

Description

The U6 series is constant-current, NFC programmable and IP20 rated LED driver that operates from 176~305Vac input with excellent power factor. The NFC interface implemented enables an easy and safe way for programming LED drivers during the production process and in the field. The parameter scan be transferred without powering on the LED driver. The U6 series supports timer dimming with four modes. The better thermal design and high efficiency enables the driver to operate with high reliability and extend product lifetime. Overall protection is provided against lightening surge, output over voltage, short circuit, and over temperature to ensure low failure rate.



Product Features

- Input voltage range: 176~305Vac;
- Self-adaptive Constant power design;
- Adjust output current (AOC) by NFC programmer ;
- Constant lumen output(CLO);
- 3-in-1 dimmable: 0~10Vdc / 1-10Vdc / PWM / Timer dimming;
- 4 Timers dimming: Timing; Virtual Midnight; Self-Adaptive,Customizations(Optional);
- Standby power consumption<0.5W;
- Suitable for luminaires with protection Class I and II;
- Surge protection: 6KV line-line, 10KV line-earth(Class I);
- Protections: Input UVP/OVP; Output SCP/OVP/OTP;
- IP20 design for indoor and outdoor applications ;
- 5~7 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
U6-060M090	176-305	60	38-90	0.67-1.05	0.70	90.5%	0.97	5%

NOTES:

- [1]. M means 0-10V dimming.
[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	-	-	45A	230Vac&Full Load, Cold Start
Standby Power Consumption	-	-	0.5W	230Vac&50Hz
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	
Open Circuit Voltage	-	-	120Vdc	
Output Current Range	10% I _{MAX}	-	100% I _{MAX}	The NFC regulates the I _{max} current
Full Power Current Range	0.67A	-	1.05A	
Current Accuracy	-5% I _{set}	-	+5% I _{set}	I _{set} >0.67A
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 to240Vac.
Load Regulation	-3%	-	+3%	25°C±10°C ambient temperature, Input Voltage 230Vac, load changes from 60% to 100%.
Turn-on Delay Time	-	-	1.5s	230Vac, 100%Load
Isolation input to output	-	Double	-	
Output P _{st} ^{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	88.5% 88.0%	90.5% 90.0%	-	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)
Life Time	-	100Khours	-	Tc=75°C, 230Vac&100% Load
Operating Temperature Ta	-40°C	-	+55°C	230Vac&100% Load
Operating Tc for Safety Tc_s	-40°C	-	+90°C	
Operating Tc for Warranty Tc_w	-40°C	-	+75°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.
Input Over voltage Protection	-	-	350Vac	350Vac>48hours, 380Vac>5mins
Over Temp Protection Tc	-	95°C	-	Tc; 230Vac&100% load
Short Circuit Protection	-	-	-	self-recovery
Dimensions (L*W*H)mm	132.5*77*40mm			
Net Weight	420±50g/PCS			
Package (L*W*H)mm	494*335*177mm; 30PCS/CTN, Gross Weight: 16kg			

Dimming

Parameter	Min	Typ.	Max	Notes
Absolute Maximum Voltage	-	10V	15V	On the Vdim (+) Pin
Source Current on Vdim (+)Pin	-	100uA	200uA	
Dimming Range	10% I _{set}	-	100% I _{set}	I _{set} 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	0.4V	0.6	0.7V	
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%	-	10%	
Turn-Off Duty Cycle	4%	-	7%	
Timer dimming	-	-	-	3 types, which is set by software
Output lumen compensation	-	-	-	Constant lumen output function
Over Temperature Protection	-	-	-	Thermal Cut Off function optional(过温锁定)

Safety Specification

Parameter	CCC	CE/ENEC (Class I/II)	UL	Notes
Dielectric Strength(Input-Output)	-	3000Vac	-	60s, Current not exceeding 5mA
Dielectric Strength(Input-Ground/Case)	-	3000Vac	-	60s, Current not exceeding 5mA
Dielectric Strength(Output-Ground/Case)	-	500Vac	-	60s, Current not exceeding 5mA
Dielectric Strength(Input-Dimming)	-	3000Vac	-	60s, Current not exceeding 5mA
Dielectric Strength(Dim-Ground/Case)	-	500Vac	-	60s, Current not exceeding 5mA
Insulation Resistance	10MΩ(Min)			Input-Output, Input-PE, Output-PE, 500Vdc/60s/25°C/70%RH

