



**Product Features**

- Input voltage range: 108~305Vac;
- Constant power design, output current programming adjustable;
- 3-in-1 dimmable: 0~10Vdc, PWM, Timer dimming. Dim-to-off;
- Constant lumen output;
- Auxiliary power supply: 12V/200mA;
- Surge protection: 5KV line-line, 10KV line-earth;
- Protections: SCP, OVP, OTP;
- IP67 design for indoor and outdoor applications;
- Suitable for dry / damp / wet locations;
- 5 years warranty.

**Application**

- Suitable for horticulture lighting, high power lighting, etc.

**DESCRIPTION**

The P1-600W series is 600W outdoor offline programmable LED driver that operates in constant current with high PF value and universal input voltage range 108~305Vac model. Offline Monitored by dimming cable connected with an USB kit programming device, the fully programmed drivers offer all dimming, dim-to-off, constant lumen output options and a wide range of output current in a single driver, which deliver maximum flexibility with customized operating settings and intelligent control options for lighting manufacturers, as one driver can be programmed for many different luminaire designs. P1 provides built-in timer dimming schedules further increasing the energy savings and CO<sub>2</sub> reductions achieved with LED lighting. It also helps clients to improve the management of logistics and stock. The compact metal case and high efficiency enables the driver to operating with high reliability, and extending product lifetime. Overall protection is provided against lightening surge, output over voltage, short circuit, and over temperature, to ensure low failure rate.

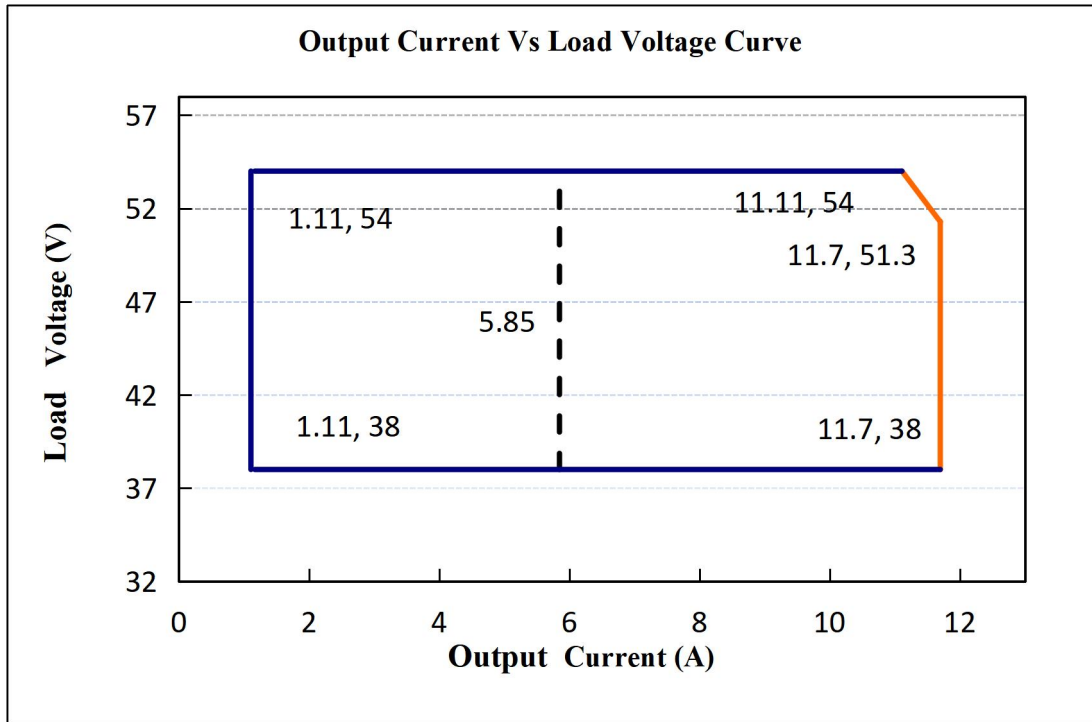
**MODELS**

Model Number [1]	Max Output Power (W)	Output Voltage Range (Vdc)	Full Power Output Voltage Range (Vdc)	Full Power Current Adjustable Range (A) [2]	Default Output Current Setting(A)	Typical Efficiency [3]	PF
P1-600M056A12	600	38~54	51.3~54	11.11~11.7	51.3V/11.7A	94%@230	0.97@230

**Notes:**

- [1]. A12 means the driver with 12V/200mA auxiliary power supply.
- [2]. Output current adjustable range with constant power at max output power.
- [3]. 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**



