

Save More Energy



Programmable Driver Configurator Software
User manual

Content:

1. Introduction.....	3
2. Installing the Programmable Driver Configurator Software.....	4
2.1 PC System Requirement	4
2.2 Installing the Programmable Driver Configurator Software.....	4
3. Installing the USB Driver	6
4. Essential Hardware	8
4.1 Configurator	8
4.2 The Pin definition of Configurator.....	9
5. Hardware Connection	10
6. Programmable Driver Configurator Software Function Instruction	13

1. Introduction

The Programmable Driver Configurator Software and Configurator are compatible with MOONS’ CLKS and CP drivers. They can be used to set the configuration parameters of MOONS’ CLKS and CP drivers.

This manual guides you through the installation of the Programmable Driver Configurator Software, the setup of the required hardware and describes the various application tabs and their functionality.

This manual was written for:

- ◇ MOONS’ Programmable Driver Configurator 2.2
- ◇ Configurator MSSL200 version 1.0
- ◇ All MOONS’ CLKS and CP drivers

2. Installing the Programmable Driver Configurator Software

2.1 PC System Requirement

Windows XP SP3 or senior version, Windows 7 Professional or senior version, Windows Server 2008 R2 and Windows 8;

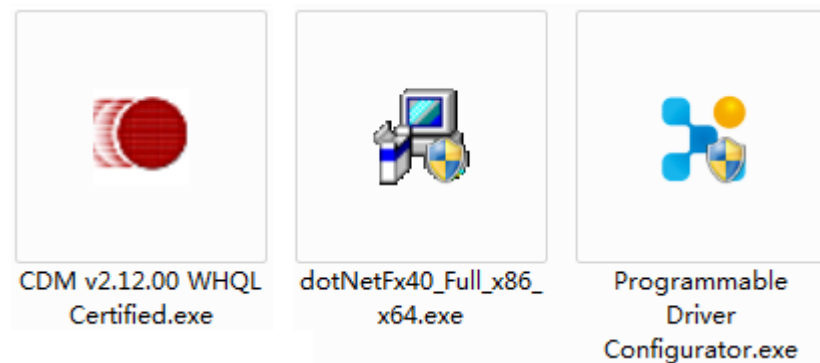
.NET Framework version 4.0; (.NET Framework is part of your Windows operating system; In the software package, there's the package of .NET Framework 4.0. You also can download it from the Microsoft official website.)

2.2 Installing the Programmable Driver Configurator Software

To install the Programmable Driver Configurator Software, carry out the following steps:

- 1) Go to https://leddriver.moons.com.cn/SouProduct/Ucenter/M_Search/Software_view.aspx?MATNR=ProgrammableDriverConfiguratorSoftware&rnd=7553
- 2) Download the Programmable Driver Configurator Software and save it to your computer
- 3) Release the Programmable Driver Configurator Software package

There are 3 files in the package;



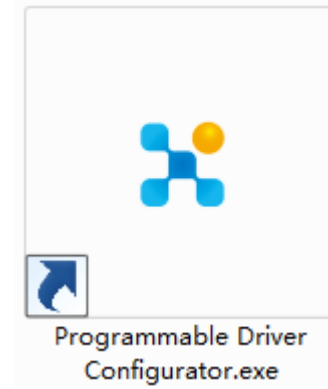
If your computer hasn't installed "Microsoft Framework4.0" or "Windows Installer3.1" before,

Please double click "dotNetFx40_Full_x86_x64" to install the Microsoft Framework4.0;

"CDM v2.12.00WHQL Certified" is the USB driver;

4) Install the Programmable Driver Configurator Software through Administrator right;

When completing the software installation, the software icon will appear on the desktop.



3. Installing the USB Driver

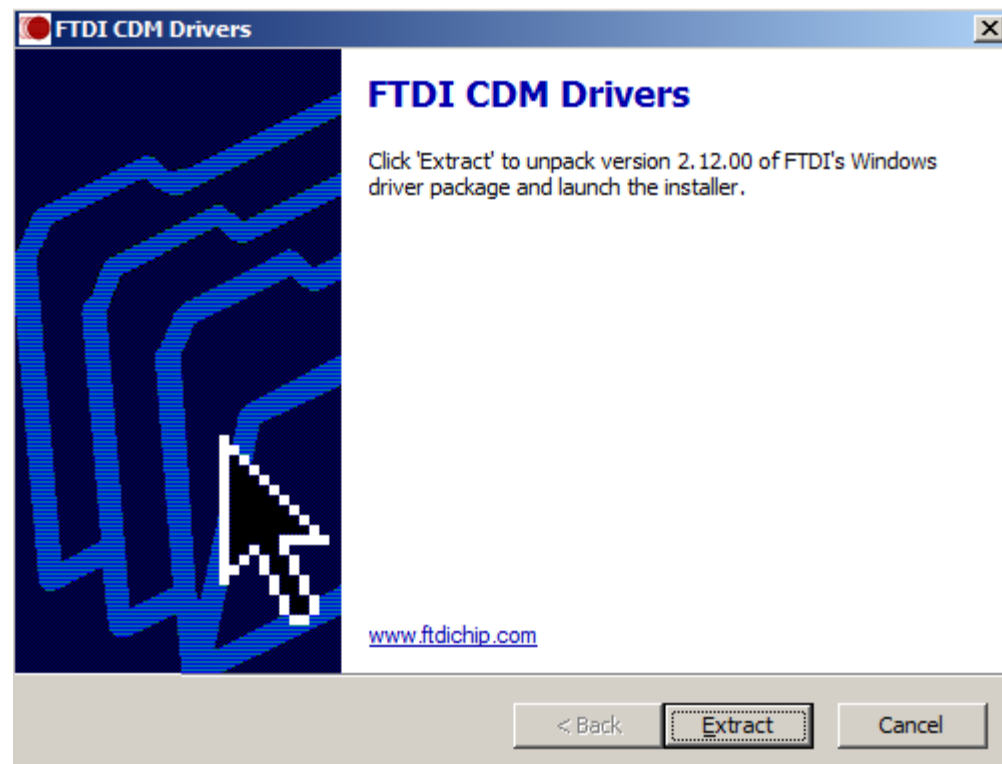
The USB driver should be installed in the computer in order to recognize the serial port number of Configurator when you connect the Configurator to your PC's USB port at first time.

Remarks: The PC needs few seconds to recognize the serial number of Configurator at first connection.

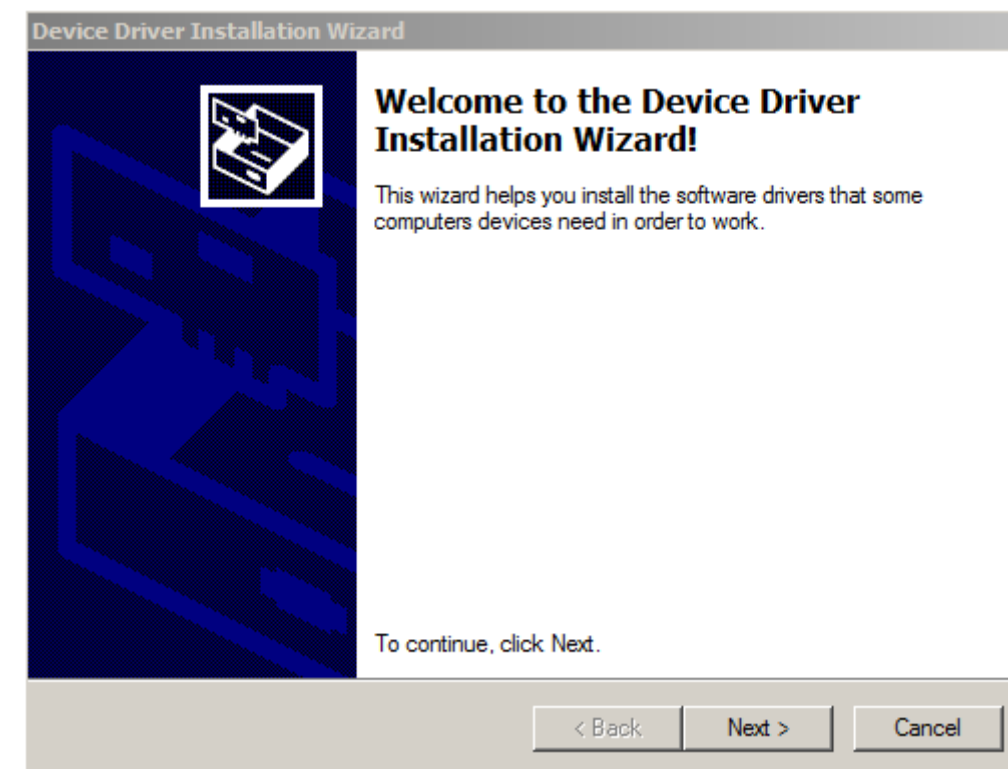
In this chapter, guide you how to install the USB driver of Configurator:

Install "CDM v2.12.00WHQL Certified" through Administrator right.

