

Description

The U5 series is constant-current LED Driver. IP20 rated LED driver that operates from 176~305Vac input with excellent power factor. The better thermal design and high efficiency enables the driver to operate with high reliability and extend product lifetime. Overall protection is provided against lightning surge, output over voltage, short circuit, and over temperature to ensure low failure rate.



Product Features

- Input voltage range: 176~305Vac;
- Constant power design;
- Suitable for luminaires with protection Class I and II;
- Surge protection: 6KV line-line, 10KV line-earth(Class I);
- Protections: Input UVP; Output SCP/OVP/OTP;
- IP20 design for indoor and outdoor applications ;
- 5 years warranty.

Application

Street and urban lighting
Industrial 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.) |
|--------------|--------------------------|---------------------|---------------------------|------------------------------------|--------------------|------------|----------|-----------|
| U5-060V090 | 176-305 | 60 | 38-90 | 0.67-1.05 | 0.70 | 90% | 0.97 | 5% |

NOTES:

[1]. V means non-dimmable, adjustable output current with potentiometer.

[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.

Input Specifications

| Parameter | Min | Typ. | Max | Notes |
|--------------------------------|--------|------------|--------|------------------------------------|
| Input Voltage | 176Vac | 220~240Vac | 305Vac | |
| Input Frequency AC | 47Hz | 50/60Hz | 63Hz | |
| Max Input Current | - | - | 0.5A | 176Vac&Full Load |
| Max Input Power | - | - | 70W | 176Vac&Full Load |
| Leakage Current | - | - | 0.70mA | IEC 60598-1;240Vac/60Hz |
| Inrush Current | - | - | 50A | 230Vac&Full Load, Cold Start |
| Power Factor(PF) | 0.95 | 0.97 | - | 220-240Vac, 50-60Hz, 100% Load |
| Power Factor(PF) | 0.91 | 0.93 | - | 220-240Vac, 50-60Hz, 60%-100% Load |
| Total Harmonic Distortion(THD) | - | 5% | 10% | 220-240Vac, 50-60Hz, 100% Load |
| Total Harmonic Distortion(THD) | - | - | 15% | 220-240Vac, 50-60Hz, 60%-100% Load |
| MCB(B16) | - | 12 | - | 230Vac |

Output Specifications

| Parameter | Min | Typ. | Max | Notes |
|-------------------------------------|----------------------|--------|----------------------|---------------------------------------------------------------------------------------------|
| Output Voltage Range | 38Vdc | - | 90Vdc | The full power cannot be lower than 57Vdc |
| Open Circuit Voltage | - | - | 150Vdc | The open circuit protection is locked, and the AC needs to be powered on again |
| Output Current Range | 0.52A | - | 1.05A | Adjustable output current with potentiometer |
| Full Power Current Range | 0.67A | - | 1.05A | |
| Current Accuracy | -5% I _{set} | - | +5% I _{set} | I _{set} >0.70A |
| 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% | 220~240Vac &100% Load, load is LED |
| Line Regulation | -1% | - | +1% | 25°C±10°C ambient temperature, input voltage changes from 200Vac to 240Vac. |
| Load Regulation | -5% | - | +5% | 25°C±10°C ambient temperature, Input Voltage 230Vac, load changes from 60% to 100%. |
| Turn-on Delay Time | - | - | 1.5s | 240Vac, 100%Load |
| Isolation input to output | - | Double | - | |
| Output Pst ^{LM} | - | - | 0.03 | In entire operating window |
| Output SVM | - | - | 0.03 | In entire operating window |

General Specifications

| Parameter | Min | Typ. | Max | Notes |
|-------------------------------------------|---------------------------------------------|-----------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Efficiency@230Vac Io=0.67A Io=1.05A | 89.0% 88.0% | 90.0% 89.0% | - | Measured at full load and 25°C ambient temperature |
| Mean Time Between Failure | - | 200Khours | - | 25°C±10°C ambient temperature, 230Vac,80% Load (MIL-HDBK-217F/SR-332) |
| Life Time | - | 50Khours 100Khours | - | Ta=55°C, Tc=85°C, 230Vac&100% Load Ta=45°C, Tc=75°C, 230Vac&100% Load |
| Operating Temperature Ta | -40°C | - | +55°C | 230Vac & 100%Load |
| Operating Tc for Safety Tc_s | -40°C | - | +85°C | |
| Operating Tc for Warranty Tc_w | -40°C | - | +85°C | 5 years warranty case temperature |
| Storage Temperature | -40°C | - | +85°C | |
| Altitude | -60m | - | 4000m | |
| Input Under voltage Protection | 130Vac | 150Vac | 170Vac | When the input voltage is lower than the protection voltage, the driver will turn off automatically. When the input voltage exceeds the recovery voltage, the driver will restart automatically. |
| Output over voltage Protection | - | - | - | Return to normal when the fault condition is removed |
| Over Temp Protection Tc | - | 90°C | - | Tc; 230Vac&100% load |
| Short Circuit Protection | - | - | - | Return to normal when the fault condition is removed |
| Dimensions (L*W*H)mm | 132.5*77*40mm | | | |
| Net Weight | 420±50g/PCS | | | |
| Package (L*W*H)mm | 500*344*177mm; 30PCS/CTN,Gross Weight: 16kg | | | |

