

# Inventronics Constant Power Programmer

## Manual Instruction

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# 1 Foreword

## 1.1 Objective

This document is the manual instruction for the programming software of Inventronics' programmable drivers, helping customer acknowledge the functions and methods of the software.

## 1.2 Background

Inventronics was concentrated on the constant current / constant voltage products in the past. When customer required different output current / voltage, the only option is do customization, causing the increase of model number and could up to thousands of models. This could cause very complicated process of stock, manufacture and warehouse management for both customer and Inventronics.

Because of the above situations, Inventronics invent the new programmable driver with 0-10V, PWM, and timer dimming functions. It is able to manufacture the programmable drivers ahead of schedule and change according to the requirement of customer easily through software, which could reduce the stress of purchasing, manufacture, sales and warehouse for both customer and Inventronics.

## 1.3 Definition

0~10V dimming driver: Inventronics Programmable Driver Software

Exx-xxxSxxxDx: Outdoor Constant Power Programmable Driver

LUD-xxxSxxxDx: Indoor Constant Power Programmable Driver

## 1.4 Abbreviation

Abbreviation	Full Name
PWM	Pulse Width Modulation
OLC	Output Lumen Compensation
CC	Constant Current
CV	Constant Voltage
OTP	Over Temperature Protection

# 2. Software Overview

## 2.1 Objective

Help customer aware of the installation and application method of the programming software.

## 2.2 Function

### Function Description

1. Choose Product and Start-up
2. Online Software Update
3. Interface Selection
4. Language Change between Chinese and English
5. Self-adaptive Programming Offline Mode
6. Read/Save Configuration
7. Set Series/Model Number
8. Constant Power Working Curve
9. Set the Maximum Output Current
10. Set Dimming Method (0~10V, 0~5V, digital, PWM, Timer)
11. Set Timer Dimming Curve
12. Set OLC Curve
13. Set OTP Parameters
14. EOL Setup
15. Select NFC Auto/None mode to Read/Write Configuration of Driver
16. Write/Read Configuration of Driver with PRG interface
17. Write/Read Configuration of Driver (Offline Mode) with PRG interface
18. Add error code on programming result on title
19. Summary

# 3. Operating Environment

## 3.1 Hardware

1Ghz above Processor (32 bits)  
512Mb above RAM  
20GB above available hard-disk space  
Mouse and Keyboard

## 3.2 Software

Operation system is WindowsXP or Windows7, with Microsoft.NET Framework 4.0 environment or higher version.

# 4. Instruction

## 4.1 Software Installation

### 4.1.1 Install USB Driver and Serial Port Driver

See in Figure 4.1.1.1

1. Uncompress file USB\_MCom.rar
2. Launch USB\_MCom.exe
3. Enter installation interface, click Next, then click Finish.

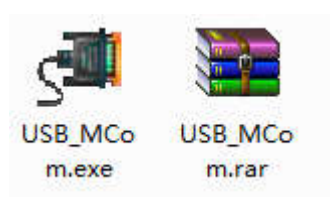


Figure 4.1.1.1 USB Driver Installation Package

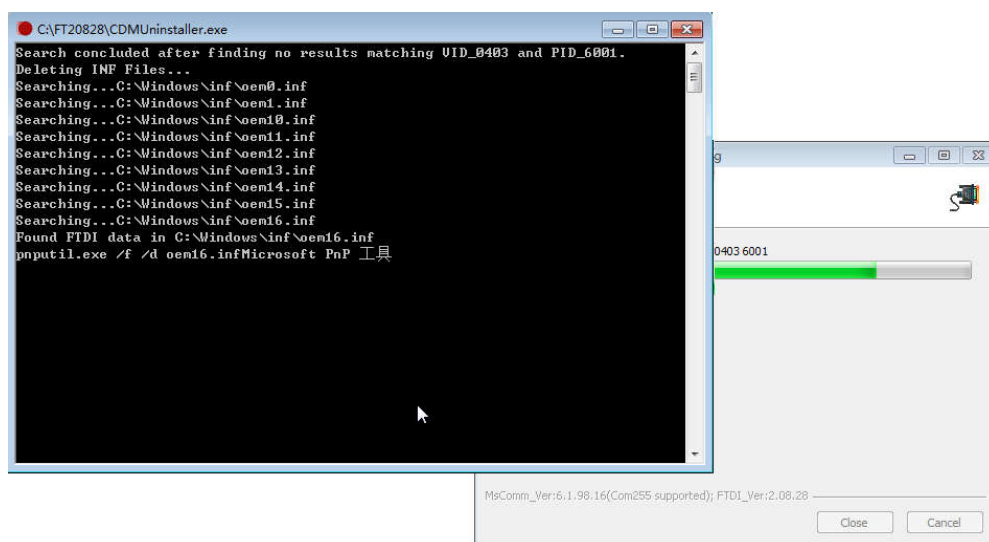


Figure 4.1.1.2

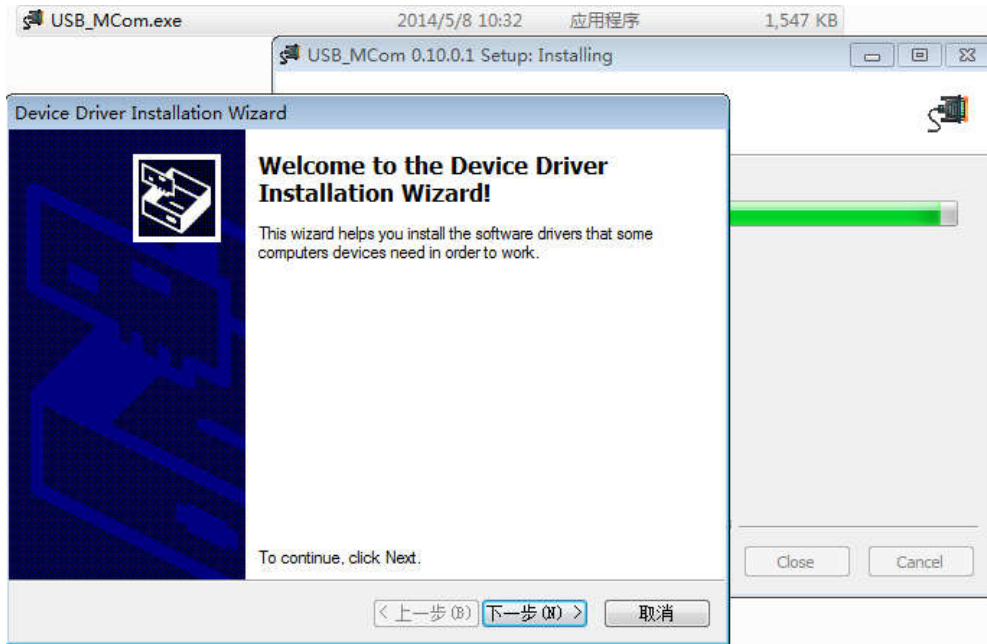


Figure 4.1.1.3



Figure 4.1.1.4

## 4.1.2 Install CPR30-USB/ISC-PRH101-USB Driver

1. Uncompress file setup\_cprusbio\_v2.50(build20161102).zip and setup\_obidusb\_v3.10(build20170130).zip,
2. Launch setup.exe
3. Enter installation interface, then click Finish.

## 4.1.3 Software Installation

1. Uncompress zip file Inventronics Multi Programmer Setup.zip
2. Double click and launch Inventronics Multi Programmer Setup.msi, seen in Figure 4.1.3.1
3. If no Microsoft.NET Framework 4.0 environment in the PC, then need to install Framework 4.0 first. Download link:  
<https://www.microsoft.com/zh-cn/download/details.aspx?id=17718>
4. Click Next, shown in Figure 4.1.3.2. Choose installation path, shown in Figure 4.1.3.3. Click Next again, shown in Figure 4.1.3.4. Continue with Next to Figure 4.1.3.5 showing the installation process of the software. Then, click Close to finish the installation,

