LIGHT APP

FEATURES

- SPI CONTROLLER for Digital-LED strip
- RGB, RGBW, Tunable White (TW), and Monochromatic Digital-LED strip light effects control
- Power supply (DC IN): 5-12-24 Vdc
- Output (OUT): voltage value equal to input voltage
- Local control (PUSH): via Normally Open (N.O.) Pushbutton
- Remote control: via Opto-Isolated DALI BUS (DALI) or via DMX512 (BUS)
- BUS Extender (BUS): possible to control other RUNNING-LIGHT-V2 via Master/Slave functionality or a second remote Digital-LED strip via PIXEL-REPEATER module
- NFC On-the-Fly device configuration via Dalcnet LightApp mobile application, parameters can be set:
  - Integrated Circuit (IC) LED type
  - Colour Type and Pixel Number
  - Up to 9 dynamic effects
  - Effect colour, speed, direction, background and more
  - DALI parameters (Power-ON state, Fade, DALI Groups and Scenes, etc.)
  - DMX parameters (Starting Address, SmartMap, etc.)
- Suitable for use in Dry locations
- Extended temperature range
- 100% Functional test – 5 years warranty

PRODUCT DESCRIPTION

RUNNING-LIGHT-V2 is an SPI controller for pixel-to-pixel LED control on digital (programmable/addressable) LED strip, supplied by a constant voltage (5 ÷ 24) Vdc from an external SELV power supply. The controller is suitable for driving Digital-LED RGB/RGBW/TW/Monochromatic strips at constant voltage. After the operating mode selection, the device can be controlled locally via a Normally Open (N.O.) pushbutton or remotely, via DALI (Digital Addressable Lighting Interface) with improved compatibility to trigger specific dynamic effects directly through DALI scenes or via DMX512 with DMX-to-SPI conversion and the new DMX Smart Maps for simplified pixel addressing and effortless dynamic control over DMX.
Through the BUS interface is possible to duplicate the effects to a second pixel-to-pixel Digital-LED strip placed at a distance up to 250 m from the controller by means of the PIXEL-REPEATER module (sold separately) for large-scale installations or to synchronize the effects with other RUNNING-LIGHT-V2 devices configured in SYNCH mode (Master/Slave system).
RUNNING-LIGHT-V2 can deliver a maximum output current of 7 A and has the following protections: over-voltage and under-voltage protections, reverse polarity protection and input fuse protection.
RUNNING-LIGHT-V2 enables you to make not only simple brightness adjustments but also more dynamic lighting control systems. This is made possible through the creation of multiple scenarios, animations, effects, and more.
Through the Dalcnet LightApp mobile application and smartphones equipped with Near Field Communication (NFC) technology, it is possible to configure multiple parameters instantly (no reboot required), including up to 9 different light effects, colour, speed, direction, pixel length, transition parameters, and more. Dalcnet LightApp can be downloaded free of charge from the Apple APP Store and Google Play Store.

⇢ For the up-to-date manual, please consult our website www.dalcnet.com or scan the QR Code on product label.

PRODUCT CODE

CODE	POWER SUPPLY	LED OUTPUTS	N° of INTERFACES	REMOTE CONTROL	LOCAL CONTROL	APP CONFIG
RUNNING-LIGHT-V2	5-12-24 VDC	7 A (max) [1]	N°1 Digital-LED strip (out) N°1 BUS Extender (in/out)	DALI, DMX, or SYNCH	N°1 N.O. Pushbutton	Dalcnet LightApp
PIXEL-REPEATER[2]	5-12-24-48 VDC	7 A (max) [1]	N°1 BUS Extender (in) N°1 Digital-LED strip (out)	BUS (up to 250 m)	-	-

Table 1: Product Code

PROTECTION AND DETECTION

The following table shows the types of incoming and outgoing protection/detection present on the device.

ACRONYM	DESCRIPTION	TERMINAL	PRESENT
IFP	Input Fuse Protection[3]	DC IN	✓
OVP	Over Voltage Protection[3]	DC IN	✓
UVP	Under Voltage Protection[3]	DC IN	✓
RVP	Reverse Voltage Polarity[3]	DC-IN	✓

Table 2: Detection and Protection functionalities

REFERENCE STANDARDS

RUNNING-LIGHT-V2 complies with the regulations shown in the table below.

