X6 Series-320W Outdoor Off-line Programmable Driver

Product Features

- Universal input voltage / Full range: 90~305Vac;
- Constant power design, output current programming adjustable;
- (M types) off-line programmable, (V types) output current adjustable by built-in potentiometer;
- 3-in-1 dimmable: 0~10Vdc, PWM, Positive and negative logic,Timer dimming, Dim-to-off;
- (M types)Constant lumen output,daily log;
- Output and Dimming Signal Isolating;
- Surge protection: 6KV 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 LED roadway lighting, Industrial lighting, landscape lighting, etc.

DESCRIPTION

The X6-320 series is 320W outdoor off-line programmable LED driver that operates in constant current with high PF value and universal input voltage range of 90~305Vac. Monitored off-line 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, providing maximum flexibility with customized operating settings and intelligent control options for lighting manufacturers, as one driver can be programmed for many different luminaire designs. X6 provides built-in timer dimming schedules that further increase the energy savings and CO_2 reductions achieved with LED lighting. It also helps customers to improve logistics and inventory management. The compact metal case and high efficiency enables the driver to operate with high reliability and extend product life. 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
X6-320Y230	320	115-230	152-230	1.39-2.10	2.10	92%	0.97

Notes:

[1]. Y can be M or V. Y=M means dimmable and off-line programmable, The adjustable Iout range: 10%-100% Imax;
Y=V means non-dimmable and output current adjusted by built-in potentiometer.

[2]. Output current adjustable range with constant power at max output power;

[3]. All specifications are measured at 25℃ ambient temperature, input voltage 230Vac, and the typical value tested by full load, if no specific note.

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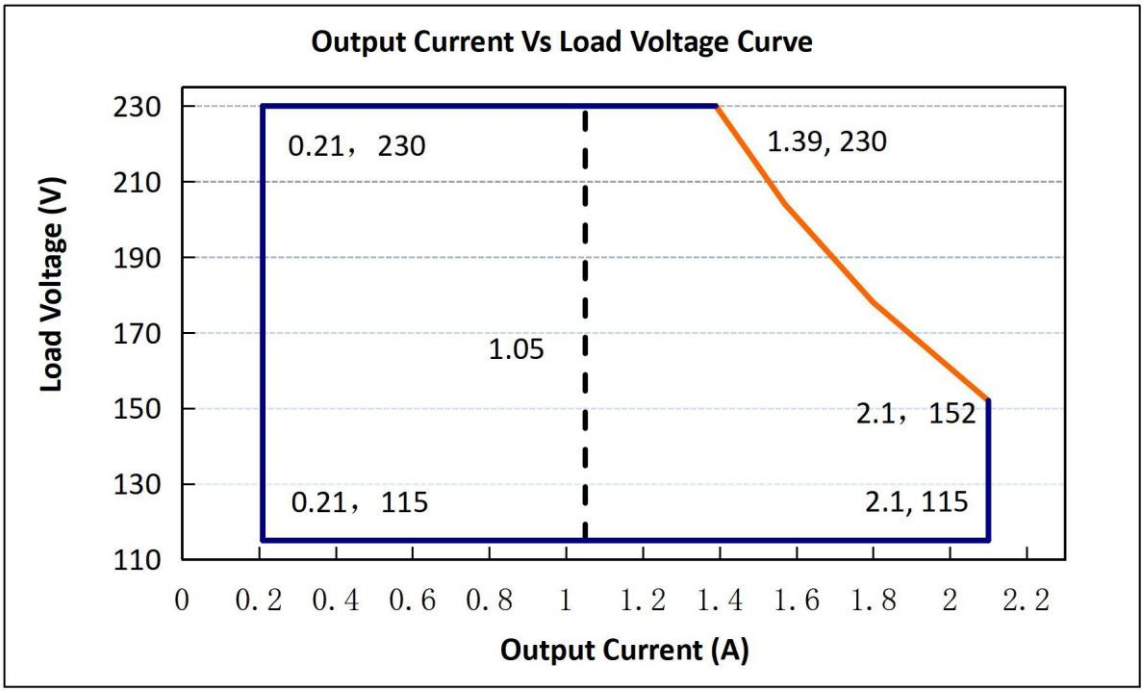
OPERATING AREA I-V



Notes：The drivers are not allowed to work in over-load condition, otherwise warranty will expire.
Y=V is suitable for the right area of the dotted line；Y=M is suitable for the solid line contain area.

INPUT SPECIFICATIONS

Parameter	Min.		Typ.		Max.		Notes
Input Voltage	90Vac		100-277Vac		305Vac		
Input Frequency	47Hz		50/60Hz		63Hz		
Leakage Current	-		-		0.70mA		277Vac/60Hz
Input AC Current	-		-		4.2A		100-277Vac &full load
Inrush Current	-		-		$4.5A^2S$		230Vac & full load
Standby Power Consumption					2W		230Vac/50Hz Dim to off
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	-		5%		10%		100-240Vac,50-60Hz, full load
	-		-		15%		277Vac, 50-60Hz, full load
Max. NO. of PSUs on CIRCUIT BREAKER	B10	1	B16	1	B25	2	230Vac
	C10	1	C16	2	C25	3	