**INPUT SPECIFICATIONS**

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	108Vac	120-277Vac	305Vac	
Input Frequency	47Hz	50/60	63Hz	
Leakage Current	-	-	0.75mA	277Vac/60Hz
Input AC Current	-	-	6A	120-277Vac & full load
Inrush Current	-	-	35A	230Vac & full load
Standby Power Consumption	-	1 W	1.5W	Dim to off, AUX. Power no load
Power Factor	0.97	0.99	-	120Vac, 50-60Hz, full load
	0.95	0.97	-	230Vac, 50-60Hz, full load
	0.92	0.95	-	277Vac, 50-60Hz, full load
THD	-	-	20%	120-230Vac, 50-60Hz, 50%-100% load
	-	-	20%	277Vac, 50-60Hz, 70%-100% load

**OUTPUT SPECIFICATIONS**

Parameter	Min.	Typ.	Max.	Notes
Output Current Setting Range (A)	10% I <sub>max</sub>	-	100% I <sub>max</sub>	
Output Current Tolerance(%)	-5	-	5	
Output Current Setting Range (A)	1.17	-	11.7	

No Load Output Voltage (V)	-	-	58	
Total Output Current Ripple(pk-pk)	-	±5%	±10%	20MHz BW, full load& LED load, the ripple would be tiny different under different LED load.
Startup Overshoot Current (%)	-	-	20	120~277Vac &100% Load, load is LED
Line Regulation (%)	-1	-	1	25°C±10°C ambient temperature, input voltage changes from 120Vac to277Vac.
Load Regulation (%)	-3	-	3	25°C±10°C ambient temperature, Input Voltage 230Vac, load changes from 60% to 100%.
AUX. Power output voltage (V)	11.4	12	12.6	
AUX. Power output current(mA)	0	200	-	
Turn-on Delay Time (S)	-	-	3	120Vac, 100%load,10-90%Vo
	-	-	2	230Vac, 100%load,10-90%Vo

**GENERAL SPECIFICATIONS**

Parameter		Min.	Typ.	Max.	Notes
Efficiency @120Vac I <sub>o</sub> =11.7A		91%	92%	-	Measured at full load and 25°C ambient temperature
Efficiency @277Vac I <sub>o</sub> =11.7A		93%	94%	-	
Dielectric Strength	Input-Output	-	3750Vac	-	Max 5mA/60S
	Input-PE	-	1600Vac	-	
	Output-PE	-	1600Vac	-	
Grounding Resistance (Ω)		-	-	0.1	25A/60S, under 25°C±10°C ambient temperature
Insulation Resistance (MΩ)		100	-	-	Input-Output, Input-PE, Output-PE, 500Vdc/60S/25°C/70%RH
MTBF (Hr)		-	500000	-	Telcordia SR-332,100% load, & Ta = 25°C
Lifetime (Hr)		-	50000	-	230Vac&100% load, 75°C case temperature, refer to lifetime curve for details
Ambient Temperature (°C)		-20		+45	Input:120-200Vac
		-20		+50	Input:200-277Vac
Operating Case Temperature for Safety T <sub>c_s</sub> (°C)		-20	-	+90	
Operating Case Temperature for Warranty T <sub>c_s</sub> (°C)		-20	-	+75	5 years warranty case temperature Humidity: 10% to 95% RH
Storage Temperature (°C)		-40	-	+85	Humidity: 10% to 95% RH
Working elevation		-50m	-	4000m	
Dimensions (L*W*H)mm		L301*W106*H50mm;			
Net Weight		2800±100g/PCS			
Package		L590xW445xH185mm 8PCS/Ctn, Gross Weight: 23.5Kg			

**DIMMING**

Parameter	Min.	Typ.	Max.	Notes
0~10V Absolute Maximum Voltage on the Vdim (+) Pin (V)	-	10	-	
0~10V Source Current on Vdim(+)Pin (mA)	-	0.2	0.4	
Dimming Output Range	10%	-	100% I <sub>max</sub>	I <sub>max</sub> =11.7A
Recommended Dimming Range for 0-10V (V)	0	-	10	
PWM_in High Level (V)	9.7	-	10.5	
PWM_in Low Level (V)	0	-	0.3	
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	√
ENEC		EN62384	√
CB	CB Countries	IEC61347-1, IEC61347-2-13	√
UL	USA	UL 8750	√
CUL	Canada	CSA C22.2 No.250.13	

