

LED 驱动规格书

1800STH500C-PLD

V1.5

2023/12/17

Powerland Signatures					Customer Approval Signature
Prepared	Checked		Approved	Marketing	
	ME	研发经理			

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1800W LED Drivers with three independent output channels, all the output channels can parallel connection freely.

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



Features	3
Applications	3
Model Name Definition	3
Specifications	3
Input Specifications	3
Output Specifications	4
General Specifications	4
Dimming Specifications	5
0-10V and PWM Dimming Specifications	5
Safety & EMC Compliance	5
Isolation	6
Block Diagram	6
Performance Curve	7
Inrush Current Data	8
Programming	8
Dimming Curve	9
NTC	10
Strobe function	11
Mechanical Drawing	13
Label	13
Package	14
Description of upper computer software	15
Revision History	19

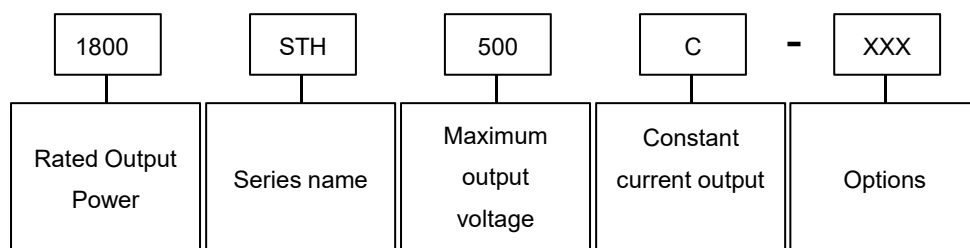
Features

- 3 channels 600W output, with free parallel connection
- 3 channels CC programmable outputs
- High efficiency: 96.5% typical @400Vac, full load
- High power factor: 0.99 typical. @ 230Vac, full load
- Isolated 0-10V/PWM/ Resistor Dimming/DMX Dimming/DALI Dimming optional
- 3 independent DMX512 addresses
- With Lightning Protection & all-round protections (OVP,OCP,SCP,OTP)
- Comply with UL8750 & EN61347-2-13 Safety Regulation
- IP66
- Remote mounting up to 200m between driver and luminaire

Applications

- Stadium Lighting
- Arena Lighting

Model Name Definition



Specifications

Part Number	Outputs	Max. Output Power	Programmable Current Range per channel	Output Voltage Range	Efficiency @400VAC
1800STH500C-PLD	CH1	600W	0.6-2.2A	280-500V	96.5%
	CH2	600W	0.6-2.2A	280-500V	
	CH3	600W	0.6-2.2A	280-500V	

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input AC Voltage	180 Vac	200-415Vac	456Vac	Default performance input voltage range Set by programming
	432Vac	480Vac	528Vac	
Input Frequency	45 Hz	50/60 Hz	66 Hz	
Leakage Current	-	-	0.75 mA	At 400Vac / 60Hz input , grounding effectively
Input AC Current	-	-	3.95A	Measured at full load and 480 Vac input.
	-	-	4.74A	Measured at full load and 400 Vac input.

	-	-	9.8A	Measured at full load and 200 Vac input.
Inrush Current	-	-	30A	At 400Vac input, 25°C cold start.
PF	0.95	-	-	At 400Vac, 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 full load condition
Total Output Current Ripple (pk-pk)	-	-	10%lo max	At full load condition, 20 MHz BW
Startup Overshoot Current	-	-	10%lo max	At full load condition
Line Regulation	-	-	±3%	Measured at full load
Load Regulation	-	-	±3%	
Turn-on Delay Time	-	-	1.5 s	Measured at 200/400/480Vac 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% lowest, or shut down.
SCP				Shut down and latch
OVP	-	-	600V	Peak
C _m Surge Peak Voltage at output	-	-	3KV	@10KV input common-mode surge

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Standby power	-	-	0.5W	Measured at 230Vac/50Hz; Dimming off
	-	-	0.85W	Measured at 277Vac/50Hz; Dimming off
	-	-	1W	Measured at 400Vac/50Hz; Dimming off
	-	-	1.5W	Measured at 480Vac/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	
Storage Temperature	-40°C	-	+85°C	Humidity: 5%RH to 90%RH
Dimensions				
Inches (L × W × H)	19.76×5.91×3.09			
Millimeters (L × W × H)	502×150×78.5			
Net Weight/pcs	-	5.55kg	-	

Dimming Specifications

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

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%	-	98%	

Safety & EMC Compliance

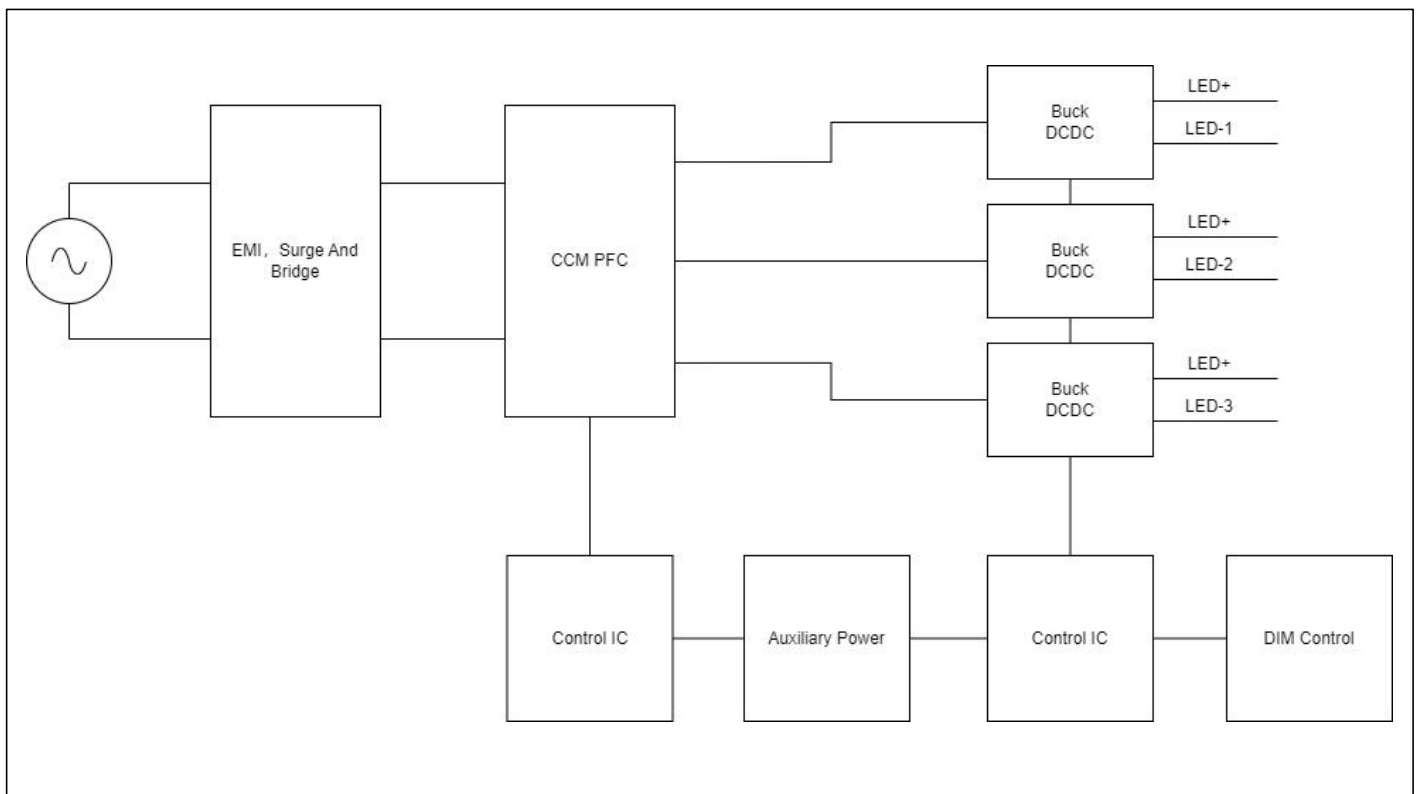
Safety Category	Standard
UL/CUL	UL8750,CAN/CSA-C22.2 No. 250.13-12
ENEC&CE	EN 61347-2-13
CB	IEC 61347-1, IEC 61347-2-13
EMI Standards	Notes
FCC Part 15	ANSI C63.4:2009 Class B
	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired Operation.
EN 55015 (CISPR15)	Conducted emission Test & Radiated emission Test
EN61000-3-2	Harmonic Current Emission
EN61000-3-3	Voltage Fluctuation & Flicker
EMS Standards	Notes
EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN 61000-4-4	Electrical Fast Transient / Burst-EFT: level 3, criteria A
EN 61000-4-5 (AC Mains)	Surge Immunity Test: AC Power Line: line to line 10 kV, line to earth 10 kV
EN 61000-4-5 (Output)	Common Mode:3KV (V+ to Earth, V1-,V2-,V3- to Earth); Differential Mode: 1KV (V+ to V1-,V2-,V3-)
EN 61000-4-5 (Control terminal)	Common Mode:3KV (DA+ to Earth, DA- to Earth); Common Mode:3KV (DMX+ to Earth, DMX- to Earth) Common Mode:3KV (0-10V+ to Earth, 0-10V- to Earth)