OUTPUT SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%	-	+5%	
Output Current Setting Range (A)	1.05	-	2.10	The 'M type' adjustable Iout range: 10%-100% Imax,
Output Current Setting Range with Constant Power（A）	1.39	-	2.10	
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	-	-	10%	100~277Vac &100% Load, load is LED
No Load Output Voltage（V）	-	-	260	
Line Regulation	-1%	-	+1%	25℃±10℃ ambient temperature, input voltage changes from 120Vac to277Vac.
Load Regulation	-3%	-	+3%	25℃±10℃ambient temperature, Input Voltage 230Vac, load changes from 60% to 100%.
Turn-on Delay Time	-	1S	3S	120Vac,100% load
			2S	230Vac,100% load

GENERAL SPECIFICATIONS

Parameter		Min.	Typ.	Max.	Notes
Efficiency @120Vac I_O=1.39A I_O=2.10A		85.0% 86.0%	87.0% 88.0%		Measured at full load and 25℃ ambient temperature
Efficiency @230Vac I_O=1.39A I_O=2.10A		90.5% 90.4%	92.5% 92.4%		Measured at full load and 25℃ ambient temperature
Efficiency @277Vac I_O=1.39A I_O=2.10A		90.6% 90.4%	92.6% 92.4%		Measured at full load and 25℃ ambient temperature
Dielectric Strength	Input-Output	-	3750Vac	-	Max 5mA/60S
	Input-PE	-	1600Vac	-	
	Output-PE	-	1600Vac	-	
Grounding Resistance		-	-	0.1Ω	25A/60S, under 25℃±10℃ambient temperature
Insulation Resistance		10MΩ	-	-	Input-Output, Input-PE, Output-PE, 500Vdc/60S/25℃/70%RH
MTBF		-	200000Hrs	-	25℃±10℃ambient temperature, 230Vac,80% load (MIL-HDBK-217F)
Lifetime		-	50000Hrs	-	230Vac&100% load, 75℃ case temperature, refer to lifetime curve for details
Ambient Temperature		-40℃		+60℃	Reference derating curve
Operating Case Temperature for Safety Tc_s		-40℃	-	+90℃	
Operating Case Temperature for Warranty Tc_s		-40℃	-	+75℃	5 years warranty case temperature

				Humidity: 10% to 95% RH
Storage Temperature	-40℃	-	+85℃	Humidity: 5% to 100% RH
Dimensions (LxWxH)mm	L231*W98*H42 mm			
Net Weight	1700±100g/PCS			
Package	L615mmxW375mmxH166mm; 10PCS/Ctn, Gross Weight: 19.6Kg			

DIMMING

Parameter		Min.	Typ.	Max.	Notes
0~10V Absolute Maximum Voltage on the Vdim (+) Pin		-	10V	-	
0~10V Source Current on Vdim(+)Pin		-	200uA	400uA	
Dimming Output Range	X6-320M230	10% I_{max}	-	100% I_{max}	I_{max}=2.10
	X6-320M230	0.21	-	2.10	
Recommended Dimming Range for 0-10V		0V	-	10V	Default 0-10V/ PWM Dimming(0-10V,0-9V,0-5V,0-3.3V can be customized as request)
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%	

SAFETY 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	√
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	√
EAC	Russia	ГОСТ Р МЭК 61347-1-2011 ГОСТ IEC 61347-2-13-2013 ГОСТ IEC 62493-2014 СТБ ЕН 55015-2006 ГОСТ IEC 61547-2013 ГОСТ 30804.3.2-2013 (IEC 61000-3-2:2009) ГОСТ 30804.3.3-2013 (IEC 61000-3-3:2008)	√

Insulation

Insulation	Input/Mains	Dimming	LED Output	Case
Input/Mains	/	Double	Double	Basic
Dimming	Double	/	Basic	Basic
LED Output	Double	Basic	/	Basic
Case	Basic	Basic	Basic	/

