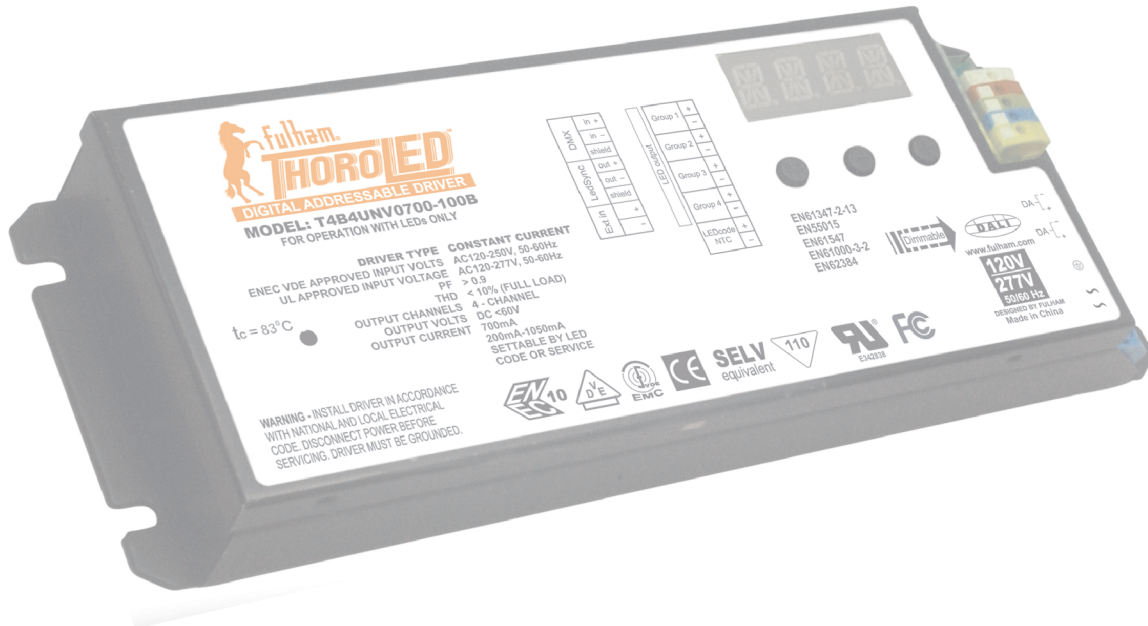




CONFIGURATION MANUAL T4NUNVxxxV-100K/B/R



Configure the driver over its intuitive, 3-button user interface with display. The easy-to-navigate menu allows you to set parameters such as number of LED groups, DMX or DALI network settings for networked mode and show/color/dim values for standalone operation. You can also lock the driver's configuration and perform a test run of the connected LED groups. This article explains how to work with the menu buttons and display, and lists the various menu items and selectable values.

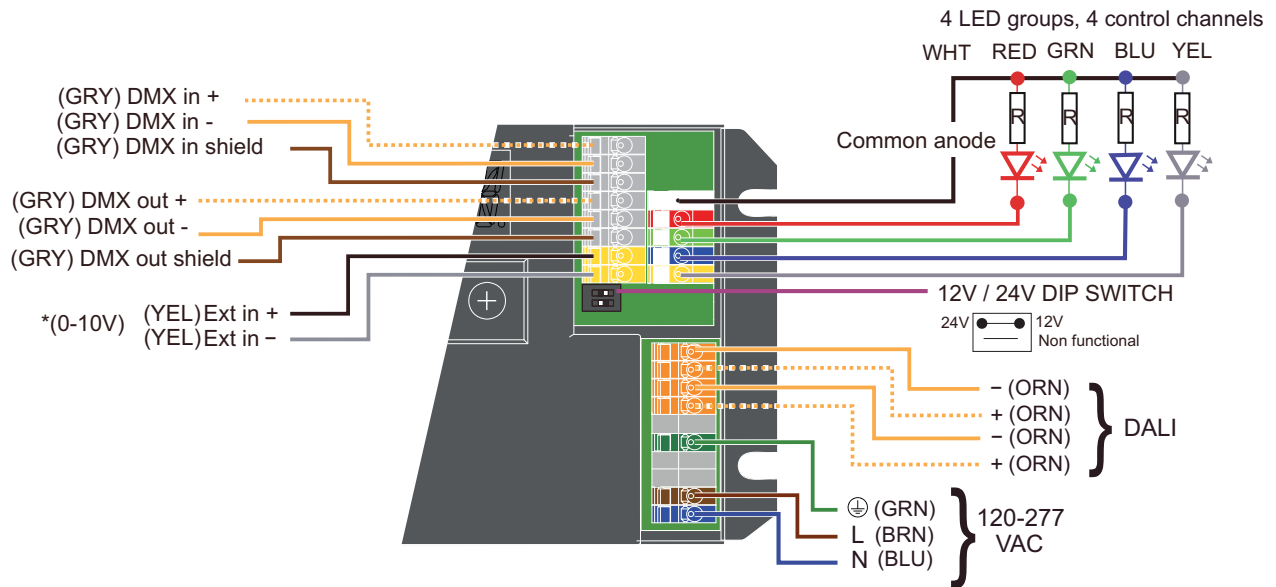
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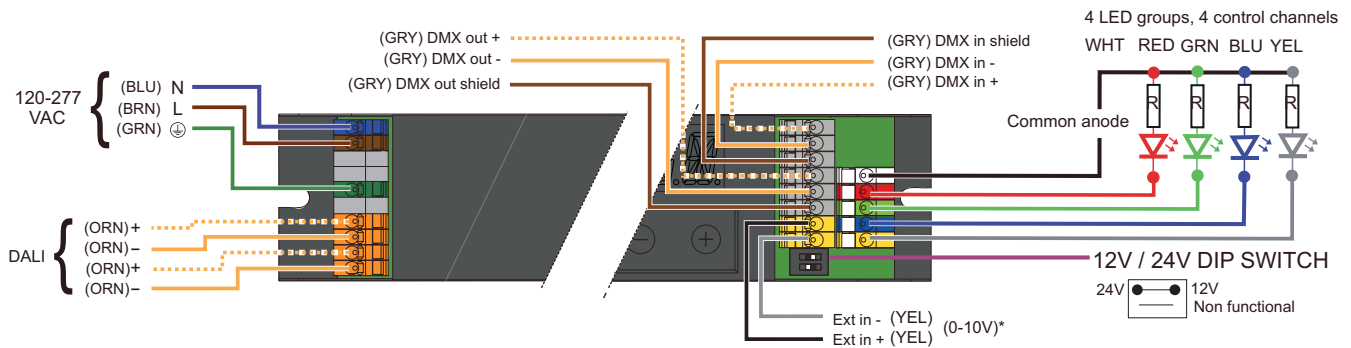
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DMX-DALI addressable driver

