



# Integrated Lighting Studio

GUI Software

## User Manual

This manual is updated for ILS Release Version: 5.2.6

[www.deltapsu.com](http://www.deltapsu.com)

# 1. Introduction

In nowadays, digital lighting systems is more and more flexible, humanized and customized. With this software, you can evaluate DALI standard functions and/or configure the LED driver's lighting behavior with a scheduled command sequence you desired. You can also monitor and log the power meter data of individual LED driver (if power meter function is supported) in DALI network. All functions are integrated in one single Graphical User Interface (GUI) to ease the design efforts for evaluating Delta's LED driver in lighting applications using Integrated Lighting Studio (ILS).

The DALI control function provides a comprehensive commands list that covers DALI-1 and DALI-2. The command sequence can be edit and save/open so this custom testing/evaluating is repeatable and reusable in lab or in trial to improve the efficiency and correctness of on-site installations.

The programming function provide different ways to customize a LED driver. You can program output current, protection function, dimming function and other characteristics via DALI interface, or via iProgramming interface which don't need AC mains to power on the device, or via the NFC interface which can perform quick and contactless programming.

The power meter function can read power meter data manually or automatically in real time, which can monitoring the power consumption of individual LED driver to achieve the purse of energy conservation and environmental protection.

The firmware update function can update the firmware of LED driver supports IAP (in application programming) function conveniently when necessary in practical application. Note that only specified models support on this features, refer to product datasheet for details.

The Integrated Lighting Studio supports Windows 8, 8.1 and 10 operating systems, and it can only be used with the tools mentioned in this document.

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## 3. System Requirements

The minimum system requirements for using Integrated Lighting Studio are:

- PC or laptop with Microsoft Windows 8, 8.1 or 10
- One USB 2.0 port
- FTDI Driver for using DALI tool and iProgramming tool
- At least 50 MB of free disk space

## 4. Download and Installation

A zip-file can be downloaded from [www.deltaww.com/ILS](http://www.deltaww.com/ILS). This zip-file contains the following files:

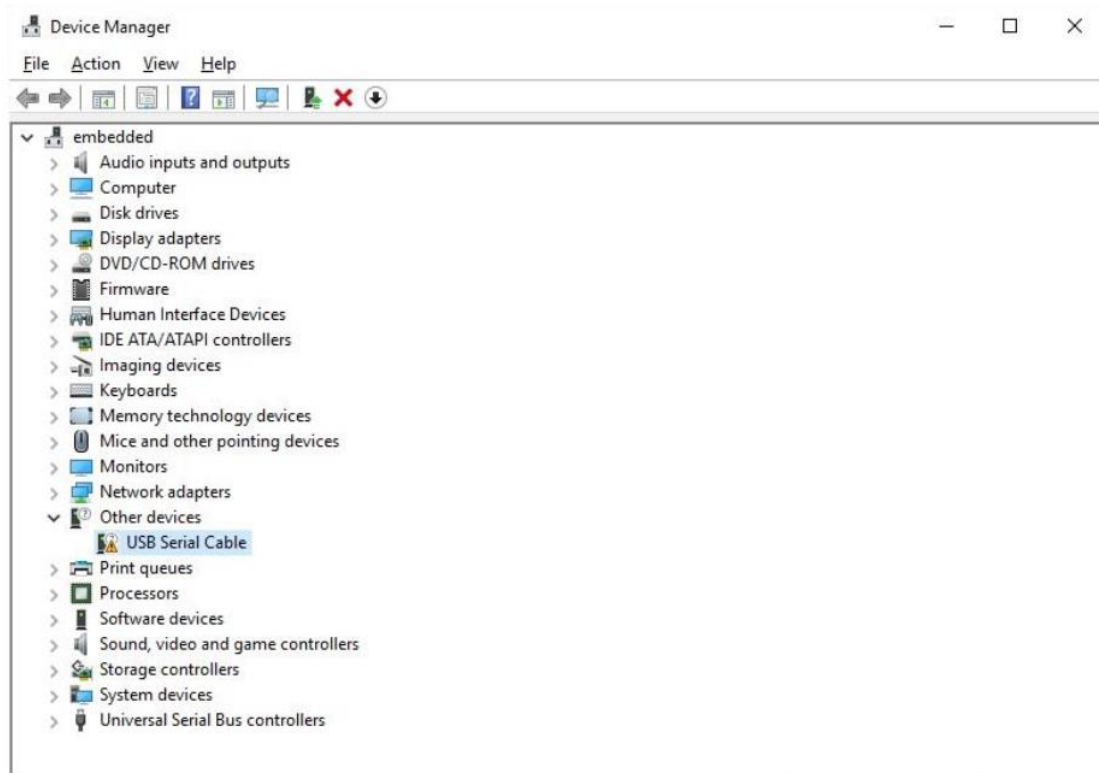
File name	File type	Description
Drivers	folder	Contains drivers and other essential files for ILS
Manuals	folder	Contains user manual for customer (this document) and Programming tool selection guide
IntegratedLightingStudio.exe	executable	The executable file (this GUI)

For those files/folders not mentioned here are subject to internal used only by this GUI, please do not change or modify of any kind to prevent unexpected error.

**Note:** Before using DALI tool and iProgramming tool, a FTDI driver is needed, which will be usually installed automatically when the tool is connected to the USB port of the computer. Once installed, you should find the connected tool is recognized as “USB Serial Port” in Device Management, as shown below.



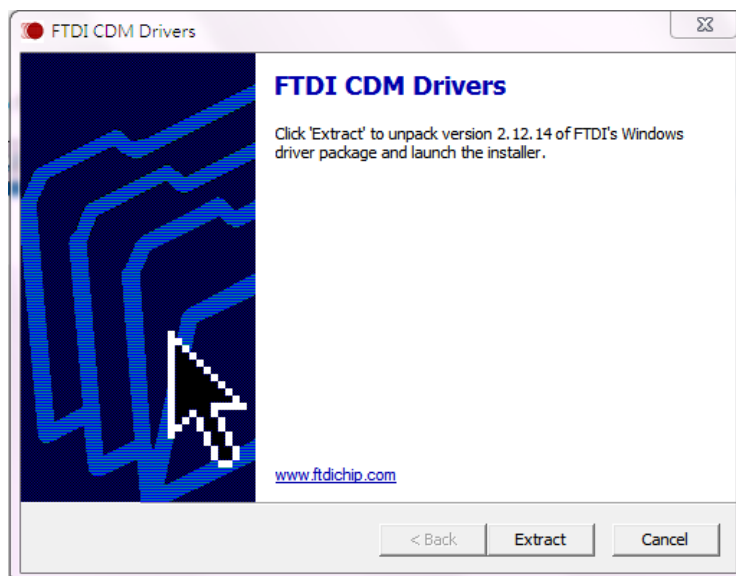
If installation do not start automatically and the tool is not recognizable and show as “USB Serial Cable” in Device Management, as shown below.



Then you could install the FTDI driver manually as described in next sentences.

## 4.1. Installing the FTDI Driver

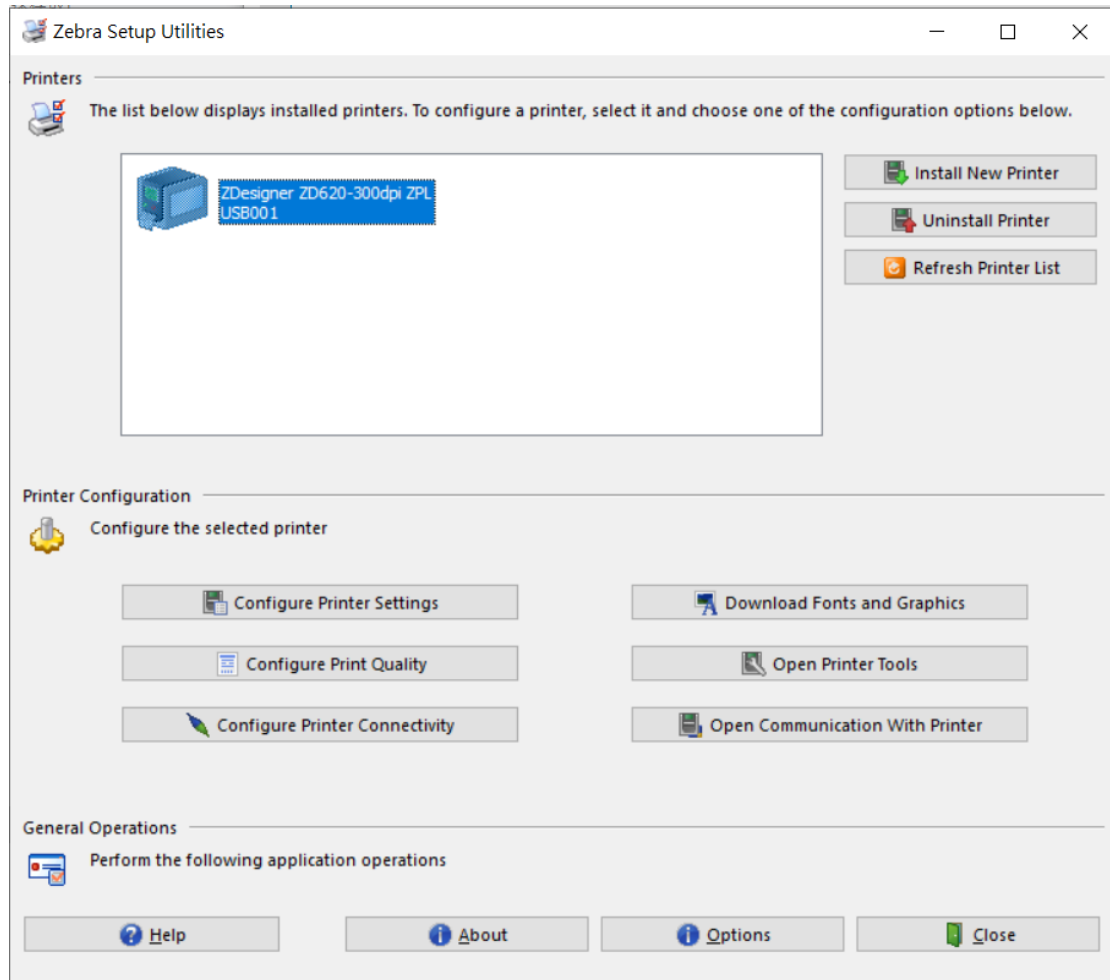
Double click the “CDM21214\_Setup.exe” under the Drivers folder, and click the “Extract” and “Next” button in the subsequent interface.



Click the “Finish” button to complete the installation in the following page.

