## Description

The X7S series is outdoor programmable LED driver that operates in constant current with high PF value for Class I and Class II Luminaires. It also helps clients to improve the management of logistics and stock. The compact metal case and high efficiency enables the driver to operate with high reliability. It provides extreme durability with an IP67 rating and extends product lifetime. Overall protection is provided against lightning surge, output over voltage, short circuit and over temperature to ensure low failure rate.

## Product Features

- Universal input voltage: 90~305Vac;
- Self-adaption Constant power design;
- Isolated constant current design;
- Suitable for luminaires with protection Class I and II;
- 0-10V/ PWM/timer dimming, Dim-to-off;
- Adjustable output current with programmer;
- High surge protection: 6KV line-line, 10KV line-earth(Class I);
- Protections: Input UVP, Output SCP / OVP / OTP;
- IP67 design for indoor and outdoor applications;
- Suitable for dry / damp / wet locations;
- 5 years warranty.

## Application

Road and street lighting,

Street and urban lighting

## Models

| Model Number | Input Voltage Range (Vac) | Max Output Power (W) | Output Voltage Range (Vdc) | Full Power Output Current Range (A) | Default Current(A) | Eff. (Typ.) | PF(Typ.) | THD(Typ.) |
|---|---|---|---|---|---|---|---|---|
| X7S-060M062 | 90~305 | 60 | 32~62 | 0.97~1.30 | 1.05 | 90.5% | 0.97 | 5% |

**NOTES:**

[1]. M means 0-10V/ PWM/Timer dimming;

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

## Input Specifications

| Parameter | Min | Typ. | Max | Notes |
|---|---|---|---|---|
| Input Voltage Range | 90Vac | 120/230/277Vac | 305Vac | |
| Input Frequency AC | 47Hz | 50/60Hz | 63Hz | |
| Max Input Current | - | - | 0.8A | 108Vac & 100%Load |
| Max Input Power | - | - | 80W | 108Vac & 100%Load |
| Leakage Current | - | - | 0.70mA | IEC60598-1;240Vac/60Hz. |
| Inrush Current | - | - | $0.88A^2s$ | 230Vac, 100% load |
| Power Factor (PF) | 0.96 | 0.98 | - | 120Vac，50-60Hz，70%-100% load |
| Power Factor (PF) | 0.93 | 0.95 | - | 230Vac，50-60Hz，70%-100% load |
| Power Factor (PF) | 0.90 | 0.93 | - | 277Vac，50-60Hz，70%-100% load |
| Total Harmonic Distortion (THD) | - | 5% | 10% | 120-230Vac，50-60Hz，70%-100% load |
| Total Harmonic Distortion (THD) | | 10% | 20% | 277Vac，50-60Hz，70%-100% load |
| MCB(B16) | - | 9 | - | 230Vac；100%load |

## Output Specifications

| Parameter | Min | Typ. | Max | Notes |
|---|---|---|---|---|
| Output Voltage Range | 32Vdc | - | 62Vdc | Recommended voltage range 46-62V |
| Open Circuit Voltage | - | - | 85Vdc | |
| Output Current Range | 0.13A | - | 1.30A | Adjustable output current with programmer |
| Full Power Output Current Range | 0.97A | - | 1.30A | |
| Current Accuracy | -5% | - | +5% | |
| Total Output Current Ripple (pk-pk) | - | 5% | 10% | 20MHz BW full load＆LED load the LED load ripple is slightly different for different LEDs |
| Startup Overshoot Current | - | - | 10% | |
| Line Regulation | -3% | - | +3% | 25℃±10℃ambient temperature, input changes from 120Vac to 277Vac |
| Load Regulation | -3% | - | +3% | Load varies from 60% to 100% with 230Vac Input at 25℃ ±10℃ ambient temperature |
| Turn-on Delay Time | - | - | 2.0s | 240Vac,100% load |