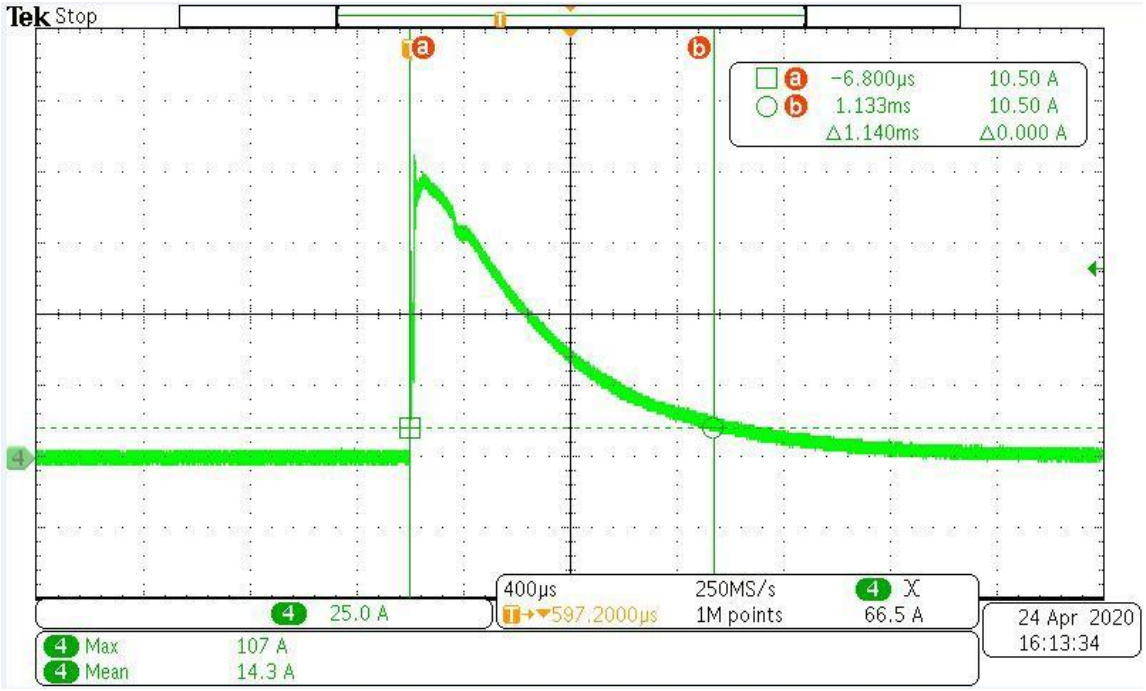
EMC COMPLIANCE

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	√

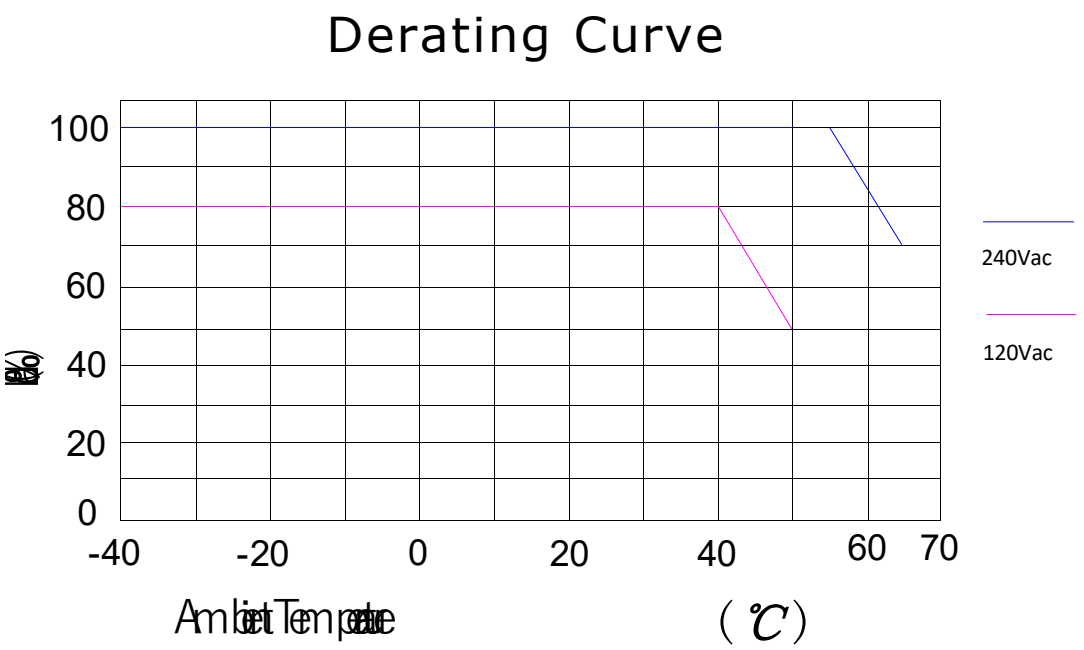
NOTE:

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

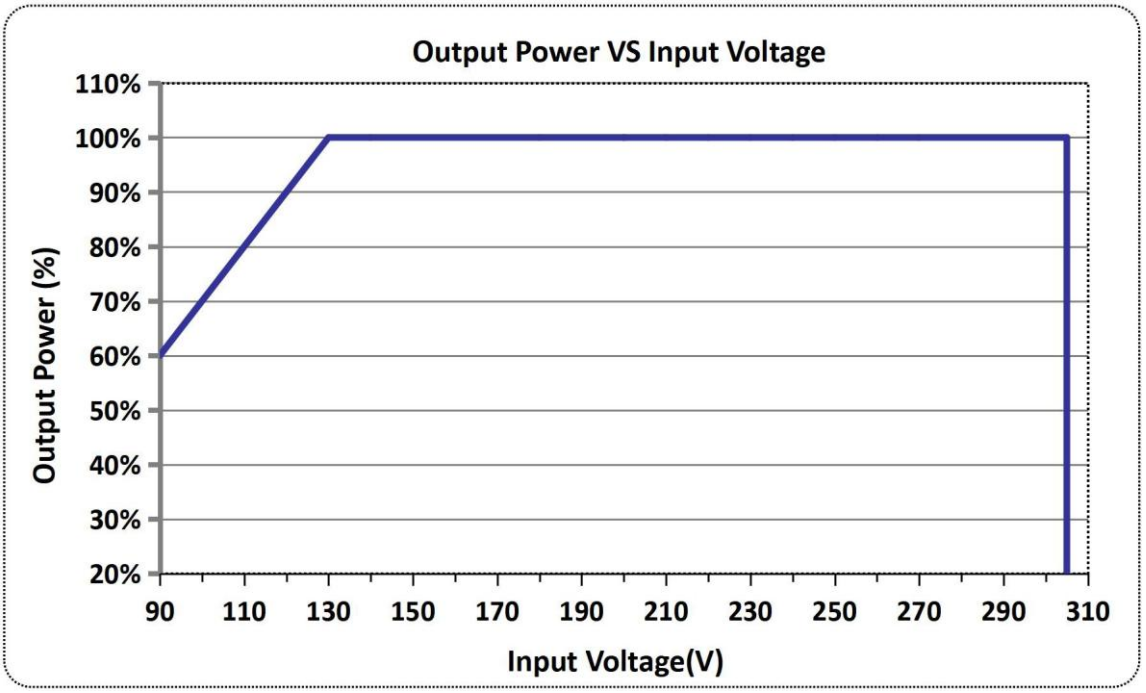
INRUSH CURRENT WAVEFORM



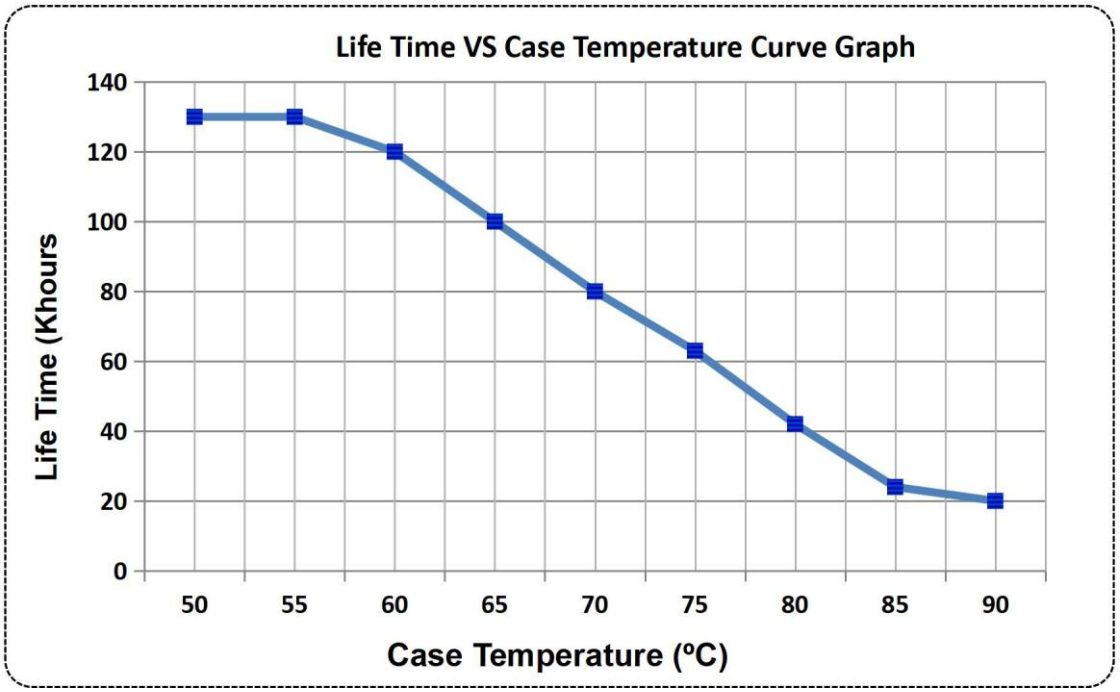
DERATING CURVE



OUTPUT POWER VS INPUT VOLTAGE