WIRING DIAGRAM - B



WIRING DIAGRAM - K/R



WARNING: Risk of electrical shock. May result in serious injury or death. Disconnect power before servicing or installing.



CAUTION: The device may only be connected and installed by a qualified electrician. All applicable regulations, legislation and building codes must be observed. Incorrect installation of the device can cause irreparable damage to the device and connected LEDs.



CAUTION: Pay attention when connecting LED groups: polarity reversal results in no light output and often damages the LEDs.

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1. Working with the menu buttons and display

The driver features three menu buttons (M, - and +) with which you can navigate the configuration menu. The display above the menu buttons shows the menu item names and values that can be selected for every item.

In order to prevent an unlocked driver's configuration from being accidentally changed by objects touching the menu buttons, the menu buttons are sunk into the cover. For easy access to the buttons when you are doing a complete configuration, it is recommended to remove the cover. If you only need to change one setting, such as changing a color or show sequence, you can leave the cover on and press the menu buttons using a pen.

1.1 General function of menu buttons

Pressing M

- o shows the current mode or the next menu item; browse menus and settings without making any changes.
- o saves a changed value.
- o at the last menu item turns off the display.

Pressing + or -

- o changes a value (which is only saved when M is pressed).

Accidentally changed a value but haven't confirmed it yet by pressing M, by not doing anything and waiting for 8 seconds, the display will turn itself off without changing the value.

If you are in a menu and want to change to another menu, do not press any buttons for at least 8 seconds so the display turns off, and subsequently press the button combination for the menu you want to change to.

2. Main menu items

The very first time the power is connected to the driver, the display will show "SET MODE". You need to set the mode of operation first, before you can move on to the other menu items. If the power is interrupted to a driver that has already been configured, the display will only show the driver type when the power comes back on, but will not go to the Set Mode menu, as the driver's configuration has been saved to memory.

Proceed as follows to configure your driver:

1. Set the mode of operation (COLR, SHOW, DMX or DALI) in the mode selection menu.
2. Set the LED group configuration in the LED menu.
3. Configure the operation mode you have chosen in step 1 (COLR, SHOW, DMX or DALI).

Except for the configuration menus SET MODE, LED, COLR/SHOW/DMX/DALI, a number of other menus give the driver some additional features:

- o TEST: Lets you perform a test run of the connected LEDs
- o LOCK: Lets you soft-lock or hard-lock the driver's configuration
- o RESET: Lets you reset the driver to the factory default settings

2.1 Setting the mode of operation

In the mode selection menu, you can set the mode of operation for your driver:

- o COLR MODE: Lets you set a color for standalone operation.
- o SHOW MODE: Lets you set a show sequence for standalone operation.
- o DMX MODE: Lets you configure DMX related settings (start address, network resolution, termination) for networked operation.
- o DALI MODE: Lets you view DALI related settings (start address, network resolution, termination) for networked operation. Note that you do not actively configure DALI settings, these are automatically set by the DALI master.

To enter the mode selection menu:

1. The very first time the power is connected to the driver, the display will show the driver type for a couple of seconds and then automatically enter the SET MODE menu.

When you want to change the mode of operation of a previously configured driver, Press the M button for five seconds to enter the SET MODE menu.

The display shows "SET" - "MODE" followed by the name of the first mode (COLR).

2. Press + or - until the display shows the mode you want your driver to operate in: COLR, SHOW, DMX or DALI.
3. Press the M button to save your selection. The display will turn off after you have pressed the M button.

The display also turns off after 8 seconds of inactivity. To enter the Mode menu again, repeat the aforementioned sequence.

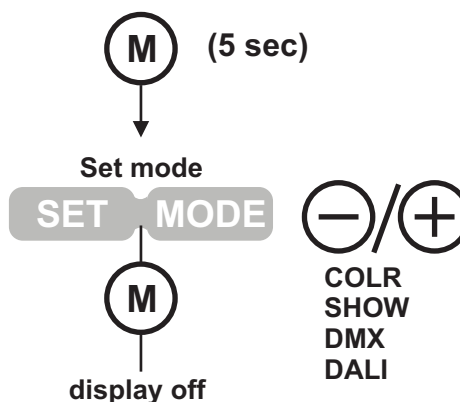


Figure 1: Setting the mode of operation



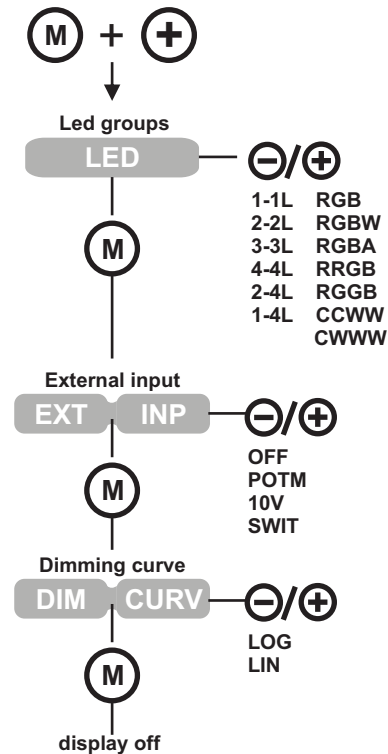
After you have confirmed COLR MODE as the mode of operation, it is recommended to set the LED groups via the SETUP menu first, before entering the COLR menu to set the color of your choice.

