Description

DALI programmer is a bridge between computer and driver, through the dimming wire to realize programming procedure. USB port connects the computer and the other end connects the dimming wire of the driver. Bring great convenience and cost-saving to production, make driver programming easier. The Configurer Tool can be used immediately without installing a USB driver software.



CE

Product Features

- Operating Voltage: USB 5VDC;
- IP20;
- 1 year warranty.

Application

Suitable for DALI LED drivers of X6E D, U5, U6, U7, S6, G6 D, etc.

Connection Diagram



Program instructions

1. Connect to DALI programmer

Please confirm that after the DALI programmer is connected to the computer, the interface displays “HID0”, indicating that the DALI programmer is connected successfully.

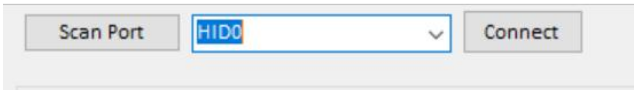


Figure 1

2. Description of Configurer Tool’s Main Interface:

(1) “**Driver Type**” bar in the Configurer is the present driver’s model, cannot be changed, it has been set before leaving our factory.

(2) “**Max Out Current 1**” The maximum output current can be set according to actual needs.
(Note: The adjustable range of current is 10%Iomax ~ 100%Iomax).

(3) “**Max Out Power 1**” set, set the maximum output power, ensure that the driver does not exceed this set Max power. If the output voltage is high resulting in the output power exceeding the set value, the output current will be decrease so that it does not exceed the set maximum power.

(4) “**Dimming Type**” has three options: DALI-2 dimming, Timing dimming (Timing, Self-Adaption), Timing_DALI-2 dimming (Timing, Self-Adaption).

(5) After the above parameters are set, click on the “**Set**” button for the programming.

(6) To read the parameters set inside the driver, users may click the “**Read**” button to realize the function of reading configured data of drivers. Click the “**Read**” button, and the log interface will display the current power, voltage, current and other real-time parameters.

(7) Click the “**MOSO**” logo to enter the official website of MOSO.

(8) Switchable languages, currently supporting English and Chinese.

(9) “**Scan Port**” button, used to search for the device currently connected to the PC port.

(10) **Save Cfg**: After setting the parameters, click to save the current parameter configuration and generate a Cfg configuration file on the computer.

(11) **Read Cfg**: Browse the cfg file saved on the computer before, and call this file into the Configurer tool for the next driver's programming.

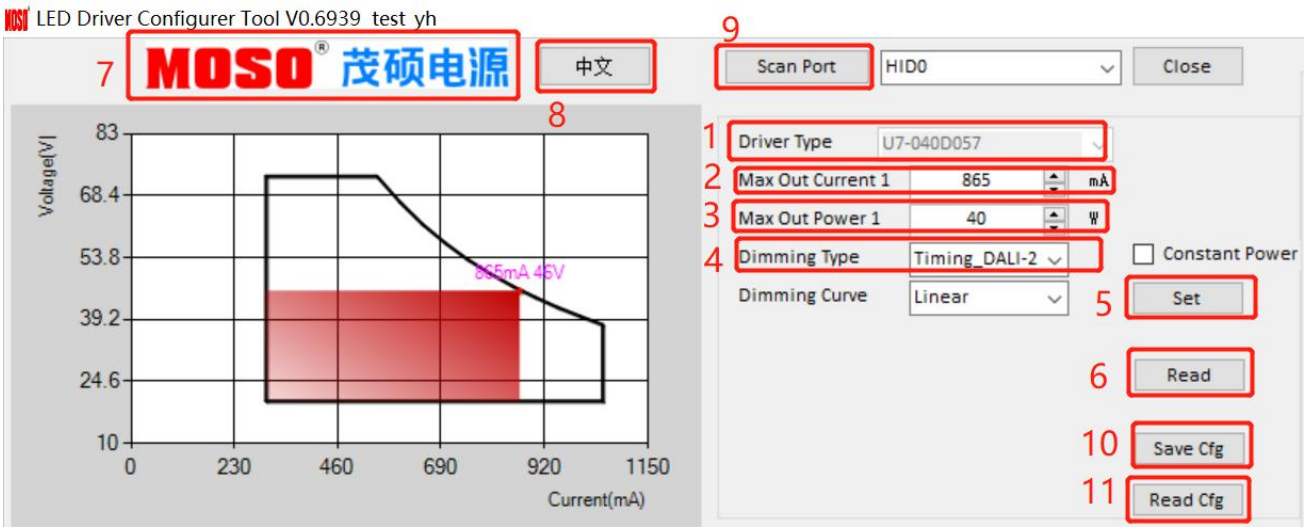


Figure 2

3. Description of DALI-2 Main Interface

Power On Level: This Function defined by DALI standard. When using DALI controller or DALI programmer to control brightness, this function will be turn on. After detecting that the output is normal, the brightness will be adjust according to the dimming value set last time.

System Failure Level: It defined by DALI standard and also only available when using the DALI programmer or controller. When the next operation cannot be performed or the operation fails during the usage of software, an error message will appear on the log interface on the right to remind the user of the operation error.

Fade Time: Defined by DALI standard. It can be set from the minimum value of 0s to the maximum value of 90s. When the selected Fade Time is determined, each subsequent dimming operation will be completed within the specified Fade Time. For example, when the fade time is set to 8s, it will take 8s to complete the dimming operations (Including adjustment to the maximum dimming value, adjustment to the minimum dimming value, and adjustment to the middle dimming value, as long as it is an action of changing the dimming value.