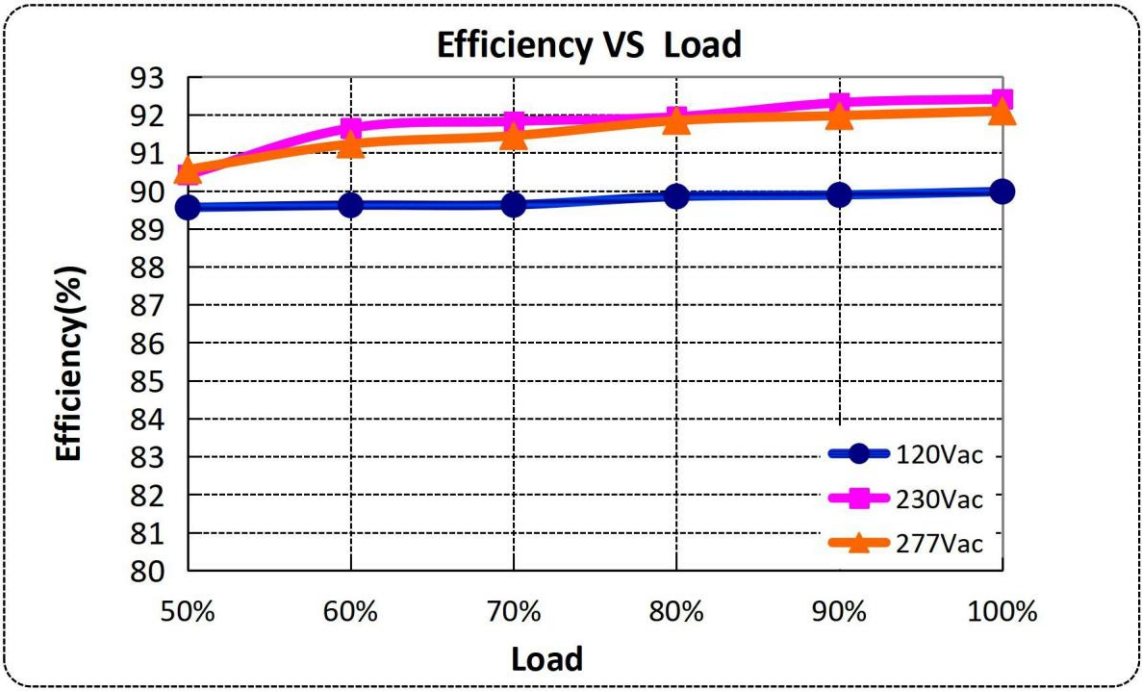


LIFETIME VS CASE TEMPERATURE

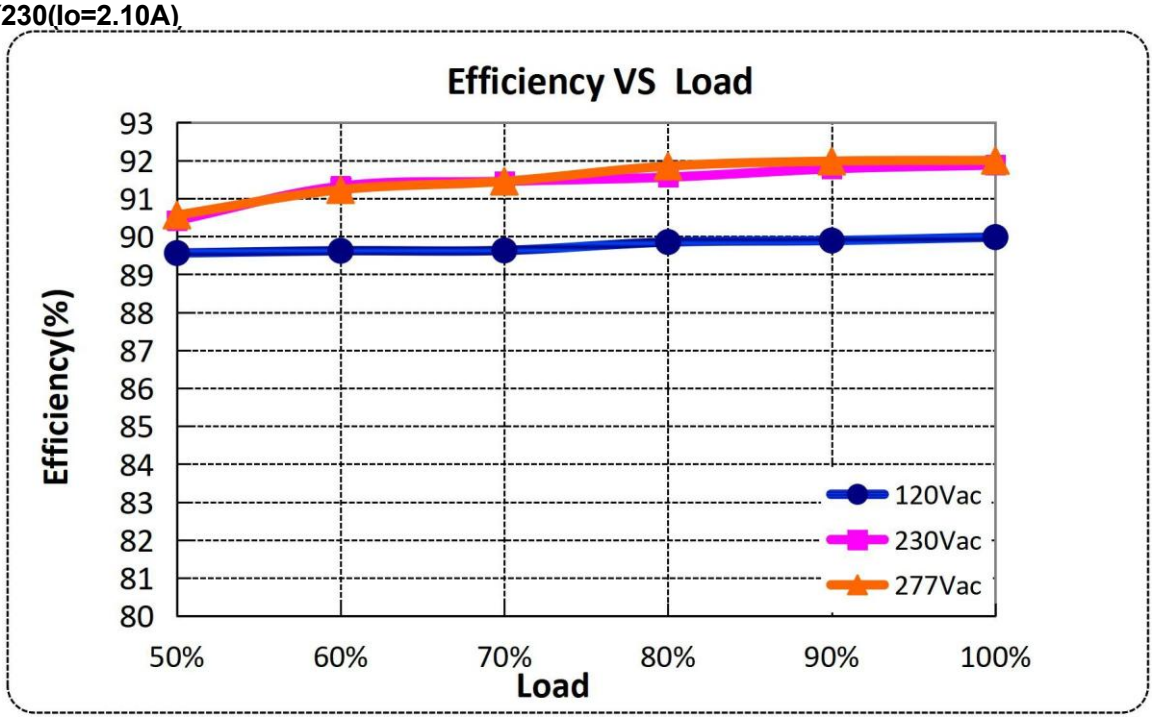


EFFICIENCY VS LOAD

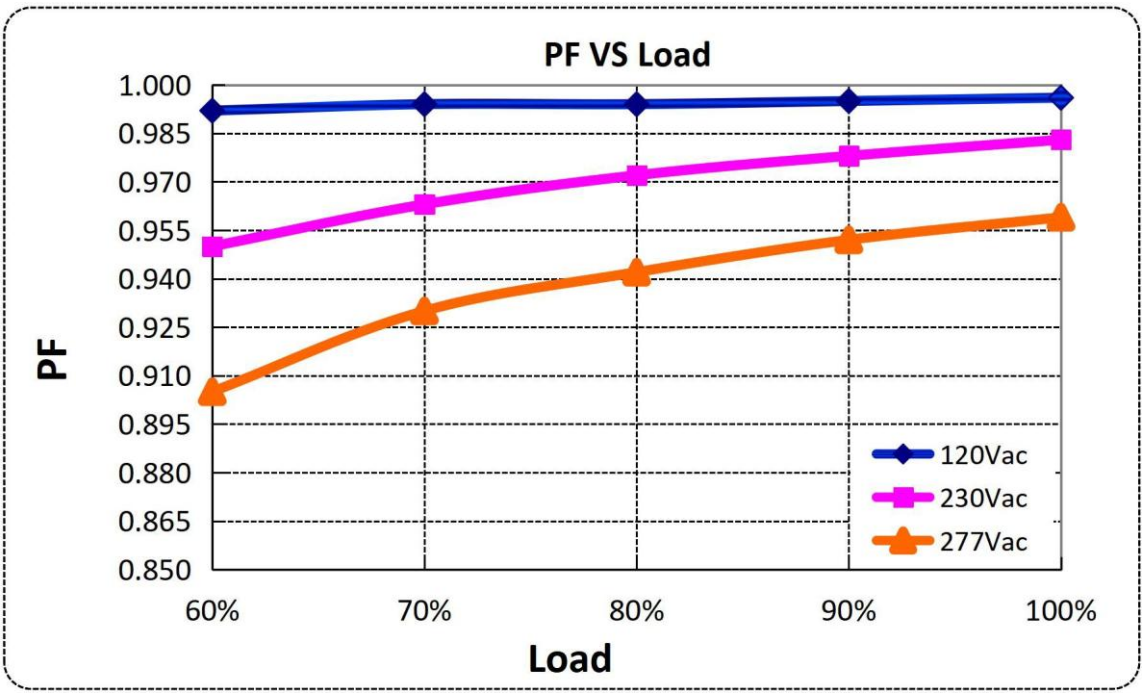
X6-320Y230(Io=1.39A)