	Differential Mode: 1KV (DA+ to DA-) Differential Mode: 1KV (DMX+ to DMX-) Differential Mode: 1KV (0-10V+ to 0-10V-)
EN 61000-4-5 (NTC)	Common Mode: 3KV (NTC+ to Earth, NTC- to Earth); Differential Mode: 1KV (NTC+ to NTC-)
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61000-4-8	Power Frequency Magnetic Field Test
EN 61000-4-11	Voltage Dips
EN 61547	Electromagnetic Immunity Requirements Applies To Lighting Equipment

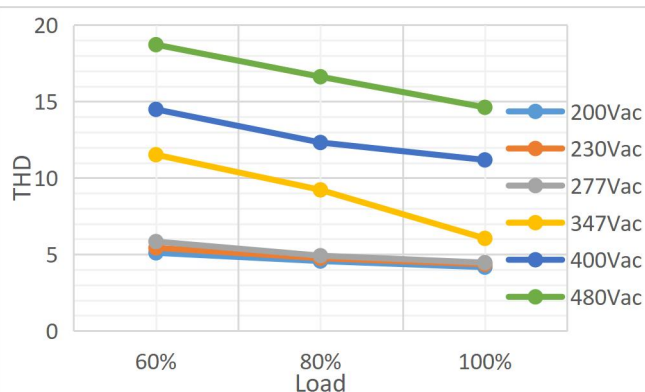
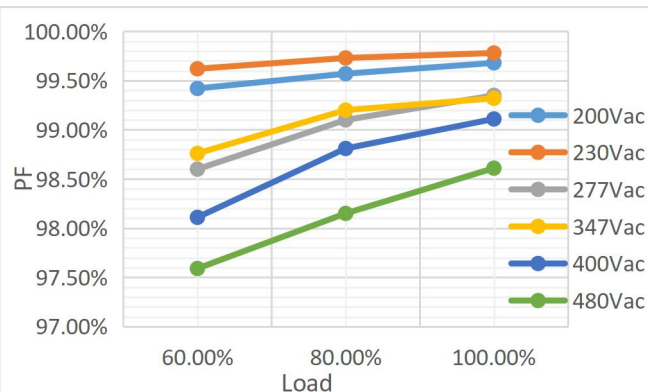
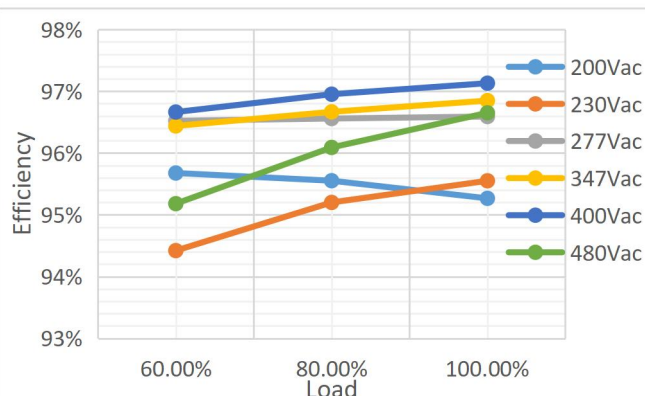
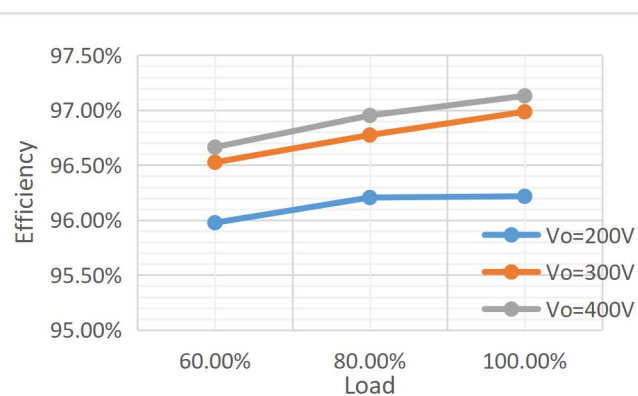
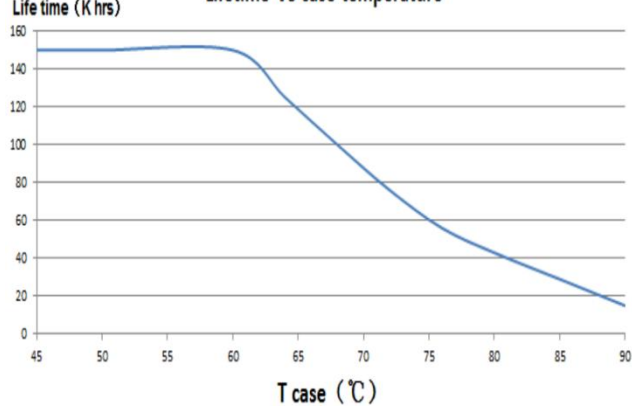
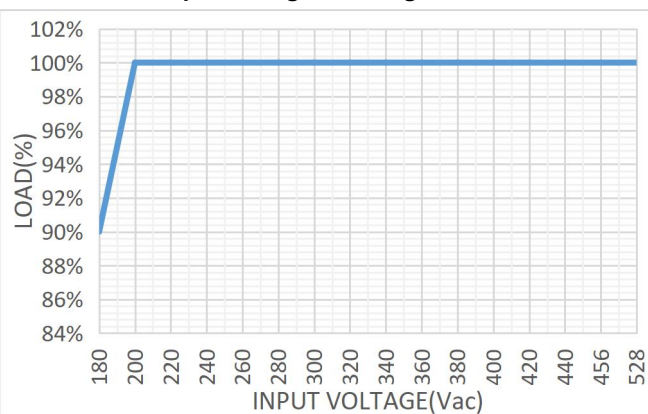
Isolation

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($V_o=400V$)

Efficiency Vs Different Loads($V_{in}=400Vac$)

Lifetime VS case temperature

Input Voltage Derating Curve


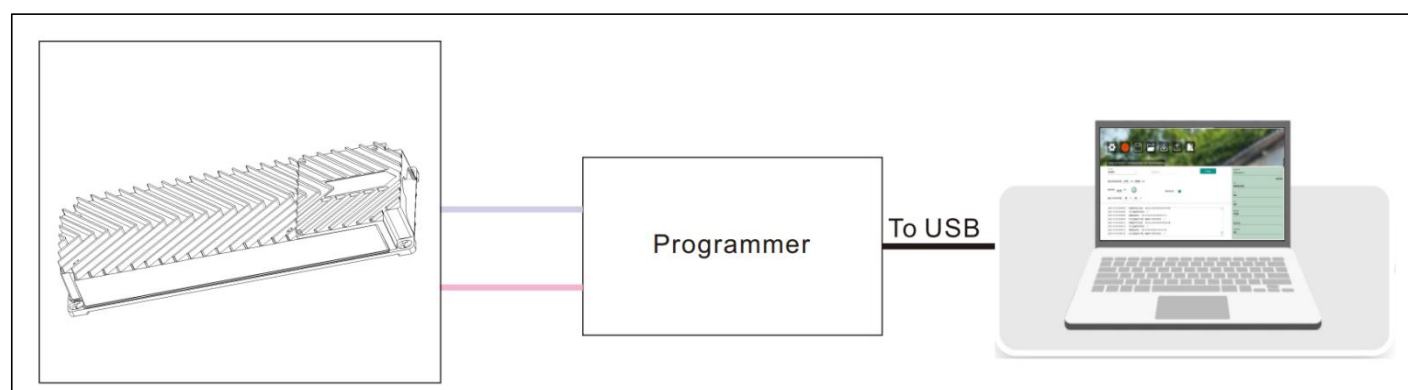
Inrush Current Data

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	19.2	0.24	1	1	2	2	1	1	2	2	1	1	2	2
380	25.2	0.25	1	1	2	2	1	2	3	3	1	2	3	3
480	26.9	0.26	1	1	2	2	1	2	3	4	1	2	3	4

Vin(Vac)	Fin(Hz)	I inrush(A)	T inrush(ms)
277	60	19.2	0.24
380	50	25.2	0.25
480	63	26.9	0.26

