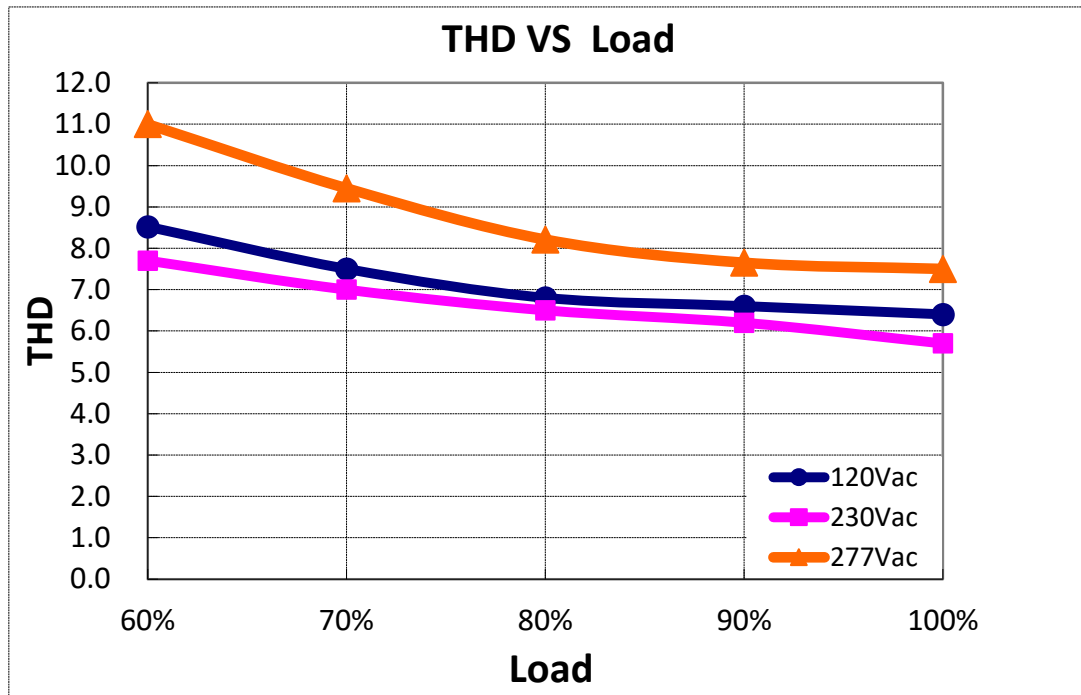
**EFFICIENCY VS LOAD**



**POWER FACTOR VS LOAD**



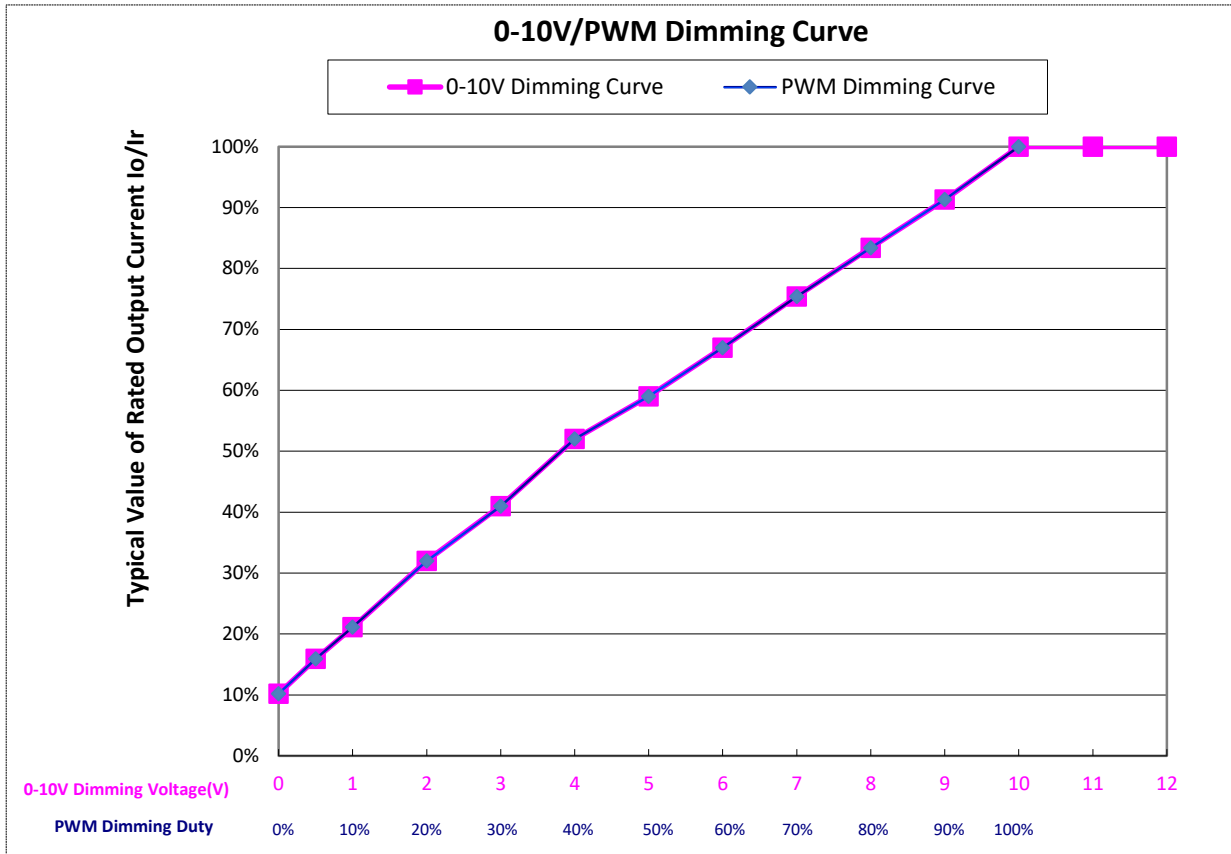
**TOTAL HARMONIC DISTORTION**



**PROTECTIONS**

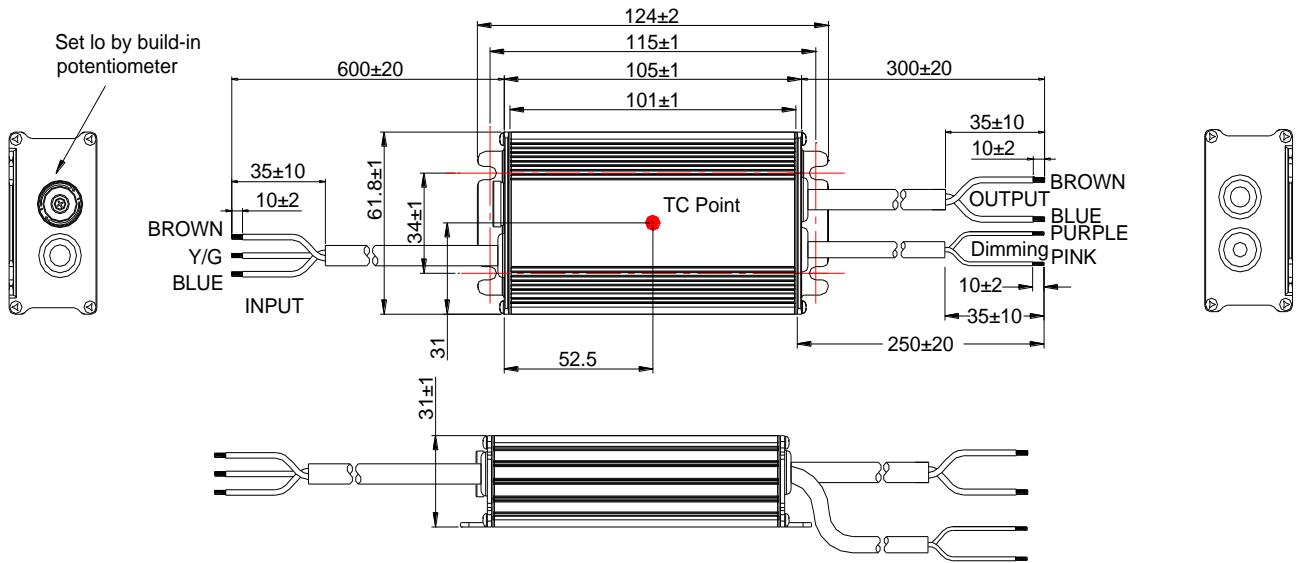
Parameter	Notes
Over Temperature Protection	Decreases output current, returning to normal after over temperature is removed, exclude auxiliary power supply.
Short Circuit Protection	Constant current and auto recovery. No damage will occur when any output is short circuited. The output shall return to normal when the fault condition is removed.
Over Temperature Protection	Decreases output current, returning to normal after over temperature is removed.

