

This specification describes the performance characteristics of a 1200W/4.5A versatile power supply for LED Driver.

The output current of this series are programmable, and designed for 0-10V/PWM/Rset/DMX dimming/DALI dimming applications.



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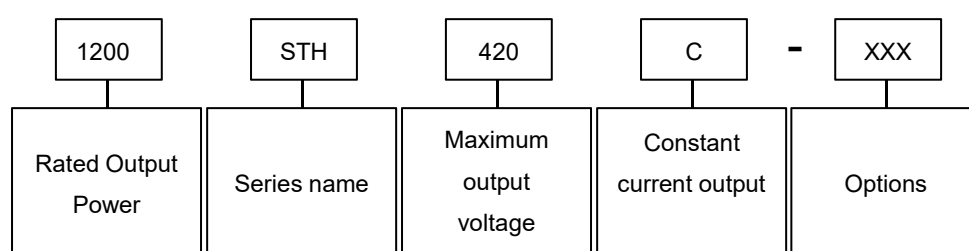
Features

- Constant current programmable outputs
- High efficiency: 96% typical @400Vac, full load
- High power factor: 0.99typical. @ 230Vac, full load
- Isolated 0-10V/PWM/ Resistor Dimming/DMX Dimming/DALI Dimming optional
- DMX512 with RDM function
- With Lightning Protection & all-round protections (OVP,OCP,SCP,OTP)
- Comply with UL8750 & EN61347-2-13 Safety Regulation
- IP66

Applications

- Stadium Lighting
- Arena Lighting

Model Name Definition



Specifications

Part Number	Max. Output Power	Programmable Current Range per channel	Output Voltage Range	Power Factor Typical		Efficiency(Typical) @400VAC
				230Vac	400Vac	
1200STH420C-PLD	1200W	2-4.5A	200-420V	0.99	0.97	96%

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input AC Voltage	180Vac	-	528Vac	
Input Frequency	47 Hz	50/60 Hz	63 Hz	
Leakage Current	-	-	0.75 mA	At 277Vac / 60Hz input , grounding effectively
Input AC Current	-	2.7A	-	Measured at full load and 480 Vac input.
	-	5.5A	-	Measured at full load and 230 Vac input.
	-	6.3A	-	Measured at full load and 200 Vac input.
Inrush Current	-	-	35A	At 277Vac input, 25°C cold start.
Inrush Current (I ² *t)	-	0.022	-	A ² Sec (50%Imax to 50%Imax)

PF	0.95	-	-	At 277Vac, 80%-100% load
THD	-	-	20%	At 200-480Vac, 80%-100% load

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%lo set	-	5%lo set	At 25°C and full load condition
Total Output Current Ripple (pk-pk)	-	-	10%lo max	At 25°C and full load condition, $\leq 200\text{Hz BW}$
Startup Overshoot Current	-	-	10%lo max	At 25°C and full load condition
Line Regulation	-	-	$\pm 3\%$	Measured at 25°C and full load
Load Regulation	-	-	$\pm 3\%$	At 25°C condition
Turn-on Delay Time	-	-	2 s	Measured at 200/277/456Vac input.
Temperature Coefficient of I _o set	-0.03%/°C	-	0.03%/°C	Case temperature = 0°C ~T _c max
OTP T _c	85°C	90°C	95°C	Output current will drop to 50%
SCP				Shut down and latch
Auxiliary Output Voltage	11V	13.5V	16V	
Auxiliary Output Current	0 mA	-	100mA	Return terminal is "0-10V(-)"

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Standby power	-	-	0.8 W	Measured at 230Vac/50Hz; Dimming off
MTBF	234,000 Hours	-	-	Measured at 230Vac input, 80%Load and 25 ° C ambient temperature (MIL-HDBK-217F)
Lifetime	97,000 Hours	-	-	Measured at 230Vac input, 80%Load and 60 ° C case temperature; See lifetime vs. T _c curve for the details
Operating Case Temperature T _c	-40°C	-	90°C	
Operating Ambient Temperature T _a	-40°C	-	50°C	220-480Vac input
	-40°C	-	45°C	200-220Vac input
Storage Temperature	-40°C	-	85°C	Humidity: 5%RH to 90%RH
Dimensions				
Inches (L × W × H)	16×5.92×3.09			
Millimeters (L × W × H)	406.4×150.4×78.5			
Net Weight/pcs	-	4.65kg	-	

Dimming Specifications

Dimming	Explain
DALI2.0	Part 101/102/207/251/252/253
DMX	RDM
0-10V	Programmable
PWM	Programmable

RDM Protocol for the DMX dimming

The RDM protocol is a bidirectional communication protocol based on the standard DMX512 protocol, which allows users to Configure, monitor, and query remote devices. The RDM protocol adds control to the DMX signal by adding control Information packets are used to achieve communication with devices.

The following are the registers supported by the RDM Protocol:

No	Address	Param	Value	R/W
Network Management(default)				
1	0x0001	DISC_UNIQUE_BRANCH		
2	0x0002	DISC_MUTE		
3	0x0003	DISC_UN_MUTE		
RDM Information(default)				
1	0x0050	SUPPORTED_PARAMETERS		R
2	0x0051	PARAMETER_DESCRIPTION		R
3	0x0060	DEVICE_INFO		R
4	0x00C0	SOFTWARE_VERSION_LABEL		R
5	0x00F0	DMX_START_ADDRESS		R/W
6	0x1000	IDENTIFY_DEVICE		R/W
RDM Information				
1	0x0080	DEVICE_MODEL_DESCRIPTION		R
2	0x0081	MANUFACTURER_LABEL	POWERLAND	R
3	0x0082	DEVICE_LABEL		R/W
4	0x00E0	DMX_PERSONALITY		R/W
5	0x0120	SLOT_INFO		R
6	0x0121	SLOT_DESCRIPTION		R
7	0x0200	SENSOR_DEFINITION	Voltage,Current,Temp	R
8	0x0201	SENSOR_VALUE		R
9	0x0400	DEVICE_HOURS		R
10	0x0403	LAMP_STATE		R
11	0x0405	DEVICE_POWER_CYCLES		R

0-10V and PWM Dimming Specifications

Parameter	Min.	Typ.	Max.	Notes
Absolute Maximum Voltage on the Vdim (+) Pin	-1 V	-	15 V	
Source Current on Vdim (+)Pin	90uA	100uA	110uA	
Recommended Dimming Input Range	0 V	-	10 V	Default 0-10V dimming mode.
PWM_in High Level	3 V	5V	10 V	PWM is disabled default, please inform us if need this function enable.
PWM_in Low Level	-0.3 V	-	0.6 V	
PWM_in Frequency Range	500 Hz	-	3 KHz	
PWM_in Duty Cycle	1%	-	100%	

Safety & EMC Compliance

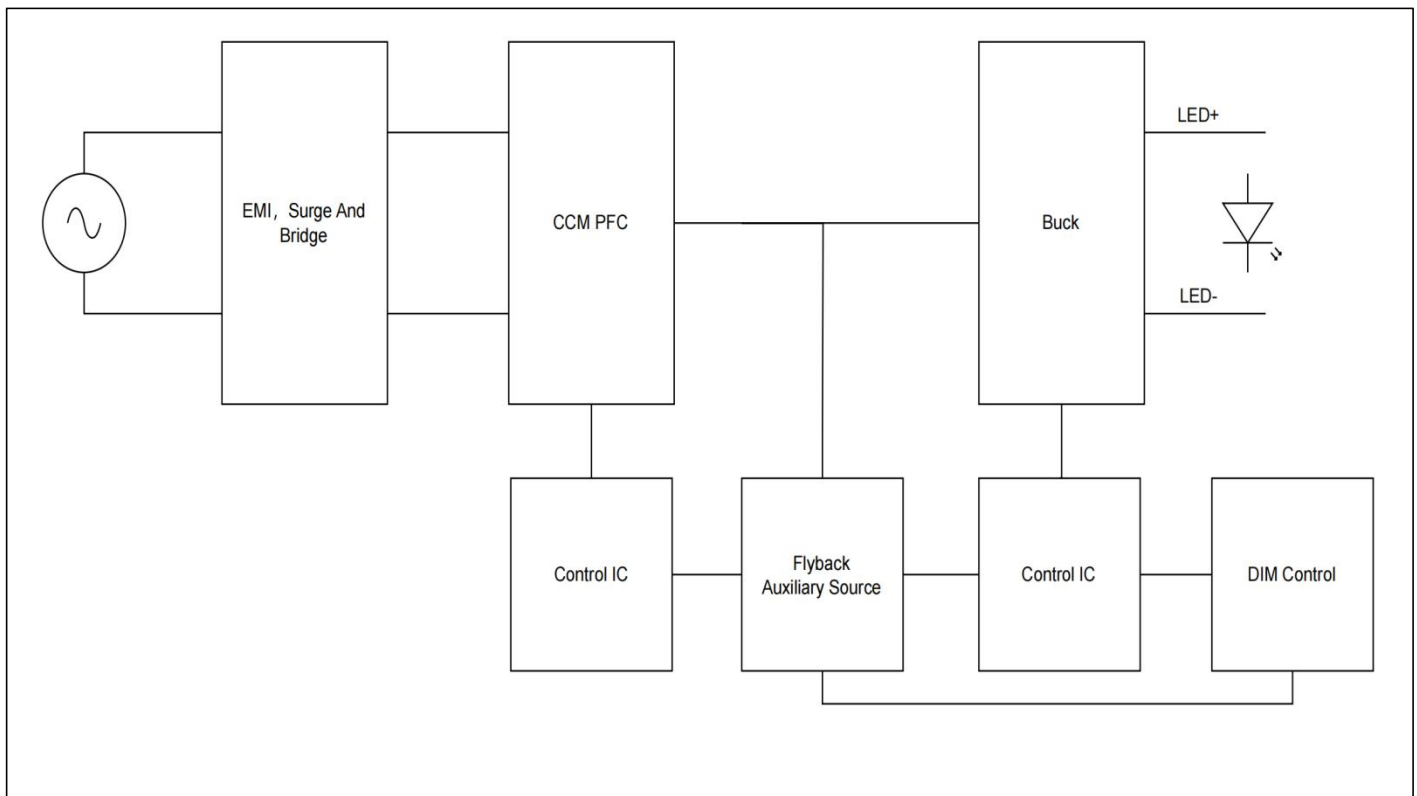
Safety Category	Standard
UL/CUL	UL8750,CAN/CSA-C22.2 No. 250.13-12
ENEC & CE-LVD	EN 61347-1, EN 61347-2-13, EN62384
CB	IEC 61347-1, IEC 61347-2-13
Dielectric Strength(Hi-pot)	Primary to Dimming: 4000Vac 10mA max
	Primary to Earth: 2000Vac 10mA max.
	Secondary to Earth: 500Vac 10mA max.
Insulation Resistance	50Mohm min.@ primary to secondary add 500Vdc test voltage
Grounded Resistance	0.1 Ω max. @ 25A, 1 minute
EMI Standards	Notes
FCC Part 15	ANSI C63.4:2009 Class B
	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired Operation.
EMS Standards	Notes
EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge, criteria A
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS, criteria A
EN 61000-4-4	Electrical Fast Transient / Burst-EFT: level 3, criteria A
EN 61000-4-5	Surge Immunity Test: AC Power Line: line to line 10 kV, line to earth 10 kV, criteria B
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS, criteria A
EN 61000-4-8	Power Frequency Magnetic Field Test, criteria A
EN 61000-4-11	Voltage Dips, criteria C
EN IEC 61547	Electromagnetic Immunity Requirements Applies To Lighting Equipment