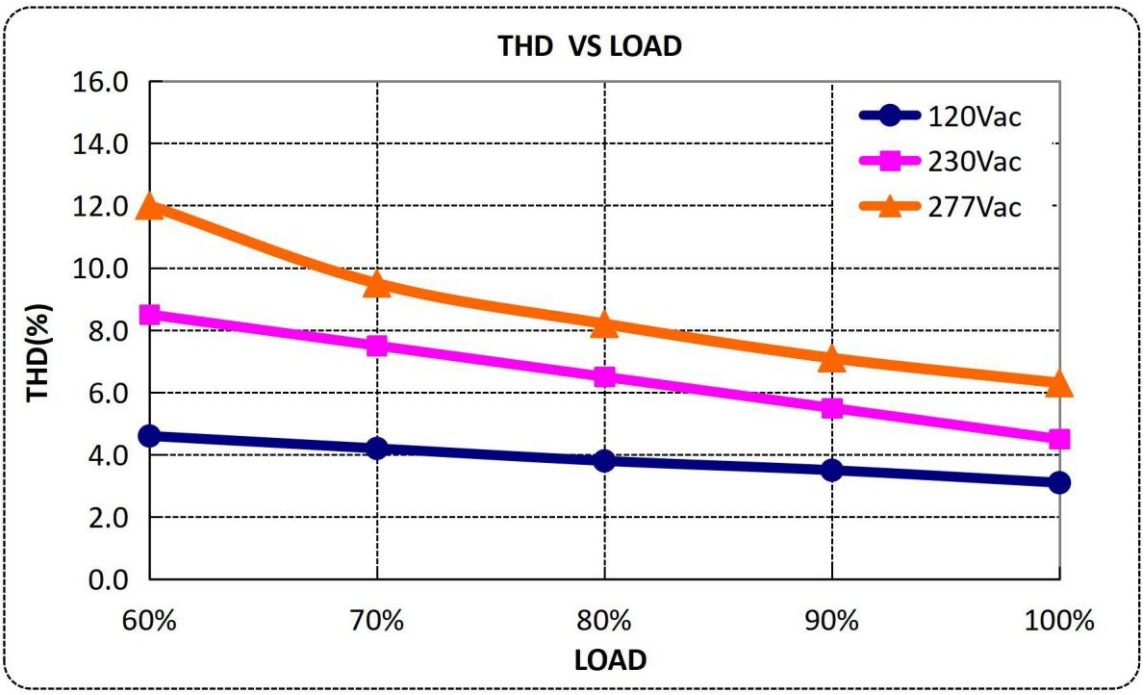
X6-320Y230(Io=2.10A)