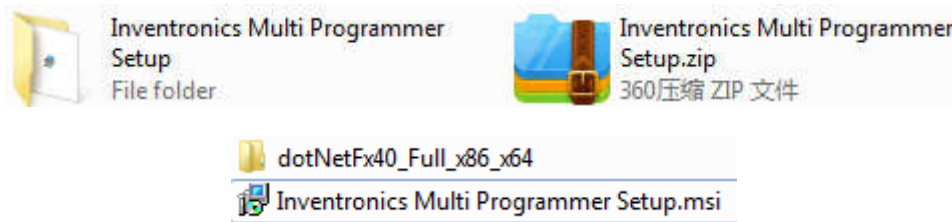


Figure 4.1.3.1 Inventronics Multi Programmer Setup Installation Package

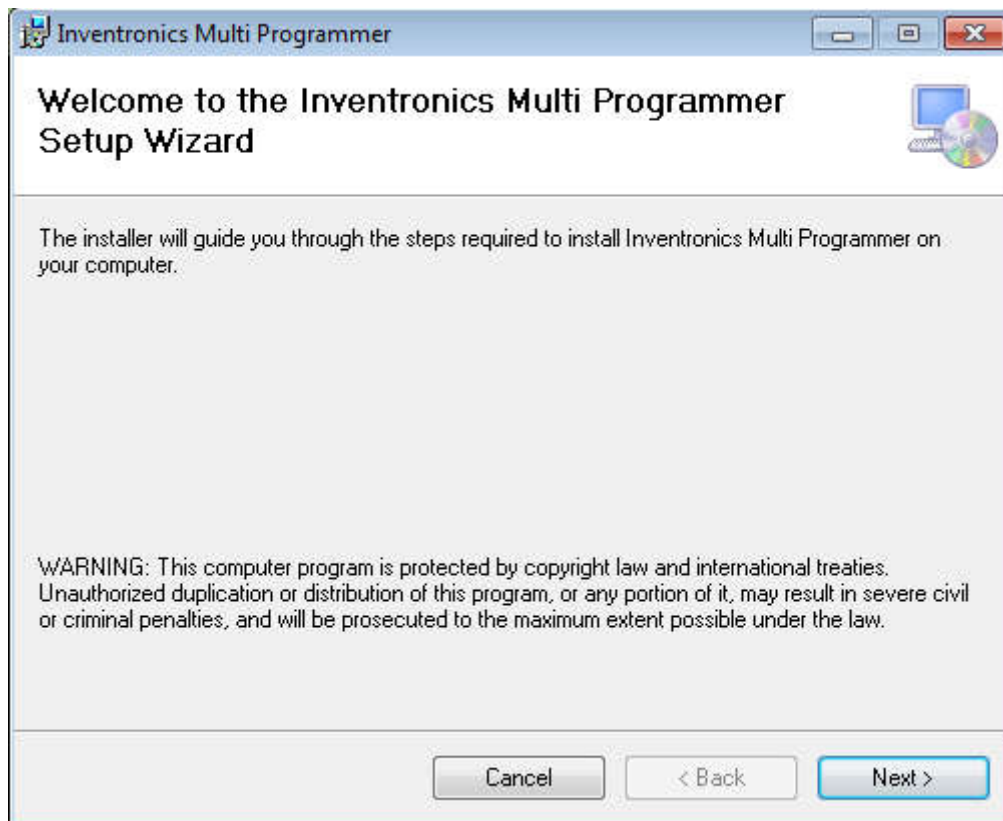


Figure 4.1.3.2 Inventronics Multi Programmer Setup Installation

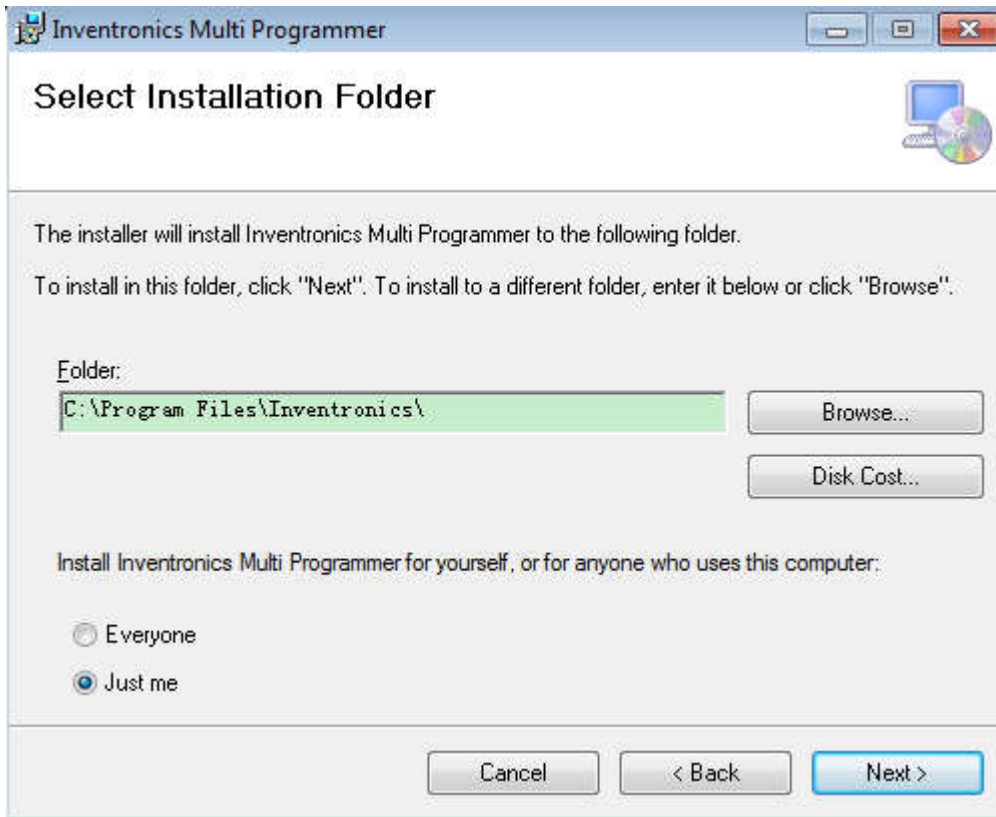


Figure 4.1.3.3 Inventronics Multi Programmer Setup Installation Path

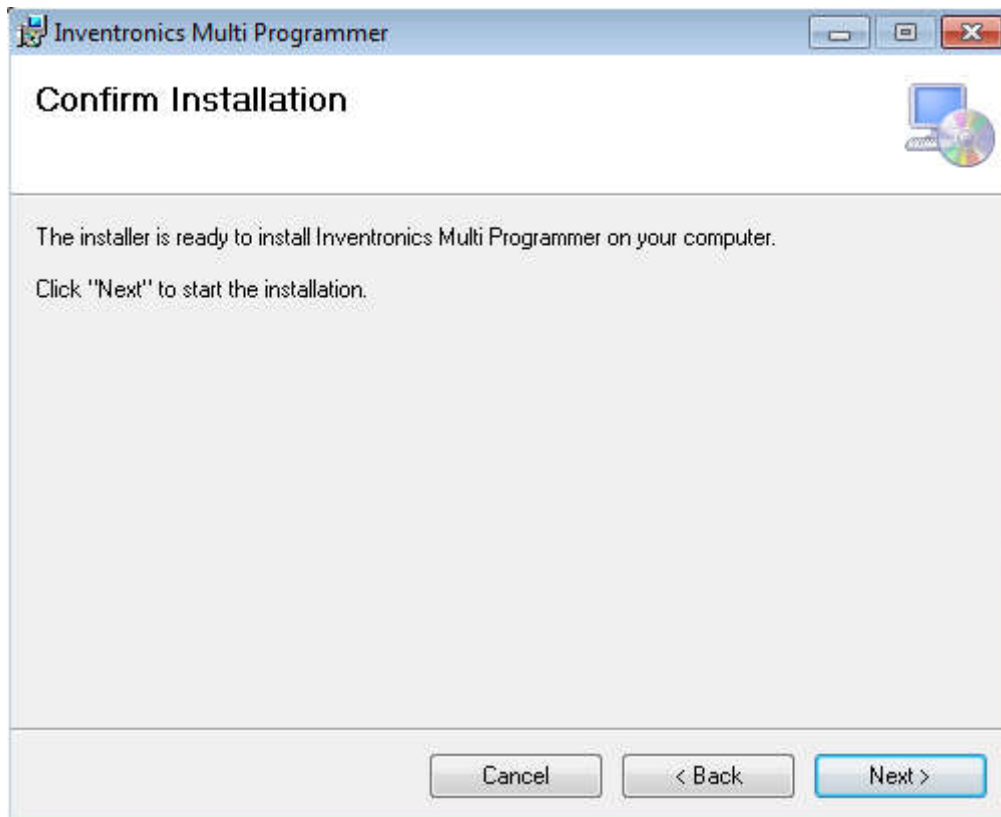


Figure 4.1.3.4 Inventronics Multi Programmer Setup Installation



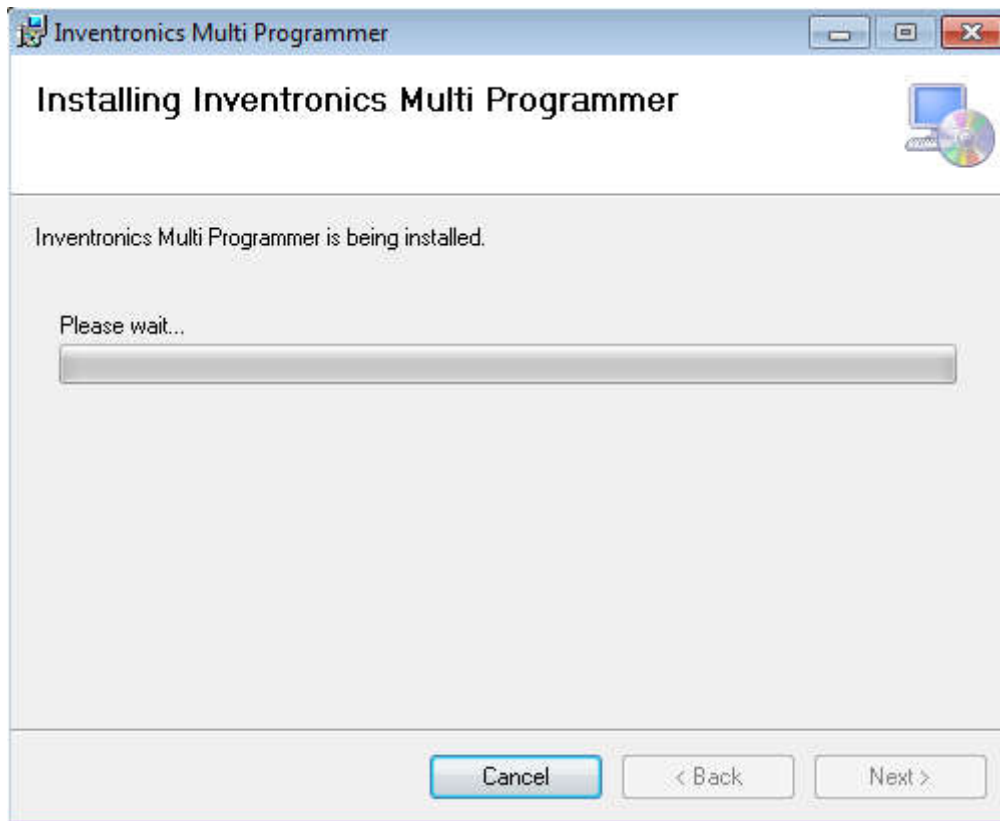


Figure 4.1.3.5 Inventronics Multi Programmer Setup Installation

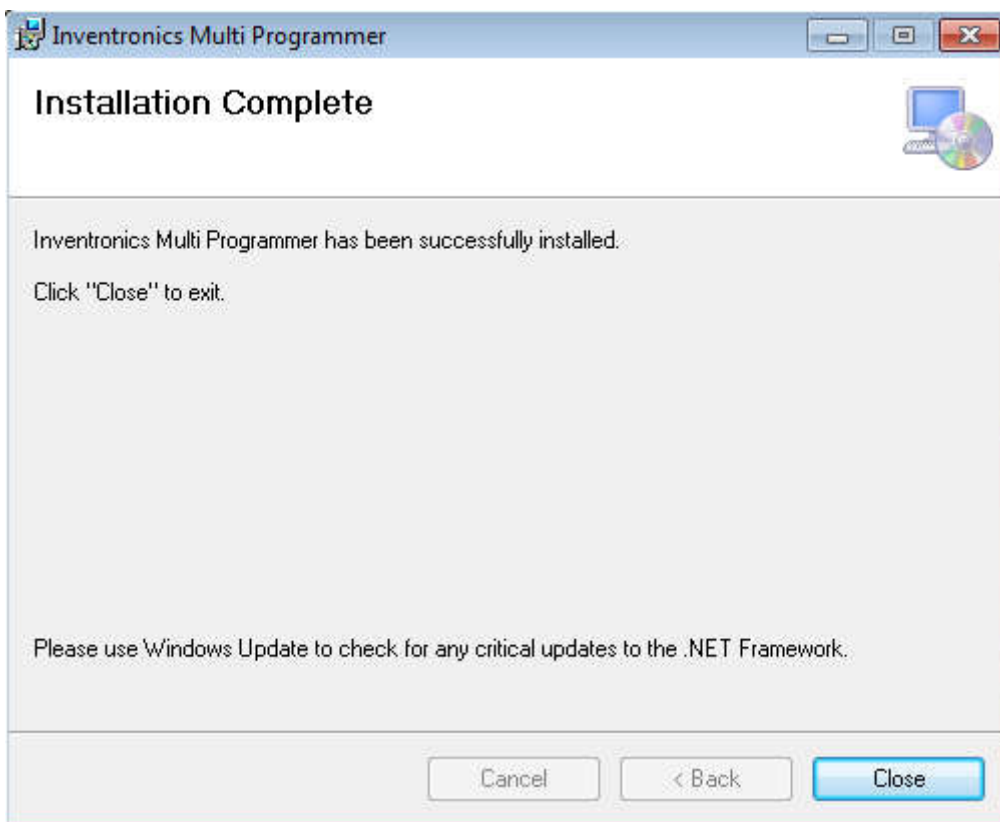


Figure 4.1.3.6 Inventronics Multi Programmer Setup Finish

## 4.2 Open Software

When installation is finished, a new folder 'Inventronics' is set in the start menu. 'Start' -> 'All Programs' -> Inventronics -> ProductInformation

Meanwhile, a shortcut icon (Inventronics Multi Programmer.exe) is created on the desktop.

Both paths can open the software, shown in Figure 4.2.1.

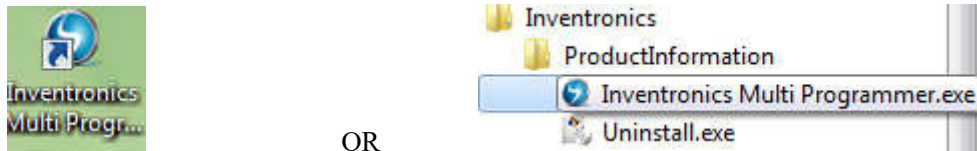


Figure 4.2.1 Software Launch Icon

## 5. Start-up Interface

### 5.1 Start-up Interface

Choose the product that is going to be programmed, including 0-10V dimming driver (Constant Power Driver), DALI driver (DALI Constant Power Driver), Current Limiter (0-xV Dimmer) and Combo dimmer (Programmable Timer Dimmer).

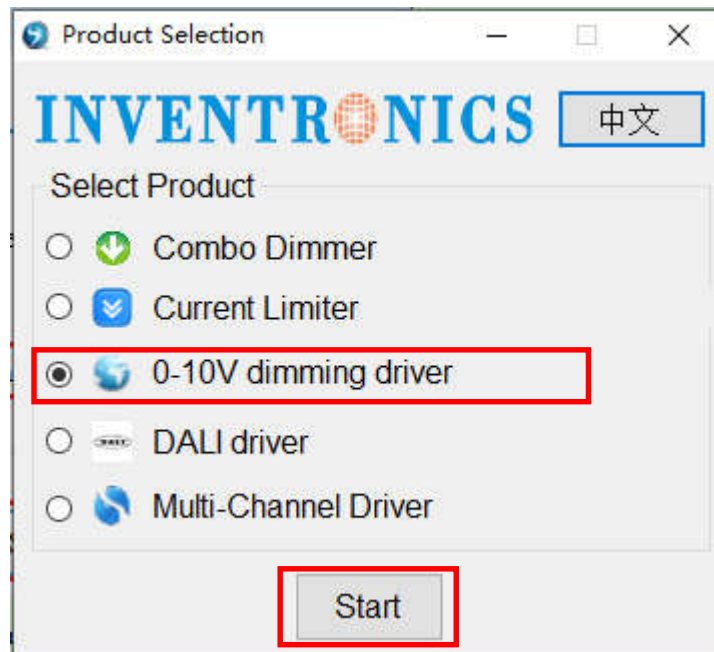


Figure 5.1.1 Driver Start-up Interface

## 6. Constant Power Driver Operation Example

### 6.1 Software Online Update

When the computer is connected to Internet, there will be an update notification when a new version is released. See Figure 6.1.1.

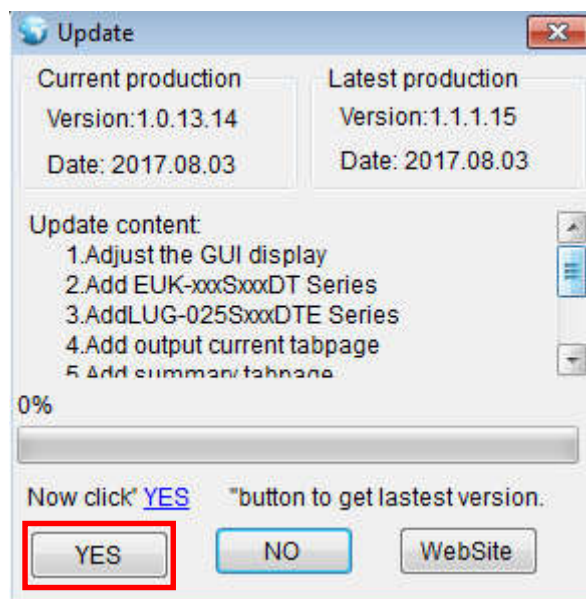


Figure 6.1.1 Update Interface

### 6.2 Interface Selection

There are PRG and NFC Reader interface, The Customer can choose interface to operate.

If the selection interface is PRG, When the connection between the programmer and PC is ready, the corresponding COM port number COMx shows on the software. If multiple USB serial port is used for programming, please make sure the COM port number is right before read/write the driver. If no USB serial port is detected, make sure the connection is right, then refresh the serial port.

If the selection interface is NFC Reader, The supported reader models are CPR30-USB and ISC-PRH101-USB, When the connection between the NFC Reader and PC is ready, the corresponding Reader information shows on the software, If multiple NFC Reader is used for programming, please make sure the NFC Reader is right before read/write the driver, If no NFC Reader is detected, make sure the connection is right, then refresh the Reader.

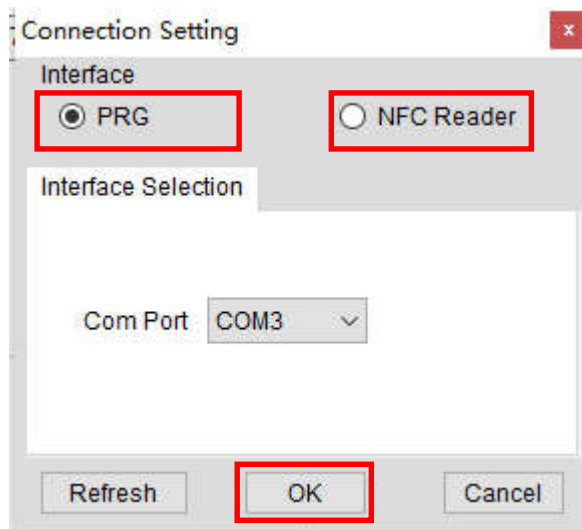


Figure 6.2

“Refresh”: Click the button to refresh the interface

“OK”: Click the button to confirm the selection interface

“Cancel”: Click the button to cancel the selection interface

## 6.3 Language Change between Chinese and English

Software default language is consisted with the language of PC. If computer language is Chinese, then the software interface is Chinese. If computer language is English, then the software is English.