Safety Compliance

Safety Category	Standards	Approved	Notes
CCC	GB/T 19510.213, GB/T 19510.1		
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		

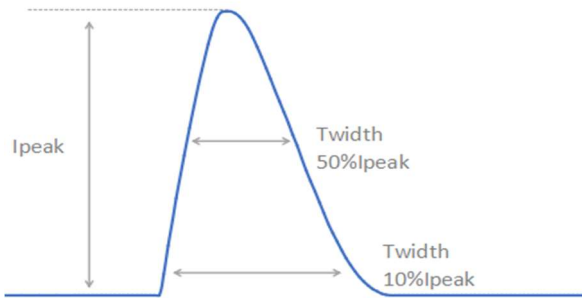
EMC Compliance

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

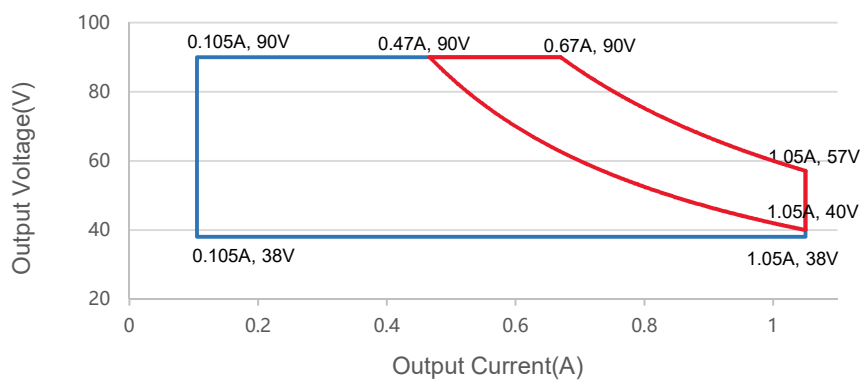
Our products comply with RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Inrush Current



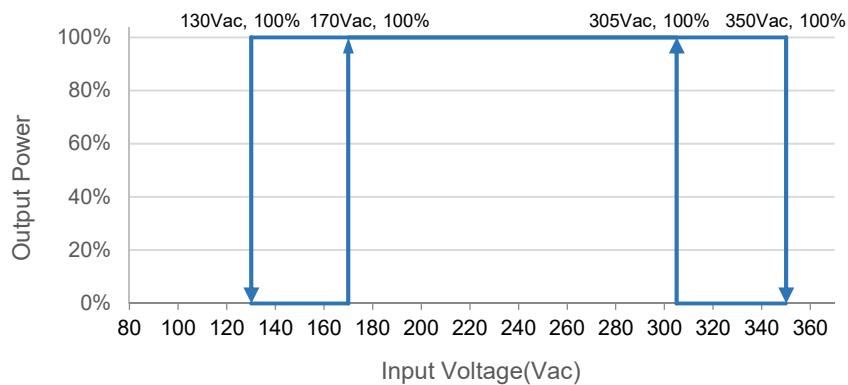
V_{in}	I_{peak}	$T(@10\% \text{ of } I_{peak})$	$T(@50\% \text{ of } I_{peak})$
230Vac	40A	428uS	200uS

