

INTRODUCTION

Meso LED Driver stands for an extremely flexible LED Driver, designed for fast and easy configuration.

This Application Note “AN3_Meso 25 Setting” illustrates the setting options of the Meso LED driver in order to allow a fast and easy setting, performed by the lamp manufacturer and /or installer.

Two external dedicated and portable Programming Tools (one for Meso analog version and one for Meso DALI version) permit to customize different Meso LED driver key parameters. This guarantees extreme flexibility during the final products (lamps) production process, permitting all the OEMs to directly personalize their products, avoiding managing different LED driver models and their stocking inventory.

NOTE: The following paragraphs describe the programmability feature for Meso LED driver analog version (Code **RMLD-XXXX-X-XA**). The programmability procedure for Meso LED driver DALI version (Code **RMLD-XXXX-X-XD**) is described starting from page 9.

PROGRAMMING TOOL FOR MESO ANALOG VERSION (0-10V/1-10V)

Meso LED driver with analog dimming option (0-10V/1-10V) can be set using the same Programming Tool available for Ozone LED Driver (ordering code: RSOZ070-PTOOL).

The battery powered unit (see Figure 1), is a user-friendly remote programmer that permits the user to manage the following settings:

- Output Constant Current Setting
- Light Fade Time Setting
- 0-10V or 1-10V analog dimming option

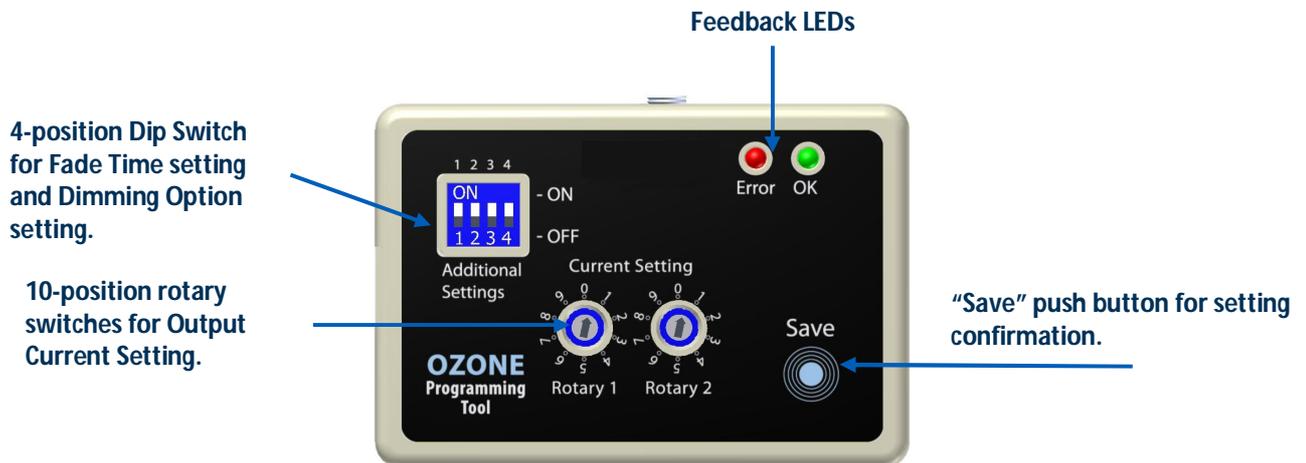


Figure 1: Ozone Programming Tool (Code RSOZ070-PTOOL)

PROGRAMMING CONNECTIONS

The Ozone Programming Tool is easily connectable with Meso LED driver by the 3-wire cable (Figure 2) provided together with the tool.

The programming wires are identified by coloured collars placed near the metal end terminals.

Follow the connection table below for a correct programming connections correspondence between programming wires and Meso outputs (wires or connectors, depending on the version in use).