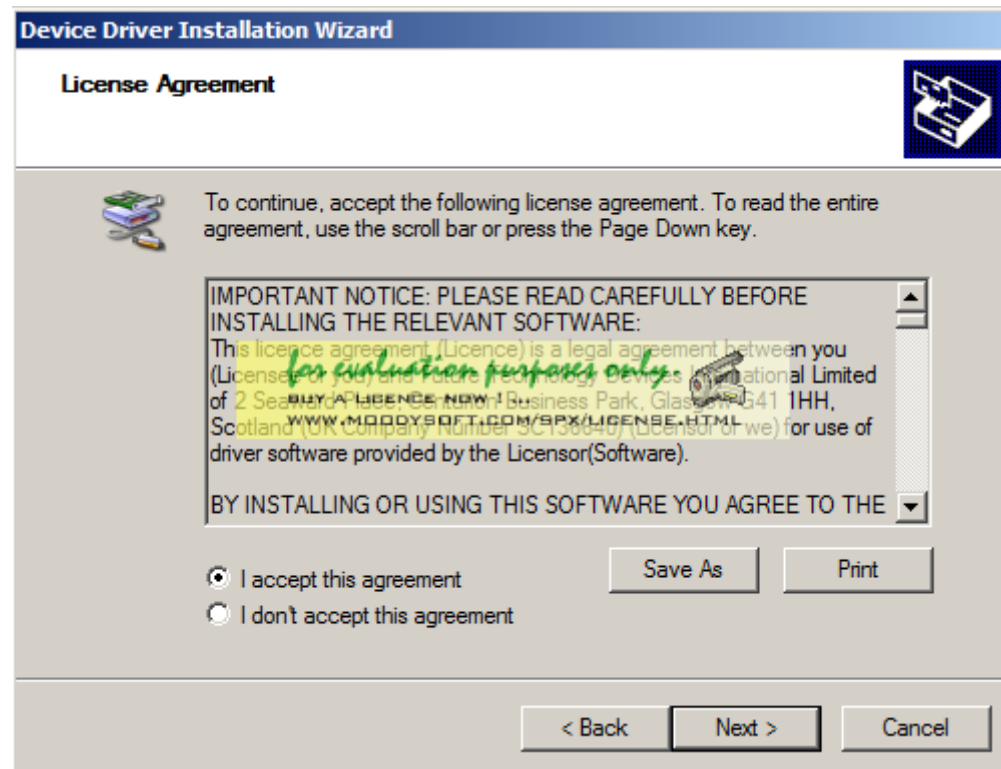
a) Click "Extract"



b) Click "Next"



c) Choose “I accept this agreement” and click “Next”



d) The following picture shows you have completed to install the serial port driver successfully and then click “Finish”

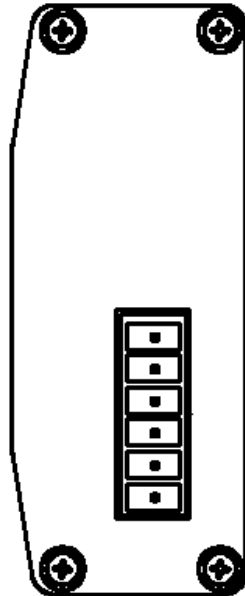


4. Essential Hardware

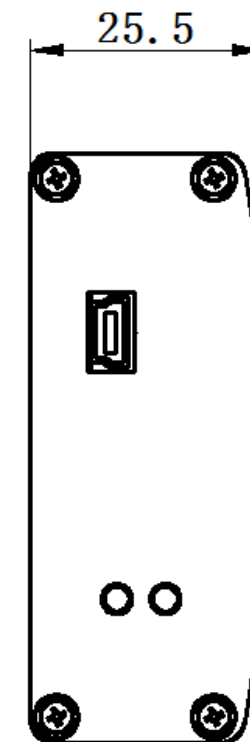
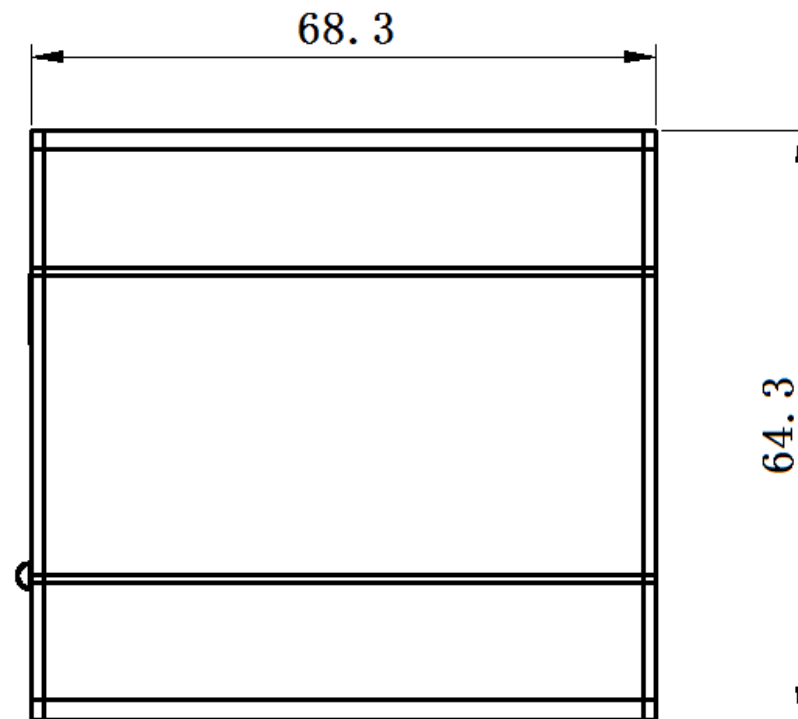
To work with the Programmable Driver Configurator Software, you need:

- 1) A PC to run the software
- 2) Configurator
- 3) Plug and USB-to-mini USB cable. Both parts are supplied with the Configurator
- 4) MOONS' CLKS or CP driver that you wish to configure