Output Voltage vs. Output Current

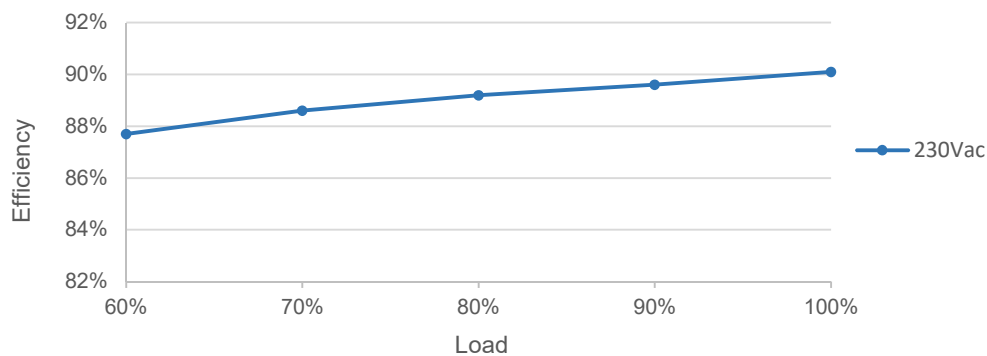


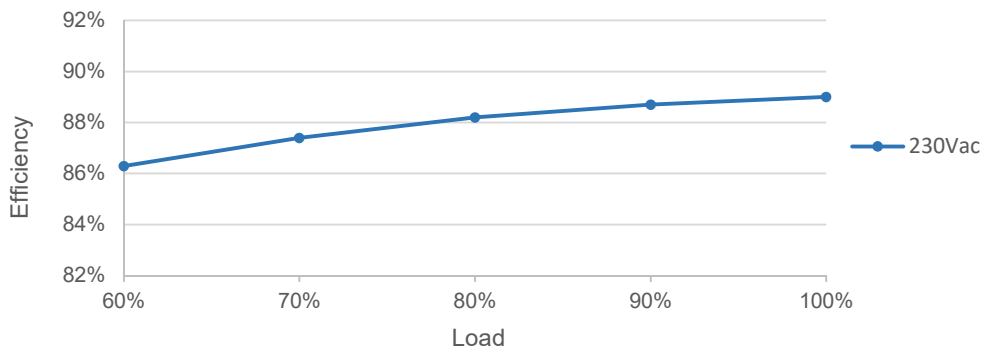
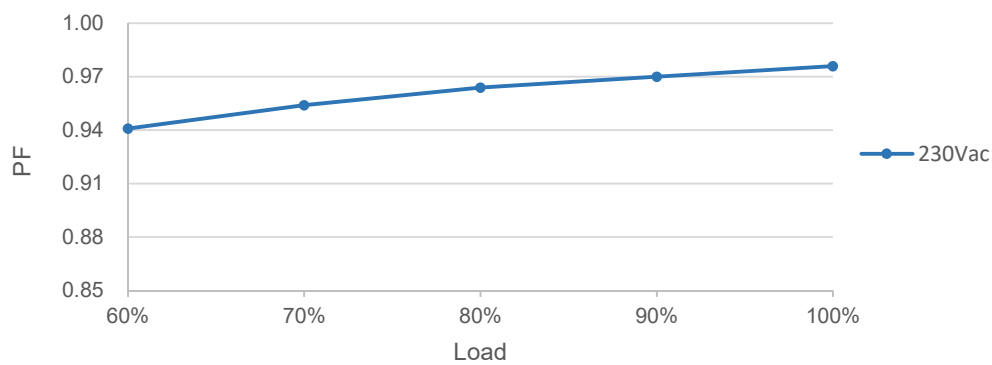
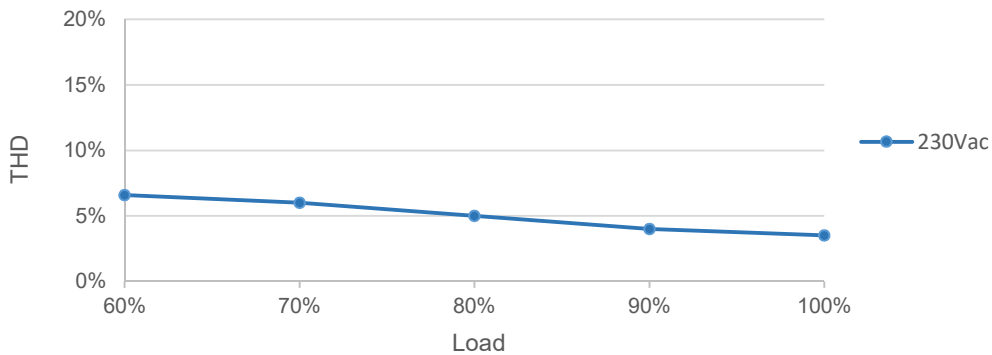
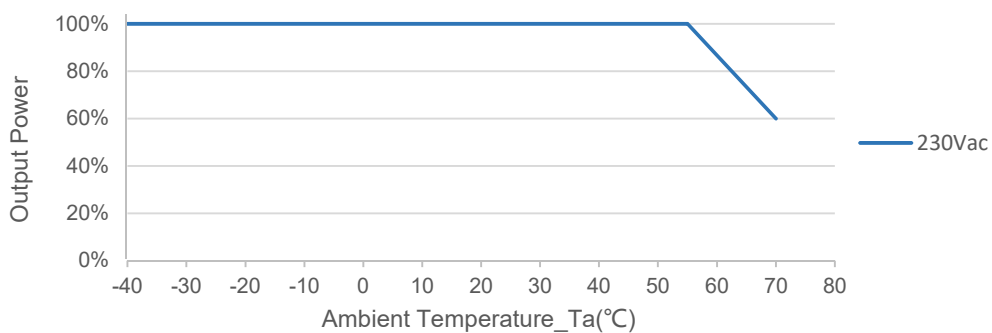
Red curve: good performance area