Meso OUTPUT wire/connector	Programming Wire
Ts (orange wire)	RED collar wire
-DIM (grey wire)	BLACK wire
+DIM (purple wire)	WHITE collar wire

Table 1: External programming tool connections correspondence

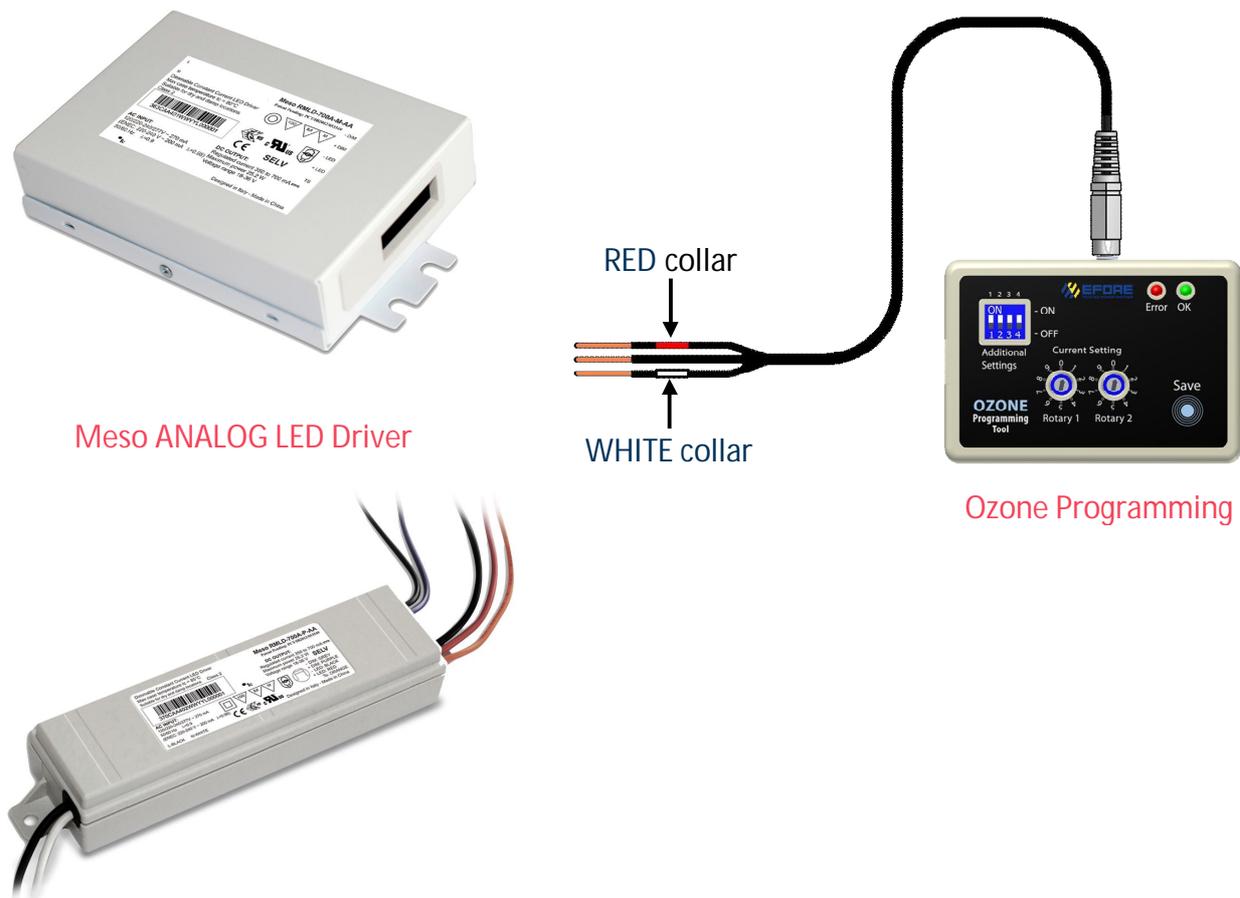


Figure 2: Programming wires connection to the Meso 25 ANALOG LED Driver

DIP-SWITCH SETTINGS (FADING TIME AND DIMMING SETTINGS)

The 4-position dip-switch on the remote programming tool permits to set the light fade time and the analog dimming option.

Follow the dip-switch settings combination table (Table 2) below to select the requested configuration. Each switch can stand in ON or OFF position, the combination of the four switches positions determines the product configuration as reported in the table.



Sw. 1	Sw.2	Fade time (s)
OFF	OFF	0
ON	OFF	2
OFF	ON	5
ON	ON	10
Switch 3		Dimming Option
OFF		1-10V
ON		0-10V (DTO)
Switch 4		Factory reserved
Red = factory pre-set values.		

Table 2: Dip-switch settings combinations

Fade Time: Required time (in seconds) to raise linearly the output LED current from 0A (OFF state) to the nominal set current (I_{SET}) and vice versa.