STANDARD	TITLE
EN 55015	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
EN 61547	Equipment for general lighting purposes – EMC immunity requirement
EN 61347-1	Lamp Controlgear – Part 1: General and safety requirement
EN 61347-2-13	Lamp controlgear - Part 2-13: Particular requirement for d.c. or a.c. supplied electronic Controlgear for LED modules
ANSI E1.11	Entertainment Technology - USITT DMX512-A - Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories

Table 3: Reference standards

[1] The maximum total output current depends on the operating conditions and ambient temperature of the system. For the correct configuration, check the maximum power that can be delivered in the §Technical Specifications and in the §Thermal Characterization sections.
[2] Optional BUS module sold separately.
[3] Protections refer to the control logic of the board.

TECHNICAL SPECIFICATIONS

Description	Name	Values Min	Values Typ	Values Max	Unit of Measure	Note
POWER SUPPLY (DC IN terminal)						
Nominal Supply Voltage	V_{IN}	5	12	24	Vdc	-
Supply Voltage range	V_{IN-RNG}	5	÷	24	Vdc	-
Efficiency at full load	E_{FF}		> 95		%	-
Standby power absorption	P_{STBY}		< 0.5		W	-
PUSH-BUTTON (INPUT terminal)						
Input type	IN_{TYPE}		Dry contact		-	For N.O. pushbutton
Maximum wiring distance	PB_{WD-max}	-	-	10	m	-
OUTPUT (OUT terminal)						
Output Voltage	V_{OUT}		= V_{IN}		-	-
Output Current (max)	$I_{OUT-max}$	-	-	7	A	-
Rated Power Output	P_{OUT}	@5V	@12V	@24V	W	Rated @T_A<35 °C.
		35	84	168		
Load type	L_{TYPE}		Digital-LED strip		-	Defined by design
IC LED type	IC_{TYPE_3CH}		WS2811, WS2812, WS2812B, WS2813B, WS2815, UCS1903, UCS1904, TM1804, TM1903, TM1913, GS8206, TX1818, SK6812, SM16703, APA105		-	3-channel Digital-LED. Check on Table 5 for other compatible ICs.
	IC_{TYPE_4CH}		WS2814, UCS2904, TM1814, SK6805, SK6812, SM16704, UCS7604		-	4-channel Digital-LED. Check on Table 5 for other compatible ICs.
Colour type map	CL_{TYPE_3CH}		RGB, RBG, GRB, GBR, BRG, BGR, WWW, TW(WWCW), TW(CWWW)		-	3-channel RGB/TW Digital-LED
	CL_{TYPE_4CH}		RGBW, RBGW, GRBW, GBRW, BRGW, BGRW, WRGB, WRBG, WGRB, WGBR, WBRG, WBGR		-	4-channel RGBW Digital-LED
Maximum addressable LEDs	IC_{ADDR_max}	-	-	2000	-	-
Resolution	RES		8		bit	16 million colours
Frame Rate	FR_{RGB}		100000 / (3 * Pixel Number)		-	RGB
	FR_{RGBW}		100000 / (4 * Pixel Number)		-	RGBW
BUS EXTENDER (BUS terminal)						
BUS type	BUS_{TYPE}		RS485		-	DMX protocol compatible
Maximum wiring distance	BUS_{WD-max}	-	-	250	m	-
DALI BUS (DALI terminal)						
DALI Device Type	DT_{DALI}	DT6	or	DT8	-	-
DALI Power Supply	PS_{DALI}		External		-	DALI bus Power Supply is required
ENVIRONMENTAL						
Storage temperature	T_{STORE}	-40	÷	+60	°C	Minimum values defined by design
Working Ambient temperature	T_A	-10	÷	+60	°C	Minimum values defined by design
Max Temperature @T_c point	T_C	-	-	+80	°C	-
Connector Type	CON_{TYPE}		Push-in terminals		-	-
Wiring Section	WS_{SOLID}	0.5	÷	1.5	mm^2	Defined by design
	WS_{STRAND}	20	÷	16	AWG	
Strip length	WS_{STRIP}		10		mm	-
Protection class	IP_{CODE}		IP20		-	-
Enclosure Material	M_{CASE}		PC/ABS		-	Polycarbonate/ABS
Enclosure Fixing	F_{CASE}		Screw fixing slots		-	-
Packaging units (pieces/units)	PU		1		pcs	-
Dimensions	-	L	H	D	-	-
	MD	136	29	21	mm	Case
	PD	147	34	29	mm	Packaging
Weight	W		58		g	Including packaging