NOTE: When using timing mode, please confirm that the "**System Failure Level**" check box is not checked, otherwise TIMING dimming cannot operate. When the "**System Failure Level**" is turned on, if the driver detects that the dimming wire is open, it will judge that the driver is in a fault state. When the dimming wire is connected to the DALI controller and the fault is removed, the driver will run timing function.

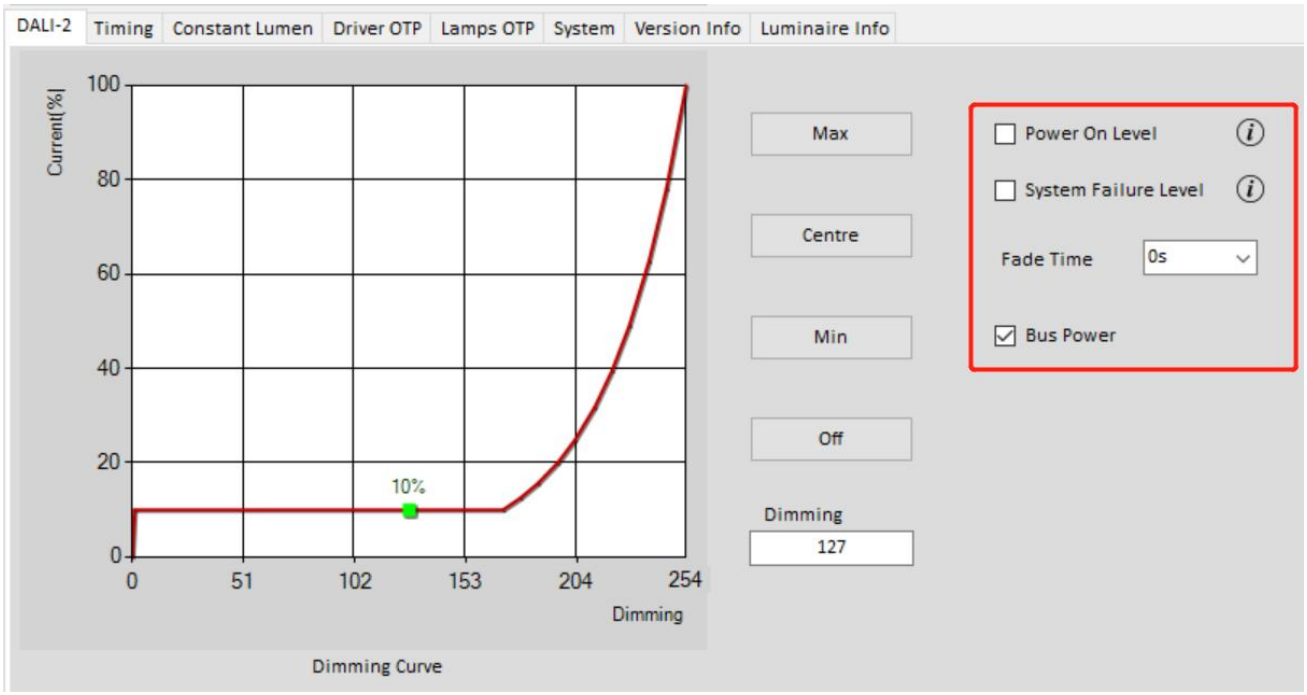


Figure 3

4. How to Set Dimming

Dimming types include DALI-2 dimming and timing dimming. Logarithmic curve and linear curve can be selected for different dimming type. Logarithmic curve will be automatically selected by default when switching to DALI-2 dimming, while the linear one will be selected for Timing dimming.

(Note: When DALI-2 dimming is selected, the Timing dimming function will not be accessible.

While the Timing dimming is selected, the DALI-2 dimming function will not be accessible.)

4.1 Timing Dimming

After selecting "Timing Dimming", you can set relevant parameters within three timing dimming settings (Timing, Virtual Midnight, Self-Adaption) according to your actual needs.

First, after reading the model, we need to select Dimming Type, and we can select Timming-DALI-2 mode.

