

# **DALI programming**

**User Manual V3. 0**

## Revision history

Revision	Changes	Author	Date
V1.0.4	Add function Save& Load profile	David.Zhou	2020/12/03
V1.0.5	Delete OTP recovery point	David.Zhou	2021/03/22
V1.0.6	Add current programming read and LED OTP read functions. Change the default OTP trigger point from 120°C to 100°C.	David.Zhou	2021/06/08
V1.9	1.Add compatibility for EUCO-1K0140GLA 2. Modify the version format of GUI	David.Zhou	2021/09/13
V2.0	1.Update current programming set up.	David.Zhou	2022/02/18
V2.4	1.Update firmware update process	David.Zhou	2022/07/25
V3.0	1.Update functions description: CLO,STD, Part 251, Part 253	David.Zhou	2023/02/13

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## I. Connect the device

Before launching the DALI programming software, make sure the programmer is connected to the USB port of your computer. Then, connect the programmer SDPTDV05UAB to the LED driver via DA+/DA- terminal (The DALI interface is polarity sensitive). After all of this, connect the driver to AC input, and power on the driver. The connection is described in the following figure. Please connect to LED fixture during the programming. The driver will turn on the light on and off to indicate the current programming is carried in correct order.

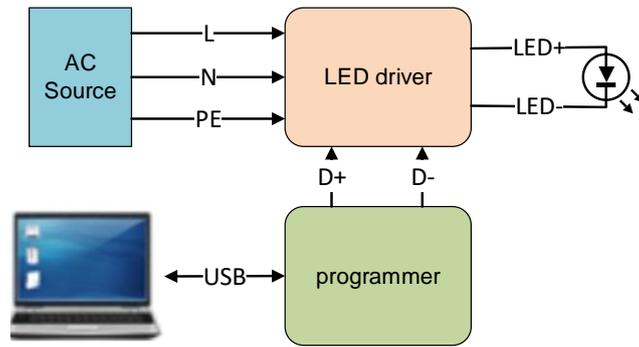


Figure 1. The connection of the DALI programming tool



Figure 2. The picture of the DALI programming tool

**Note:** Before running all the following functions, please make sure the driver is powered on. When the USB is connected to the computer, it may take a few minutes to install a driver automatically. Please wait patiently for the installation to finish.

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**Note: The LED module is mandatory during current programming.**

## II. Open DALI programming software

Double click “*DALI\_Tool\_For\_EUCO-1Kx140GLA\_S03E00.exe*” to start the software.



Figure 3 Open DALI programming software

## III. Program the output current

**Step 1:** The GUI interface of DALI programming tool is shown in the following figure. Firstly, after opening the software, make sure the status light becomes green which means that the DALI programming to has be connected successfully. Otherwise, follow step “I-Connect the device” to check the USB cable and DALI bus.

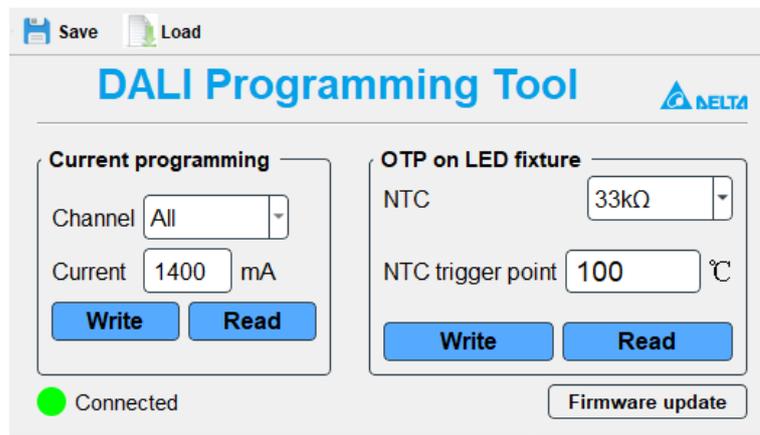


Figure 4 the software of DALI programming tool

**Step 2:** There are four items of current channel you can choose as shown below:

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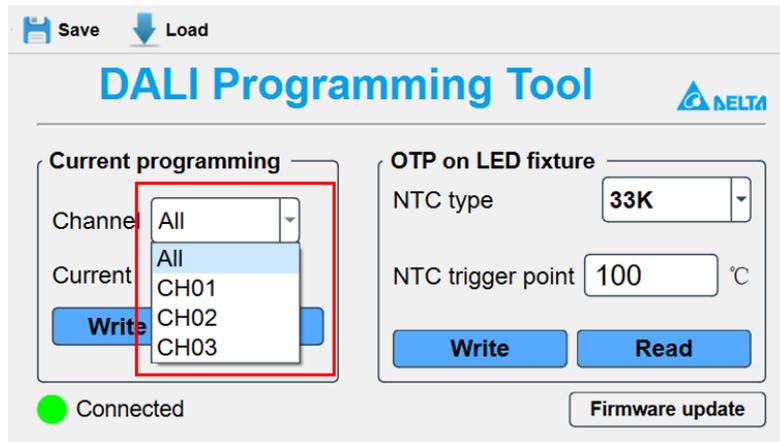


Figure 5. Choose current channel

If you select the item “All”, it means that you would program the current of all three channels at once. But the channel, “CH01”, “CH02” and “CH03” (only for EUCO-1K5GLAx), would only program the corresponding channel ‘s current.

