

Description

The X8 series is constant-current, NFC programmable and IP67 rated LED driver that operates from 90-305Vac 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 parameters can be transferred without powering on the LED driver. X8series integrate AC power monitoring with an auxiliary voltage and dim-to-off functionality for powering low voltage. The dimming control supports two-way communication via DALI-2 and complies with D4i. 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

- Universal input voltage: 90~305Vac;
- Constant power design;
- Suitable for luminaires with protection Class I and II;
- DALI2&D4i Certified;
- 3 Timers dimming: Timing, Virtual Midnight, Self-Adaptive;
- Auxiliary power supply: 24V/125mA;
- Dim-to-Off with Standby Power ≤ 0.5 W;
- Over temperature protection via external NTC (Optional) ;
- Constant lumen output(CLO);
- NFC programmable;
- Integrated 16Vdc Bus Power Supply Based on DALI-2;
- High surge protection: DM 6KV, CM 10KV (Class I);
- Protections: Input UVP,OVP, Output SCP / OVP / OTP;
- IP67 design for indoor and outdoor applications;
- Suitable for dry / damp / wet locations;
- 7 years warranty.

Application

Road and street 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.)
X8-240D056	90~305	240	28-56	4.30~6.85	5.0	93.0%	0.98	3%

NOTES:

[1]. 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 Range	90Vac	120/230/277Vac	305Vac	
Input Frequency AC	47Hz	50/60Hz	63Hz	
Max Input Current	-	-	3.3A	120Vac & 100%Load
Max Input Power	-	-	290W	120Vac & 100%Load
Leakage Current	-	-	0.70mA	IEC60598-1;240Vac/60Hz.
Inrush Current	-	-	3A ² s	230Vac, cold start
Standby Power Consumption	-	-	0.5W	230Vac&50Hz, Auxiliary Power Without Load and 16Vdc Bus Power Supply Shut Off
Power Factor (PF)	0.96	0.99	-	120Vac , 50-60Hz , 60%-100% load
Power Factor (PF)	0.93	0.98	-	230Vac , 50-60Hz , 60%-100% load
Power Factor (PF)	0.90	0.95	-	277Vac , 50-60Hz , 60%-100% load
Total Harmonic Distortion (THD)	-	3%	10%	120-230Vac , 50-60Hz , 60%-100% load
Total Harmonic Distortion (THD)	-	5%	10%	277Vac , 50-60Hz , 60%-100% load
MCB(B16)	-	2	-	230Vac; 100%load

Output Specifications

Parameter	Min	Typ.	Max	Notes
Output Voltage Range	28Vdc	-	56Vdc	The full power cannot be lower than 35Vdc
Open Circuit Voltage	-	-	80Vdc	The open circuit protection is locked, and the AC needs to be powered on again.
Output Current Range	0.685A	-	6.85A	Adjustable output current with programmer
Full Power Output Current Range	4.30A	-	6.85A	
Current Accuracy	-5%I _{set}	-	+5%I _{set}	I _{set} is set to the full power range
Total Output Current Ripple (pk-pk)	-	-	10%	20MHz BW full load & LED load the LED load ripple is slightly different for different leds
Startup Overshoot Current	-	-	10%	120-277Vac full load condition, LED load
Line Regulation	-1%	-	+1%	25°C±10°C ambient temperature, input changes from 120Vac to 277Vac
Load Regulation	-3%	-	+3%	Load varies from 60% to 100% with 230Vac Input at 25°C±10°C ambient temperature
Turn-on Delay Time	-	-	1.5s	120-277Vac, 100% load, Extended soft start operation time when ambient temperature is below -10°C
Output Pst ^{LM}	-	-	0.03	In entire operating window
Output SVM	-	-	0.03	In entire operating window
Power Monitoring Accuracy	-1%	-	+1%	Measured at 230Vac input and 100% load

General Specifications

Parameter	Min	Typ.	Max	Notes
Efficiency@120Vac Io=4.3A Io=6.85A	88.5% 88.0%	90.5% 90.0%	-	Measured at full load and 25°C ambient temperature 24V No Load
Efficiency@230Vac Io=4.3A Io=6.85A	91.5% 90.5%	93.5% 92.5%	-	Measured at full load and 25°C ambient temperature 24V No Load
Efficiency@277Vac Io=4.3A Io=6.85A	92.0% 91.0%	94.0% 93.0%	-	Measured at full load and 25°C ambient temperature 24V No Load
Mean Time Between Failure	-	200Khours	-	25°C±10°C ambient temperature, 230Vac, 80% load condition (MIL-HDBK-217/SR-332)
Lifetime	-	100Khours	-	230Vac & 100% load, Tc 70°C, refer to lifetime vs. case temperature curve
Operating Temperature Ta	-40°C	-	+45°C	108~176Vac, Output Power vs. Ambient Temperature curve
Operating Temperature Ta	-40°C	-	+55°C	176~305Vac, Output Power vs. Ambient Temperature curve
Operating Tc for Safety Tc_s	-40°C	-	+90°C	
Operating Tc for Warranty Tc_w	-40°C	-	+75°C	5-year warranty shell temperature, humidity: 10% to 95% RH
Storage Temperature Ta	-40°C	-	+85°C	Humidity: 5% to 100% RH
Altitude	-60m	-	4000m	
Input Under voltage Protection	70Vac	80Vac	90Vac	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	305Vac	325Vac	345Vac	The input voltage exceeds the protection voltage, the output is turned off. Automatic recovery. When the input voltage falls below the recovery voltage, the drive will restart.
External NTC (R1)	-	20.05K ohm (Set by software)	-	When the R-NTC is reduced to R1, the external thermal protection is triggered and the output current gradually decreases.
External NTC (R2)	-	10.27K ohm (Set by software)	-	When the R-NTC is reduced to R2, the output current is reduced to the programmed protection current value.
External NTC (Protection Circuit)	10%Io _{set}	60%Io _{set}	100%Io _{set}	10%Io _{set} > Io _{min} (Default setting 60%).
External NTC (Protection Circuit)	Io _{min}	60%Io _{set}	100%Io _{set}	10%Io _{set} ≤ Io _{min} (Default setting 60%).
Over Temperature Protection Tc	-	95°C	-	Decreases output current, returning to normal after over temperature is removed.
Short Circuit Protection	-	-	-	Self-recover after 30 seconds..
Output over voltage Protection	-	-	-	AC needs to be powered on again
Dimensions (L*W*H)	213.5*72*39mm			
Net Weight	1020±50g/PCS			
Package (L*W*H)	575*375*204mm; 18PCS/Ctn, Gross Weight: 20.5Kg			