Table 4: Technical specification

Other compatible IC-LEDs	IC Type to select
WS2812C, WS2813, WS2813E, WS2815B, WS2818A	WS2815
WS2813C, WS2818B	WS2813B
UCS1909, UCS1912*, UCS2903	UCS1903
UCS2909, UCS2912*	UCS1904
UCS2904B*	UCS2904
TM1809, TM1812*	TM1804
TM1913, TM1923	TM1903
TM1926*	TM1913
WS2813B_4CH	WS2814
APA107, APA109	APA105
GS8208	GS8206
SK6808, SK6813	SK6812
* 4-Pixel per IC-LED	

Table 5: Compatible IC-LEDs

T_C Point Position

The figure below shows the position of the maximum temperature point (*T_c point*, highlighted in red) reached by the electronics inside the enclosure. It is located on the front side (Top) near the BUS output terminal.

Figure 1: T_c point position

LIGHT EFFECTS

RUNNING-LIGHT-V2 supports the following light animations of the pixel-to-pixel Digital-LED strip, fully customizable as detailed in the §Effect Settings section of this document. The light effects are grouped depending to the Colour Type as shown in the following Table.

	FILL	FILL PARTIAL	STATIC	RAINBOW	WAVE	PLASMA	FIRE	HORSE RACE	STATIC2
RGB	✓	✓	✓	✓	✓	✓	✓	✓	✓
RGBW	✓	✓	✓	✓	✓	✓	✓	✓	✓
TW	✓	✓	✓	-	✓	-	-	-	✓
WWW	✓	✓	✓	-	✓	-	-	-	✓

Table 6: Grouping for the available effects

For an effect preview, please visit our website: https://www.dalcnet.com/en/blog/dynamic-led-scenography-and-effects-with-running-light-dalcnet-n6.

INSTALLATION

ATTENTION! *Installation and maintenance must always be carried out in the absence of voltage. Before proceeding with the connection of the device to the power supply, make sure that the voltage of the power source is disconnected from the system.*

The device should only be connected and installed by qualified personnel. All applicable regulations, legislation, standards, and building codes must be adhered to. Incorrect installation of the device may cause irreparable damage to the device and connected loads.

The following paragraphs show the diagrams of the dimmer's connection to the remote control, the load and the supply voltage. It is recommended to follow these steps to install the product safely.

Since multiple operating modes are available, refer to the appropriate wiring depending on the type of operation you wish to achieve.

1. Safety first: ensure the DC Power Supply is disconnected from the Mains Voltage before starting the installation
2. Load wiring: connect the Digital-LED strip wires to the "OUT" terminal block, wiring the positive wire to the "V+" terminal, the negative wire to the "V-" terminal, and the Data-IN wire to the "DATA" terminal.
3. Electrical connections: up to 6 operating modes are available, please refer to the proper wiring instruction listed below.
   - *PUSH SYNCH* and *SYNCH SLAVE* control type: refer to §SYNCH wiring.
   - *PUSH REPEATER* and *DALI REPEATER* control type: refer to §REPEATER wiring.
   - *DMX TO SPI* and *DMX SMART MAP* control type: refer to §DMX wiring.
4. Power Supply wiring: connect a 5 Vdc, 12 Vdc, or 24 Vdc constant voltage SELV power supply (depending on the nameplate data of the LED load) to the "+" and "-" terminals of the DC IN terminal.
5. Check the connections: verify that all connections are tightly secured and that there are no exposed wires.
6. Final check: reconnect the DC Power Supply to the Mains Voltage to power ON the device. Perform a test to ensure that the device is functioning correctly and that all connections are secure.
   Note: the installer is responsible for verifying the installation.