**Step 3:** After choosing the programming channel, the current value of that channel also need to be set. The default value for each channel is 1400mA as show in the figure. You could set the current value from 500mA to 1400mA.

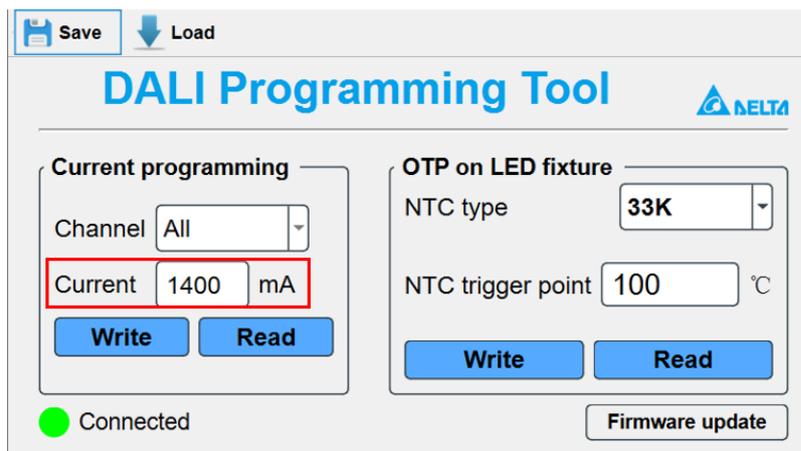


Figure 6. Set current value

**Step 4:** If the programming parameters have been set completely, click “Write” button. Then the driver would light-off and light-on automatically. And the status message at the bottom will show “Current programming successfully”.

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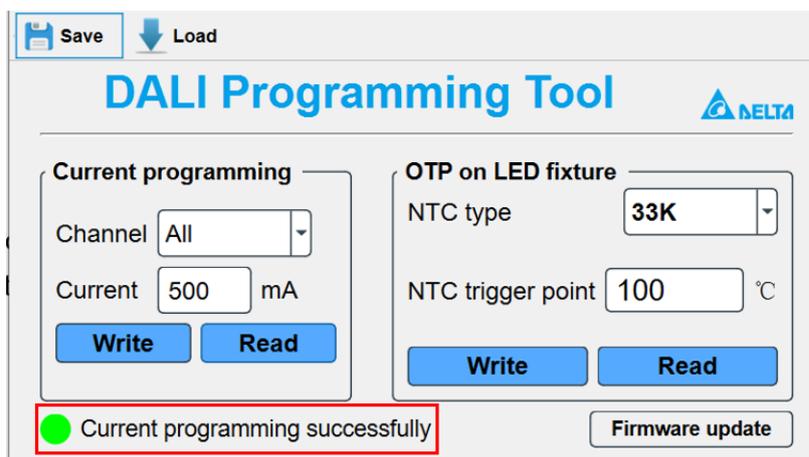


Figure 7. Current program successfully

**Step 5:** After programming the current, the customer could read the programming result to check if the output current programming action is right. Click “ **Read** ” button to read the actual output current.

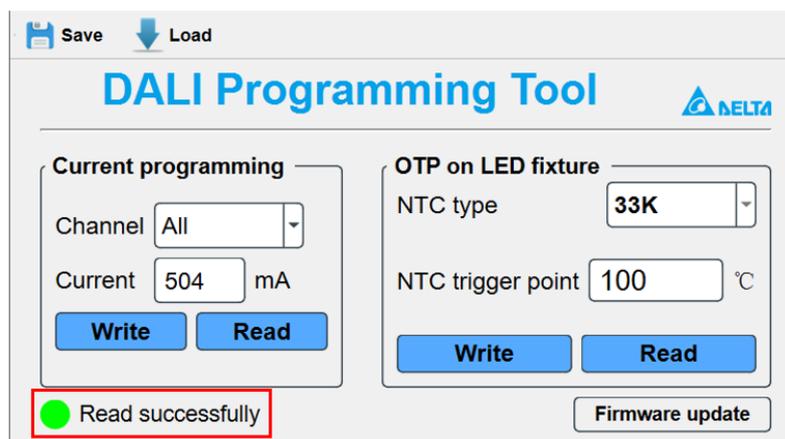


Figure 8. Read current programming value

#### IV. Set and read LED OTP parameters

The driver has integrated the OTP protection function. But this function needs the LED fixture with a 33K or 100K NTC register to sensor the temperature. For the OTP protection, there are two parameters that you may want to set: NTC type and temperature trigger point.

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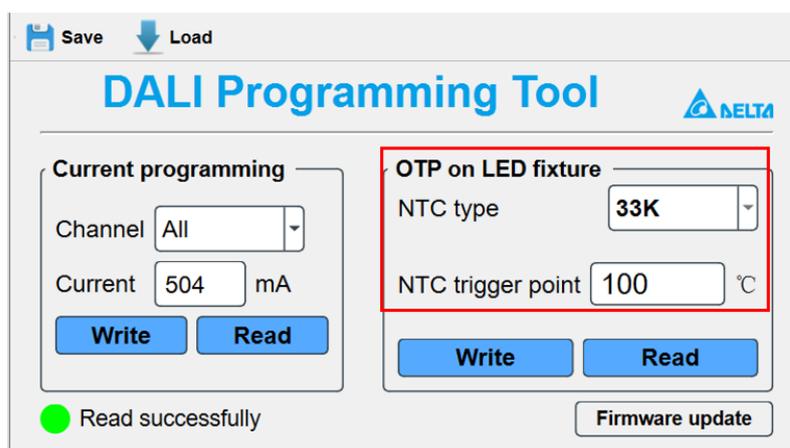


Figure 9. Set OTP parameters

When the LED's temperature has exceeded NTC trigger point, it would start OTP protection process. Please refer to the driver's data sheet for full details of OTP protection.