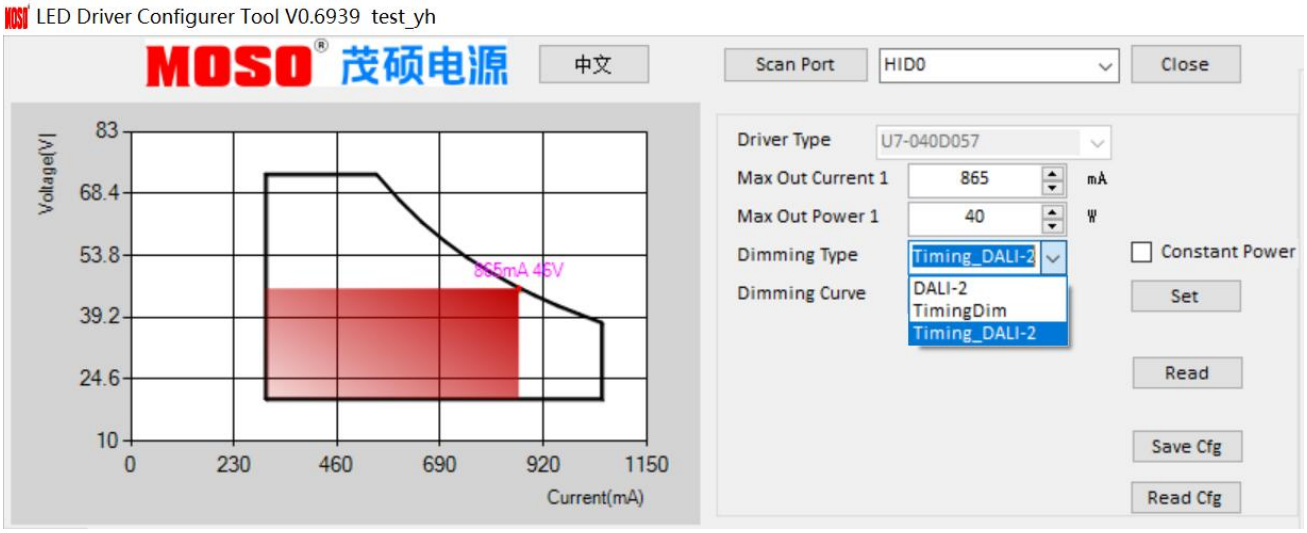


Figure 4

Notes: Follow the principle of “the latter first” in this mode. If the user uses DALI-2 dimming to change the dimming value after using the timing dimming function, the driver will give priority to running the DALI-2 dimming function; but the timer of Timing Dimming keeps counting. If DALI signal is still present, DALI-2 dimming will always be run. When there is no DALI signal, the driver will switch back to Timing Dimming when the timer enters the next step; after using DALI-2 dimming, if the user uses the functions of the timing dimming, the driver will give priority to running the timing dimming function after the shutdown and restart.

Then select dimming curve. We need to select linear curve (Our software will automatically select the linear curve for Timing Dimming by default, which is the optimal dimming curve we recommend for Timing Dimming).

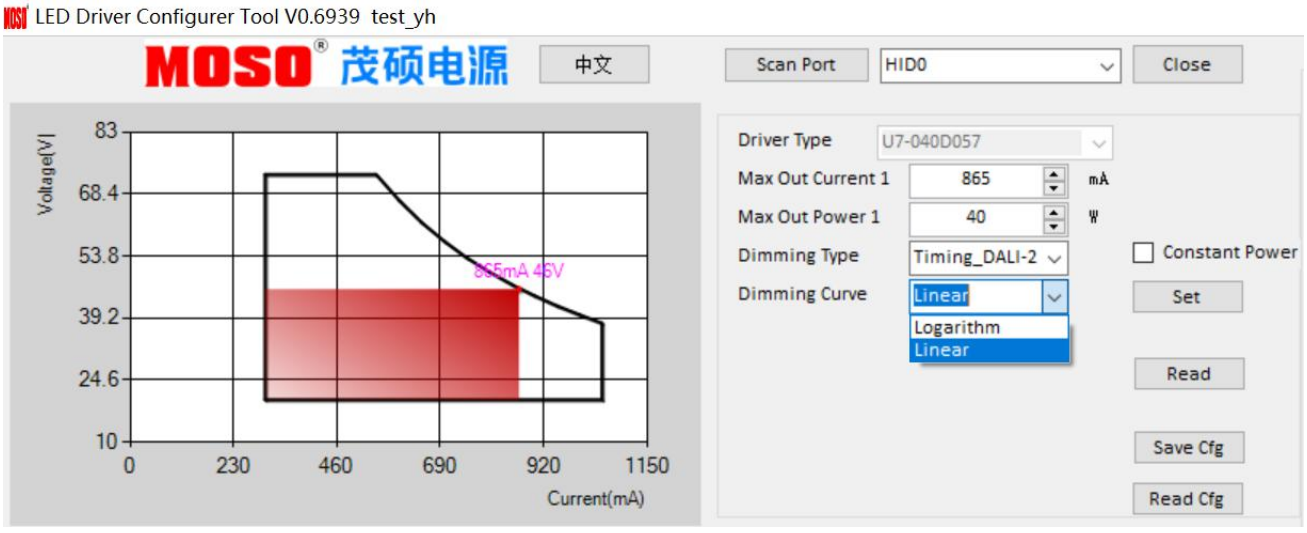


Figure 5

4.1.1 Timing

For example: we set the parameters as shown in Figure 6

Timer 1:	17:00
Timer 2:	19:00
Timer 3:	21:00
Timer 4:	00:00
Timer 5:	03:00
Timer 6:	05:00
Timer 7:	07:00