DALI Specifications

Parameter	Min	Typ.	Max	Notes
24V Auxiliary Output Voltage	21.6V	24.0V	30.0V	120-277Vac, P _{load} > 0.1W
24V Auxiliary Output Source Current	0mA	-	125mA	Return terminal is "DA-"
24V Auxiliary Output Transient Peak Current @6W	-	-	250mA	250mA peak for a maximum duration of 2.2ms in a 6.0ms period during which time the average should not exceed 125mA.
24V Auxiliary Output Transient Peak Current @10W	-	-	425mA	425mA peak for a maximum duration of 1.3ms in a 5.2ms period during which time the average should not exceed 125mA.
Integrated DALI-2 Bus Power Supply Voltage	12V	16V	20V	Voltage is depending on loading.
Integrated DALI-2 Bus Power Supply Current	50mA	-	60mA	Return terminal is "DA-"
DALI-2 (High Voltage Level)	9.5V	16V	22.5V	
DALI-2 (Lower Voltage Level)	-6.5V	0V	6.5V	Return terminal is "DA-"
DALI-2 (Dimming Output Range)	10% I _{set}	-	100% I _{set}	I _{set} = 4.30~6.85A
DALI-2 (Sink Current)	-	-	2.0mA	

Insulation

Insulation	Mains	EQUI	LED +/- NTC	DA+ / Vaux
Mains	-	Double	SELV	SELV
EQUI	Double	-	Supplementary	Supplementary
LED +/- NTC	SELV	Supplementary	-	Supplementary
DA+ / Vaux	SELV	Supplementary	Supplementary	-

Notes:

[1] DALI-2 bus power supply is enabled by default and can be disabled via programming interface.

[2] DALI-2 bus power supply supports automatic shut-down and restart after short-circuit.

[3] DALI signal line shall not be connected to the five core terminal shared by input and dimming

[4] The DALI signal line shares the negative with the 24V auxiliary source. The 24V auxiliary source can be used alone or share the negative pole with the DALI line

Safety Specification

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

Safety Compliance

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

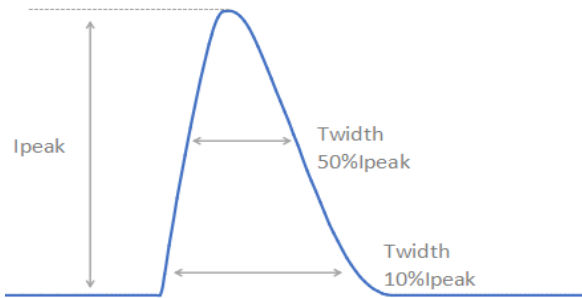
EMC Compliance

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		
Ring Wave			

RoHS

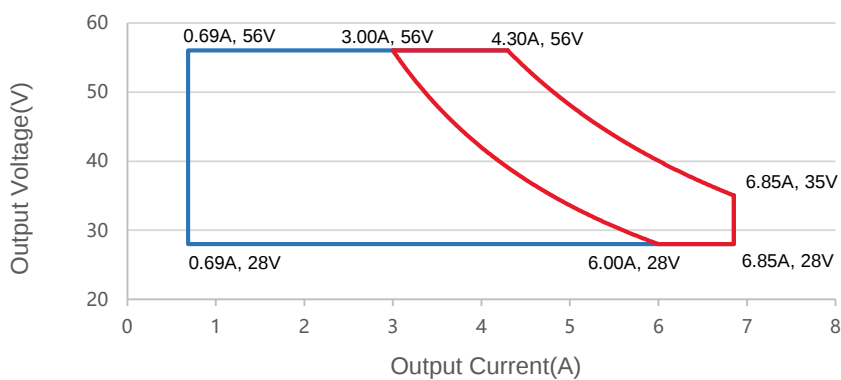
Our products comply with reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU.

Inrush Current



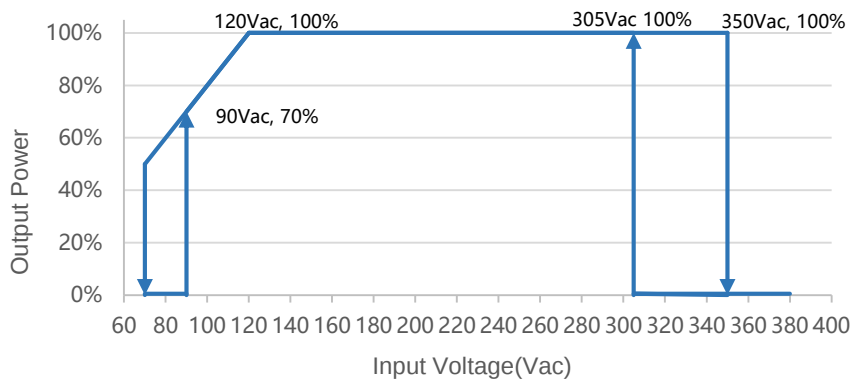
V_{in}	I_{peak}	$T(@10\% \text{ of } I_{peak})$	$T(@50\% \text{ of } I_{peak})$
230Vac	90.4A	1144 μ s	810 μ s