Setting OTP parameters is simple. Firstly, set the value of trigger point. Then click the **“Write”** button.

The customer also could click **“Read”** button to read the current OTP point.

In order to make sure the OTP protection works normal, some constraints have been introduced.

1. The range of NTC trigger point is 80°C~120°C. The default value is 100°C.

## V. Save& Load profile

**Step1:** Please click the “Save” button in the tool bar. The GUI would save current configured parameters.

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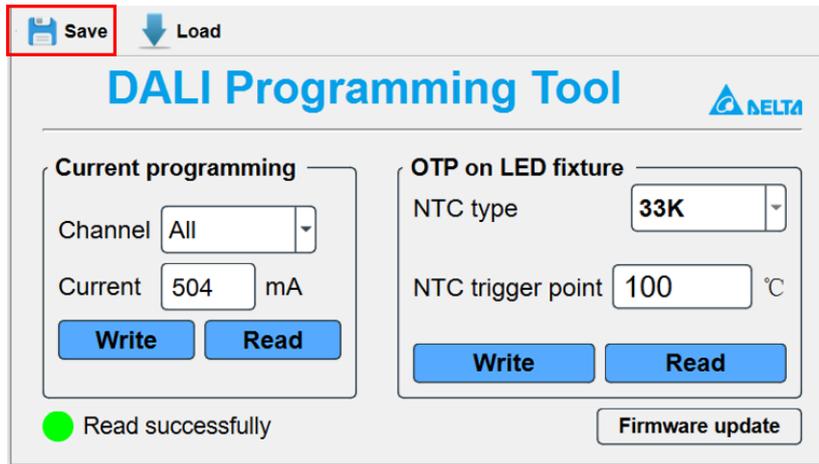


Figure 10. Save profile

The program will create a new folder in current path named “profile”. In this folder, the file with parameters is named “config.ini”.

**Step2:** Please click “Load” button to load the last saved profile.

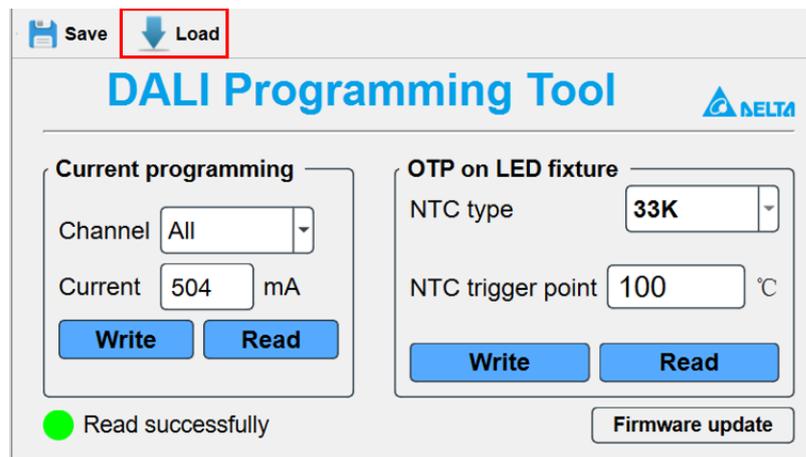


Figure 11. Save profile

And every time the GUI starts, it will load the profile automatically.

## VI. Firmware update

**Step1:** Before updating the firmware, please make sure that the programming tool you are using is the latest version which the model number is SDPT05UAA or SDPT05UAB. And, the AC power of the driver has been turned off for at least 30 seconds.

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Note: If you use SDPT05UAB for updating, it would support update 30~40pcs at a time.

Step2: Click “Firmware update” button in the lower right corner. The firmware update interface would pop out.

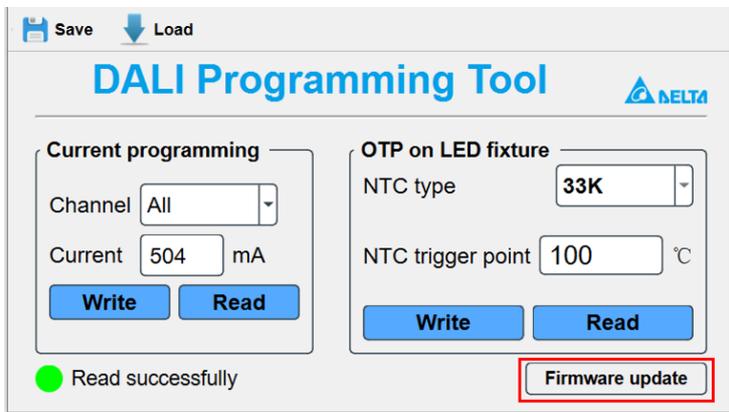


Figure 12. Click Firmware update button

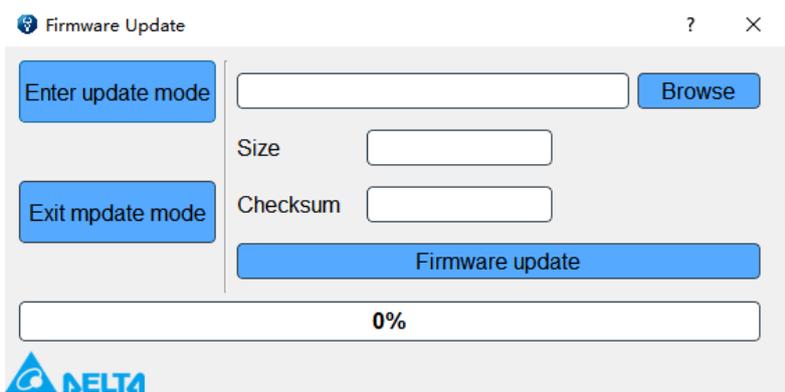


Figure 13. the interface of firmware update

Step3: Click the button “Enter Update mode” as shown below.