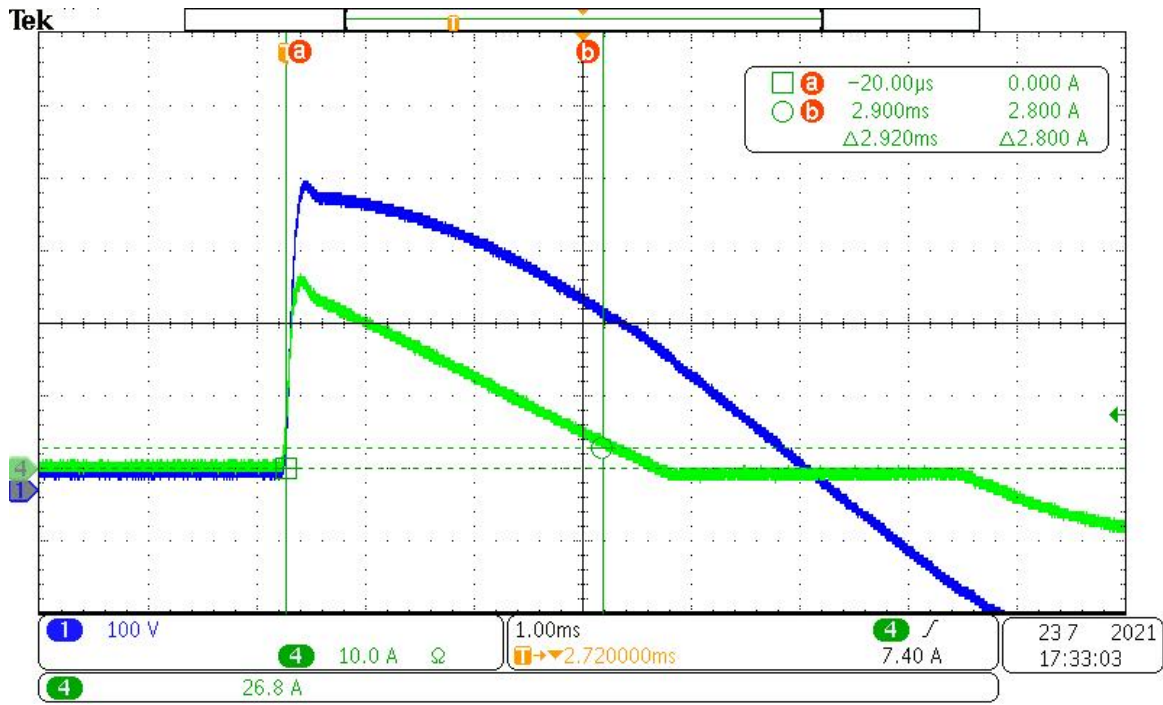
**SAFTY STANDARDS**

Safety Category	Country / Territory	Standards	Approved
CCC	China	GB/T 17743, GB 17625.1	
CE	Europe	EN 55015	Class B
		EN 61000-3-2, EN 61000-3-3	Class C
		EN61000-4-2,3,4,5,6,11	Class B
		EN 61547	
FCC	USA	FCC part 15	Class B