## General Specifications

| Parameter | Min | Typ. | Max | Notes |
|---|---|---|---|---|
| Efficiency@120Vac<br>Io=0.97A<br>Io=1.30A | <br>85.5%<br>85.0% | <br>87.5%<br>87.0% | - | 100% load，25℃ ambient temperature |
| Efficiency@230Vac<br>Io=0.97A<br>Io=1.30A | <br>88.5%<br>88.0% | <br>90.5%<br>90.0% | - | 100% load，25℃ ambient temperature |
| Efficiency@277Vac<br>Io=0.97A<br>Io=1.30A | <br>89.0%<br>88.5% | <br>91.0%<br>90.5% | - | 100% load，25℃ ambient temperature |
| Mean Time Between Failure | - | 200Khours | - | 25℃±10℃ambient temperature，230Vac，80% load condition (MIL-HDBK-217/SR-332) |
| Lifetime | - | 85Khours | - | 230Vac & 100% load, Tc 75℃，refer to lifetime vs. case temperature curve |
| Operating Temperature Ta | -40℃ | - | +50℃ | 108~176Vac, Output Power vs. Ambient Temperature curve |
| Operating Temperature Ta | -40℃ | - | +60℃ | 176~305Vac, Output Power vs. Ambient Temperature curve |
| Operating Tc for Safety Tc_s | -40℃ | - | +90℃ | |
| Operating Tc for Warranty Tc_w | -40℃ | - | +75℃ | 5-year warranty shell temperature,humidity:10% to 95% RH |
| Storage Temperature Ta | -40℃ | - | +85℃ | Humidity:5% to 100% RH |
| Altitude | -60m | - | 4000m | |
| Input Under Voltage Protection | 60Vac | 75Vac | 90Vac | When the input voltage is lower than the protection voltage, the driver will turn off automatically.<br>When the input voltage exceeds the recovery voltage, the driver will restart automatically. |
| Over Temperature Protection Tc | - | 95℃ | - | Decreases output current, returning to normal after over temperature is removed. |
| Short Circuit Protection | - | - | - | Constant current mode. The output shall return to normal when the fault condition is removed. |
| Dimensions (L*W*H) | 122*68*35mm | | | |
| Net Weight | 510±50g/PCS | | | |
| Package (L*W*H) | 466*282*172mm; 16PCS/Ctn, Gross Weight: 10.1Kg | | | |

## Dimming

| Parameter | Min | Typ. | Max | Notes |
|---|---|---|---|---|
| Absolute Maximum Voltage | - | 10V | 15V | On the Vdim (+) Pin |
| Source Current on Vdim (+)Pin | - | 200uA | 400uA | |
| Dimming Range | 10% $I_{max}$ | - | 100% $I_{max}$ | $I_{max}$ is set to the full power range |
| Suggest Dimming Input 0-10V | 0V | - | 10V | |
| Turn-on Voltage | 0.7V | 0.9 | 1.0V | |
| Turn-off Voltage | 0.5V | 0.6 | 0.7V | Afterglow may appear after switching off. It is necessary to conduct grounding test with lighting fixture. |
| 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% | |
| Turn-on Duty Cycle | 7% | - | 11% | |
| Turn-Off Duty Cycle | 5% | - | 7% | Afterglow may appear after switching off. It is necessary to conduct grounding test with lighting fixture. |
| Timer dimming | - | - | - | 3 types, which is set by software |
| Output lumen compensation | - | - | - | Constant lumen output function |

## Safety Specification

| Parameter | Min | Typ.(Class I/II) | Max | Notes |
|---|---|---|---|---|
| Dielectric Strength（Input-Output） | - | 3750Vac | - | 60s，Current not exceeding 5mA |
| Dielectric Strength （Input-Ground/Case） | - | 1600/3200Vac | - | 60s，Current not exceeding 5mA |
| Dielectric Strength （Output-Ground/Case） | - | 1500Vac | - | 60s，Current not exceeding 5mA |
| Dielectric Strength（Input-Dimming） | - | 3750Vac | - | 60s，Current not exceeding 5mA |
| Dielectric Strength （Dimming-Ground/Case） | - | 500Vac | - | 60s，Current not exceeding 5mA |
| Grounding Resistance | - | - | 0.1Ω | 25℃±10℃ Ambient Temperature, pass 25A Current, 60s(Class Ⅰ). |
| Insulation Resistance | 10MΩ | - | - | Input-Output, Input-PE/Case, Output-PE/Case, 500Vdc/60s/25℃ |