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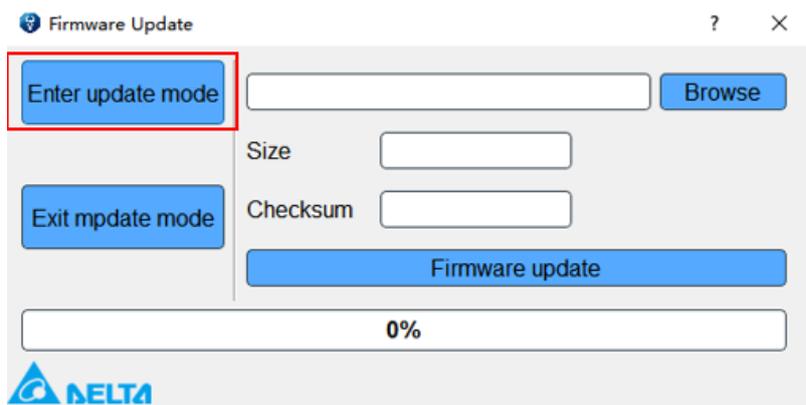


Figure 14. Enter firmware update mode

Please click “NO” in the following picture.

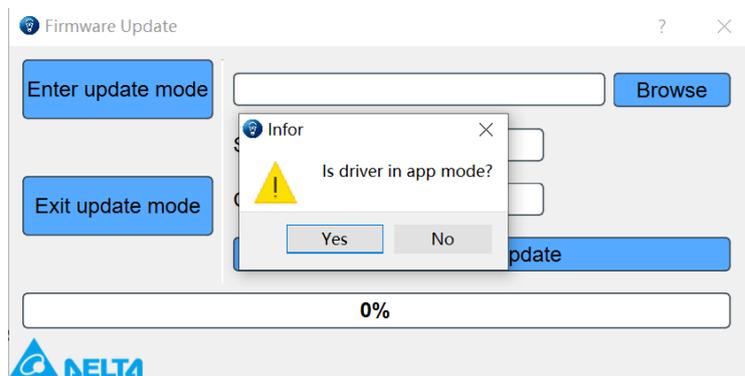


Figure 15. Choose enter update mode

When a message “**Wait for AC power on ...**” pops up, turn on the AC power of driver. After the AC power is stable, click “**OK**” button.

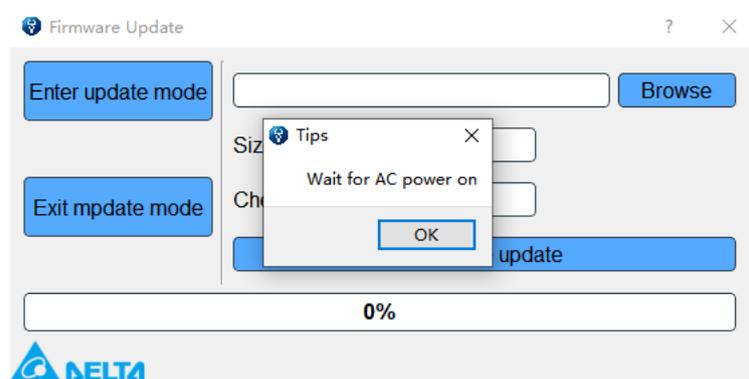


Figure 16. Message: Wait for ac power on

If the MCU has already been in update mode, a message “MCU is ready for updating” would pop out.

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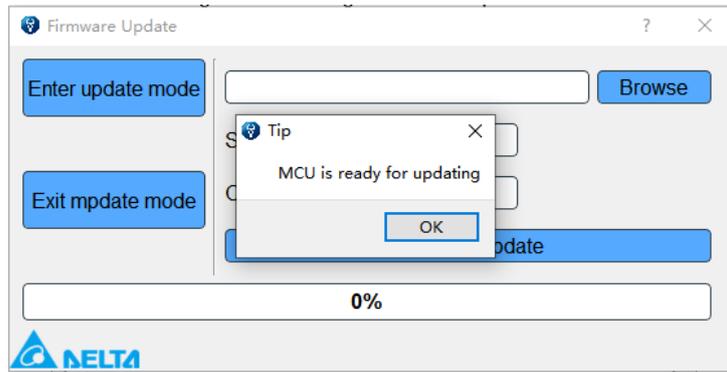


Figure 17. Message: MCU is ready for updating

Step 4: Click **“browse”** button and choose the hex file that you are ready for updating. Please check the size and checksum of hex file in case of updating wrong file.