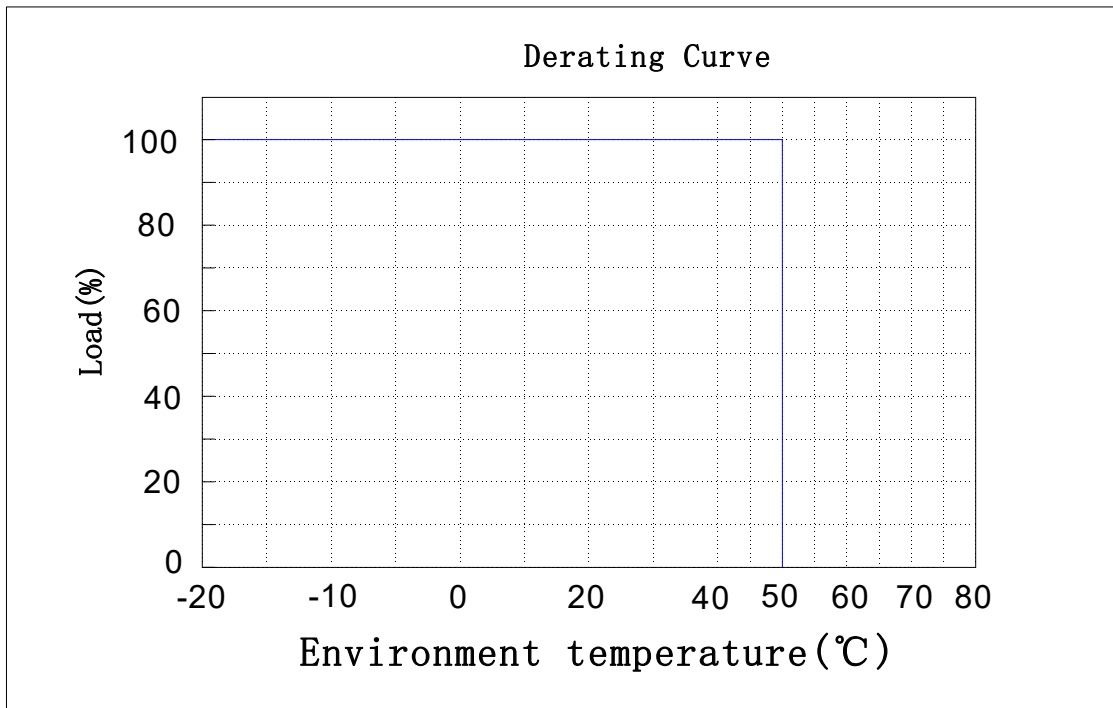
**NOTE:**

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.

