



### Product Features

- Universal input voltage / Full range: 90~305Vac;
- Constant power design, output current programming adjustable;
- (M types) offline 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

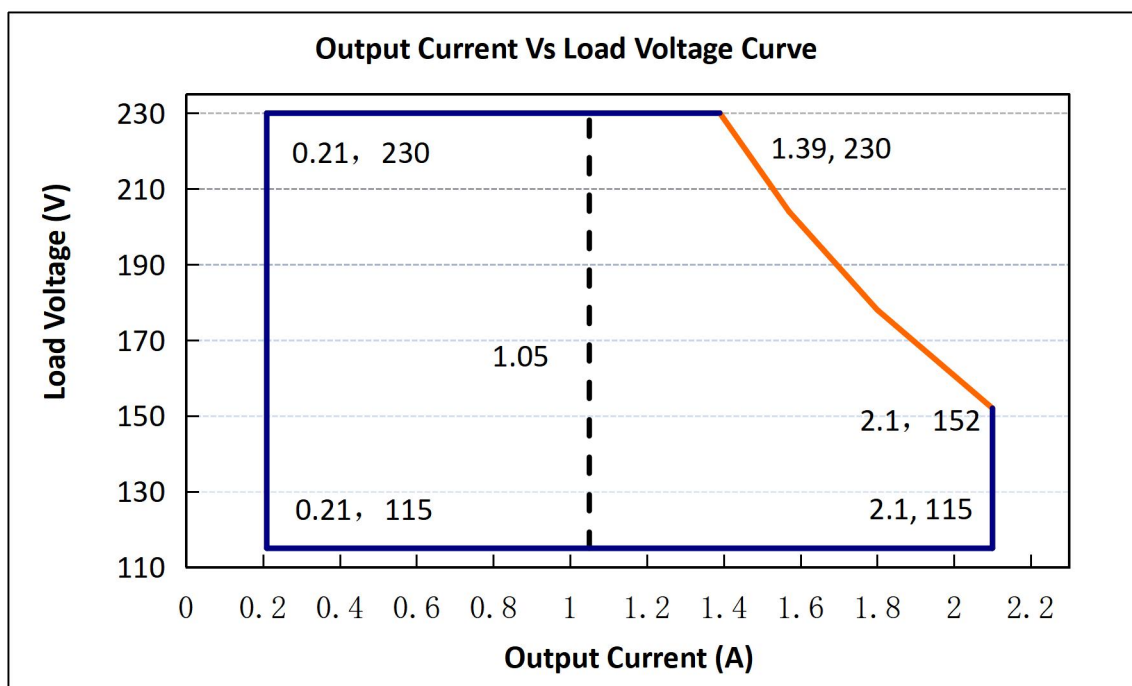
The X6-320 series is 320W outdoor offline programmable LED driver that operates in constant current with high PF value and universal input voltage range 90~305Vac model. Offline Monitored by dimming cable connected with an USB kit programming device, the fully programmed drivers offer all dimming, dim-to-off, 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. X6 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<br>[1] | Max<br>Output<br>Power<br>(W) | Output<br>Voltage<br>Range<br>(Vdc) | Full Power<br>Output<br>Voltage<br>Range (Vdc) | Full Power<br>Current<br>Adjustable<br>Range (A) [2] | Default Output<br>Current Setting(A) | Typical<br>Efficiency<br>[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 offline programmable, The adjustable lout range: 10%-100% I<sub>max</sub>;  
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.

**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 <sup>2</sup> S |   | 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 lout range: 10%-100% I <sub>max</sub> ,                             |
| 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°C±10°C ambient temperature, input voltage changes from 120Vac to277Vac.                  |
| Load Regulation                                      | -3%  | -    | +3%  | 25°C±10°Cambient 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<br>I <sub>o</sub> =1.39A<br>I <sub>o</sub> =2.10A |              | 85.0%<br>86.0% | 87.0%<br>88.0% |       | Measured at full load and 25°C ambient temperature                           |
| Efficiency @230Vac<br>I <sub>o</sub> =1.39A<br>I <sub>o</sub> =2.10A |              | 90.5%<br>90.4% | 92.5%<br>92.4% |       | Measured at full load and 25°C ambient temperature                           |
| Efficiency @277Vac<br>I <sub>o</sub> =1.39A<br>I <sub>o</sub> =2.10A |              | 90.6%<br>90.4% | 92.6%<br>92.4% |       | Measured at full load and 25°C ambient temperature                           |
| Dielectric Strength                                                  | Input-Output | -              | 3750Vac        | -     | Max 5mA/60S                                                                  |
|                                                                      | Input-PE     | -              | 1600Vac        | -     |                                                                              |
|                                                                      | Output-PE    | -              | 1600Vac        | -     |                                                                              |
| Grounding Resistance                                                 |              | -              | -              | 0.1Ω  | 25A/60S, under 25°C±10°C ambient temperature                                 |
| Insulation Resistance                                                |              | 10MΩ           | -              | -     | Input-Output, 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 |
| Ambient Temperature                                                  |              | -40°C          |                | +60°C | Reference derating curve                                                     |
| Operating Case Temperature for Safety T <sub>c_s</sub>               |              | -40°C          | -              | +90°C |                                                                              |
| Operating Case Temperature for Warranty T <sub>c_s</sub>             |              | -40°C          | -              | +75°C | 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,<br>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 <sub>max</sub> | -     | 100% I <sub>max</sub> | I <sub>max</sub> =2.10                                                             |
|                                                    | X6-320M230 | 0.21                 | -     | 2.10                  |                                                                                    |
| Recommended Dimming Range for 0-10V                |            | 0V                   | -     | 10V                   | Default 0-10V/ PWM<br>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<br>ГОСТ IEC 61347-2-13-2013<br>ГОСТ IEC 62493-2014<br>СТБ EH 55015-2006<br>ГОСТ IEC 61547-2013<br>ГОСТ 30804.3.2-2013 (IEC 61000-3-2:2009)<br>ГОСТ 30804.3.3-2013 (IEC 61000-3-3:2008) | √        |