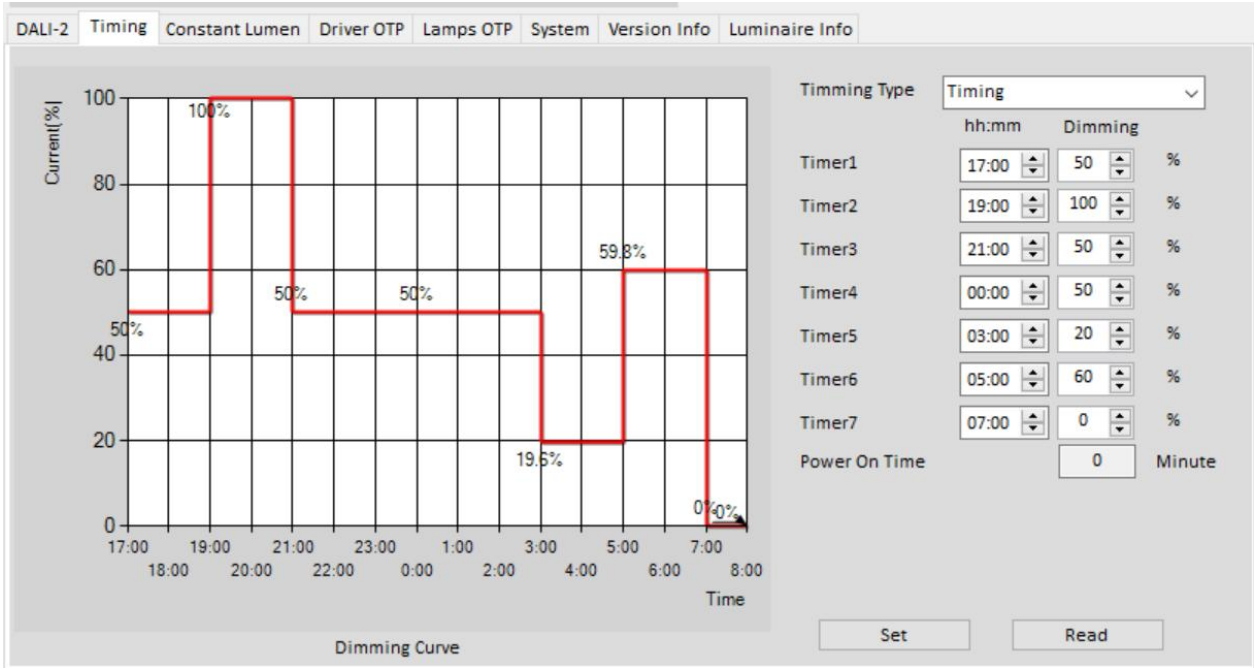


Figure 6

The output current of the drive will drop to 50% of **"Max Out Current 1"** at the moment of power on (Timer1).

After one hour (Timer2), the current will become 100% of the **"Max Out Current 1"**.

After two hours (Timer3), the drive current will become 50% of the **"Max Out Current 1"**.

After two hours (Timer4), the current will become 40% of the **"Max Out Current 1"**.

After two hours (Timer5), the current will become 20% of the **"Max Out Current 1"**.

After two hours (Timer6), the current will become 60% of the **"Max Out Current 1".**

And two hours later (Timer7), the current will become 0% of the **"Max Out Current 1"**.

NOTE: The time we set is just for you to understand the usage of this function. When the program starts to run depends on when the driver starts to power on.

4.1.2 Virtual Midnight

First of all, according to the parameter settings in the Figure 7.

Timer 1: 19:00

Timer 2: 20:00

Timer 3: 22:00

Timer 4: (Midnight point) 00:00

Timer 5: 02:00

Timer 6: 04:00

Timer 7: 05:00

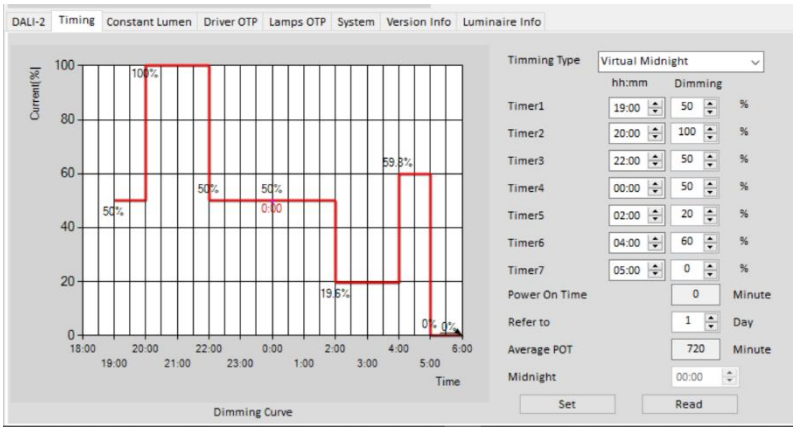


Figure 7

Because the set working hours are 10 hours, it can be calculated that the midnight point is the fifth hour, and at the same time, the software will collect the average working time of 7 days (The basis of explanation is when the reference days are set to 7 days)). If the average working hours of 7 days is 12 hours, therefore, the daily working hours will be increased by one hour((12-10)/2) each day at Timer1 and Timer 7. According to the calculated average time, increase or decrease the front end and rear end of the timing curve of the driver.

The actual working hours will be automatically adjusted as follows:

Timer 1:	18:00
Timer 2:	20:00
Timer 3:	22:00
Timer 4:	00:00(Virtual Midnight Point)
Timer 5:	02:00
Timer 6:	04:00
Timer 7:	06:00

NOTE: The time of settings is only for your understanding. “18:00” of Timer 1 don’t mean the actual 18 o'clock, the program starts to run depends on the time when your driver starts power on.

The customer is not allowed to modify midnight point. Every time the customer inputs the required parameters in the "Virtual Midnight" interface, the software will automatically calculate the total duration of Timer 1-Timer 7. For example: Timer 1 is 19:00(tonight); Timer 7 is 09:00(next morning), the software automatically calculates the midnight point as 02:00 and locks the midpoint to run the virtual midnight function according to this value.

When the driver is used for the first time, there is no working data stored inside the driver. When the reference time is set to how many days, the driver will first run the corresponding days to set the parameters of this program.
(We strongly recommend that customers use the reference day function according to this idea, because the error is minimal. For detailed explanation, please refer to 4.1.4.)