Note: This LED driver meets the EMI specifications above, but EMI performance of a luminaire that contains it depends also on the other devices connected to the driver and on the fixture itself.

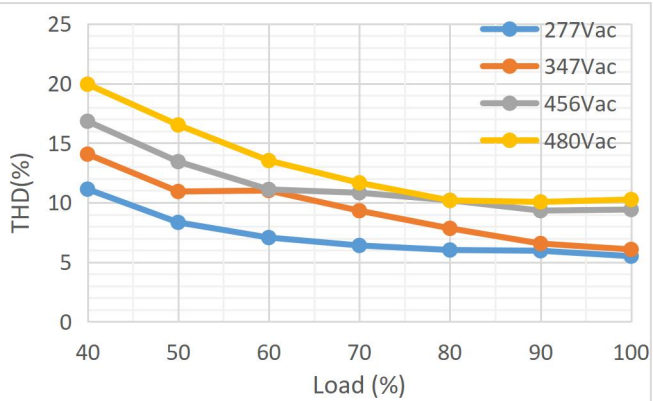
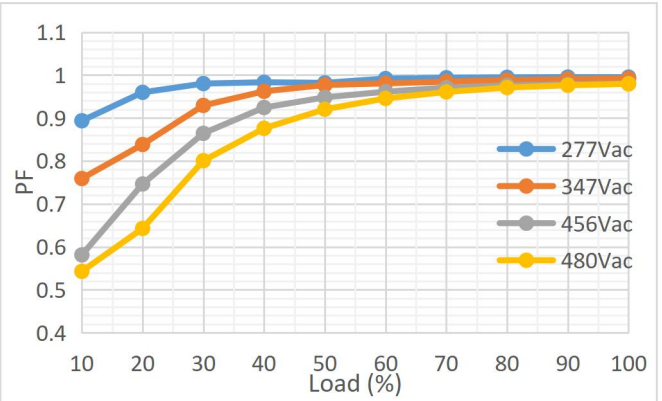
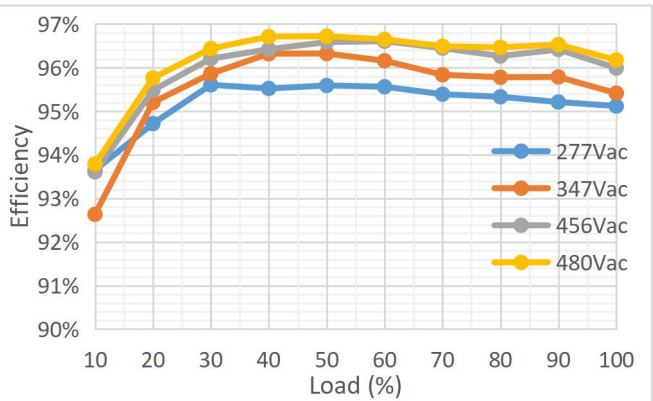
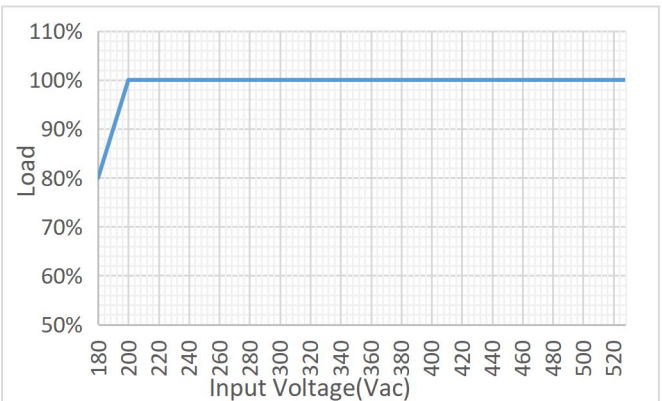
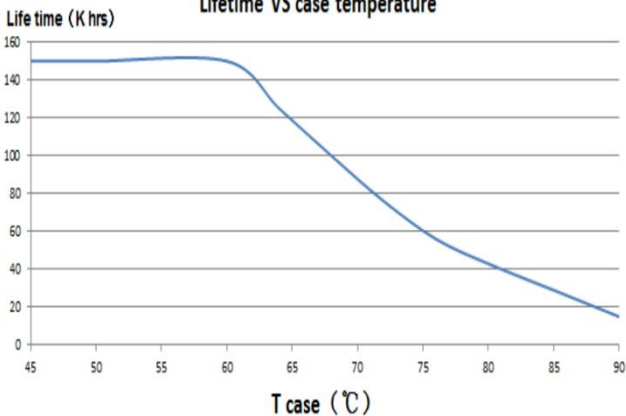
Isolation

Isolation	AC Input	DC Output	Dimming (SELV)	Housing
AC Input	/	No isolation	Double isolation	Basic
DC Output	No isolation	/	Double isolation	Basic
Dimming (SELV)	Double isolation	Double isolation	/	Basic
Housing	Basic	Basic	Basic	/

Block Diagram



Performance Curve

Total Harmonics Vs Different Loads

Power Factor Vs Different Loads

Efficiency Vs Different Loads

Input Voltage Derating Curve

Lifetime VS case temperature


Inrush Current Data

The maximum number of LED drivers connectable to a single MCB is reported in the following table for each nominal input voltage. Due to the different kinds of circuit breakers available on the market, this table is just for reference.

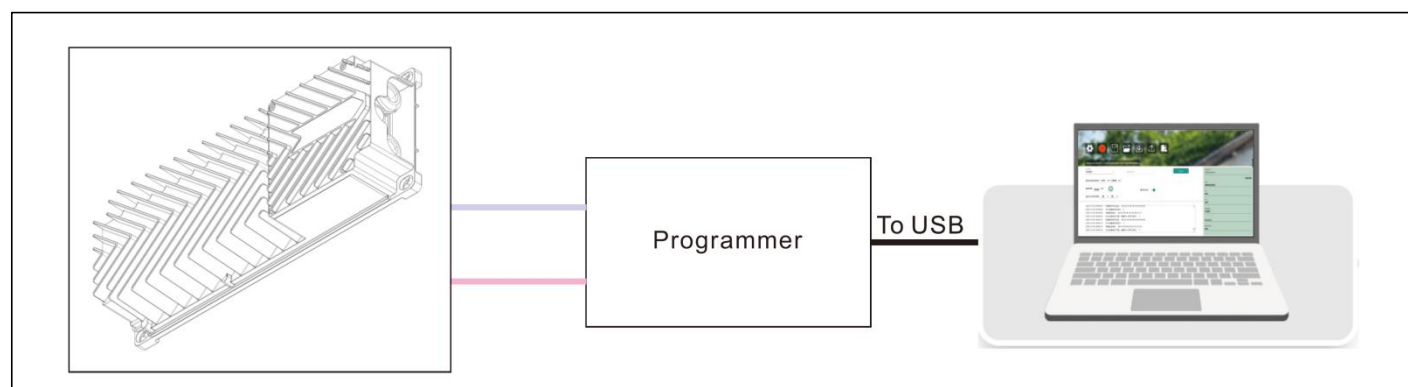
Vin	Inrush Current data		Drivers for Each circuit Breaker											
Nominal (Vac)	I peak(A)	T inrush(ms)	type B 10A	type B 16A	type B 20A	type B 25A	type C 10A	type C 16A	type C 20A	type C 25A	type D 10A	type D 16A	type D 20A	type D 25A
277	13.2	0.252	1	2	3	4	1	2	3	4	1	2	3	4
380	18	0.384	1	2	2	3	2	3	4	5	2	3	4	6
480	25.6	0.29	1	1	1	2	1	2	3	3	3	4	6	7

Vin(Vac)	Fin(Hz)	I inrush(A)	T inrush(ms)
277	60	13.2	0.252
380	50	18	0.384
480	63	25.6	0.29