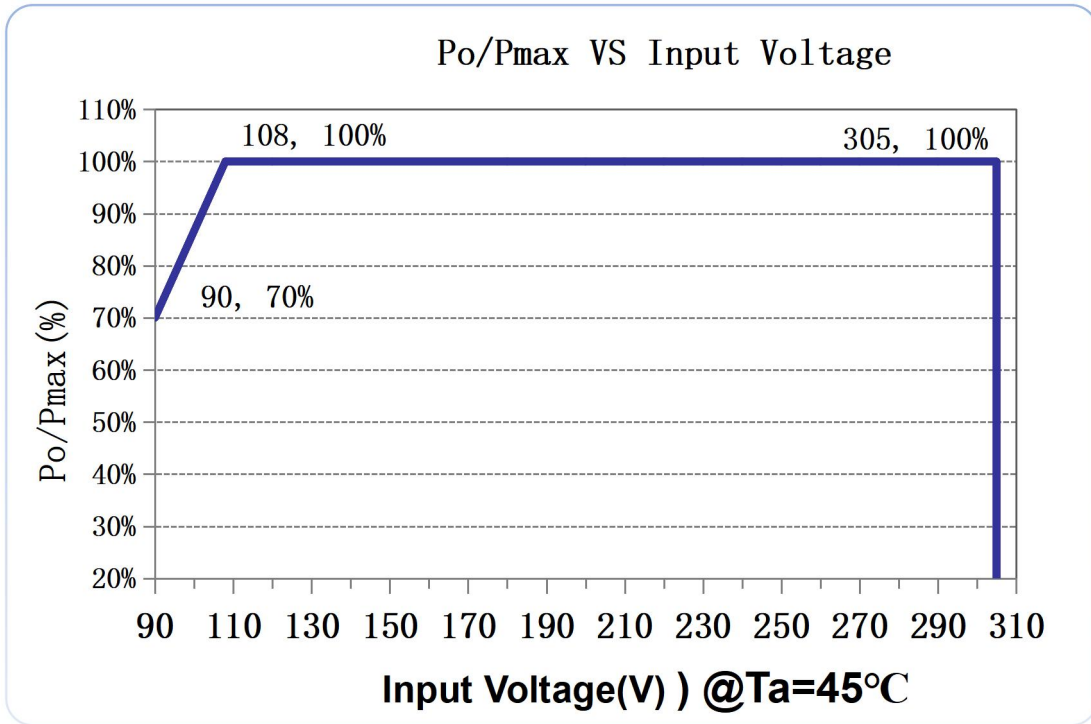
**INRUSH CURRENT WAVEFORM**



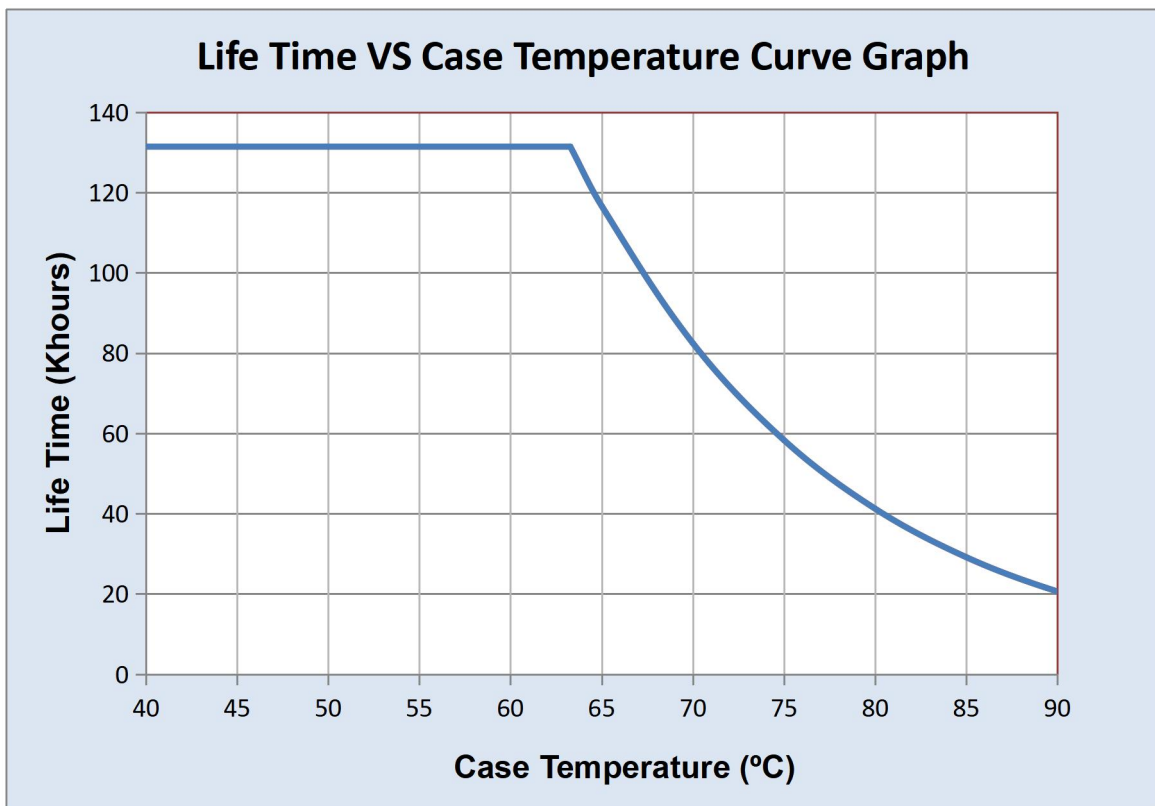
**DERATING CURVE**



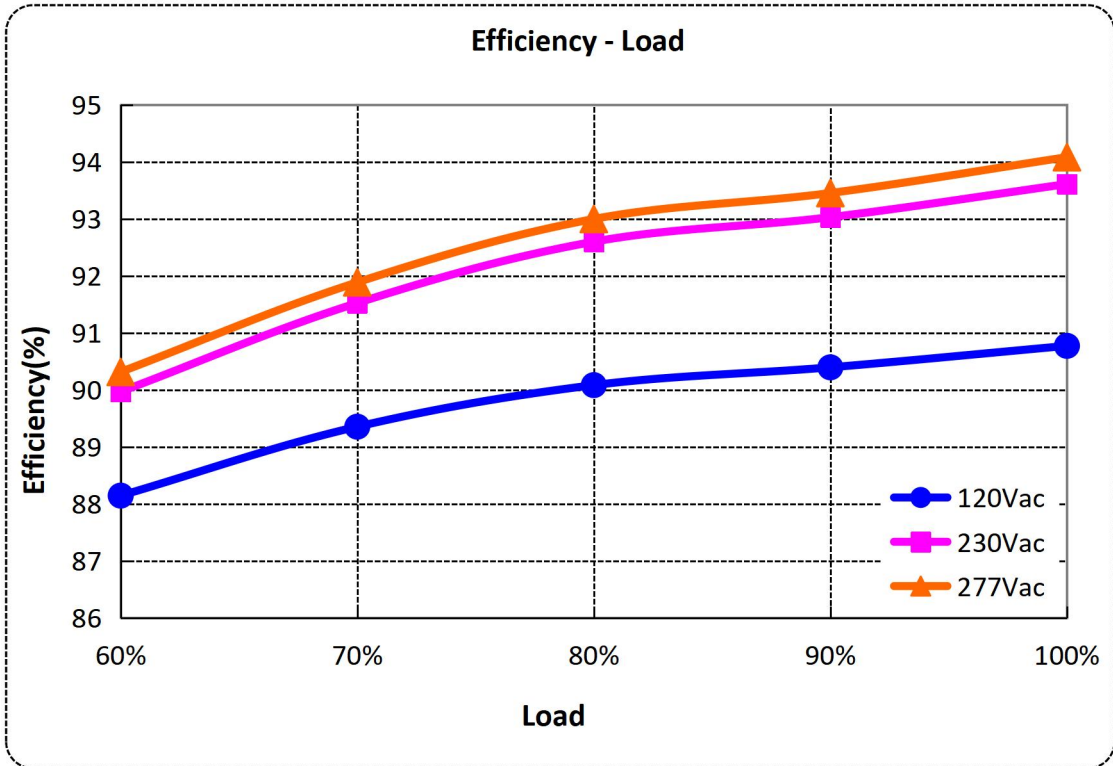
**OUTPUT POWER VS INPUT VOLTAGE**



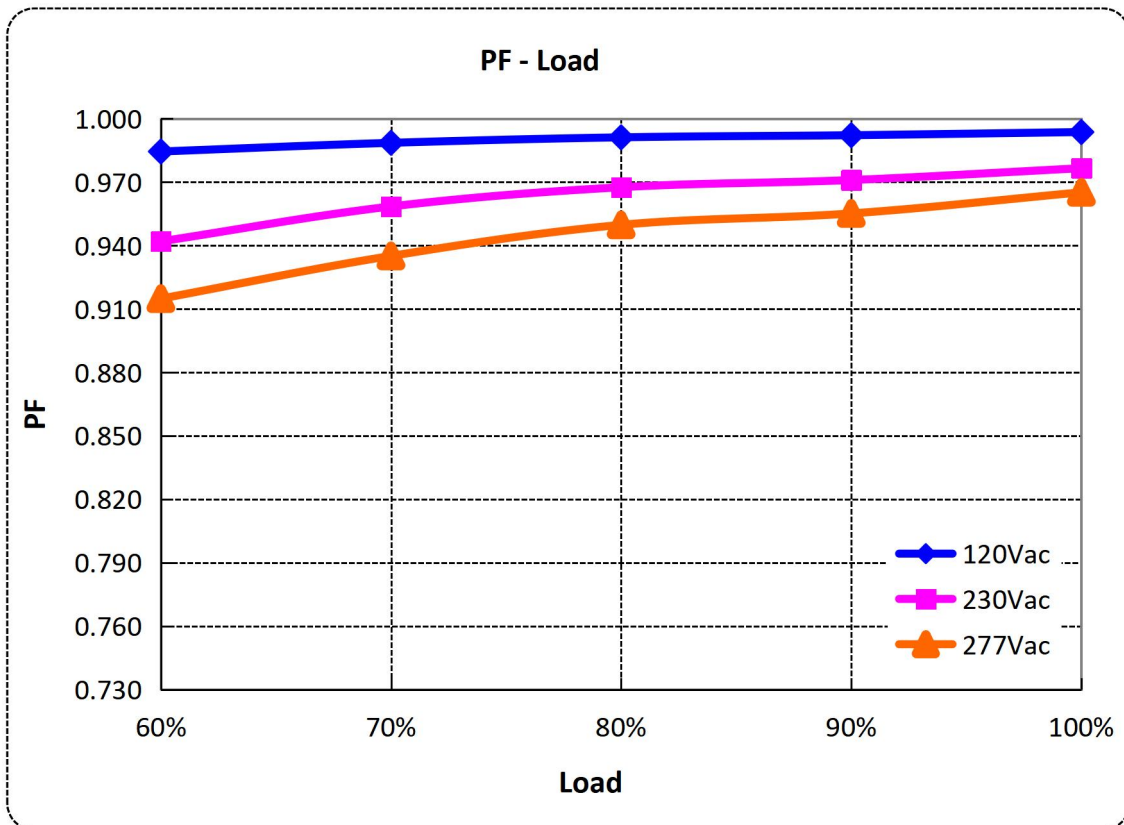
**LIFETIME VS CASE TEMPERATURE**



**EFFICIENCY VS LOAD**

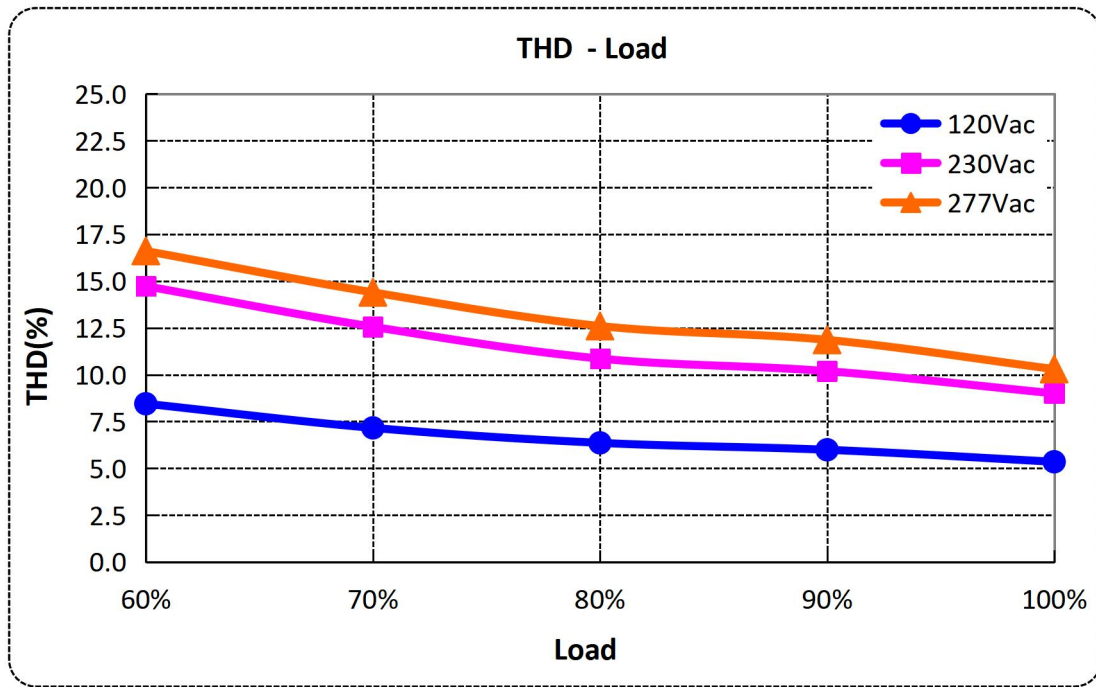