4.1.3 Self-Adaption

For example, we set the parameters like the Figure 8 below:

Timer 1: 21:00
Timer 2: 22:00
Timer 3: 23:00
Timer 4: 00:00
Timer 5: 01:00
Timer 6: 02:00
Timer 7: 03:00

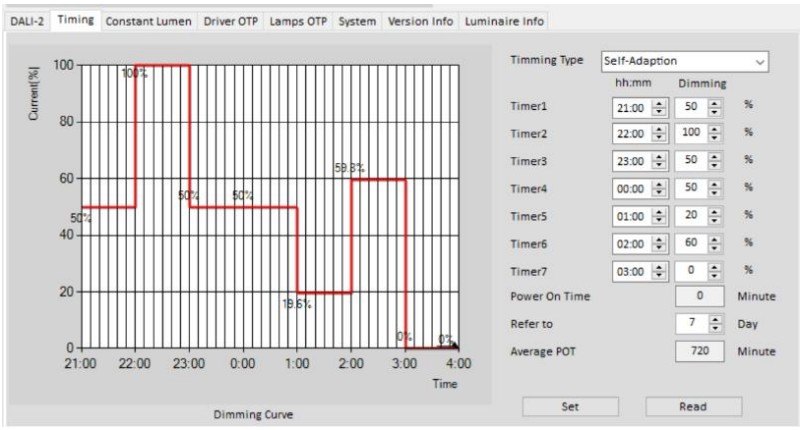


Figure 8

This function is used to adapt to the situation that the night time varies with the seasons. The setting parameters of timing dimming also change accordingly. To use this function, you need to set the parameters in "Timing Dimming", and the software will calculate the night time length of tonight according to the night time length of the previous days (reference days).

When the software obtains that the average working time of 7 days is 720 minutes (12 hours), because the total working time we set is 6 hours for each day, and 12÷6=2, the time interval will be 2 times longer than the previously set time.

The driver's actual working time will be change according to the following 7 timers:

Timer 1: 18:00
Timer 2: 20:00
Timer 3: 22:00
Timer 4: 00:00
Timer 5: 02:00
Timer 6: 04:00
Timer 7: 06:00

4.1.4 Special Notes

1. The reference days can be set by yourself. When the driver is used for the first time, a cycle will start to form after the continuous work within reference days.

Refer to: Total duration of sampling



Figure 9

"Refer to" is a tool to reduce errors. In fact, when you set the Timing Dimming, the driver will immediately start running the Timing Dimming. The reference days are not a tool for activating the Self-Adaption. Just like numerator and denominator, the number of reference days can be regarded as the denominator, and the total working duration as the numerator. When calculating the average working time, the more reference days, the more accurate for the average result calculated, and also for the error will be smaller. The length of the reference days will only affect the driver's error correction speed.

2. When the actual power on time of the driver reaches four fifths or more of the set working time, and the driver is powered off, the driver will consider that it has completed the one reference day working cycle.

3. In the dimming type of Timing_Dali-2, when the driver is running Timing Dimming mode, the DALI dimming control is performed. At this time, the driver's brightness will follow the DALI dimming value and will not change until the next timer is reached, and the remaining timer in Timing Dimming will automatically continue to run.
Let's take Timer 1: 18:00 & Timer 2: 20:00 as the example:
When DALI dimming is performed at any time from 18:00 to 22:00, the driver will follow the DALI dimming value and keep the light unchanged .Until 22:00, when the driver reach the Timer 2, it will immediately switch back to the dimming value set by Timing Dimming.
Note: When the driver reaches timer7, it will execute DALI dimming and output the dimming value according to DALI dimming, and will not switch back to timing dimming.

5. How to Set Constant Lumen Output

As the red box 1 shown in Figure 10 below**.** Set a current value in the "**Max Out Current 1**", which must be lower than the maximum current value of 3000mA. After setting the value, user must press the "**Enter**" key on the keyboard. After pressing the key, you can see the following two non-overlapping curves on the Configurer interface, and then you can set the CLO function.

The **"Enable"** check box must be checked before the constant lumen function can be used normally (Red box 2). As the red box 3 shown in Figure 10, Press **"Default"** button. The optimal setting for the curve of CLO function we recommend will appear. Of course, if you want to set the CLO according to your own needs, you can also enter the value where the red box 4 located.

Then, press **"Set"** button (red box 5) write all parameters to driver.

Follow the red box 6 and press **"Read"** button to read the constant Lumen parameters on MCU through Configurer.

After reading, when the curve set in the corresponding percentage column appears in the Configurer interface curve, it means that the setting is correct.