For information on how to configure the LED groups, see 2.2 "Configuring LED groups".

2.2 Configuring LED groups

In the SETUP menu, you can configure the LED groups and an external input device.

Figure 2: Configuring the LED groups



To enter the SETUP menu:

1. Press the M and + button simultaneously.
2. The display displays LED. This menu option configures the LED groups. Possible values are from:
 - a. 1-1L: one DMX/DALI channel is used for one LED group (group 1). The other LED group connectors are disabled.
 - b. 2-2L: two DMX/DALI channels are used for two LED groups, the group 1 and group 2 connectors. Group 3 and 4 are disabled.
 - c. 3-3L: three DMX/DALI channels are used for LED groups 1, 2 and 3. Group 4 is disabled.
 - d. 4-4L: one DMX/DALI channel is used per LED group.
 - e. 2-4L: two DMX/DALI channels are used for four LED groups, one for group 1 and 2, the other for group 3 and 4.
 - f. 1-4L: one DMX channel is used for four LED groups.

- g. RGB: 3 DMX/DALI channels are used for three LED groups: one channel for red LEDs, one for green LEDs and one for blue LEDs.
 - h. RGBW: four DMX/DALI channels are used for four LED groups: one channel for red LEDs, one for green LEDs, one for blue LEDs and one for white LEDs.
 - i. RGBA: four DMX/DALI channels are used for four LED groups: one channel for red LEDs, one for green LEDs, one for blue LEDs and one for amber LEDs.
 - j. RRGB: three DMX/DALI channels are used for four LED groups: two channels for red LEDs, one for green LEDs and one for blue LEDs.
 - k. RGGB: three DMX/DALI channels are used for four LED groups: one channel for red LEDs, two for green LEDs and one for blue LEDs.
 - l. CCWW: one DMX/DALI channel is used for two LED groups with the same color and one DMX channel is used for two LED groups consisting of white LEDs only.
 - m. CWWW: one DMX/DALI channel is used for one LED group and one DMX/DALI channel is used for three LED groups consisting of white LEDs only.
3. Press M to confirm the LED group configuration of your choice.
 4. The EXT INP menu item allows you to configure the driver for use with an external input device such as a 10k Ohm potentiometer (POTM), a 0...10V control device (10V) or a show switch (SWIT). The first two allow you to turn on/off and dim the light, the last one to select another show sequence. Confirm your choice by pressing M.



When the EXT INP menu item is set to another value than OFF, but no device is connected to the EXT connectors, the driver will not yield the optimum light output.

5. The DIM CURV menu item allows you to configure the output dimming curve of the driver. Select LOG set output dimming curve as logarithmic type and LIN as linear type. Press the M button to save your selection. The display will turn off after you have pressed the M button.
The display will also turn off after 8 seconds of inactivity.

2.3 Configuring the operation mode 'COLR'

In COLR mode, you can set your LED application's color for standalone (i.e. non networked) operation. To change the COLR settings:

1. Press M to enter the COLR menu. Your options in the COLR menu depend on the way you have configured your LED groups in the SETUP menu. Below you will find the COLR menu options for the corresponding LED group configurations.

1-1L and 1-4L

- 1-1L: one DMX/DALI channel is used for one LED group (group 1). The other LED group connectors are disabled.
- 1-4L: one DMX/DALI channel is used for four LED groups. This means that all four groups have light output. INT (intensity) lets you set the intensity of the light output: 255 is full on, 0 is off.

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DMX-DALI addressable driver

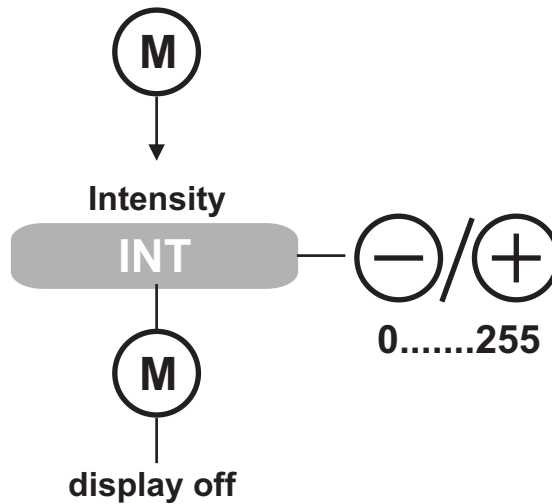


Figure 3: COLR settings for 1-1L and 1-4L

2-2L and 2-4L

2-2L: two DMX/DALI channels are used for two LED groups, the group 1 and group 2 connector. Group 3 and 4 are disabled.

2-4L: two DMX/DALI channels are used for four LED groups, one for group 1 and 2, the other for group 3 and 4.

INT (intensity) lets you set the intensity of the light output of each channel: 255 is full on, 0 is off.