Note:

test equipment: Regenerative Grid Simulator IT7915-350-90

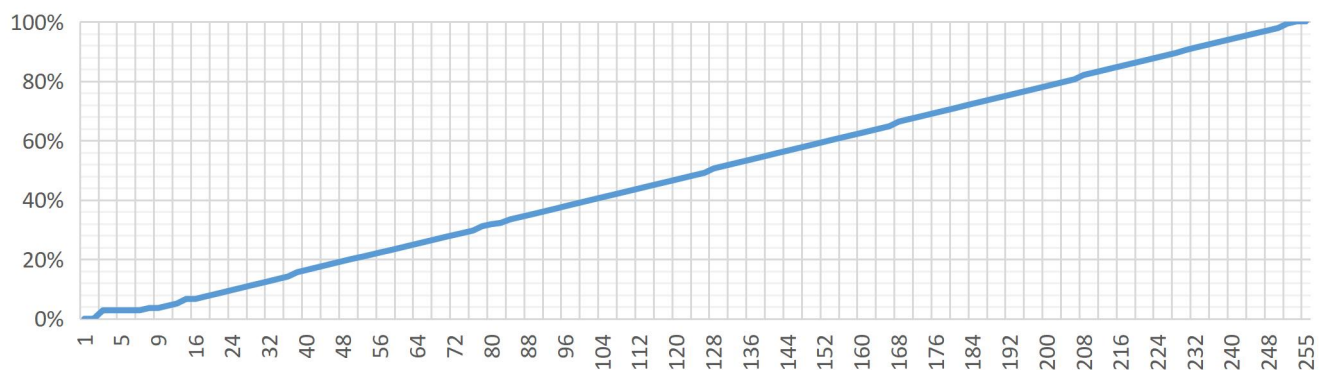
Programming



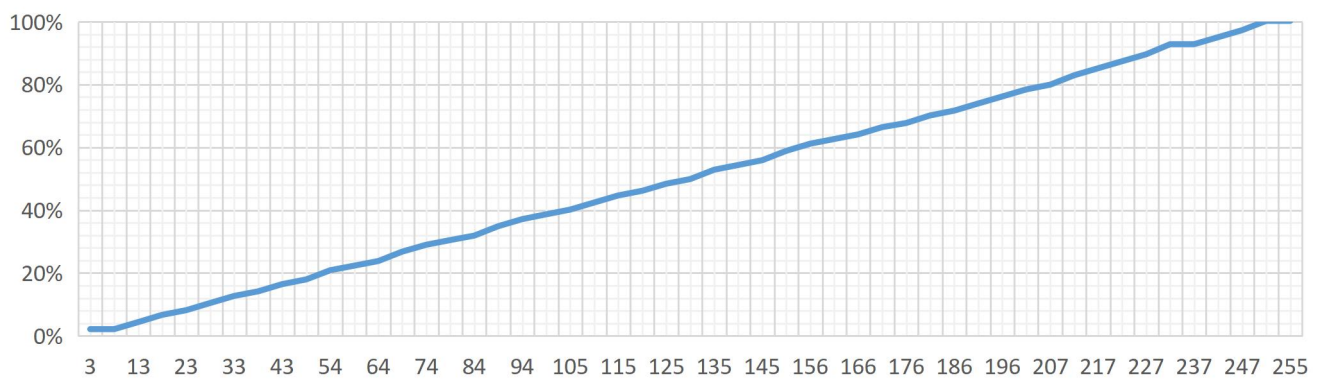
Note: Contact business personnel to take the software installation package.

Dimming Curve

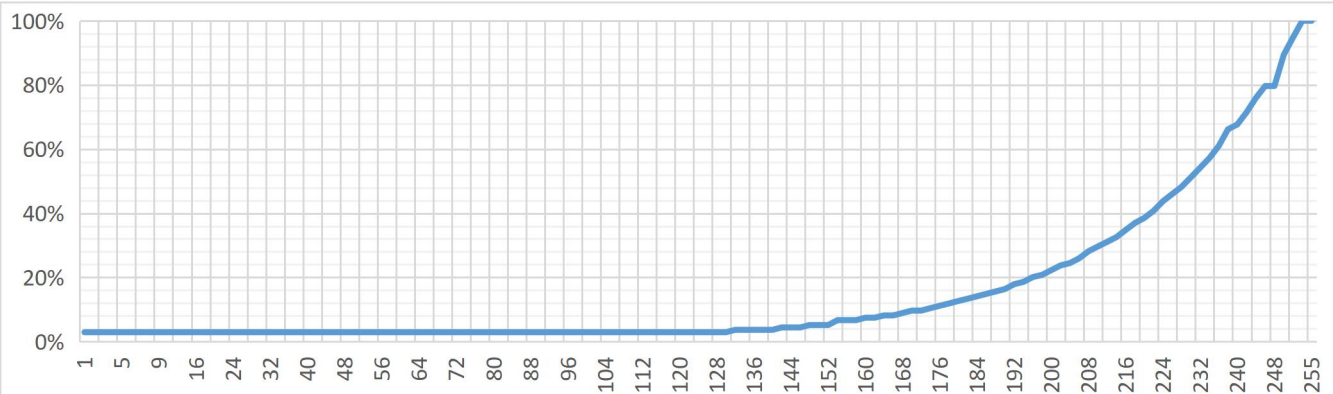
DMX Dimming Curve



DALI Linear Dimming Curve

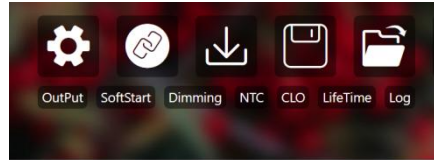


DALI Logarithm Dimming Curve



NTC

The drive has the option of external temperature protection. On the internal connector, an external NTC lead can be selected for temperature protection. Do not connect the external NTC protection cable when it is not needed. In the setting of the programmer, there is a column of NTC selection.

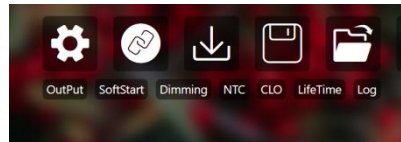


☐ Enable NTC Protection

Please Select NTC Mode

If use the NTC function, select “Enable NTC Protection”. The recommended normal temperature resistance of external selected NTCS is 100K ohms. Place at the end of high temperature device to be detected.

After clicking with this function. The NTC temperature protection mode and temperature point can be set. There are two situations, step protection and linear protection.



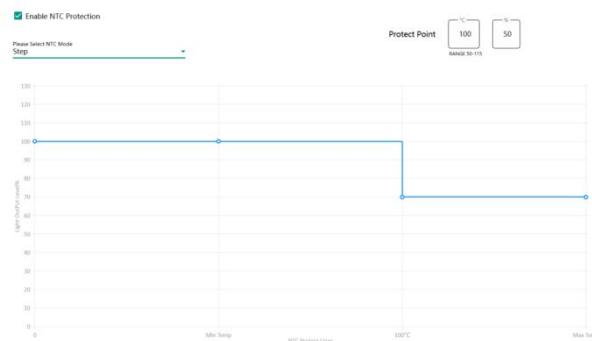
☒ Enable NTC Protection

Please Select NTC Mode

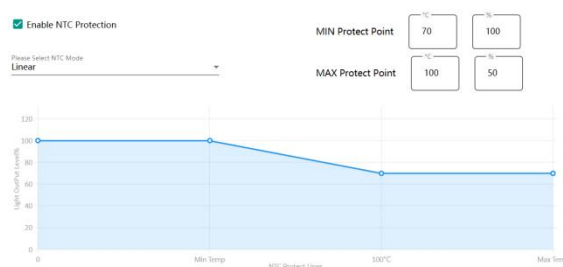
Step

Linear

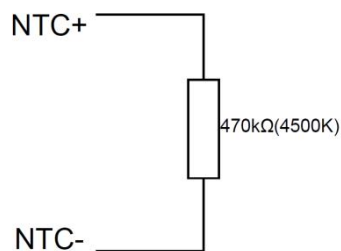
When setting step protection, it will immediately derate to the set ratio while reaching the designed temperature. As can be seen from the setting interface, both the protection temperature and the derating ratio when reaching the protection temperature can be set in the programmer.



If you choose linear protection. As you can see from the figure below, you can set the temperature protection point at which the descent begins, and the maximum temperature protection. And the power drop amplitude when the maximum temperature protection point is reached.



NTC connection mode:



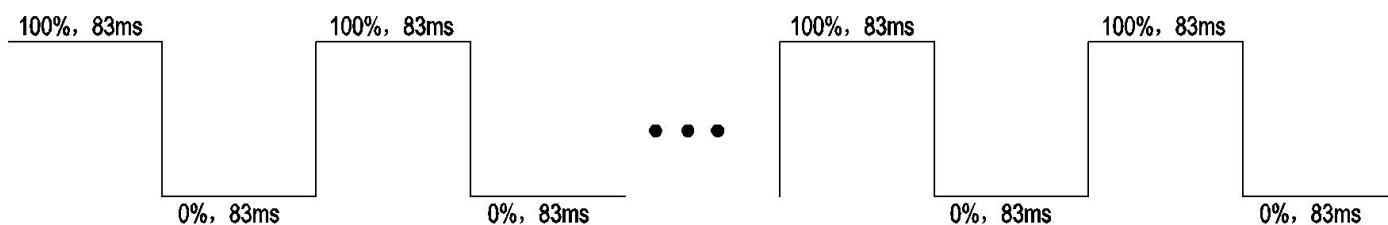
Recommended NTC resistor:

Sunlord P/N: CMF474F4500FB0805

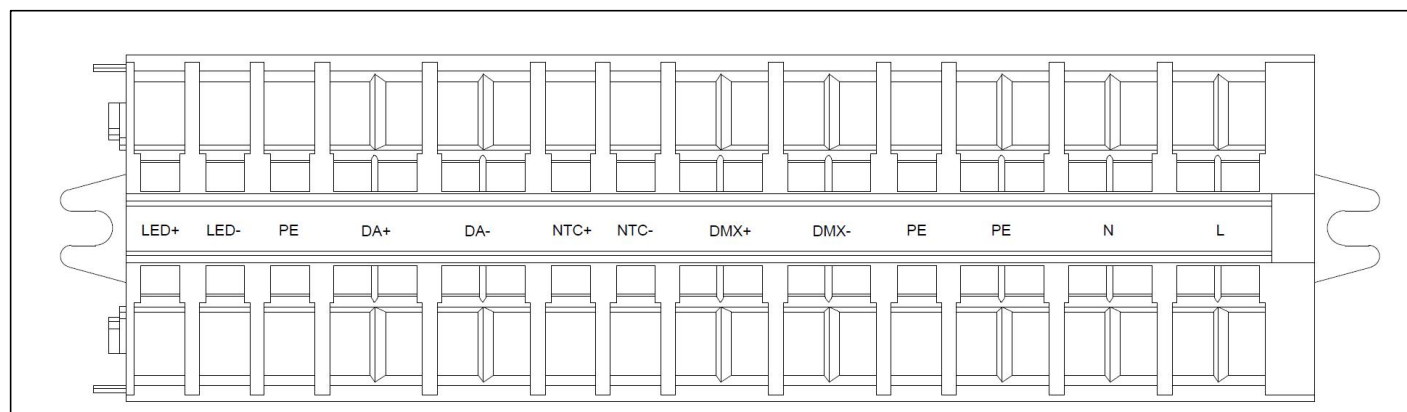
Strobe function With DMX Control

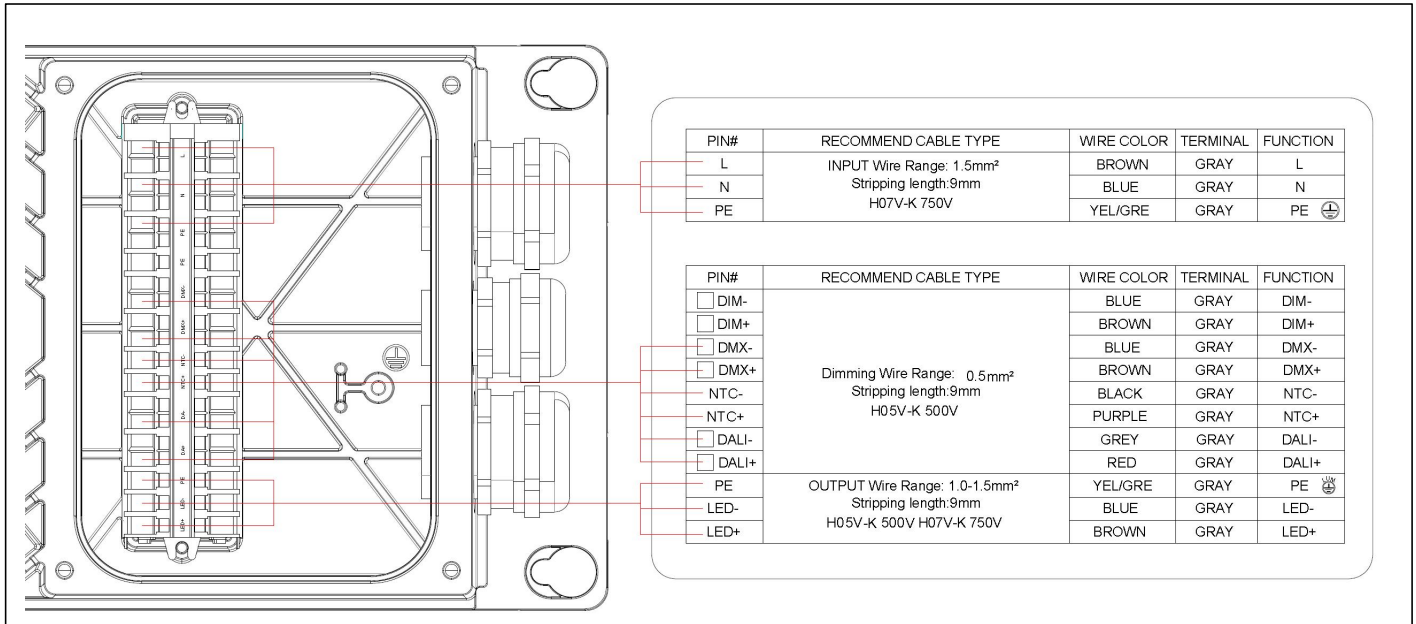
The driver supports strobe function up to 12 fps from 100% dimming to 0% change forth and back.

Less than 7fps is recommended.