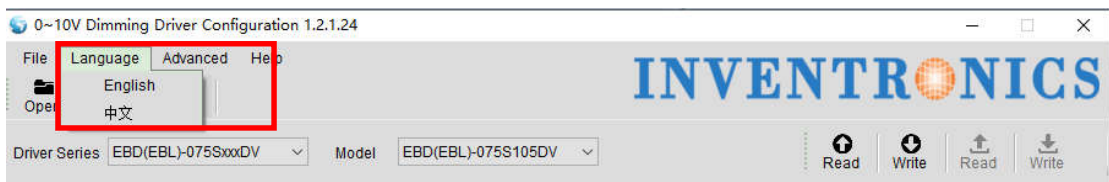


Figure 6.3.1

## 6.4 Read/Save Configuration (CFG)

Save Configuration: save all the configurations (including serial number, model number, output mode, dimming method, OTP setting, dimming setting and OLC setting) on the software as Default.ini in PC for next time.

Read Configuration: choose Default.ini from PC and all the configurations will show on the software interface.

The file menu bar can also be used to read and save configuration files. See Figure 6.4.1

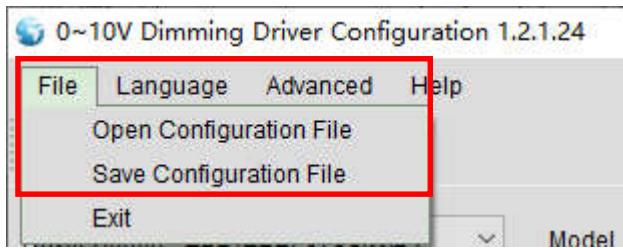


Figure 6.4.1

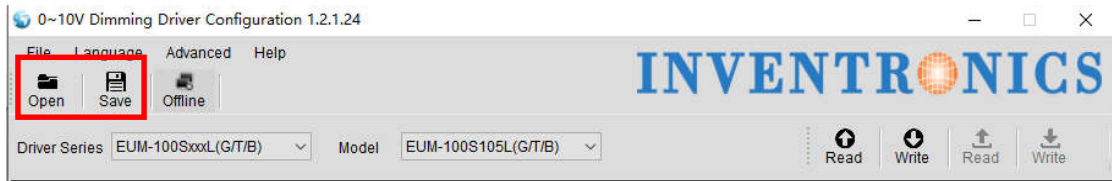


Figure 6.4.2

## 6.5 Choose Serial and Model Number of Driver

Choose corresponding serial and model number through pull-down menu.

If the selection interface is PRG, Only the serial and model that support the PRG interface shows in the list.

If the selection interface is NFC Reader, Only the serial and model that support the NFC Reader interface shows in the list.

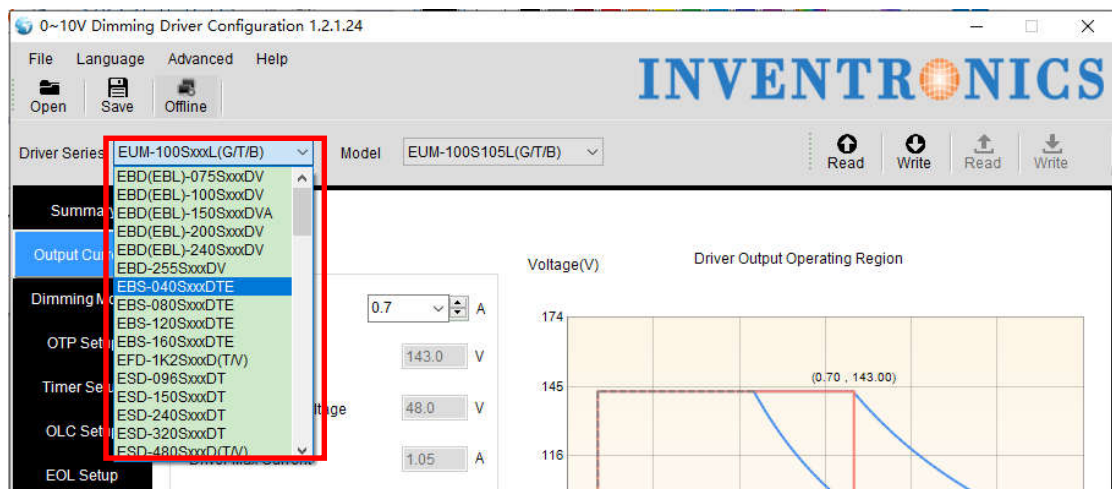


Figure 6.5.1

## 6.6 Driver Working Area Curve

Choose different serial number, the corresponding curve will show on the interface. The curve also changes along with the output current setting. Put cursor on the curve, the coordinate values display on the curve, like shown in Figure 6.6.1.

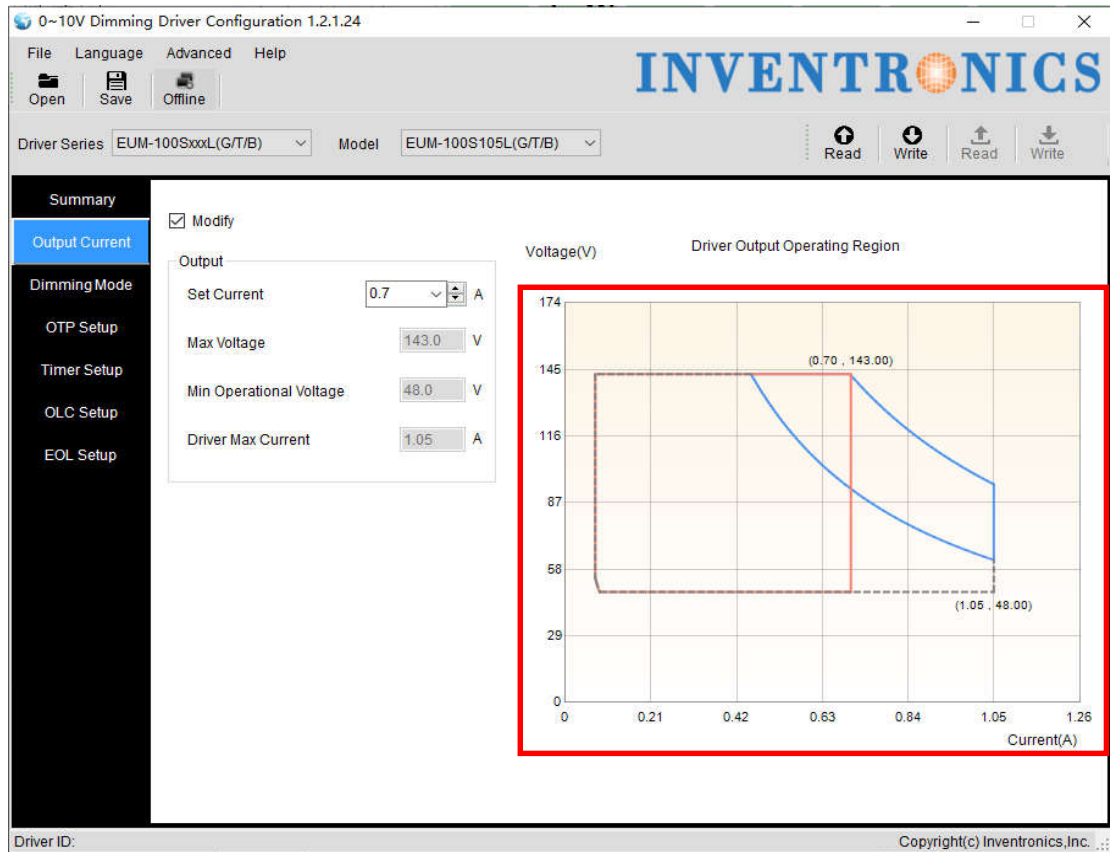


Figure 6.6.1

## 6.7 Drive current setting

Select the different series of drives in the "output current" page according to the set current value of the work area drawing, and display set current value, the maximum voltage value, the minimum recommended voltage value, the minimum operating voltage and the maximum current value, the mouse placed to the curve Point position, display coordinate point. As shown below.

Set the current value: select the corresponding current value in the set current drop-down menu; you can manually enter the correct current value, or press the up and down arrows to increase self-increment. The current setting step is 1% of the maximum current value. If it is not at 1%, it will automatically round the selected value.

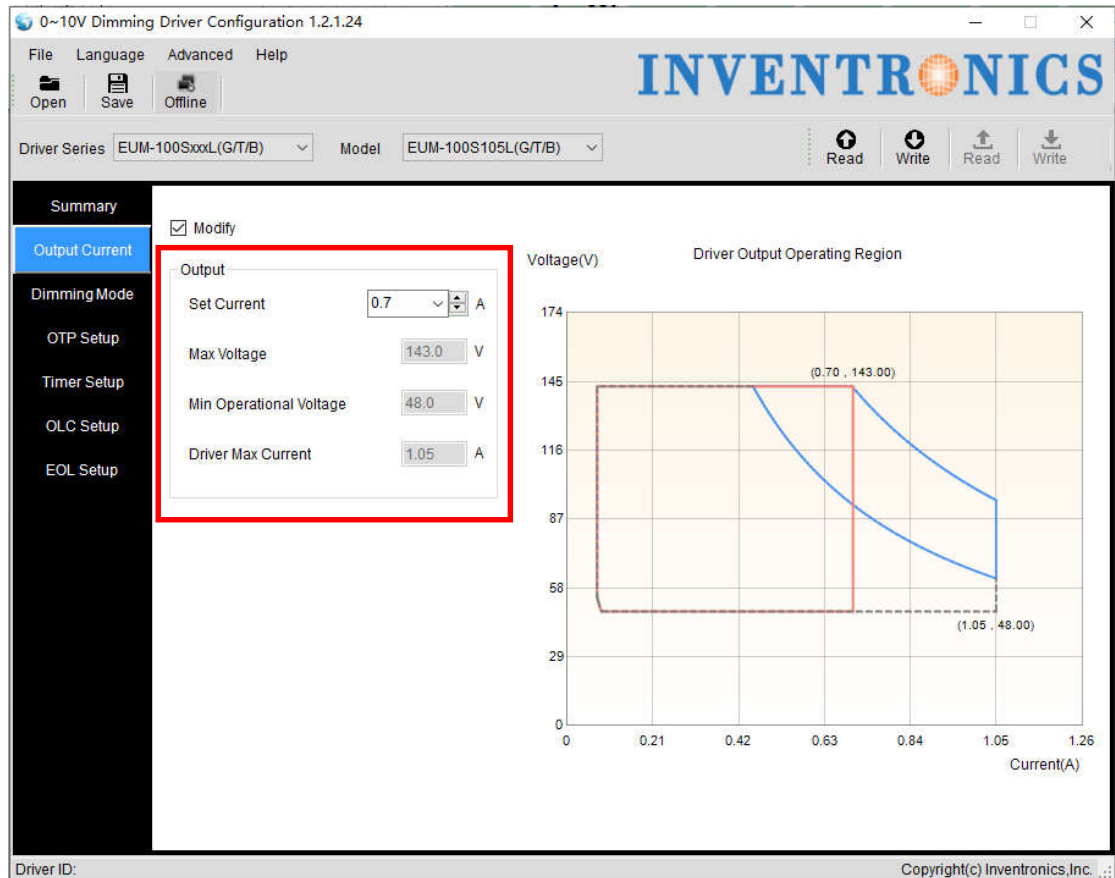


Figure 6.7.1

## 6.8 Choose Dimming Method

Select the page "Dimming settings" to select the dimming mode

There are 5 optional dimming methods:

1. 0-10V: Dimming with external 0-10V analog voltage signal. +/- Logic optional
2. 0-5V: Dimming with external 0-5V analog voltage signal. +/- Logic optional
3. Digit Dimming: Digital dimming method
4. PWM: Dimming with external PWM signal. +/- Logic optional
5. Timer: three ways of timer dimming – traditional timer, self-adapt-midnight and self-adapt-percentage, both time and dimming level are adjustable, you can check the enable checkbox of "Timer Setup" to enable timer mode.

You can enable OLC together with dimming method above:

Enable OLC: check Enable OLC to enable the function. Also you can check the enable checkbox of "OLC Setup" to enable OLC

Default setting is 0-10V dimming.

Note: Different series, only show the way it supports dimming.

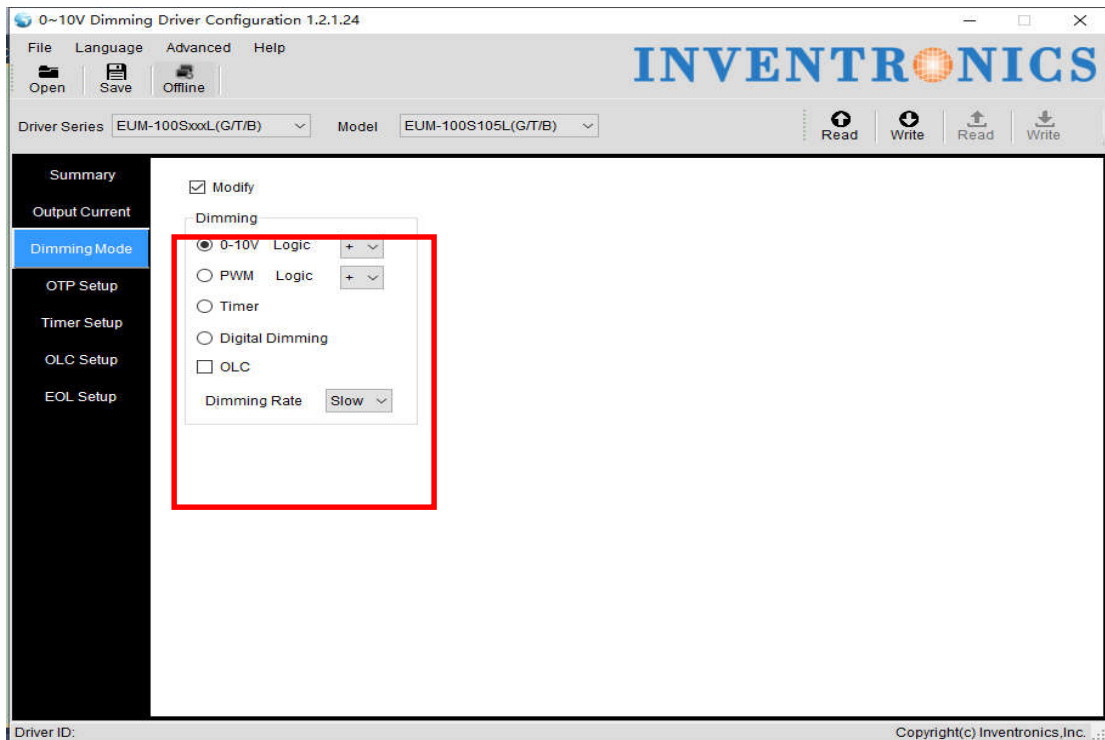


Figure 6.8.1

## 6.9 Timer Dimming Mode Curve Setting

You can check the modify checkbox to set timer dimming mode curve, like shown in Figure 6.9.