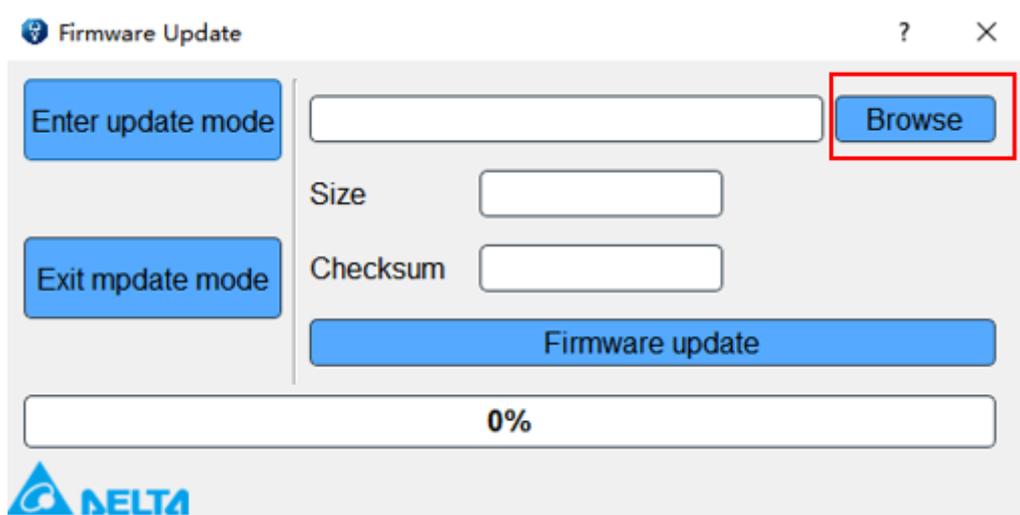
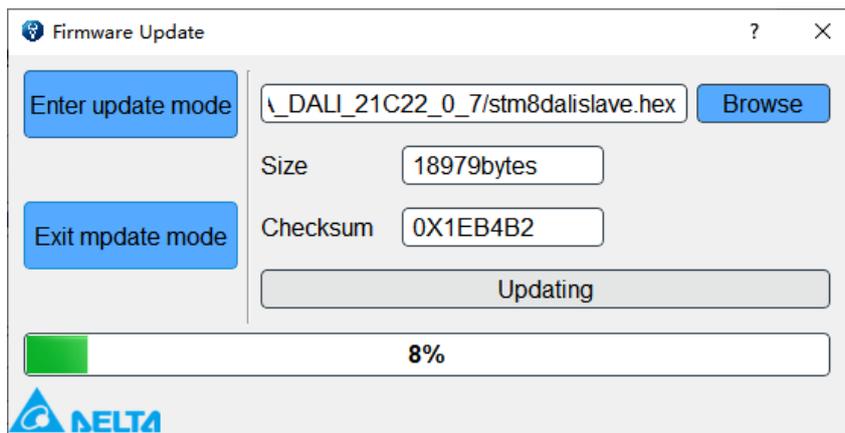


Figure 18. Read hex file

Step 5: Click button **“Firmware-update”** to update firmware. The progress state shall be shown in the progress bar.



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Figure 19. Update hex file

When the update is completed, **“Update successfully”** would pop out. The whole update process will take about one minute.

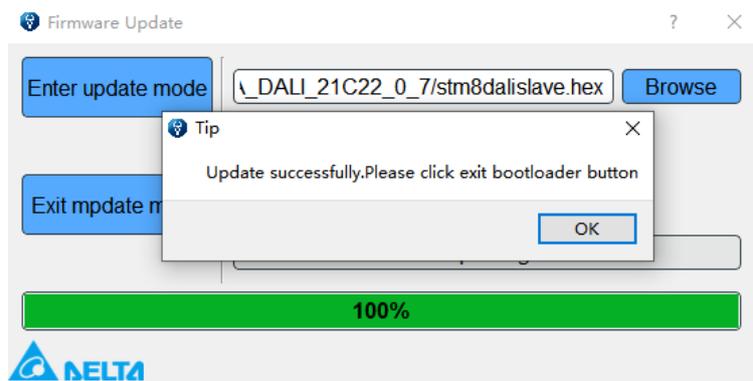


Figure 20. Update successfully

Step 6: Click button **“Exit Update mode”** to exit update mode.

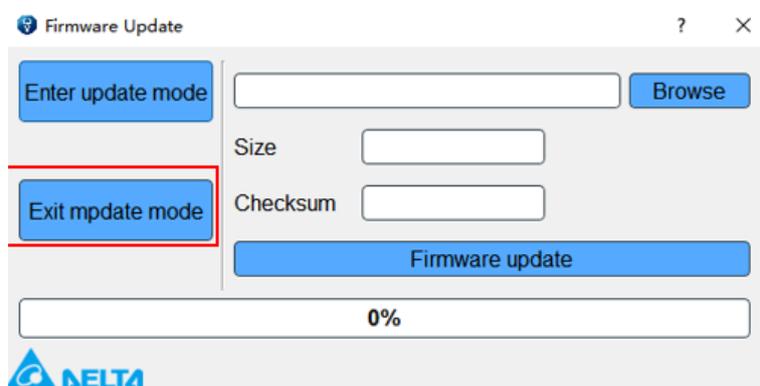


Figure 21. Exit update mode

### VII. Add-on functions

Note: Not all drivers supports this function. If you want use the add-on functions, please update the firmware to the latest version.