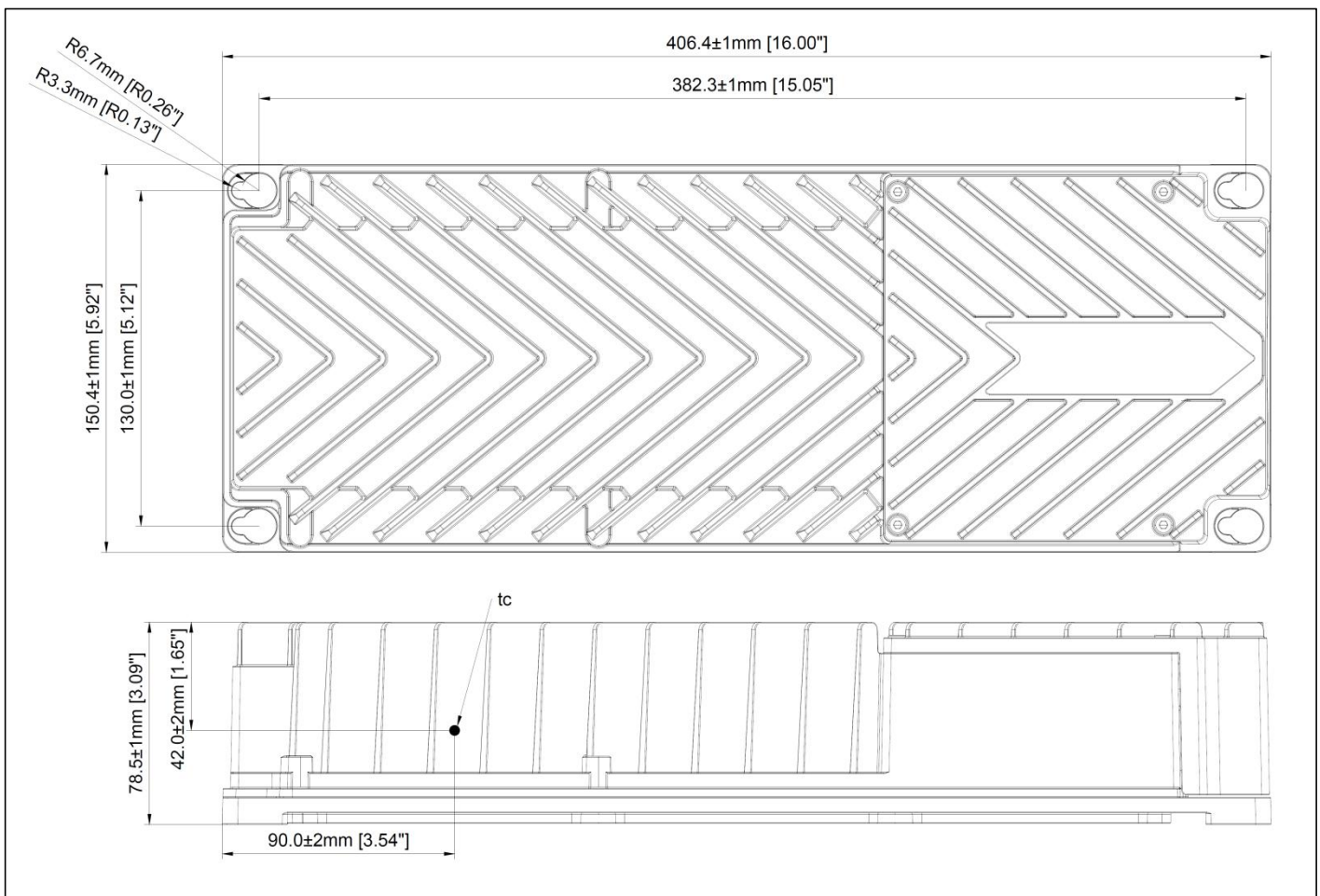


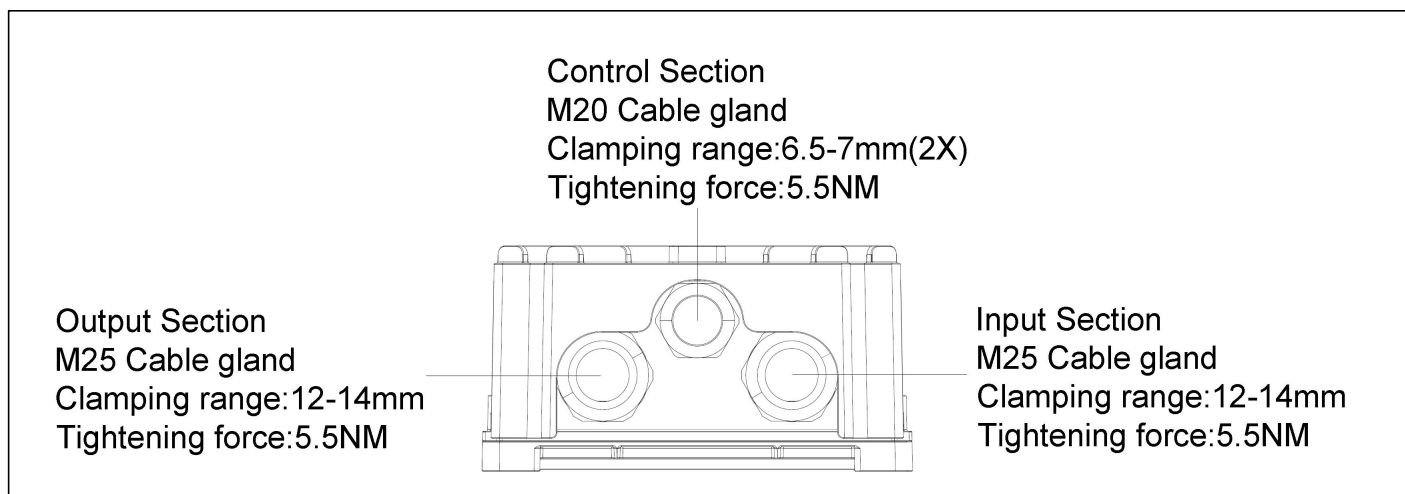
Definition Of Cabling Interface





Mechanical Drawing

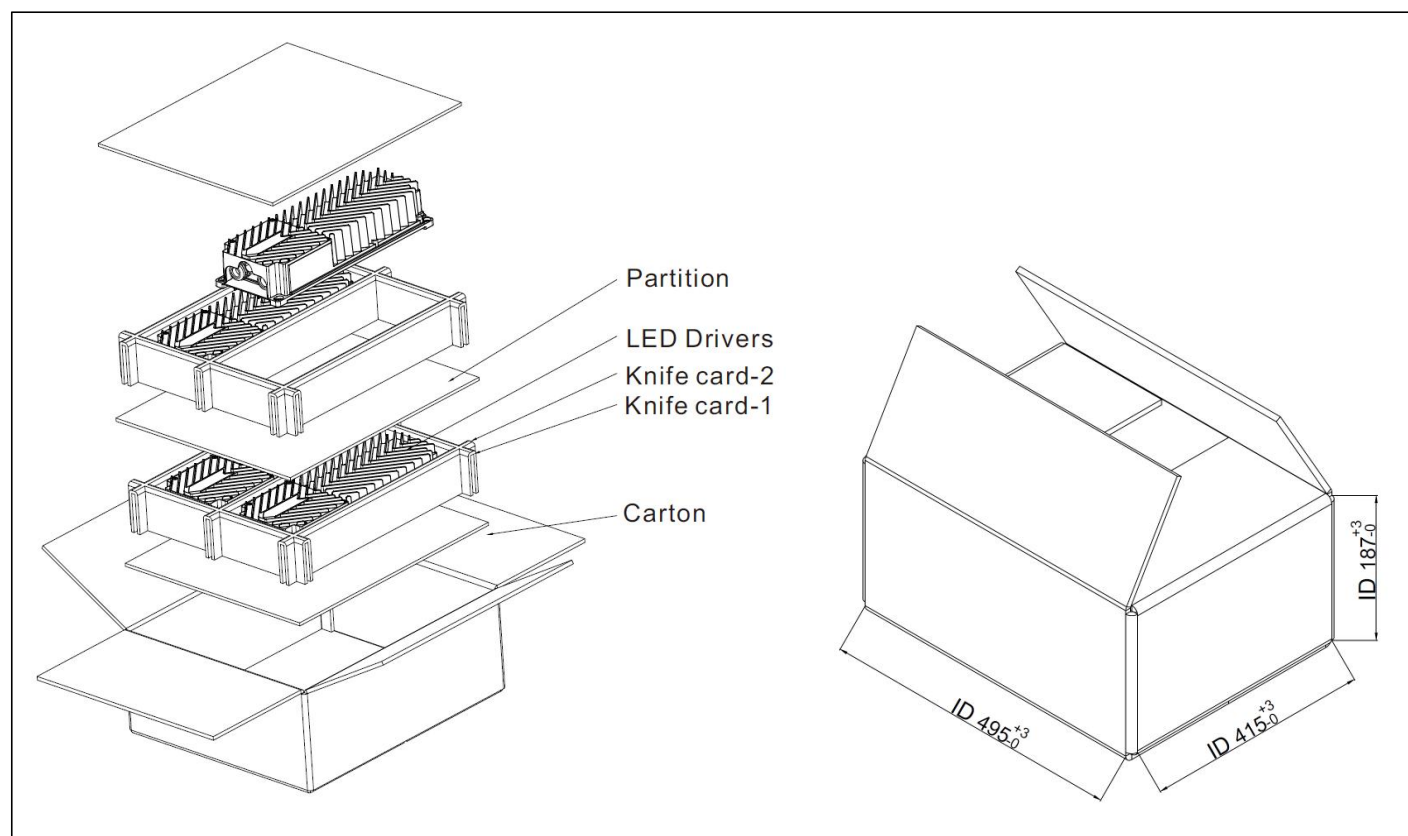




NOTE: The DMX、DALI dimming and dimming can only use one at the same time.

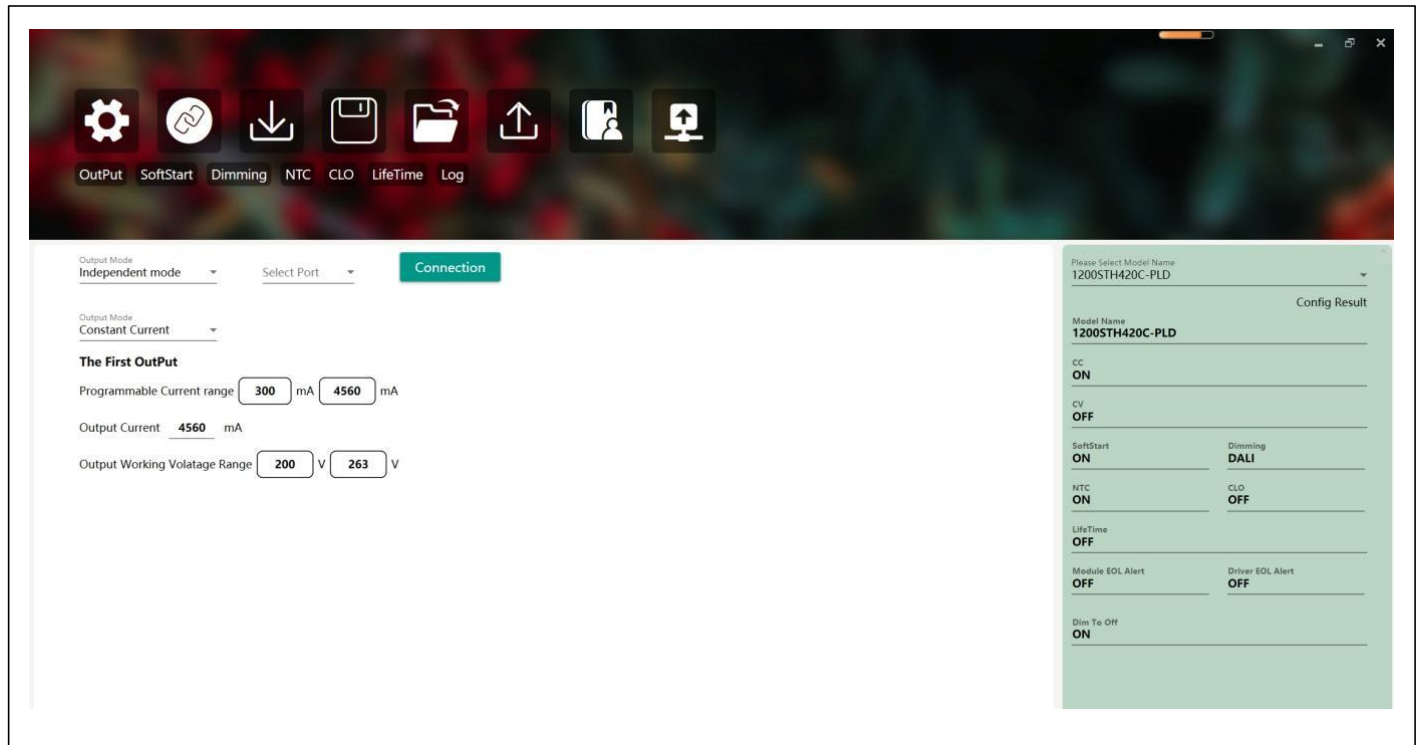
Package

Carton	L×W×H = mm× mm× mm
Knife card-1	4pcs/carton
Knife card-2	6pcs/carton
LED Drivers	4pcs/carton
Net weight	4.65kg/pcs
Gross weight	20.5kg/carton
Transportation seismic grade	GB/T 4857.7-2005



Description of upper computer software

1. Output mode



The screenshot shows the 'Output' tab selected in the top navigation bar. The main configuration area includes:

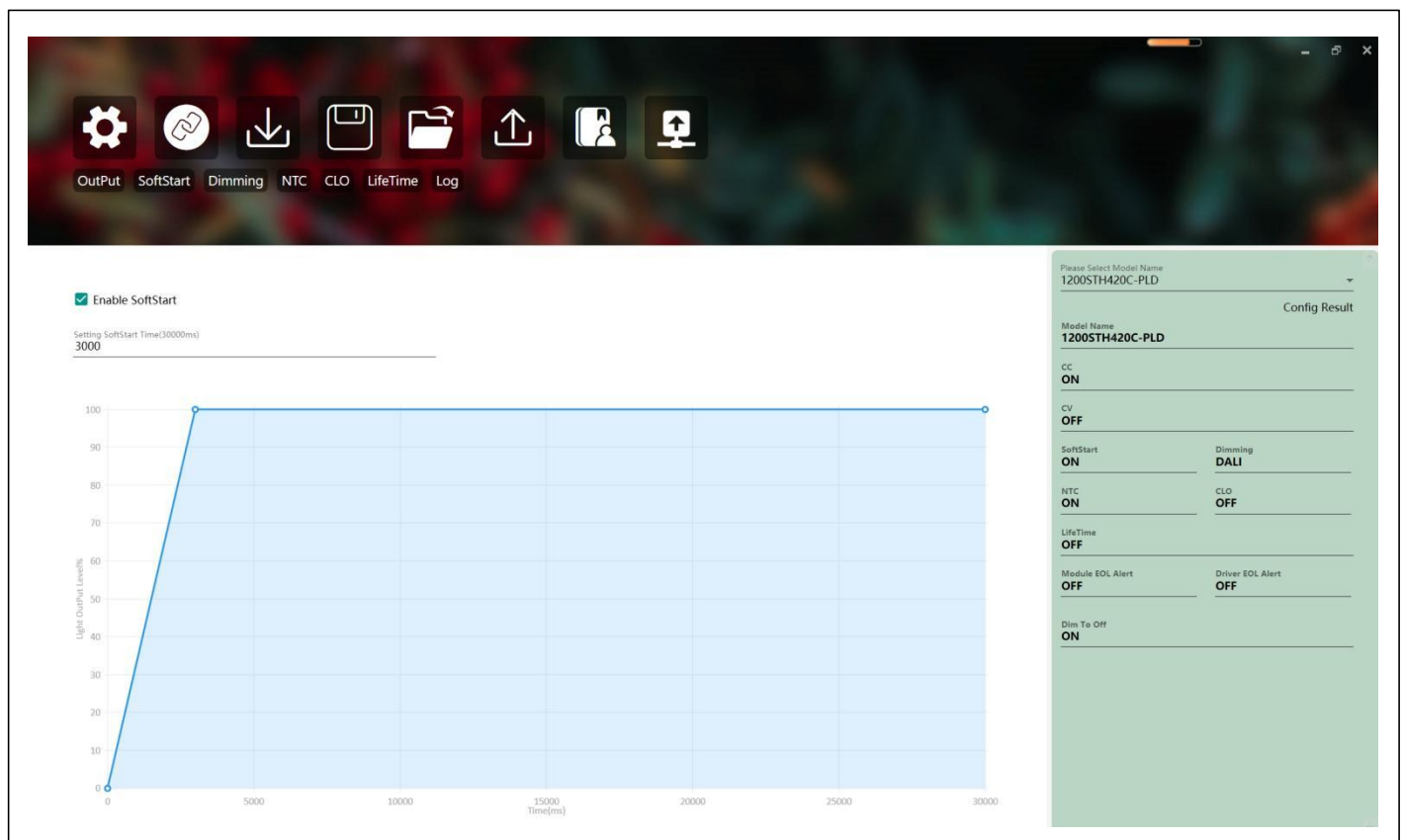
- Output Mode:** Set to 'Independent mode'.
- Select Port:** A dropdown menu.
- Connection:** A green button.
- Output Mode:** Set to 'Constant Current'.
- The First OutPut:**
 - Programmable Current range:** 300 mA to 4560 mA.
 - Output Current:** 4560 mA.
 - Output Working Volatage Range:** 200 V to 263 V.

On the right, the 'Config Result' panel shows the model name '1200STH420C-PLD' and various status indicators:

- CC: ON
- CV: OFF
- SoftStart: ON
- Dimming: DALI
- NTC: ON
- CLO: OFF
- LifeTime: OFF
- Module EOL Alert: OFF
- Driver EOL Alert: OFF
- Dim To Off: ON

2. SoftStart mode

The soft start can be set according to the demand.



The screenshot shows the 'SoftStart' tab selected in the top navigation bar. The main configuration area includes:

- Enable SoftStart:** Checked.
- Setting SoftStart Time(30000ms):** 3000.

A graph titled 'Light Output Levels' vs 'Time(ms)' shows a linear ramp from 0 to 100% output over 3000ms, then remaining constant at 100% until 30000ms.

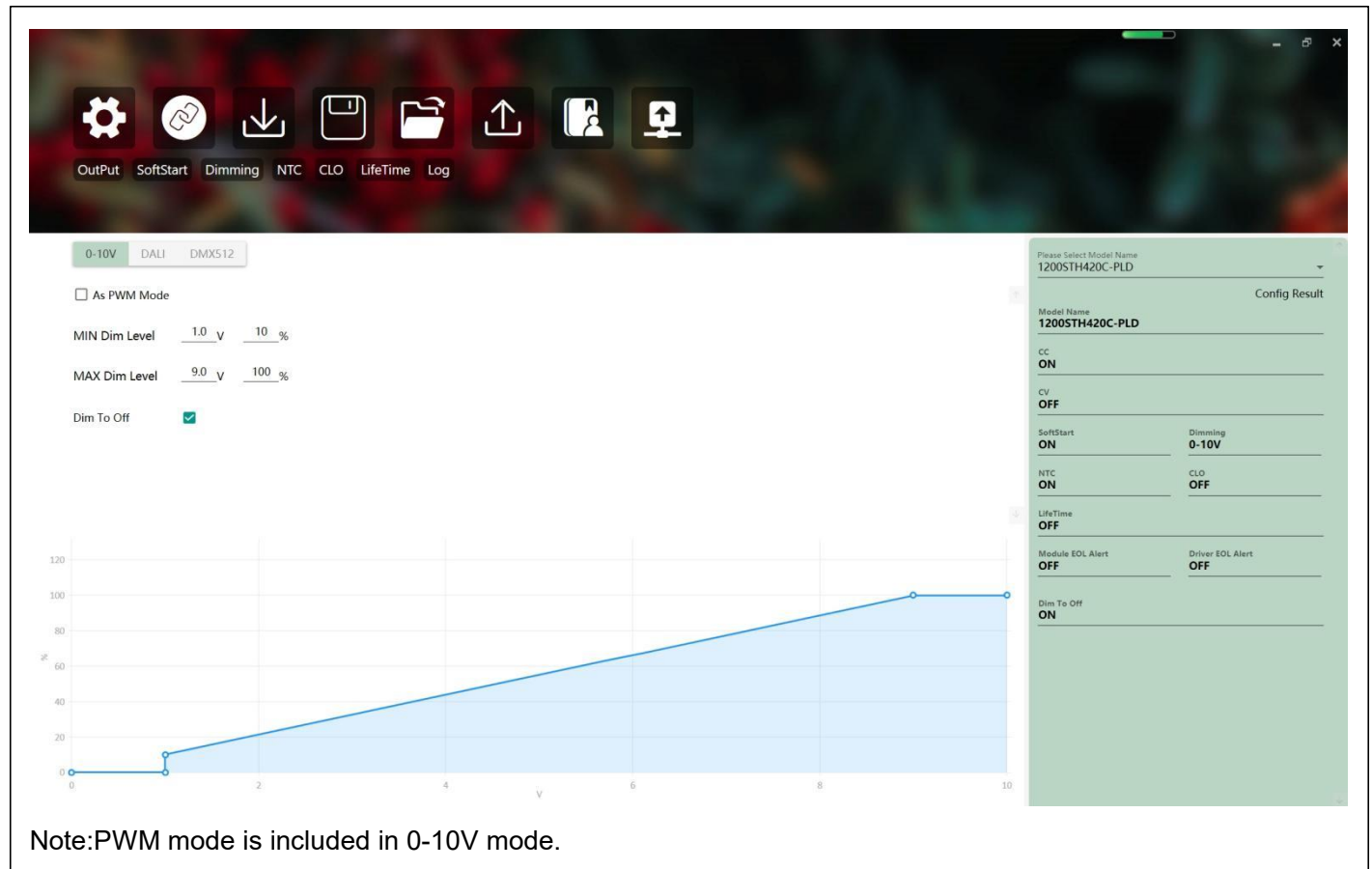
On the right, the 'Config Result' panel shows the model name '1200STH420C-PLD' and various status indicators:

- CC: ON
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- NTC: ON
- CLO: OFF
- LifeTime: OFF
- Module EOL Alert: OFF
- Driver EOL Alert: OFF
- Dim To Off: ON

3. Dimming mode

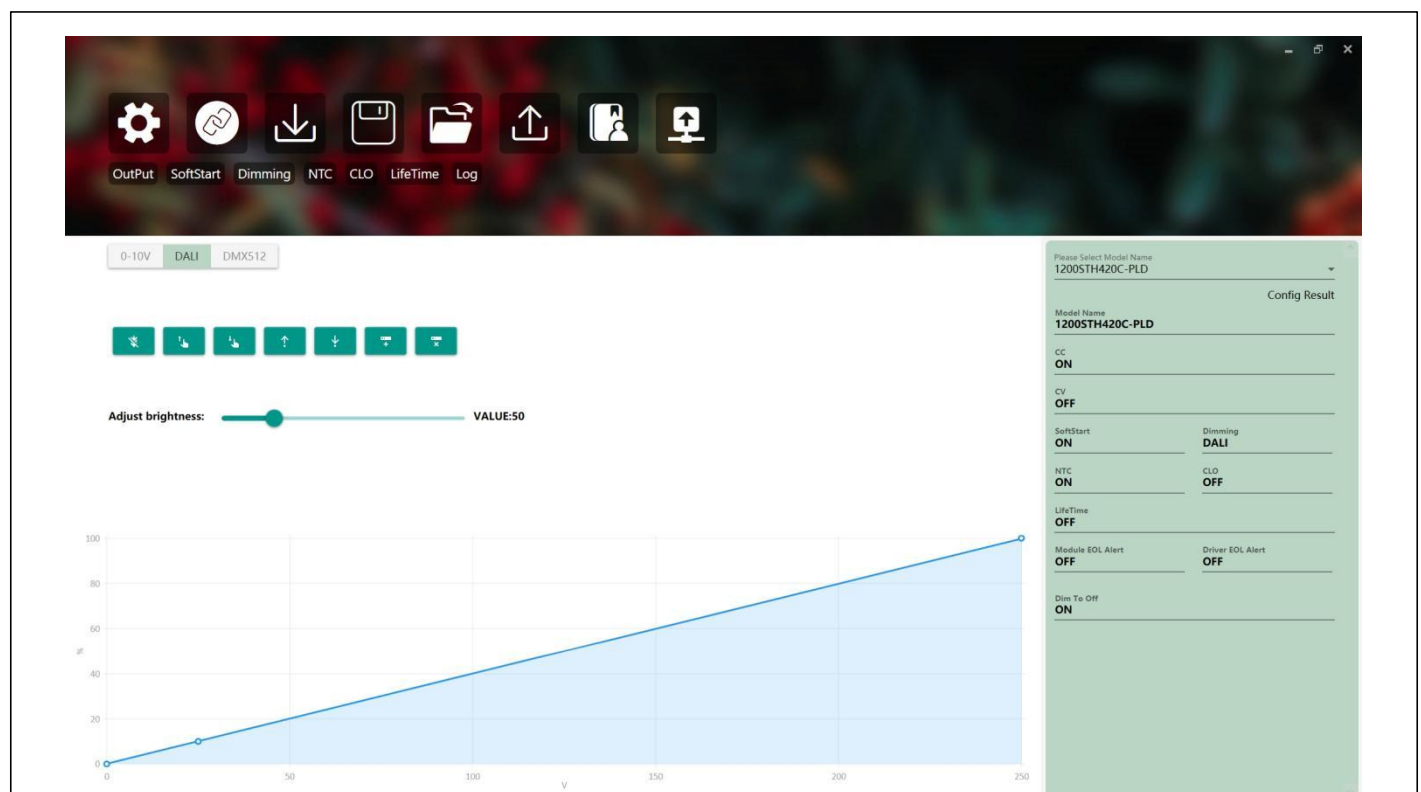
The dimming have 0-10V, DALI and DMX512 modes.