Output Voltage vs. Output Current

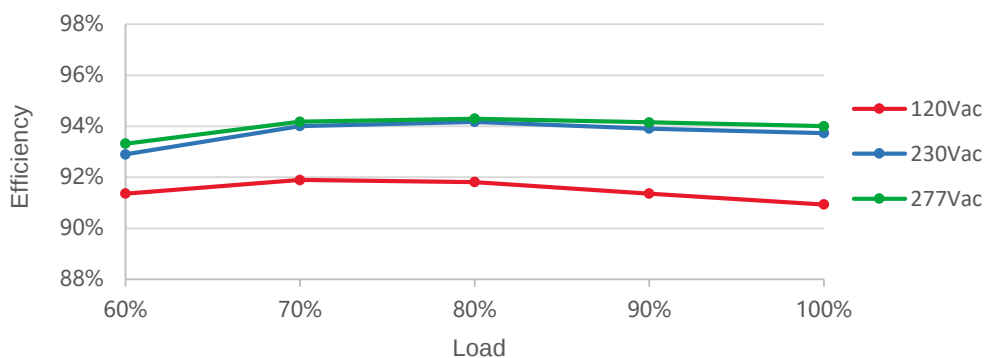


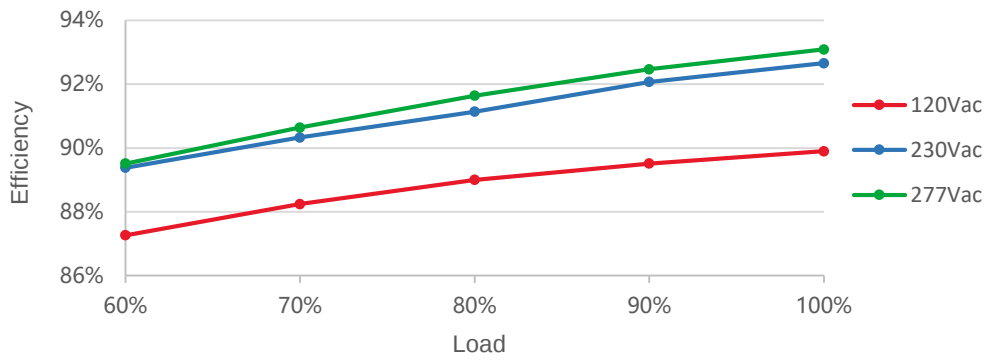
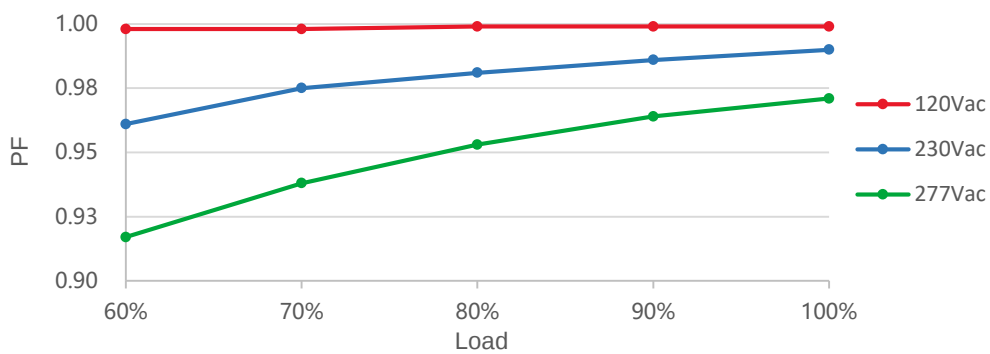
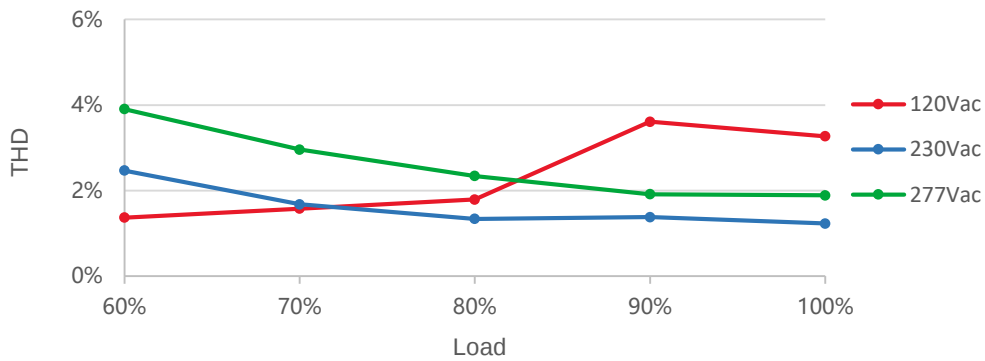
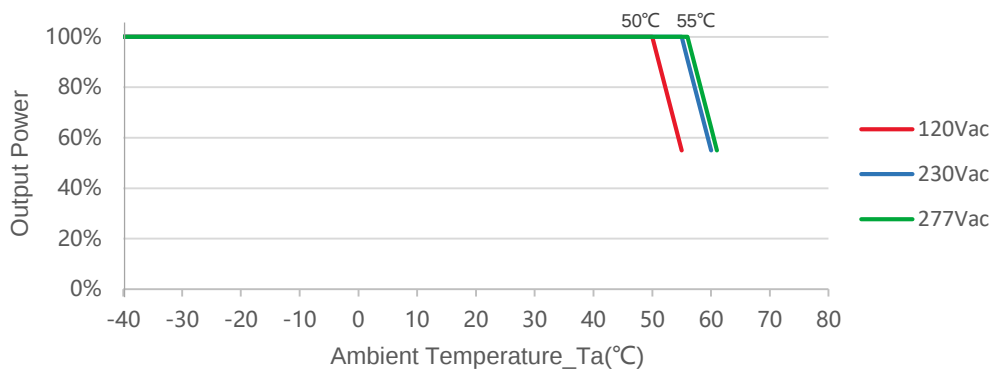
Red curve: good performance area