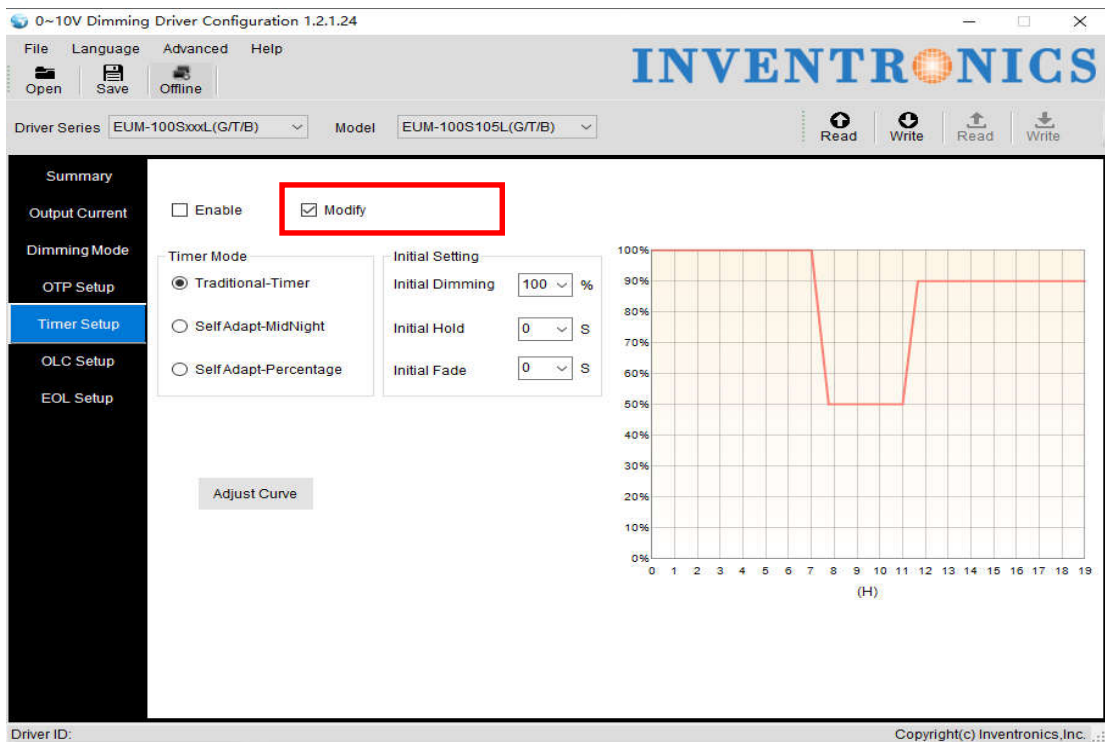


Figure 6.9



## 6.9.1 Choose Timer Dimming

Complete 6.9 operation, Set the timer dimming mode curve.

## 6.9.2 Choose Timer Mode

Choose Traditional-Timer, See Figure 6.9.2.1

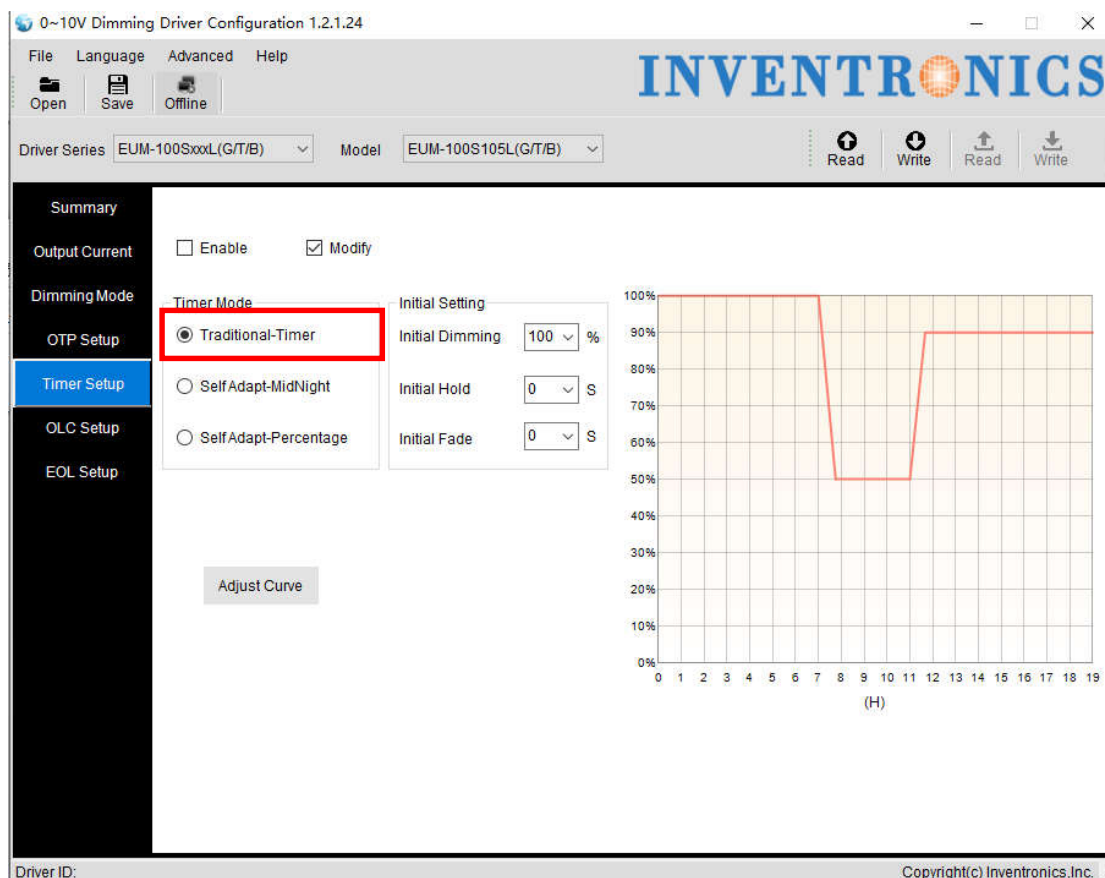


Figure 6.9.2.1 Traditional Timer Mode

## 6.9.3 Default Setting

The initial operating curve is presented. Initial dimming, initial hold time and initial fade time can also be set, and the default values are like shown in 6.9.2.1. When driver is powered on, the output works according to the operation curve.

## 6.9.4 Set Curve

After clicking Adjust Curve button, a secondary window appears. For each light level, there are 3 different sliding blocks for adjusting dimming, holding time and fading time separately. When dragging the blocks, the operation curve would also changes directly.

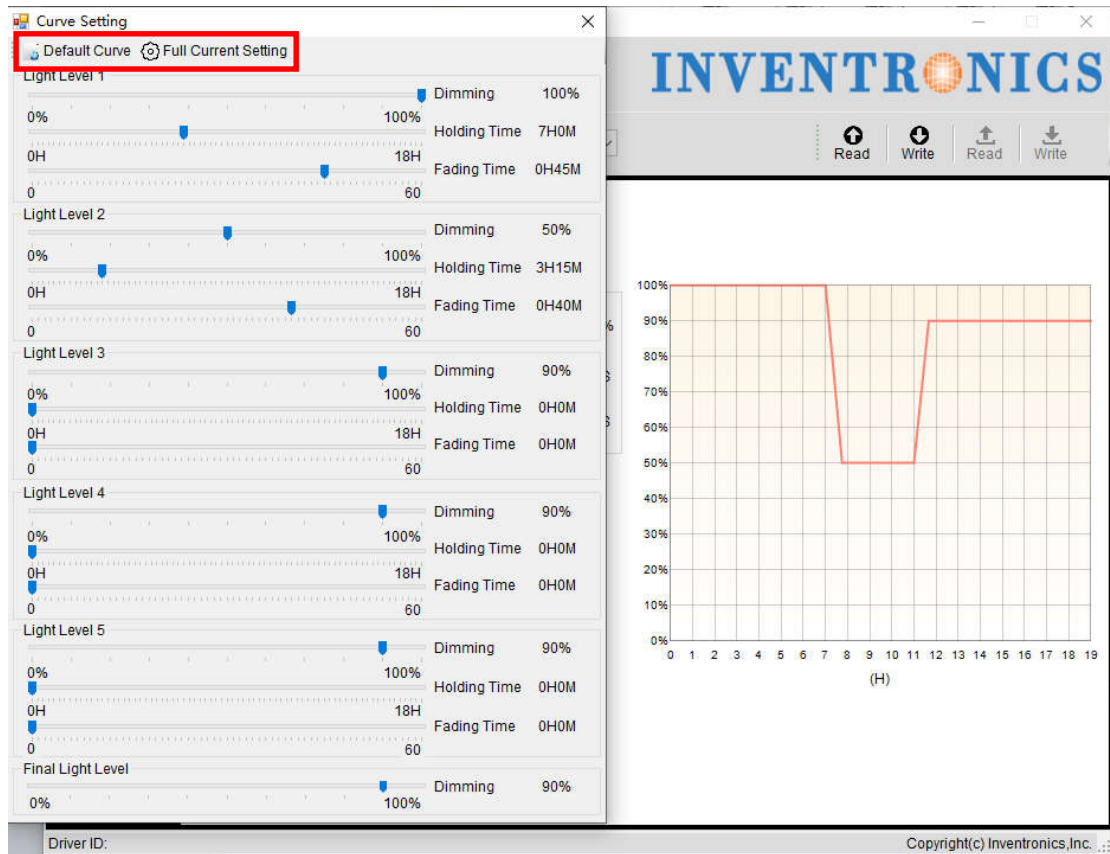


Figure 6.9.4.1 Set Curve

### 6.9.5 Default Curve

Click Default Curve button, and the setting is back to the default curve.

### 6.9.6 Full Current Setting

Click Full Current Setting button, and the dimming setting is 100%.

## 6.10 Self-Adapt-Midnight Timer Setting

### 6.10.1 Choose Timer Dimming

Complete 6.9 operation , Set the timer dimming mode curve.

### 6.10.2 Choose Timer Mode

Choose Self-Adapt-Midnight Timer Mode

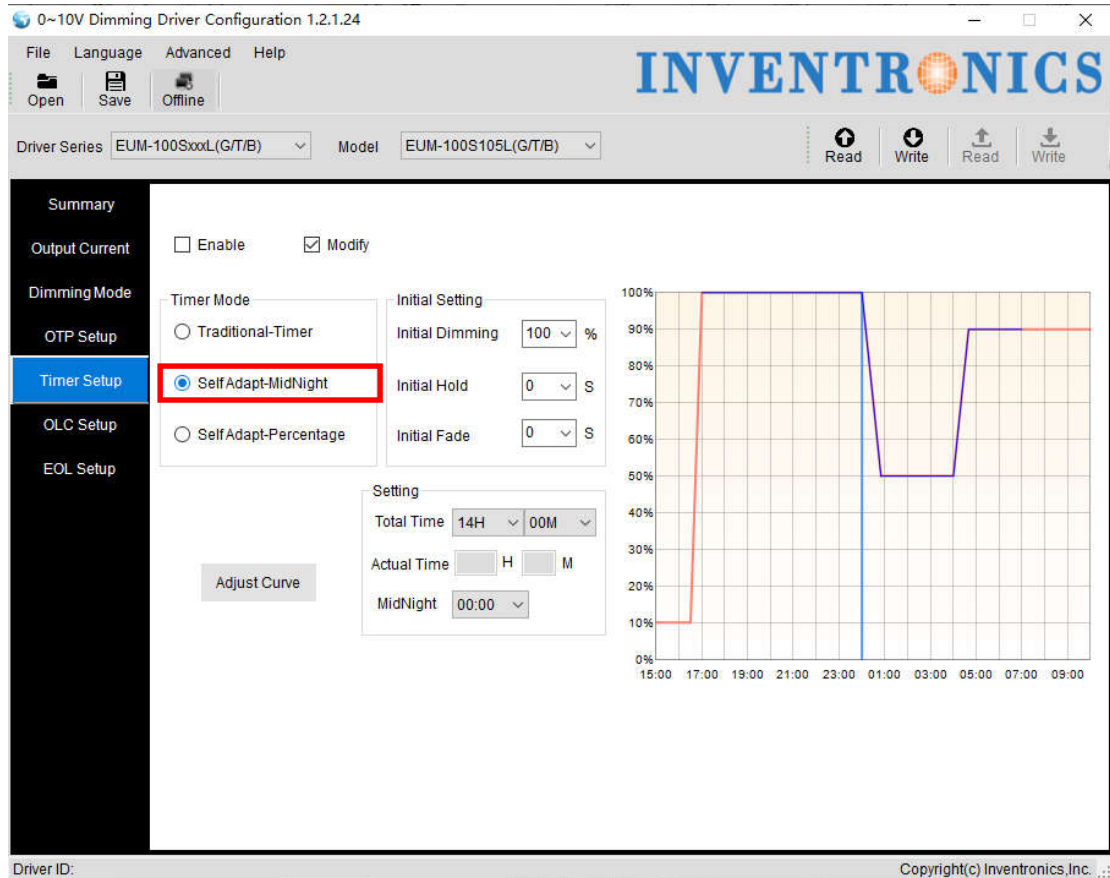


Figure 6.10.2.1 Self-adapt-midnight Timer Mode

### 6.10.3 Parameter Setting

Initial dimming, holding time, fading time, total time and midnight time are all adjustable. The default values are shown in Figure 6.10.2.1. Driver could manage to change the starting/ending points of operation curve according to the last two days' turning on/off time.

### 6.10.4 Set Curve

After clicking Adjust Curve button, a secondary window appears. For each light level, there are 3 different sliding blocks for adjusting dimming, holding time and fading time separately. When dragging the blocks, the operation curve would also changes directly.