Fade Time will also affect the 0-10V linear dimming function.

Example: Considering a 10sec. fade time: if the user dims the output current down from 100% I_{set} to 50% I_{set} , the transition time will be 5 seconds.

Dimming option: This parameter set the driver response to a dimmer voltage less than 1V. When selected 1-10V and the dimmer voltage is less than 1V the output current of the driver will be 10% of the I_{SET} .

When selected 0-10V and the dimmer voltage is less than 1V the current on the LED will be forced to zero.

ROTARY SWITCHES SETTINGS (OUTPUT CONSTANT CURRENT)

By combining the two 10-way rotary switches positions, it is possible to set the output constant current value. A very wide output current range of values, from 250mA to 1000mA, can be selected in 10mA steps, for a 25W total maximum output power. See the table below to select the right rotary switches positions corresponding to the required output current.

	RMLD-500A/B-X-XX (28V - 56V) / (12V - 24V)	RMLD-700A-X-XX (18V - 36V)	RMLD-1000A-X-XX (12V - 24V)
Rotary Position	Output Current Set (Iset)	Output Current Set (Iset)	Output Current Set (Iset)
R1 - R2	mA	mA	mA
0-0	250	---	---
0-1	260	---	---
0-2	270	---	---
0-3	280	---	---
0-4	290	---	---
0-5	300	---	---
0-6	310	---	---
0-7	320	---	---
0-8	330	---	---
0-9	340	---	---
1-0	350	350	---
1-1	360	360	---
1-2	370	370	---
1-3	380	380	---
1-4	390	390	---
1-5	400	400	---
1-6	410	410	---
1-7	420	420	---
1-8	430	430	---
1-9	440	440	---
2-0	450	450	---
2-1	460 (*)	460	---
2-2	470 (*)	470	---
2-3	480 (*)	480	---
2-4	490 (*)	490	---
2-5	500 (*)	500	500
2-6	---	510	510
2-7	---	520	520
2-8	---	530	530
2-9	---	540	540
3-0	---	550	550
3-1	---	560	560
3-2	---	570	570
3-3	---	580	580
3-4	---	590	590
3-5	---	600	600
3-6	---	610	610
3-7	---	620	620
3-8	---	630	630
3-9	---	640	640

	RMLD-500A/B-X-XX (28V - 56V) / (12V - 24V)	RMLD-700A-X-XX (18V - 36V)	RMLD-1000A-X-XX (12V - 24V)
Rotary Position	Output Current Set (Iset)	Output Current Set (Iset)	Output Current Set (Iset)
R1 - R2	mA	mA	mA
4-0	---	650	650
4-1	---	660	660
4-2	---	670	670
4-3	---	680	680
4-4	---	690	690
4-5	---	700	700
4-6	---	---	710
4-7	---	---	720
4-8	---	---	730
4-9	---	---	740
5-0	---	---	750
5-1	---	---	760
5-2	---	---	770
5-3	---	---	780
5-4	---	---	790
5-5	---	---	800
5-6	---	---	810
5-7	---	---	820
5-8	---	---	830
5-9	---	---	840
6-0	---	---	850
6-1	---	---	860
6-2	---	---	870
6-3	---	---	880
6-4	---	---	890
6-5	---	---	900
6-6	---	---	910
6-7	---	---	920
6-8	---	---	930
6-9	---	---	940
7-0	---	---	950
7-1	---	---	960
7-2	---	---	970
7-3	---	---	980
7-4	---	---	990
7-5	---	---	1000

Table 3: Output currents set points

(*) Only for Meso **RMLD-500A-X-XX (28V - 56V)** the output current must be limited in the final application at a maximum of 450mA when operating between 50V and 56V in order to limit the output power at 25W.

PROGRAMMING OPERATIONS SEQUENCE

Run the following 10-step sequence for Meso LED driver programming, using the “RSOZ070-PTOOL” external Programming Tool.