Output Power vs. Input Voltage

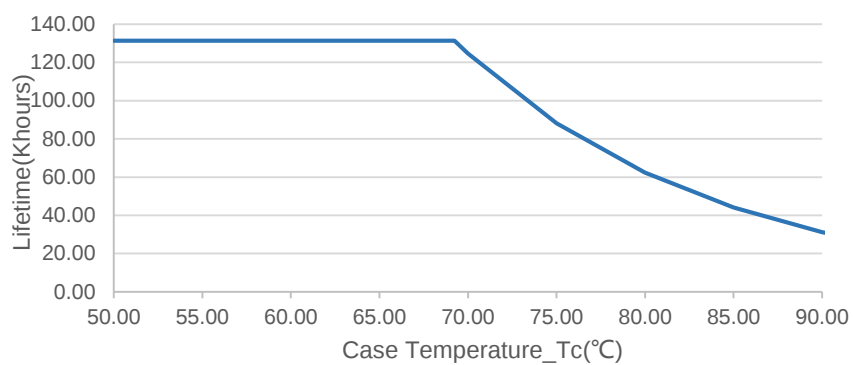


Efficiency vs. Load ($I_o=4.30\text{ A}$)

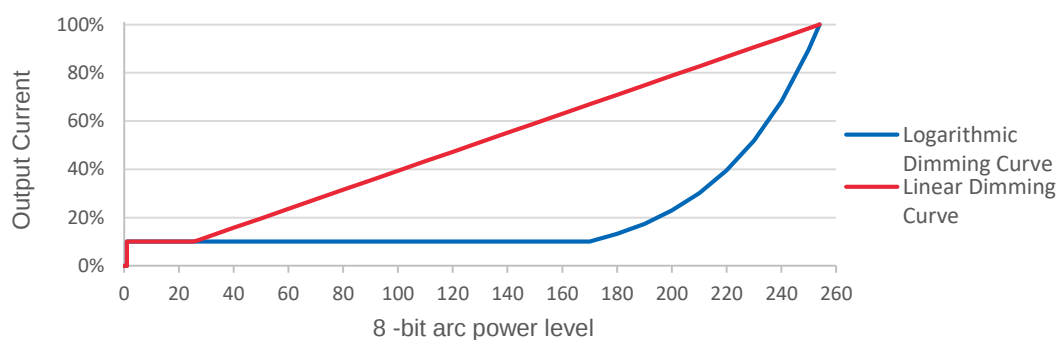


Efficiency vs. Load (Io=6.85A)

PF vs. Load

THD vs. Load

Output Power vs. Ambient Temperature


Lifetime vs. Case Temperature



DALI2Dimming



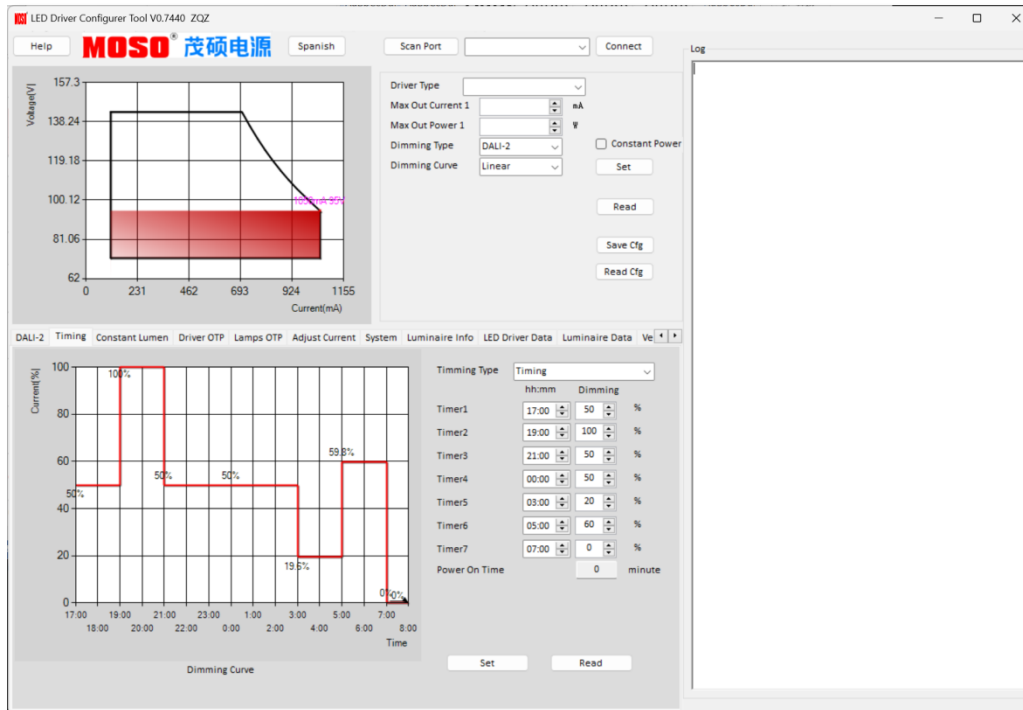
Note: Factory Default Output Logarithmic Curve