Output Power vs. Input Voltage

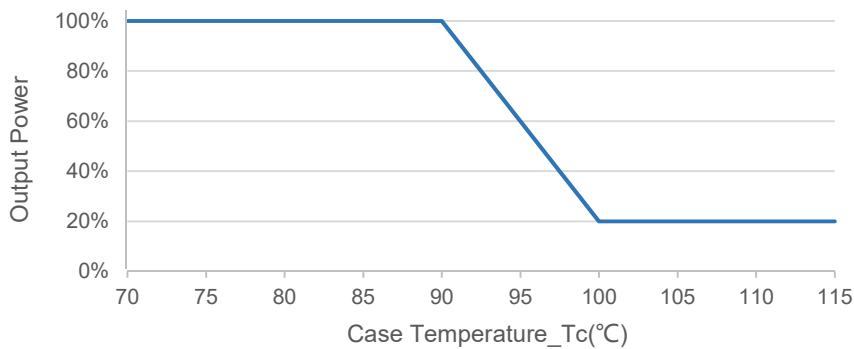


Efficiency vs. load ($I_o=0.67A$)



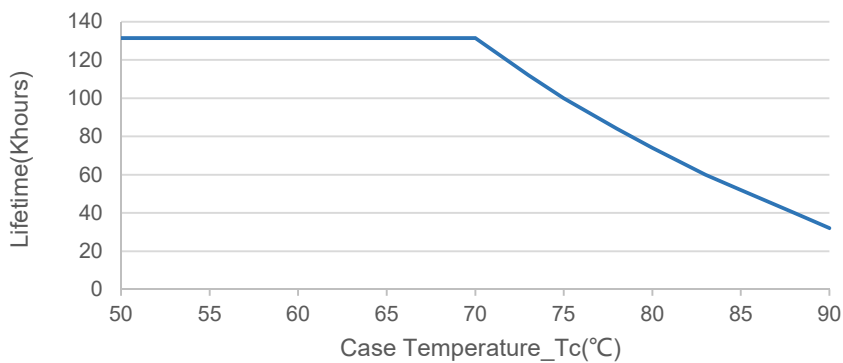
Efficiency vs. Load (I_o=1.05A)**PF vs. Load****THD vs. Load****Output Power vs. Ambient Temperature**

Over Temperature Protection Curve

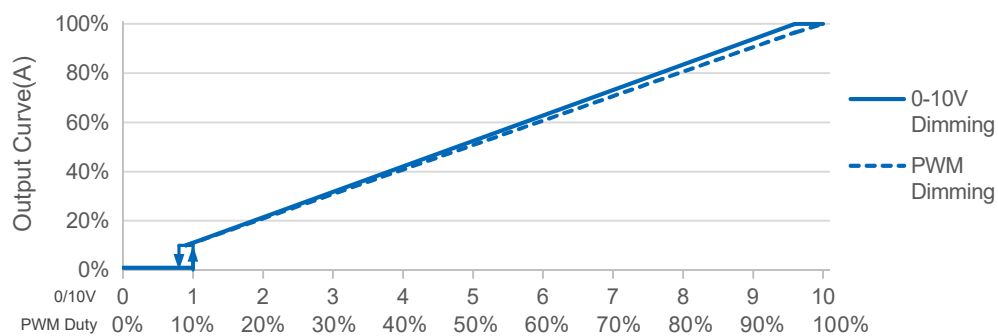


Notes: Customers can set the start derating temperature and end derating temperature. This curve is the default factory protection curve, When the temperature rises to the normal operating temperature, the drive will resume output.

Lifetime vs. Case Temperature



0/1-10V/PWM Dimming



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

Programming Link (NFC)



Notes:

1. The driver does not need to be powered on during the programming process.
2. Please refer to ProgrammerMS-PRG-N1 and MS-PRG-W1 datasheet for details.
3. Applicable to FEIG programmer: ISC PRH101-USB and CPR30+.