**0-10V/PWM DIMMING**

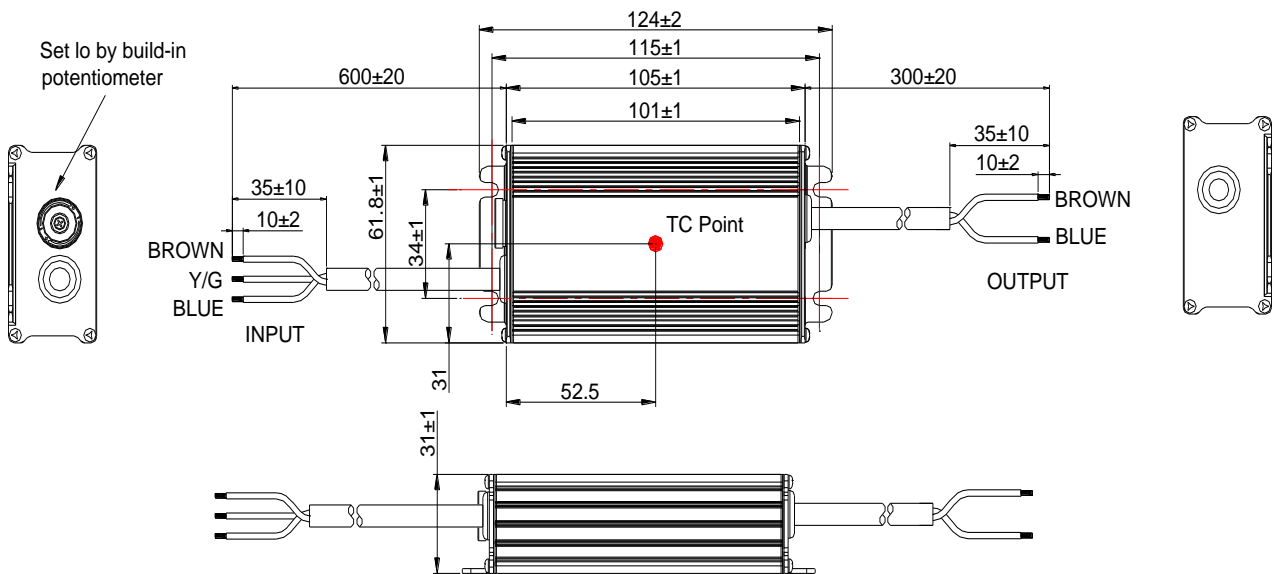


**MECHANICAL OUTLINE**

MNC-060M240



MNC-60V240



Wire	Specification	Note
Input	CCC+VDE H05RN-F 3x1.0mm <sup>2</sup> L=600±20mm L:Brown, N:Blue, G:Yellow/Green	CCC/CE
Output	CCC+VDE H05RN-F 2x1.0mm <sup>2</sup> L=300±20mm LED+:Brown, LED-:Blue	CCC/CE
Dimming	UL2733 22AWG*2C L=250±20mm DIM+:Purple, DIM-:Pink	