4.1 Configurator

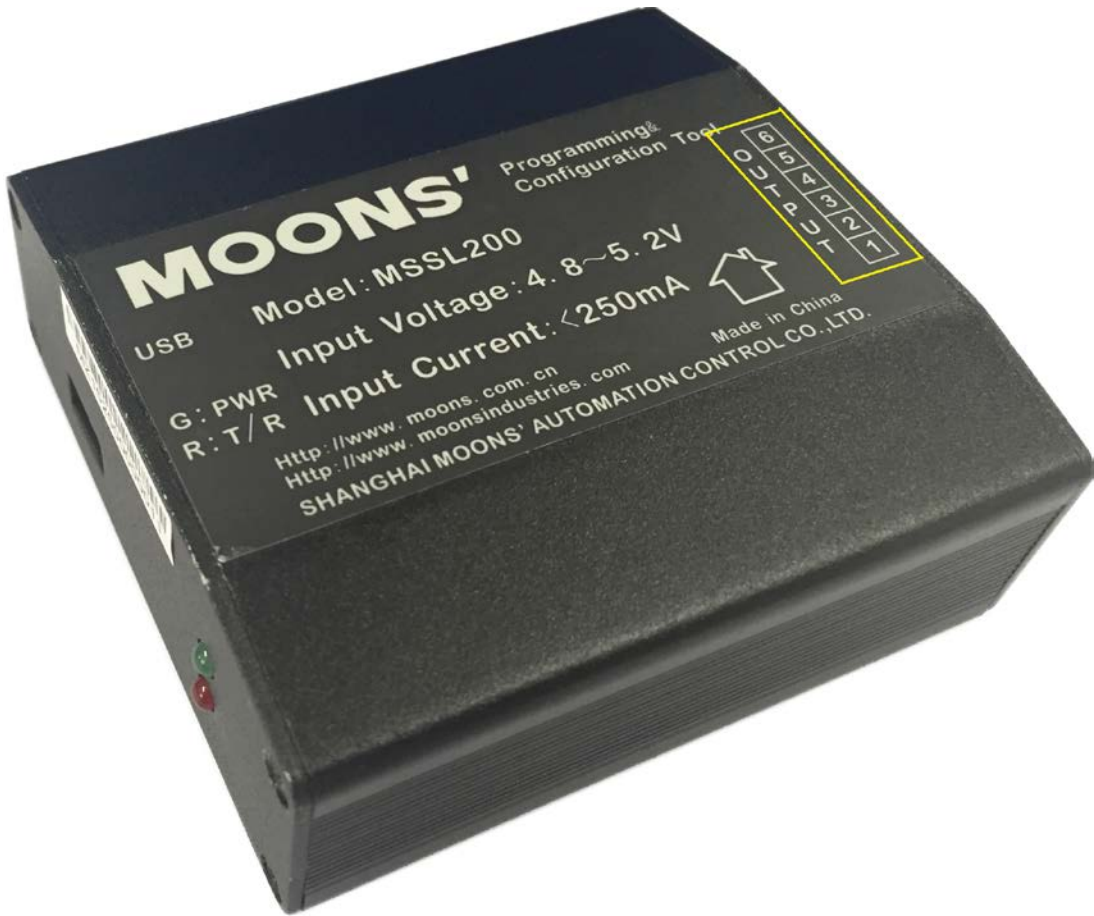


Plug connector on the Configurator



Mini USB connector on the Configurator

4.2 The Pin definition of Configurator



No.	CLKS & CP Series
1	LED Code(Purple)
2	NC
3	GND(Gray)
4	NC
5	NC
6	VCC H Output(Yellow or White & Black)

5. Hardware Connection

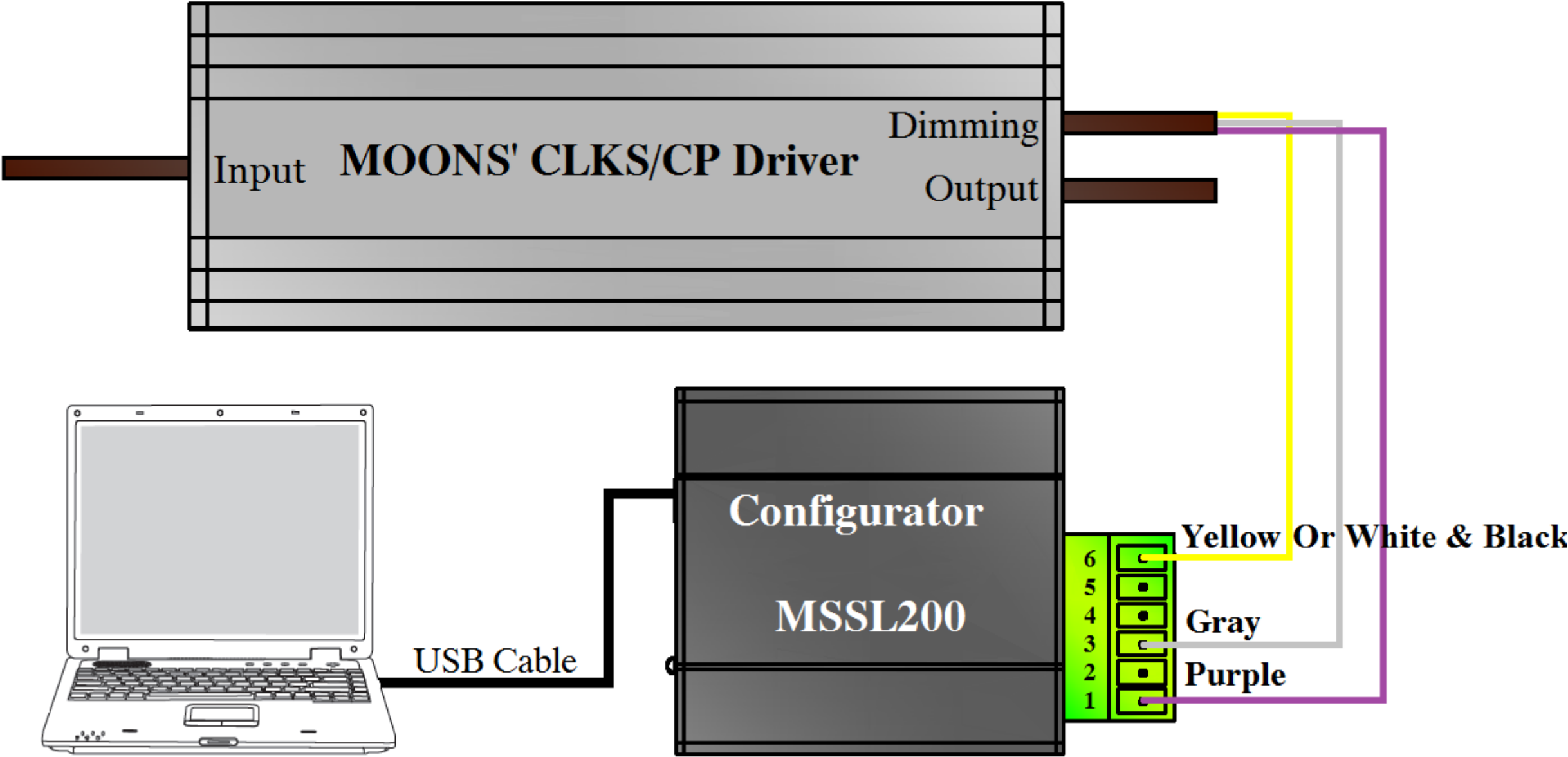
As mentioned in the chapter 1, the Programmable Driver Configurator Software and Configurator are compatible with MOONS' CLKS and CP drivers.

During use the Configurator and Programmable Driver Configurator Software to configure MOONS' CLKS and CP drivers. These drivers are compatible with charged configuration mode and uncharged configuration mode.