Step 1: Turn on the AC power, when the driver works normal, then open the GUI. If the driver supports the add-on functions, the GUI would be shown as below:

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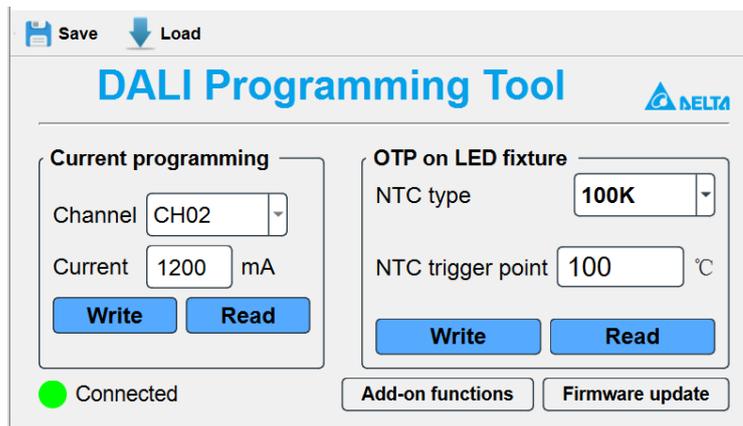


Figure 22. GUI with add-on functions

Step 2: Click the “ Add-on Functions”. There would pop out one new GUI.

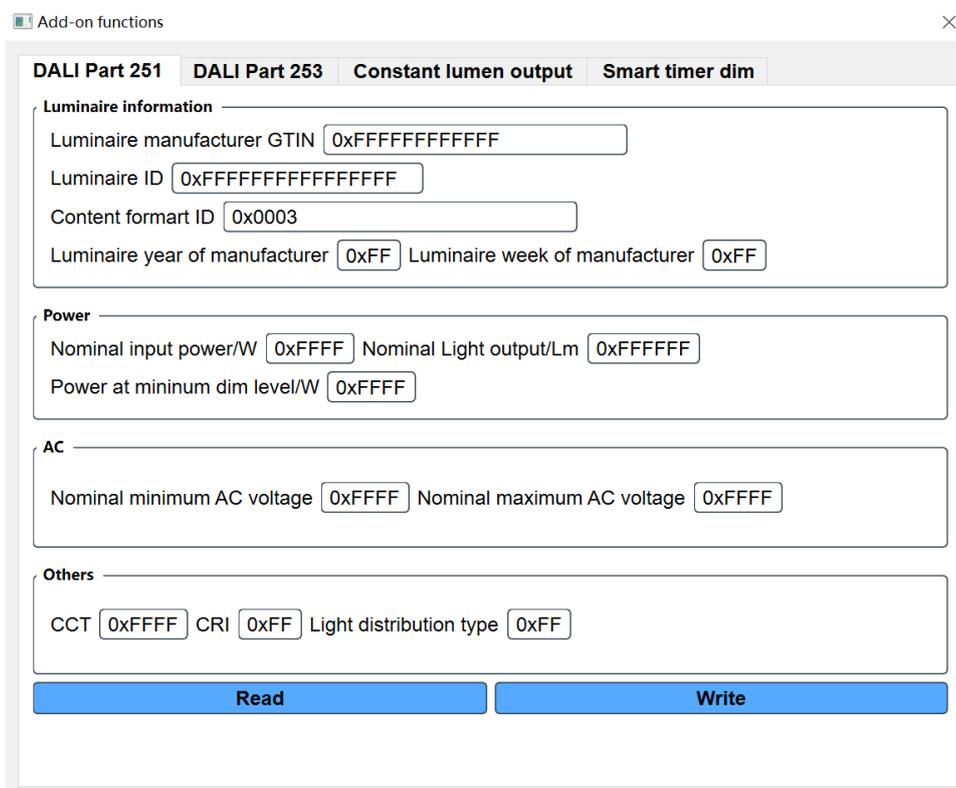


Figure 22. GUI for add-on functions

There are items in add-on functions: DALI part 251, DALI part 253, Constant lumen output, smart timer dim.

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**DALI part 251:** This function is developed based on DALI protocol-DALI part 251. It could read and write most of memory bank 1 expansion.

The screenshot shows a software interface titled "Add-on functions" with a close button (X) in the top right corner. It features four tabs: "DALI Part 251", "DALI Part 253", "Constant lumen output", and "Smart timer dim". The "DALI Part 251" tab is selected and contains the following fields:

- Luminaire information:**
  - Luminaire manufacturer GTIN:
  - Luminaire ID:
  - Content format ID:
  - Luminaire year of manufacturer:  Luminaire week of manufacturer:
- Power:**
  - Nominal input power/W:  Nominal Light output/Lm:
  - Power at minimum dim level/W:
- AC:**
  - Nominal minimum AC voltage:  Nominal maximum AC voltage:
- Others:**
  - CCT:  CRI:  Light distribution type:

At the bottom of the GUI are two blue buttons: "Read" and "Write".

Figure 23. GUI for DALI part 251

Click on the “ Read ” button would start reading process. Then all data location in the GUI would be disabled, and enabled when this data has been read successfully.

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Add-on functions
×

**DALI Part 251**
**DALI Part 253**
**Constant lumen output**
**Smart timer dim**

**Luminaire information**

Luminaire manufacturer GTIN

Luminaire ID

Content format ID

Luminaire year of manufacturer  Luminaire week of manufacturer

**Power**

Nominal input power/W  Nominal Light output/Lm

Power at minimum dim level/W

**AC**

Nominal minimum AC voltage  Nominal maximum AC voltage

**Others**

CCT  CRI  Light distribution type

Reading
Write

Figure 23. Reading process DALI part 251

Click the “Write” button would start the write process. Also, when writing, all data location would be disabled until it has been written completely. It should be noted that the writing process would take some time.