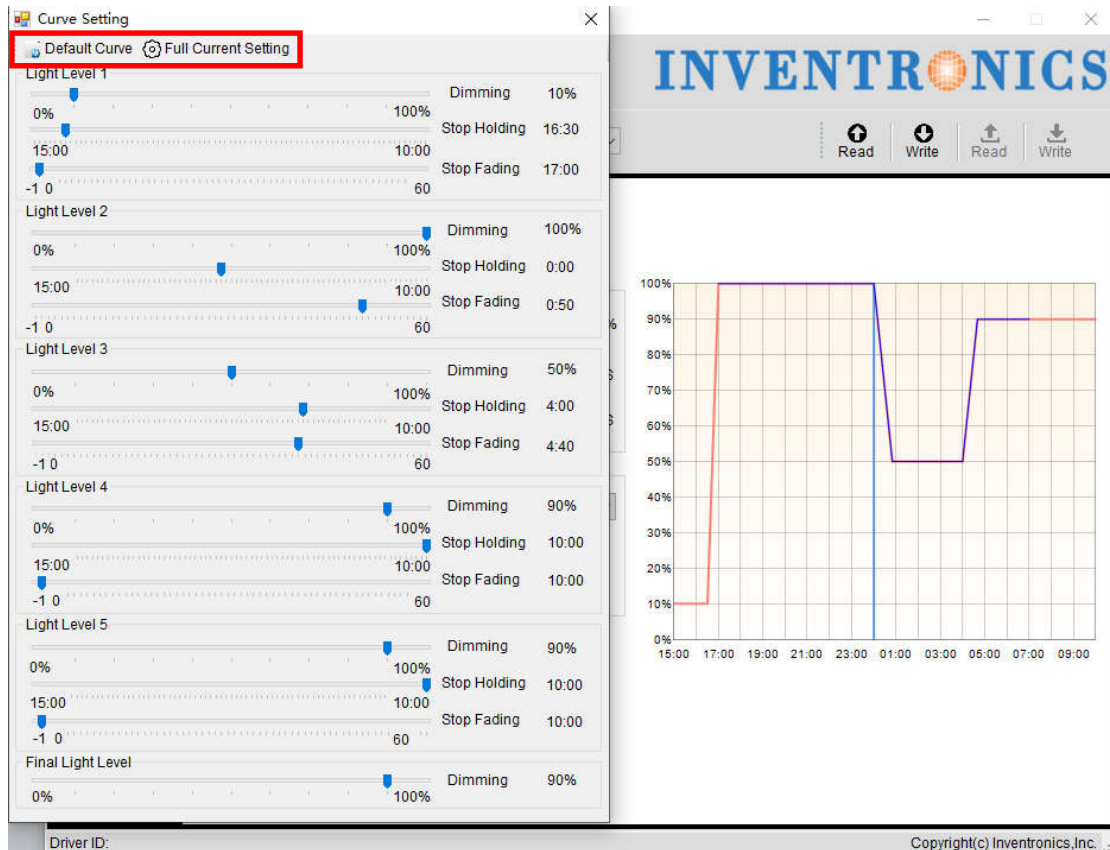


Figure 6.10.4.1 Set Curve

### 6.10.5 Default Curve

Click Default Curve button, and the setting is back to the default curve.

### 6.10.6 Full Current Setting

Click Full Current Setting button, and the dimming setting is 100%.

## 6.11 Self-Adapt-Percentage Timer Dimming Mode

### 6.11.1 Choose Timer Dimming

Complete 6.9 operation, Set the timer dimming mode curve.

### 6.11.2 Choose Timer Mode

Choose Self-Adapt-Midnight Timer Mode

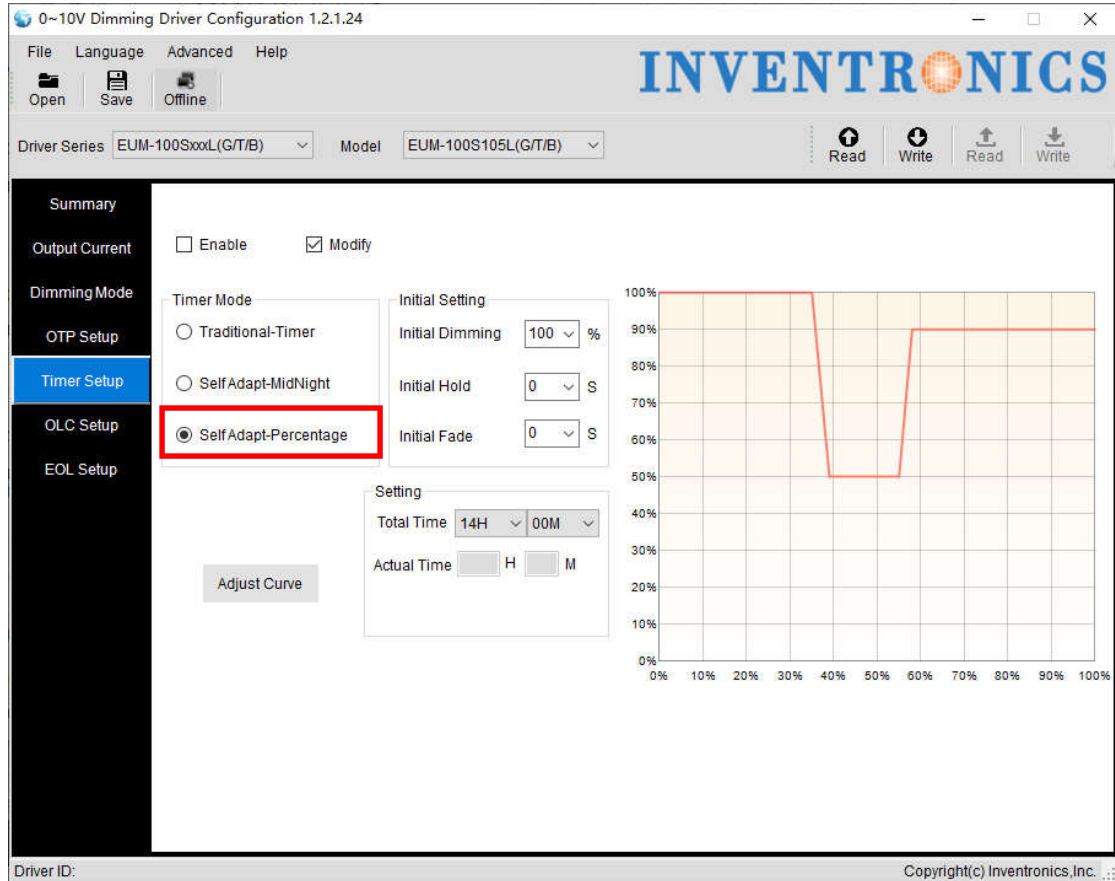


Figure 6.11.2.1 Self-Adapt-Percentage Mode

### 6.11.3 Parameter Setting

Initial dimming, holding time, fading time and total time are all adjustable. The default values are shown in Figure 6.11.2.1. Driver could manage to change the dimming percentage of operation curve according to the last two days' working percentage.

### 6.11.4 Set Curve

After clicking Adjust Curve button, a secondary window appears. For each light level, there are 3 different sliding blocks for adjusting dimming, holding time and fading time separately. When dragging the blocks, the operation curve would also changes directly.

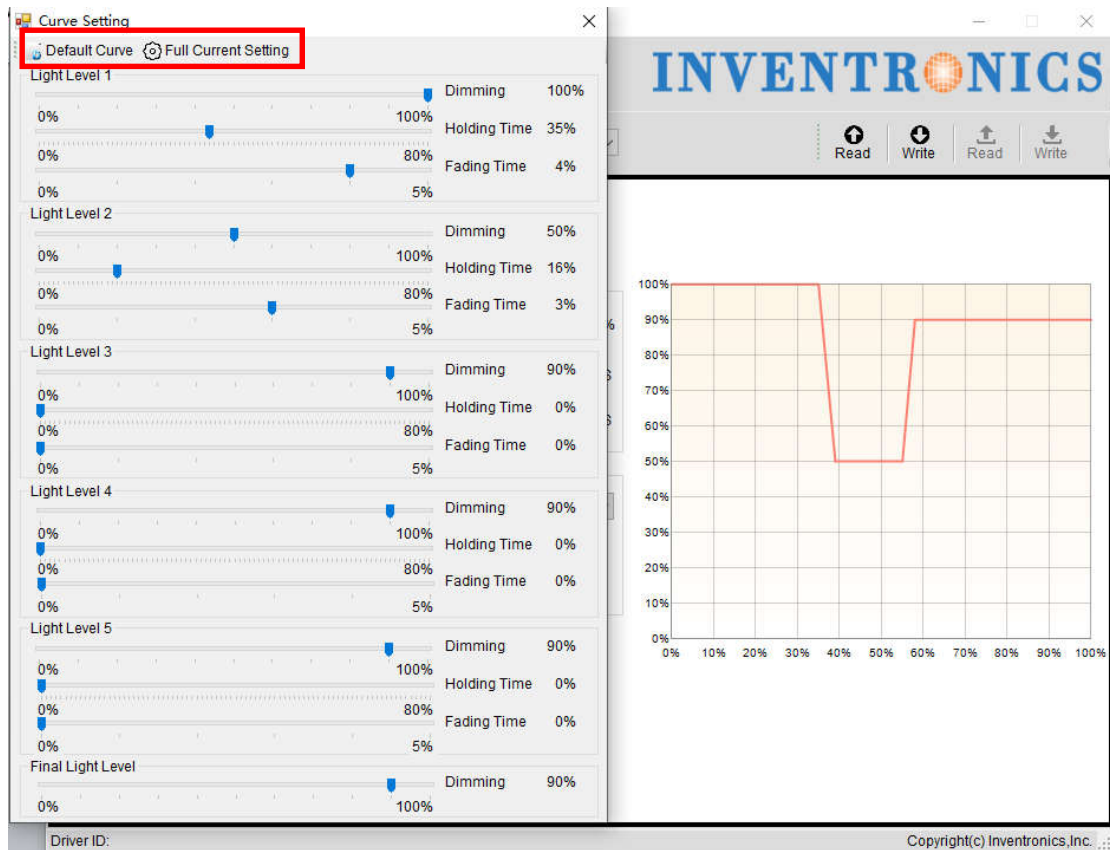


Figure 6.11.4.1 Set Curve

### 6.11.5 Default Curve

Click Default Curve button, and the setting is back to the default curve.

### 6.11.6 Full Current Setting

Click Full Current Setting button, and the dimming setting is 100%.

## 6.12 OLC Curve Setting

### 6.12.1 OLC Curve Setting

Select the "OLC Setup" page and check the modify checkbox, you can set the OLC curve and reset times. Input required current percentage and time in the blanks.

Note: the unit of time is kHrs. The percentage range of output current is 60%-100%, Some series of time range is 0-64kHrs, And some series of time range is 0-120kHrs

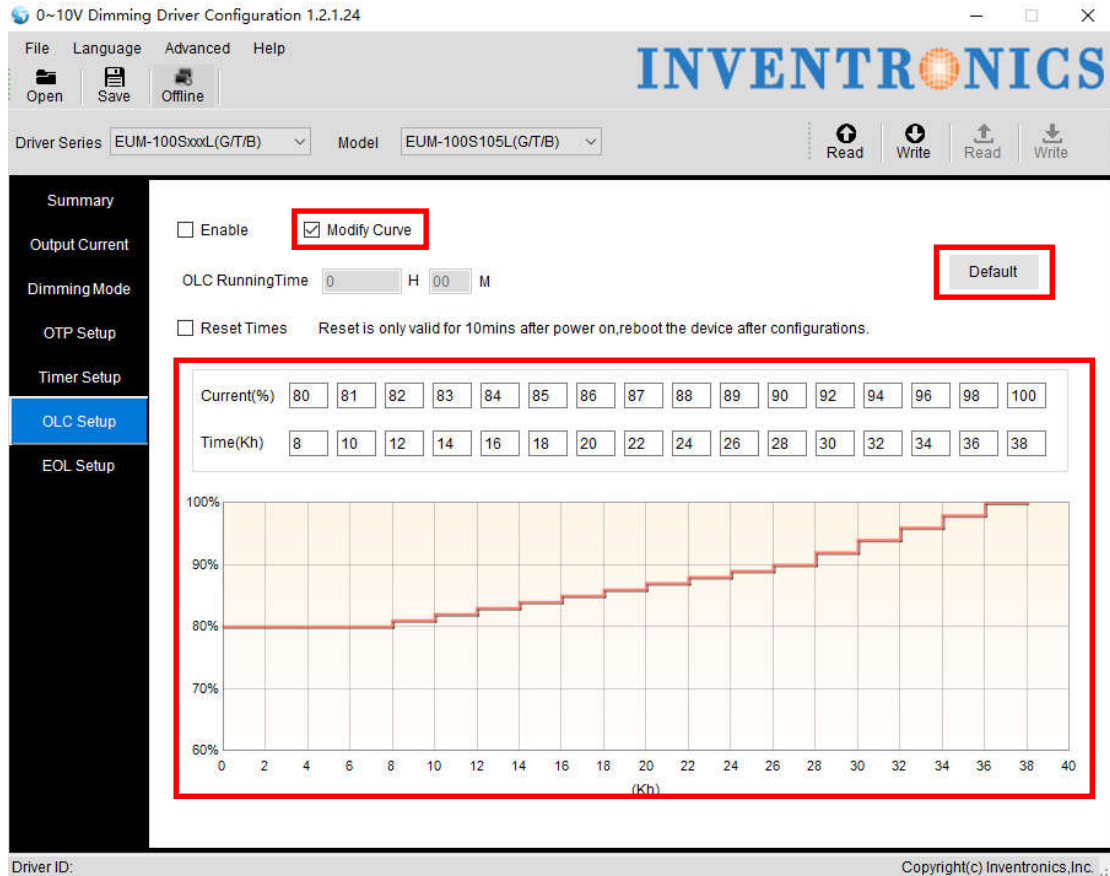


Figure 6.12.1

### 6.12.2 Default curve

Click the "Default" button to restore the default factory curve.

## 6.13 External temperature protection Settings(OTP)

The "Enable" check box in the "Temperature Settings" page controls the opening or closing of the external temperature. The default is on

### 6.13.1 External temperature protection Settings

The external temperature protection settings include protection points, recovery points, and corresponding current percentages.