## 4.2. Installing Zebra Printers Driver

Only ZPL-compatible printers are support and can be used to print out critical programming parameters in ILS. This label printing function is optional. Zebra printer is considered, please install [Zebra Setup Utilities](#) before enable this function during operation. Once the Zebra Setup Utilities is installed, run the Zebra Setup Utilities application to install the printer manually.



## 4.3. Launching the Integrated Lighting Studio

To launch this application, simply double click the shortcut “IntegratedLightingStudio.exe”.

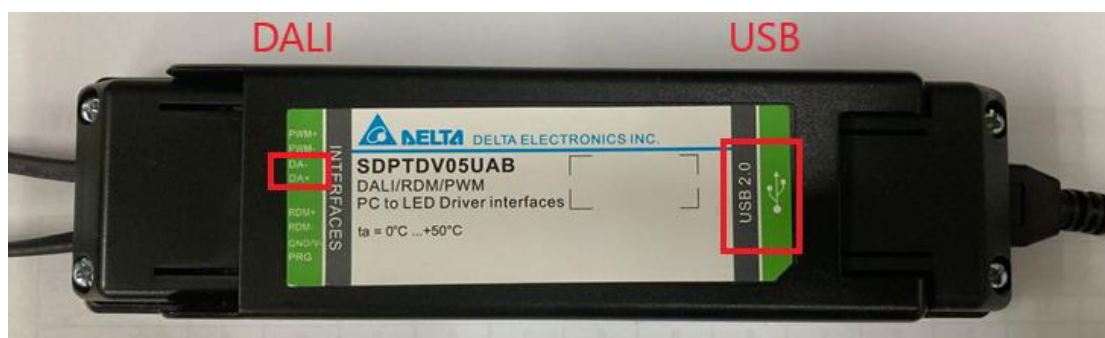


名稱	修改日期	類型	大小
Drivers	2022/7/13 上午 1...	檔案資料夾	
ILS User Manual_v5.1.6.pdf	2021/9/3 下午 06...	Microsoft Edge P...	1,593 KB
IntegratedLightingStudio.exe	2022/7/13 上午 1...	捷徑	2 KB

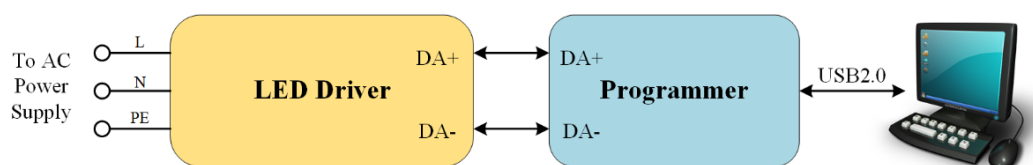
# 5. The Supported Interfaces

## 5.1. DALI

The DALI tool (SDPTDV05UAX) has a USB port and two parallel DALI output connectors, in which it bridges between PC and DALI LED driver. This tool can be used to control DALI LED driver, program the custom setting to the LED driver, update the firmware and read out the power meter data as described in Chapter 6.1, 6.2 6.3 and 6.4 respectively.



The typical tool connection is shown in the figure below.



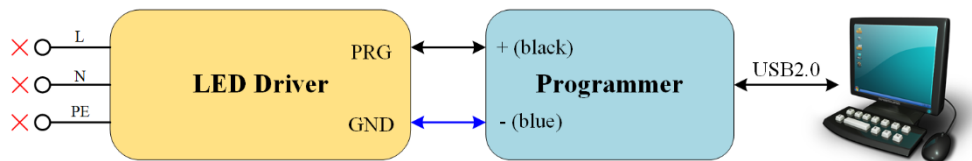
**Note:** the DALI interface is polarity sensitive, and the LED driver must be powered from the external AC power supply. SDPTDV05UAX is powered from USB cable that can only supply the DALI network with 16VDC DALI signal voltage at up to 50mA. Due to the constrain of limited supplied current, it is suggested not to use in the DALI network contains more than 3 DALI LED drivers (control gears) to ensure the correctness of DALI control functions.

## 5.2. iPprogramming

The iPprogramming interface (PTDV05UB) has a USB port and two parallel programming output connectors. This tool is used to program the custom setting to the LED driver as described in Chapter 6.2.



The connection of iProgramming tool is shown in the figure below.



**Note:** The programming output is polarity sensitive, please connect the wires according to the color shown in the figure above, and the LED driver is then powered directly from the tool via USB, do not connect AC mains to the LED driver when using iProgramming.

### 5.3. NFC

CPR30-USB is a desktop NFC reader and ISC.PRH101-USB is a handheld NFC reader both from FEIG, the driver can be found from [www.feig.de](http://www.feig.de) or the software installation package. All three tools can be used to program the custom setting to the LED driver similar to iProgramming but without any wiring and facilitating contactless programming when NFC interface is available on driver.



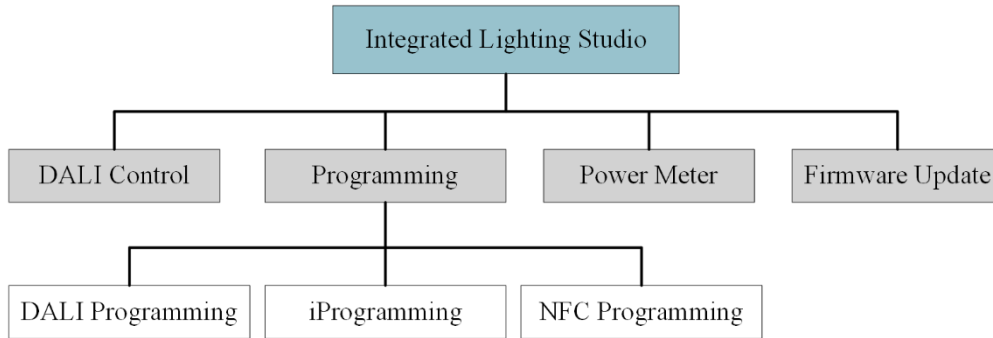
CPR30-USB



ISC.PRH101-USB

## 6. Starting Integrated Lighting Studio

Before starting Integrated Lighting Studio, make sure that the correct interface has been connected to your computer. The function diagram of the Integrated Lighting Studio is as bellow.

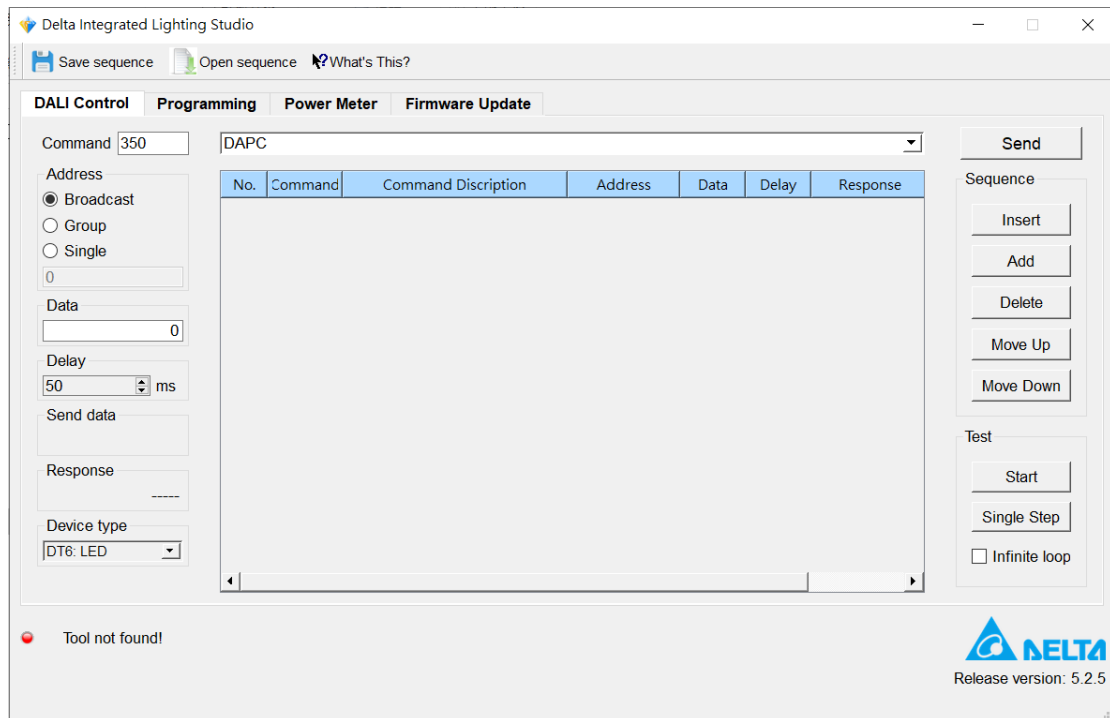


The tool required for each function is shown in the following table.

Category	Sub function	Matching tool
DALI Control	NA	DALI tool (SDPTDV05UAx)
Programming	DALI programming	DALI tool (SDPTDV05UAx)
	iProgramming	iProgramming tool (PTDV05UB)
	NFC programming	CPR30-USB and ISC.PRH101-USB
Power Meter	NA	DALI tool (SDPTDV05UAx)
Firmware Update	NA	DALI tool (SDPTDV05UAx)

### 6.1. Work with DALI Control

DALI control provides an easy way to do simple DALI driver control. It can send a single or a set of sequential DALI commands.



**Note:** This function is only used for simple configuration. It is not guaranteed to be used for professional control system.

### 6.1.1. Send DALI Command

This feature can be used to send a DALI command which supports device type 6 (abbreviated as DT6, defined for LED) and device type 8 (abbreviated as DT8, defined for colour control). Choose a device type in “Device type” selection area first. And then choose a command by clicking down button of command select combo box, or type the command number in manually (don’t forget to press “Enter” key when finish editing).

**Note:** Commands end with “\*” are supported in DALI Ed2.



Select (could be Broadcast, Group or Single) and edit the address (when select Group or Single) of the LED driver(s) you want to send, edit the parameter if the selected command requires a parameter. Then Click the “Send” button to send the command.

Address

Broadcast

Group

Single

0

Data

0

Delay

200 ms

Send data

Response

-----

Device type

DT6: LED

### 6.1.2. Send DALI Command Sequence

This feature can be used to send a DALI command sequence. Before send the sequence, you need to create a command sequence by using the edit buttons includes “Insert”, “Add”, “Delete”, “Move Up” and “Move Down”.