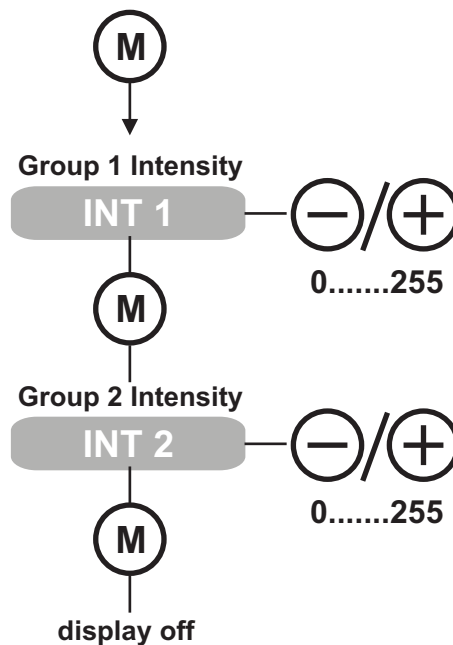


Figure 4: COLR settings for 2-2L and 2-4L

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DMX-DALI addressable driver

3-3L

3-3L: Three DMX/DALI channels are used for LED groups 1, 2 and 3. Group 4 is disabled. INT (intensity) lets you set the intensity of the light output of each channel: 255 is full on, 0 is off.

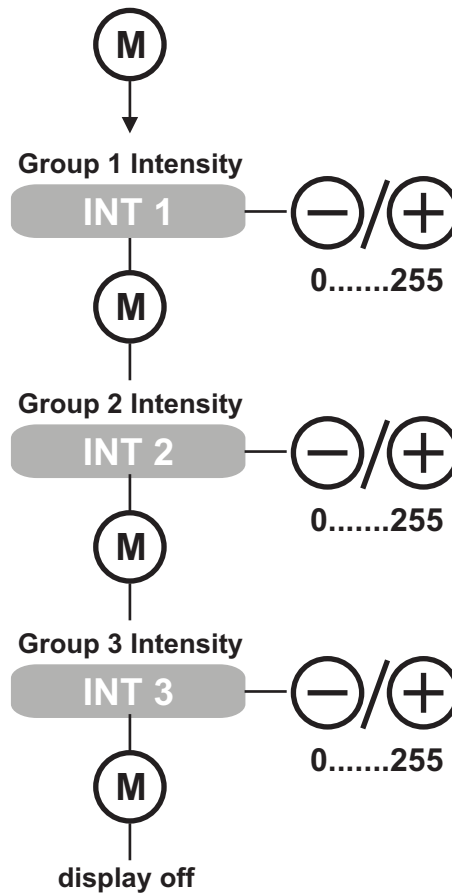


Figure 5: COLR settings for 3-3L

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DMX-DALI addressable driver

4-4L

4-4L: one DMX/DALI channel is used per LED group. INT (intensity) lets you set the intensity of the light output of each channel: 255 is full on, 0 is off.

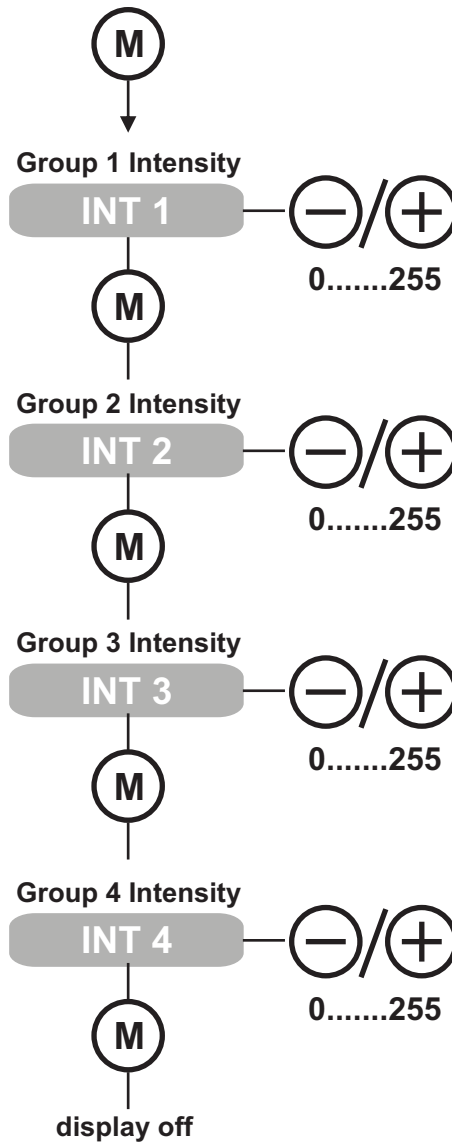


Figure 6: COLR settings for 4-4L

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CCWW or CWWW

CCWW: one DMX/DALI channel is used for two LED groups with the same color and one DMX/DALI channel is used for two LED groups consisting of white LEDs only.

CWWW: one DMX/DALI channel is used for one LED group and one DMX channel is used for three LED groups consisting of white LEDs only.