**POWER FACTOR VS LOAD**

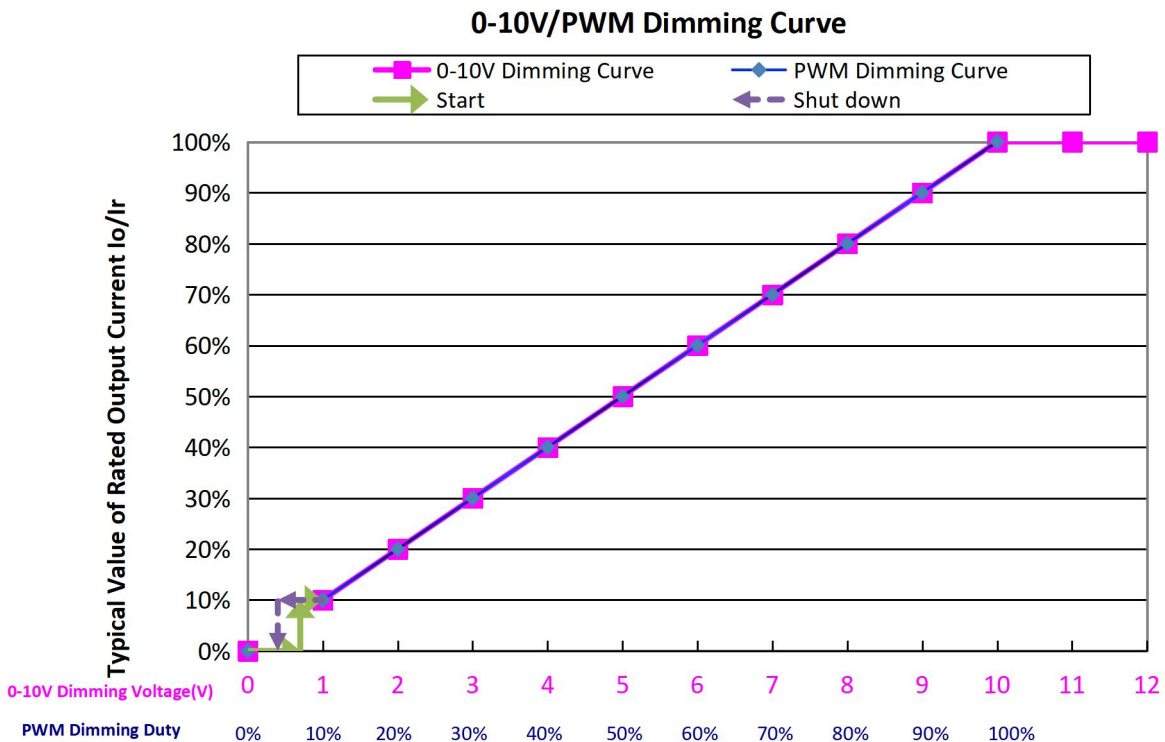




**TOTAL HARMONIC DISTORTION**



**0-10V/PWM DIMMING**

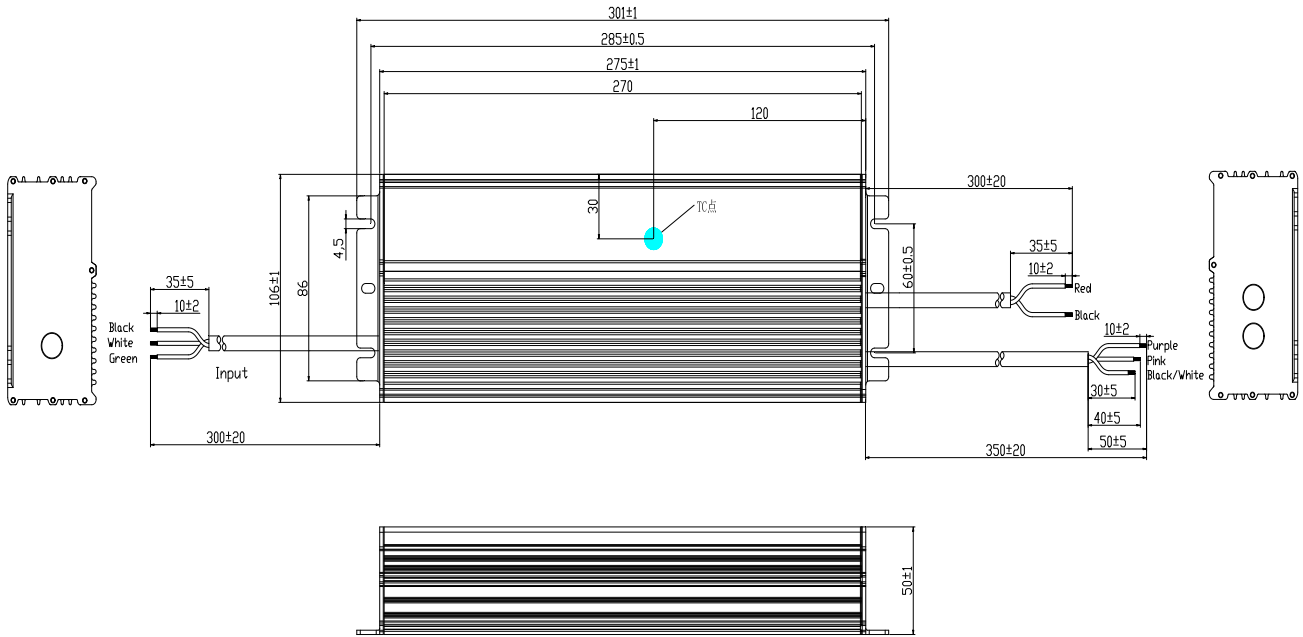


**PROTECTIONS**

Parameter	Notes
Over Temperature Protection	Decreases output current, returning to normal after over temperature is removed.