1. If connected, unplug AC power from the Meso input AC wires.
2. If connected, unplug all wires from the secondary side (LED board, Ts, Dimming).
3. Connect the 3-wire cable of the external Programming Tool to the Meso output sections, as shown in Figure 2.
4. Reconnect the AC power to the Meso input AC side.
5. Select and run the correct Dip-switch settings combinations according to Table 2.
6. Choose the output Constant Current value and place the correspondent rotary switches positions, according to Table 3.
7. Press “Save” push button.
8. Verify the feedback green LED blinks (2 fast blinks followed by 1 longer blink).
9. Verify that the error red LED remains OFF after the green LED blinking.
10. First disconnect the AC cable and then the 3-wire programming cable from the Meso output section.

Now the new settings are installed and they will be active at the next Meso power-on.

WARNINGS: If the error red LED turns-on after the two green LED fast blinks, it means that the programming operation failed. In this case, repeat the programming sequence from the beginning paying particular attention to wires connections and rotary switches combination.

Any rotary switches combination not shown in Table 3 must be considered as not allowed. Additional red LED fast blinks after the programming phase, indicate a low battery level.

MECHANICAL DIMENSIONS AND BATTERY REPLACEMENT

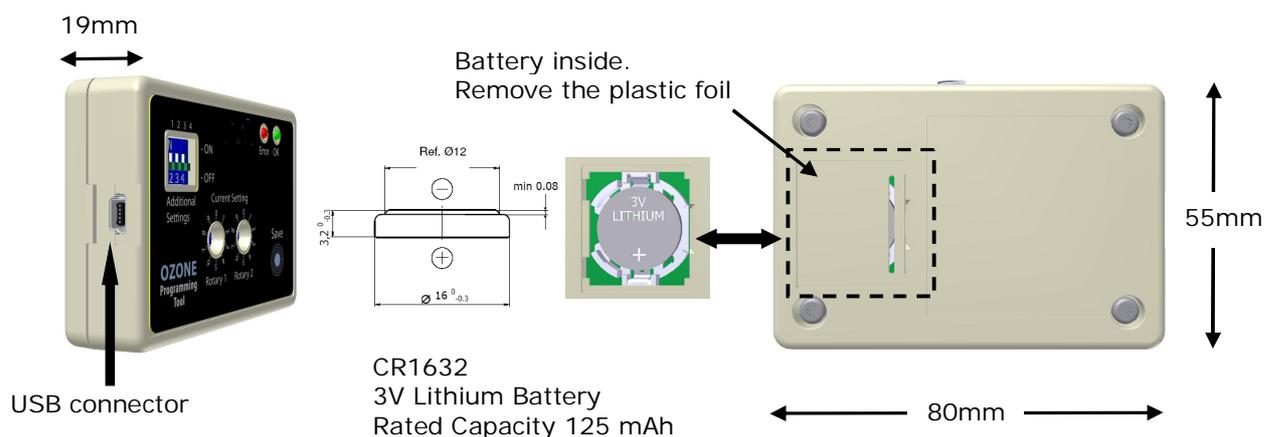


Figure 4: Mechanical Dimensions and battery replacement

PROGRAMMING TOOL FOR MESO DALI VERSION

Meso LED driver with DALI dimming option can be set using DALI Programming Tool (ordering code: RSOZ070-PDALI), shown in Figure 5.

Through the dedicated Meso DALI Programmer software, explained in detail in the following sections, it is possible to set all the characteristics of Meso LED driver based on the final application.

To operate with Meso DALI Programmer software, connect your PC to the DALI Programming Tool by USB, then use the custom 2-wire cable (included in the programming tool package) to connect the tool to Meso LED driver DALI inputs (either polarity).



Figure 5: DALI Programming Tool and 2-wires connection cable

MINIMUM PC REQUIREMENTS AND LICENSE AGREEMENT

Operating System: Windows XP SP3 / Windows Vista / Windows 7
Microsoft.NET Framework 4 Client Profile (x86 and x64)

The Meso DALI Programmer PC Software is property of ENEDO S.p.A. and it is managed and distributed only by ENEDO

- The Meso DALI Programmer PC Software can be installed in any number of computers.
- The Meso DALI Programmer program file cannot be modified in any way.
- The Meso DALI Programmer can only be distributed or sold exclusively by ENEDO S.p.A.

The Meso DALI Programmer PC Software and related documentation are provided without any kind of warranty. This software does not warrant that its functions or documentation will meet your requirements or that the software operation will be error-free or complete, or that defects in the software or documentation will be corrected.