Off-line Programming

User-friendly connection of programming without necessary to power on device.

Programming mode I: MS-PRG-W1



Visual Intelligent Programming

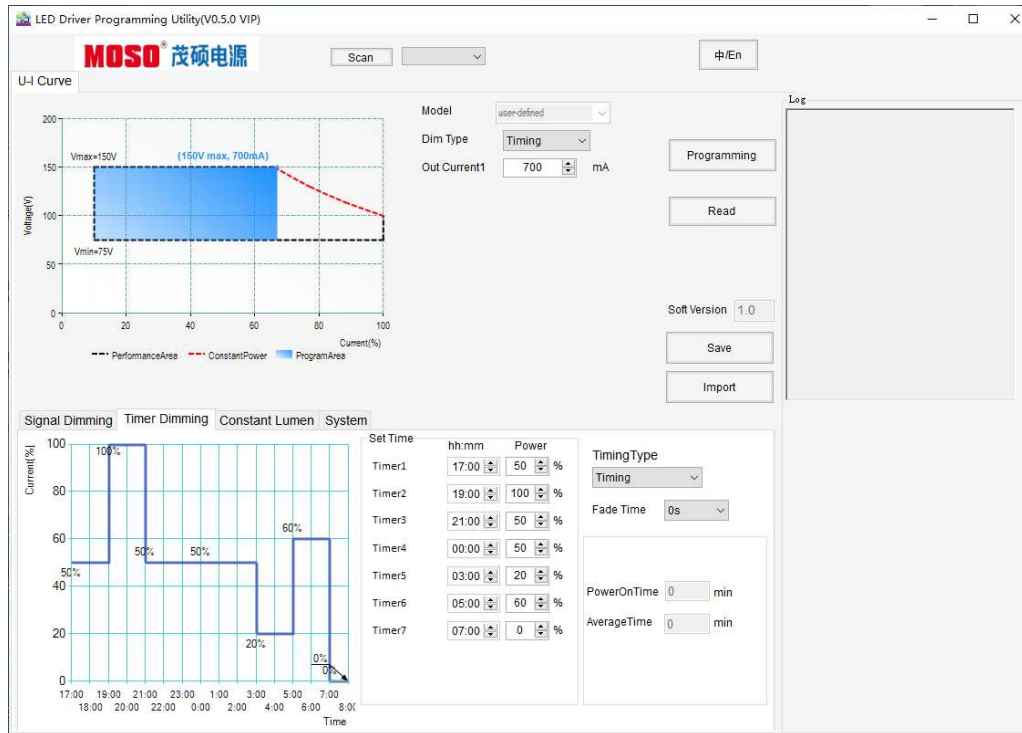
1. Set the output parameters through the control signal line
0-3.3V/0-5V/0-9V/0-10V optional.
2. Timer dimming. Set the timer control function, support up to 7 segments;
3. Set output CLO;
4. Read the recorded system parameters; Record the working time working temperature, and software version information of the LED driver.
5. Configure the driving parameters. After setting is completed, then click the configured parameters to complete programming.

Time Dimming

Time-controlled dimming is divided into three modes: Timing dimming, Virtual Midnight dimming, Self-Adaptive dimming.