Command 350

DAPC

Send

Address

Broadcast

Group

Single

0

Data

0

Delay

200 ms

Send data

Response

-----

Device type

DT6: LED

No.	Command	Command Discription	Address	Data	Delay	Response
1	350	DAPC	Broadcast	0	200	
2	0	OFF	Broadcast		200	

Sequence

Insert

Add

Delete

Move Up

Move Down

Test

Start

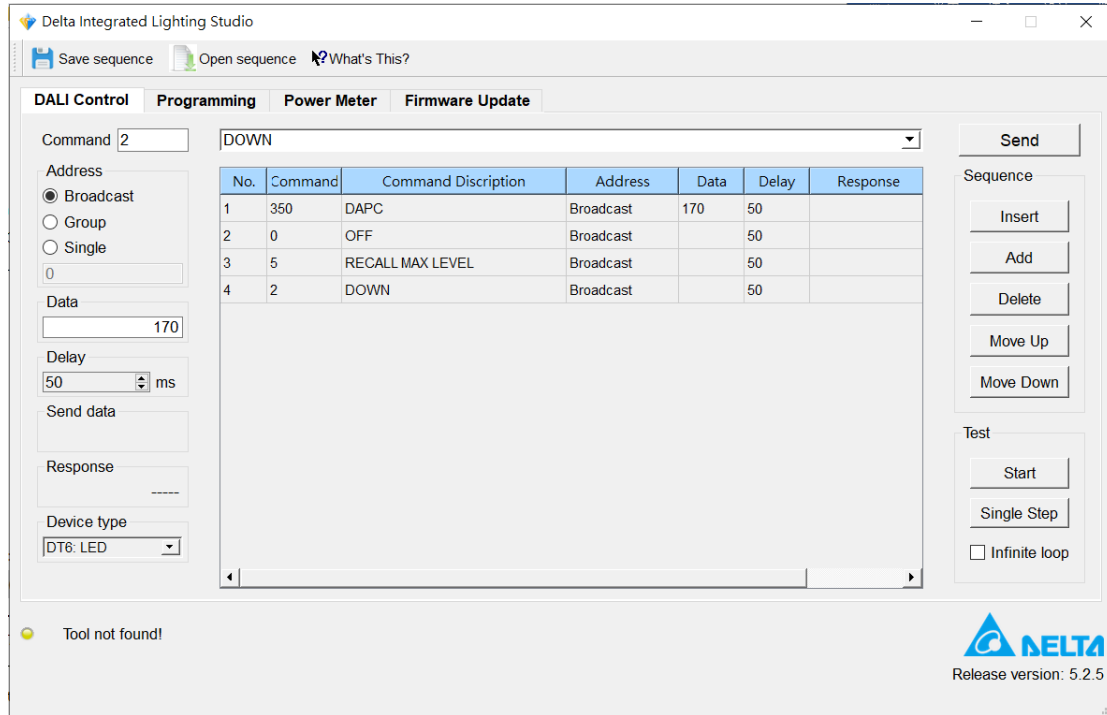
Single Step

Infinite loop

**Note:** When setting a zero for the delay time, the tool will send the command as soon as possible, but the actual delay time will not be zero (the shortest time interval between two commands is 120ms typically).

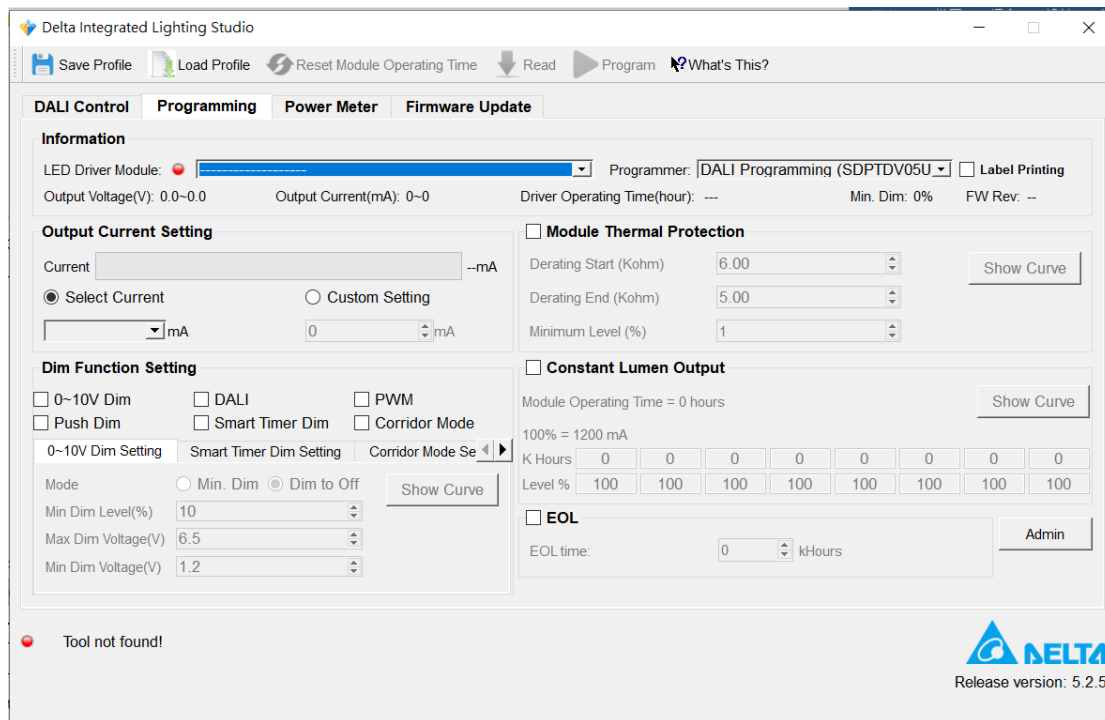
After editing the sequence, you can click “Start” button to send the command sequence. Before that, you can specify the starting point of edited command sequence where will start to send by clicking the command item (will display in orange ink). If you need to send the sequence repeatedly, select the “Infinite loop” checkbox before clicking the

“Start” button. You could also just send a single command at a time by clicking “Single Step” button. You can also open an existing command sequence by clicking “Open sequence” button, accordingly, you can save a command sequence by clicking “Save sequence” after you finish creating it.



## 6.2. Work with Programming

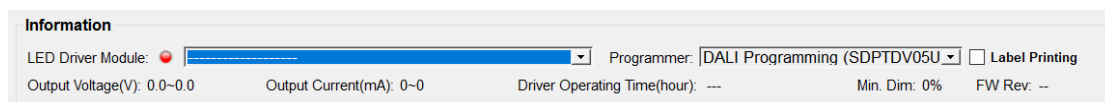
This function can provide customized settings for users, including output current, dim function, LED Module Thermal Protection, Constant Lumen Output, End Of Lifetime (EOL), and etc. The setting interface of this function is shown in the figure below.



### 6.2.1. Product Information

You can manually select the programmer tool you preferred to do the programming task. The software will detect the LED driver automatically when a compatible driver is represented. Of course, the matching tool should be connected first. When the LED driver is not connected, the indicator blinks alternate red and yellow, and the indicator will turn solid green when the driver is detected.

Once the LED driver is detected, basic product information will be displayed, including product model name, output voltage range, output current range, maximum output power, minimum dimming level and the version of firmware.



### 6.2.2. Output Current Setting

This feature is used to set the maximum output current of the LED driver, when a LED driver is detected, the output current of the driver will be displayed. To change the setting, select the desired output current from the drop-down list (50mA for each step) in the following figure.



**Output Current Setting**

Current  mA

Select Current  Custom Setting

mA  mA

Alternatively, you can choose “Custom Setting” and set an arbitrary value in constant to reconfigure the output current.

**Output Current Setting**

Current  mA

Select Current  Custom Setting

mA  mA

### 6.2.3. Dim Function Setting

This feature is used to select dimming mode when the LED driver supports various dimming modes (for those not supported dimming modes, the items will be grayed out). Select the corresponding checkbox to set the desired dimming mode. For some dimming modes, there are additional parameters that can be set, dimming curve for example.

**Dim Function Setting**

0~10V Dim  DALI  PWM

Push Dim  Smart Timer Dim  Corridor Mode

For “0~10V Dim”, you can customize the dimming curve in the “0~10V Dim Setting” sub page. Select a mode between “Min. Dim” and “Dim to Off”. Choose a value by clicking the up/down buttons or type the value manually for the required parameters.

**Dim Function Setting**

0~10V Dim  DALI  PWM

Push Dim  Smart Timer Dim  Corridor Mode

0~10V Dim Setting Smart Timer Dim Setting Corridor Mode Setting

Mode  Min. Dim  Dim to Off

Min. Dim Level(%)

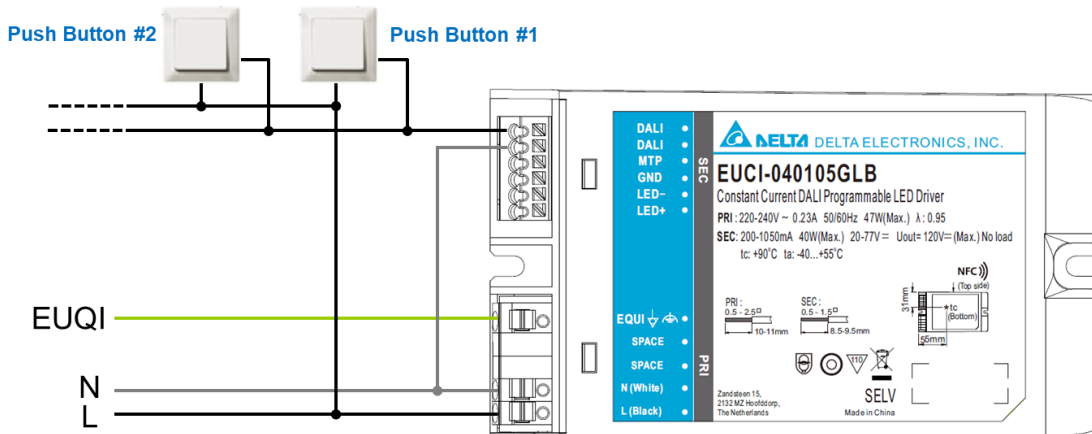
Max. Dim Voltage(V)

Min Dim Voltage(V)

The dimming curve can be displayed by clicking “Show Curve” button then a new page is popped up to illustrated the given parameters graphically as the following figures shown. You can also edit the parameters directly in this page.