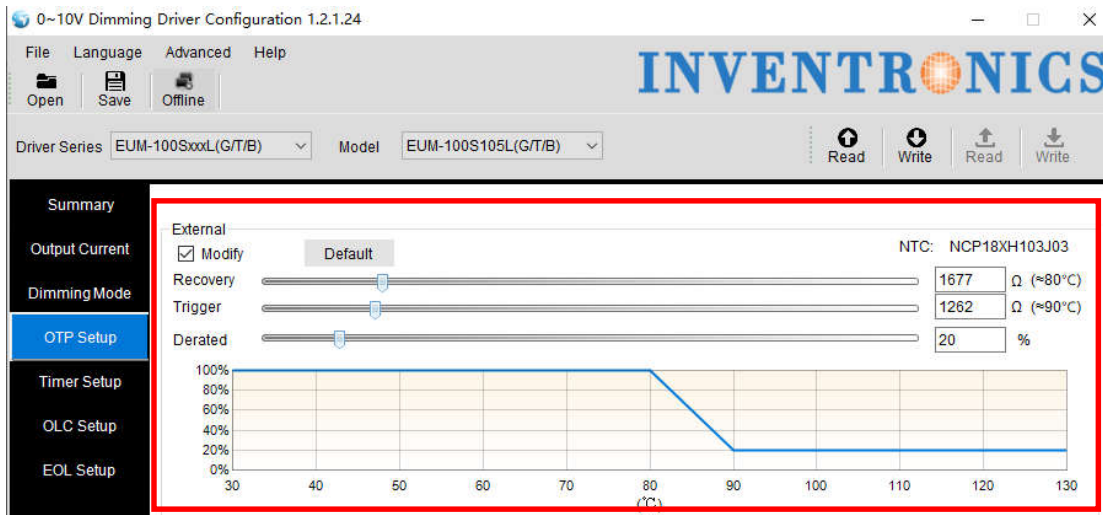


Figure 6.13.1

### 6.13.2 Default curve

Click the "Default" button in the "OTP Setup" temperature setting page to return to the default factory curve.

## 6.14 Internal temperature protection Settings(OTP)

The "Modify" check box in the "Temperature Settings" page controls the opening or closing of the internal temperature. Default state is off.

### 6.14.1 Internal temperature protection Settings

The internal temperature protection settings include protection points, recovery points, and corresponding current percentages.



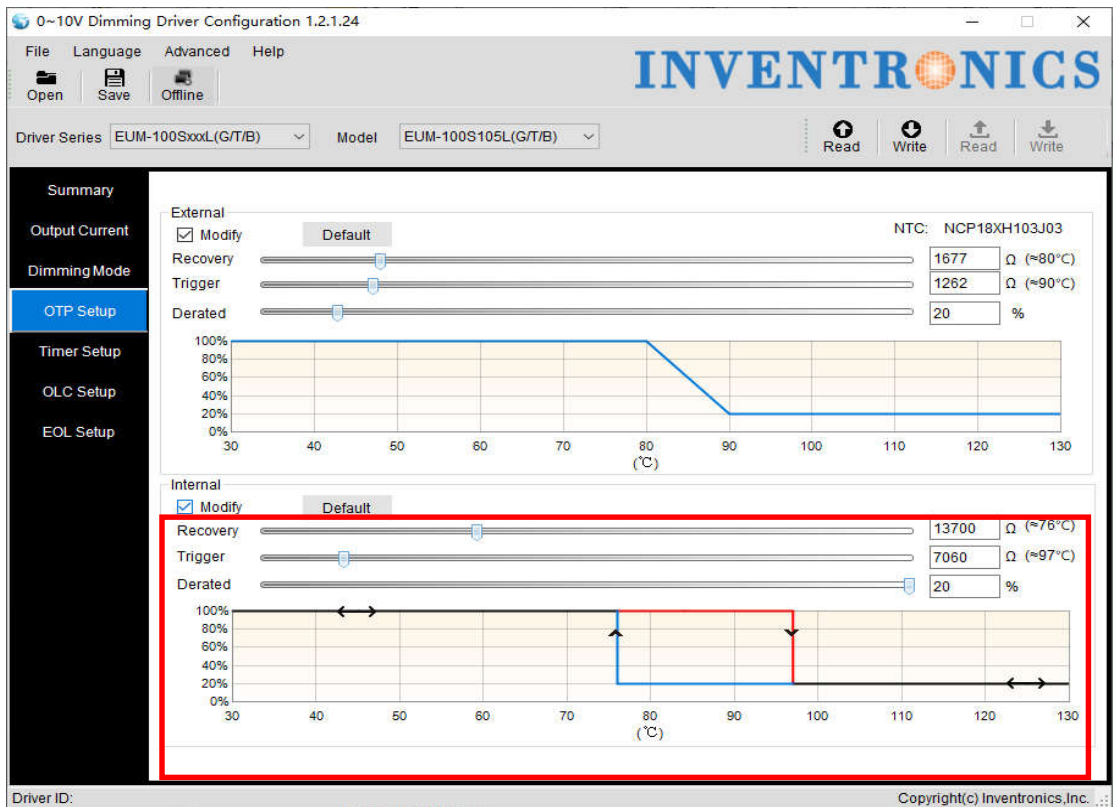


Figure 6.14.1

### 6.14.2 Default curve

Click the "Default" button that in the "Temperature Settings" page to return to the default factory curve.

## 6.15 EOL Setting

Click the "EOL Setup" page to set EOL switch and time, See Figure 6.15.1

EOL Switch : Including On/Off

EOL Time: The range of time is 0~127Kh

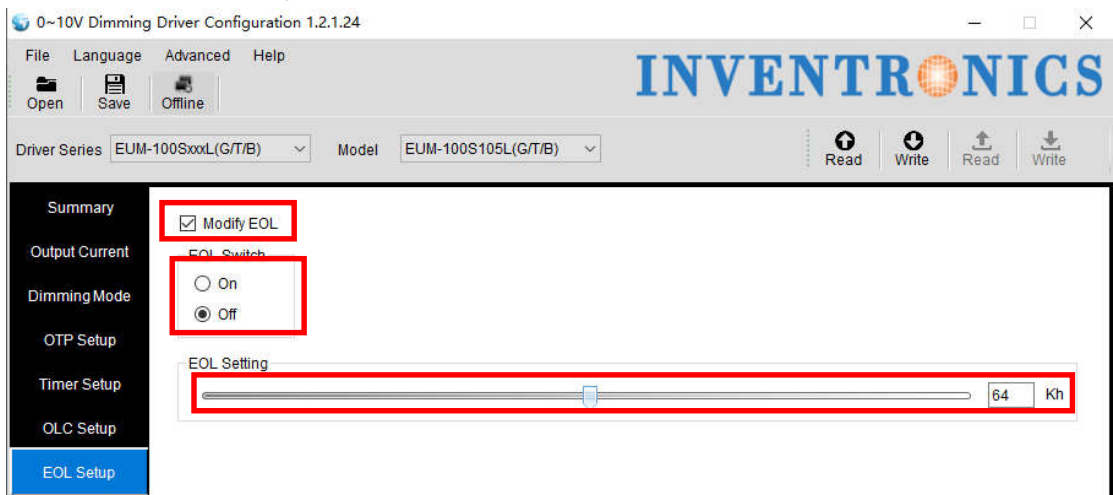


Figure 6.15.1

## 6.16 Summary page display

Click the "Summary" overview page to display the currently set items, such as: mode setting, output current, OTP setting, AC setting, timing curve setting, light failure compensation setting value, and the displayed function block is determined by the selected function. As shown below.

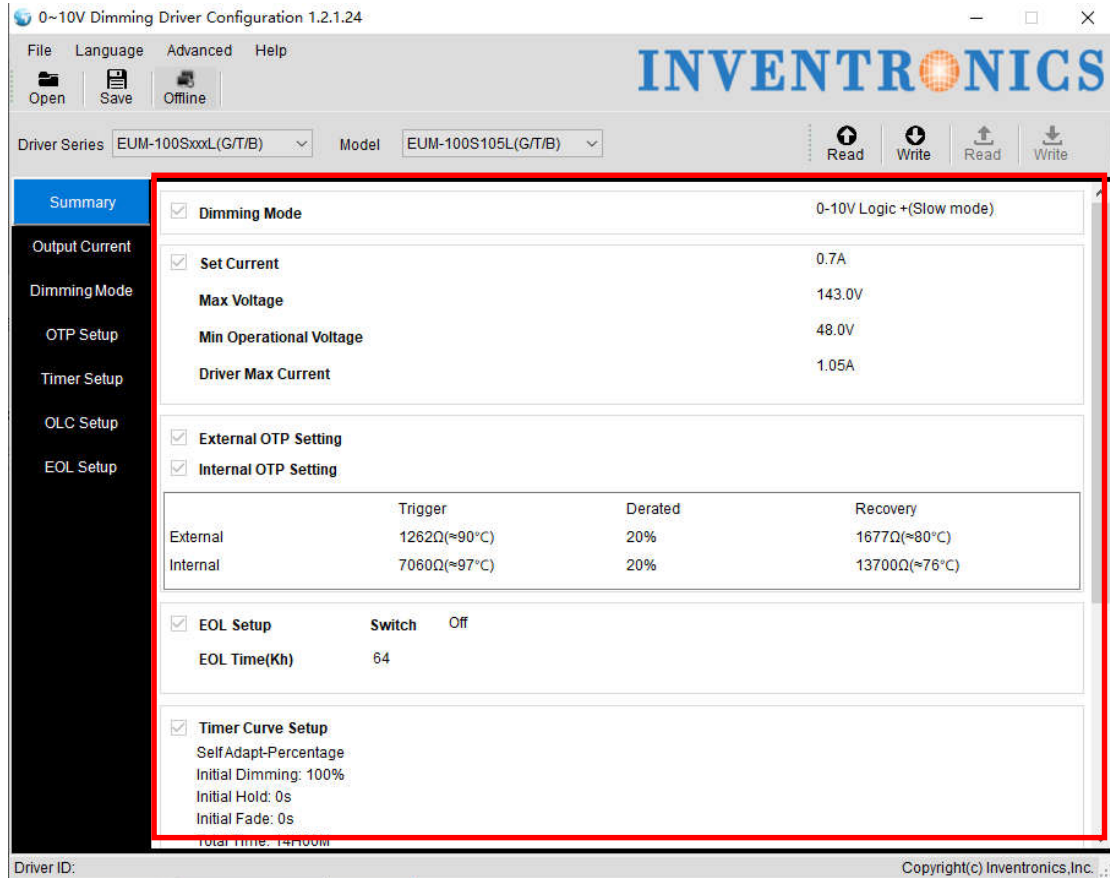


Figure 6.16.1

## 6.17 Offline Mode

First the selection interface is PRG, If the function is fine, the status bar offLine is enabled. If not supported the offline function, the status bar offLine is not enabled.



Figure 6.17.1 Testing offline function

If the offline selected, the background color turns green, you can read and write the programmer EEPROM. It's use for the programmer to program the drive offline, as shown in Figure 6.17.1.

If offLine is not selected, the background color changes to gray. that is online mode, select

the different interface to read/write.

This Online mode is default.

## 6.18 Read/Write to Driver with PRG interface

### 6.18.1 Select connection interface

as shown in Figure 6.18.1.

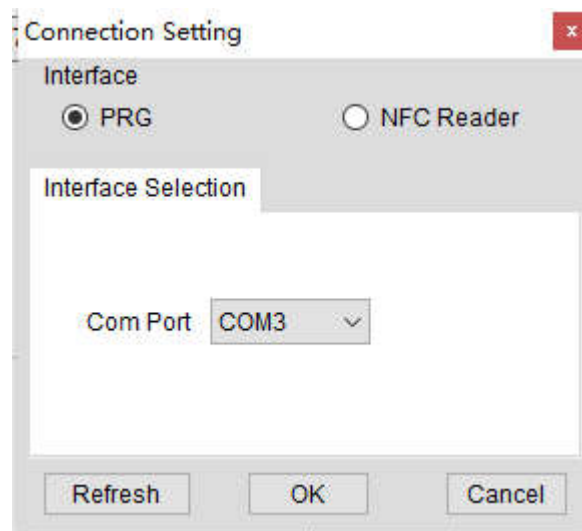


Figure 6.18.1

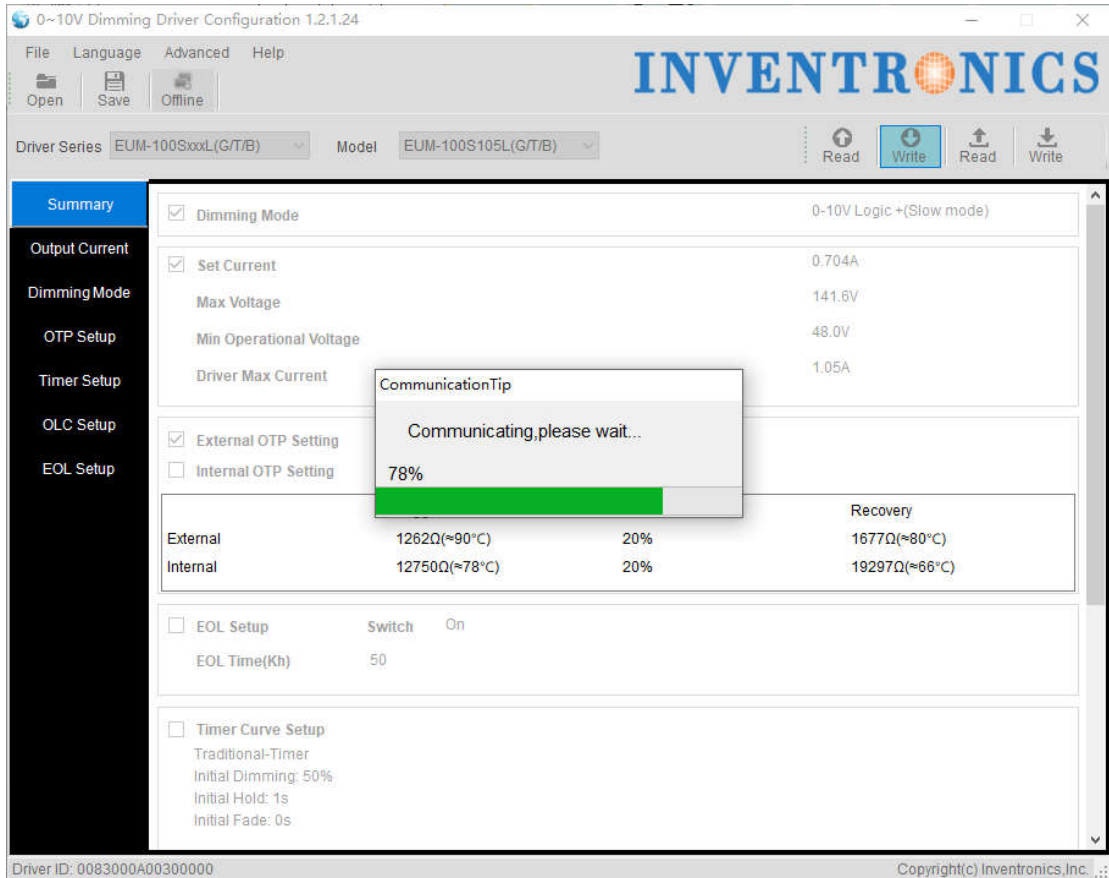
### 6.18.2 Write to Driver

Write to Driver: when the setting on the software are all ready, click Write to Driver and the configurations can be written to the driver. If the data is transmitted successfully to the driver, there will be a pop up box with 'Success'. Otherwise, the pop up box would be saying 'Failure'.