## Safety Compliance

| Safety Category | Standards | Approved | Notes |
|---|---|---|---|
| CCC | GB/T 19510.1, GB/T19510.213 | | |
| CE | EN61347-1, EN61347-2-13, EN62493 | √ | |
| ENEC | EN61347-1, EN61347-2-13, EN62384 | √ | |
| CB | IEC61347-1, IEC61347-2-13 | √ | |
| BIS | IS 15885(PART 2/SEC 13) | | |
| UL | UL 8750 | | |
| CUL | CSA C22.2 No.250.13 | | |
| KC | K61347-1, K61347-2-13 | | |
| PSE | J61347-1, J61347-2-13 | | |
| SAA | AS/NZS IEC 61347.2.13 | | |
| SAA | AS/NZS 61347.1 | | |

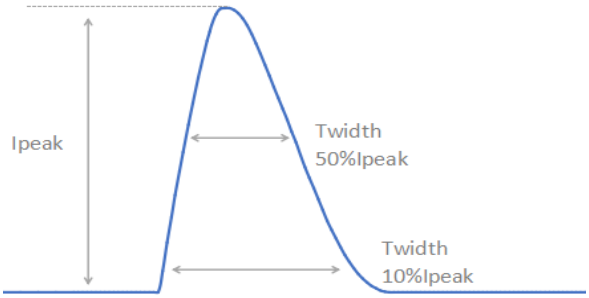
## EMC Compliance

| EMC Category | Standards | Approved | Notes |
|---|---|---|---|
| CCC | GB/T 17743, GB 17625.1 | | |
| CE | EN 55015 | √ | |
| CE | EN 61000-3-2, EN 61000-3-3 | √ | |
| CE | EN61000-4-2,3,4,5,6,11 | √ | |
| CE | EN 61547 | √ | |
| KC | K61547 | | |
| KC | K00015 | | |
| PSE | J55015 | | |
| FCC | FCC part 15 | | |
| Surge Shock Immunity | ANSI/C82.77-5-2017 | | |
| Ringing Wave | | | |

## RoHS

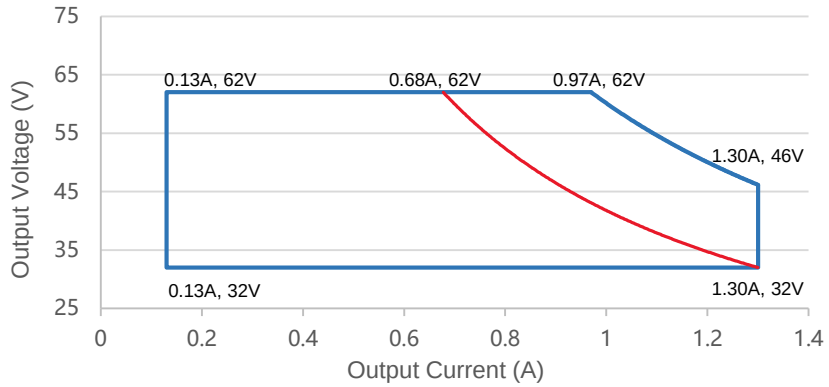
Our products comply with reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU.