For Push Dim, it offers an alternative group dimming control method without DALI Controller, one or multiple push button can be used as dimmer and connect to one or multiple driver(s) as illustrated below



Push Dim operations are summarized as the table below

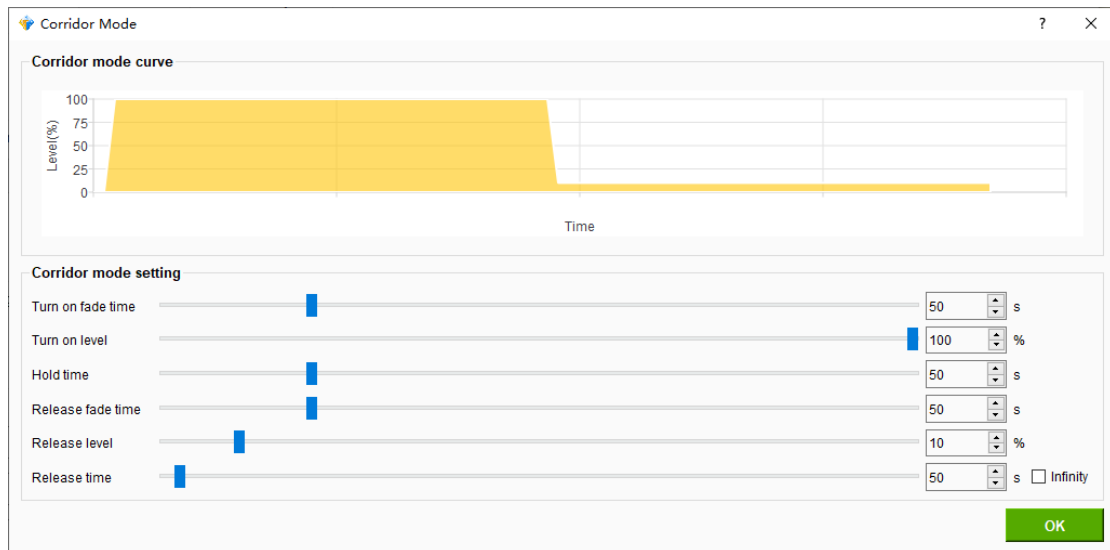
Push Dim function	Contact duration	Dimming function
Ignore	< 60 ms	Ignore push
Short push	> = 60 ms and < 600 ms	Toggle the LED output ON/OFF
Long push	>= 600 ms	Dim the LED output up or down
Synchronize drivers	Long push -> short push -> long push	All drivers dimming level synchronize with each other

For Corridor Mode, the wiring is similar to Push Dim, but normal triggered by the presence (such as PIR) sensor rather than the push buttons, the LED output is adjusted

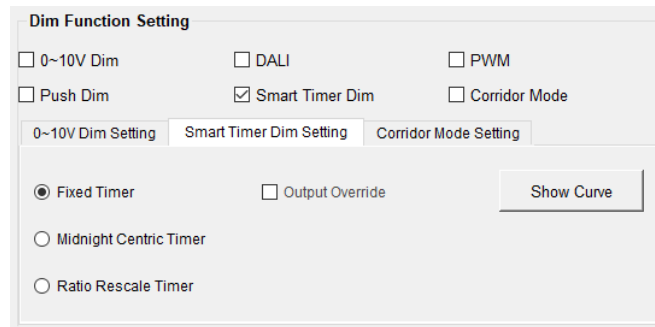
to a defined Turn on level when a presence sensor detects a moving object in the range then hold at same light level for a Hold time before go to a defined background Release level for a Release time when presence sensor is released as the moving object is no longer in the detection range. The operation is illustrated as shown below



All parameters can be configured using GUI, the dimming profile can be displayed by clicking “Show Curve” button then a new page is popped up to illustrated the given parameters graphically as shown below.



For “Smart Timer Dim”, you can customize a dynamic dimming schedule in different modes.



**Note:** This Smart Timer Dim come with an optional “Output Override”, simply tick the box to enable and disable this option. When the box is ticked, that means the dimming output level can be overridden by other dimming interfaces (not limited to specific interface, refer to the product datasheet for details). In case of Push Dim, the output current will go to maximum level when Push Dim signal is presented and go back to former level when signal is absented.

There are three different 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 five steps.

- **Midnight Centric Timer**

This mode is an memory-based that automatically measures over the past two days the power-on time of the lighting installation at which is the naturally corresponded to night time. The Midnight Centric Timer software calculates the length of power on time and centralized from the given virtual midnight point and change 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 15 minutes, the output current will fixed to the maximum level since there is no valid (reasonable) data for reference. Start from the third day and so on, when the power-on time difference of past two days is less than 15 minutes, the output level is controlled based on the correlation between the midnight point of programmed profile and yesterday power-on duration.

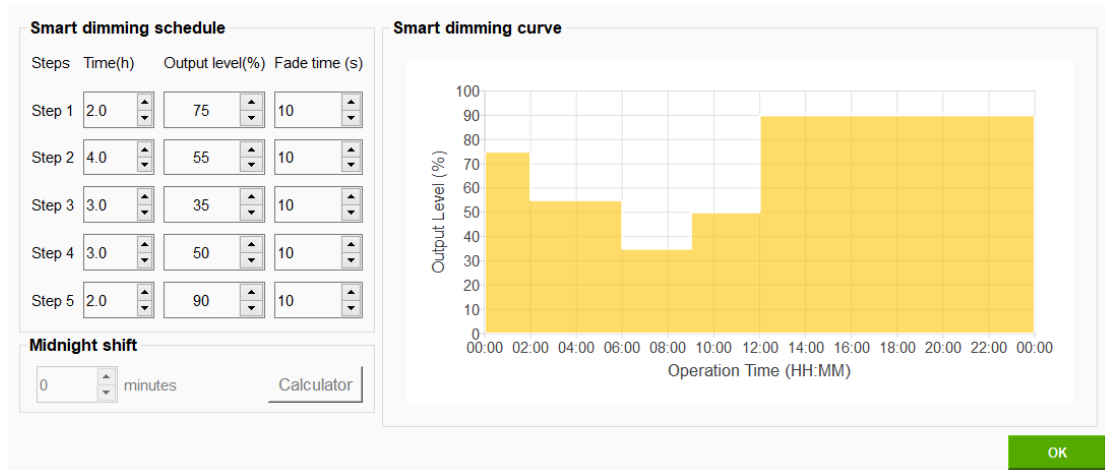
- **Ratio Rescale Timer**

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 will remain in last level (level in step 5) for all three modes.

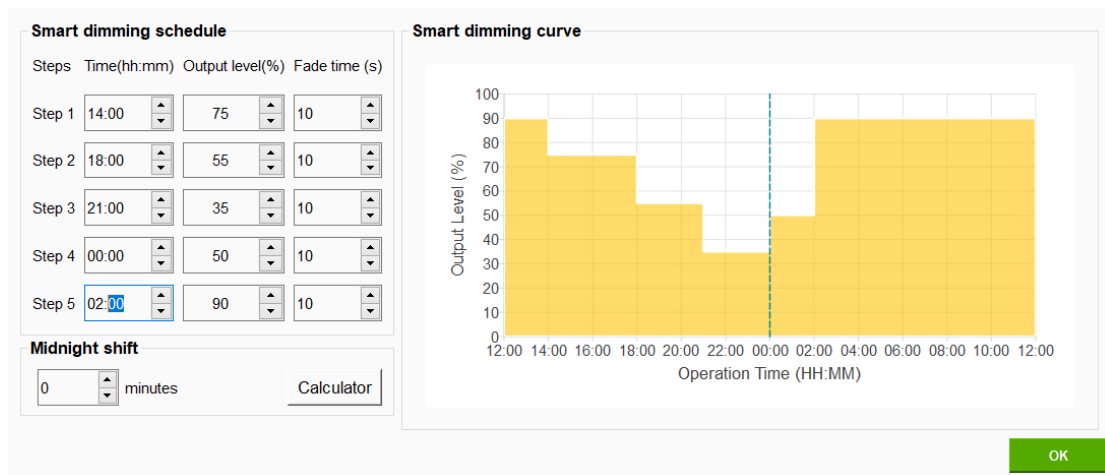
### Fixed Timer mode usage:

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 step 3), and so on.



### 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.



For different geographical locations, a calculator can be used to assist in calculating the midnight shift time, as shown in the figure. Select the "Use time shift calculator" checkbox when you need to use the results of the current calculation.

**Midnight time shift calculator**

Use time shift calculator

Time Zone(UTC): 9

Latitude: 0 degree 0 minute 0 second

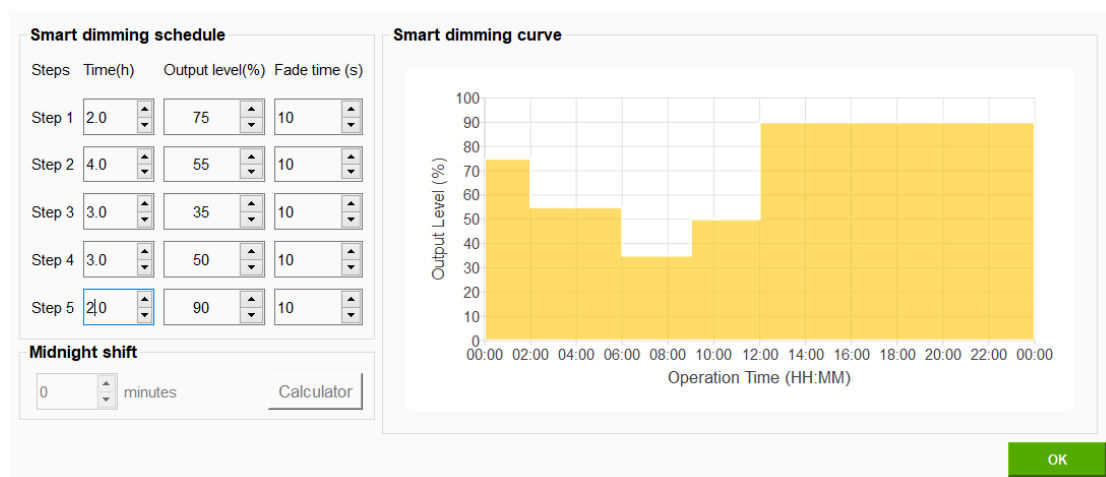
Longitude: 139 degree 50 minute 0 second

Calculated time shift: -19 minutes

**OK**

### 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 some models, additional setting of FadeTime for each step are supported, to achieve the smoothness of transition from one step to another. All setting parameters in each mode can be changed by clicking the up/down buttons or type the value manually for "Time" (min unit is 0.1 hour, namely 6 minutes) and "Output level (min unit is 1%)" of each step. Click "OK" button to save the settings. Note that by clicking OK here will not yet save the given profile to the LED driver, refer to Chapter 6.2.7 for further instructions to program the driver.