Safety Specification

| Parameter | Min | Typ. | Max | Notes |
|------------------------------------|------|---------|-----|----------------------------------------------------------|
| Dielectric Strength(Input-Output) | - | 3750Vac | - | 60s, Current not exceeding 5mA |
| Dielectric Strength(Input-Ground) | - | 3750Vac | - | 60s, Current not exceeding 5mA |
| Dielectric Strength(Output-Ground) | - | 1650Vac | - | 60s, Current not exceeding 5mA |
| Insulation Resistance | 10MΩ | - | - | Input-Output, Input-PE, Output-PE, 500Vdc/60s/25°C/70%RH |

Safety Compliance

| Safety Category | Standards | Approved | Notes |
|-----------------|----------------------------------|----------|-------|
| CCC | GB19510.1,GB19510.14 | | |
| 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 | | |

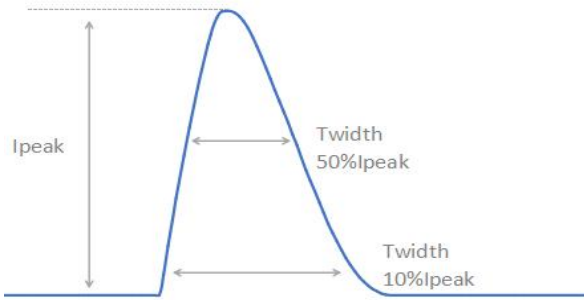
EMC Compliance

| 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

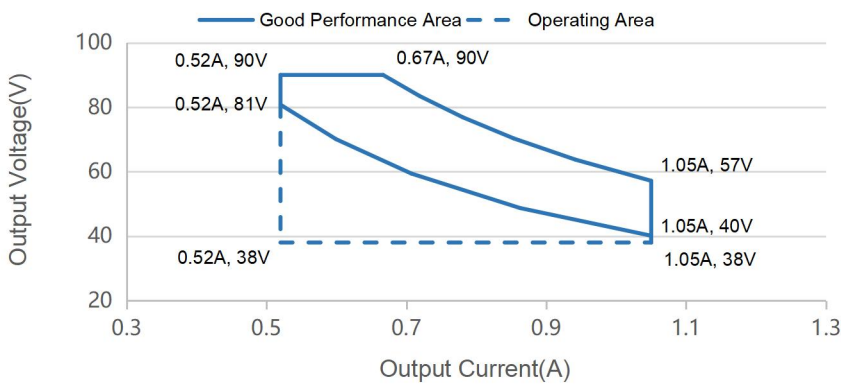
Our products comply with RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Inrush Current

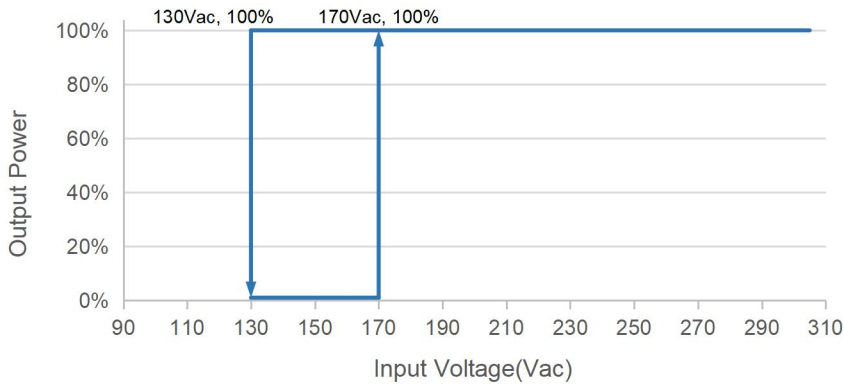


| Vin | Ipeak | T(@10% of Ipeak) | T(@50% of Ipeak) |
|--------|-------|------------------|------------------|
| 230Vac | 40A | 428uS | 200uS |