DIGITAL-LED LOAD WIRING

RUNNING-LIGHT-V2 has one output terminal that can drive a RGB, RGBW, TW, or Monochromatic Digital-LED strip with up to 2000 pixel-to-pixel IC LEDs. The IC LED type, colour type, and the number of LED elements to be driven are configurable from Dalcnet LightApp. The following connection diagram (Figure 2) allows you to drive one Digital LED load.

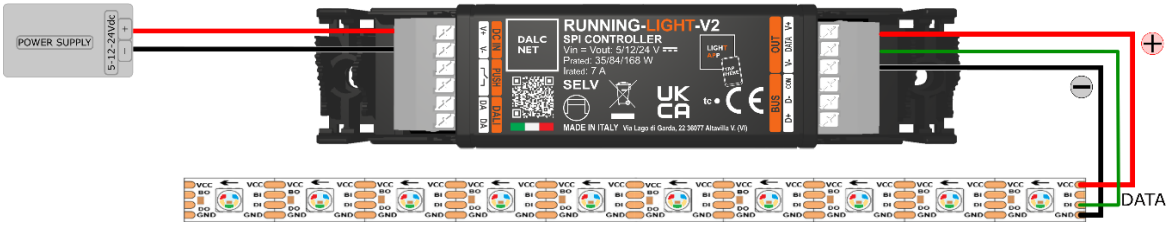


Figure 2: Connection diagram for Digital LED loads

For higher Load current (> 7A) it is recommended to use the following connection diagram, bypassing the V+ and V- signals of the OUT terminal and connecting the digital LED strip Supply Voltage terminals directly to the Power Supply.

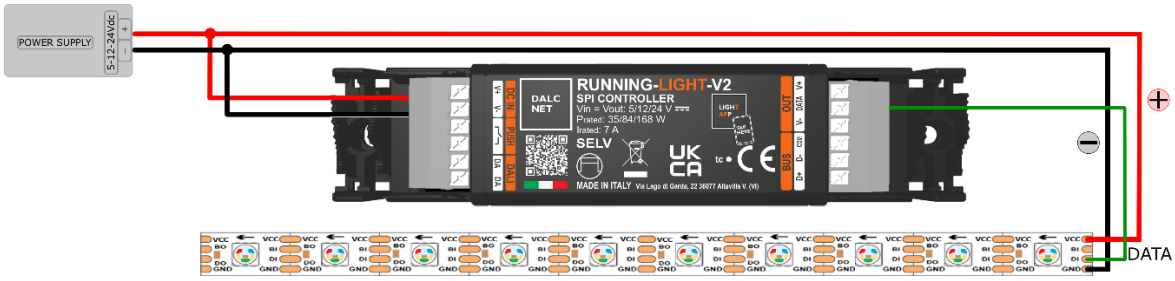


Figure 3: Connection diagram for Digital LED loads (> 7A)

SYNCH WIRING

It is possible to connect multiple RUNNING-LIGHT-V2 devices in Master/Slave mode, connecting the local control (i.e. push button) to the PUSH terminal block of the Master device, wiring the Master's "BUS" signals to the "BUS" terminal of the Slaves devices. After wiring, set the proper behaviour to the RUNNING-LIGHT-V2 devices via NFC tap configuration with Dalcnet LightApp:

- Master mode: set the Control Type parameter to *PUSH SYNC*
- Slave mode: set the Control Type parameter to *SYNC SLAVE*

Following diagrams shows two different sync wiring configurations, depending to the cable used.

RUNNING-LIGHT-V2 devices can be powered by a single DC power supply or by a dedicated DC power supply for each device. In any case, make sure that the rating data of the power source(s) comply with the requirements listed in Table 4.

The BUS terminal is a RS485 interface and requires 3-wire twisted pair shielded cable (recommended to improve signals immunity against environment electrical disturbances). In case of 4-wire (twisted pairs) shielded cable, simply use one

twisted pair for COM signal (with pair wires connected) and the other twisted pair for differential D+ and D- signals. 2-wire twisted pair shielded cable can be used too using the Shield as COM signal.