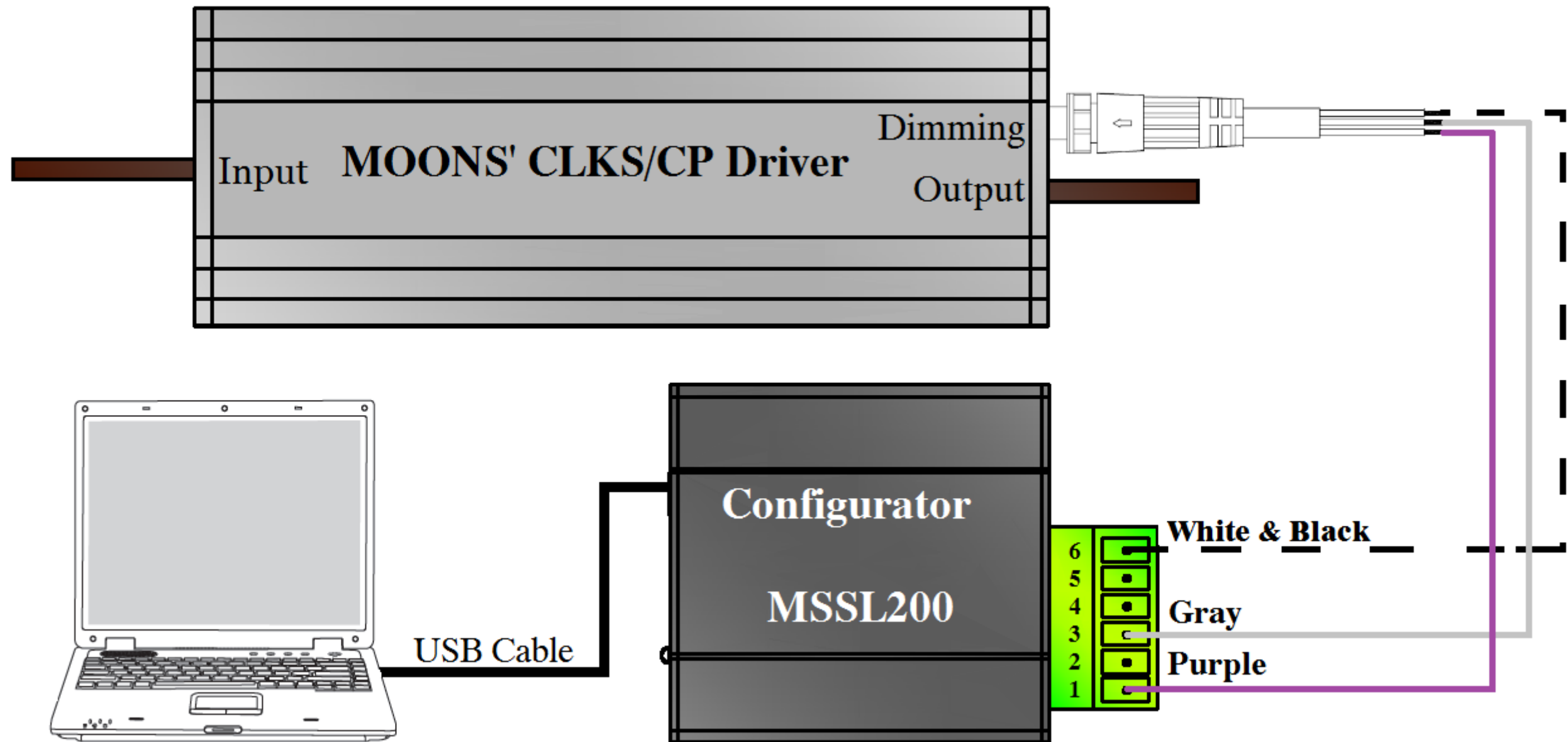
Notes:

- a) **During charged configuration mode, the dimming cable can't be touched output side of the driver. Otherwise the driver will be broken.**
- b) **After using the driver, when you cut off the AC source of the driver, please don't let the dimming cable touch output side of the driver immediately. Otherwise the driver will be broken.**

Here guide you how to complete the corresponding hardware connection of MOONS' CLKS and CP drivers.



The hardware connection of configuring MOONS' CLKS/W or CP/W driver



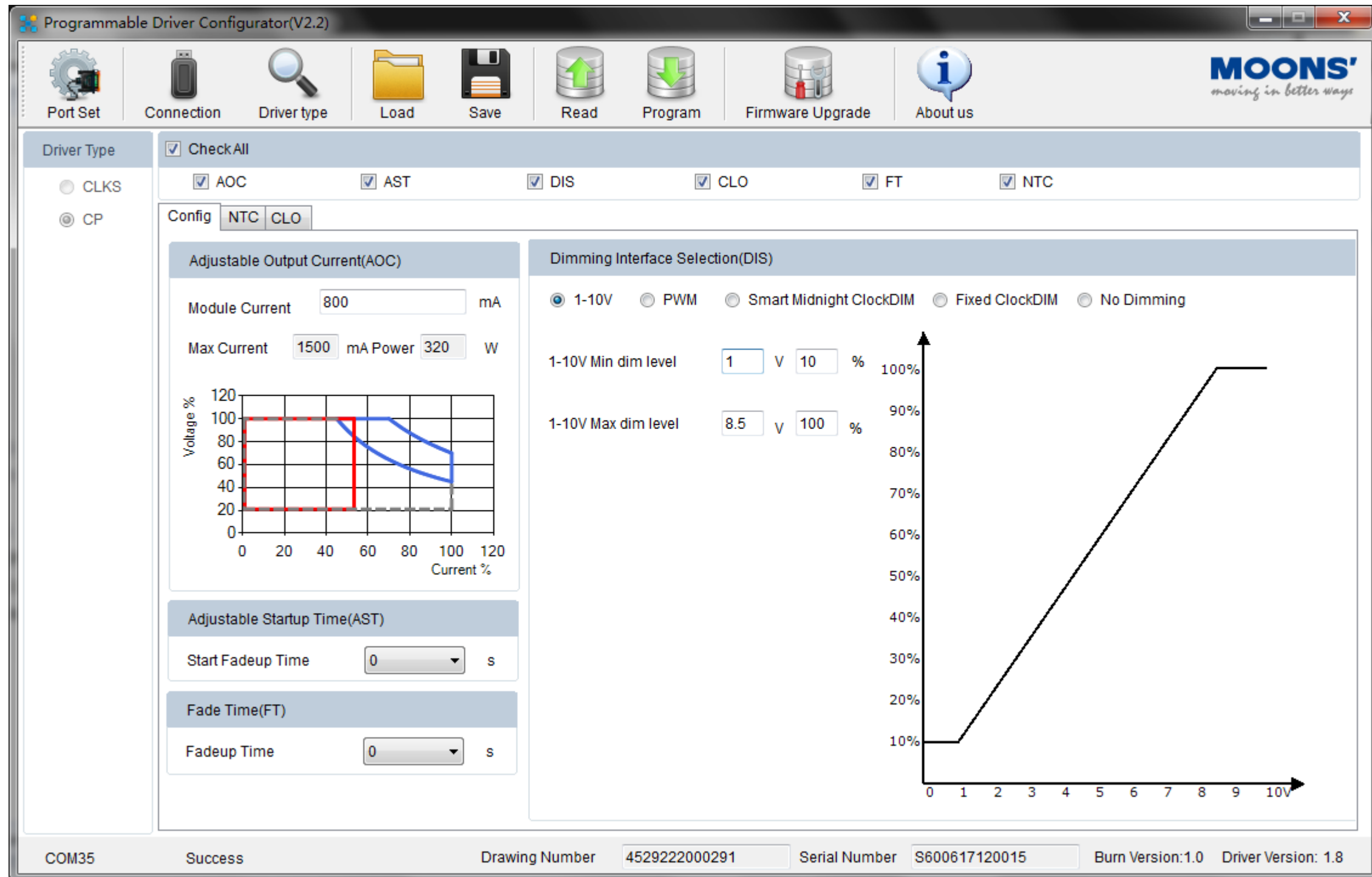
The hardware connection of configuring MOONS' CLKS/C or CP/C driver

Remarks:

For CLKS,CP driver, there's two versions CLKS/W, CP/W and CLKS/C, CP/C; CLKS/W, CP/W using 3 wires dimming port (programming port);

CLKS/C, CP/C using 3 pins water proof connector dimming port (programming port).