### 6.2.4. Module Thermal Protection

This feature is used to regulate lamp power when the LED module is overheated. The LED driver starts to reduce output power in order to control temperature in a certain range. This is done by attaching the NTC resistor to the used LED lamp module and then connect to the LED driver, refer to the product datasheet for more detail on wiring.

Configure the NTC resistance values to determine the dimming behavior versus temperature based on the usage condition of whole designed lamp.

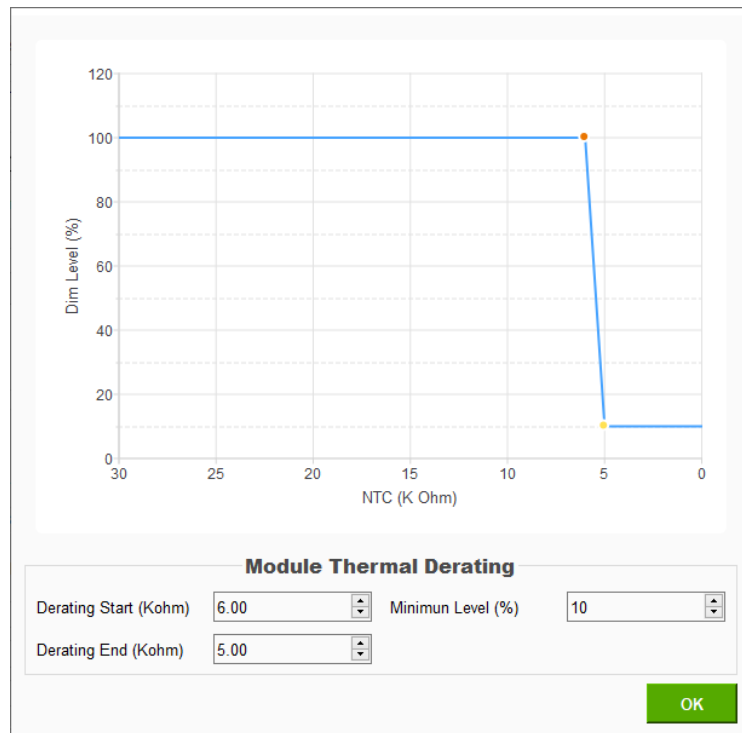
**Module Thermal Protection**

Derating Start (Kohm)

Derating End (Kohm)

Minimum Level (%)

Select the Enable checkbox to use this feature if the LED driver supports this feature. Choose a value by clicking the up/down buttons or type the value manually for the required parameters. The dimming curve representing the dimming behavior can be displayed by clicking “Show Curve” button. The curve is displayed as the following figure.



**Note:** Please refer to the data manual of NTC resistor used for the relationship between the resistance value of NTC and the actual temperature.

### 6.2.5. Constant Lumen Output

This feature is used to compensate the light attenuation with the increasing of LED usage time. So the lumen output remains constant over the lifetime of LED lamp module used with LED driver. You can set the output level for exceeding different accumulated module operating time in eight steps.

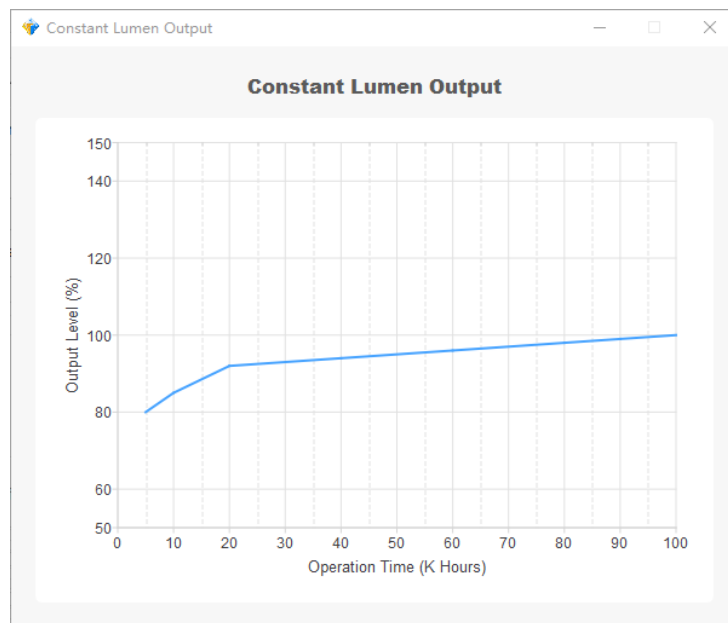
**Constant Lumen Output**

Module Operating Time = 0 hours Show Curve

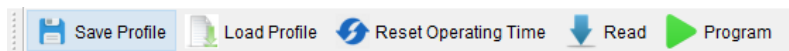
100% = 1200 mA

K Hours	0	0	0	0	0	0	0	0
Level %	100	100	100	100	100	100	100	100

The constant lumen output curve can be displayed by clicking “Show Curve” button. The curve is displayed as the following figure.



You can also reset the accumulated operating hours for the LED module by clicking “Reset Module Operating Time” button. This is useful when replacing the LED module.



### 6.2.6. EOL Setting

This feature is used to warn the user when exceeding the end of the guaranteed lifespan of the LED module. In this case, the driver will blink the lamp for 6 seconds during AC power on then operate as usual. This feature uses the same burning hours counter as the Constant Lumen Output.

**EOL**

EOL time:  kHours



Select the Enable checkbox to use this feature if the LED driver supports this feature. Choose a value by clicking the up/down buttons or type the value manually (range 1~255 kHours).

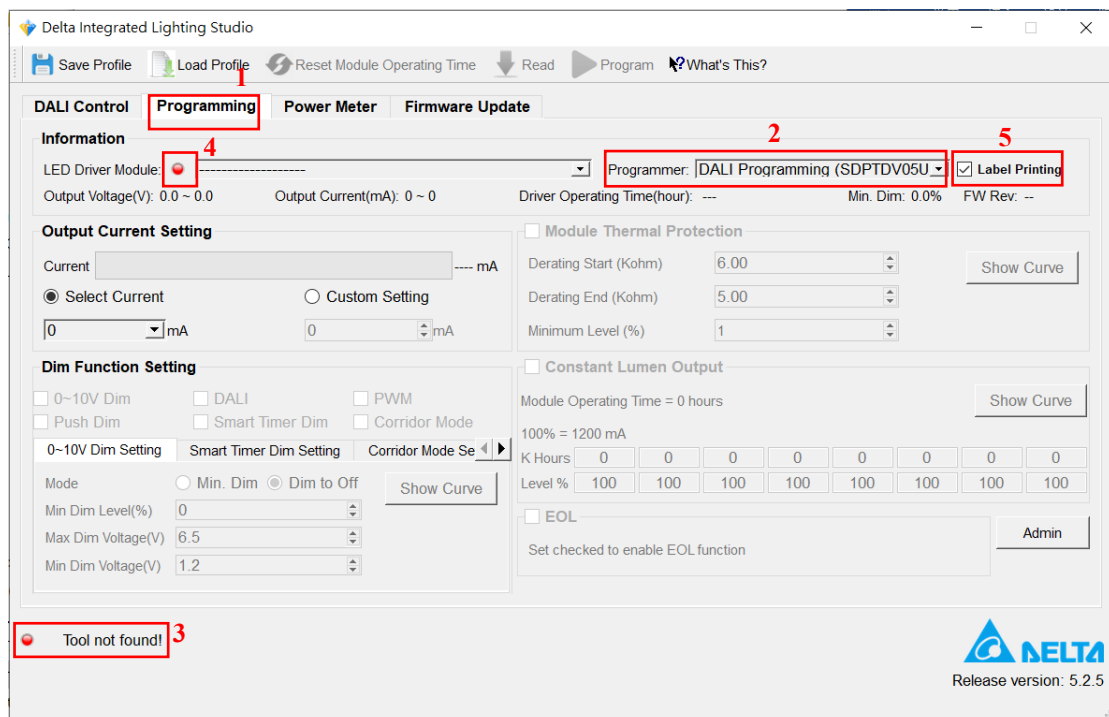
### 6.2.7. Programming Steps

**Step 1:** Please connect the matching programmer tool to the USB port of the computer via the USB cable.

**Step 2:** Connecting the programmer tool with the LED driver. If you are using a DALI tool or iProgramming tool, please connect the LED driver with the programmer follow the connection described in Chapter 5.1 and 5.2 respectively. If you are using a NFC programmer, place NFC reader close to the LED driver's NFC antenna where is marking as.



**Step 3:** Launch the “Integrated Lighting Studio”, then click “Programming” tab at the top of the page, as shown in solid red bounding box 1 below.



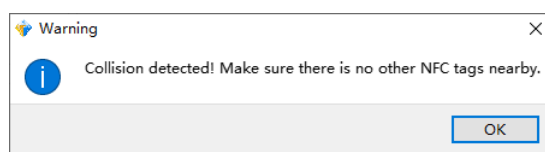
**Step 4:** Select the matching programmer in the GUI, as shown in solid red bounding box 2 above.

**Step 5:** Check the tool connection state. The software will detect the programmer tool automatically and shown which tool is connected to the PC. The indicator will turn solid green when the tool is detected, otherwise, the indicator blinks alternate red and yellow, as shown in solid red bounding box 3 above.

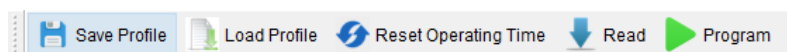


**Step 6:** Check the LED driver connection state. The software will detect the LED driver automatically. The indicator will turn solid green when the LED driver is present, otherwise, the indicator blinks alternate red and yellow, as shown in solid red bounding box 4 above. When the LED driver is detected, the software will start to read out all configuration of the detected driver, the read out process may take a few seconds to complete. After that, you can start to edit the configuration you want.

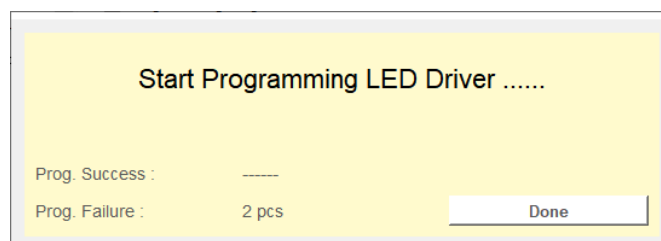
**Note:** If you are using a NFC programmer, please make sure there is no other NFC tags nearby, both CPR30-USB and ISC.PRH101-USB can only program one NFC embedded driver at a time.



**Step 7:** Clicking the “Program” button at the top right of the window will start to program the edited configuration to the LED driver. If there is a ZPL -compatible printer is available and installed properly (refer to section 4.2), it will print out the label in the end of each successful programming when the box “Label Printing” is ticked, as shown in solid red bounding box 3 above.