Keep the distances from the device to the unshielded portion of twisted pair as short as possible.

It is possible to configure Master & Slave system up to 10 total devices, with 15m maximum cable length between devices.

Diagram with 3-wire (twisted pair plus common) shielded cable

On 3-wire (twisted pair plus common) shielded cable, connect the common wire to the COM signal and the twisted pair to the D+ and D- signals on BUS terminals. The cable's shields shall be connected all together and to the Earth Ground at one end only. The following diagram is recommended for cabling path near disturbance sources (e.g. Mains grid, wireless router, etc.) and in general to improve disturbance immunity at BUS side.

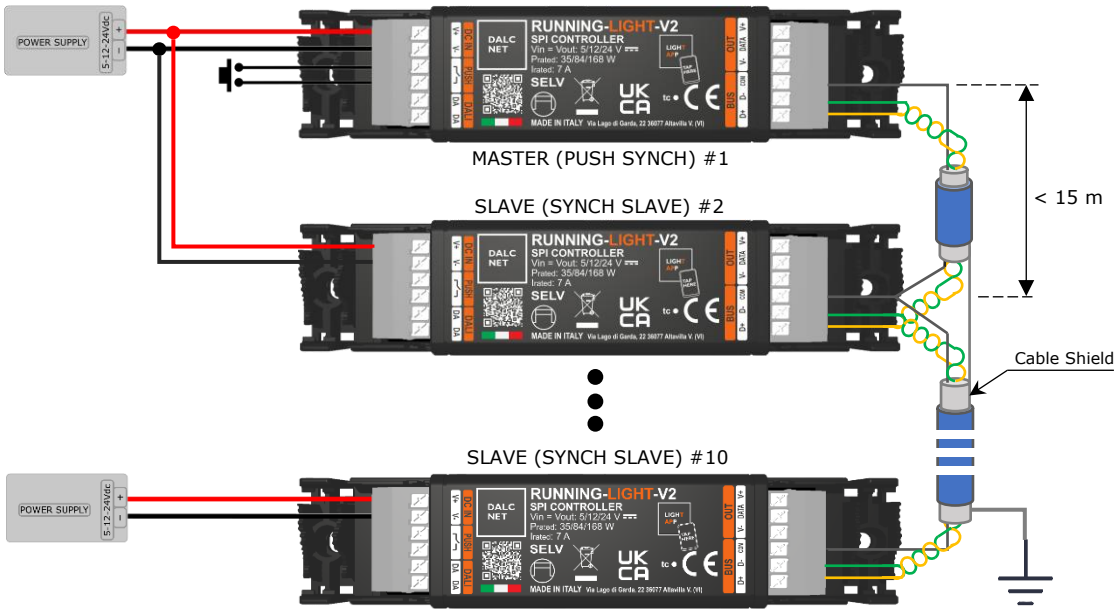


Figure 4: Synch wiring diagram with 3-wire shielded cable

Diagram with 2-wire (twisted pair) shielded cable

In case of twisted pair shielded cable (no Common wire) connecting the RUNNING-LIGHT-V2 devices, wire the COM signals to the cable's shield and the twisted pair to the D+ and D- signals on BUS terminals.