**Insulation**

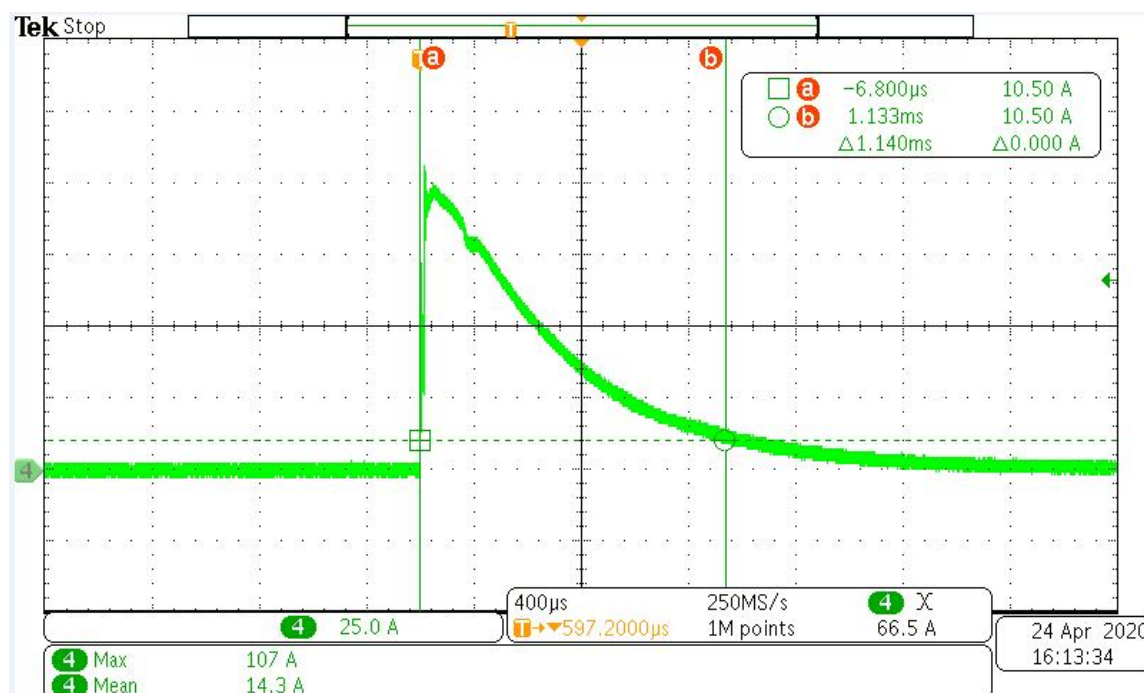
| Insulation  | Input/Mains | Dimming | LED Output | Case  |
|-------------|-------------|---------|------------|-------|
| Input/Mains | /           | Double  | Double     | Basic |
| Dimming     | Double      | /       | Basic      | Basic |
| LED Output  | Double      | Basic   | /          | Basic |
| 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                | √        |

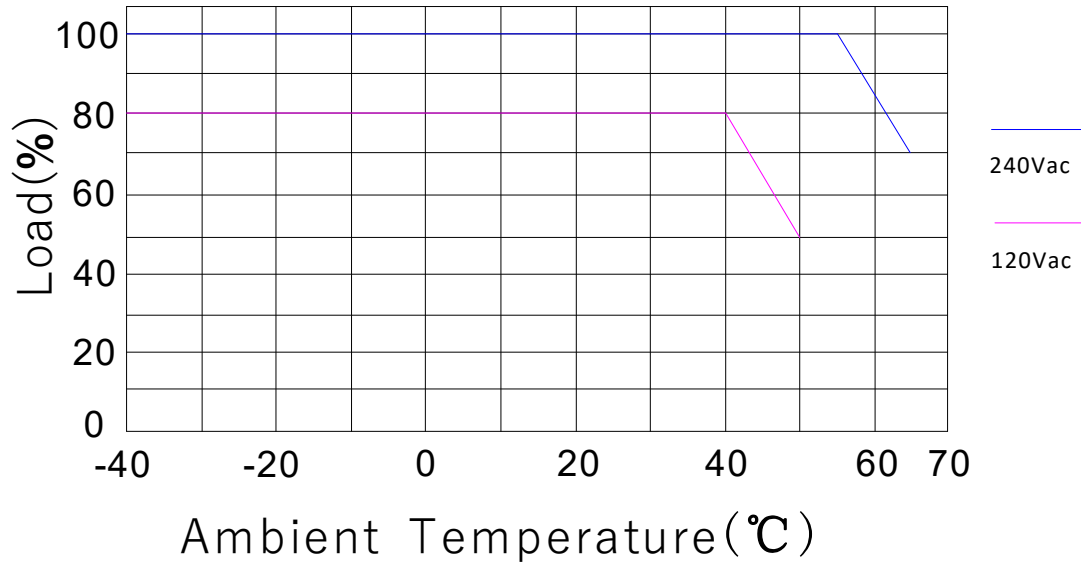
**NOTE:**

This LED driver meets the EMI specifications above, but as a component of a luminaire, 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.