Short Circuit Protection	Constant current mode 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 Voltage Protection	Run into protection model when output voltage exceeds limit, and return to normal when the fault condition is removed.

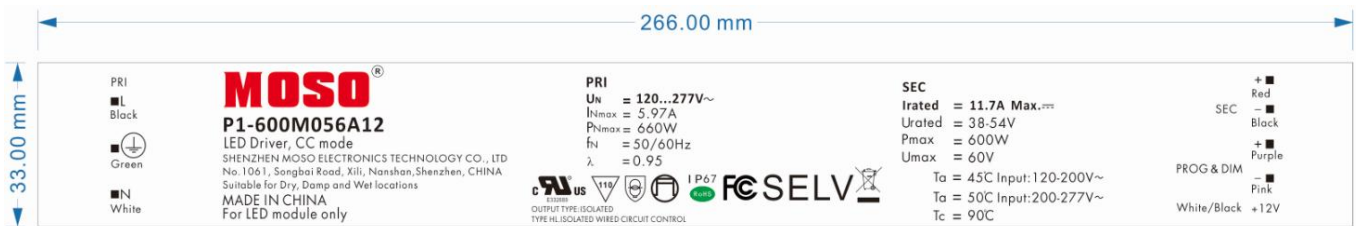


**MECHANICAL OUTLINE**



Wire	Specification	Note
Input	SJTW 16AWG*3C external diameter: 8.4mm L=300±20mm	UL
Output	SJTW 14AWG*2C external diameter: 8.7mm L=300±20mm	UL
Dimming	UL21996 22AWG*3C external diameter: 5.0mm L=350±20mm	Y=M

**LABEL**





# Specification for Approval

Product Name: 680W off-line programmable driver  
Product Model: P1-600M056A12   
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