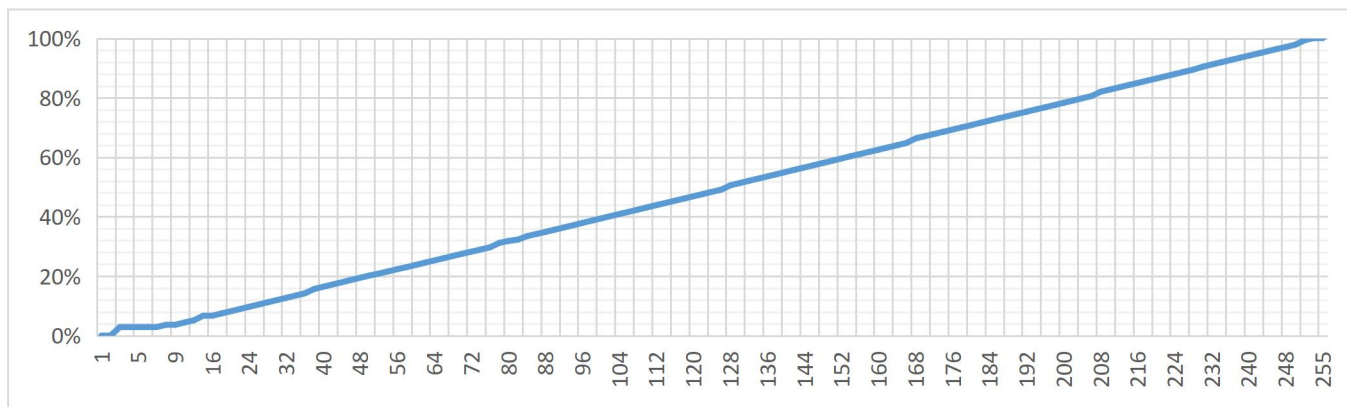
Programming



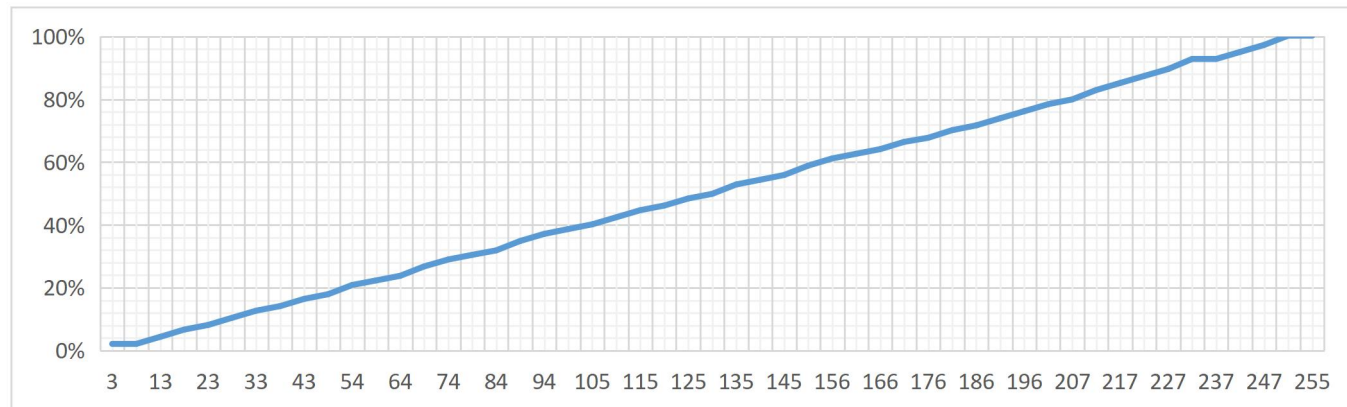
Note: Contact business personnel to take the software installation package.

Dimming Curve

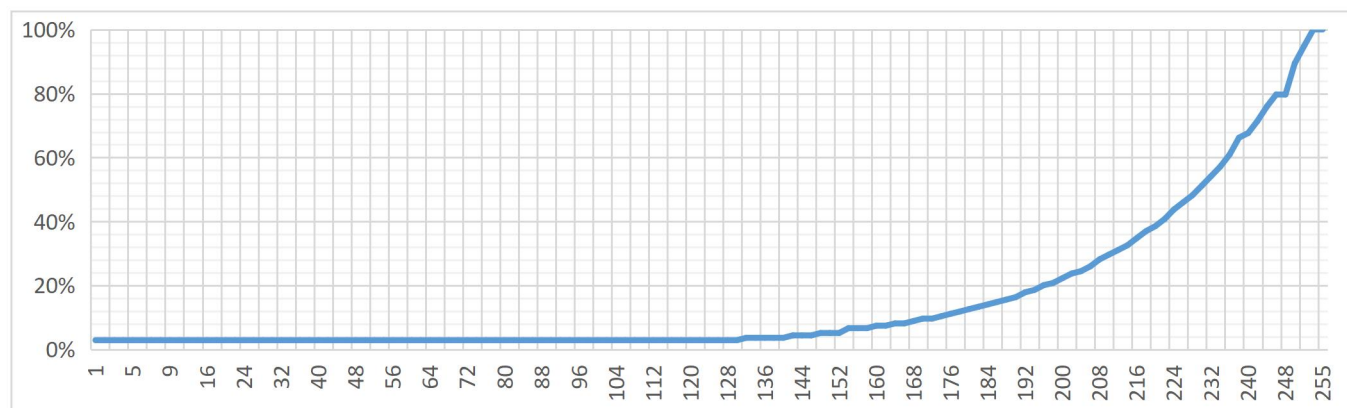
DMX Dimming Curve



DALI Linear Dimming Curve

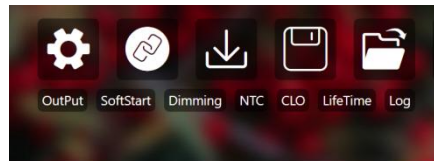


DALI Logarithm Dimming Curve



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.

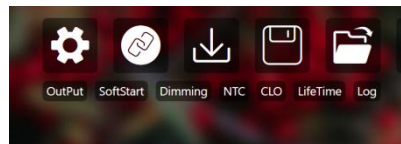

☐ Enable NTC Protection

Prot

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

Prot

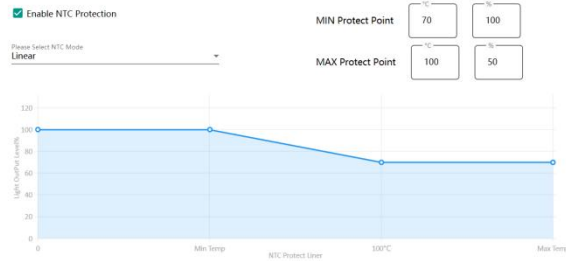
Please Select NTC Mode

Step
Linear

When setting step protection, it will immediately derate to the set ratio while reaching to 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.



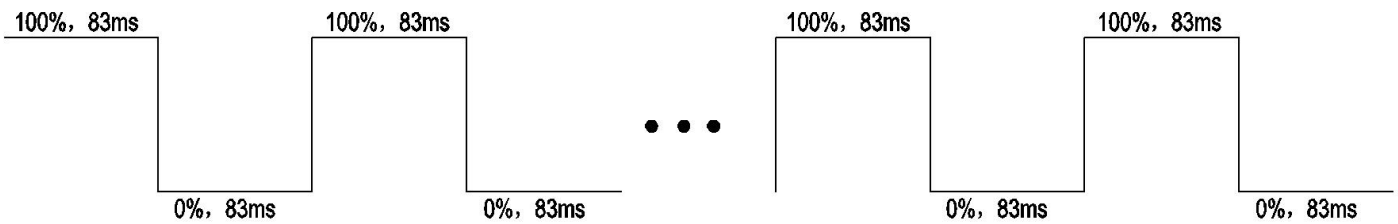
If you choose linear protection. As you can see from the figure below, you can set the temperature protection point at which the descent begins, and the maximum temperature protection. And the power drop amplitude when the maximum temperature protection point is reached.