## Inrush Current



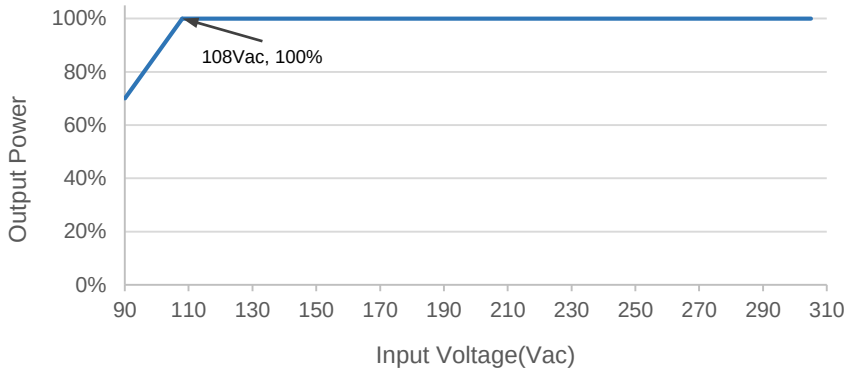

| Vin | Ipeak | T(@10% of Ipeak) | T(@50% of Ipeak) |
|---|---|---|---|
| 120Vac | 26.1A | 492uS | 184uS |
| 230Vac | 50.2A | 420uS | 184uS |
| 277Vac | 62A | 420uS | 184uS |