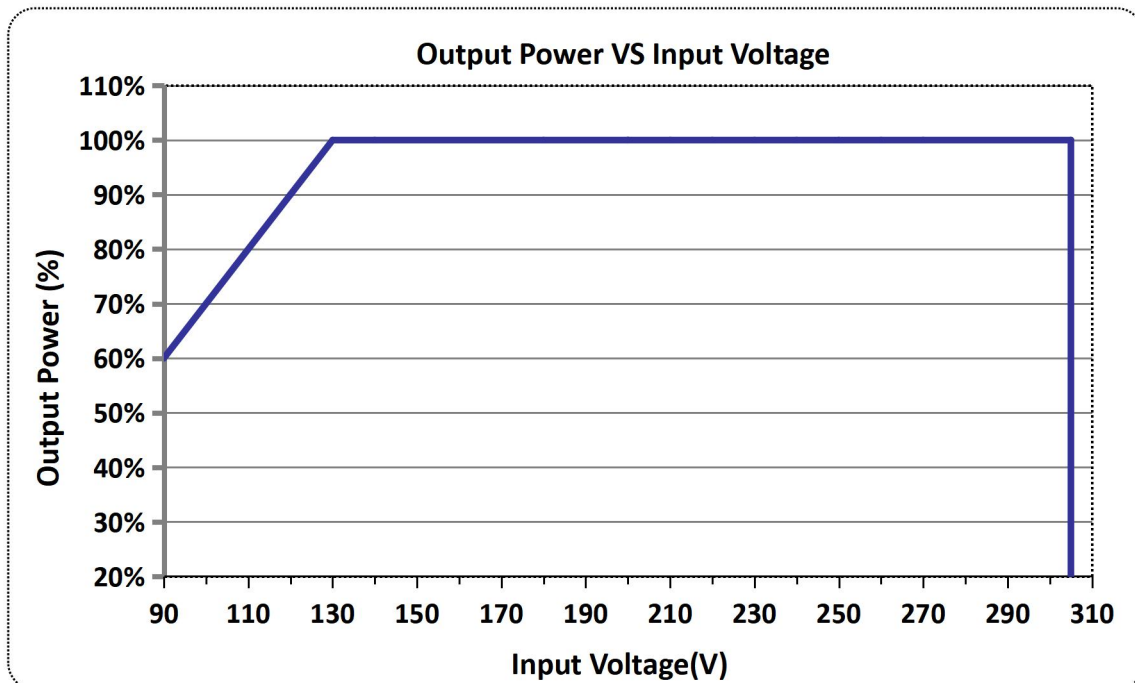
**INRUSH CURRENT WAVEFORM**


**DERATING CURVE**

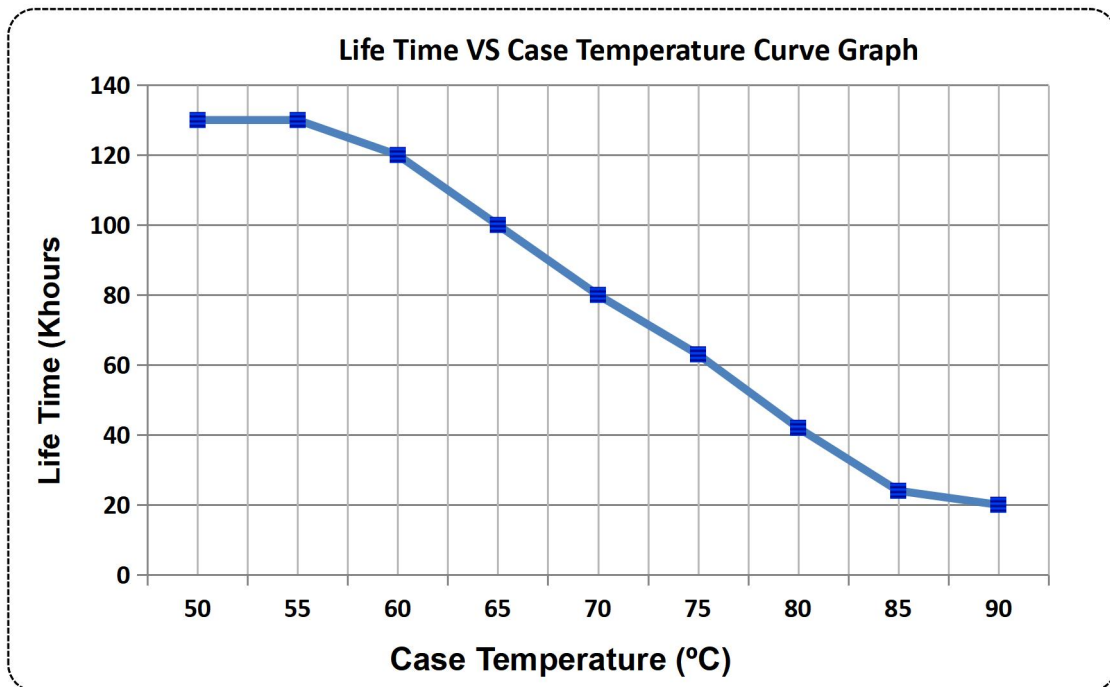