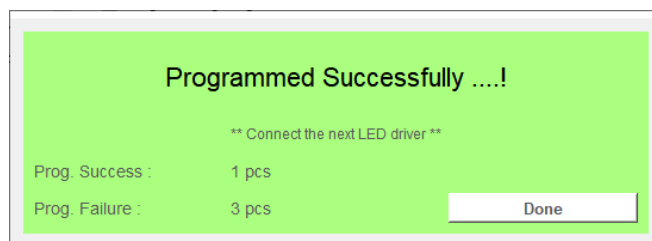


The software will display the status as shown below, it will take a while to complete the programming, and the time varies depending on different tool.

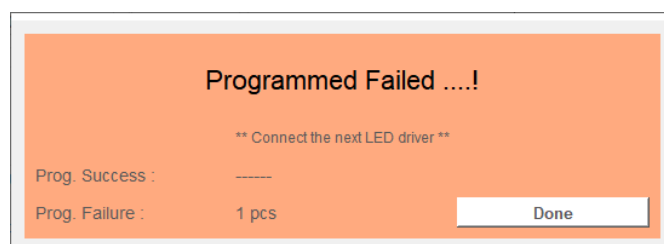


When the programming process is successful, then the software will display the

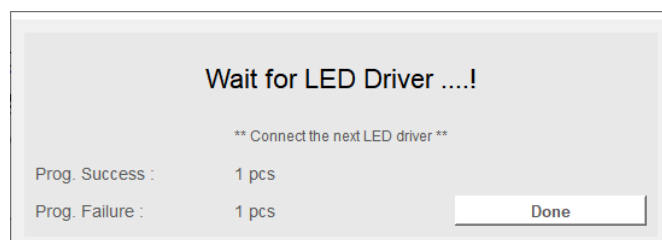
following page. The counter of successful programmed device will be displayed as well.



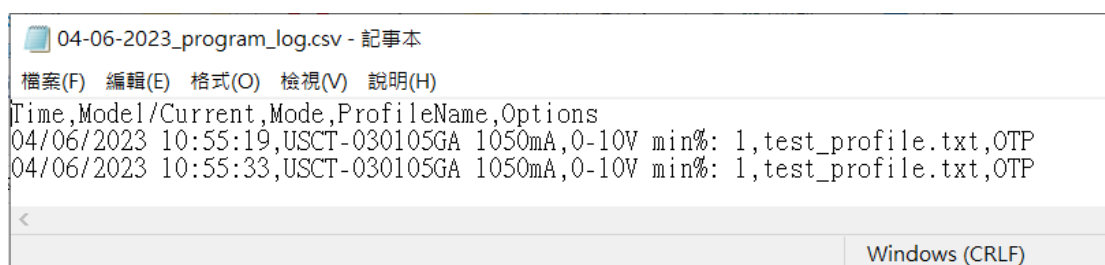
When the programming process fails, then the software will display the following page. The counter of failed driver will be displayed.



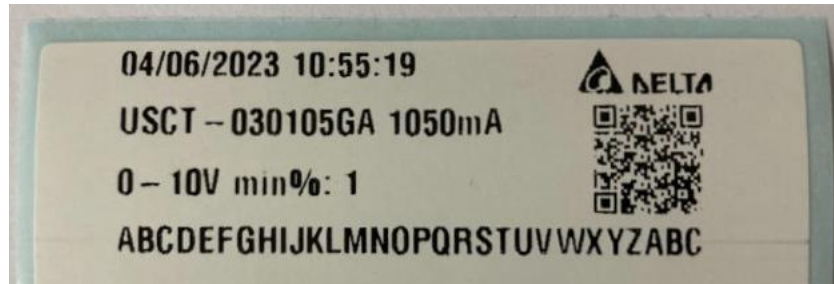
When the LED driver is removed after successful programming, then the software will display the following page. In this page, you can change to the next LED driver (must be the same model) to program repeatedly.



A csv file will be generated in the same folder automatically for each successful programming to facilitate data logging. The file name of csv will start with the date of programming. The csv contains programmed Time, Model/Current, Mode, ProfileName (if the setting is loaded from a pre-saved txt file, refer to section 6.2.8) and enabled Options, as shown below

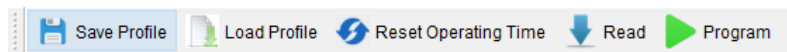


The first four elements in the csv file are default to be print out if the box “Label Printing” is ticked, the print out label will look like following

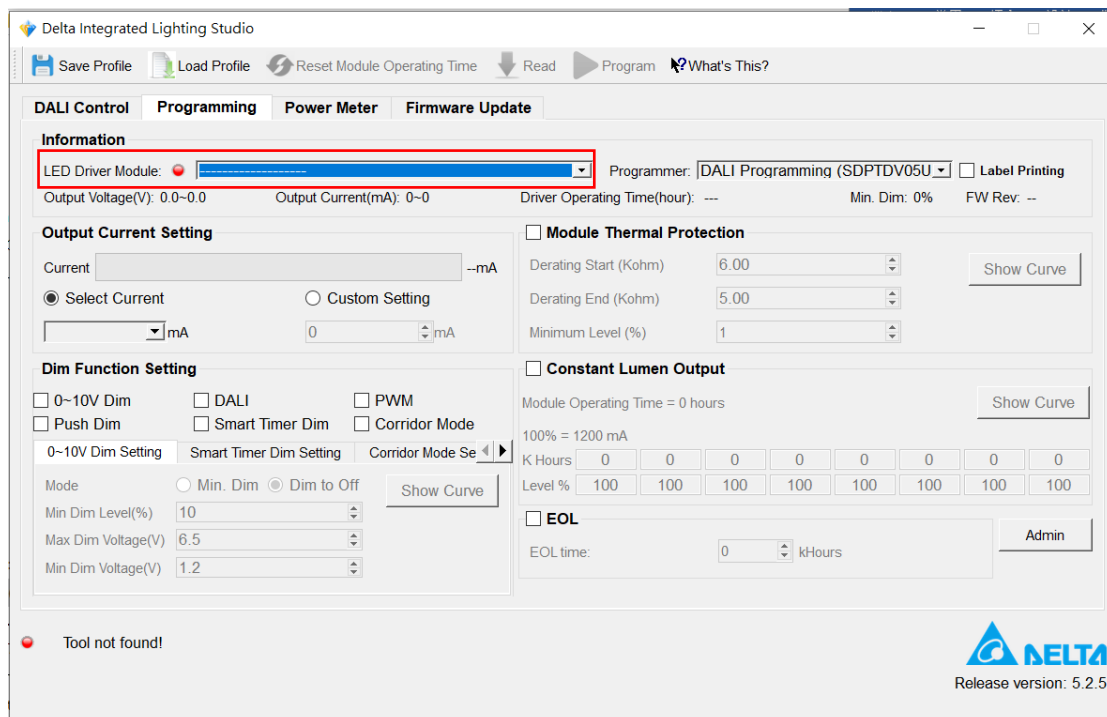


### 6.2.8. Save and Load Profile

In order to improve the usability, you can save the configured settings into a txt file with a specific name by clicking the “Save Profile” button, then the txt file can be shared/stored. Simply click the “Load Profile” button to apply a previous setting on the GUI.



Note that the edited profile must address a specific LED Driver Module. In the case of editing profile without a connected LED Driver, the LED Driver Module (as shown below) must be selected manually before the edited profile can be saved.



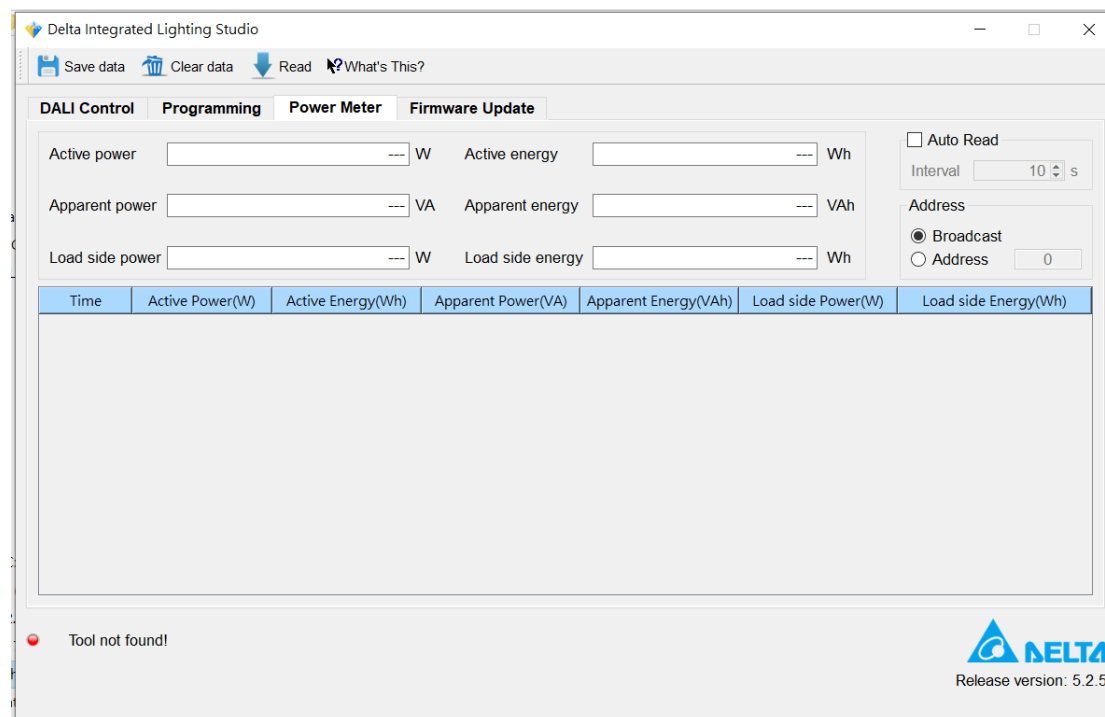
## 6.3. Work with Power Meter

### 6.3.1. Power Meter Description

This tab is used to read the power information of LED driver(s). You can read the active power, active energy, apparent power, apparent energy, load side power and load side energy of the LED driver, please refer to DiiA specification DALI part 252 for more details.

You can read power data periodically by checking the “Auto Read” checkbox, and the auto read time interval can be set (minimum: 10 seconds). Besides, you can choose the address of LED driver you want to read from when there are multiple LED drivers are connected to the DALI bus. In auto read mode, you can save the power data to excel document by clicking “Save Data” button after you finish reading the power data.