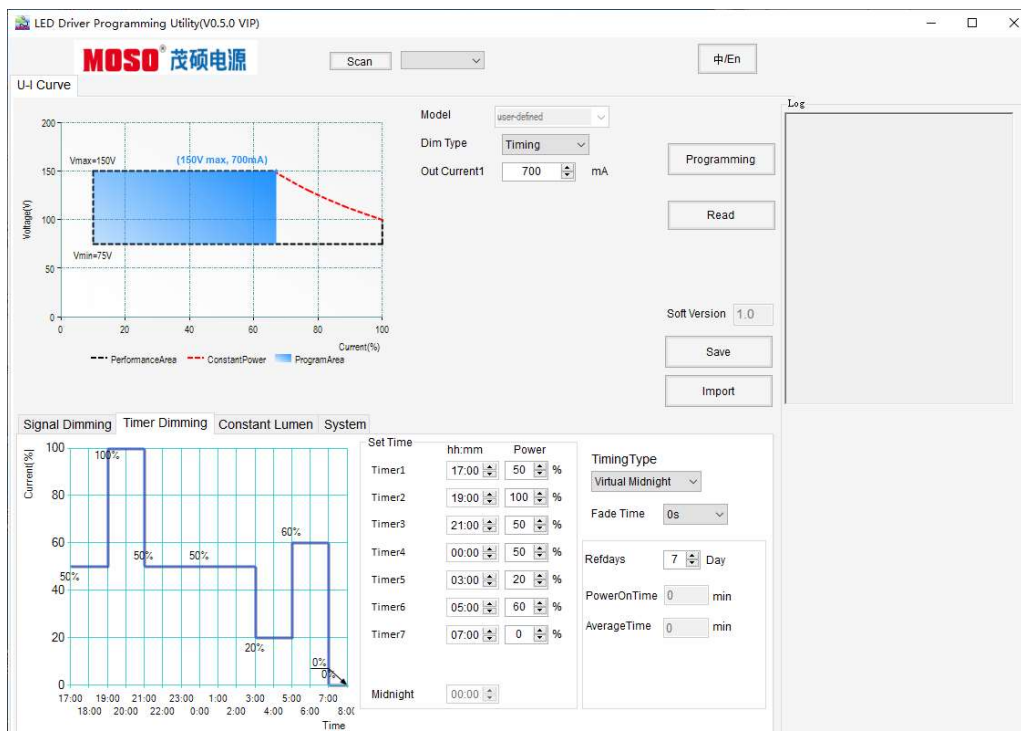
Timing Dimming

After the driver is powered on, the driver will change in sequence according to the programmed seven periods, and maintain the brightness of timer 7 after running to the last timer.



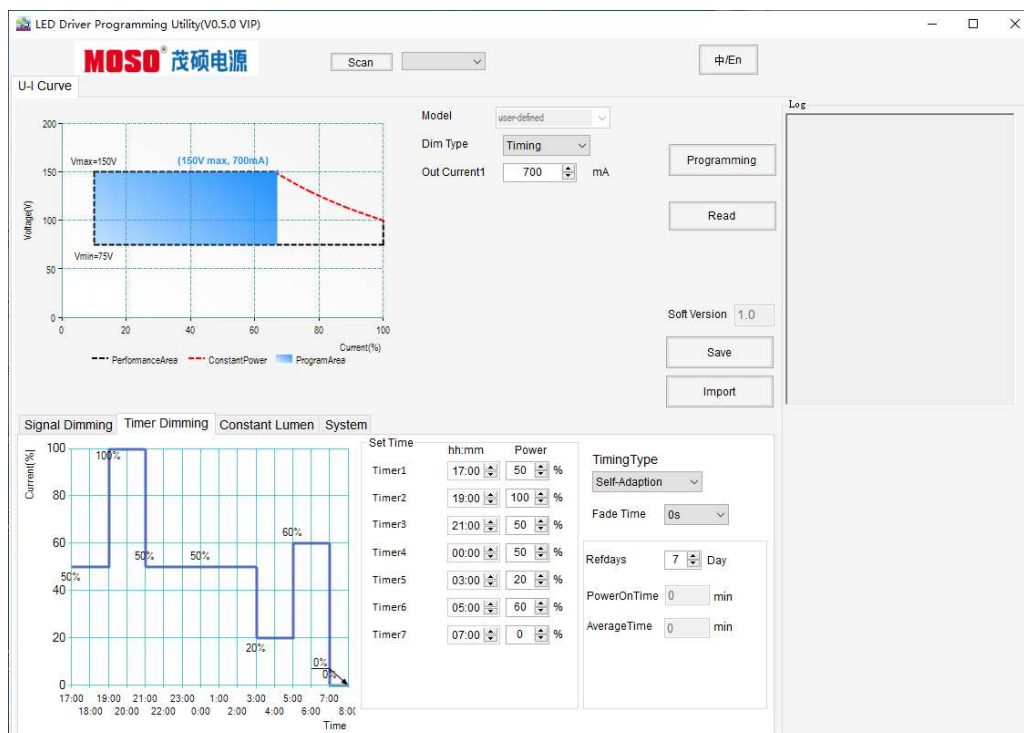
Virtual Midnight Dimming

The power-on point and power-off point usually correspond to sunset time and sunrise time respectively, so their midpoint is the virtual midnight point. The driver will automatically sample the corresponding effective working days according to the reference days set by the customer, and automatically adjust the dimming curve according to the average working hours.