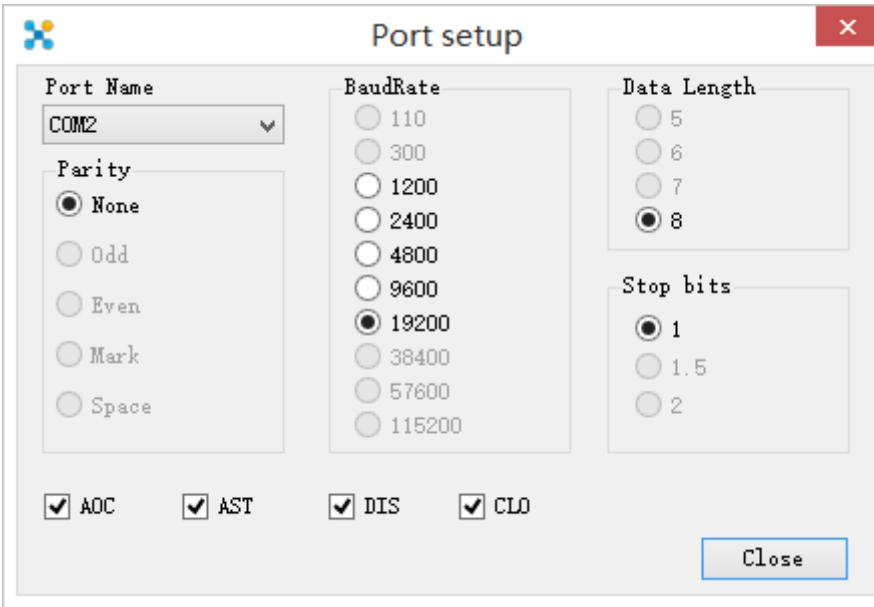

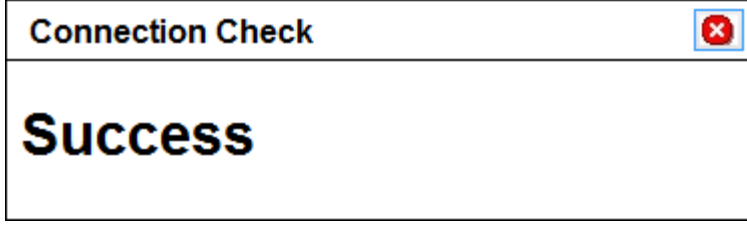

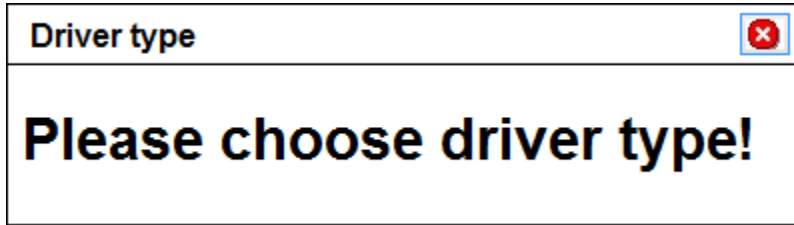
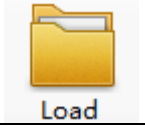
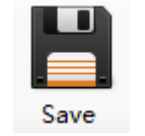

6. Programmable Driver Configurator Software Function Instruction



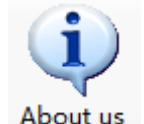


The main software interface of Programmable Driver Configurator Software

To configure the corresponding driver through Programmable Driver Configurator Software, carry out the following steps: **Port Set→Connection→Driver Type**

MAIN MENU BAR

<div>  <div>Port Set</div> </div>	<p>The Programmable Driver Configurator Software can recognize which serial port the configurator uses automatically.</p> <p>Other parameters can be kept acquiescent, like right figure shows.</p> <p>User also can check the serial port number the configurator uses manually in the computer equipment management. The computer needs few seconds to recognize the configurator at first connection.</p> <div> <div> <div>+</div> <div>Network adapters</div> </div> <div> <div>+</div> <div>Ports (COM & LPT)</div> </div> <div> <div>+</div> <div>USB Serial Port (COM14)</div> </div> <div> <div>+</div> <div>Processors</div> </div> </div> <div>  </div>
<div>  <div>Connection</div> </div>	<p>Check whether configurator (MSSL200) connects to the computer successfully or not.</p> <p>The testing result will appear on the software interface.</p> <div>  </div>
<div>  <div>Driver type</div> </div>	<p>When you click “Driver type”, the Programmable Driver Configurator Software can recognize the driver type automatically. If it can’t recognize the driver type successfully, user also can choose the driver type manually.</p> <p>If you want to configure another driver, you should click “Driver type” again after complete the hardware connection.</p> <div>  </div>
<div>  <div>Load</div> </div>	<p>Load the ready-made configuration data through this function. Please refer to Video.</p>
<div>  <div>Save</div> </div>	<p>Save the current configuration data through this function. Please refer to Video.</p>
<div>  <div>Read</div> </div>	<p>User can gain the configuration of MOONS’ CLKS and CP driver through this “Read” function.</p>

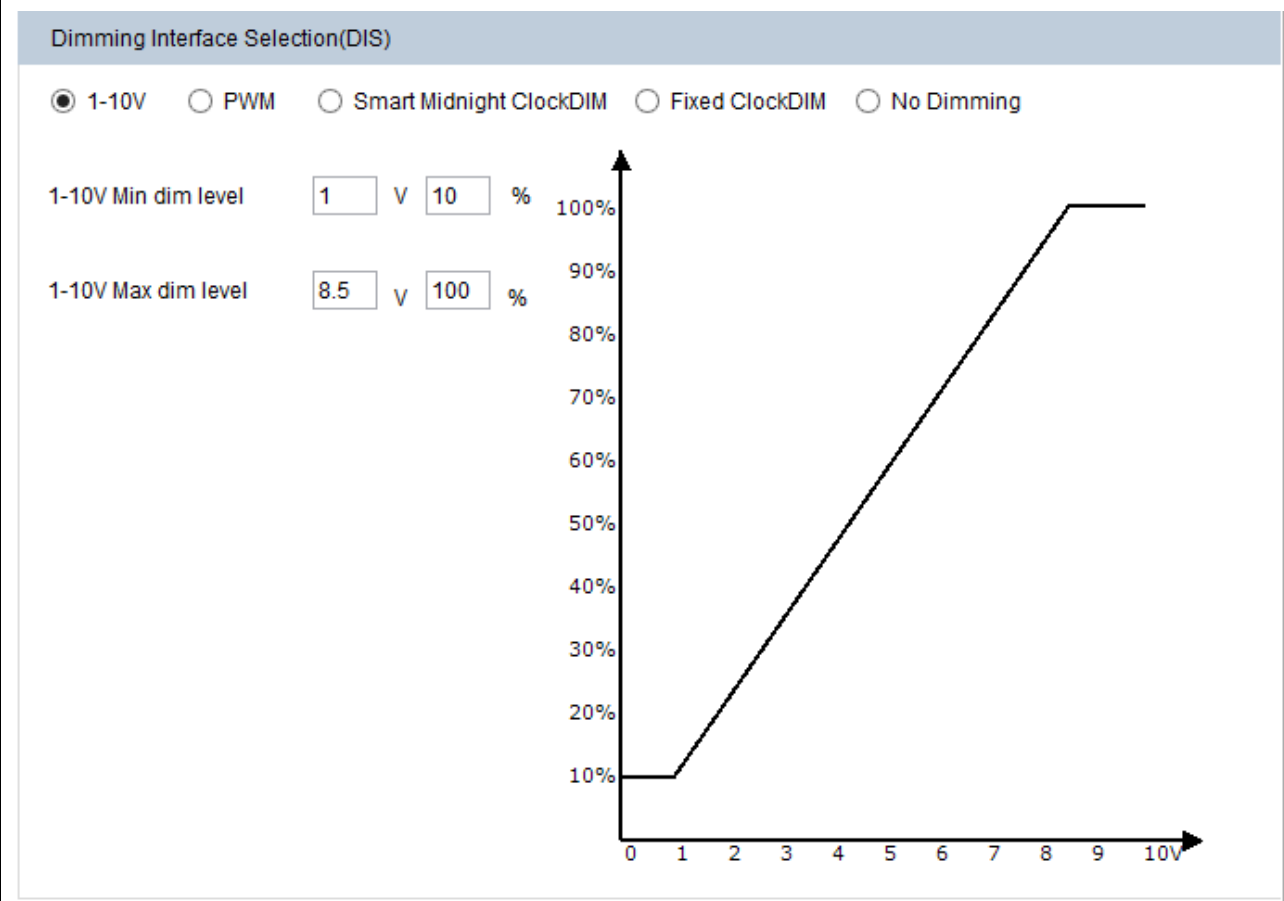
 Program	User can set the new configuration of MOONS' CLKS and CP driver through this "Program" function.
 Firmware Upgrade	User can upgrade the firmware through this function.
 About us	The version of software, configurator and driver can be checked through this function.