See in Figure 6.18.2



Figure 6.18.2 Write to Driver



### 6.18.3 Read to Driver

Read Driver: read the configuration of the driver and show on the software. See in Figure 6.18.3

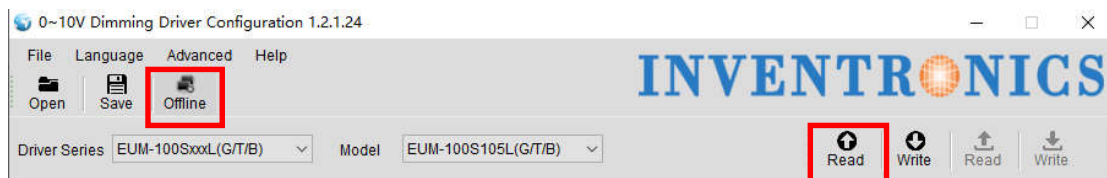


Figure 6.18.3 Read to Driver

## 6.19 Read/Write to Driver in manual mode of NFC Reader

### 6.19.1 Select connection interface

as shown in Figure 6.19.1.

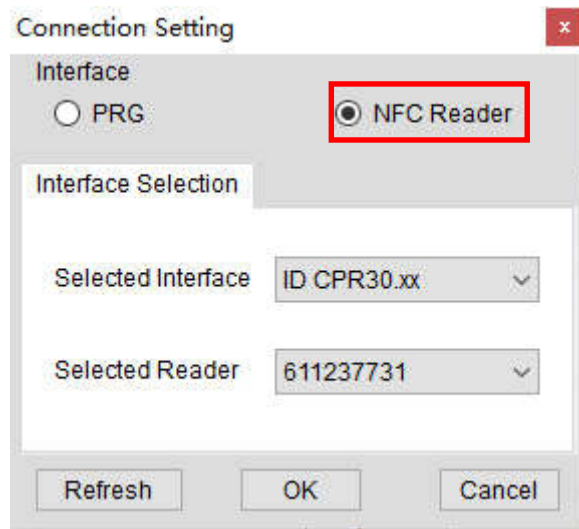
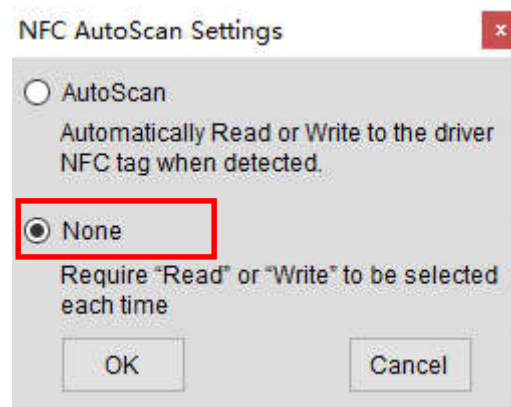


Figure 6.19.1

### 6.19.2 NFC detection mode setting



### 6.19.3 Write to Driver

Write to Driver: when the setting on the software are all ready, click Write to Driver and the configurations can be written to the driver. If the data is transmitted successfully to the driver, there will be a pop up box with 'Success'. Otherwise, the pop up box would be saying 'Failure'.

See in Figure 6.19.3.1, 6.19.3.2

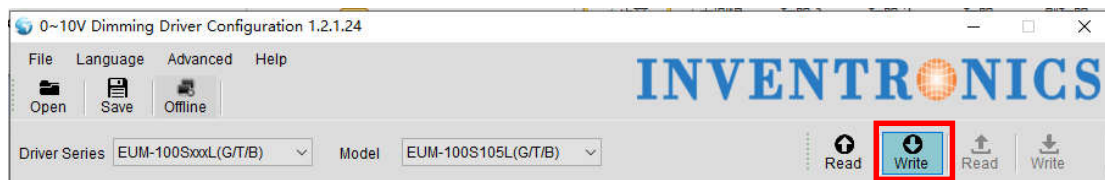


Figure 6.19.3.1

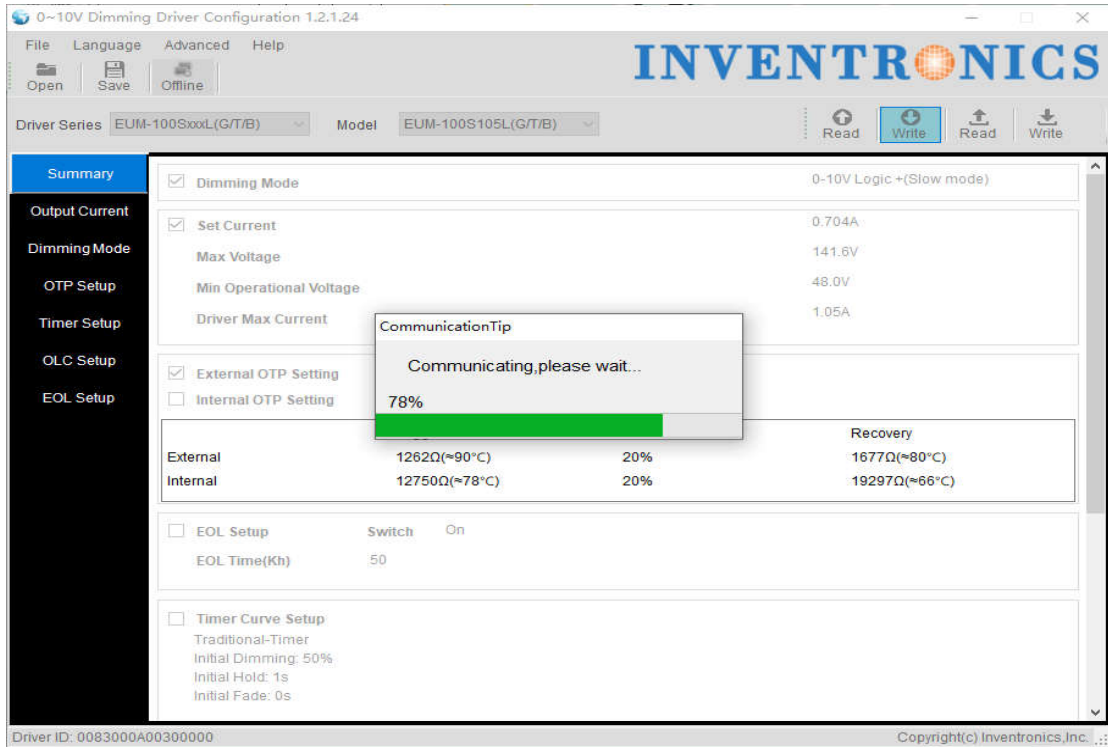


Figure 6.19.3.2

#### 6.19.4 Read to Driver

Read Driver: read the configuration of the driver and show on the software. See in Figure 6.19.4.1

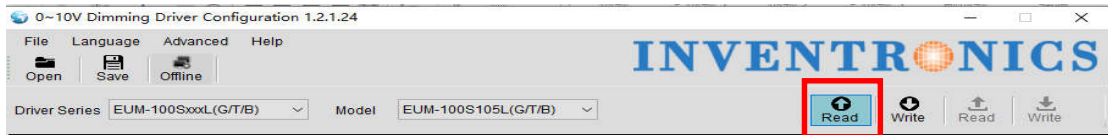


Figure 6.19.4.1

## 6.20 Read/Write to Driver in Auto mode of NFC Reader

### 6.20.1 Select connection interface

as shown in Figure 6.20.1.1

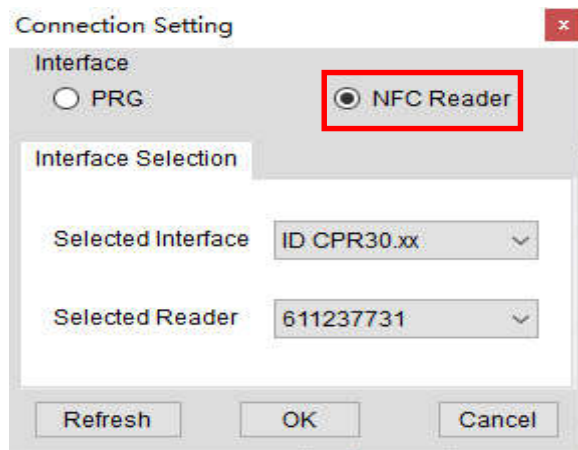


Figure 6.20.1.1

### 6.20.2 NFC detection mode setting

as shown in Figure 6.20.2.1

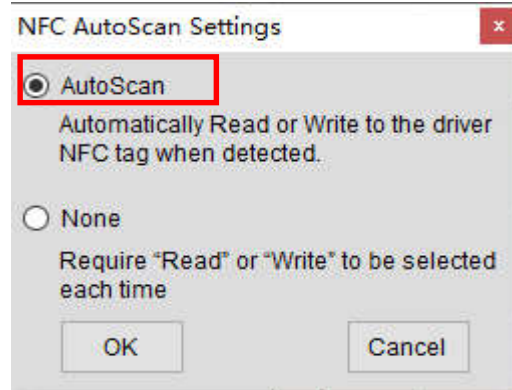


Figure 6.20.2.1

### 6.20.3 Auto Write to Driver

Auto Write: It is to detect NFC Tag automatically, when the NFC Tag is detected, then the configurations can be written to the driver, .If the data is transmitted successfully to the driver, there will be a pop up box with ‘Success’, then the reader continues to detect NFC Tag, Otherwise, the pop up box would be saying ‘Failure’. See in Figure 6.20.3.1