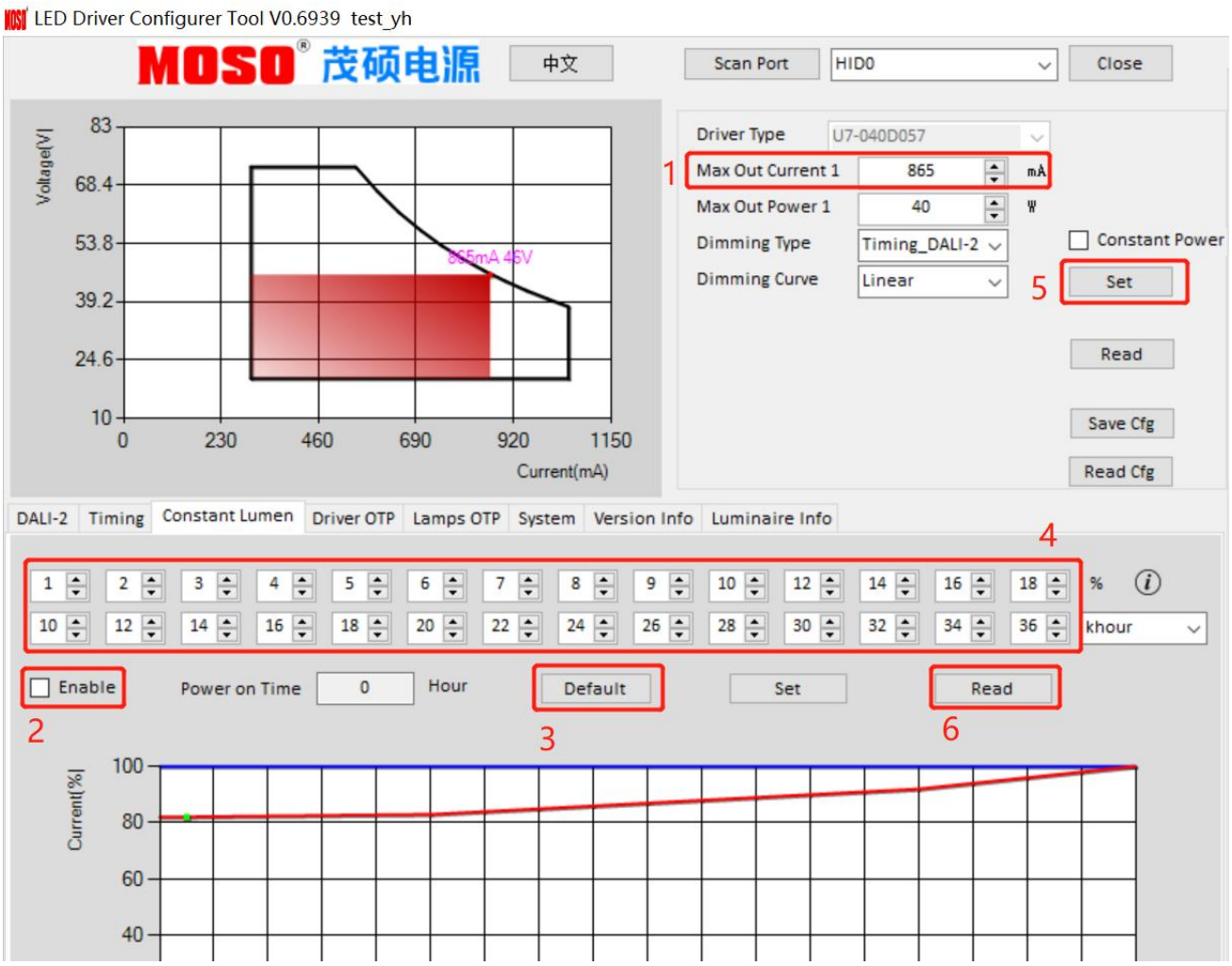


Figure 10

NOTE: The minute option bar is only for test verification. After running this function to verify that constant lumen can be used normally, power off the driver and reread the drive's data. After finding that this option bar changes to hour display, don't worry. This function is normal. The minute option is only for test use. After the test is completed, the default hour option will be restored.

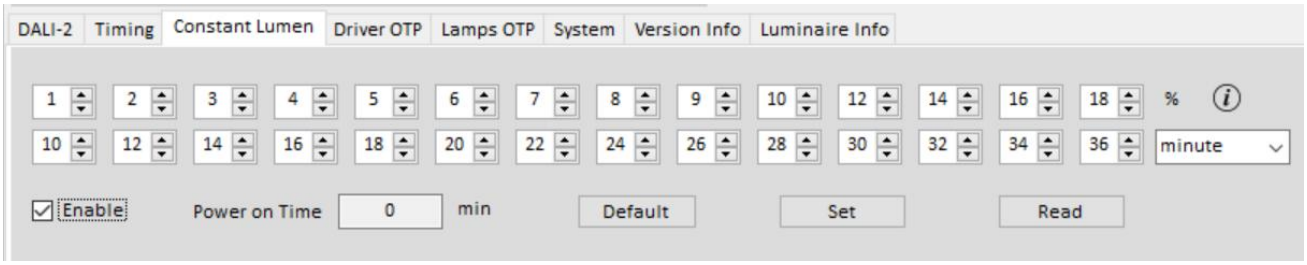


Figure 11

6. About Driver OTP

Calculate the current dimming value according to the following formula,

Val = (254-Voor) * (T-Ts) / (Te - Ts) + Voor

Note:

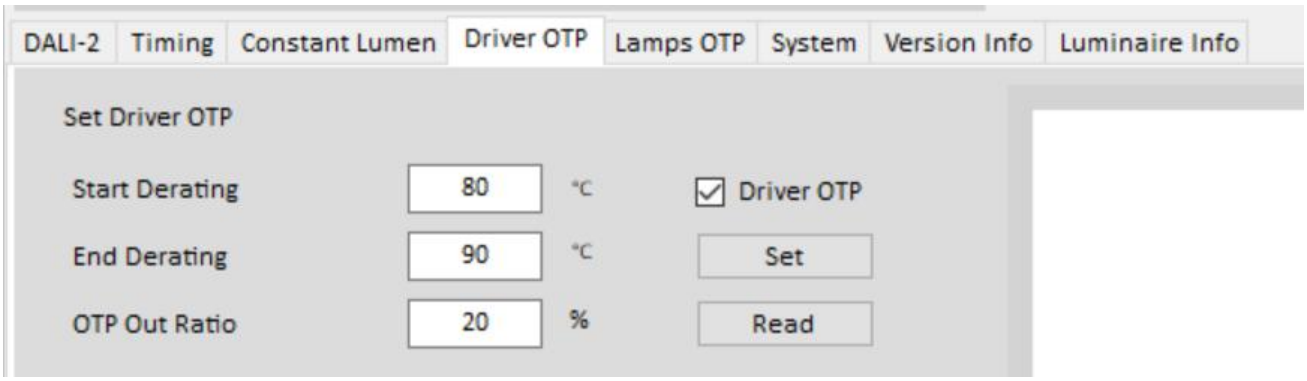
Val is the current dimming value,

Voor is the corresponding dimming value of the OTP out Ratio, the OTP Out Ratio is the percentage of the maximum output current.