CONFIG INTERFACE

<div>Adjustable Output Current(AOC)</div> <div>Module Current <input type="text" value="1050"/> mA</div> <div>Max Current <input type="text" value="1050"/> mA Power <input type="text" value="150"/> W</div>	<p>Users can set the "Module Current". Module Current means the output current of driver.</p> <p>For the CLKS driver, the "Module Current" can be set between 10%*Max Current and 100%*Max Current.</p> <p>For the CP driver, the "Module Current" can be set between 7%*Max Current and 100%*Max Current.</p> <p>Moreover, the precise of the current value can achieve 1 mA.</p>
<div>Adjustable Startup Time(AST)</div> <div>Start Fadeup Time <input type="text" value="1"/> s</div>	<p>Set driver's "Start Fade up Time". It means how much time the driver costs to achieve the "Module Current" that the user set. The valid value is 0s, 1s, 2s, 5s, 10s, 20s, 40s.</p> <p>For instance: if the "Start Fade up Time" is set to be 5s. When the driver is charged, it will cost 5s to achieve the "Module Current"</p> <p>This function is available in the No Dimming, 0-10V dimming, PWM dimming, Smart Midnight ClockDIM and Fixed ClockDIM mode;</p> <p>Remarks: If you set 0s, it means you turn off that function.</p>
<div>Fade Time(FT)</div> <div>Fadeup Time <input type="text" value="1"/> s</div>	<p>Set driver's "Fade up Time". This function is available in the Smart Midnight ClockDIM and Fixed ClockDIM mode; It means how much time the driver costs to achieve another dimming level from previous dimming level. The valid value is 0s, 1s, 2s, 5s, 10s, 20s, 40s.</p> <p>For instance: if the "Fade up Time" is set to be 5s, the diver will cost 5s to achieve dimming level 2 from dimming level 1.</p>

DIMMING INTERFACE SELECTION

In the dimming configuration interface, there are five dimming modes: No Dimming, Smart Midnight ClockDIM, Fixed ClockDIM, 0-10V dimming and PWM dimming;

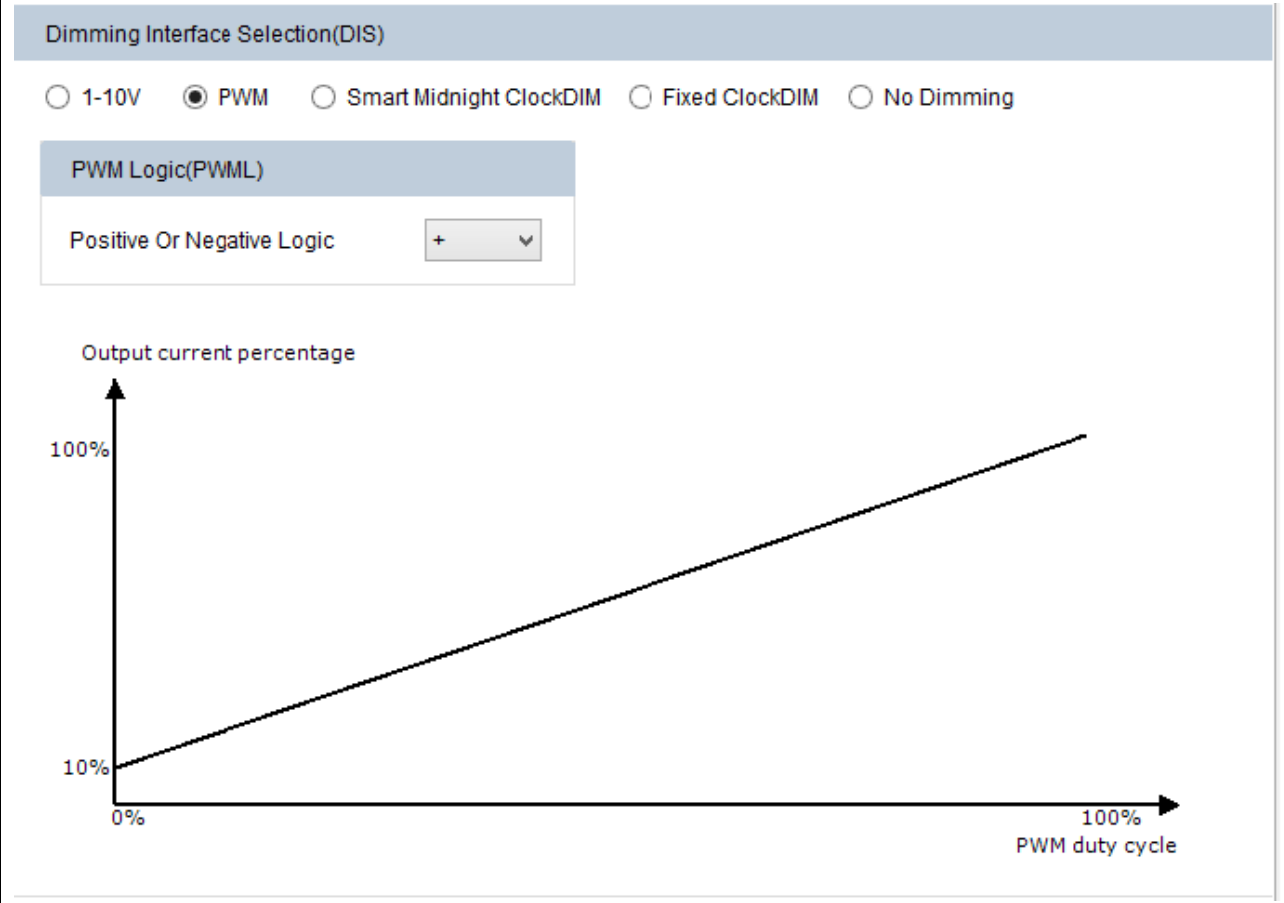


0-10V Dimming

User can set the 0-10V dimming curve.

Default situation:

0-10V Dimming Signal	Output
$\leq 1.0V$	10%*Module Current
$\geq 8.5V$	100%*Module Current



PWM Dimming

User can set “Positive Logic” or “Negative Logic” of the PWM signal.

The signal parameters:

1	3-10V
0	-0.3~0.8V
f	500Hz~5KHz

<div>Dimming Interface Selection(DIS)</div> <div><div><input type="radio"/> 1-10V</div><div><input type="radio"/> PWM</div><div><input type="radio"/> Smart Midnight ClockDIM</div><div><input type="radio"/> Fixed ClockDIM</div><div><input checked="" type="radio"/> No Dimming</div></div>
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Operating principle of self-study Clock Dimming function(Smart Midnight ClockDIM)

The operating principle can be summarized in the following three steps:

- 1) Evaluate the last operating time
- 2) Calculate the average operating time
- 3) Calculate the virtual clock time.

1)Evaluate the recent operating time

The driver will record recent 5 valid operating times, and then evaluate the last operating time(T-on last)

The valid operating time range is between 4 hours to 24 hours.

2)Calculate the average operating time

The calculation formula of average operating time: $T\text{-on average} = (T\text{-on last} + \text{twice recent operating time expect } T\text{-on last})/3$

The deviation between T-on last and twice recent operating time should be no more than 1 hour.

If there's no twice recent operating time, the driver may not perform dimming plan, the output of driver will keep 100%*Module Current.

For example: The driver has recorded 5 operating times:

June 18th	June 17th	June 16th	June 15th	June 14th
7 hours	5 hours	7 hours	9 hours	7 hours

Therefore the average operating time: $T\text{-on average} = (7+7+7)/3 = 7$ hours

3)Calculate the virtual clock time

Virtual clock=00:00 – [T-on average/2] + Mid-point shift

The value of Mid-point shift depends on which country the user chooses in the configuration software interface.

For example we still use the previous data to calculate the virtual clock. Assume we choose the geographic position as Shanghai, the Mid-point shift is 1 hour.

June 18th	June 17th	June 16th	June 15th	June 14th
7 hours	5 hours	7 hours	9 hours	7 hours

The T-on average=7 hours.

Virtual clock=00:00-7/2 hours+1 hour=21:30 PM

So the driver will run the dimming plan from 21:30PM to 04:30AM.

The virtual clock will calculate every day in order to adapt to the changeable starting and ending time due to the seasonal alteration by self-study function.

What mentioned above is just about the operating principle of self-study.

If the customer has the clock dimming plan likes the following form shows, the dimming plan should be as the following picture shows.