Under any circumstances, including negligence, the Meso DALI Programmer PC Software and related documentation shall not be liable for any lost revenue or profits or any incidental, indirect, special, or consequential damages that result from the use or inability to use the Software or related documentation.

SOFTWARE INSTALLATION PROCEDURE

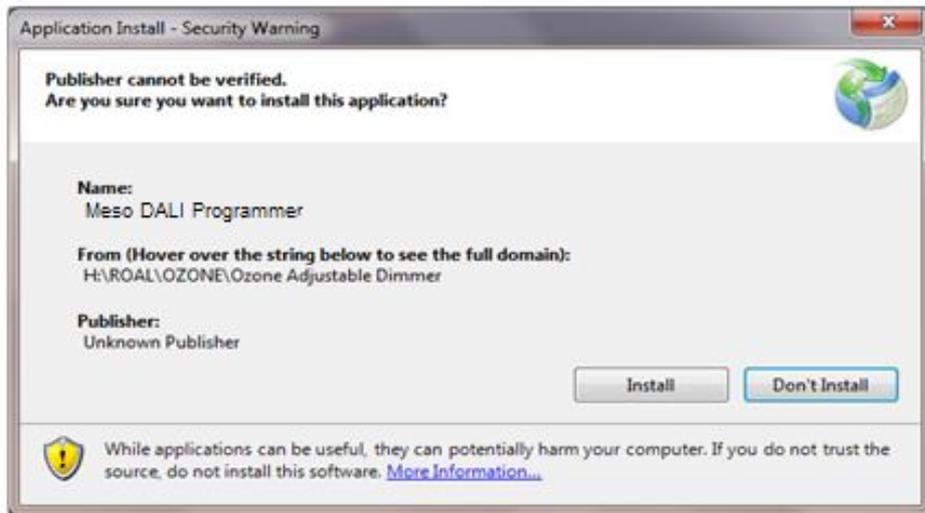
Unzip "Meso DALI Programmer vx_x" Files.zip in your dedicated PC folder, two subfolders will be generated "Meso DALI Programmer" and "USB Driver".

Enter the "Meso DALI Programmer" folder and launch the "Setup" file.

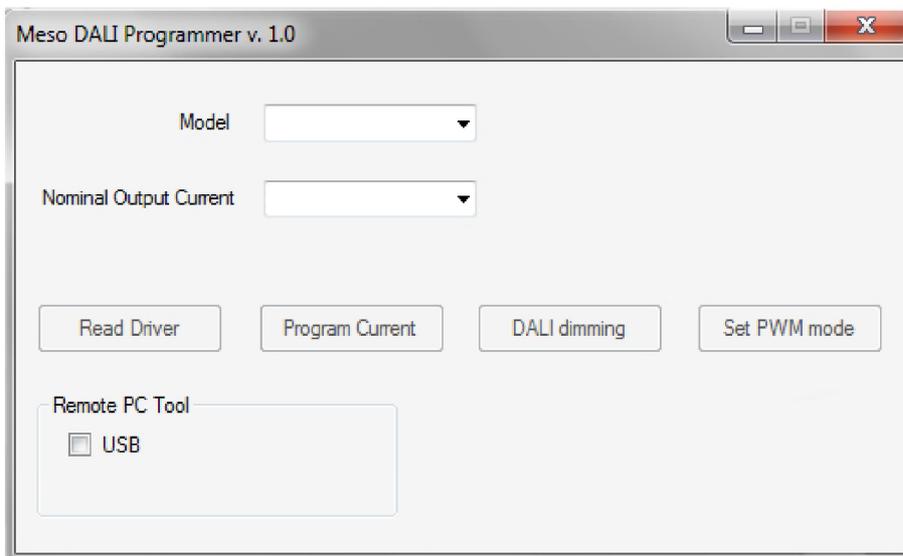
It is required to install the "Microsoft .NET Framework 4 Client Profile (x86 e x64)" in your PC system. If it is already installed in your computer, the procedure will automatically continue.

If not, the installation procedure will directly download it from the Microsoft website (it could take some minutes and requires the system restart).

Once the Microsoft .NET Framework 4 is installed, or skipped if already present, click "install" in the following window.



The Meso DALI Programmer software will be automatically launched at the end of the installation procedure.



A new dedicated desktop icon and Start menu folder will be created for direct software execution.