Te is the endderating temperature, End Derating

Ts is start derating temperature, Start Derating

T is the current temperature



7. How to Set Lamps OTP

(1) As “the red box 1”shown in Image 20 below. User can set the target value in the “**Start Derating”**, **“End Derating”**, **“OTP Out Ratio”** (Other parameters can be set based on actual needs).

(2) The **“Lamps OTP”** check box must be checked to make sure that the Lamps OTP function can be used normally. (Red box 2)

(3) Then, press **“Auto Set”** button (red box 3) write all parameters to driver.

(4) The “Read” button located in main interface (red box 4) is to read all parameters written into the MCU through DALI programmer.

(5) The “**Read**” button located in “**Lamps OTP**” interface (red box 5) read only the Lamps OTP parameters from MCU. Only what Configurer read out is exactly the parameter the user set before, it means that the OTP function has been set successfully.

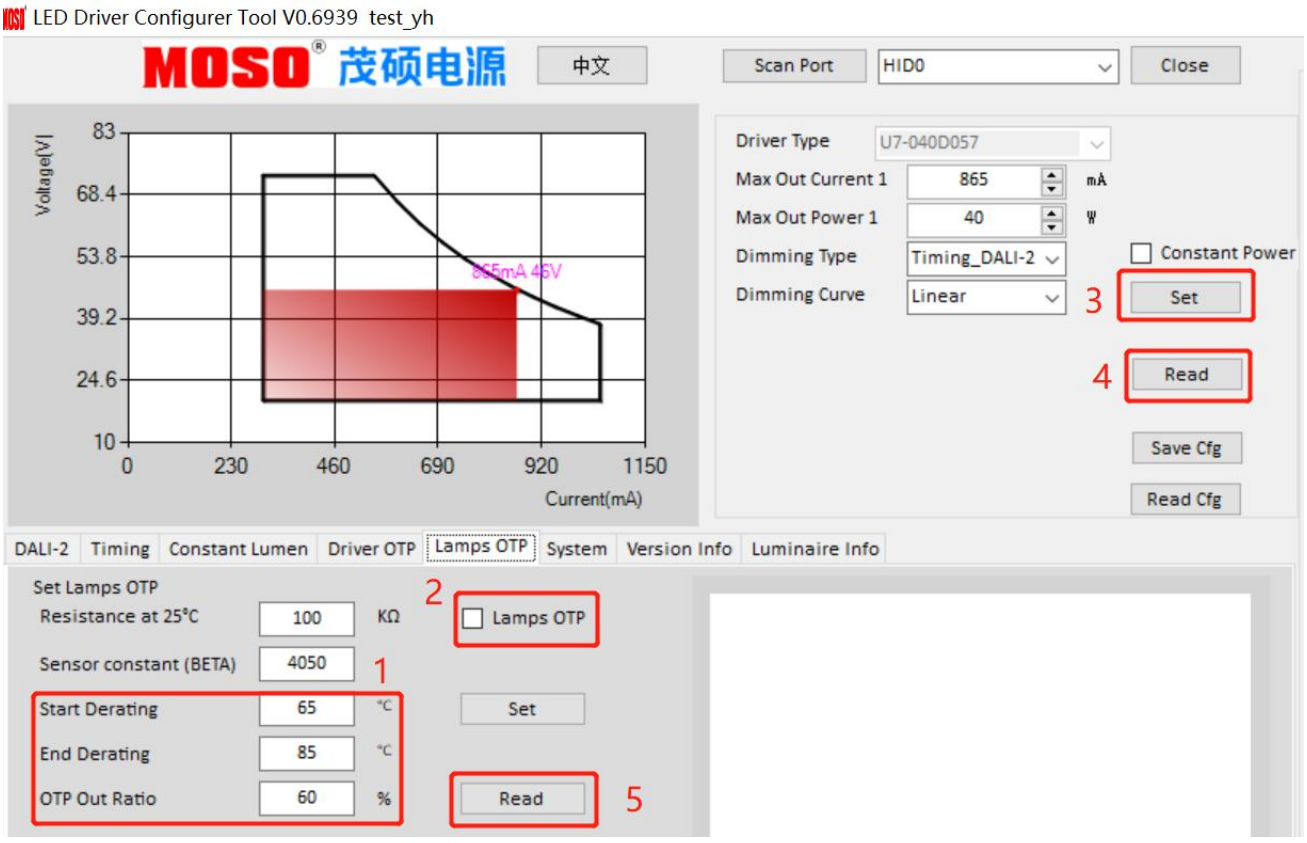


Figure 12

Note: NTC resistance at 25℃ recommended value 100KΩ, Sensor constant (BETA) value 4050.

NTC resistance can be selected by customers, but we still recommend the use of 100k Ω thermistors, because the error between the use of 100k Ω thermistors and the actual temperature is the smallest. When using a 100K Ω NTC resistor to test the temperature, the software test temperature is about 3-5℃ different from the actual test temperature.