Time Dimming

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

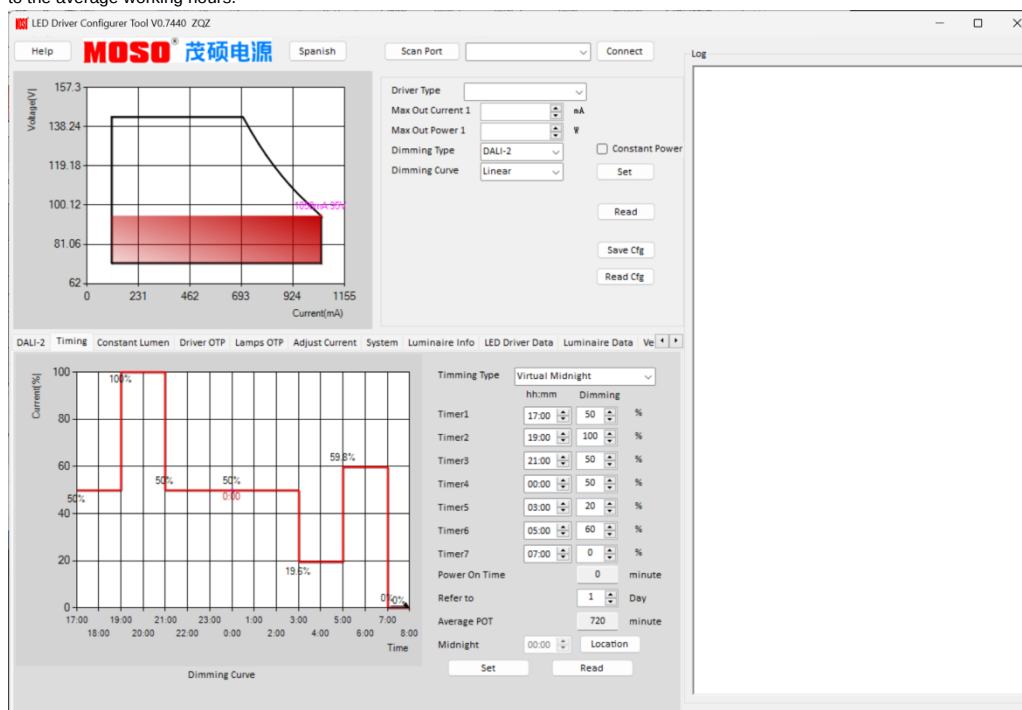
Timing Dimming

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.



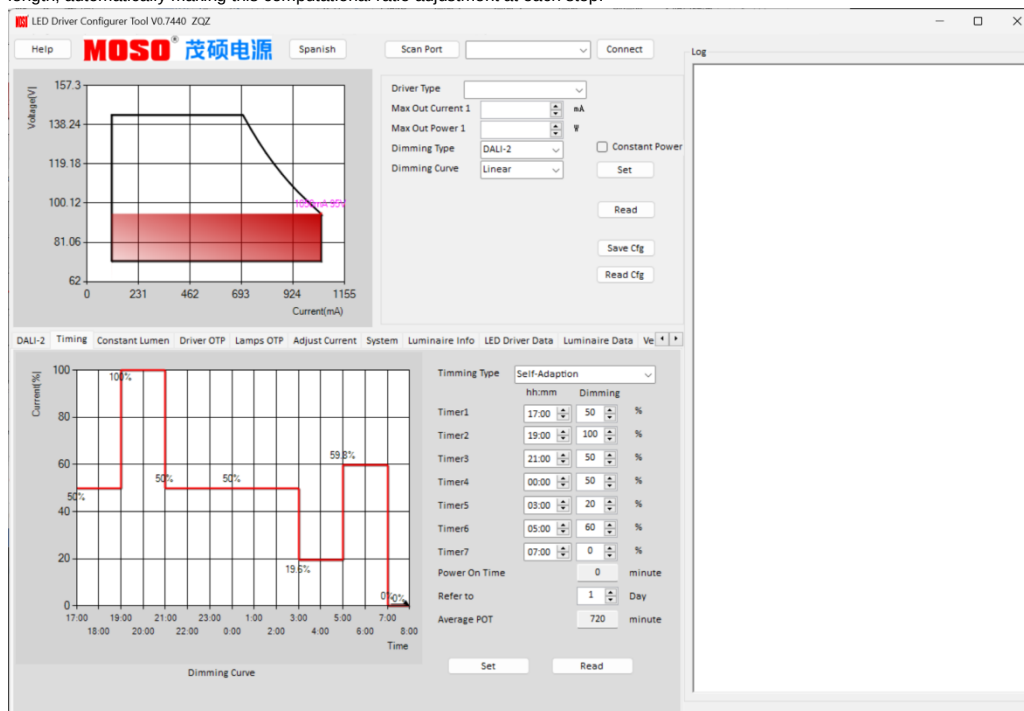
Virtual Midnight Dimming

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.

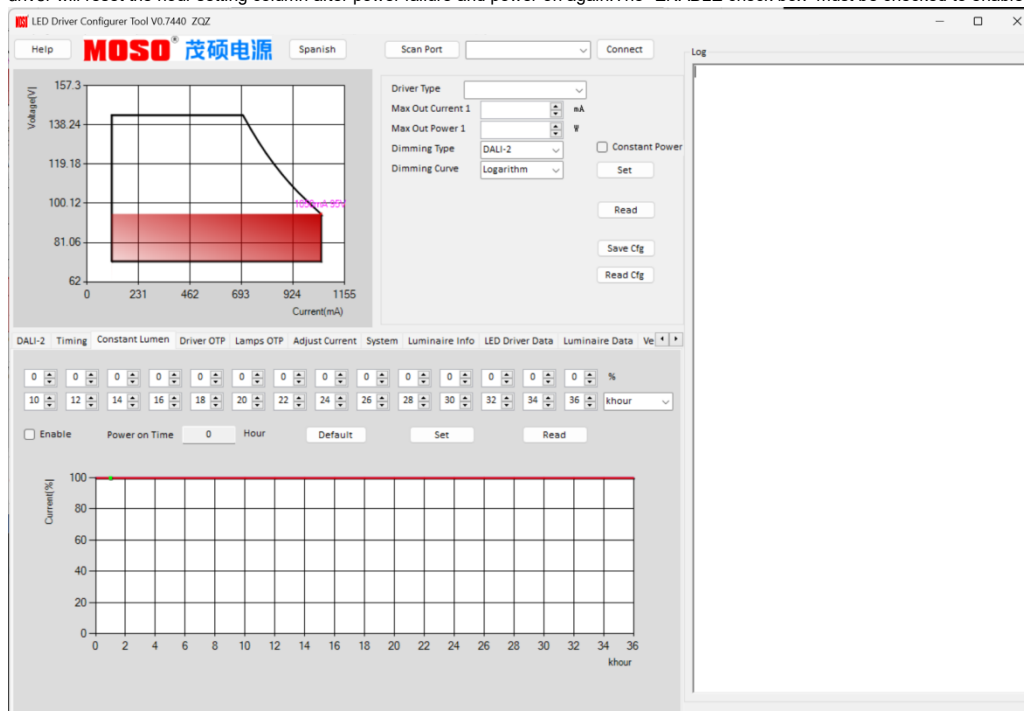


Note: Drives were judged only as valid working days if they were greater than 4 hours and less than 24 hours, and an effective on-off cycle was considered a day

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.