## Output Voltage vs. Output Current

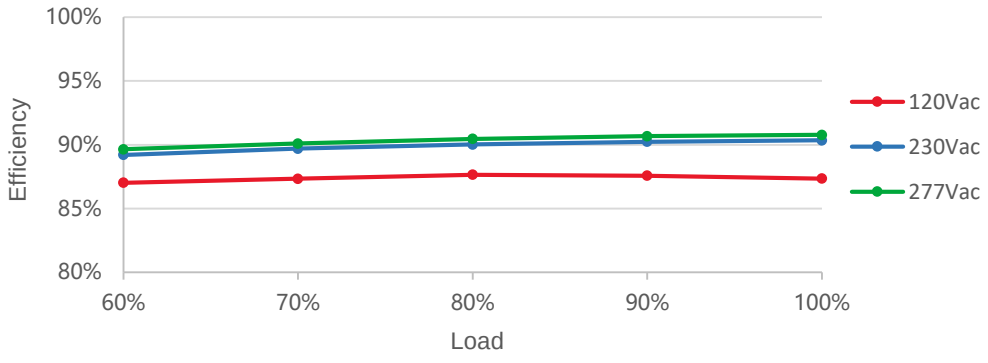



Red curve: good performance area

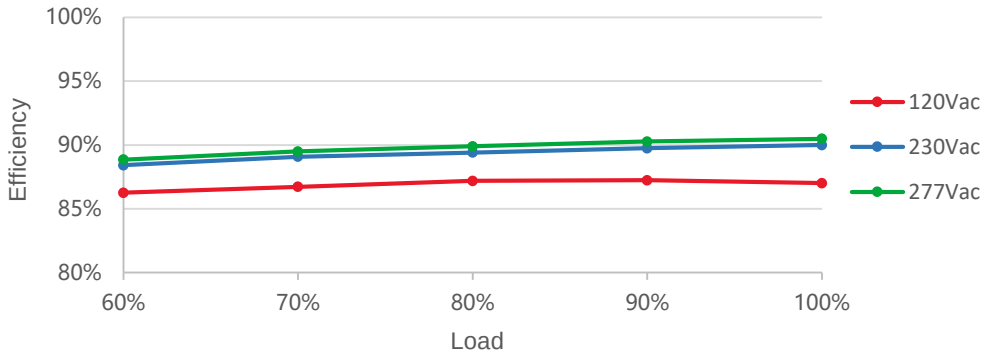
## Output Power vs. Input Voltage



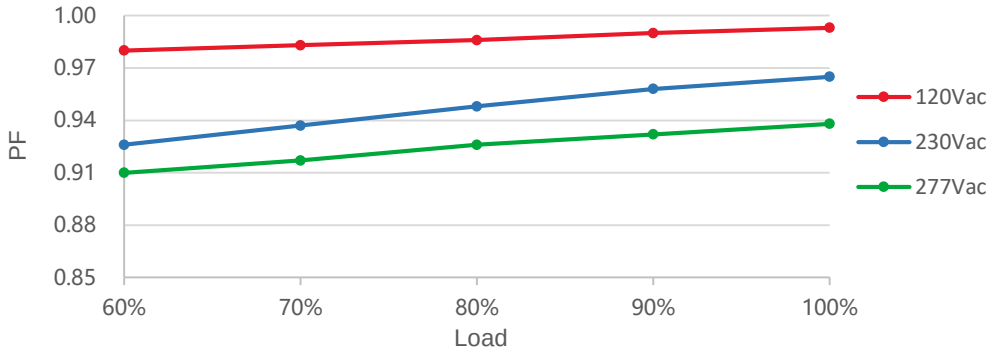

## Efficiency vs. Load (Io=0.97A)



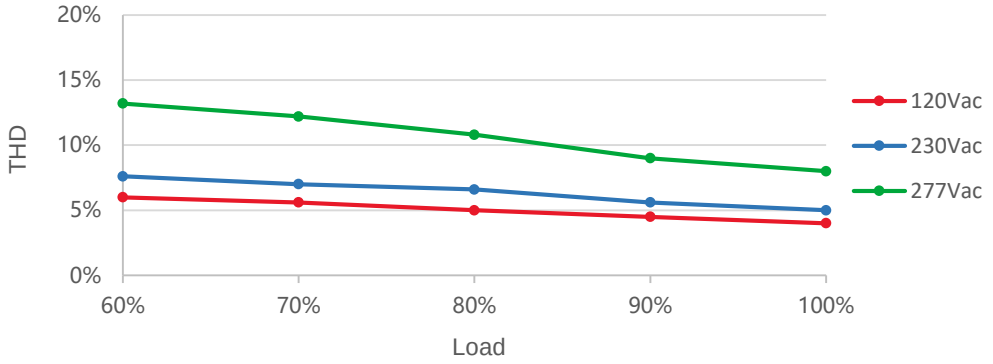
## Efficiency vs. Load (Io=1.30A)