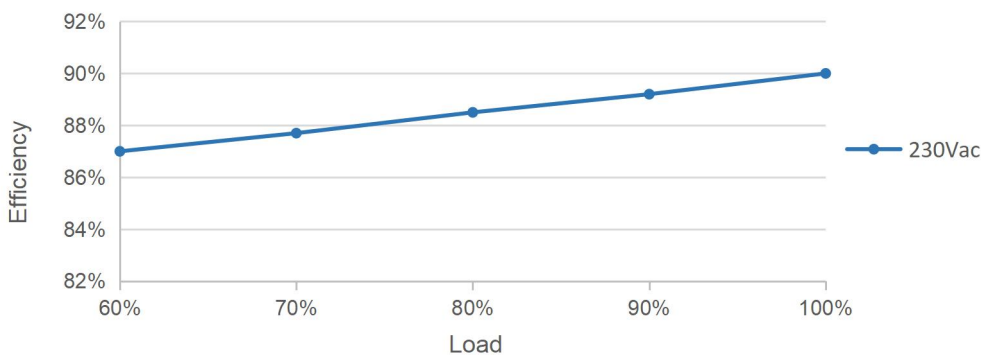
Output Voltage vs. Output Current



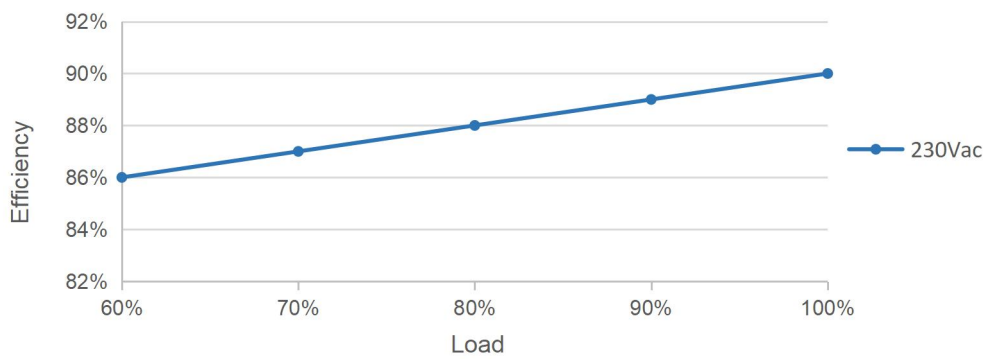
Output Power vs. Input Voltage



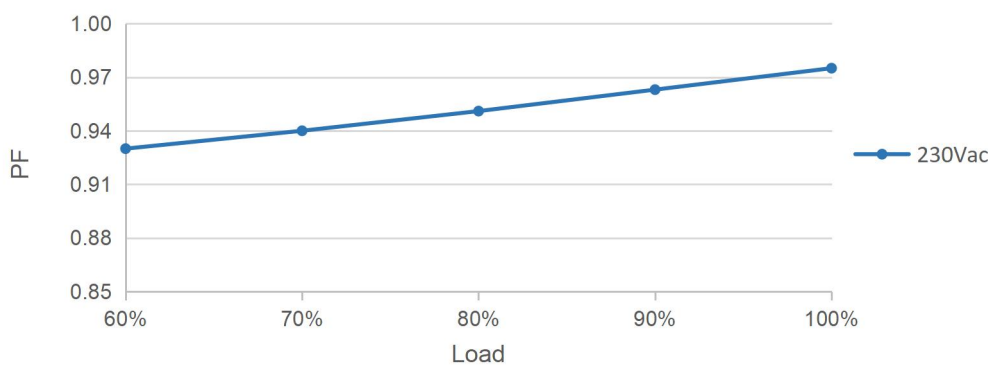
Efficiency vs. Load (Io=0.67A)