**Note:** The software can only read the data from one LED driver at any given time, so if more than one LED drivers is connected to the DALI bus, please specify the address of the LED driver to be read from.



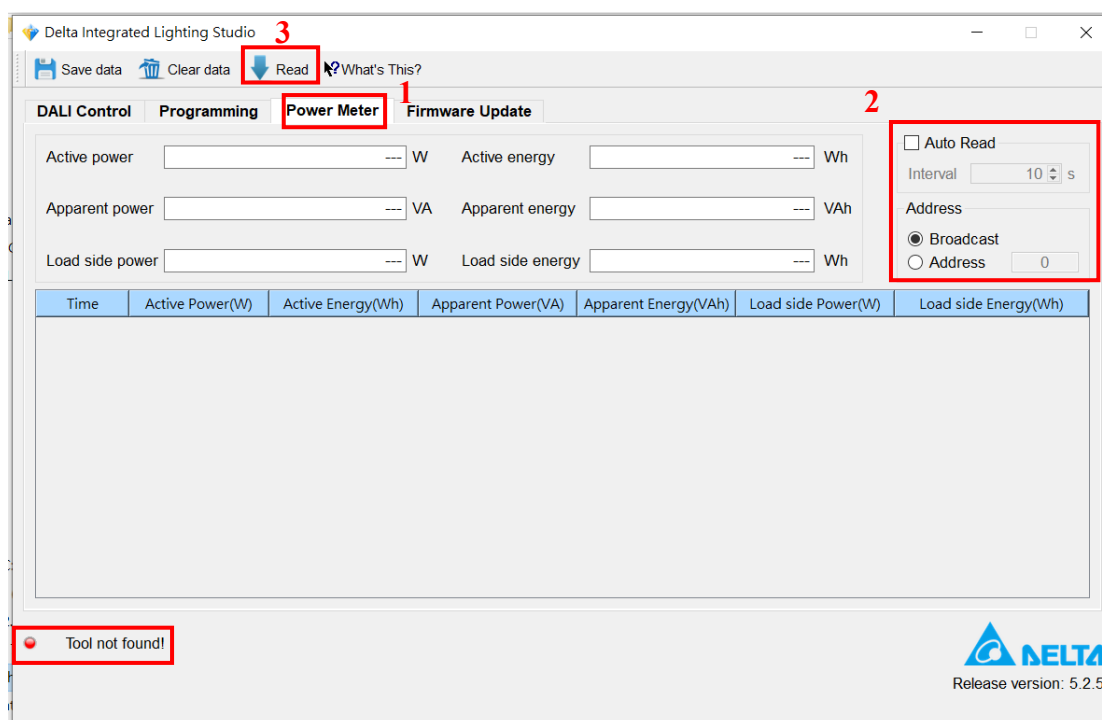
### 6.3.2. Power Meter Operation Steps

To read the power information, please follow the steps below:

**Step 1:** Connect DALI tool to your PC through USB cable.

**Step 2:** Connect the output terminal of DALI tool to the LED driver with two wires (Note that the DALI interface is polarity sensitive).

**Step 3:** Launch the Integrated Lighting Studio. And select the “Power Meter” tab in the topside of the GUI. The software will detect the tool automatically, when the tool is not connected, the indicator blinks alternate red and yellow, and the indicator will turn solid green when the tool is detected.



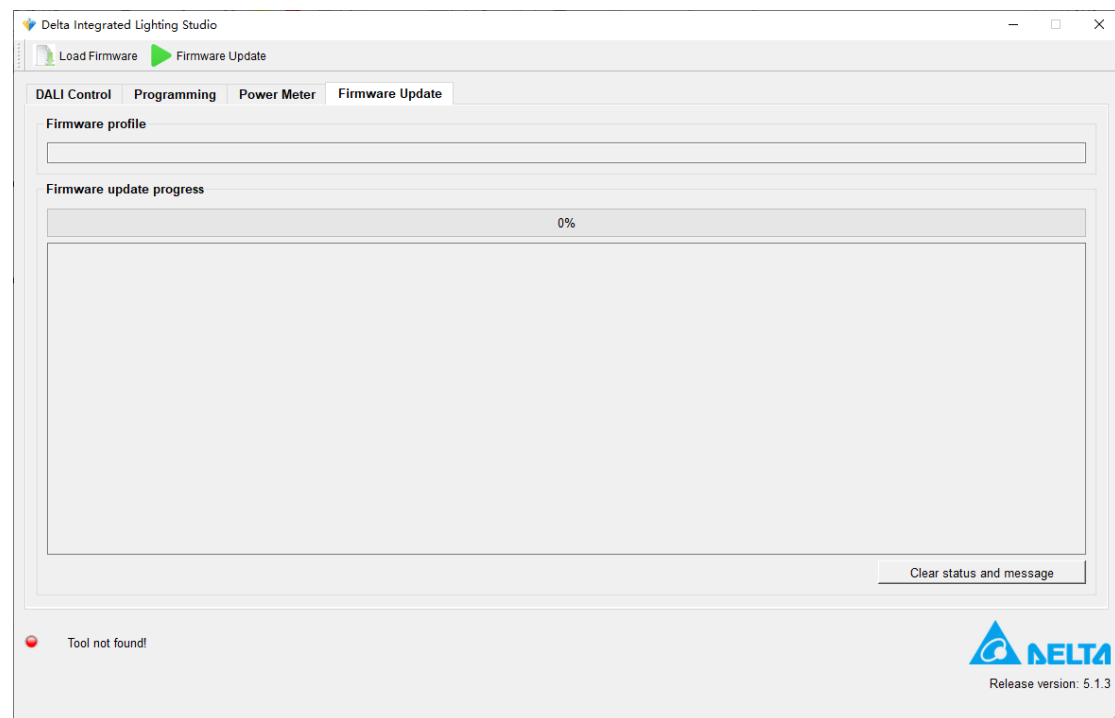
**Step 4:** Check “Auto Read” checkbox if you need to read information periodically, and set the auto read time interval. Set the address according to the connection of the LED driver. You can simply select “Broadcast” if only one LED driver is connected with the DALI tool.

**Step 5:** Click “Read” button to start reading the power information, and it will take a few seconds to read the data before it is displayed. The data will be displayed in the corresponding box in the top of the window if “Auto Read” is not checked, otherwise, the data will also be displayed in the lower section of the windows with timestamp. You can clear the data in the table by clicking “Clear Data” button at the top of the window.

## 6.4. Work with Firmware Update

### 6.4.1. Firmware Update Description

In order to update the firmware conveniently when necessary in field, new generation of the LED driver is designed to have capability of bootloader. With the help of the specified tools, this GUI software can be used to communicate with these LED driver with bootloader function, and finally complete the update and deployment of the firmware.



**Note:** The DALI interface is used to update the firmware, so please remove other conventional DALI controllers in the system when updating the firmware. Besides, only the DALI tool (SDPTDV05UAx) supports firmware update function. Limited to the power supply capability of this DALI tool, it only supports the firmware update of less than 32 LED driver at the same time.

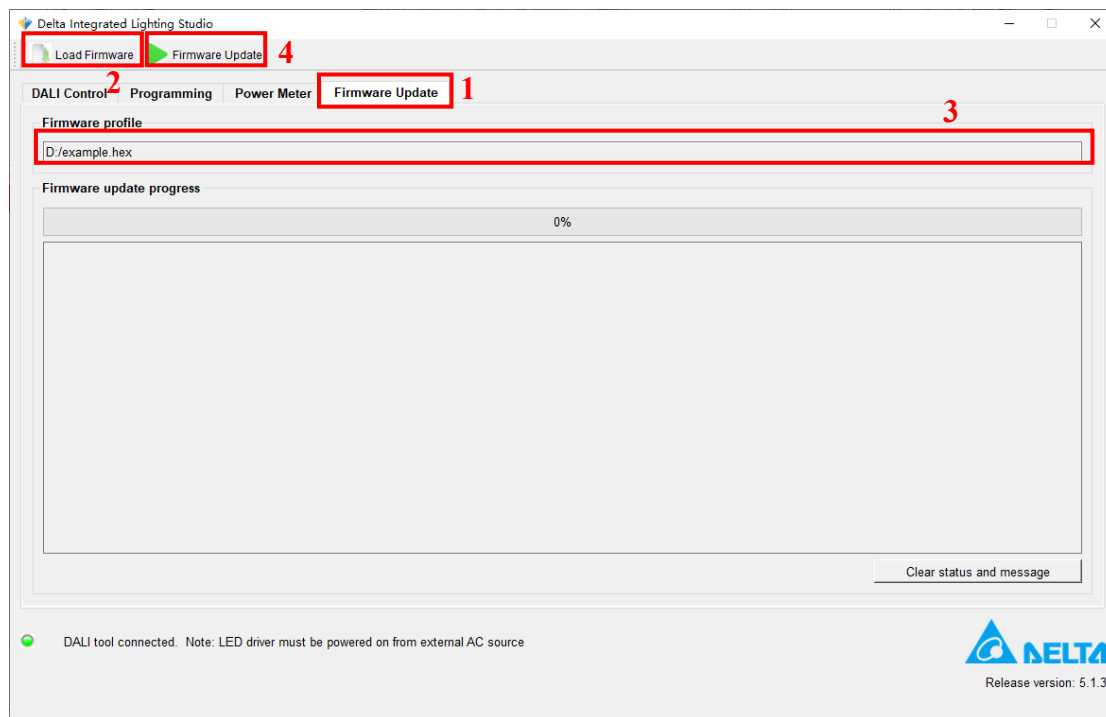
### 6.4.2. Firmware Update Operation Steps

**Step 1:** Please connect the matching tool to the USB port of the computer via the USB cable.

**Step 2:** Connect the output terminal of DALI tool to the LED driver with two wires.

**Step 3:** Launch the Integrated Lighting Studio. And select the “Firmware Update” tab in the topside of the GUI. The software will detect the tool automatically. When the tool is not connected, the indicator blinks alternate red and yellow, and the indicator will turn solid green when the tool is detected.