POWER FACTOR VS LOAD



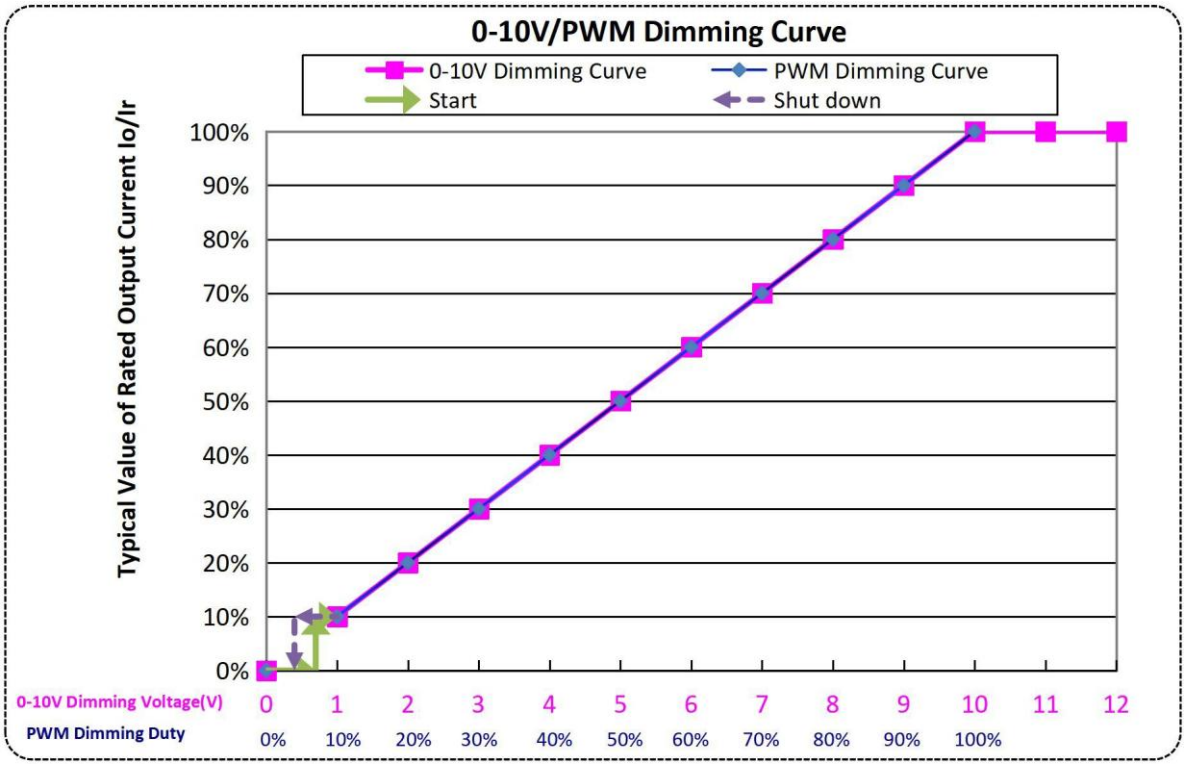
TOTAL HARMONIC DISTORTION



PROTECTIONS

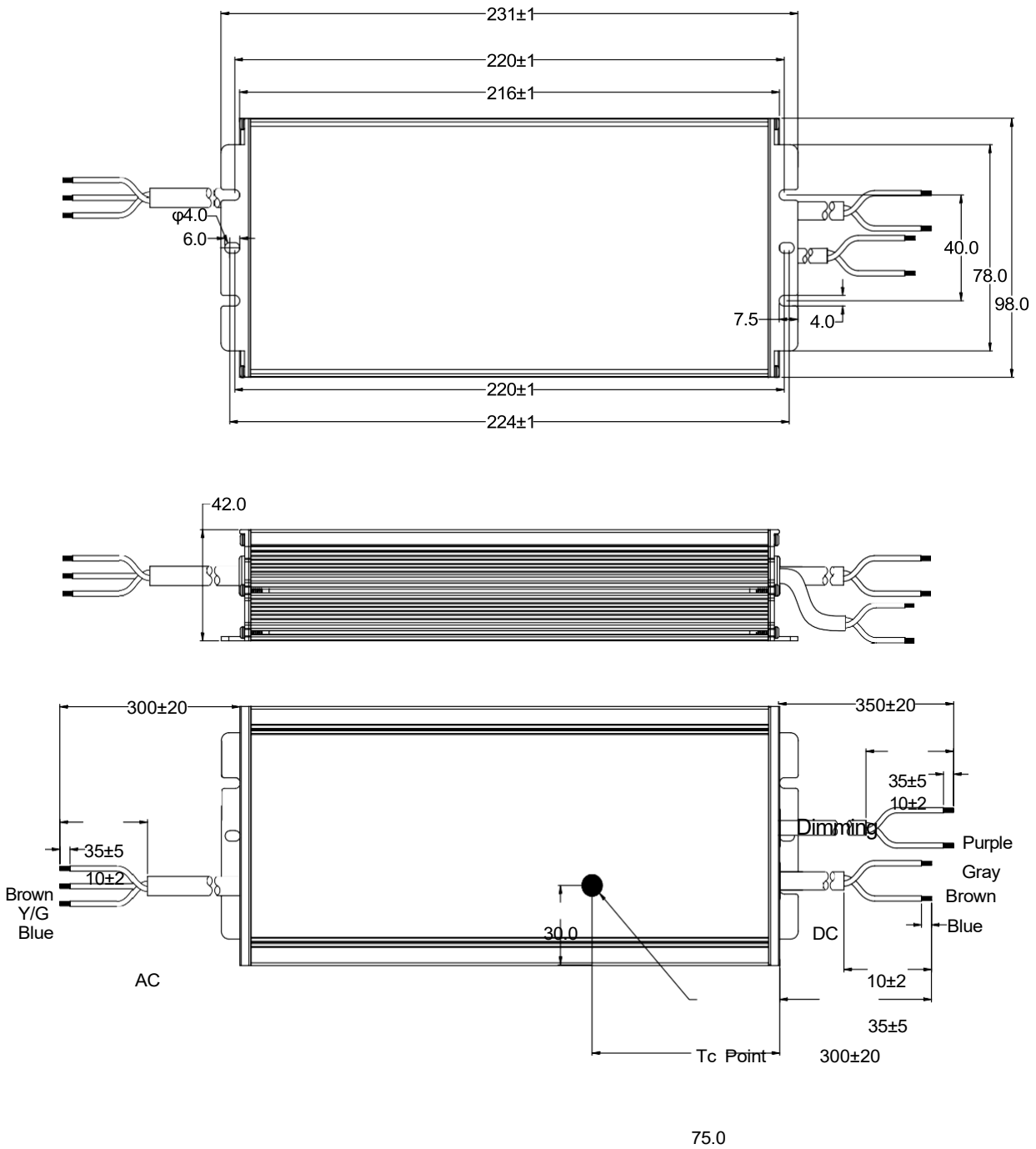
Parameter	Notes
Over Temperature Protection	Decreases output current, returning to normal after over temperature is removed. The max derating could be met Max Temperature 85℃ and Max Humidity 85%.
Short Circuit Protection	When the short circuit occurs, the input power is reduced and the product enters the constant current output mode or locked mode. When the short circuit is released, restart the input to recover.
Over Voltage Protection	Run into protection mode when output voltage exceeds limit, and return to normal when the fault is eliminated and restart the power supply.