◆ Self - Adaption Dimming

Depending on the customer setup, the drive automatically calculates the effective mean operating time and calculates the ratio to the customer's set parameter time length, automatically making this computational ratio adjustment at each step.

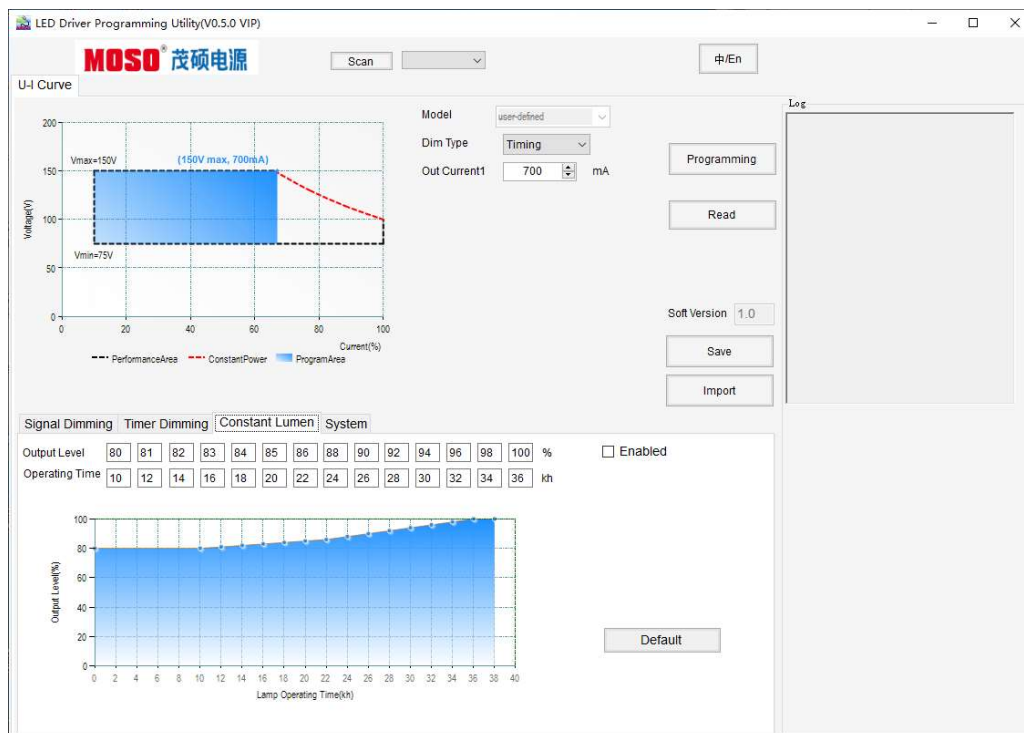


Note: Drives were judged only as valid working days if they were greater than 4 hours and less than 24 hours, and an effective on-off cycle was considered a day