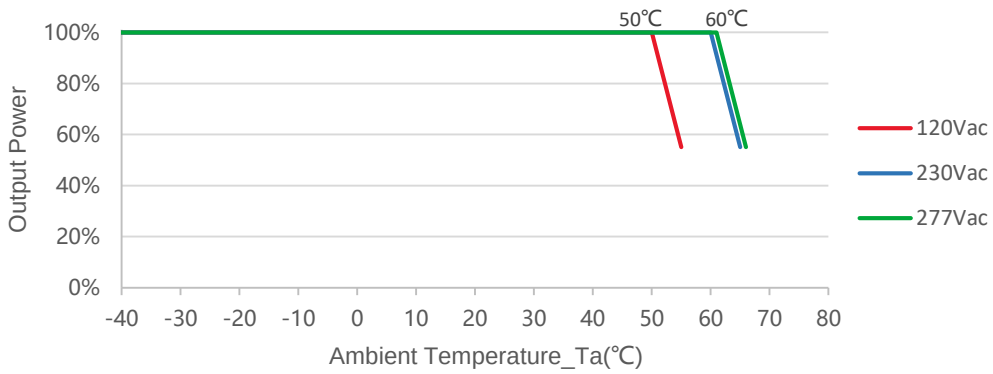

## PF vs. Load



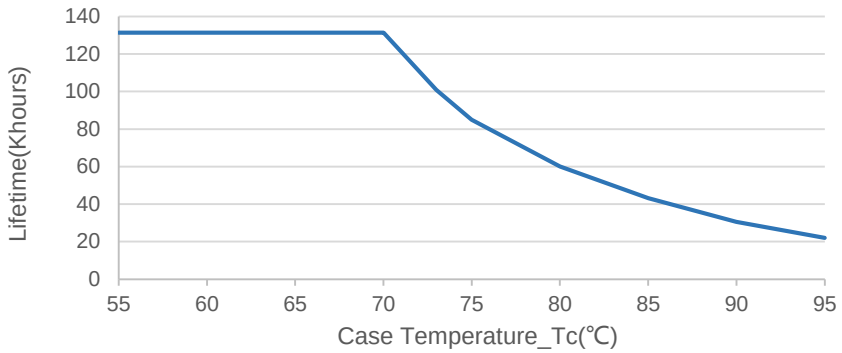

## THD vs. Load



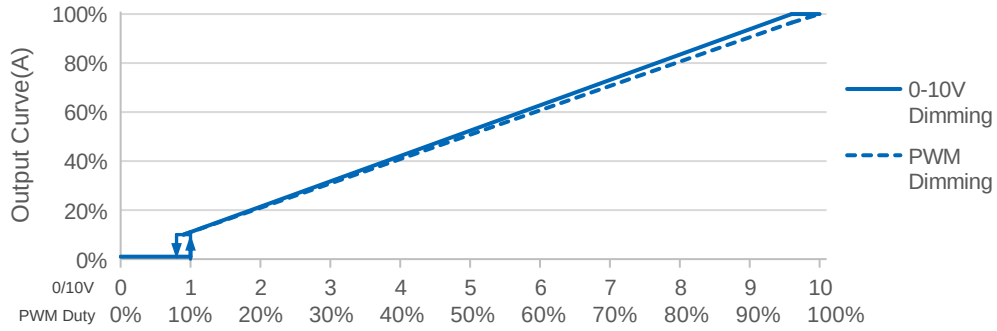

## Output Power vs. Ambient Temperature



## Lifetime vs. Case Temperature




## 0-10V/PWM Dimming




Note: Afterglow may appear after switching off dimming due to the difference of lamp panel. Thus, lighting fixture grounding test is suggested.

## Off-line Programming

User-friendly connection of programming without necessary to power on device (suitable for X6, XCP, X6I, X6E, X7S Series).

Programming mode 1

Visual Intelligent Programming

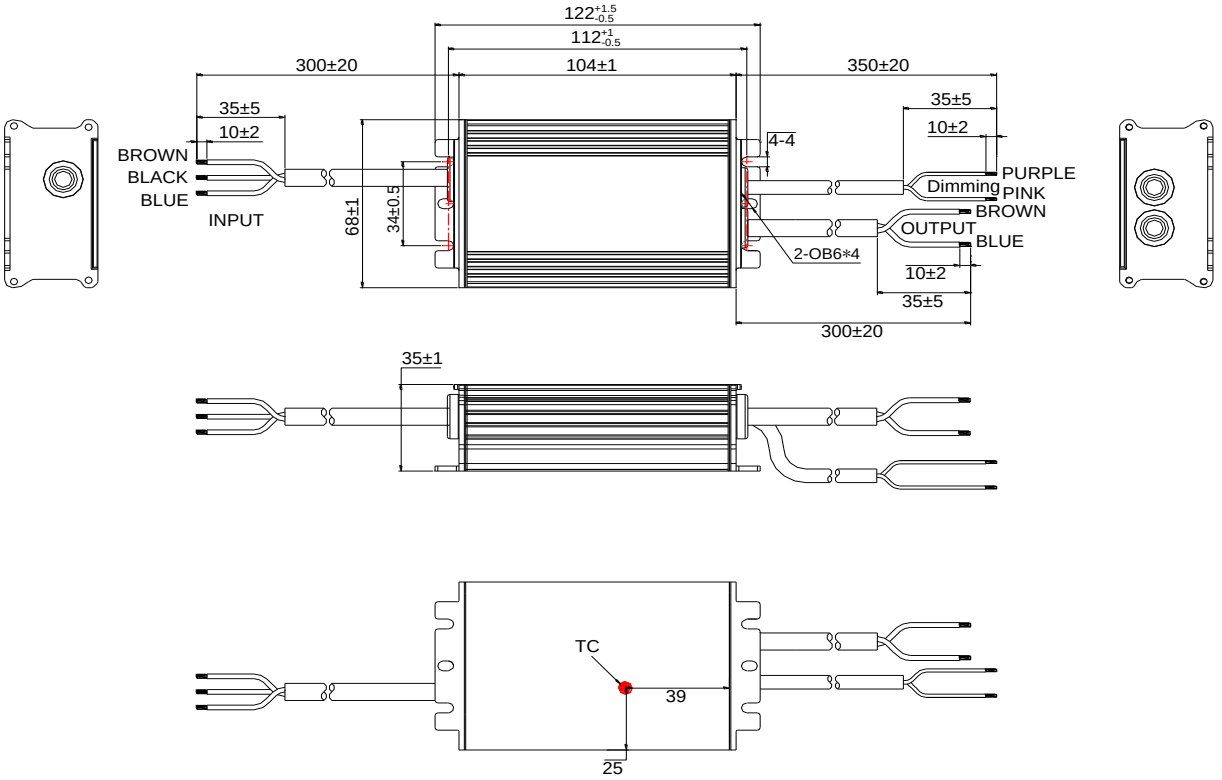
1. Set the output parameters through the control signal line 0-5V/0-10V optional.
2. Timer dimming. Set the timer control function, support up to 7 segments;
3. Set output CLO;
4. Read the recorded system parameters; Record the working time working temperature, and software version information of the LED driver.
5. Configure the driving parameters. After setting is completed, then click the configured parameters to complete programming.
6. Download it to the offline programmer.