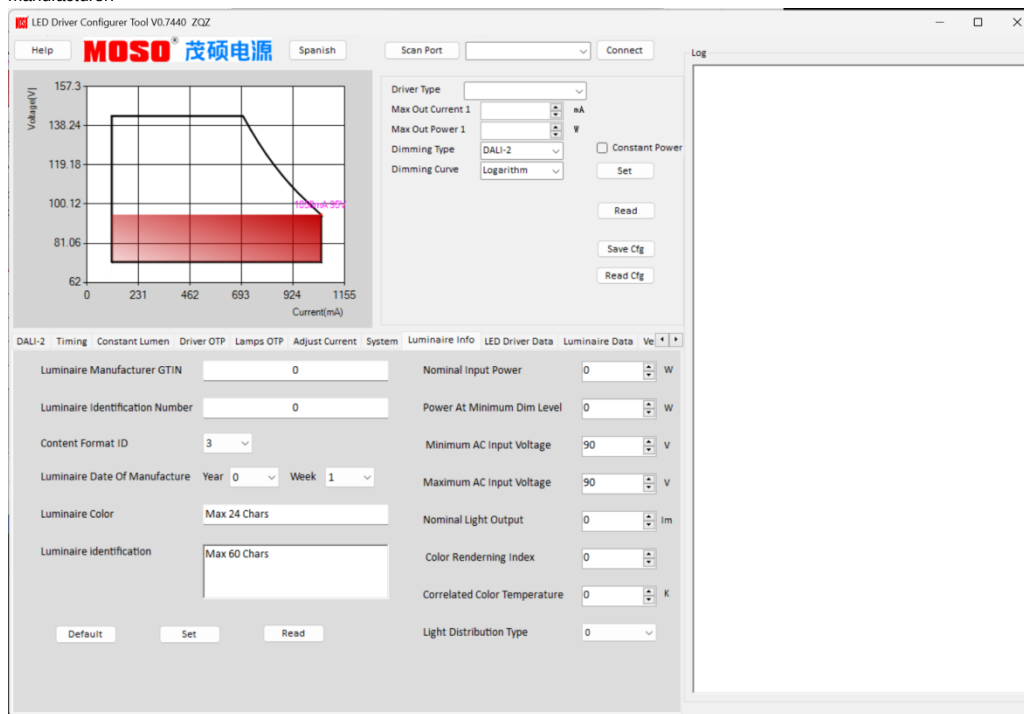
Note: Compensated current values are calculated as a percentage based on I_{MAX}. The minute setting column is only used by the customer to test the CLO function. The driver will reset the hour setting column after power failure and power on again. The "ENABLE check box" must be checked to enable the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



Luminaire Information

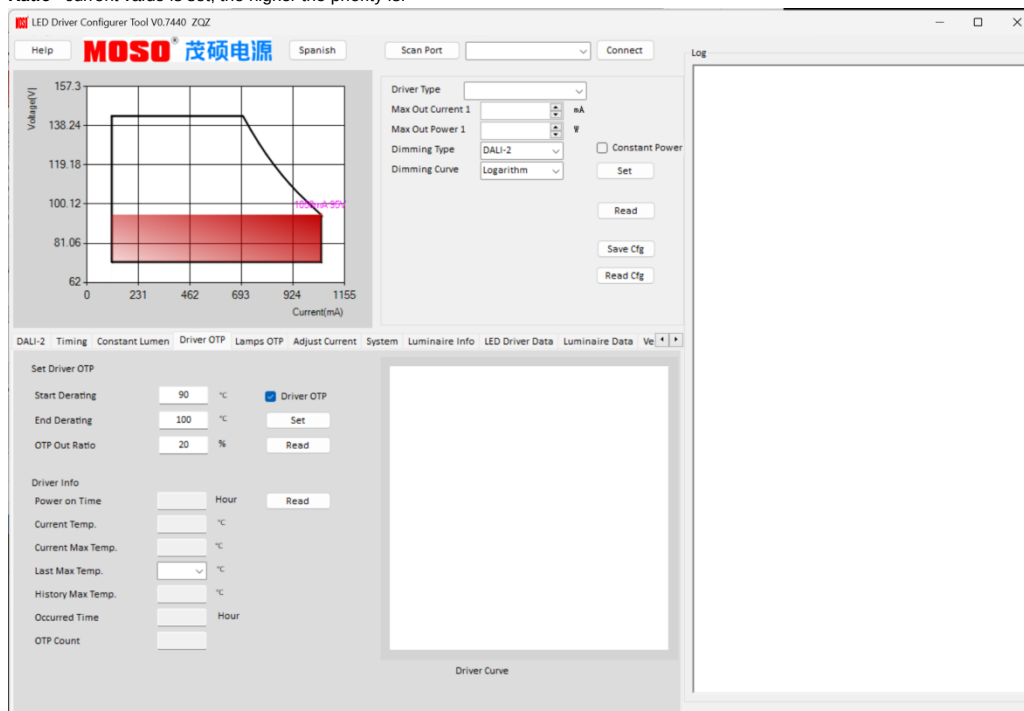
Customer can program the drive through Dali line control programmer (MS-PRG-D1 V01) and NFC programmer (MS-PRG-N1;ISC-PRH101; CPR30-USB) use "set button" in Luminaire information function bar for writing information as follows graphic.