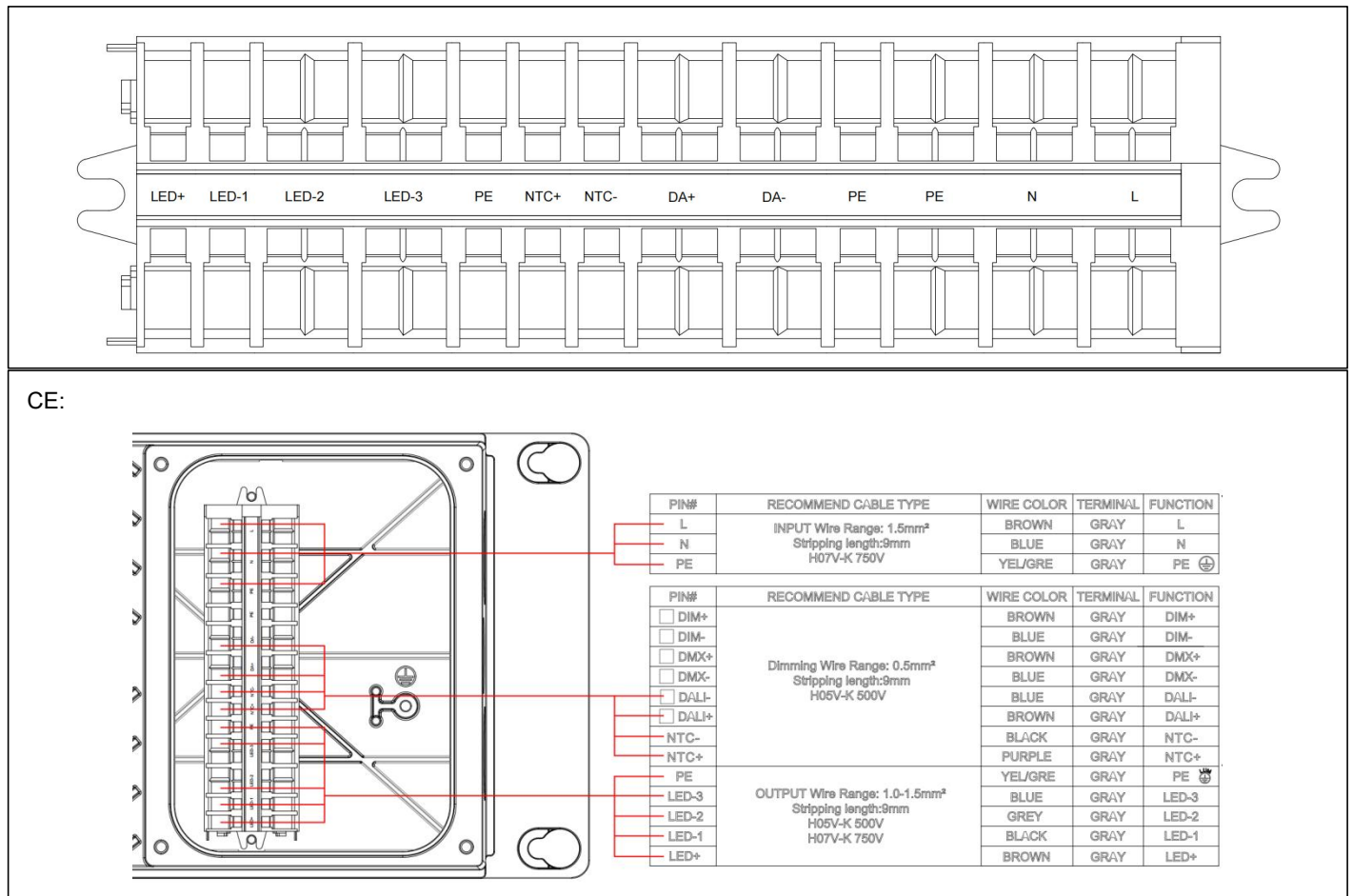
Strobe function

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



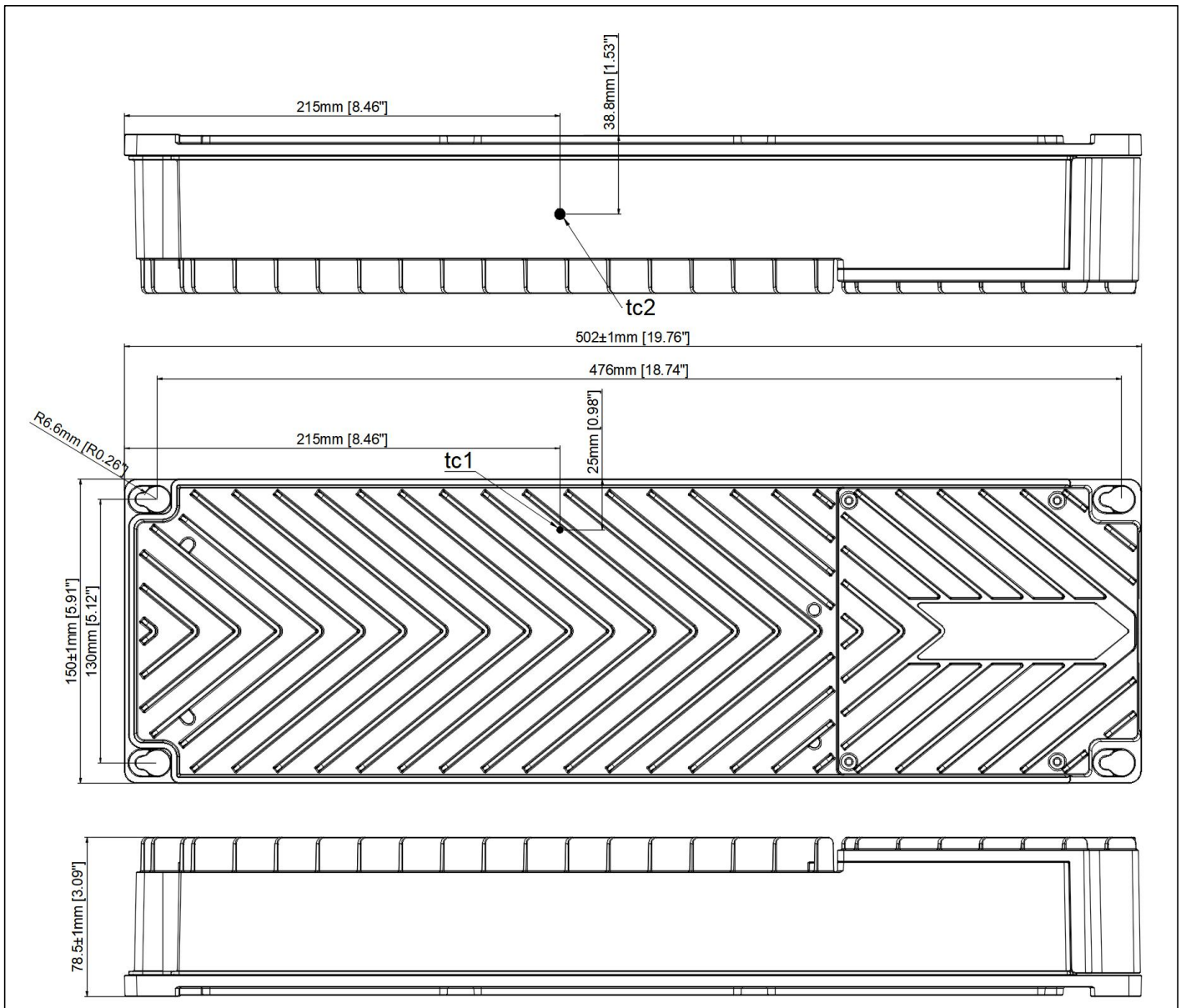
UL:

Cable gland have M25 (12-14mm or 14-16mm) and M20 (6.5-7mm * 2) two models.

Available range of input cable, output cable and dimming cable:

Gland Model	Cable Category	Cable Model	Cable Specifications	Available Range Of Outer Diameter
Input AC cable	VDE	H07RN-F	3*4mm ²	12-14mm
			3*2.5mm ²	12-14mm
	UL	SOW	3*12AWG	14-16mm
Output DC cable	VDE	H07RN-F	3*2.5mm ²	12-14mm
			5*2.5mm ²	14-16mm
	UL	SO	3*12AWG	14-16mm
		SOW	5*16AWG	12-14mm
Dimming cable	VDE	H05RN-F	3*0.75mm ²	6.5-7mm
	UL		3*20AWG	

Mechanical Drawing



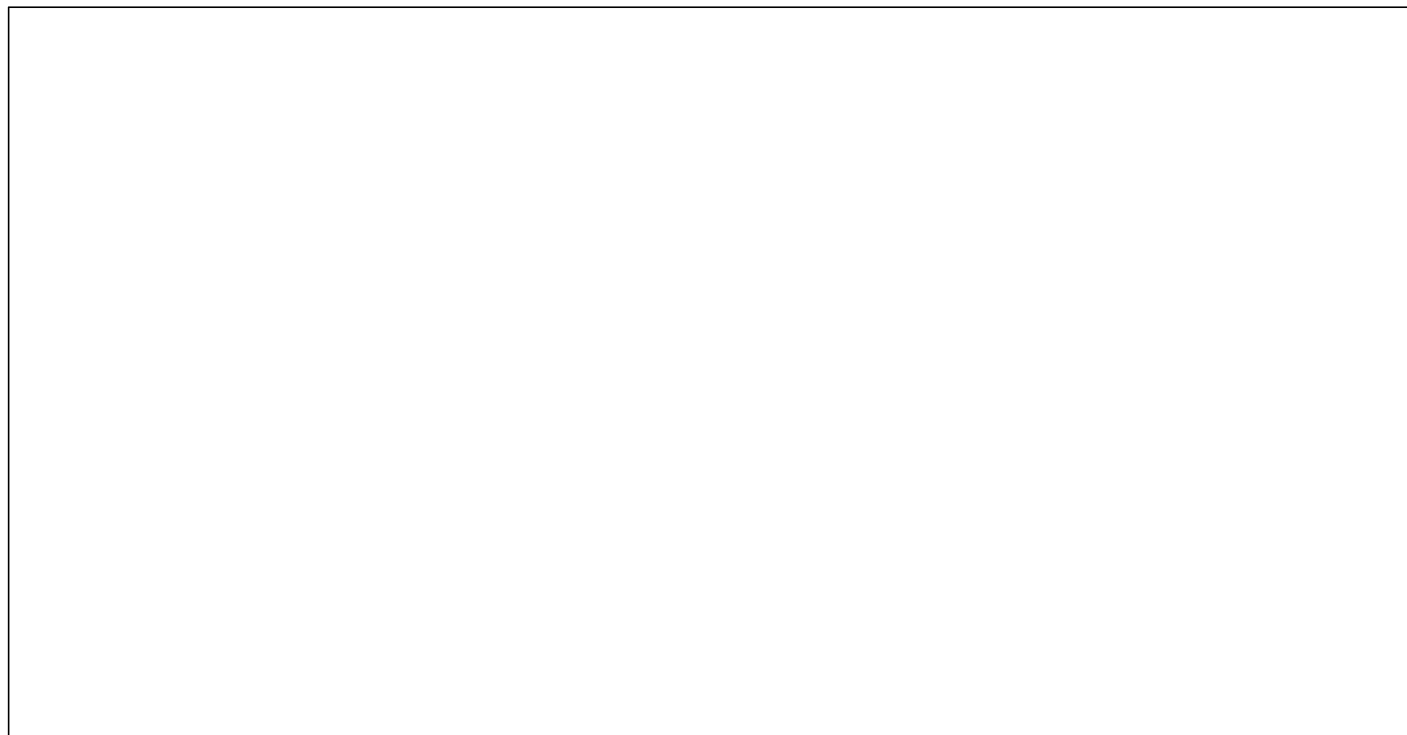
NOTE: The DMX、DALI dimming and dimming can only use one at the same time.