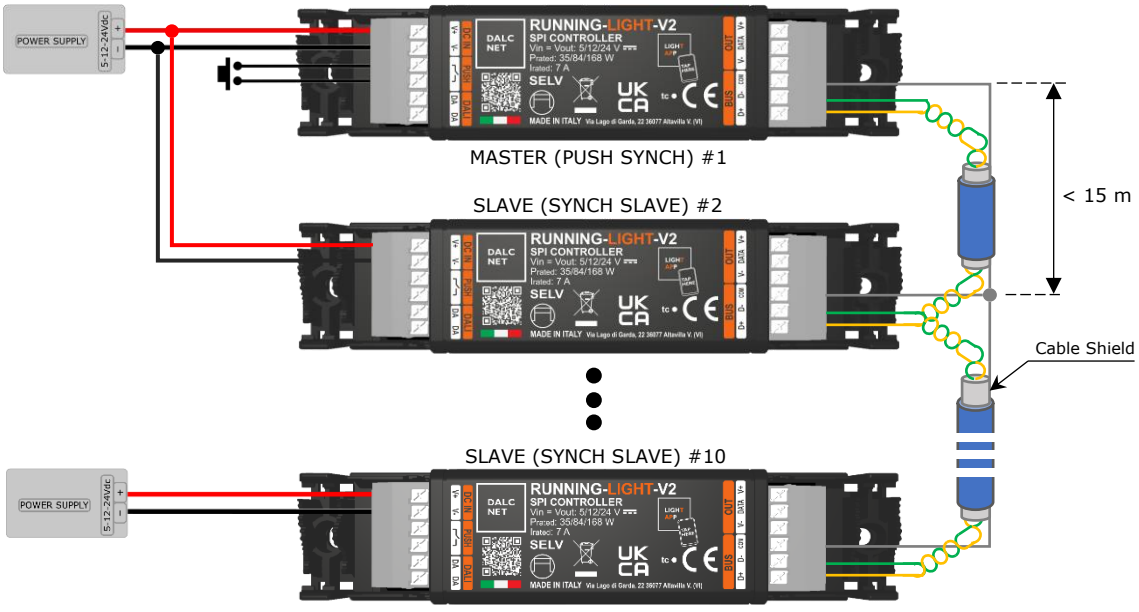


Figure 5: Synch wiring diagram with 2-wire shielded cable

REPEATER WIRING

With this type of wiring it is possible to control RUNNING-LIGHT-V2 from a N.O. pushbutton or via DALI protocol, by appropriately setting the Control Type parameter on the controller via NFC tap with LightApp:

- Pushbutton control: set the Control Type parameter to *PUSH REPEATER*
- DALI control: set the Control Type parameter to *DALI REPEATER*

To wire the DALI button or bus, follow these steps:

1. Button Wiring: Connect the button to the PUSH terminal with the symbol ⌐¬ (Control Type *PUSH REPEATER* only).
2. DALI wiring: On RUNNING-LIGHT-V2, connect the DALI bus cables to the "DA" terminals of the "DALI" terminal block (Control Type *DALI REPEATER* only).

Optionally, you can duplicate the effects on a second digital LED strip up to 250 m away from the controller using a PIXEL-REPEATER module (sold separately). The effects on both LED strips can be controlled directly from the RUNNING-LIGHT-V2 depending on the desired type of control (*PUSH REPEATER* or *DALI REPEATER).*
The following paragraphs show the bus wiring diagrams from the PIXEL-REPEATER (optional) to the RUNNING-LIGHT-V2 controller, load and power supply controllers. We recommend that you follow these steps to install the product safely:

1. Load wiring: connect the Digital-LED strip signal to the "OUT" terminal, the power supply positive wire to the "V+" symbol, the negative wire to the "V-" symbol, and the Data-IN wire to the "DATA" symbol
2. BUS wiring: connect the PIXEL-REPEATER BUS signals to the "BUS" terminal on the controller using one twisted-pair shielded cable, wiring the D+ (Data-B) signal to the "D+" symbol, the D- (Data-A) to the "D-" symbol, and the COM (Common) signal to one of the "V-" terminals through the cable shield (recommended for signal balancing).
3. Power Supply wiring: connect a 5 Vdc, 12 Vdc, 24 Vdc or 48Vdc constant voltage SELV power supply (depending on the nameplate data of the LED load) to the "V+" and "V-" terminals of the DC IN terminal.

PIXEL-REPEATER device can be powered by a dedicated DC power supply. Make sure that the rating data of the power source comply with the nameplate of module/Digital-LED strip.

BUS terminal is a RS485 interface and one twisted-pair shielded cable shall be used. RS485 shielded cable can be used too.

Keep the distances between the device and the unshielded portion of twisted pair as short as possible.

Only one control at a time, Pushbutton or DALI, will be operational depending on the Control Type configured via LightApp.