USB DRIVER AND OZONE PROGRAMMING TOOL INSTALLATION PROCEDURE

Enter the “USB driver” folder (included in the “Meso DALI Programmer” Files.zip) and launch the Setup file

If you have User Account Control enabled (Windows Vista or Windows 7), click “Yes” or “Continue” in the window that will appear on the screen.

Wait until the installation procedure ends.

Connect the DALI Programming Tool to the USB PC port and follow all the instructions to complete the driver setup.

SOFTWARE UPDATE

Uninstall the old software version.

Go to: Start→Control Panel→Programs and Features→ Meso DALI Programmer →Click “Uninstall/Change” button.

Install the new software version, following the procedure described in the previous pages.

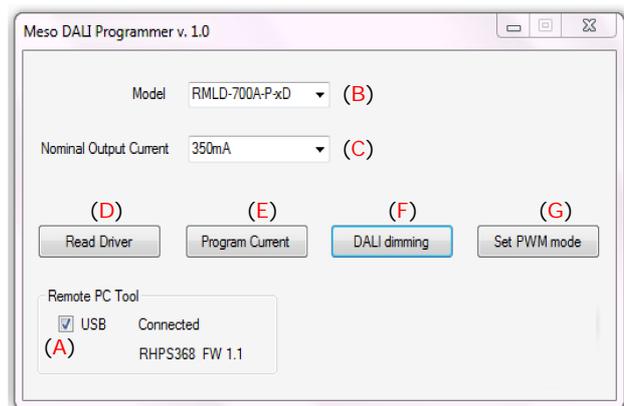
PROGRAMMABILITY FEATURES

The connections between the PC, the DALI Programming Tool and the Meso LED driver permits to set the features of the driver.

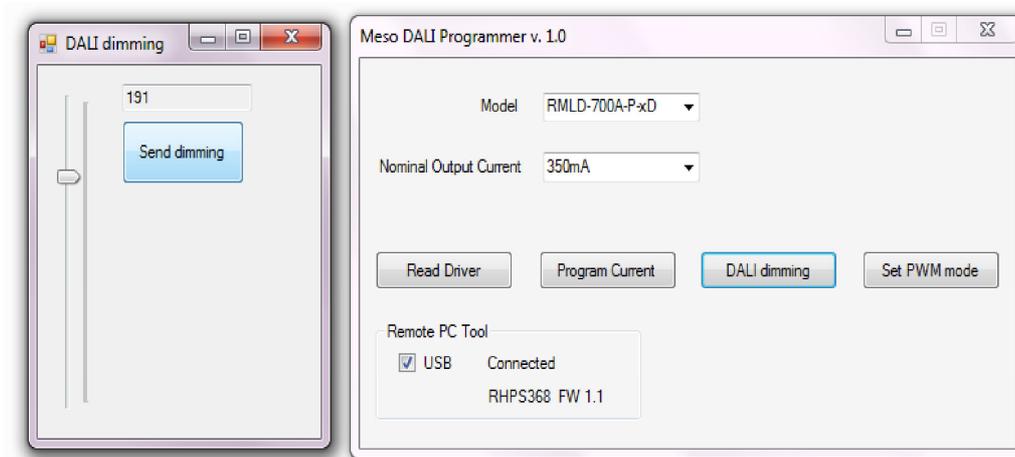
From the main program window, click the USB connection (A) to establish the communication between the PC and the Programming Tool; the right connection will be indicated.

The software program permits then to:

- Select the driver model (B)
- Set the Nominal Output Current (C)
- Read the Meso settings through the “Read Driver” button (D)
- Program the Meso LED driver through the “Program Current” button (E)
- Verify the DALI dimming performance through the “DALI dimming” button (F)
- Set the Meso LED driver to accept a PWM dimming input through the “Set PWM mode” button (G)



When pressing the “DALI dimming” button, the following interface will be displayed:



This demo feature allows the user to test the DALI communication, in order to make sure the driver has been correctly programmed.

The “Set PWM mode” button switches the DALI inputs into a PWM input interface, which allows to reduce the output current through an external PWM signal.

WARNINGS: Once the driver has been programmed into the PWM operation mode, it will not accept DALI commands anymore.

To restore the DALI communication the following procedure has to be applied:

- Power on Meso LED driver;
- Short the Ts input with the RTN input and power off Meso LED driver;
- Power on Meso LED driver.

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