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Add-on functions ×

**DALI Part 251** **DALI Part 253** **Constant lumen output** **Smart timer dim**

**Luminaire information**

Luminaire manufacturer GTIN

Luminaire ID

Content format ID

Luminaire year of manufacturer  Luminaire week of manufacturer

**Power**

Nominal input power/W  Nominal Light output/Lm

Power at minimum dim level/W

**AC**

Nominal minimum AC voltage  Nominal maximum AC voltage

**Others**

CCT  CRI  Light distribution type

Figure 24. Writing process DALI part 251

**DALI part 253:** this part contains all data about diagnostics and maintenance.

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DALI Part 251	DALI Part 253	Constant lumen output	Smart timer dim
<b>Control gear</b>			
Operating time	<input type="text" value="0"/> s	Start counter	<input type="text" value="0"/> times
Output current percent	<input type="text" value="100"/> %	Temperature	<input type="text" value="100"/> °C
Overall failure condition	<input type="text" value="100"/>	Overall failure condition counter	<input type="text" value="100"/> times
Output power limitation	<input type="text" value="100"/>	Output power limitation counter	<input type="text" value="100"/> times
Thermal derating	<input type="text" value="100"/>	Thermal derating counter	<input type="text" value="100"/> times
<b>Light source</b>			
Start counter resettable	<input type="text" value="0"/> times	Start counter	<input type="text" value="0"/> times
On time resettable	<input type="text" value="0"/> s	On time	<input type="text" value="0"/> s
Output voltage	<input type="text" value="0"/> V	Current	<input type="text" value="0"/> mA
Temperature	<input type="text" value="0"/> °C	Overall failure condition counter	<input type="text" value="100"/> times
Overall failure condition	<input type="text" value="0"/>	Short circuit counter	<input type="text" value="100"/> times
Short circuit	<input type="text" value="100"/>	Open circuit counter	<input type="text" value="100"/> times
Open circuit	<input type="text" value="100"/>	Thermal derating counter	<input type="text" value="100"/> times
Thermal derating	<input type="text" value="100"/>		
<b>Read</b>		<b>Write</b>	

Figure 25. GUI for DALI part 253

The reading and writing process would be as same as DALI part 251. However, there is one thing different. Based on the DALI protocol, only two data, **light source start counter resettable** and **light source on time resettable**, are writable. All the other data are read-only.

**Constant lumen output:** Luminance of most LED drivers would be attenuated more or less, with the same output current. So the driver supports this illumination compensation function to make sure to get the constant lumen.

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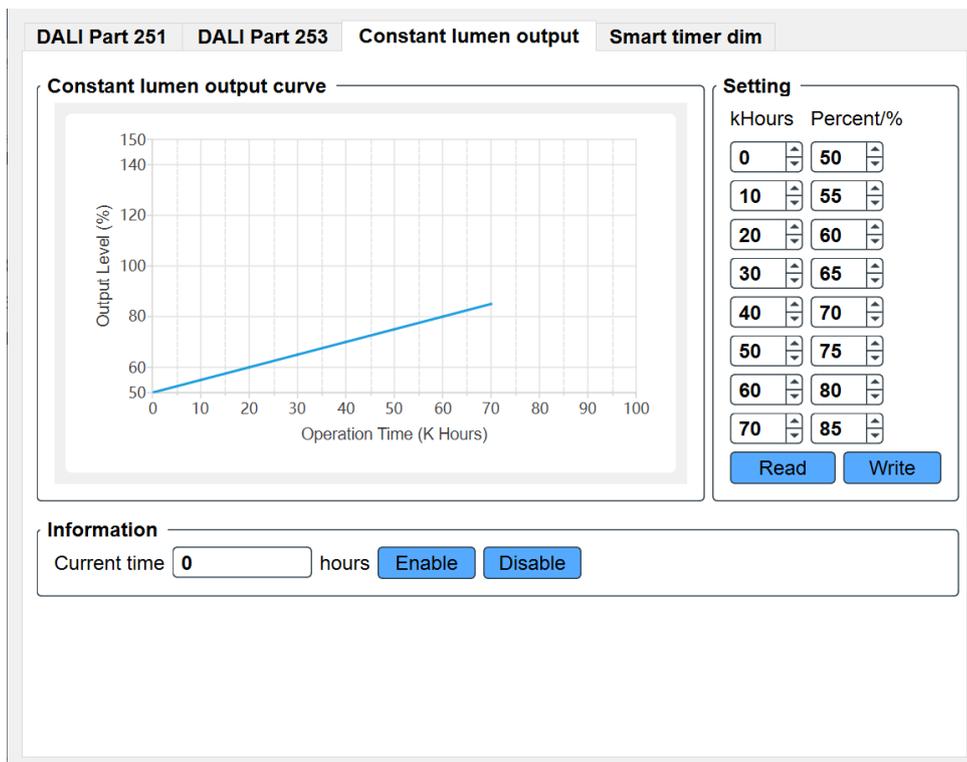


Figure 26. GUI for CLO

There are 8 time steps and percent steps for the setting. The unit for time step is kHours. Please refer the datasheet of LED to get the curve between time and illumination. And the first time always would be 0.

After key in all parameters, click on the “Write” button to start the writing process. Then the “Read” button could be clicked to check if the setting is correctly.

If the setting is successful, click “Enable” to start the CLO function. In avoid of flicker, the CLO ration only be updated when received the dimming command.