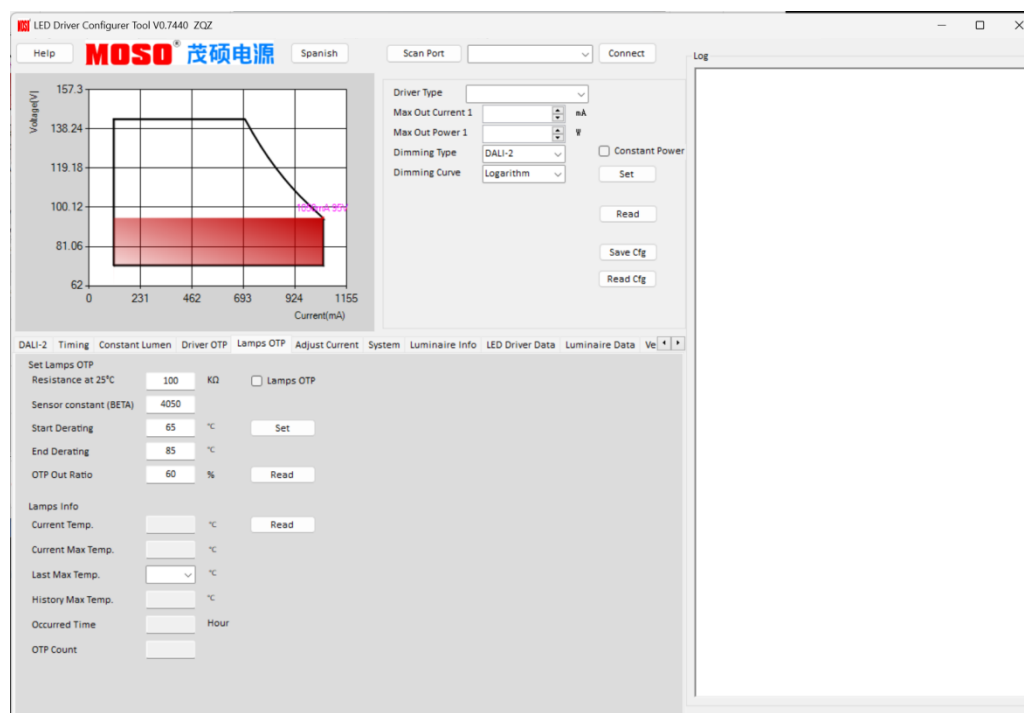
According to the provisions of DALI part 253, the driver needs to realize the operation information of lamps Data storage. This information is filled in by the lighting equipment manufacturer.



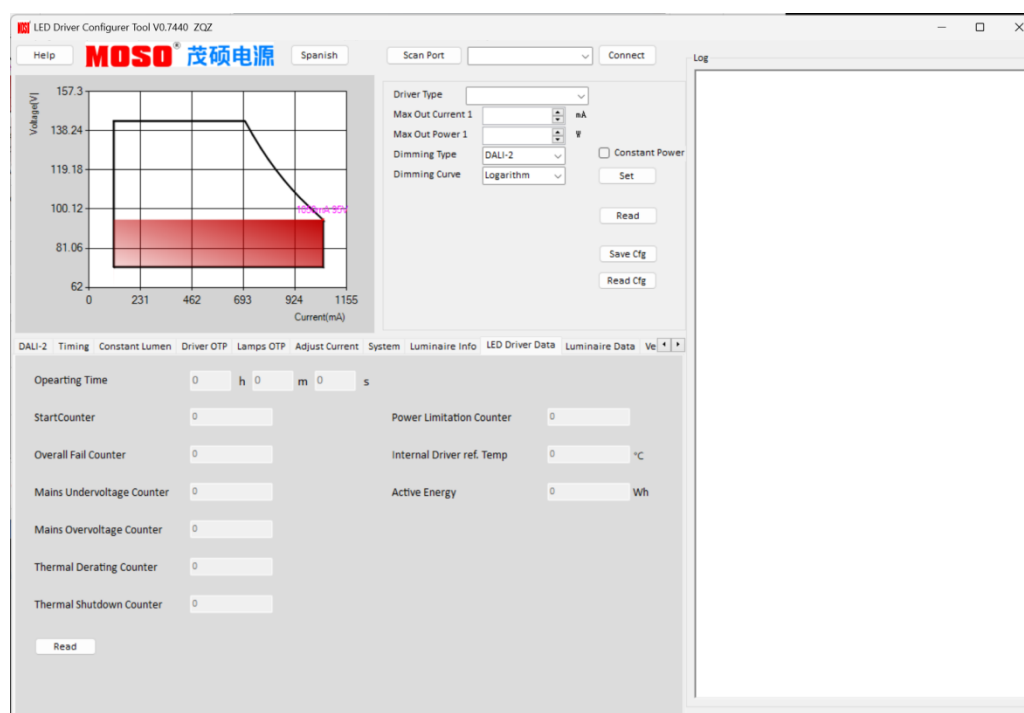
Drive Protection and Luminaire Protection

The one with the faster rate of decrease in preferential current during over- temperature protection. At the end of over-temperature protection, the lower the "OTP out Ratio" current value is set, the higher the priority is.