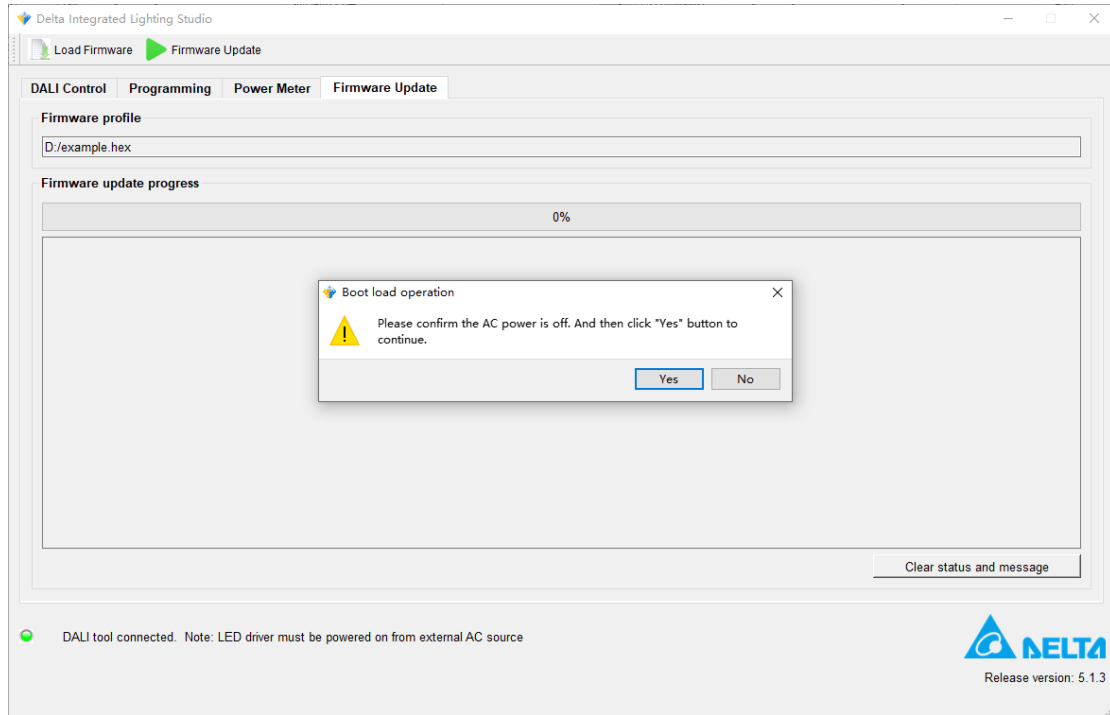
**Step 4:** Click “Load Firmware” to select and load the firmware (solid red bounding box 2), the firmware file shall be listed in solid red bounding box 3 below.



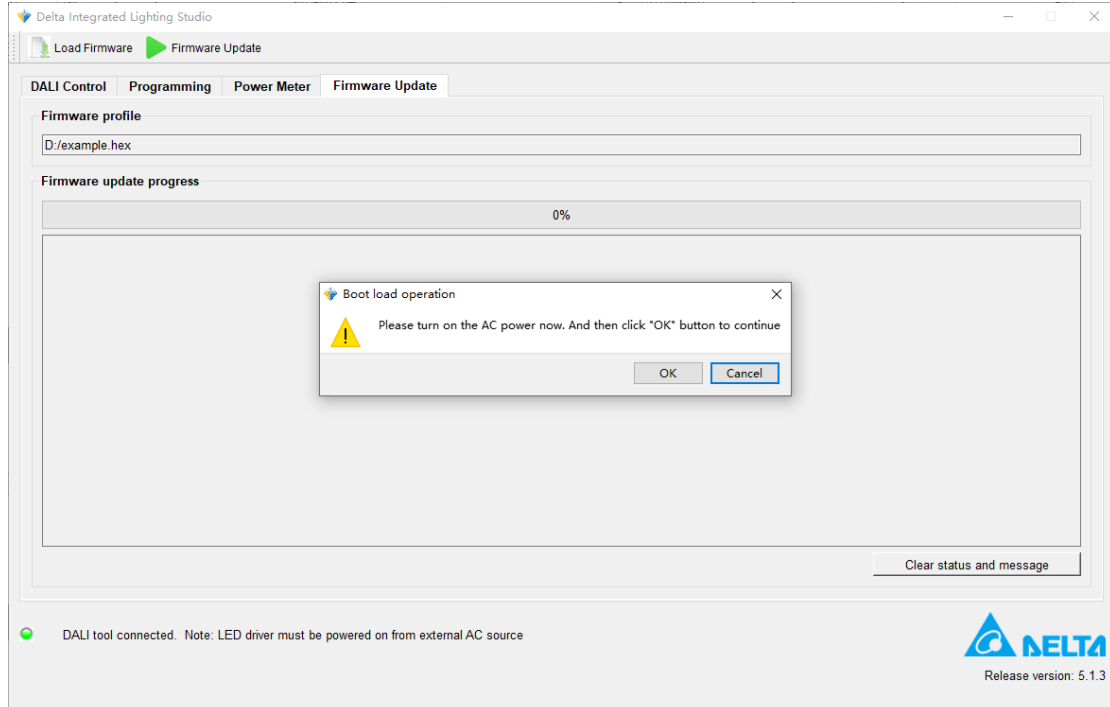
**Step 5:** Click “Firmware Update” button to start (solid red bounding box 4). Then please complete the follow-up operation according to the message box.

**Step 6:** Make sure the AC power supply of the LED driver is off, and then click “Yes” button to continue in the following step.

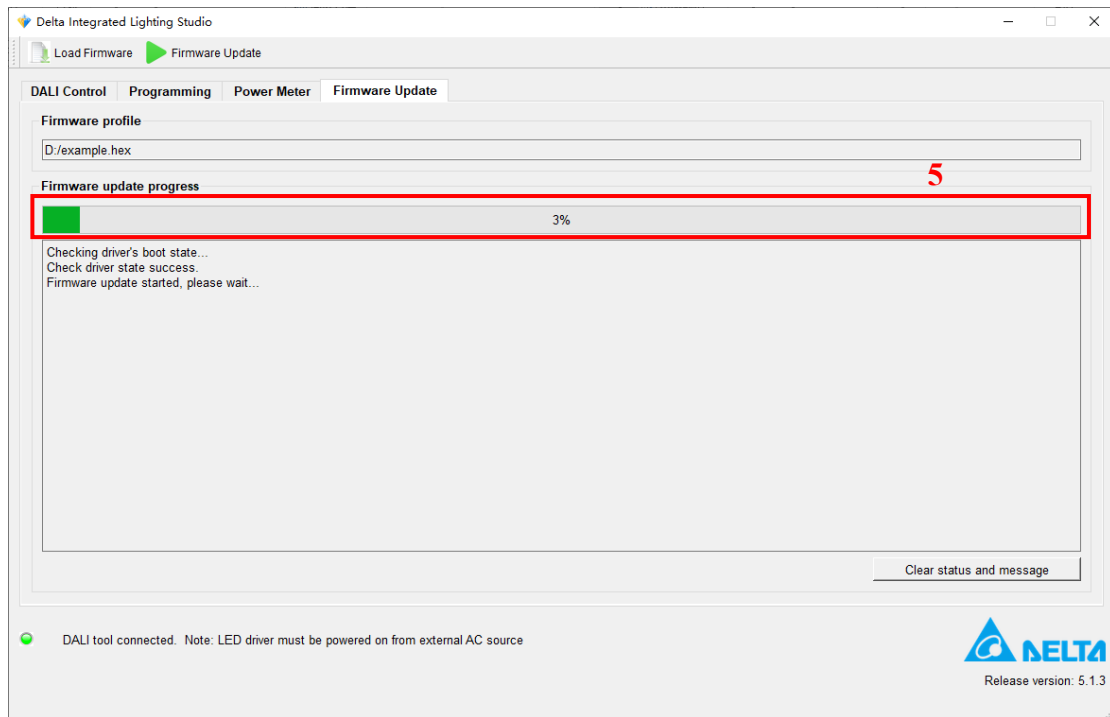




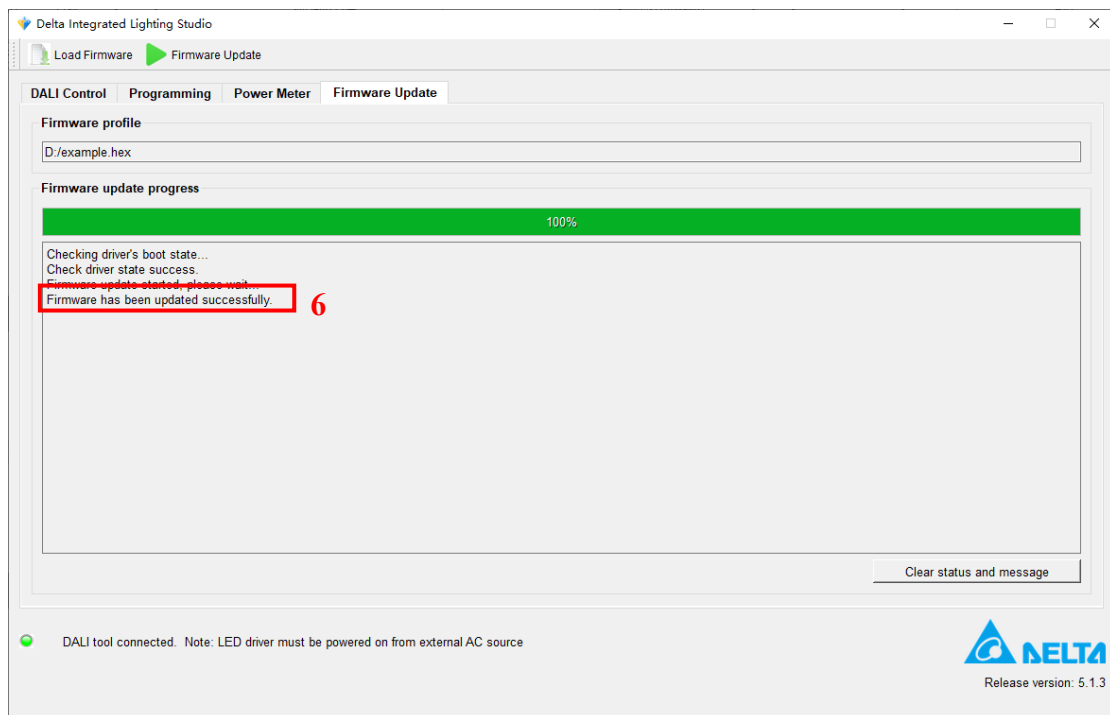
**Step 7:** Turn on the AC power supply of the LED driver, and then click “OK” to continue in the following step.



**Step 8:** Next, the software will automatically complete the software update, and the GUI will display the software update progress (solid red bounding box 5), please wait a few minutes to complete the update.



**Step 9:** After the firmware has been updated completely, the prompt message box will show the update status (solid red bounding box 6), and the LED driver will start to light up normally.



**Step 10:** Turn off the power supply of the LED driver, and then remove the program

tool.

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