Label

TBD

Package

Carton	L×W×H =555mm×400mm×125mm
EPE-1	1pcs/carton
EPE-2	1pcs/carton
LED Drivers	2pcs/carton
Net weight	5.9kg/pcs
Gross weight	13kg/carton
Transportation seismic grade	GB/T 4857.7-2005

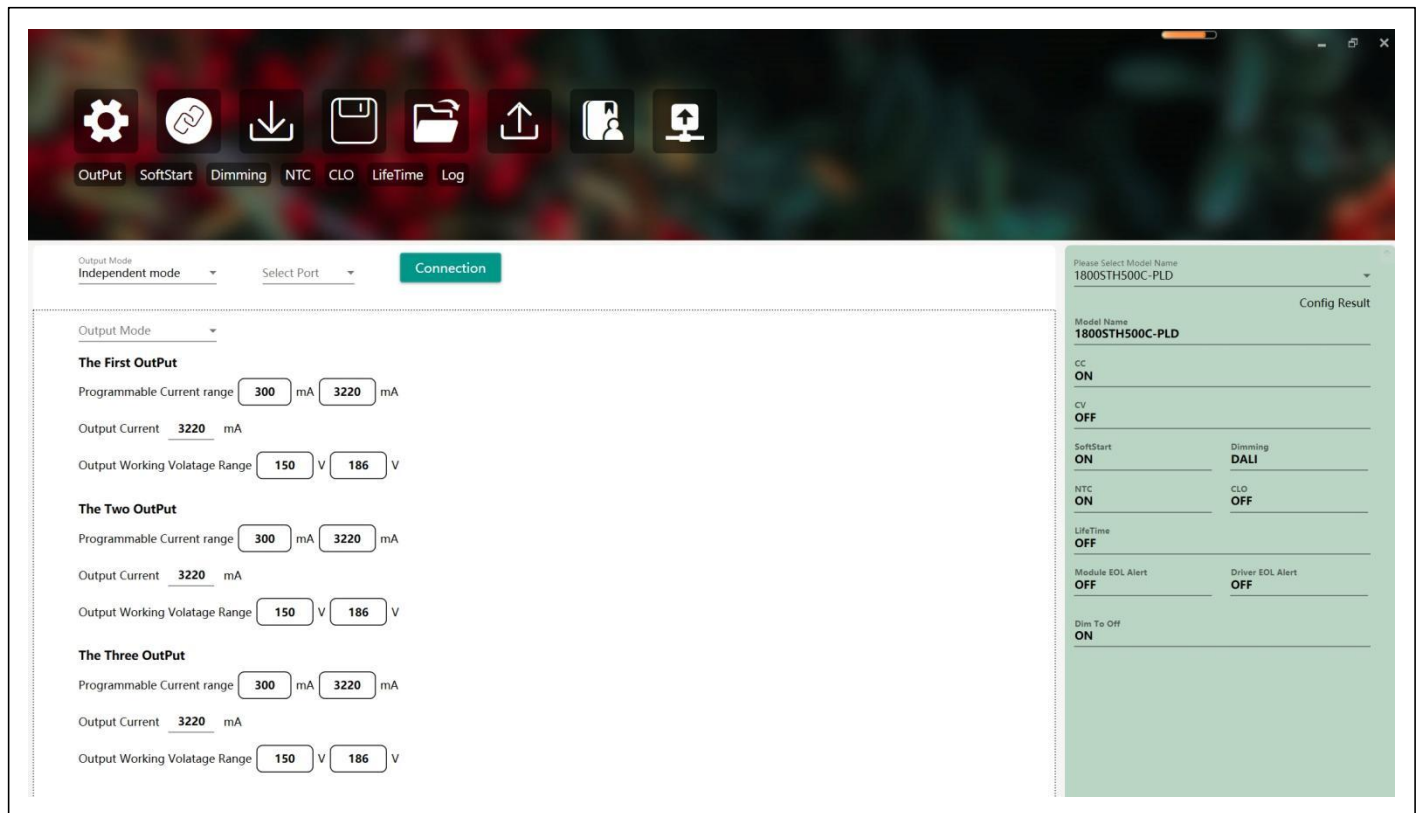


Description of upper computer software

1. Output mode

Output modes include independent mode and parallel mode.

1). Independent mode



The screenshot shows the software interface for configuring the LED driver in Independent mode. The top navigation bar includes icons for OutPut, SoftStart, Dimming, NTC, CLO, LifeTime, and Log. The main configuration area is divided into two sections: a left panel for output settings and a right panel for configuration results.

Output Mode: Independent mode (selected). **Select Port:** (empty). **Connection:** (button).

Output Mode: (dropdown menu).

The First OutPut

Programmable Current range: 300 mA to 3220 mA

Output Current: 3220 mA

Output Working Volatage Range: 150 V to 186 V

The Two OutPut

Programmable Current range: 300 mA to 3220 mA

Output Current: 3220 mA

Output Working Volatage Range: 150 V to 186 V

The Three OutPut

Programmable Current range: 300 mA to 3220 mA

Output Current: 3220 mA

Output Working Volatage Range: 150 V to 186 V

Config Result

Please Select Model Name: 1800STH500C-PLD

Model Name: 1800STH500C-PLD

CC: ON

CV: OFF

SoftStart: ON

Dimming: DALI

NTC: ON

CLO: OFF

LifeTime: OFF

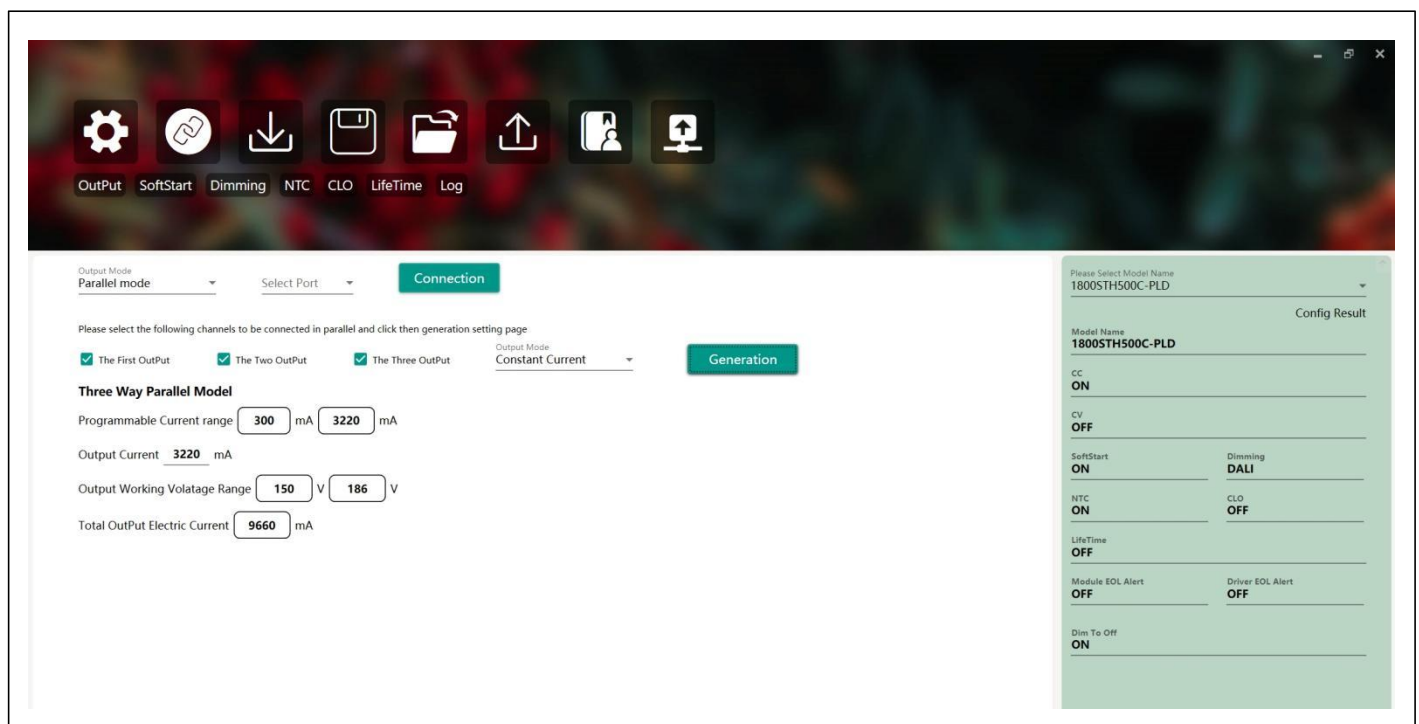
Module EOL Alert: OFF

Driver EOL Alert: OFF

Dim To Off: ON

2). Parallel mode

Select the output channels that need to be output in parallel, and then click Generation.



The screenshot shows the software interface for configuring the LED driver in Parallel mode. The top navigation bar includes icons for OutPut, SoftStart, Dimming, NTC, CLO, LifeTime, and Log. The main configuration area is divided into two sections: a left panel for output settings and a right panel for configuration results.

Output Mode: Parallel mode (selected). **Select Port:** (empty). **Connection:** (button).