## Derating Curve



**OUTPUT POWER VS INPUT VOLTAGE**

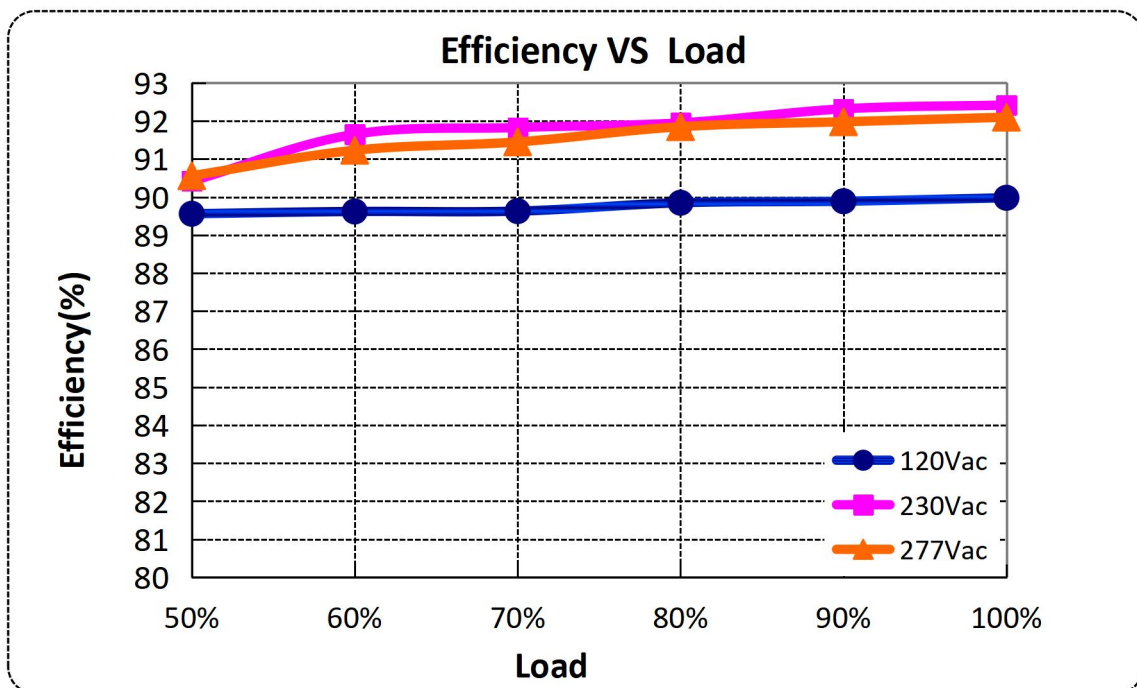