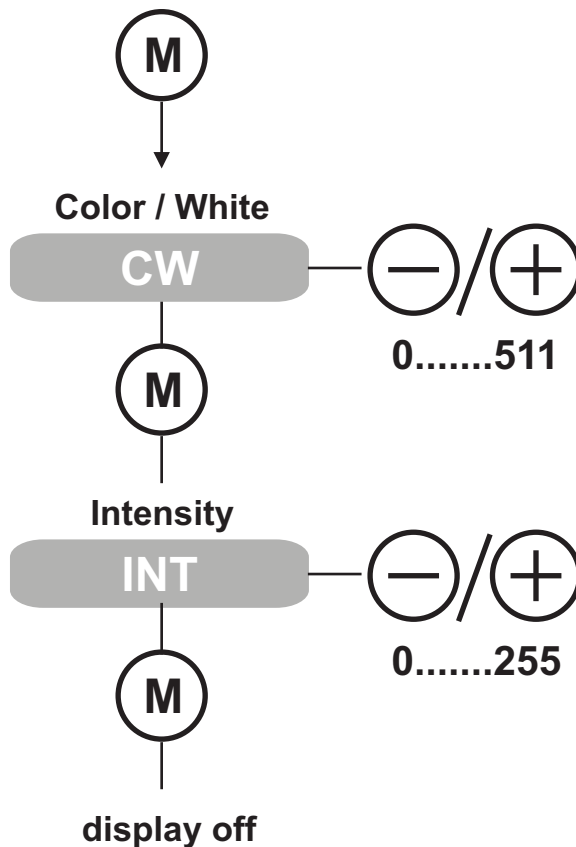


Figure 7: COLR settings for CCWW or CWWW

CW lets you set the proportion of color to white, and INT (intensity) lets you set the intensity of the light output: 255 is full on, 0 is off.

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DMX-DALI addressable driver

RGB / RRGB / RGGB

RGB: 3 DMX/DALI channels are used for three LED groups: one channel for red LEDs, one for green LEDs and one for blue LEDs.

RRGB: 3 DMX/DALI channels are used for four LED groups: two channels for red LEDs, one for green LEDs and one for blue LEDs.

RGGB: 3 DMX/DALI channels are used for four LED groups: one channel for red LEDs, two for green LEDs and one for blue LEDs.

HUE lets you set the color: By pressing + or - you actually 'walk' along the sides of the color triangle shown below, which is based on the CIE diagram. By pressing M you confirm the color of your choice. Then, INT lets you set the brightness of the chosen color.

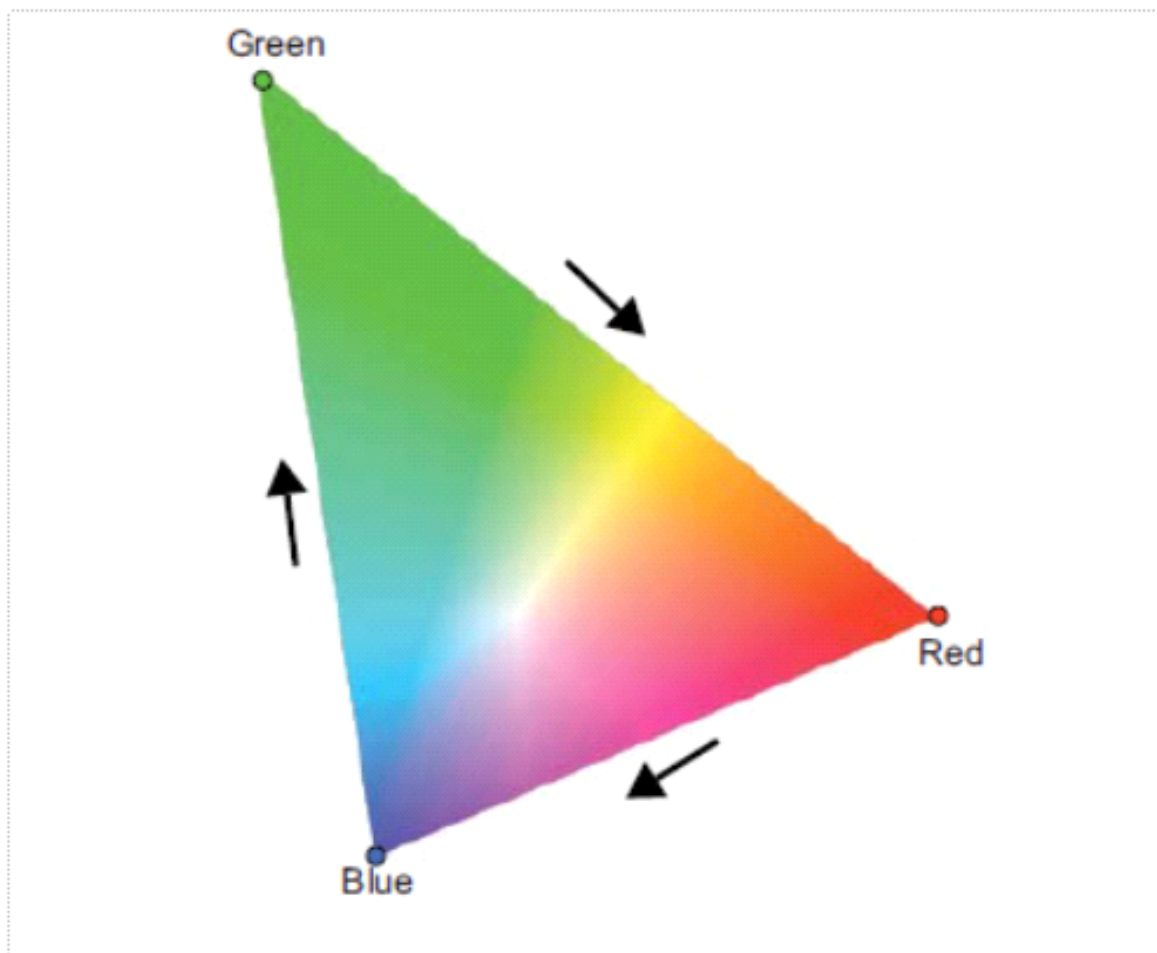


Figure 8: Setting the color

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DMX-DALI addressable driver

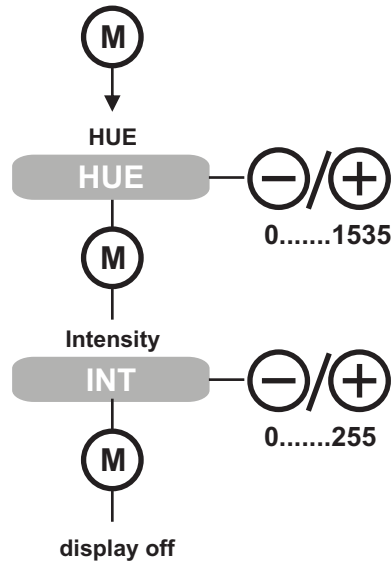


Figure 9: COLR settings for RGB, RRGB or RGG

RGBW

RGBW: 4 DMX/DALI channels are used for four LED groups: one channel for red LEDs, one for green LEDs, one for blue LEDs and one for white LEDs.