Please select the following channels to be connected in parallel and click then generation setting page

☒ The First OutPut ☒ The Two OutPut ☒ The Three OutPut

Output Mode: Constant Current (dropdown menu). **Generation:** (button).

Three Way Parallel Model

Programmable Current range: 300 mA to 3220 mA

Output Current: 3220 mA

Output Working Volatage Range: 150 V to 186 V

Total OutPut Electric Current: 9660 mA

Config Result

Please Select Model Name: 1800STH500C-PLD

Model Name: 1800STH500C-PLD

CC: ON

CV: OFF

SoftStart: ON

Dimming: DALI

NTC: ON

CLO: OFF

LifeTime: OFF

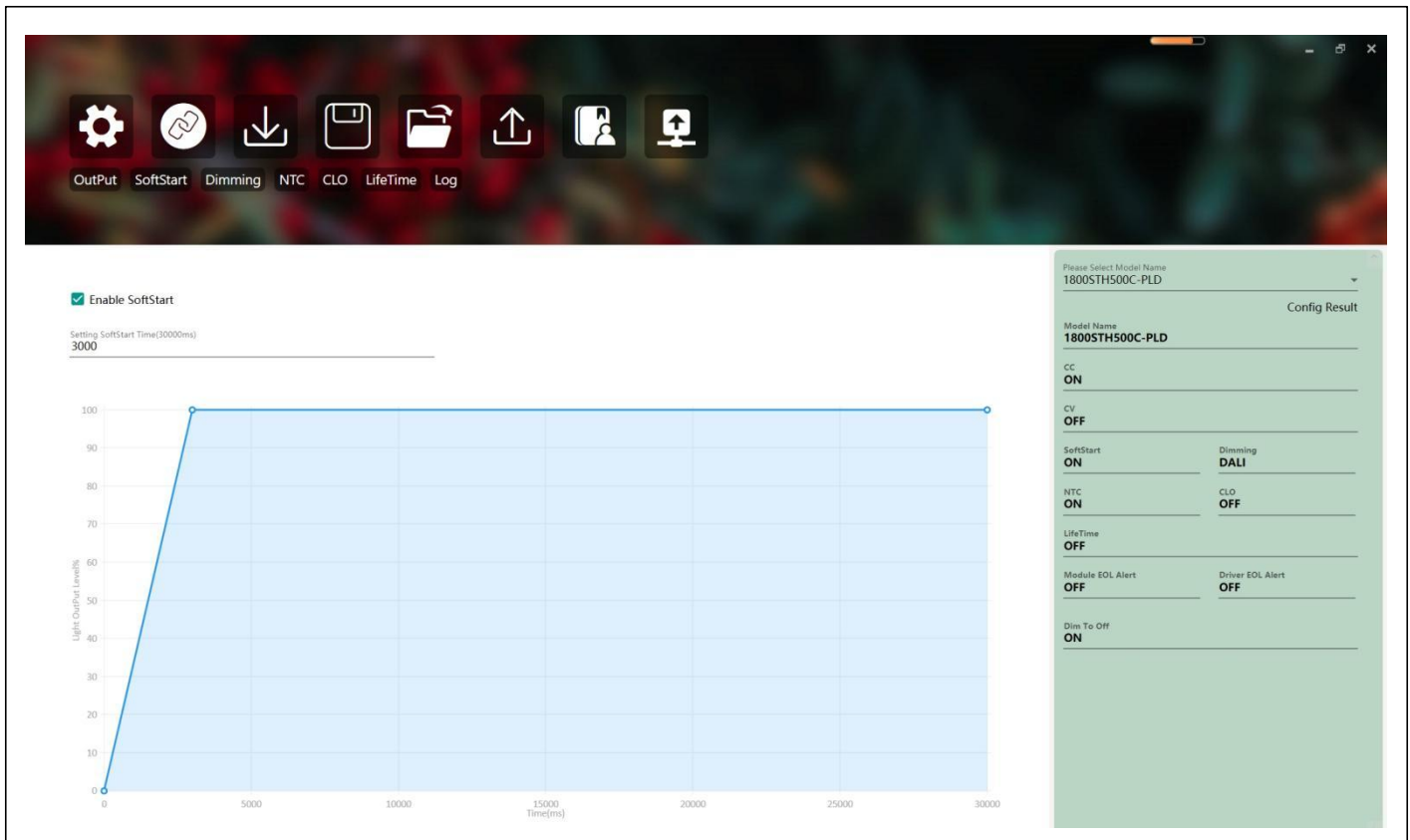
Module EOL Alert: OFF

Driver EOL Alert: OFF

Dim To Off: ON

2.SoftStart mode

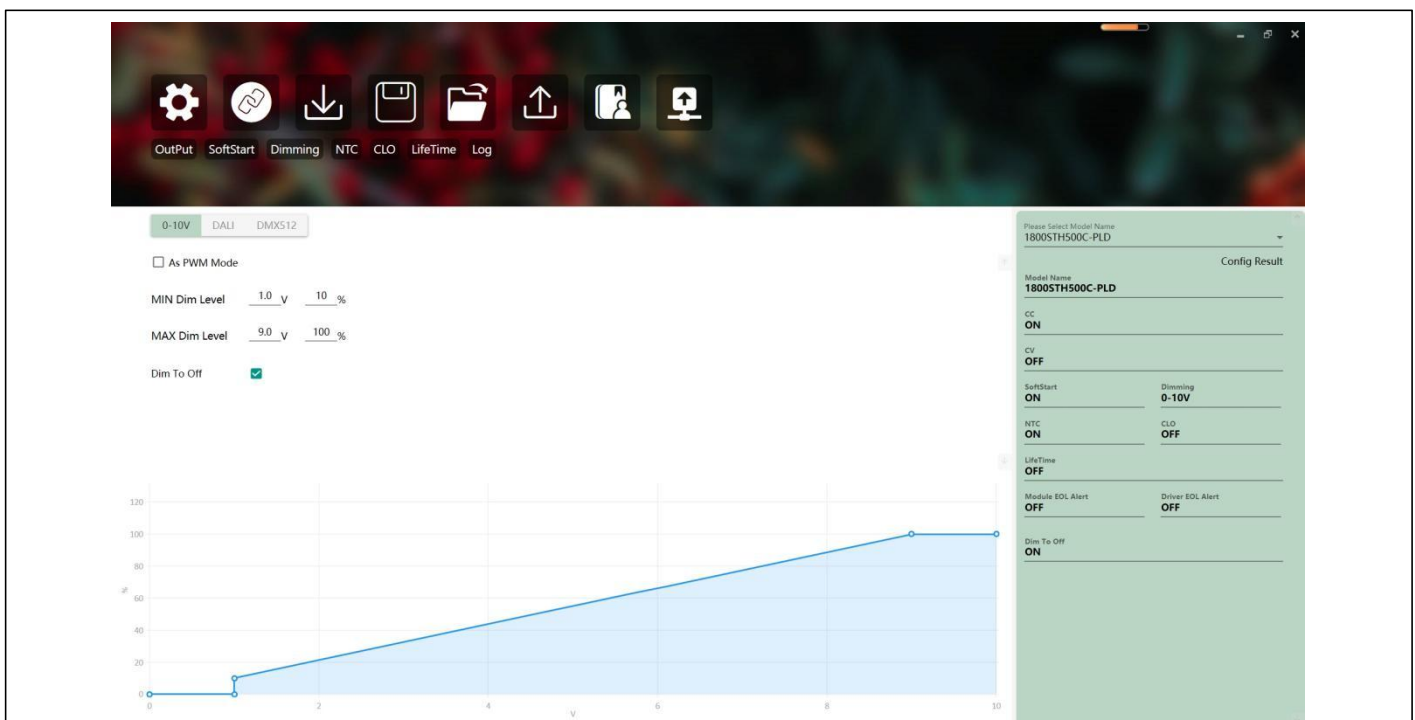
The soft start can be set according to the demand.