**LIFETIME VS CASE TEMPERATURE**

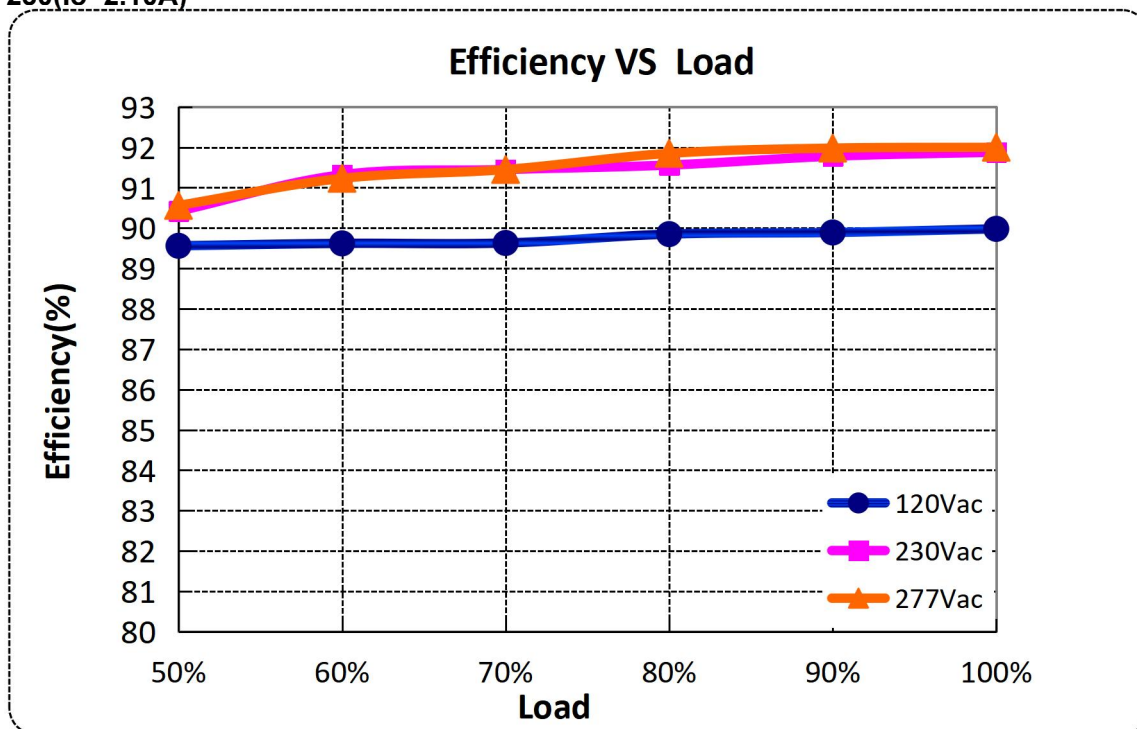
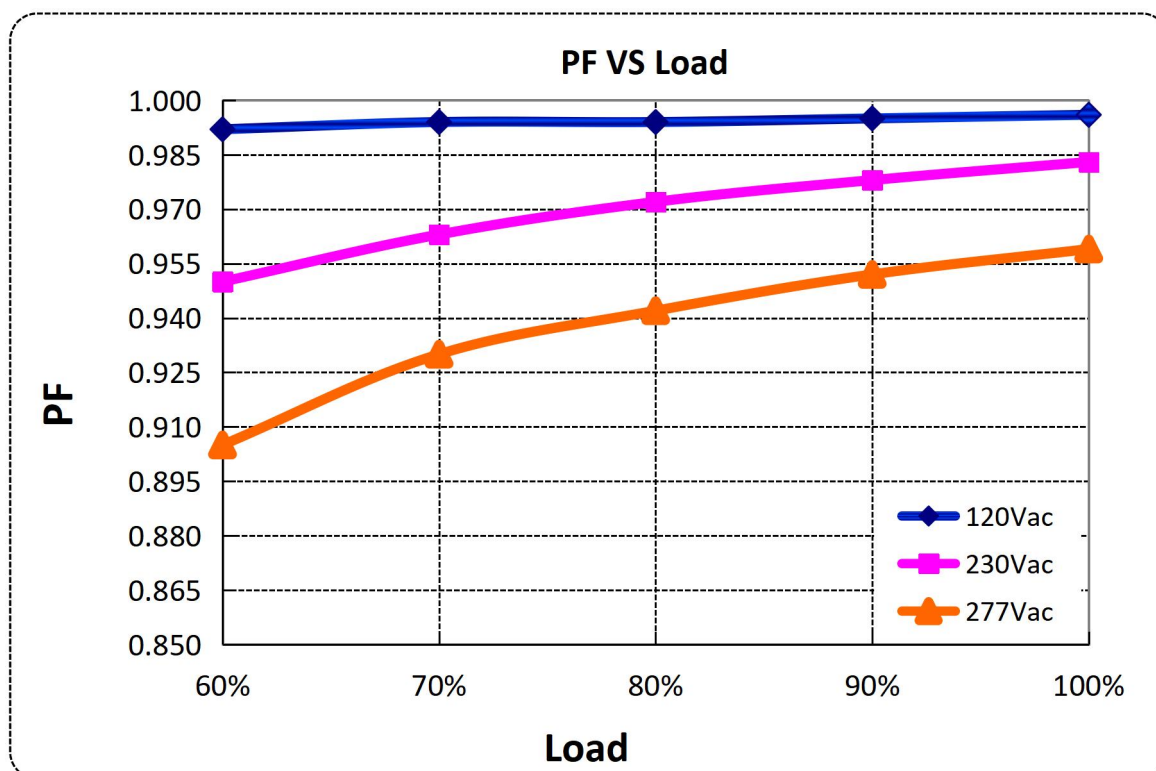