In case of one twisted-pair shielded cable (no Common wire), wire the twisted pair to the D+ and D- signals on BUS terminals. The COM signal can be connected to any "V-" terminal of the PIXEL-REPEATER device using the cable shield to improve the signal balance on the BUS.

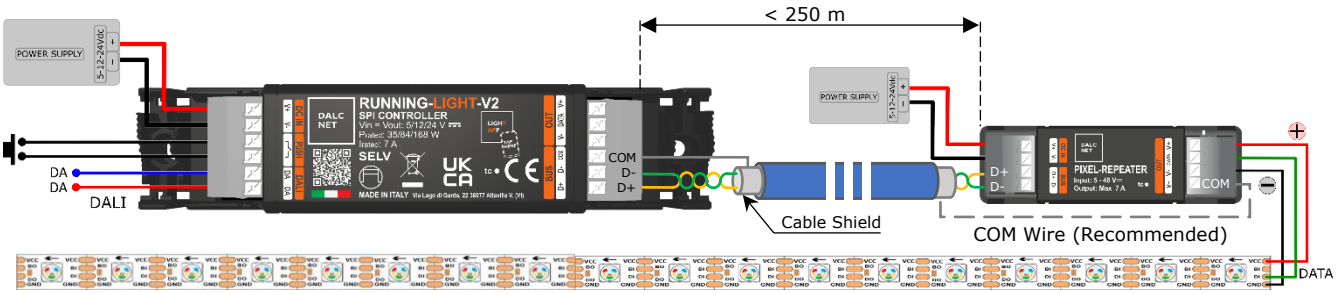


Figure 6: PIXEL-REPEATER wiring diagram

For higher Load current (> 7A) it is recommended to use the following connection diagram, bypassing the V+ and V- signals of the OUT terminal and connecting the Digital-LED strip Supply Voltage terminals directly to the Power Supply.

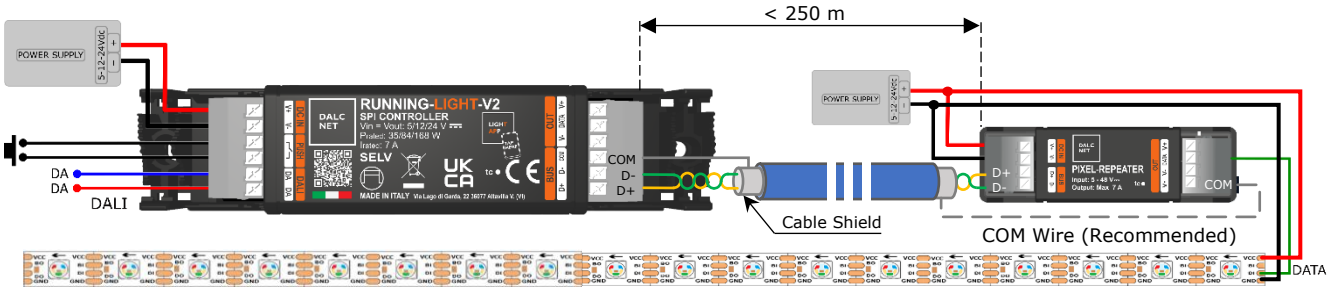


Figure 7: PIXEL-REPEATER wiring diagram (> 7A)

DMX WIRING

With the DMX control types selection, the RUNNING-LIGHT-V2 and the Digital-LED strip connected can be controlled via DMX512 bus, using the BUS terminal as control bus with an external DMX Master.
Two operating modes are available by setting the Control Type parameter value:

- *DMX TO SPI* Control Type: RUNNING-LIGHT-V2 works as a DMX to SPI converter to achieve a custom dynamic effect. Depending on the number of color channels available on the IC-LED (3 for RGB, 4 for RGBW, 2 for TW, and 1 for WWW/Monochrome), each DMX channel controls one color on the IC-LED.
- *DMX SMART MAP* Control Type: all the effect parameters are mapped over up to 13 DMX addresses to set the effect on the Digital-LED. Up to four maps are available (RGB, RGBW, TW, and WWW).

The following paragraph shows the wiring diagram of the RUNNING-LIGHT-V2 to be used with DMX control operating mode.