Summer clock dimming plan

Time	illumination level
22:00-23:00	100%
23:00-00:00	75%
00:00-04:00	50%
04:00-05:00	75%

Winter clock dimming plan

17:00-23:00	100%
23:00-00:00	75%
00:00-04:00	50%
04:00-05:00	75%
05:00-10:00	100%

Dimming Interface Selection(DIS)

☐ 1-10V
 ☐ PWM
 ☒ Smart Midnight ClockDIM
 ☐ Fixed ClockDIM
 ☐ No Dimming

Location: China-Shanghai

Adjust Light Level 1

Start time: 15:00, Stop time: 23:00

Adjust Light Level 2

Start time: 23:00, Stop time: 00:00

Adjust Light Level 3

Start time: 00:00, Stop time: 04:00

Adjust Light Level 4

Start time: 04:00, Stop time: 05:00

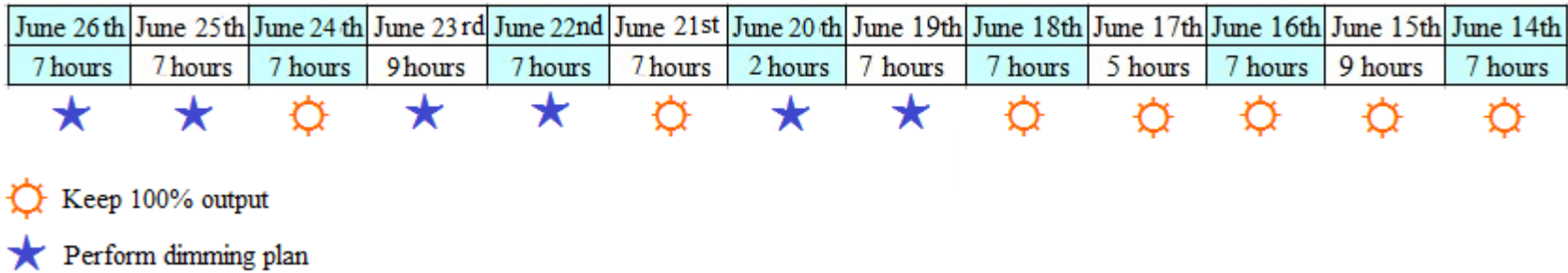
Adjust Light Level 5

Start time: 05:00

Notes:

Here use an example to explain driver’s operating situation in different condition.

Assume: Below figure shows driver’s operating situations. June 14th is the first time to electrify driver.



June 14th,15th,16th,17th,18th, driver keeps 100% output. **Cause:** Driver is recording 5 valid operating times and processing internal calculation to determine whether perform dimming plan on June19th or not.

June 19th, driver performs dimming plan. **Cause:** According to operating time on June 14th ~18th, the valid average time equals 7 hours. Driver starts to perform dimming plan.

June 20th, driver performs dimming plan. **Cause:** Operating time on June 19th is the same as valid average time.

June 21st, driver keeps 100% output. **Cause:** Operating time on June 20th is invalid operating time. Because the valid operating time range is between 4 hours to 24 hours.

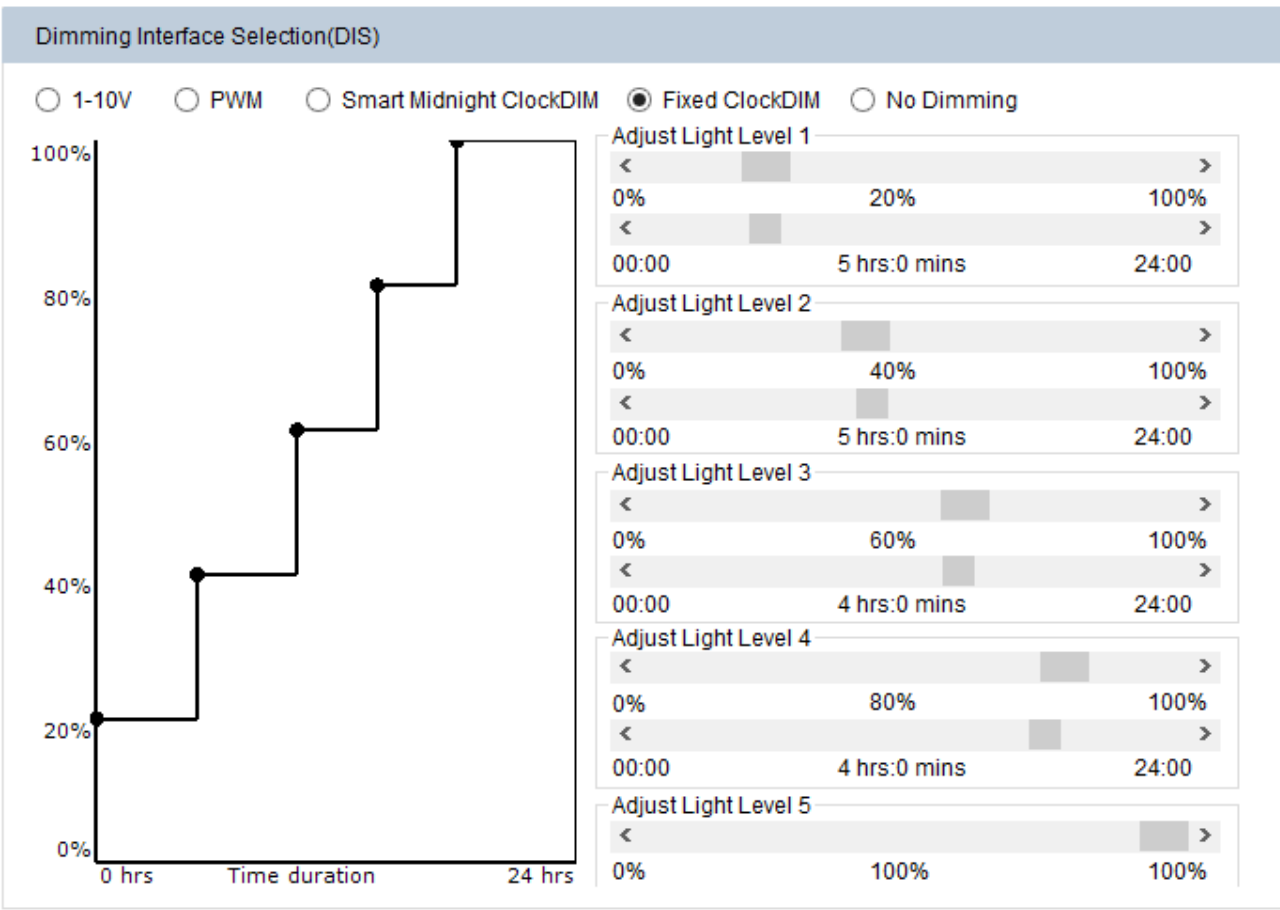
June 22nd, driver performs diming plan. **Cause:** Operating time on 21st is the same as average time.

June 23rd, driver performs dimming plan. **Cause:** Operating time on 22nd is the same as average time.

June 24th, driver keeps 100% output. **Cause:** Operating time on 23rd is 9 hours. The average time is 7 hours. The deviation of operating time between June 23nd and average time is more than 1 hour. It’s 2 hours.

June 25th, driver perform dimming plan. **Cause:** Operating time on 24th is the same as average time.

June 26th, driver perform dimming plan. **Cause:** Operating time on 25th is the same as average time.