**EFFICIENCY VS LOAD**

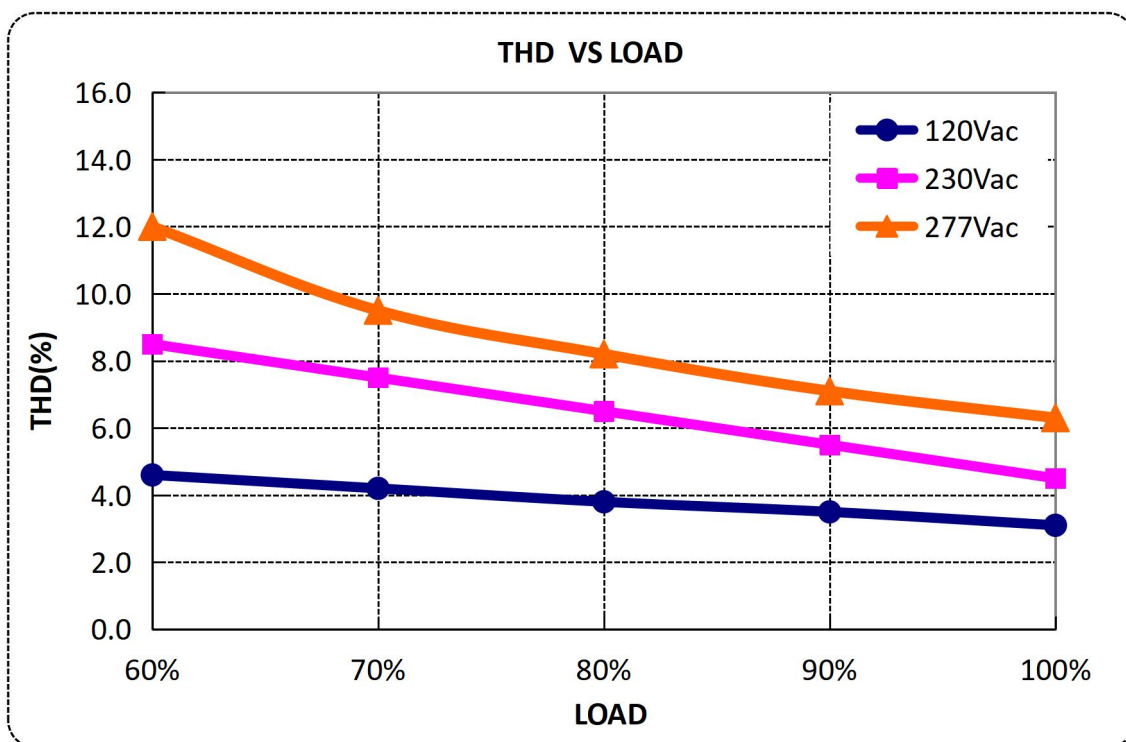
**X6-320Y230(I<sub>o</sub>=1.39A)**





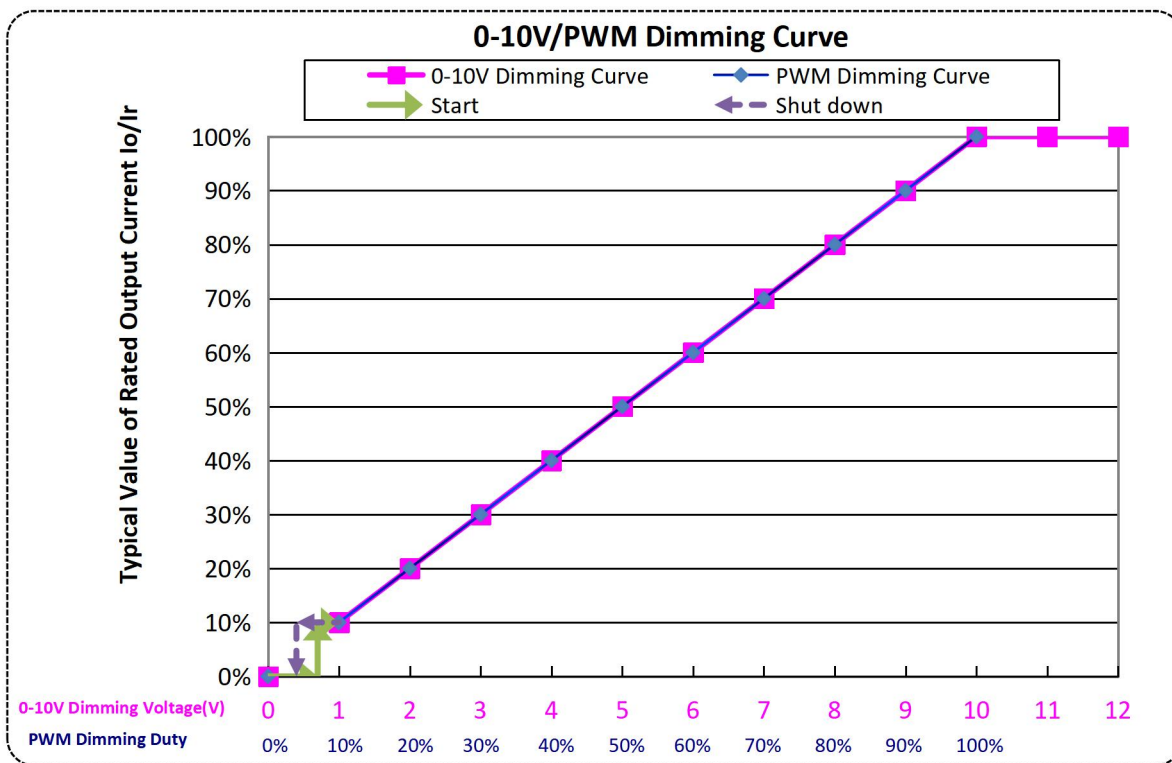
**X6-320Y230(Io=2.10A)**

**POWER FACTOR VS LOAD**


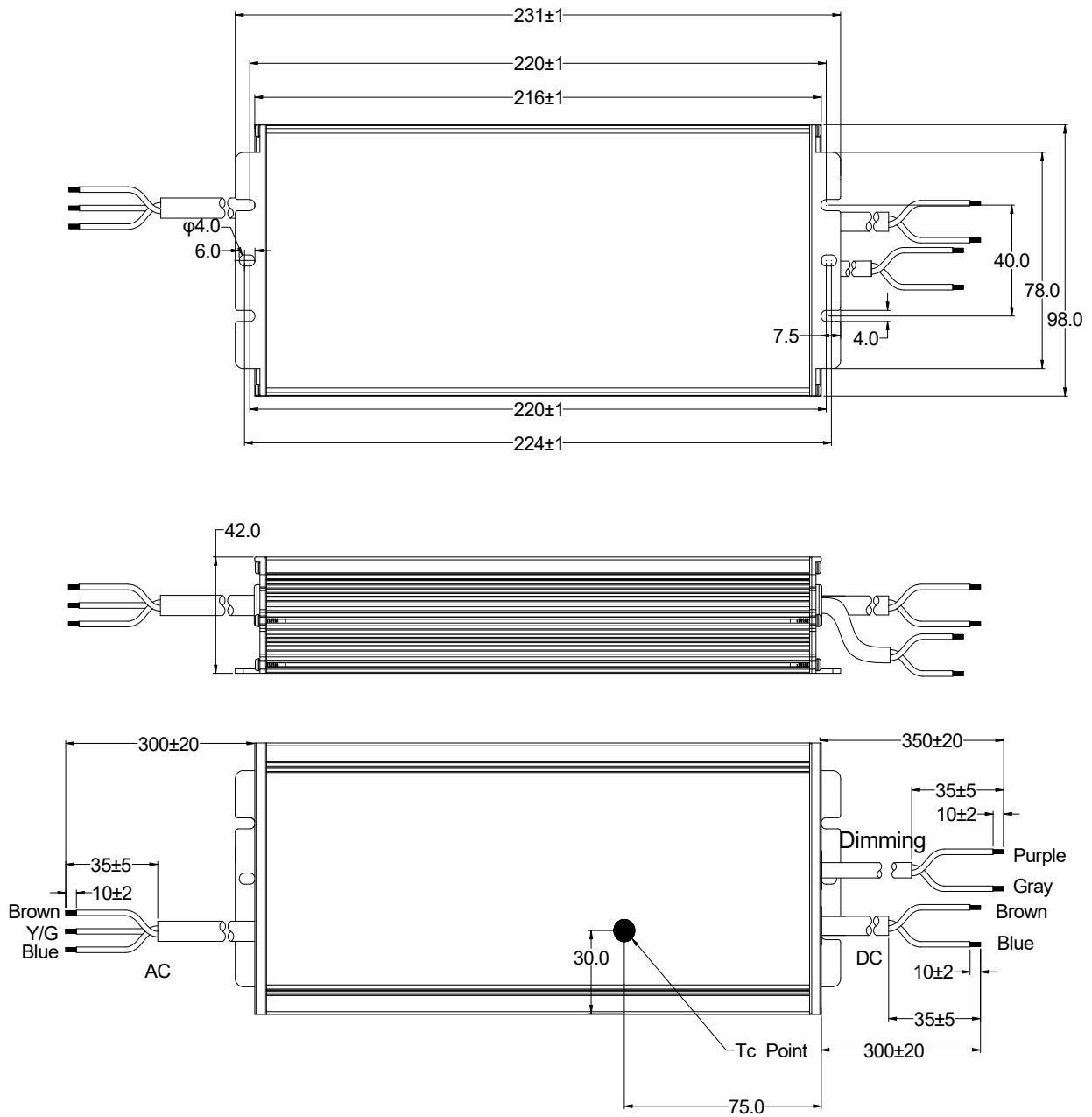


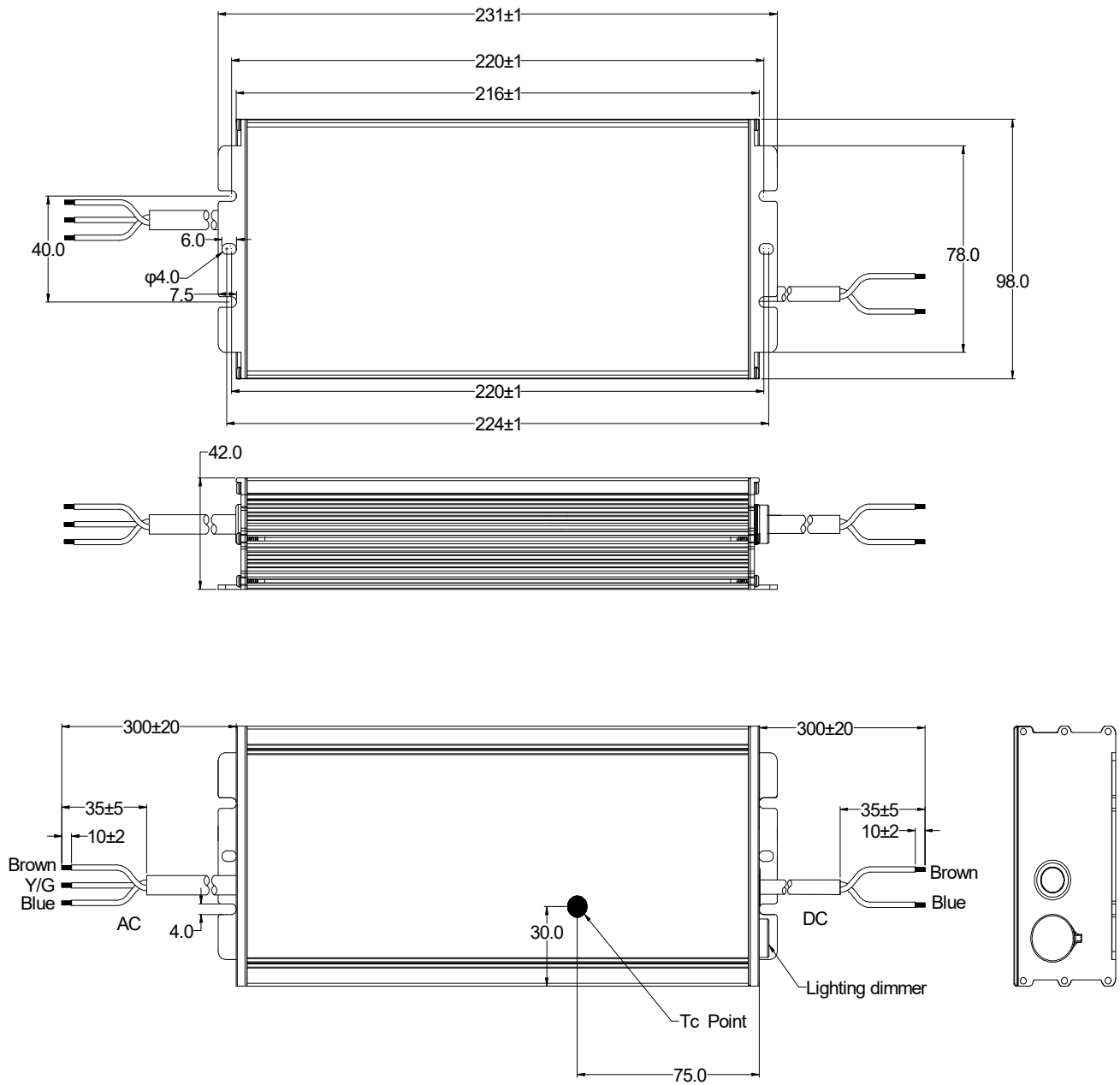
**TOTAL HARMONIC DISTORTION**

**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 model when output voltage exceeds limit, and return to normal when the fault condition is removed.                                                                              |

**0-10V/PWM DIMMING**



**MECHANICAL OUTLINE**
**X6-320M230**


**X6-320V230**


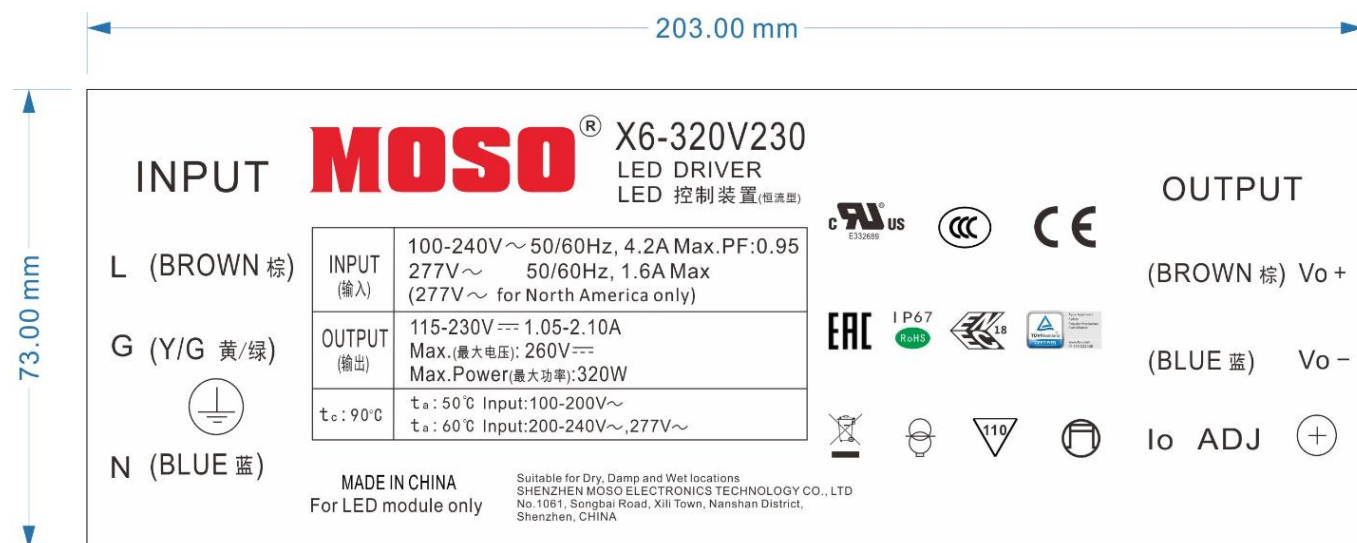