1). 0-10V mode

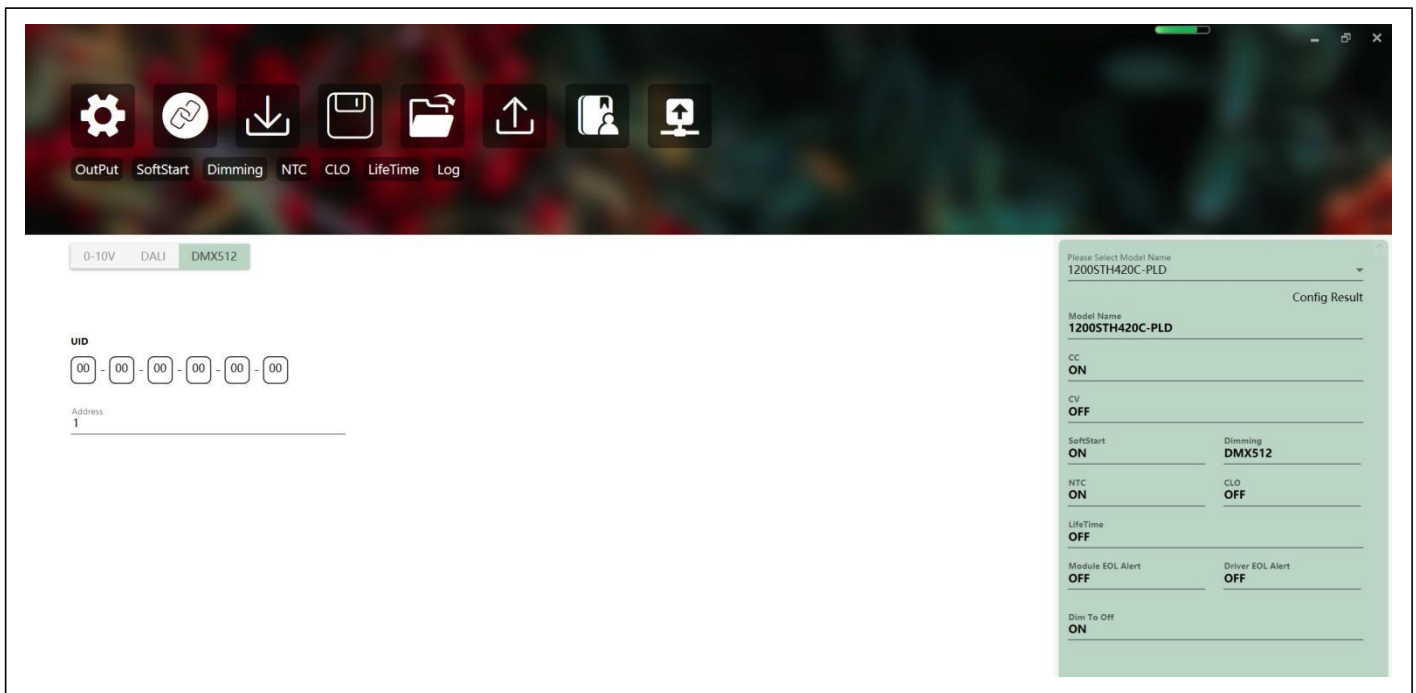


Note: PWM mode is included in 0-10V mode.

2). DALI mode



3). DMX512 mode



0-10V DALI **DMX512**

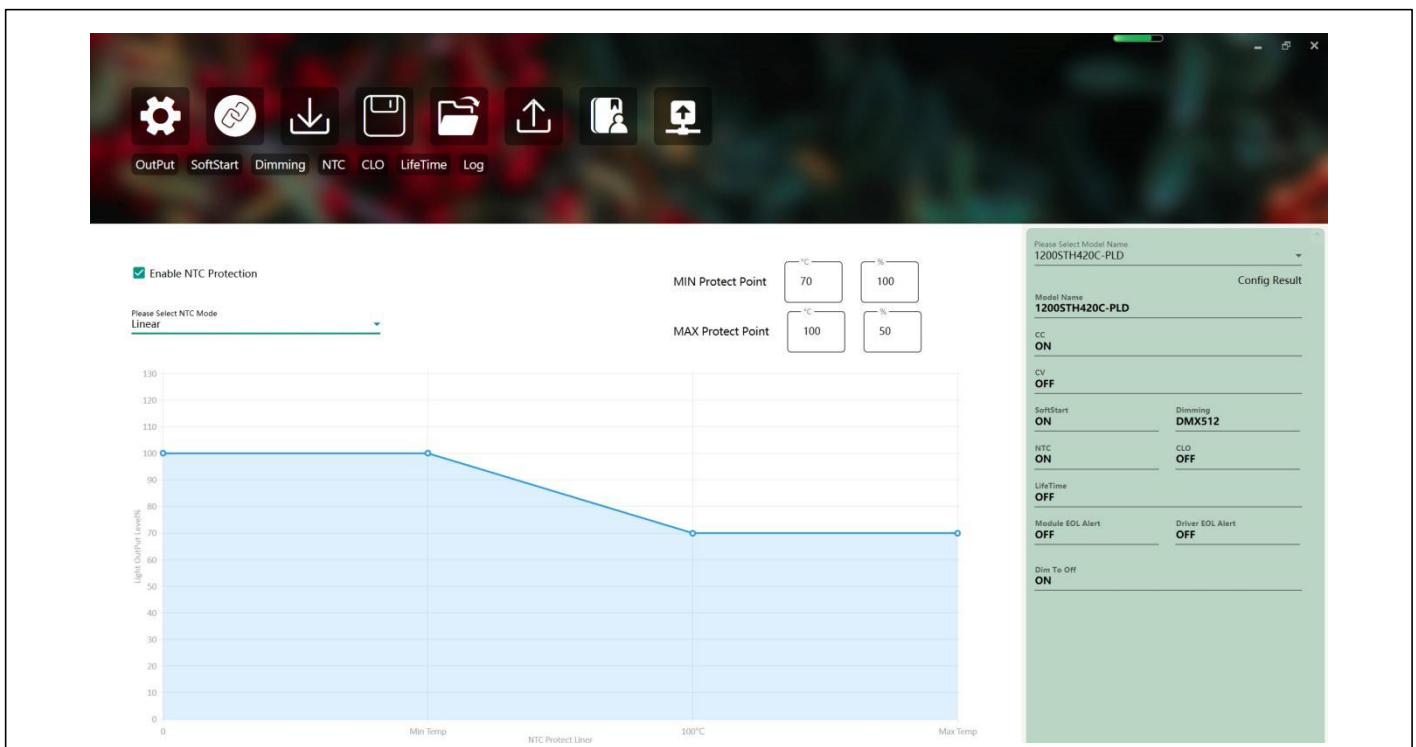
UID: 00 - 00 - 00 - 00 - 00 - 00

Address: 1

Config Result:

Please Select Model Name 1200STH420C-PLD	
Model Name 1200STH420C-PLD	
CC	ON
CV	OFF
SoftStart	ON
Dimming	DMX512
NTC	ON
CLO	OFF
LifeTime	OFF
Module EOL Alert	OFF
Driver EOL Alert	OFF
Dim To Off	ON

4. NTC mode



Enable NTC Protection ☒

Please Select NTC Mode
Linear

MIN Protect Point: 70 °C, 100 %

MAX Protect Point: 100 °C, 50 %

Light Output (%)