RGBA: 4 DMX/DALI channels are used for four LED groups: one channel for red LEDs, one for green LEDs, one for blue LEDs and one for amber LEDs.

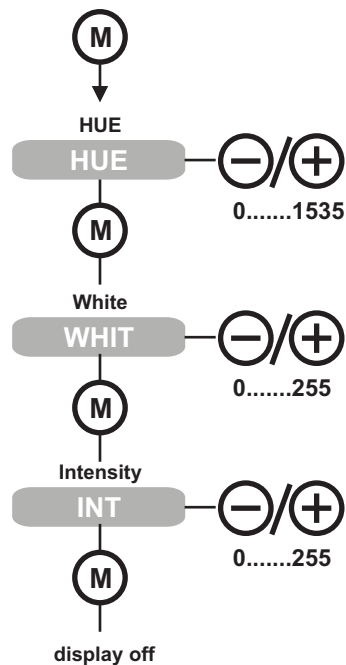


Figure 10: COLR settings for RGBW

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DMX-DALI addressable driver

HUE lets you set the color: By pressing + or - you actually 'walk' along the sides of the color triangle shown below, which is based on the CIE diagram. By pressing M you confirm the color of your choice. Then, WHITE lets you add white or amber (you 'walk' towards the white center of the color triangle). Finally, INT lets you set the intensity of the light output.

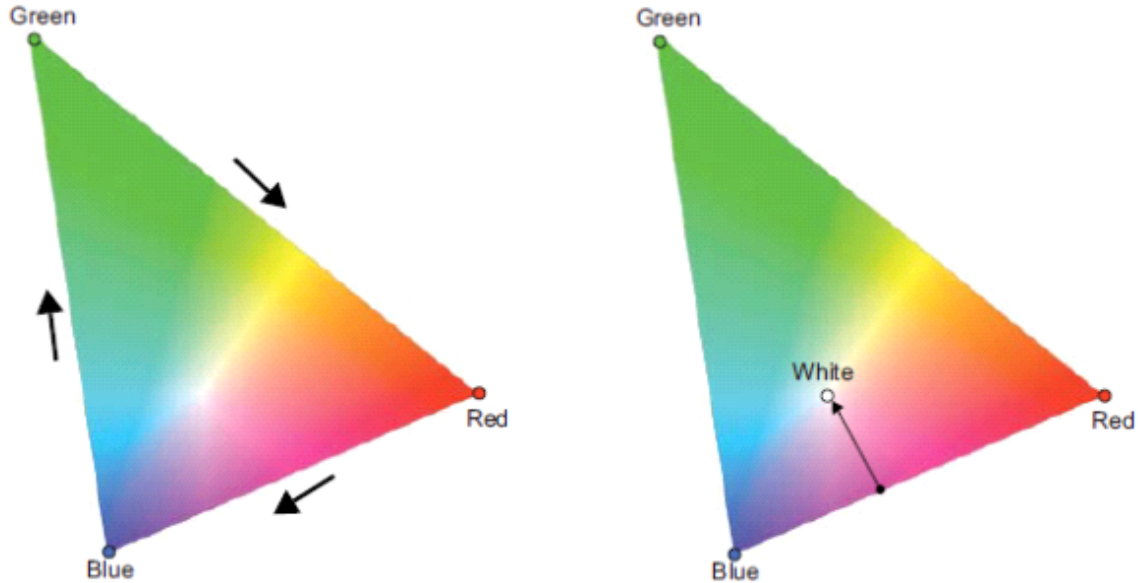


Figure 11: Setting the color (left) and adding white (right)

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RGBA

RGBA: LED group 1 is connected to red LEDs, LED group 2 is connected to green LEDs, LED group 3 is connected to blue LEDs, LED group 4 is connected to amber LEDs.

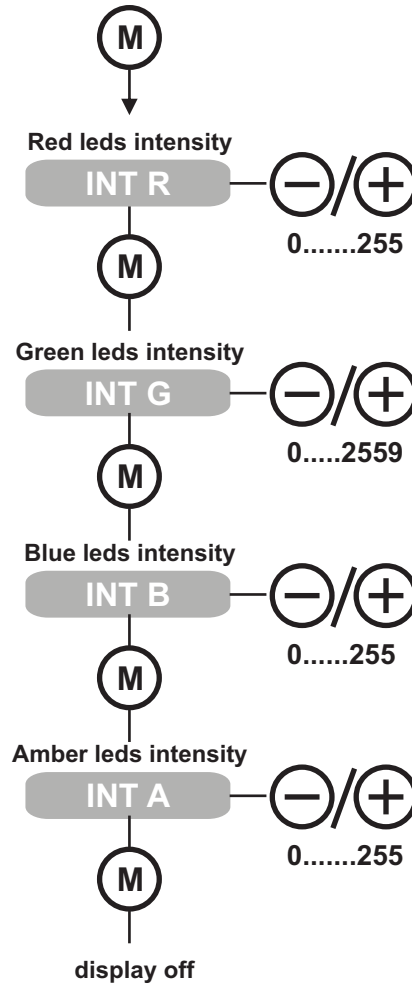


Figure 12: COLR setting for RGBA

2.4 Configuring the operation mode 'SHOW'

Your driver comes with 9 default or a number of custom show sequences. Your LED application can run these show sequences when the LED application is not part of a network (standalone operation).