3.Dimming mode

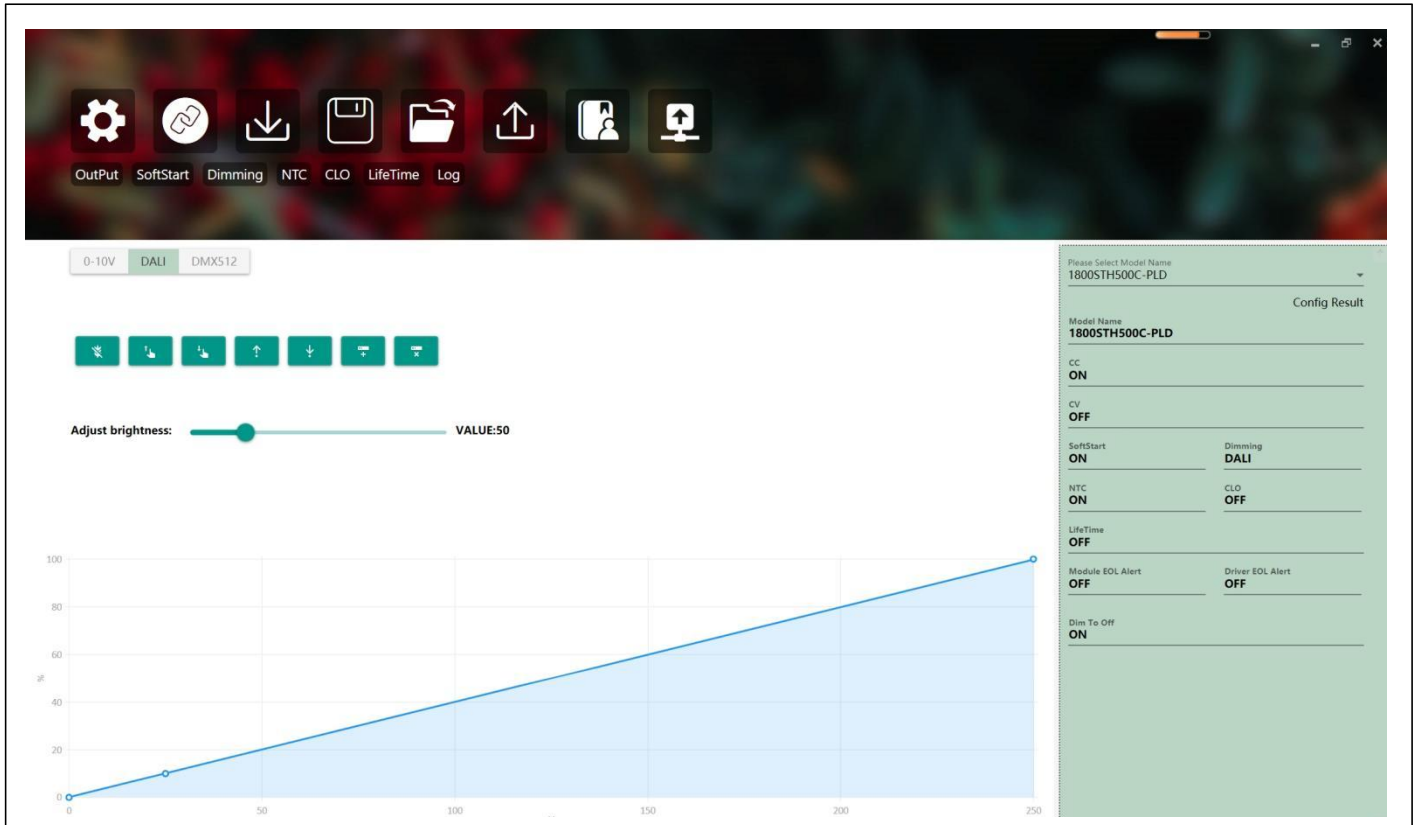
The dimming have 0-10V, DALI and DMX512 modes.

1). 0-10V mode

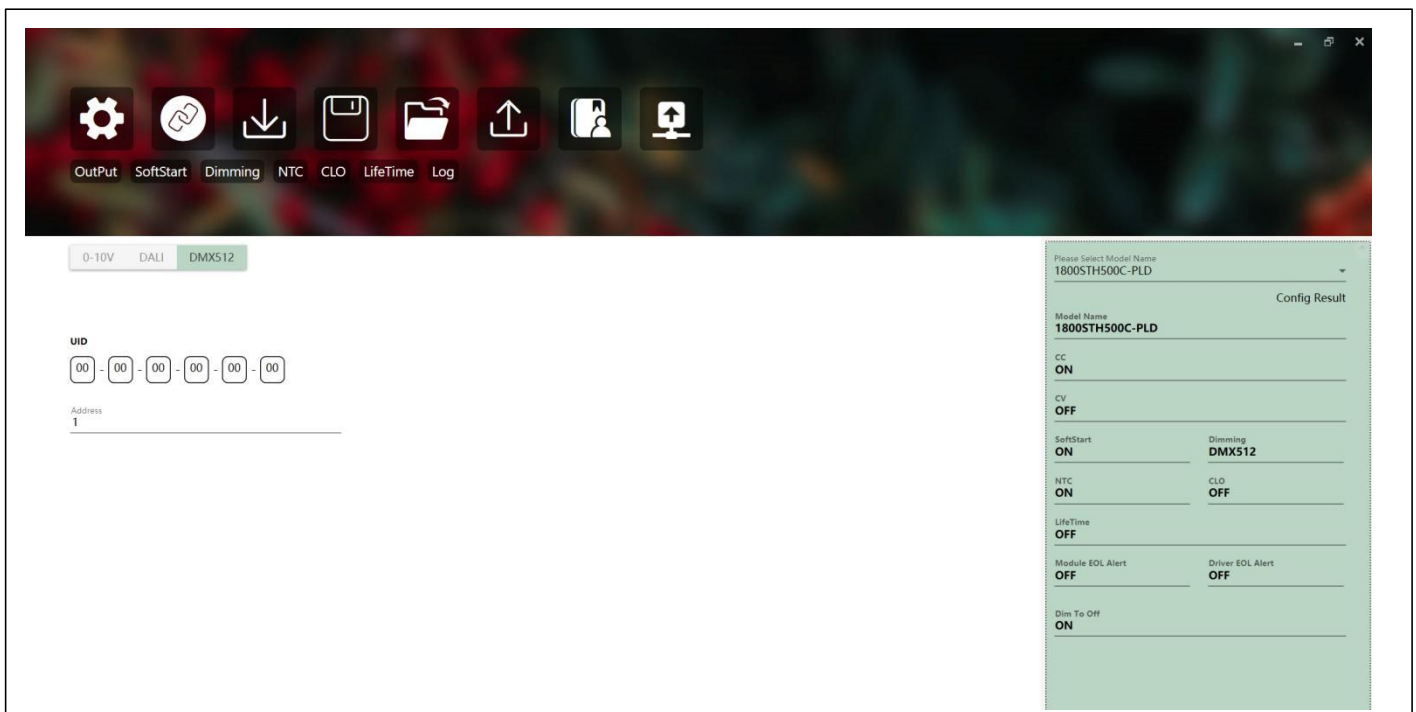


Note:PWM mode is included in 0-10V mode.