**Smart timer dim:** In this function, you could customize a dynamic dimming schedule in different modes

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Figure 26. Different modes for STD

There are three modes to create an autonomous dimming schedule:

**Fixed timer:** It is a memoryless-based dimming mode that tracks the output level based on the programmed timing curve. The output level is organized by scheduled profile in the five steps.

**Midnight centric timer:** This mode is a memory-based that automatically measures over the past two days. The power on time of these two days is naturally corresponded to the night time. The midnight centric timer software calculates the length of power on time and centralized from the given virtual midnight point and changed the output level accordingly. More specifically, when the LED driver is power-on during the very first two days or the power-on time difference of past two days is more than 15minutes, the output current will fix to the maximum level since there is no valid data for reference. When the power-on time difference of past two days is less than 15minutes, the output level is controlled based on the correlation between the midnight point of programmed profile and yesterday power-on duration.

**Ratio rescale timer:** This mode is similar to midnight centric timer that records the power-on time based on the local night time. The ratio rescale timer software rescale programmed output power profile of each step by a calculated percentage of the recorded power-on time (when valid) out of given 5 steps duration.

Note: When all steps are finished, the light level remain in last level (level in step 5) for all three modes.

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**Fixed timer mode usage:** The figure below shows the example of fixed timer dimming profile. In this case, the driver will perform 75% output level for the first two hours since power-up. Then change to 55% output level for following four hours (as step 2), follow by 35% output level for another three hours (as step3), and so on.



Figure 27. Fixed timer mode usage

**Midnight centric timer mode usage:** The figure below shows the midnight point is set to 23:00(dotted line) with typical five steps profile. If yesterday's time duration is six hours and valid, then the driver will perform the output level at 55% for one hour when power on, then follow by 35% for three hours, and so on.

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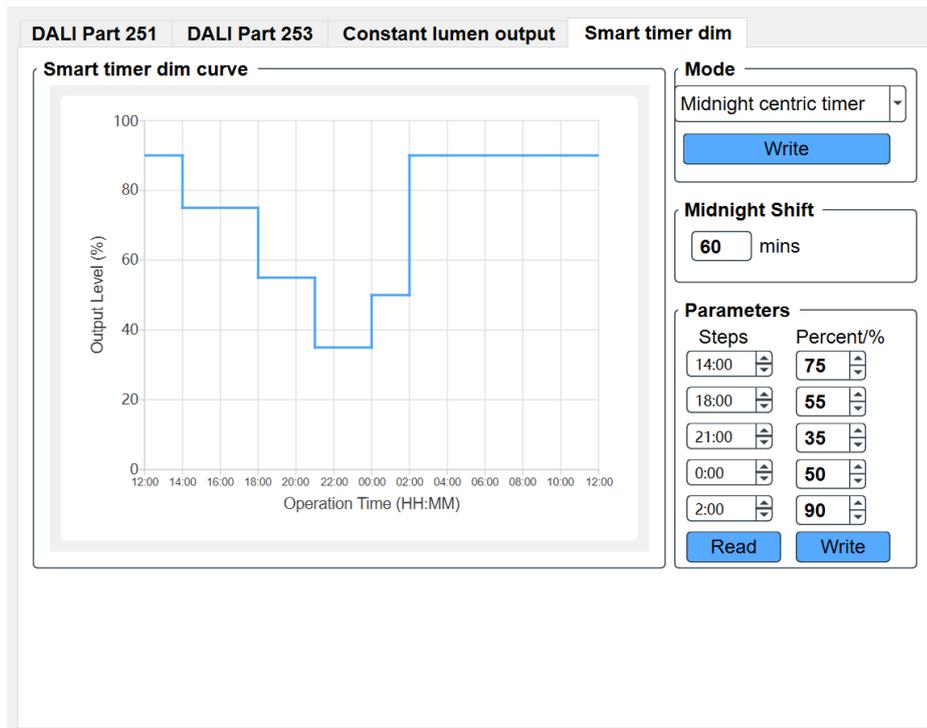


Figure 27. Midnight centric timer mode usage

**Ratio rescale timer mode usage:** The figure below shows the same example of dimming profile as in fixed timer. If yesterday's time duration is six hours and valid. In this case, the ratio is going to be rescaled is 50% of original setting profile (total of twelve hours) for each step. Therefore, the driver will perform the output level at 75% for one hour (50% of setting profile) when power on. Then performs 55% output level for two hours, and so on.

For this function, it would be better to write the setting parameters. Click the "Write" button to configure the midnight shift and all schedule. Then click the "Write" button in the STD mode to choose one mode or disable all of them.

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DALI Part 251 DALI Part 253 Constant lumen output Smart timer dim

**Smart timer dim curve**

Operation Time (HH:MM)	Output Level (%)
12:00	90
14:00	75
18:00	55
21:00	35
00:00	50
02:00	90
12:00	90

**Mode**

Midnight centric timer ▼

**Write**

---

**Midnight Shift**

mins

---

**Parameters**

Steps	Percent/%
<input type="text" value="14:00"/> ▼	<input type="text" value="75"/> ▲▼
<input type="text" value="18:00"/> ▼	<input type="text" value="55"/> ▲▼
<input type="text" value="21:00"/> ▼	<input type="text" value="35"/> ▲▼
<input type="text" value="0:00"/> ▼	<input type="text" value="50"/> ▲▼
<input type="text" value="2:00"/> ▼	<input type="text" value="90"/> ▲▼

**Read** **Write**

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