Programming mode 2

Instructions of one touch programmer:

1. Open the software interface and download the program to the offline programmer;
2. Connect the dimming wire with the programmer, press the programmer button, the programmer will give you a subtle reminder “(Beep)” to tell you the installation completed.

## Mechanical Outline

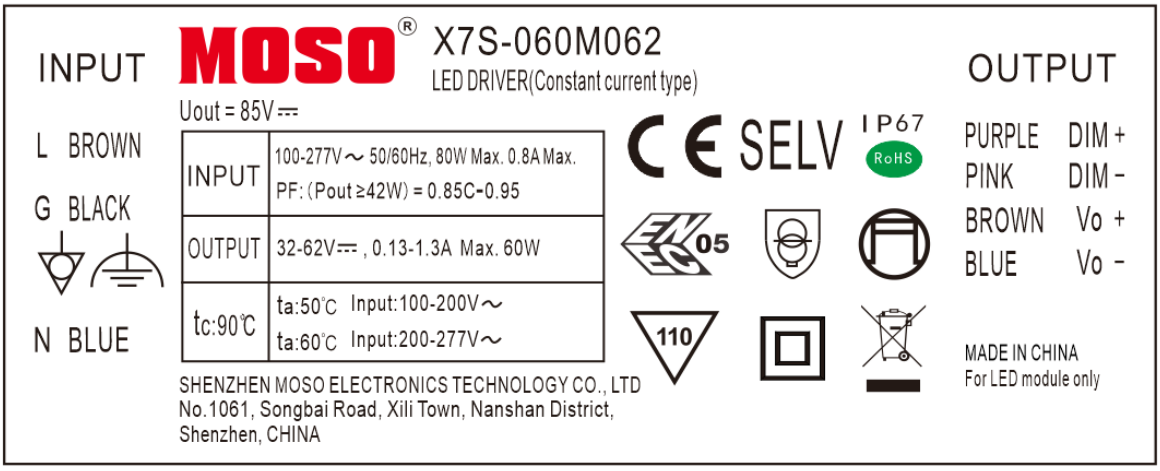



**Notes:** EQUI pin connects to ground wire and metal housing of luminaries for Class I applications, and to metal housing for Class II applications.

## Specification

| | | |
|---|---|---|
| Input | CCC+VDE 3*1.0 mm² L=300±20mm | CCC/CE |
| Output | CCC+VDE 2*1.0 mm² L=300±20mm | CCC/CE |
| Dimming | UL2733 2*22AWG L=350±20mm | UL |

## Label



## Version

| | | |
|---|---|---|
| A.1 | First release | 2025-04-07 |
| B.3 | ECL202507038 | 2025-07-31 |
| | | |
| | | |
| | | |
| | | |
| | | |

# Specification for Approval

Product Name：60W LED Driver

Product Model：X7S-060M062

Rev：B.3

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Web Site: http://www.mosopower.com

| Prepared By | Checked By | Approved By |
|---|---|---|
| | | |

# Specification for Approval

Product Name: 60W LED Driver

Product Model: X7S-060M062

Rev: B.3

| 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 |
|---|---|---|
| | | |