2). DALI mode



3). DMX512 mode



0-10V DALI **DMX512**

UID
00 - 00 - 00 - 00 - 00 - 00

Address
1

Please Select Model Name
1800STH500C-PLD

Config Result

Model Name
1800STH500C-PLD

CC
ON

CV
OFF

SoftStart
ON

Dimming
DMX512

NTC
ON

CLO
OFF

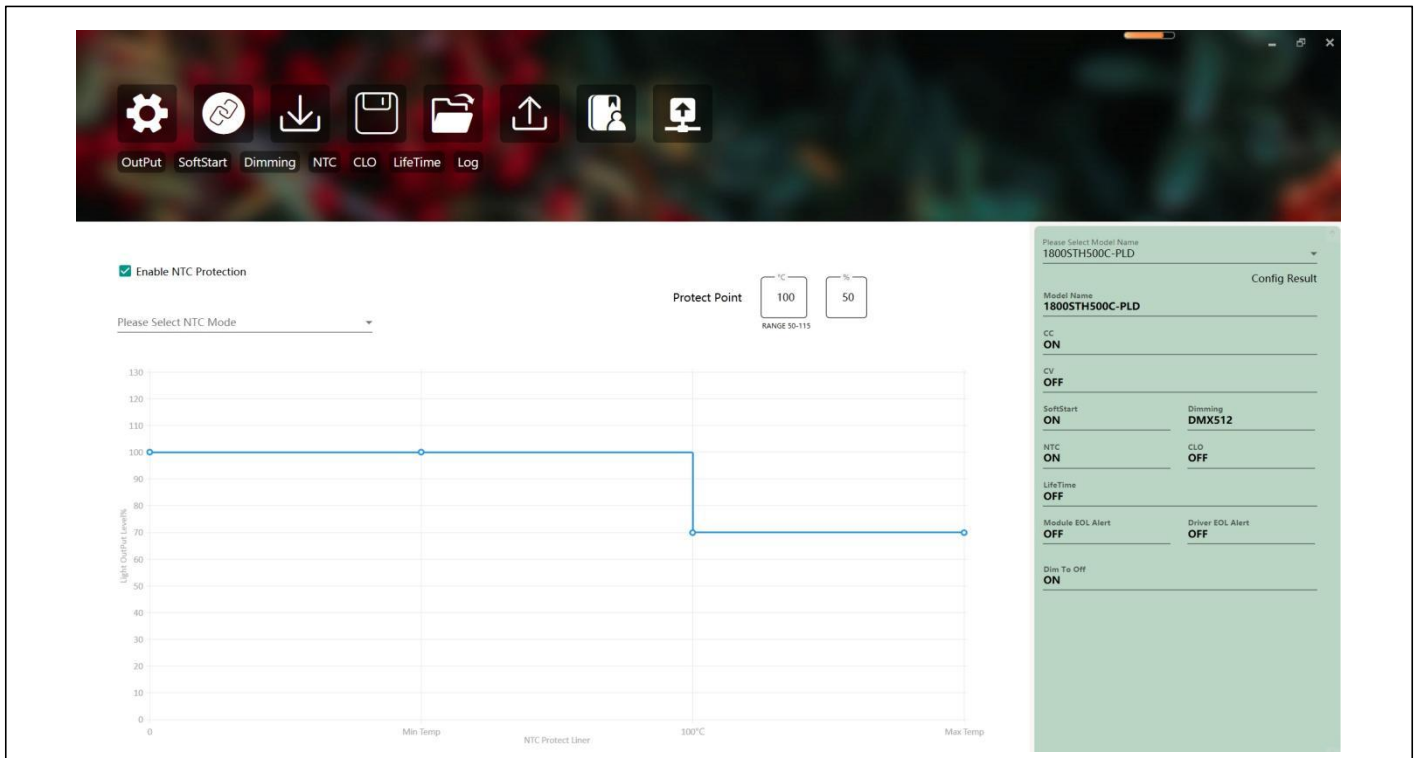
LifeTime
OFF

Module EOL Alert
OFF

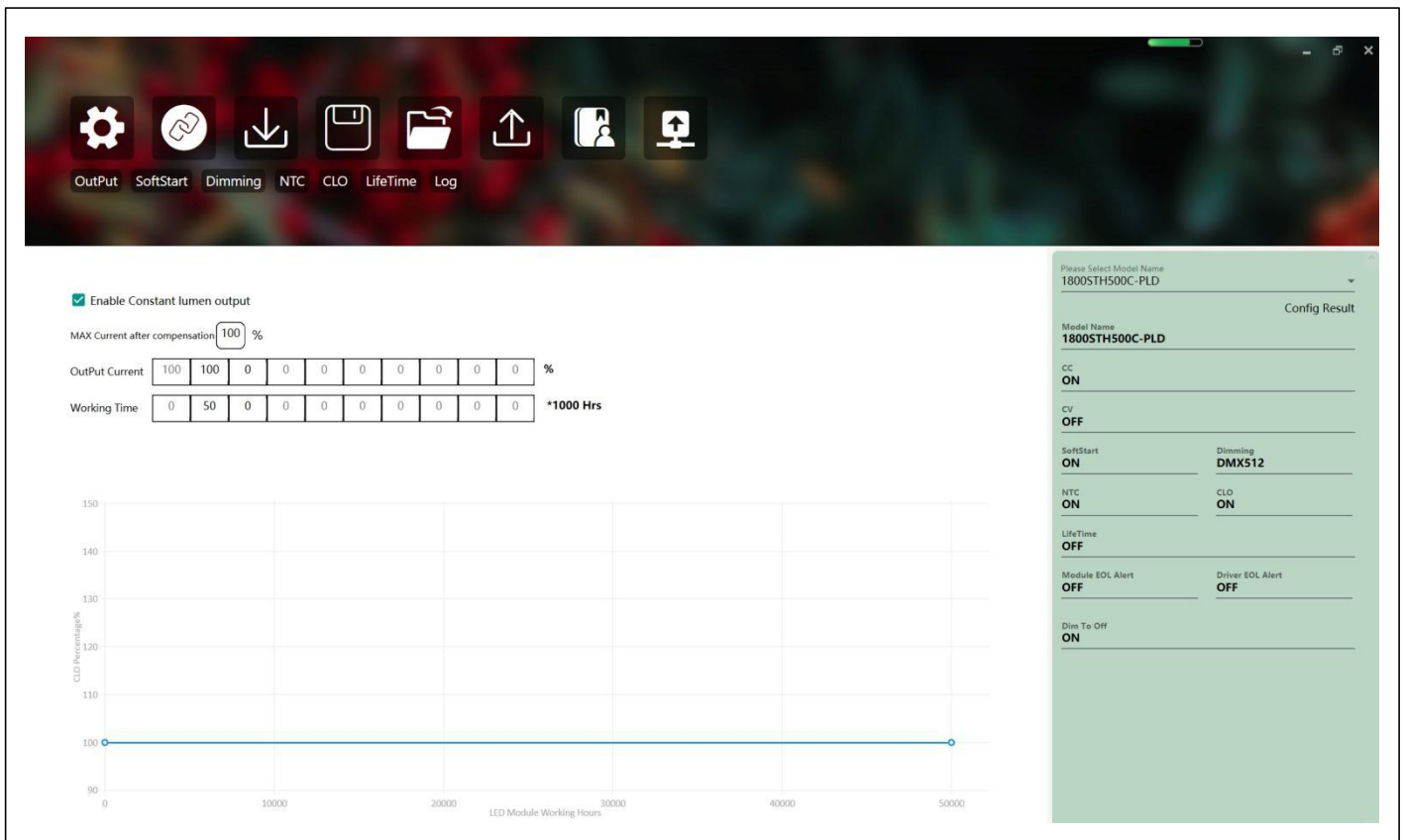
Driver EOL Alert
OFF

Dim To Off
ON

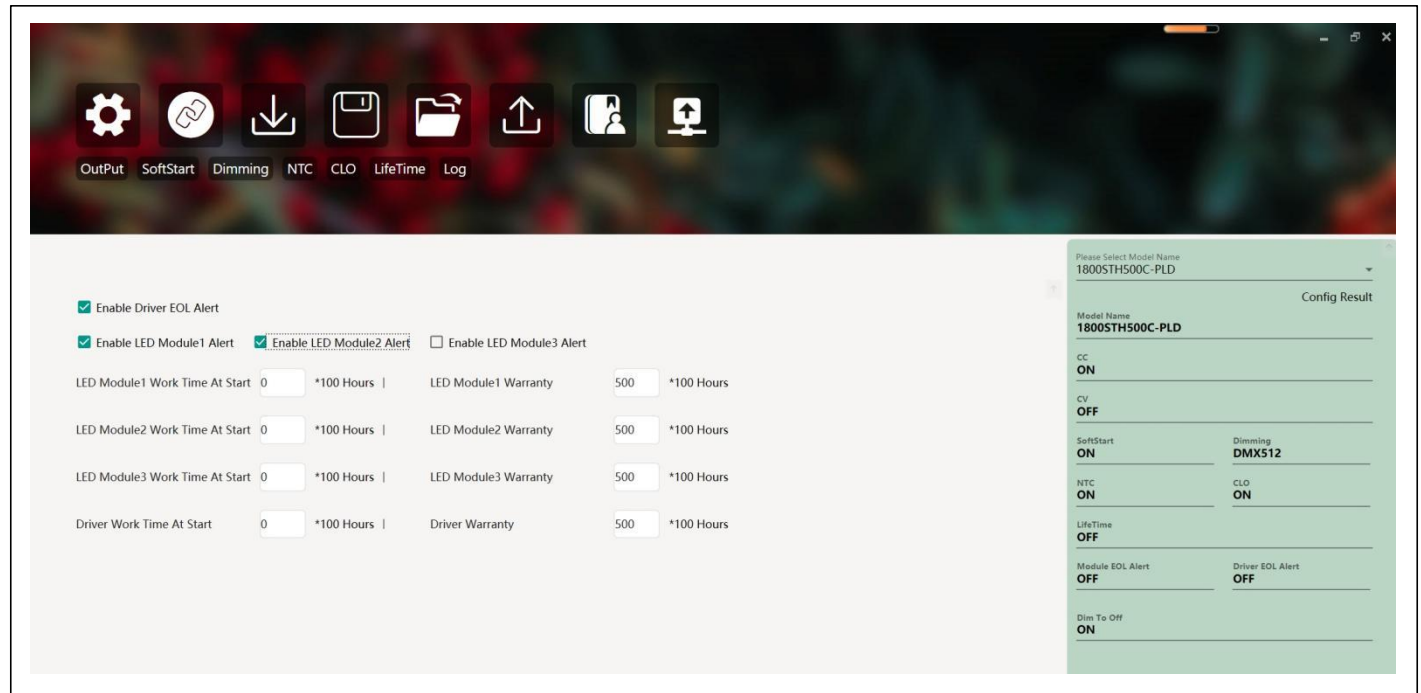
4. NTC mode



5. CLO mode



6.LifeTime mode



LifeTime mode configuration interface:

- Navigation Bar:** Output, SoftStart, Dimming, NTC, CLO, LifeTime, Log
- Alerts:**
 - ☒ Enable Driver EOL Alert
 - ☒ Enable LED Module1 Alert
 - ☒ Enable LED Module2 Alert
 - ☐ Enable LED Module3 Alert
- LED Module Settings:**
 - LED Module1 Work Time At Start: 0 *100 Hours | LED Module1 Warranty: 500 *100 Hours
 - LED Module2 Work Time At Start: 0 *100 Hours | LED Module2 Warranty: 500 *100 Hours
 - LED Module3 Work Time At Start: 0 *100 Hours | LED Module3 Warranty: 500 *100 Hours
 - Driver Work Time At Start: 0 *100 Hours | Driver Warranty: 500 *100 Hours
- Configuration Result (Model: 1800STH500C-PLD):**
 - CC: ON
 - CV: OFF
 - SoftStart: ON
 - Dimming: DMX512
 - NTC: ON
 - CLO: ON
 - 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
2022/1/25	V1.0			
2022/5/23	V1.1	Add Performance Curve		
2022/10/21	V1.2	Add Input Voltage Derating Curve		
		Adjust input voltage range	180-456Vac	180-528Vac
		Adjust Input AC Current	Measured at full load and 480 Vac input:4A Measured at full load and 230 Vac input:8.3A Measured at full load and 200 Vac input:9.6A	Measured at full load and 480 Vac input:3.95A Measured at full load and 400 Vac input:4.74A Measured at full load and 200 Vac input:9.8A
		Update Mechanical Drawing		
		Inrush Current	Max: 65A	Max: 30A
		Standby power	Max: 2A	Max: 0.5A
			1800STH420C-PLD	1800STH500C-PLD
2023/12/17	V1.3	Add Definition Of Cabling Interface		
		Update THD/PF/EFF Curve		
		Net Weight/pcs	5.9kg	5.55kg