In SHOW mode, you can choose a show sequence and set this sequence's speed and intensity i.e. brightness.

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To change the SHOW settings:

1. Press M to enter the SHOW menu.

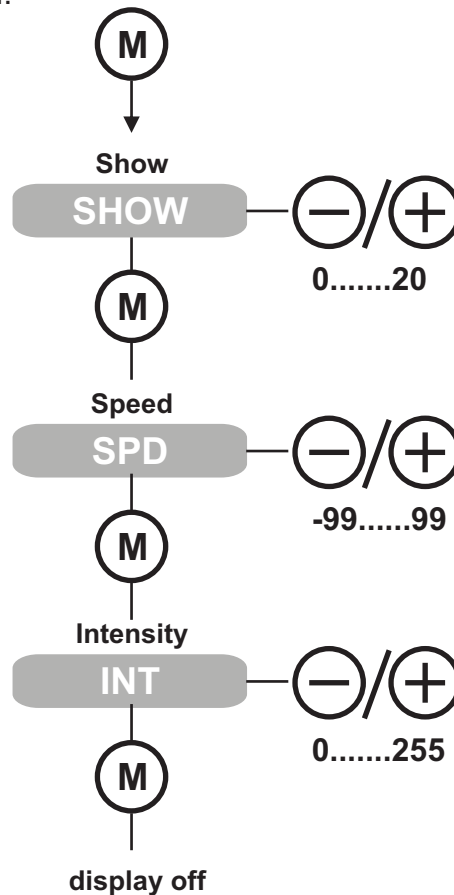


Figure 13: Configuring show settings

- SHOW allows you to select a different show sequence. The driver can contain up to 20 show sequences.
- SPD (speed) allows you to change the speed of the selected show sequence. Possible range is -99 through 99, with 0 representing the show sequence's default speed, -99 twice as slow and 99 twice as fast.
- INT (intensity) allows you to change the intensity of the selected show sequence. Possible range is 0 (off) through 255 (full on).

2. When a changed menu option is saved, the next menu option is automatically displayed on the display.

3. When you've reached the last menu option and press M, the display turns off. The display also turns off after 8 seconds of inactivity. To enter the Show menu again after the display has turned off, repeat the aforementioned sequence.

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2.5 Configuring the operation mode 'DMX'

In DMX MODE, you can set driver's network start address and its network resolution.

To change the DMX settings:

1. Press M to enter the DMX menu.
2. Press M to browse the DMX menu options. These are DMX ADDR (DMX address), NETW RES (network resolution), and TERM (DMX termination)

When you reach the required menu option, press + or - to change its value and M to save the changed value. Pressing M after the last menu option exits the configuration and turns off the display.

- a. DMX ADDR allows you to select a network start address for your driver. Value range is 1 through 512.

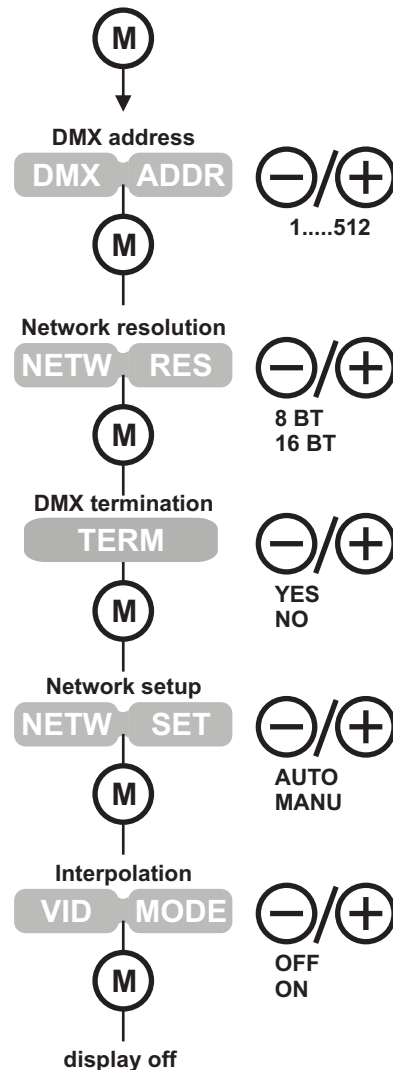


Figure 14: Configuring DMX network settings

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- b. NETW RES allows you to set the network resolution for your driver to 8 or 16 bit.
Note that 16 bit allows much smoother dimming and more accurate color mixing.
- c. TERM allows you to enable termination on your driver of 2.5.
- d. NETW SET allows you to set the network setup as AUTO or MANU.
- e. VID MODE manu item allows you to enable VID function on your driver.



ONLY enable termination if the driver is the last driver on the network cable of a bussed network architecture.

2.6 Viewing the settings of operation mode 'DALI'

In DALI MODE, you can view the DALI network settings that have been assigned to your driver. To read out the driver's DALI settings:

1. Press M to enter the DALI menu.
2. Press M to browse the DALI network data:
X BAL shows the number of ballasts, pressing M again will tell you if an address has been set (ADDR SET) or not (NO ADDR)
Pressing M after the last menu option exits the configuration and turns off the display.