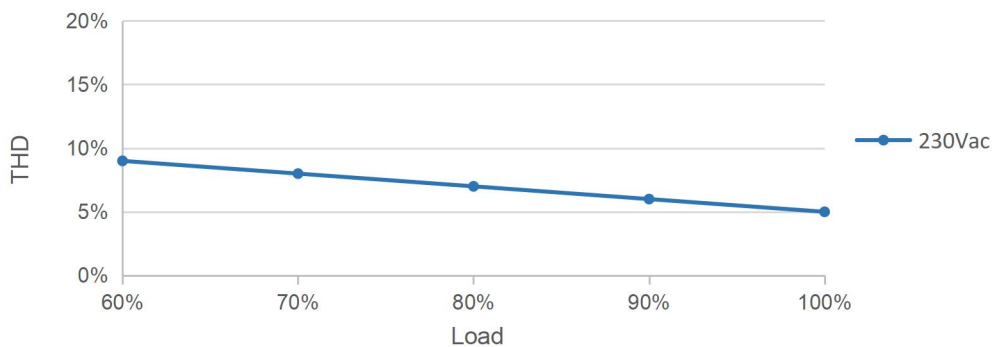
Efficiency vs. Load (Io=1.05A)



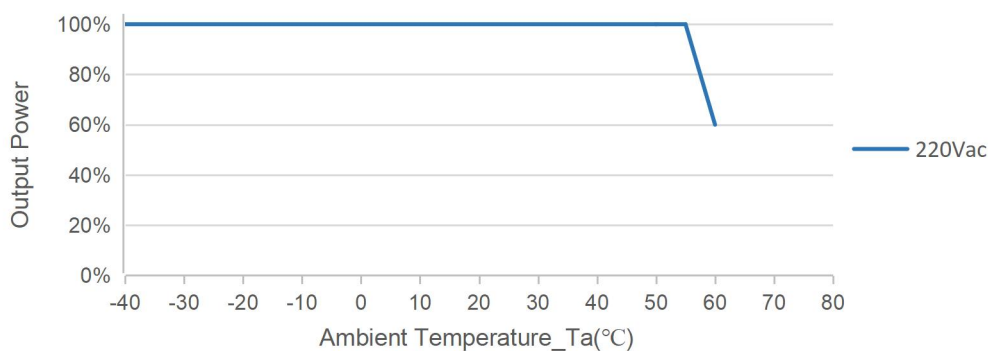
PF vs. Load



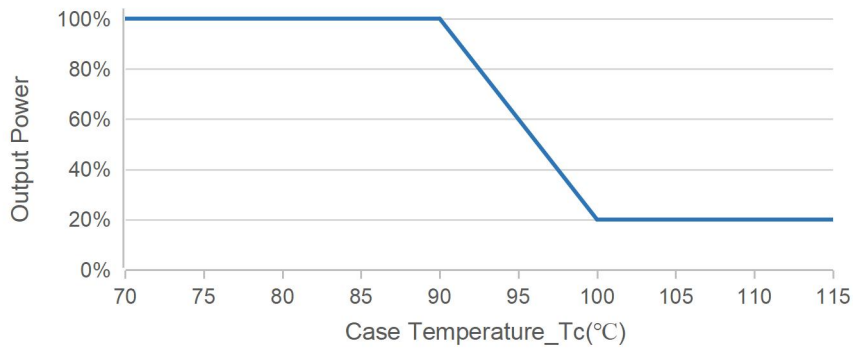
THD vs. Load



Output Power vs. Ambient Temperature

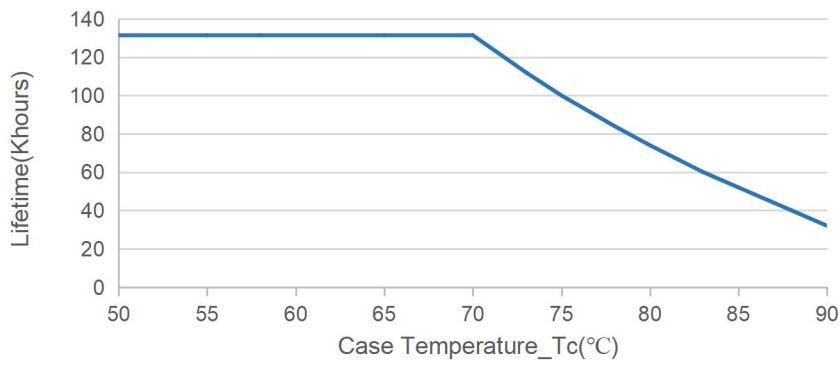


Over Temperature Protection Curve

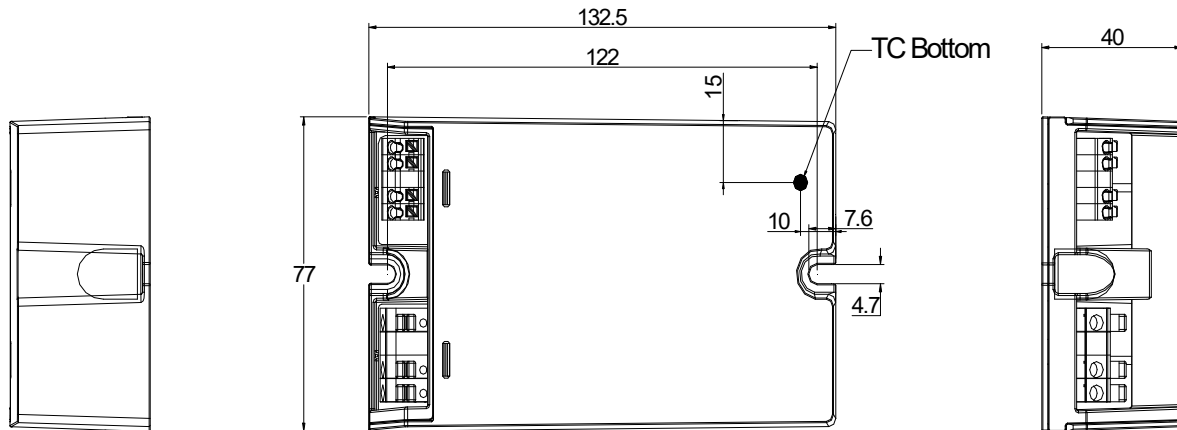


Notes: returning to normal after over temperature is removed.

Lifetime vs. Case Temperature



Mechanical Outline

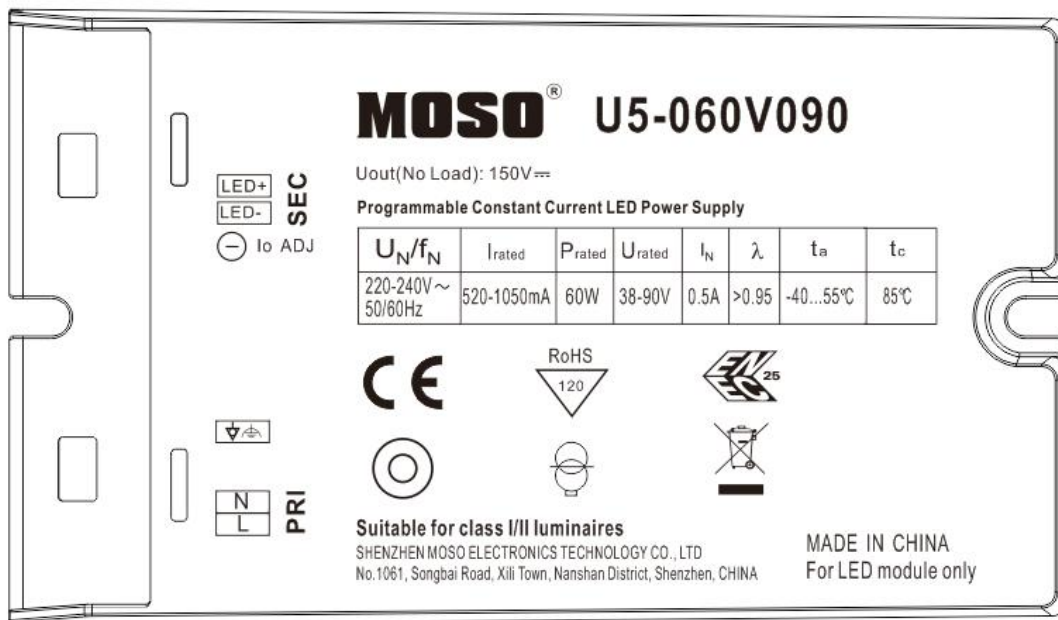


Notes: EQUI pin connects to ground wire and metal housing of luminaires for Class I applications, and to metal housing for Class II applications.

Connections

| | | |
|----------------------|-------------------------------------------------------------------------------|----------------------------------------------|
| Input (L,N,G) | Wire Cross-section 0.5 mm ² - 1.5 mm ² /20 AWG - 16 AWG | Push-in at 45°angle, solid and stranded wire |
| Output | Wire Cross-section 0.2 mm ² - 1.5 mm ² /22 AWG - 16 AWG | Push-in at 45°angle, solid and stranded wire |

Label



Version

| | | |
|-----|---------------|------------|
| A.1 | First release | 2024-10-12 |
| | | |
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| | | |
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Specification for Approval

Product Name: 60W Class I/II LED Driver

Product Model: U5-060V090

Rev : A.1

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

Specification for Approval

Product Name: 60W Class I/II LED Driver

Product Model: U5-060V090

Rev: A.1

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