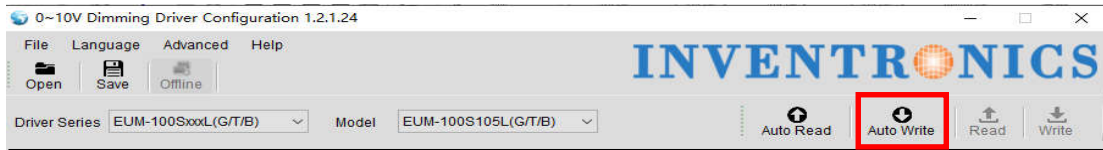


Figure 6.20.3.1

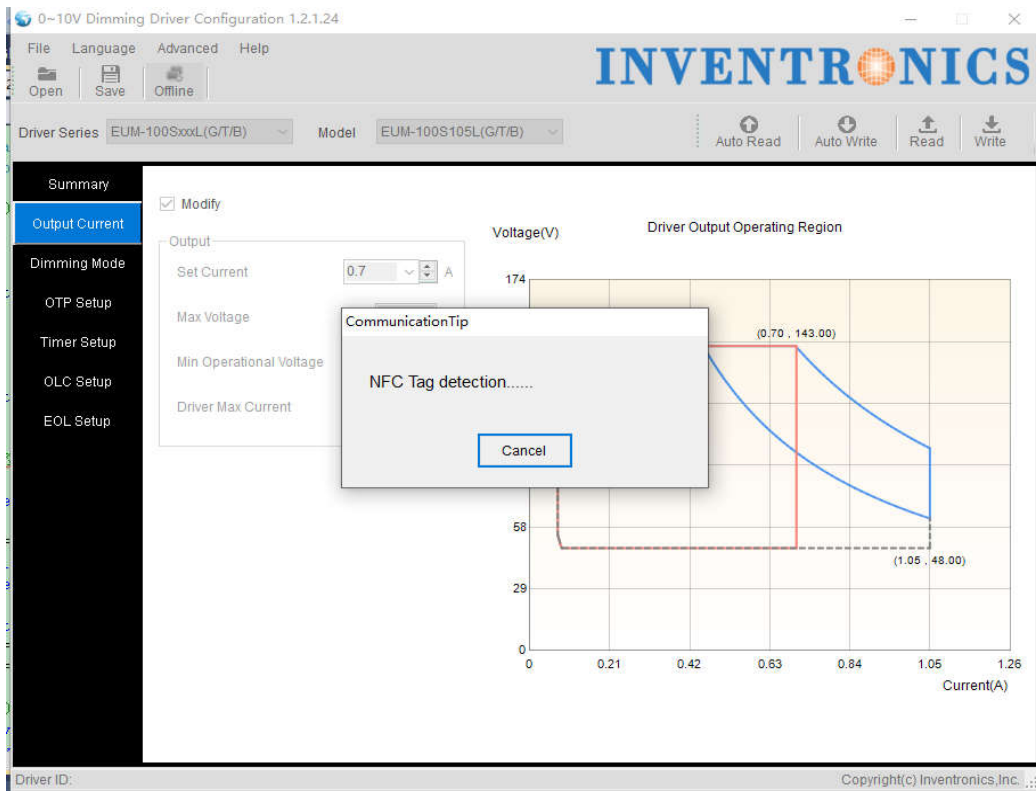


Figure 6.20.3.2

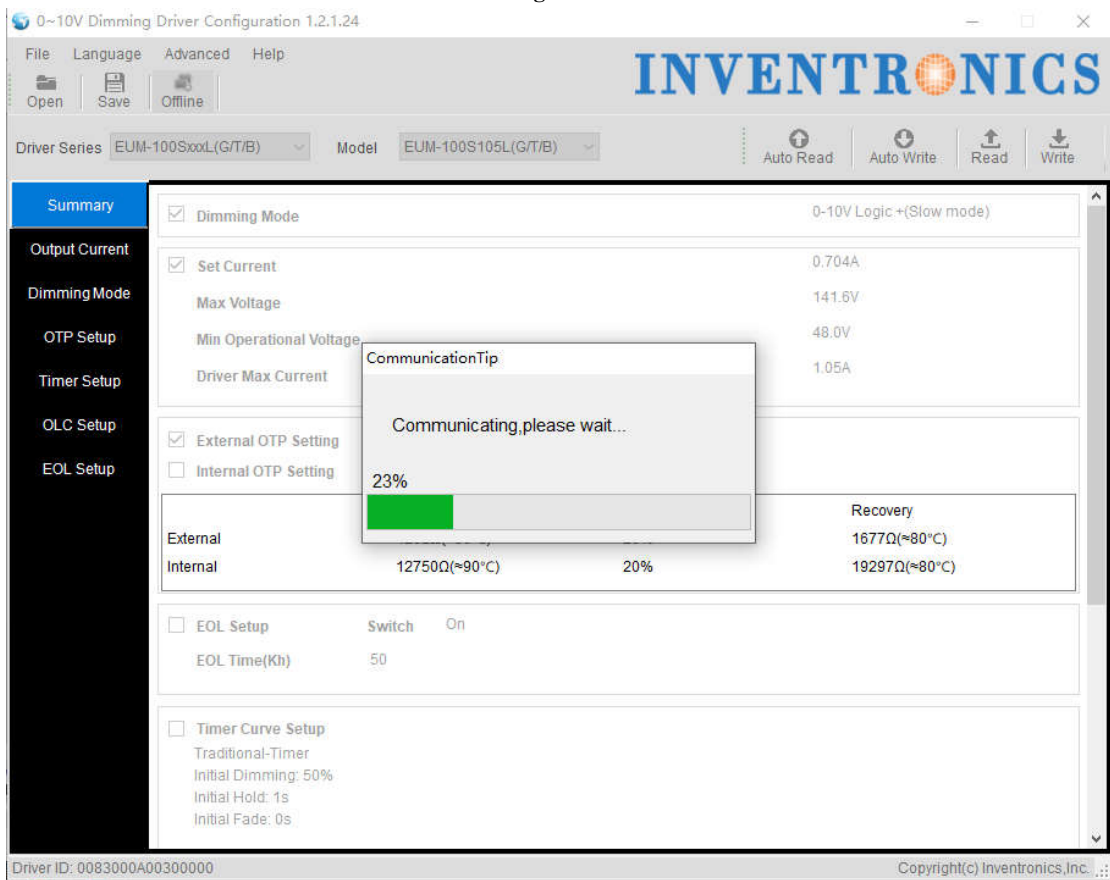


Figure 6.20.3.3

## 6.20.4 Auto Read



Auto Read: It is to detect NFC Tag automatically, when the NFC Tag is detected, then read the configuration of the driver and show on the software, If the data is transmitted successfully to the driver, there will be a pop up box with 'Success', then the reader continues to detect NFC Tag, Otherwise, the pop up box would be saying 'Failure'. See in Figure 6.20.4.1

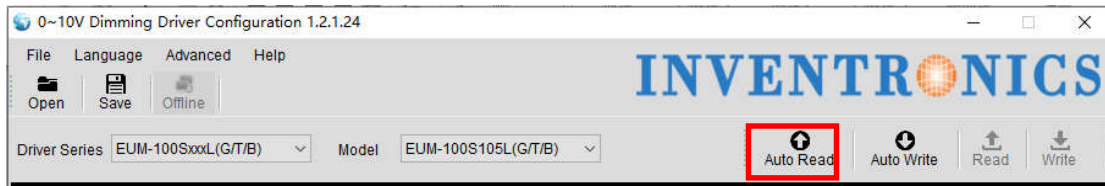
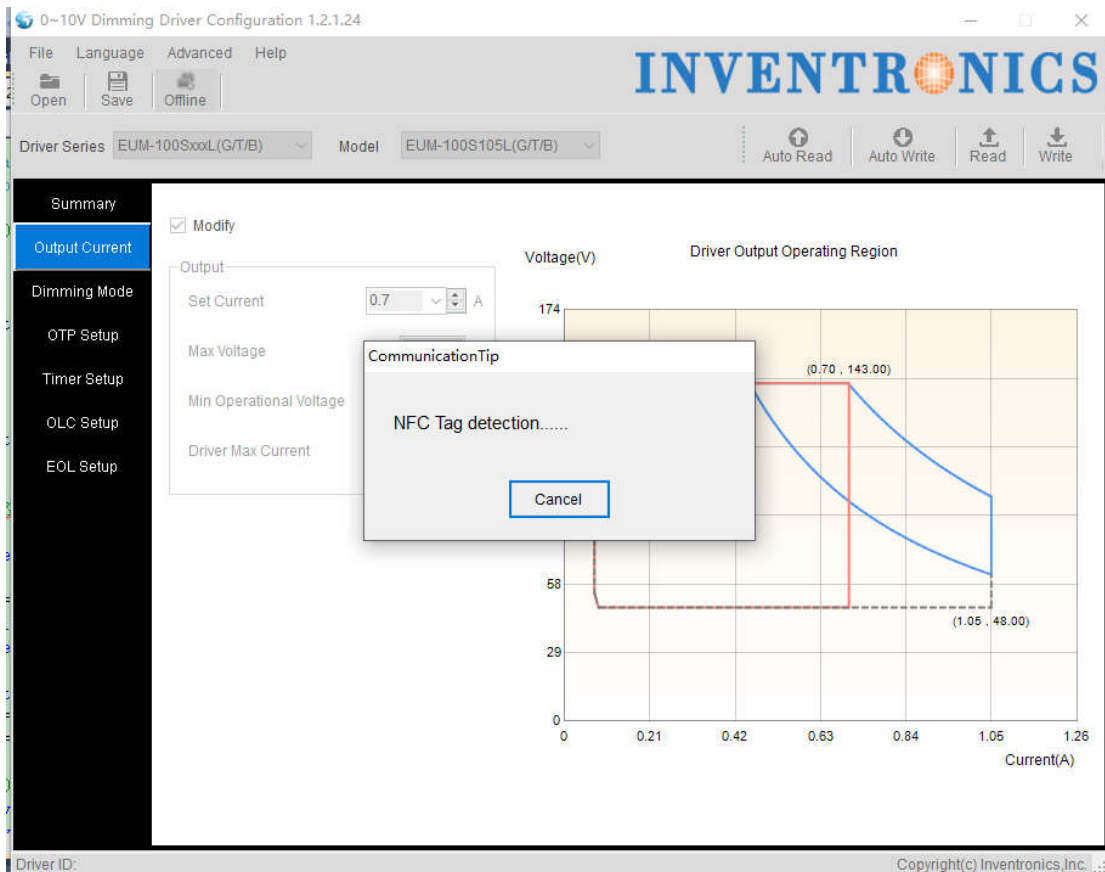
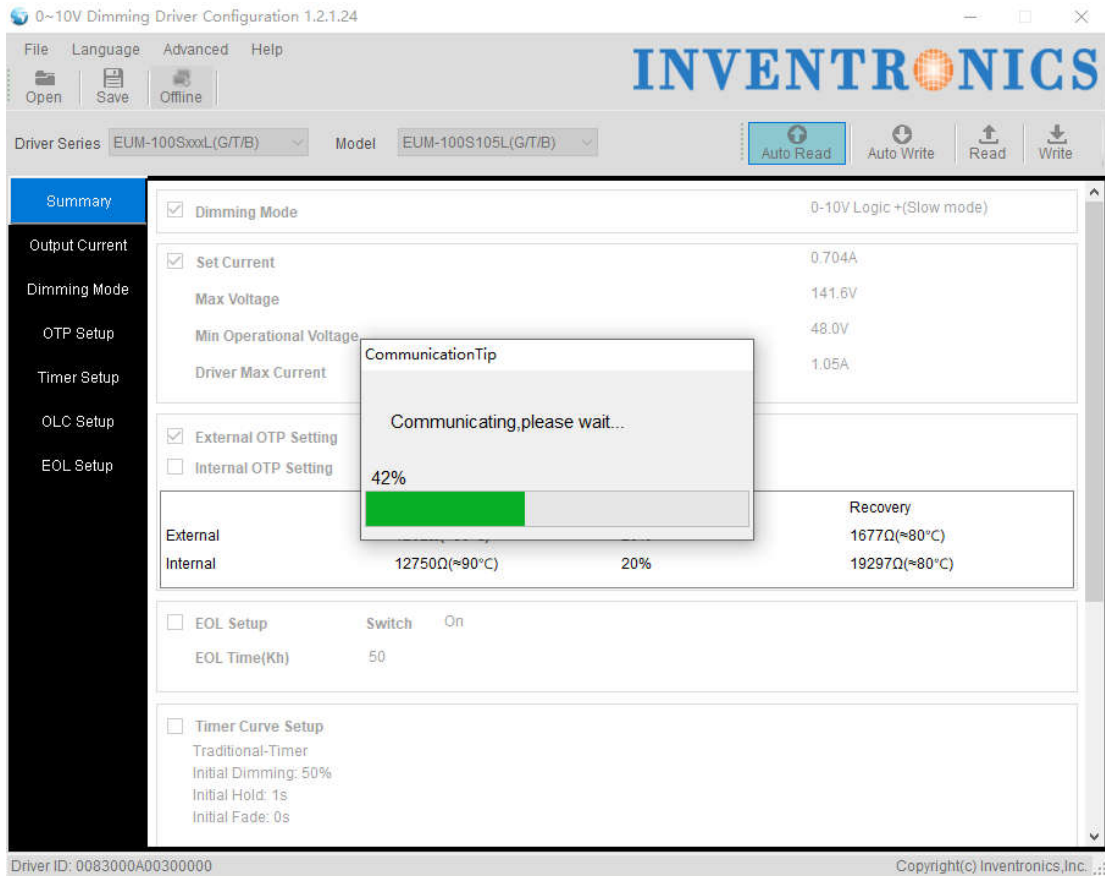


Figure 6.20.4.1





## 6.21 Reset

If the selection interface is PRG, Check Reset, and the successfully wrote configuration can act immediately. No need to power on/off again.

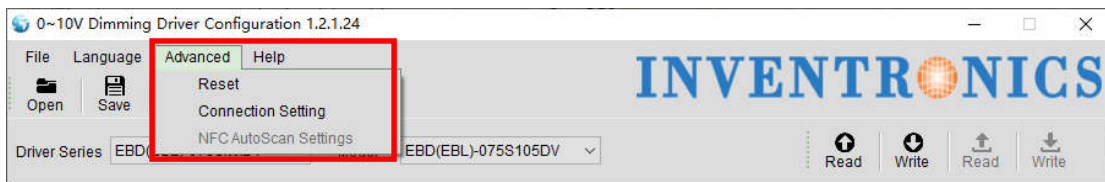


Figure 16.21.1

## 6.22 Help

You could find the software manual instruction through Help, see in Figure 6.22.1.

You could find the software modification recode file through History, see in Figure 6.22.1.

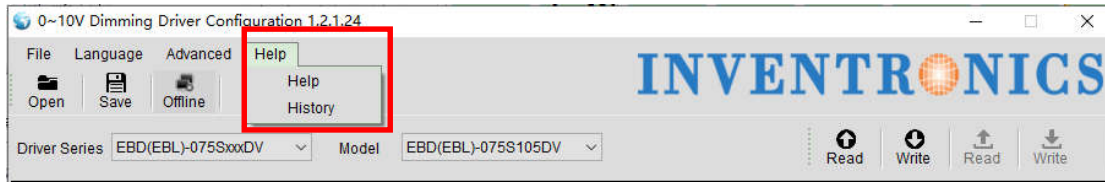


Figure 16.22.1

## 6.23 Error Code

Add the Error Code of the programming result form for Reading or Writing Driver/Programmer with PRG/NFC Reader. See Figure 6.23.1.



Figure 6.23.1 Error Code

The detailed error code is explained in Table6.23.1

Reading Driver		
Error Code	Programming Result	Reason
R101	Response error (Programmer)	The programmer response error
R001	No Response(Programmer)	The programmer is not connected successfully
R201	Data is error(Product)	The connected driver is not Constant Power driver
R002	No Response(Driver)	The driver is not connected successfully
R102	Data is error	The drive response error
R202	The series does not find!	The PC software does not include the series of the driver
R203	The Model does not find!	The current information is not written to the driver or the PC software does not include the model of the driver

Table 6.23.1 The error code of reading driver with PRG

Writing Driver		
Error Code	Programming Result	Reason
W101	Response error (Programmer)	The programmer response error
W001	No Response(Programmer)	The programmer is not connected successfully
W201	Data is error(Product)	The connected driver is not Constant Power driver
W002	No Response(Driver)	The driver is not connected successfully
W102	Data is error	The drive response error
W202	Series validation error!	The series information written by the PC software is inconsistent with the driver
W203	Model validation error!	The model information written by the PC software is

		inconsistent with the driver
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**Table 6.23.2 The error code of writing driver with PRG**

Reading Driver		
Error Code	Programming Result	Reason
R001	No Response(NFC Reader)	The NFC Reader is not connected successfully
R201	Data is error(Product)	The connected driver is not Constant Power driver
R002	No Response(Driver)	The driver is not connected successfully
R102	Data is error	The drive response error
R202	The series does not find!	The PC software does not include the series of the driver
R203	The Model does not find!	The current information is not written to the driver or the PC software does not include the model of the driver

**Table 6.23.3 The error code of writing driver with NFC Reader**

Writing Driver		
Error Code	Programming Result	Reason
W001	No Response(NFC Reader)	The NFC Reader is not connected successfully
W201	Data is error(Product)	The connected driver is not Constant Power driver
W002	No Response(Driver)	The driver is not connected successfully
W102	Data is error	The drive response error
W202	Series validation error!	The series information written by the PC software is inconsistent with the driver
W203	Model validation error!	The model information written by the PC software is inconsistent with the driver

**Table 6.23.4 The error code of writing driver with NFC Reader**

Reading Programmer.		
Error Code	Programming Result	Reason
S101	Response error (Programmer)	The programmer response error
S001	No Response(Programmer)	The programmer is not connected successfully
S201	Products matching failure!	The mode of programmer is not 0~10v dimming driver
S102	Data is error	Read programmer EEPROM response error
S202	The series does not find!	The PC software does not include the series of the driver
S203	The Model does not find!	The current information is not written to the driver or the PC software does not include the model of the driver

**Table 6.23.5 The error code of reading programmer**

Writing Programmer.		
Error Code	Programming Result	Reason
X101	Response error (Programmer)	The programmer response error

X001	No Response(Programmer)	The programmer is not connected successfully
X102	Data is error	Read programmer EEPROM response error

**Table 6.23.6 The error code of writing programmer**