| Wire    | Specification                                        | Note      |
|---------|------------------------------------------------------|-----------|
| Input   | SJOW 17AWG*3C external diameter: 8.2mm L=300±20mm    | CCC/CE/UL |
| Output  | SJOW 17AWG*2C external diameter: 7.7mm L=300±20mm  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

### LABEL

#### X6-320M230



#### X6-320V230



## REVISION HISTORY

[illegible]

# Specification for Approval

Product Name: 320W Outdoor Off-line Programmable Driver  
Product Model: X6-320M230 ☐  
X6-320V230 ☒  
Rev. B.2  
Sample Date: \_\_\_\_\_

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

XiLi Songbai Road 1061, Nanshan  
Address: District, Shenzhen City, Guangdong Post Code: 518108  
Province, P.R.China  
TEL: 0755-27657000 FAX: 0755-27657908  
E-mail: info@mosopower.com Web site: http://www.mosopower.com

| Prepared By | Checked By | Approved By |
|-------------|------------|-------------|
| <br><br>    | <br><br>   | <br><br>    |



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Product Model: X6-320M230 ☐  
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| <br><br>                                                                        | <br><br>   | <br><br>    |
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| Prepared By | Checked By | Approved By |
|-------------|------------|-------------|
| <br><br>    | <br><br>   | <br><br>    |