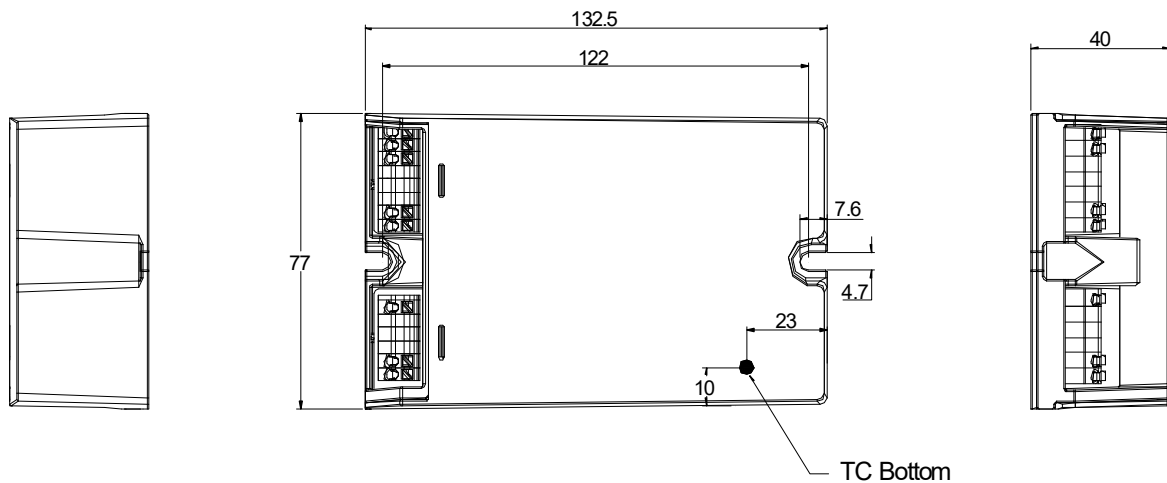
CLO

CLO: With the increase of cumulative illumination time of LED light source, the LED driving can automatically increase its output current, and then realize the increasing of light flux output of LED light source with the increase of cumulative illumination time to achieve the purpose of light decay compensation. Thus the road surface illumination level is basically constant.

Note: Compensated current values are calculated as a percentage based on IMAX. The minute setting column is only used by the customer to test the CLO function. The driver will reset the hour setting column after power failure and power on again. The "ENABLE check box" must be checked to enable the CLO function



Mechanical Outline

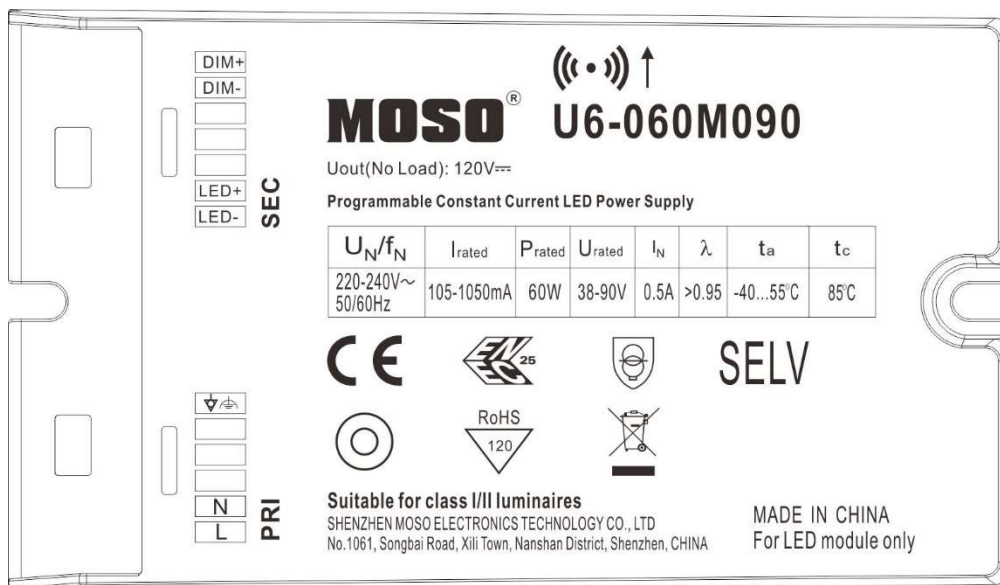


Notes: EQU pin connects to ground wire and metal housing of luminaires for Class I applications, and to metal housing for Class II applications.

Connections

Input (L,N,G)	Wire Cross-section 0.5 mm ² - 1.5 mm ² /24 AWG - 16 AWG		Push-in at 45°angle, solid and stranded wire
Output	Wire Cross-section 0.5 mm ² - 1.5 mm ² /24 AWG - 16 AWG		Push-in at 45°angle, solid and stranded wire
DIM	Wire Cross-section 0.5 mm ² - 1.5 mm ² /24 AWG - 16 AWG		Push-in at 45°angle, solid and stranded wire
Specification item	Value	Unit	type
Maximum cable length	1.5	M	

Label



Version

A.2	First release	2025-07-23

Specification for Approval

Product Name: 60W Class I/II LED Driver

Product Model: U6-060M090

Rev : A.2

Address: XiLiSongbai Road 1061, Nanshan District, Shenzhen City, Guangdong, China

Tel: 0755-27657000

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E-mail: info@mosopower.com

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

Prepared By	Checked By	Approved By

Specification for Approval

Product Name: 60W Class I/II LED Driver

Product Model: U6-060M090

Rev: A.2

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

Address:XiLiSongbai Road 1061, Nanshan District, Shenzhen City, Guangdong, China

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Prepared By	Checked By	Approved By