0-10V/PWM DIMMING

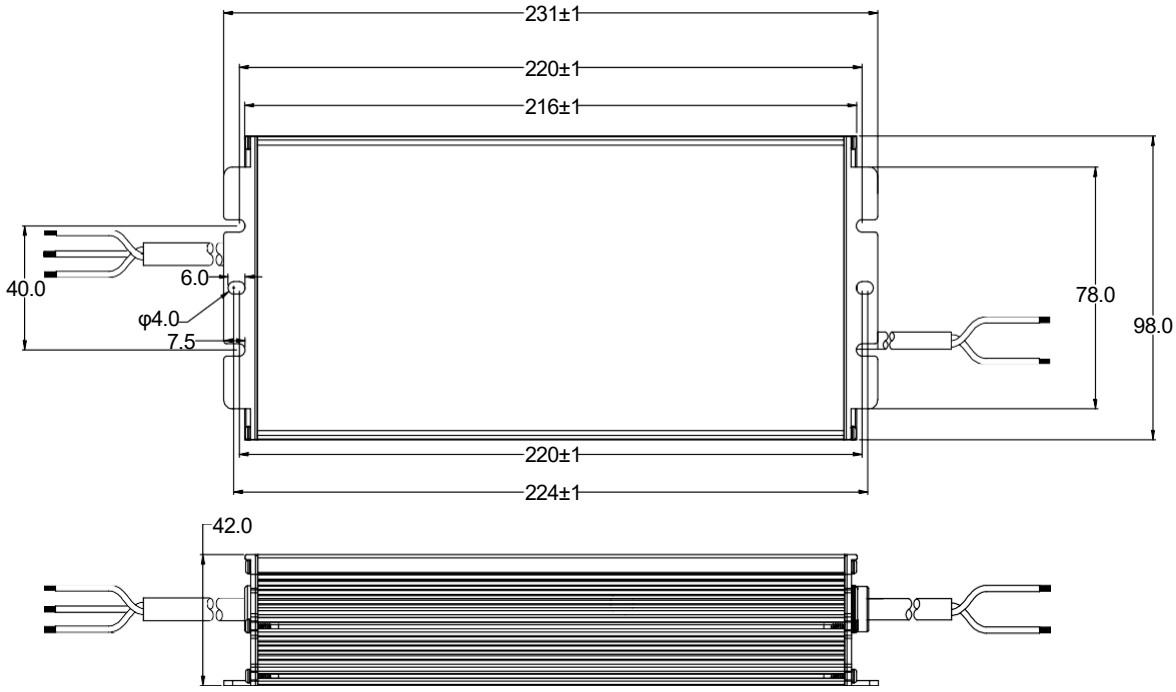


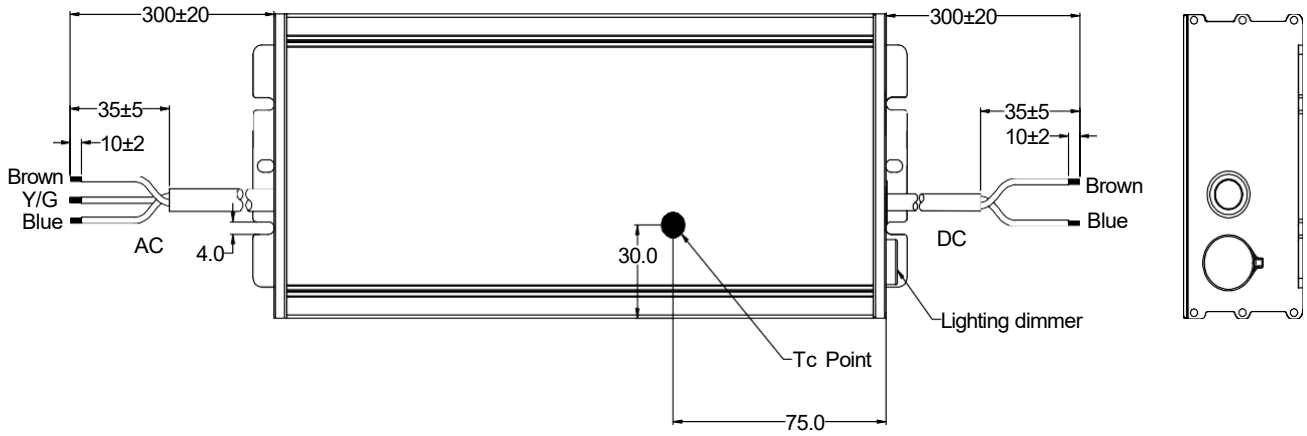
MECHANICAL OUTLINE

X6-320M230



X6-320V230





Wire	Specification	Note
Input	SJOW 17AWG*3C external diameter: 8.2mm L=300±20mm	CCC/CE/UL
Output	SJOW 17AWG*2C external diameter: 7.7mm L=300±20mm	CCC/CE/UL
Dimming	UL2733 22AWG*2C external diameter: 5.45mm L=350±20mm	Y=M

LABEL

X6-320M230

X6-320V230