Fixed ClockDIM

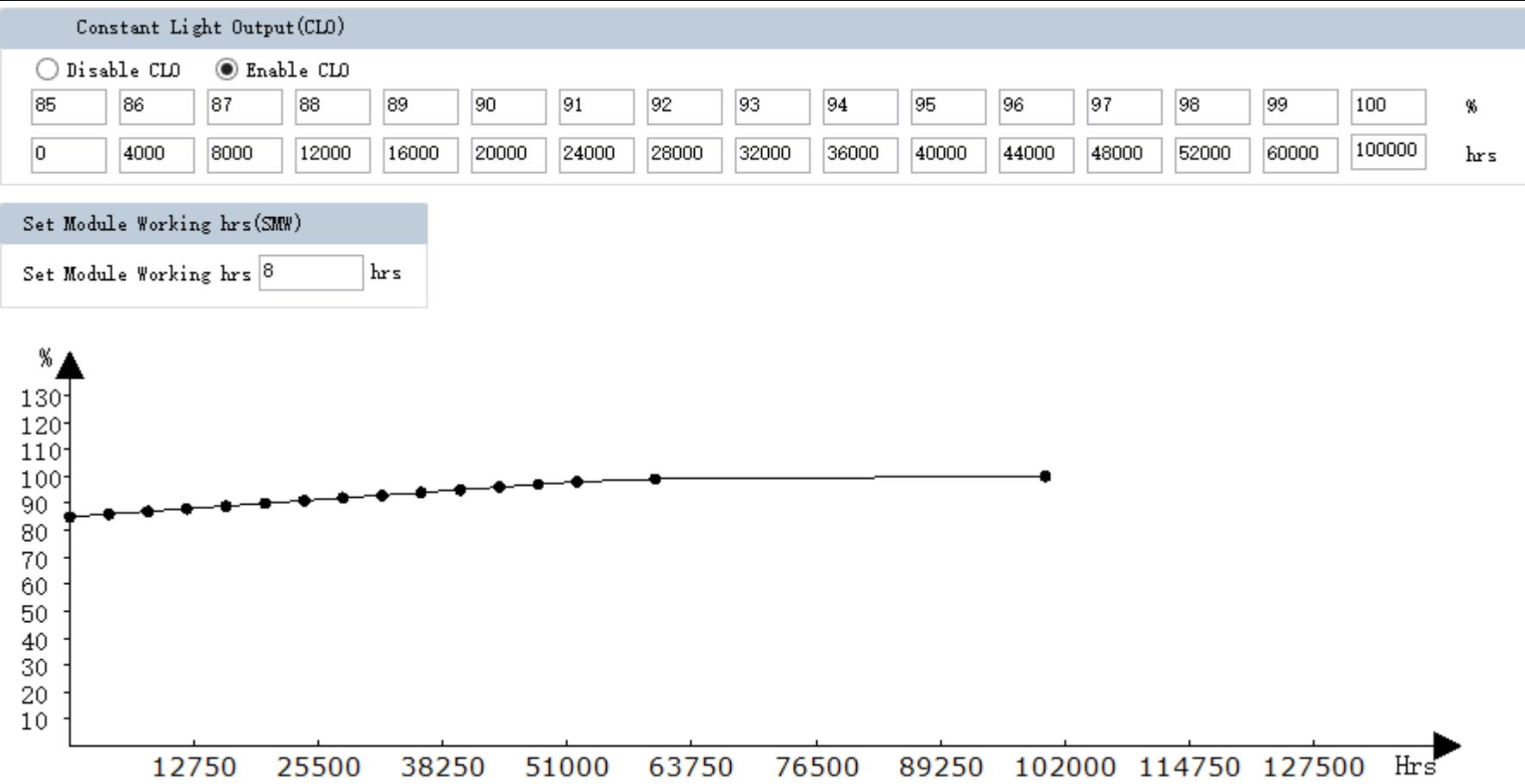
Fixed ClockDIM: Allow users to separate 24hrs into 5 sections and corresponding output current. But the time is fixed, just according to turn on time, no self-study function.

For instance: Assuming the dimming plan like following picture shows.

If the driver is charged at 15:00pm, the driver will perform the dimming plan following the form shows.

Time	Output
15:00~20:00	20%*Module Current
20:00~01:00	40%*Module Current
01:00~05:00	60%*Module Current
05:00~09:00	80%*Module Current
09:00~15:00	100%*Module Current

Constant Light Output (CLO)



Set Module Working hrs (SWM)

User can check how much time the driver works through this function.

Set Module Working hrs(SMW)

Set Module Working hrs hrs

The CLO function can solve the issue of Lumens depreciation. If the CLO function is enabled, user can check how much time the driver works. What’s more, in the configuration interface, there are 16 points to set the working time and corresponding output current.

Driver’s target output current = CLO percentage * AOC.

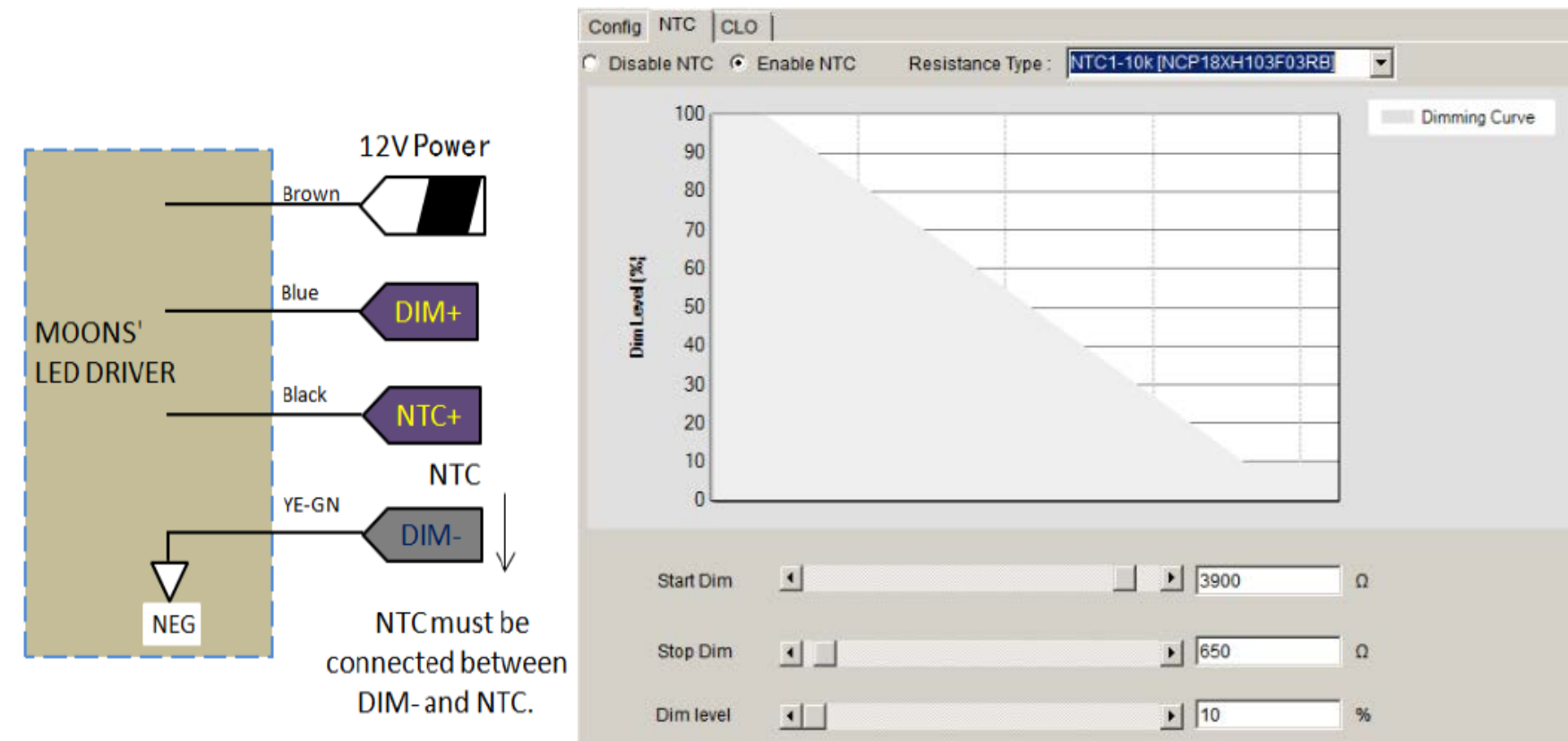
For instance: if the CLO plan likes following picture shows.

The driver will perform the dimming plan following the form shows.

Enable CLO				
Working hours:	0~4000hrs	4000~8000hrs	8000~12000hrs	...
Output current:	85%*Module Current	86%*Module Current	87%*Module Current	...

Disable CLO				
Working hours:	0~4000hrs	4000~8000hrs	8000~12000hrs	...
Output current:	Module Current	Module Current	Module Current	...

NTC



The NTC function is integrated in the driver. The temperature sensor (NTC-NCP18XH103F03RB or NTC-NCP15XW153E03RB) should be mounted on the LED module or luminaire.

The driver will do the dimming according to the dimming curve in case the LED module gets too hot. The dimming curve can be set by modifying resistance values and dim level.

Please refer to video.