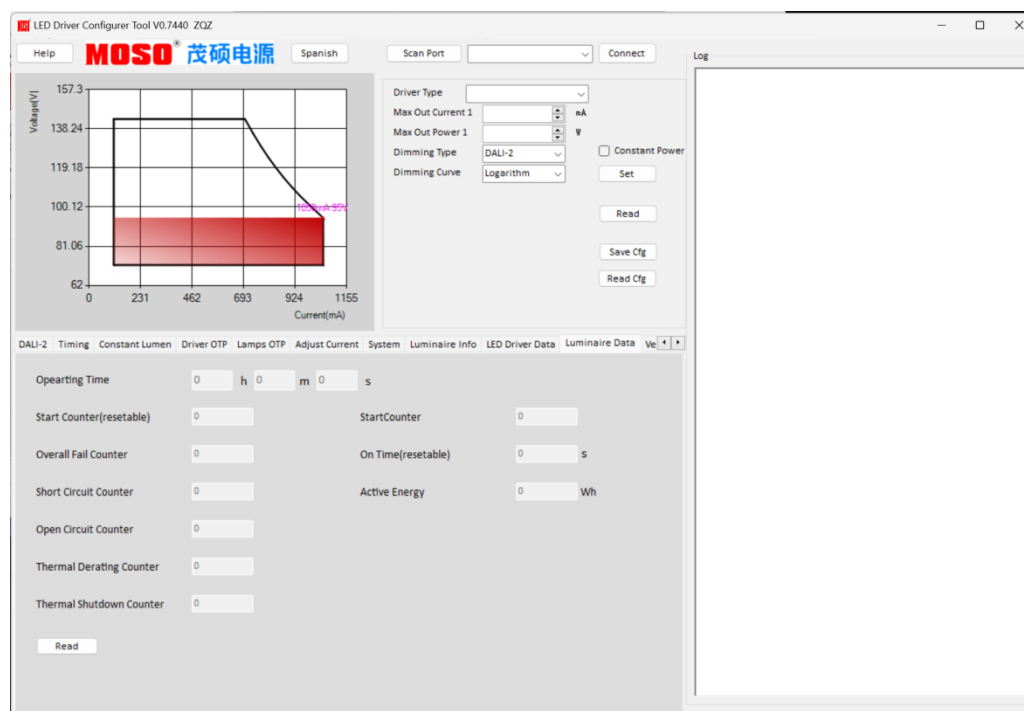




Control Gear data

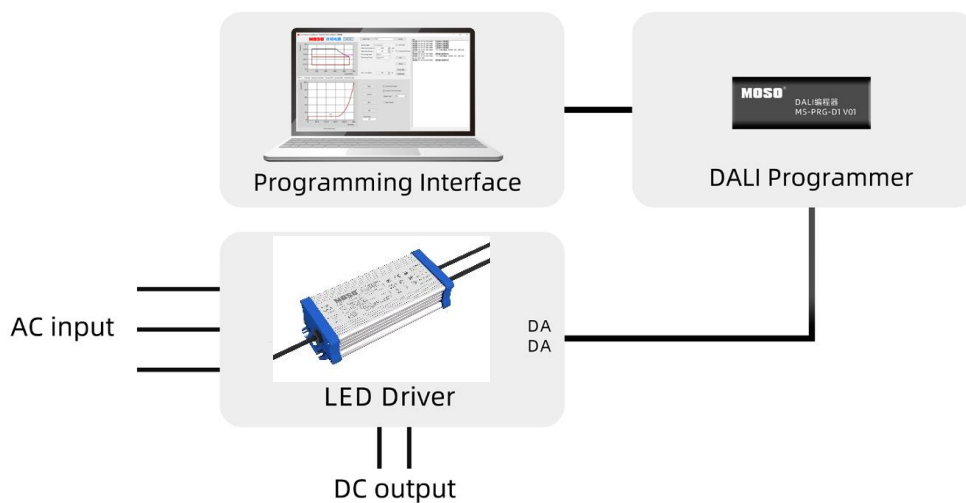


Light Source Data



Programming Link

Programming mode 1



Programming mode 2



Notes:

1. The driver does not need to be powered on during the programming process.
2. Please refer to MS-PRG-D1 or MS-PRG-N1 (Programmer) datasheet for details.
3. Applicable to FEIG programmer: ISC PRH101 and CPR30-USB

The technical drawing illustrates the dimensions and wiring for the LED strip light. The top view shows a rectangular unit with a total length of 300 ± 20 mm. The input side features three wires: BROWN, BLACK, and BLUE, with a combined width of 35 ± 10 mm and a mounting hole offset of 10 ± 2 mm. The output side has four wires: BROWN, BLUE, PURPLE, and PINK, with a combined width of 35 ± 10 mm and a mounting hole offset of 10 ± 2 mm. A DIMMING+ wire (BLACK/WHITE) is also present. The unit has a width of 72 ± 1 mm and a mounting hole diameter of $4 \times \phi 4.5$. The length of the LED strip is 195.5 ± 1.5 mm, with a total length of 204 ± 1.5 mm and a mounting hole offset of 213.5 ± 2 mm. The side view shows a height of 39 ± 1 mm and a width of 44.2 mm. A TC (Temperature Control) point is indicated at 16.6 mm from the left end.

Specification

Input	CCC+VDE 3*1.0 mm²L=300±20mm	CCC/CE
Output	CCC+VDE 2*1.0 mm²L=300±20mm	CCC/CE
Dimming+Aux	UL21996 3*22AWG L=350±20mm	UL
NTC+AUX+Dim	UL21996 5*22AWG L=350±20mm	UL

INPUT L BROWN N BLUE G BLACK MADE IN CHINA	X8-240D056 LED DRIVER Constant current type Uout = 80V --- <table border="1" data-bbox="466 1514 722 1534"> <tr> <td>INPUT</td> <td>100-277V ~ 50/60Hz, 290W Max. 3.3A Max. PF: (Pout ≥ 168W) = 0.9C-0.95</td> </tr> <tr> <td>OUTPUT</td> <td>28-56V ---, 0.685-6.85A Max. 240W</td> </tr> <tr> <td>tc: 90°C</td> <td>ta: 45°C Input: 100-200V ~ ta: 55°C Input: 200-277V ~</td> </tr> </table>	INPUT	100-277V ~ 50/60Hz, 290W Max. 3.3A Max. PF: (Pout ≥ 168W) = 0.9C-0.95	OUTPUT	28-56V ---, 0.685-6.85A Max. 240W	tc: 90°C	ta: 45°C Input: 100-200V ~ ta: 55°C Input: 200-277V ~	 I P 67 Suitable for class I/II luminaire SHENZHEN MOSO ELECTRONICS TECHNOLOGY CO., LTD No.1061, Songbai Road, Xili Town, Nanshan District, Shenzhen, CHINA	OUTPUT BROWN Vo + BLUE Vo - PURPLE DA + PINK DA - BLACK/WHITE 24V+
INPUT	100-277V ~ 50/60Hz, 290W Max. 3.3A Max. PF: (Pout ≥ 168W) = 0.9C-0.95								
OUTPUT	28-56V ---, 0.685-6.85A Max. 240W								
tc: 90°C	ta: 45°C Input: 100-200V ~ ta: 55°C Input: 200-277V ~								

Version

A.1	First release	2026-06-30

Specification for Approval

Product Name: 240W Class I/II NFC Programmable D4i Driver

Product Model: X8-240D056

Rev: A.1

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

Tel: 0755-27657000

FAX: 0755-27657908

E-mail: info@mosopower.com

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

Prepared By	Checked By	Approved By

Specification for Approval

Product Name: 240W Class I/II NFC Programmable D4i Driver

Product Model: X8-240D056

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.		

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

Tel: 0755-27657000

FAX: 0755-27657908

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

Prepared By	Checked By	Approved By