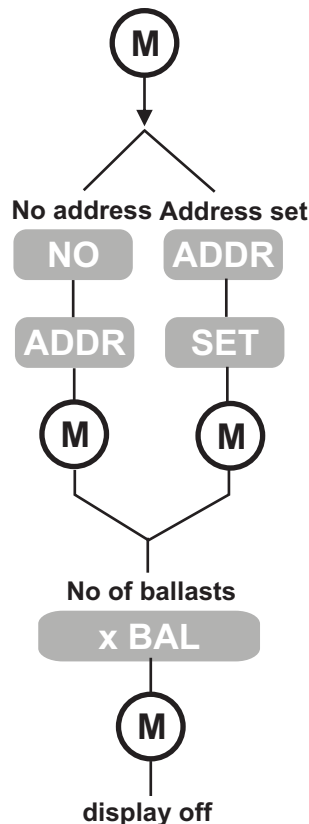


Figure 15: Viewing DALI network settings

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2.7 Locking the configuration

You can ensure that your driver's settings are not changed by locking its configuration.

You can choose

- o not to lock the configuration: everyone with access to the driver can change its settings.
- o soft-lock the configuration: you can only enter the SHOW, COLR or TEST menu or reset the driver to its factory defaults.
- o hard-lock the configuration: none of the driver's settings can be changed.



There is no way to get back into the driver's configuration once it has been hard-locked, you can only reset the driver to its factory defaults!
Only activate the hard-lock after careful consideration!

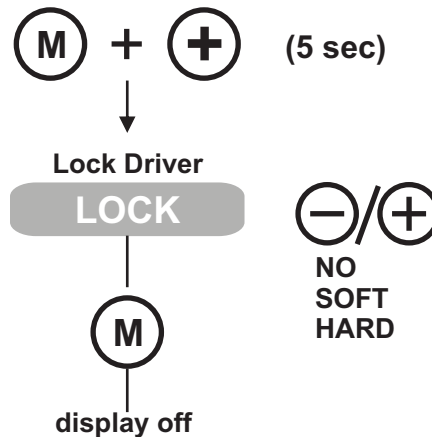


Figure 16: Locking and unlocking the driver's configuration

To lock the driver's configuration:

1. Press M and + simultaneously for 5 seconds.
2. Press + or - until the display correctly reflects your choice:
 - a. NO (do not lock driver)
 - b. SOFT (soft-lock the driver)
 - c. HARD (hard-lock the driver).
3. Press M to confirm your selection. The display turns itself off after you have confirmed your choice.

2.8 Unlocking a soft-locked driver

To unlock a soft-locked driver and regain full access to all menus:

1. Press M and + simultaneously for 5 seconds.
2. Press + or - until the display correctly reflects your choice:
 - a. YES (the driver remains soft-locked)
 - b. NO (the driver is unlocked)
3. Press M to confirm your selection. The display turns itself off after you have confirmed your choice.

2.9 Carrying out a test run

You can carry out an RGBW test run with fade for each channel, to check if

(a) all LEDs are fully functional

(b) you have correctly configured your LED groups in the SETUP menu.

To carry out the test run:

1. Press M, - and + simultaneously.
2. The connected LED groups are lit as follows:
 - for one second, LED group 1 (R) is lit
 - for one second, LED group 2 (G) is lit
 - for one second, LED group 3 (B) is lit
 - for one second, LED group 4 (W) is lit
 - for one second, LED group 1, 2, 3 and 4 (RGBW) are lit at the same time
 - this sequence is repeated once more

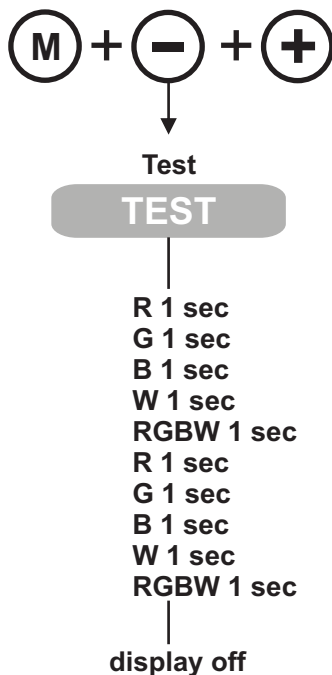


Figure 17: Carrying out a test run of the connected LEDs

Fulham extends a limited warranty only to the original purchaser or to the first user for a period of 5 years from the date of manufacture when properly installed and operated under normal conditions of use. For complete terms and conditions, please reference the Fulham product catalog (www.fulham.com)

Due to a program of continuous improvement, Fulham reserves the right to make modifications or variations in design or construction to the equipment described.

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2.10 Resetting the driver to its factory default settings

To reset the driver to its factory default settings:

1. Press M, - and + simultaneously for 5 seconds.
2. The display shows "RE-" "SET" and "PRES MENU"
3. Press M to carry out the reset, or do not press any button for 8 seconds - this allows you to exit the menu without actually carrying out the reset.

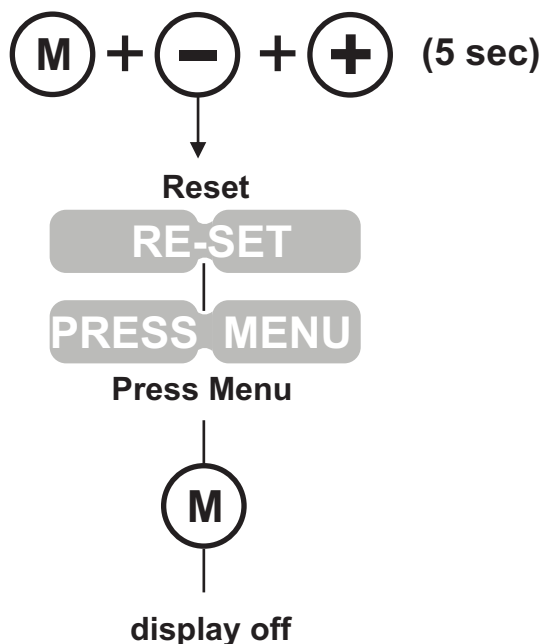


Figure 18: Resetting the driver to its factory default settings