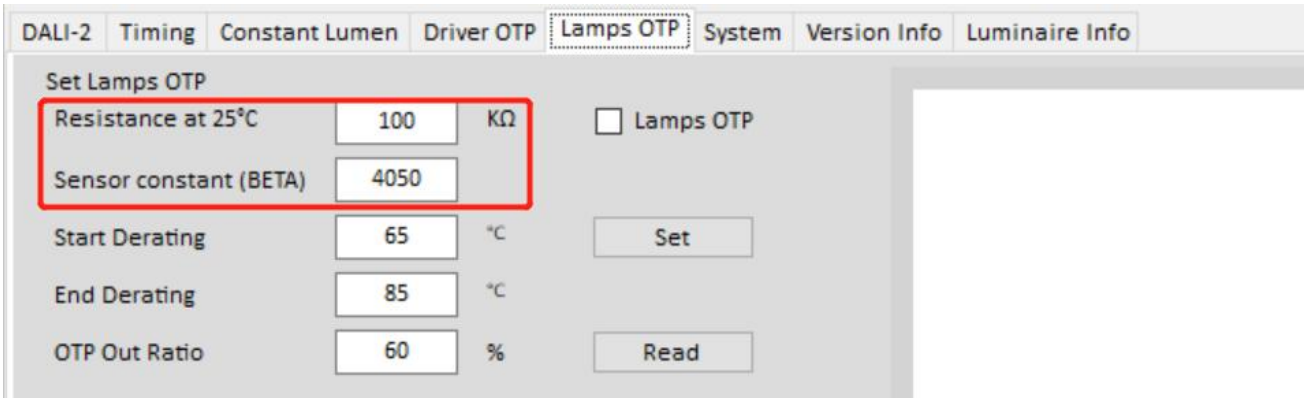


Figure 13

8. Luminaire Info

Luminaire Info function allows for the luminaire manufacturer to store light fixture information into the driver. This information can be written to the driver on the luminaire manufacturers production line. The information can be read by the DALI-2 control system, stored in a database and is useful for asset tracking and informed maintenance.

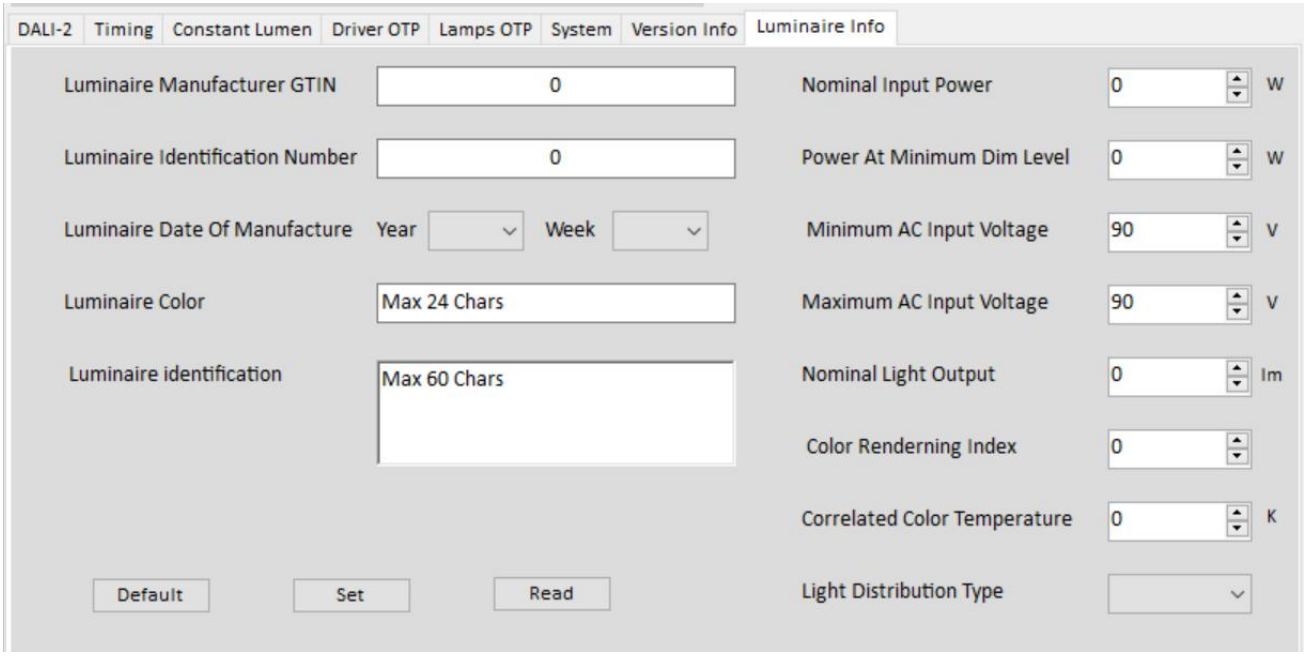


Figure 14

Version

A.1	First release	2024-09-03

Specification for Approval

Product Name： MS-PRG-D1 V01 Programmer

Product Model： MS-PRG-D1 V01

Rev ： A.1

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

Prepared By	Checked By	Approved By

Specification for Approval

Product Name： MS-PRG-D1 V01 Programmer

Product Model： MS-PRG-D1 V01

Rev： A.1

CUSTOMER AUTHORIZED SIGNATURE		
Tested By	Checked By	Approved By
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