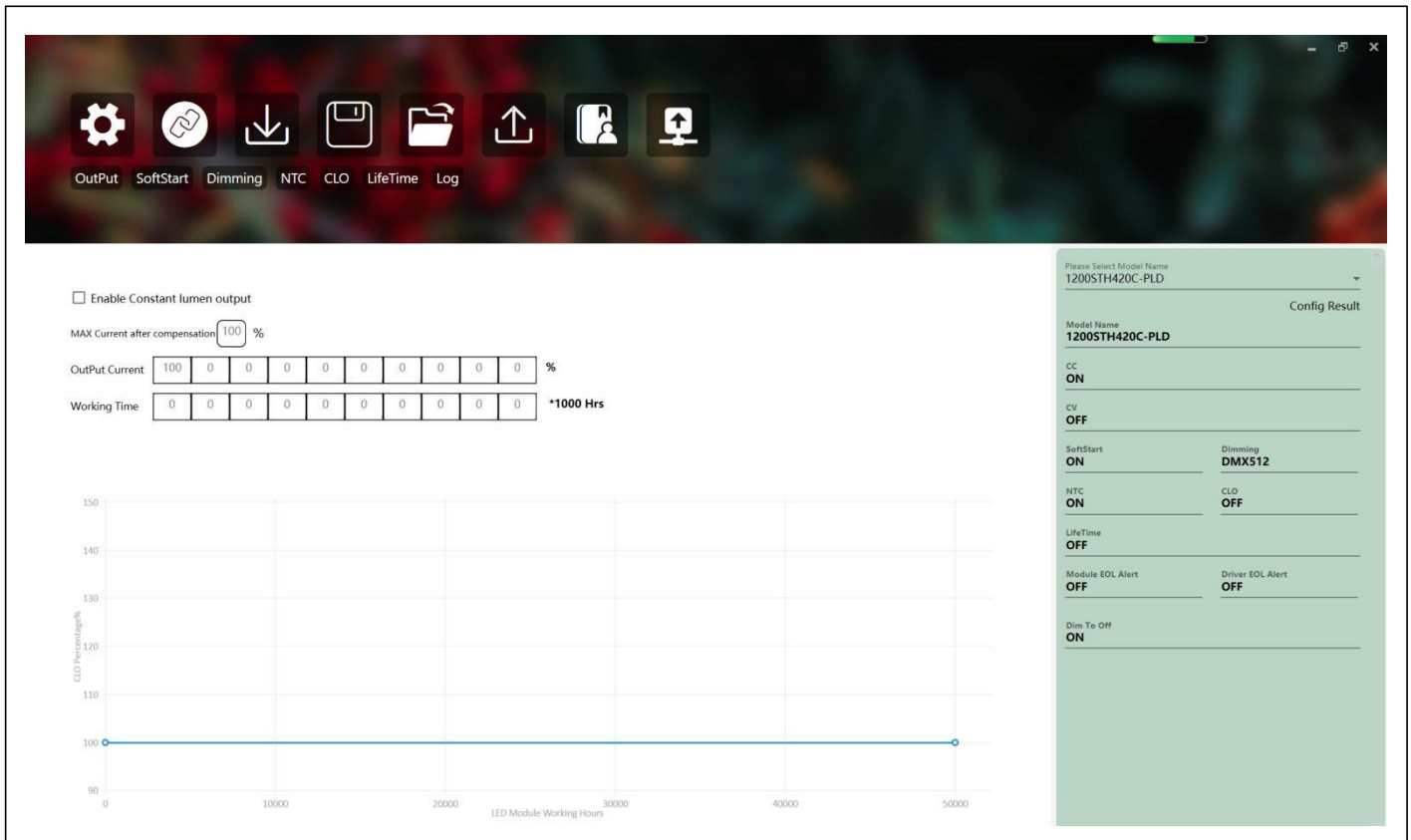
0 10 20 30 40 50 60 70 80 90 100 110 120 130

0 Min Temp NTC Protect Linear 100°C Max Temp

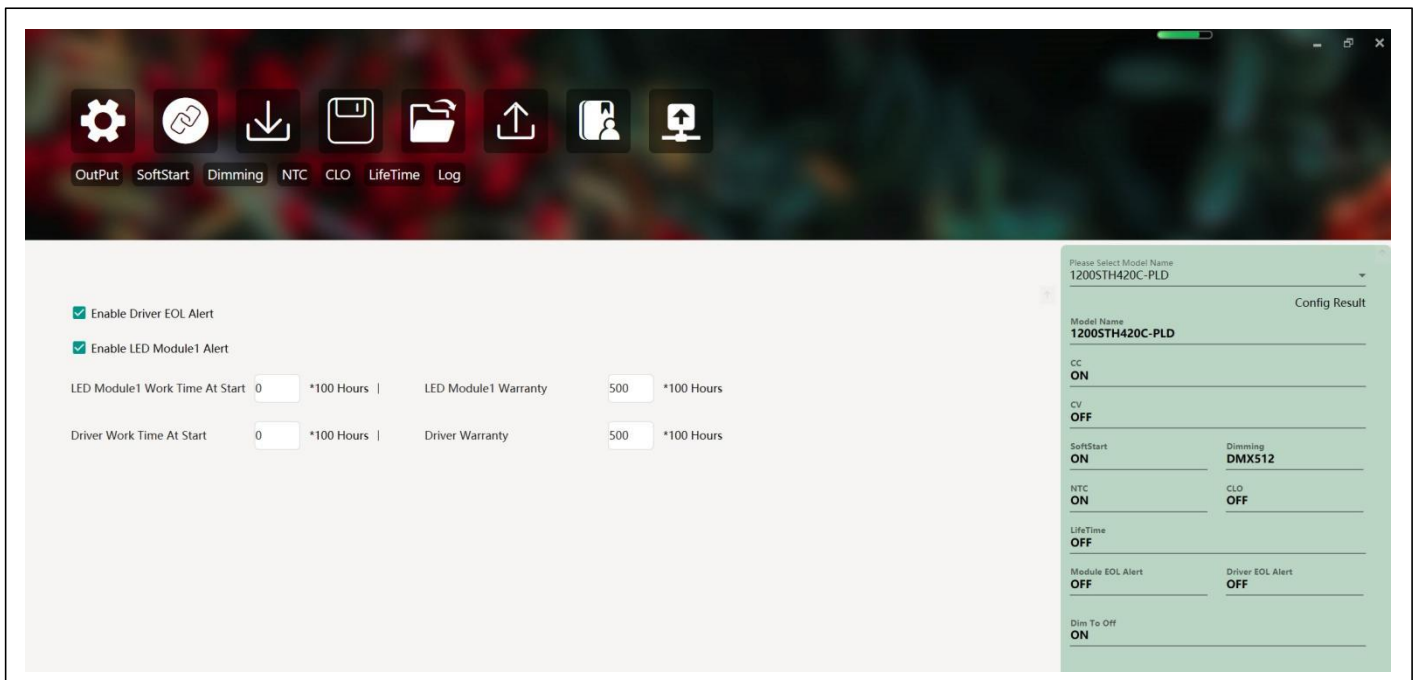
Config Result:

Please Select Model Name 1200STH420C-PLD	
Model Name 1200STH420C-PLD	
CC	ON
CV	OFF
SoftStart	ON
Dimming	DMX512
NTC	ON
CLO	OFF
LifeTime	OFF
Module EOL Alert	OFF
Driver EOL Alert	OFF
Dim To Off	ON

5. CLO mode



6. LifeTime mode



☒ Enable Driver EOL Alert

☒ Enable LED Module1 Alert

LED Module1 Work Time At Start *100 Hours | LED Module1 Warranty *100 Hours

Driver Work Time At Start *100 Hours | Driver Warranty *100 Hours

Please Select Model Name
1200STH420C-PLD

Config Result

Model Name
1200STH420C-PLD

CC
ON

CV
OFF

SoftStart
ON

Dimming
DMX512

NTC
ON

CLO
OFF

LifeTime
OFF

Module EOL Alert
OFF

Driver EOL Alert
OFF

Dim To Off
ON

Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
2022/6/21	V1.0			
2023/6/13	V1.1	Update Mechanical Drawing		
2023/10/20	V1.2	Add Isolation、Block Diagram、Performance Curve 、Inrush Current Data、Programming、Dimming Curve、NTC、Strobe function、Description of upper computer software		
		Inrush Current	Max: 65A	Max: 30A
		Input AC Voltage	Min: 200Vac	Min: 180Vac
		Update machine name	1200STH420C	1200STH420C-PLD
		Standby power	Max: 1A	Max: 0.5A
		Update Input AC Current		
2024/4/29	V1.3	Update Mechanical Drawing		
2024/10/24	V1.4	Input Frequency	45Hz	47Hz
		Leakage Current	Notes : At 400Vac / 60Hz input , grounding effectively	Note : At 277Vac / 60Hz input , grounding effectively
		Input AC Current	Max : 2.63A(Measured at full load and 480 Vac input.)	Typ : 2.7A(Measured at full load and 480 Vac input.)
			Max : 3.16A(Measured at full load and 400 Vac input)	Typ : 5.5A(Measured at full load and 230 Vac input..)
			Max: 6.4A(Measured at full load and 200 Vac input.)	Typ : 6.3A(Measured at full load and 200 Vac input.)
		Inrush Current	Notes : At 400Vac input, 25°C cold start.	Notes: At 277Vac input, 25°C cold start.
		PF	Notes : At 400Vac, 80%-100% Load	Notes : At 277Vac, 80%-100% load
		Total Output Current Ripple (pk-pk)	Notes : At full load condition, 20 MHz BW	Notes: At 25°C and full load condition, ≤200Hz BW
		Standby power	Max: 0.5W	Max: 0.8W
		Operating Ambient Temperature Ta	-40-50°C	-40-50°C(220-480Vac input) -40-45°C(200-220Vac input)
		DALI2.0	Part 101/102/207	Part 101/102/207/251/253
		Add ENEC & CE-LVD/CB		
		Add NTC connection mode /Recommended NTC resistor		
		Add Definition Of Cabling Interface		

		Add Package parameter		
		Turn-on Delay Time	Max : 1.5 s(Measured at 200/400/480Vac input.)	Max : 2 s(Measured at 200/277/456Vac input.)
		Add Inrush Current ($I^2 \cdot t$)		
		Add Dielectric Strength(Hi-pot)/Insulation Resistance/Grounded Resistance/Net Weight		
		Update lifetime vs case temperature curve		
2024/10/30	V1.5	Update NTC connection mode		
		Recommended NTC resistor	Sunlord P/N: CMF474F4500FB0805	Sunlord P/N: SDNT1608X104F4250FTF Murata P/N: NCP18WF104J03RB
2025/1/10	V1.6	Update NTC connection mode		
		Recommended NTC resistor	Sunlord P/N: SDNT1608X104F4250FTF Murata P/N: NCP18WF104J03RB	Sunlord P/N: CMF474F4500FB0805
		Add Auxiliary Output Voltage/Auxiliary Output Current		
		EMS		Add criteria
		Line Regulation/Load Regulation		Add 25°C condition
2025/4/2	V1.7	Update Mechanical Drawing		
		Update Definition Of Cabling Interface		
2026/7/10	V1.8	Add:RDM Protocol for the DMX dimming		
		Dimming Specifications:DALI2.0		Add:252
		EMS Standards	EN 61547	EN IEC 61547