RUNNING-LIGHT-V2 can communicate over DMX digital bus by means of a three-wire, twisted and shielded cable, with a nominal impedance of 110 Ω.

To connect RUNNING-LIGHT-V2 to the DMX network, simply connect the bus cables to the terminals of the "BUS" terminal block: since no other topologies other than Bus-wiring are possible, the polarity of the "COM", "D+" and "D-" signals must be respected during connection.

Keep the distances from the device to the unshielded portion of twisted pair as short as possible.

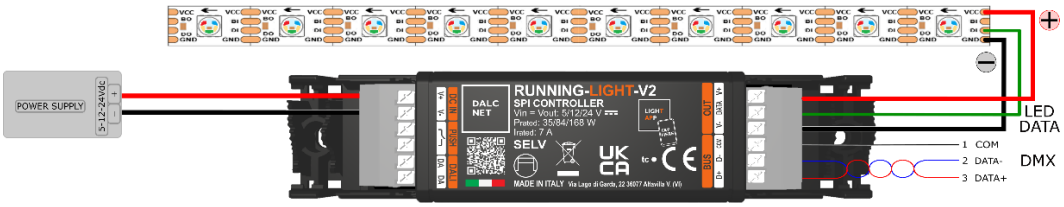


Figure 8: DMX bus wiring diagram

LOCAL CONTROL WIRING NOTES

RUNNING-LIGHT-V2 can be controlled via Local Control with one Normally Open (N.O.) pushbutton or voltage-free dry contact. No other voltage signals shall be applied to these contacts.

To connect the RUNNING-LIGHT-V2 to local control, simply connect the pushbutton to the INPUT terminal. The following image shows the indicated wiring diagram for short distances (<10 m).

Figure 9: Local Control wiring diagram for Short Distances

For longer distances (>10 m), it is recommended to use an N.O. dry contact relay module, connected between the "Input" terminal of the RUNNING-LIGHT-V2 and the power source (e.g. mains voltage 230 Vac). Following figure shows an example of a Local Command wiring recommended for long distances.

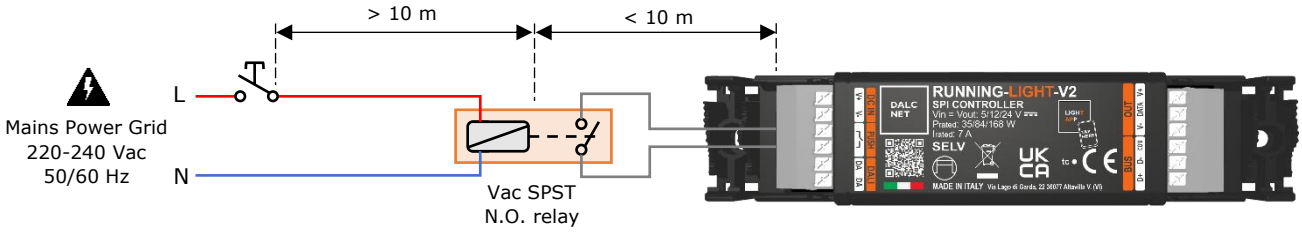


Figure 10: Local Command wiring diagram for Long Distances

DALI AND DMX WIRING TOPOLOGIES

RUNNING-LIGHT-V2 can be controlled remotely via DALI digital bus by means of a simple two-wire cable (untwisted and unshielded) or via DMX512 digital bus by means of a three-wire cable (twisted and shielded) with a nominal impedance of 110 Ω. I both cases, the control is carried out by means of a Master device (DALI or DMX), which provides commands to the devices in the network and, if necessary, in case of DALI network, the power supply[4] to the network itself.

DALI-BUS WIRING TOPOLOGIES

To connect RUNNING-LIGHT-V2 to the DALI network, simply connect the bus cables to the "DA" terminals of the "DALI" terminal: as different topologies are possible, it is not necessary to observe the polarity of the "DA+" and "DA-" signals of the bus when connecting.

DALI remote control works only if the Control Type "DALI REPEATER" is configured on the RUNNING-LIGHT-V2 device.

The DALI protocol supports several wiring topologies, i.e. Bus-wiring, shown as an example in Figure 11.

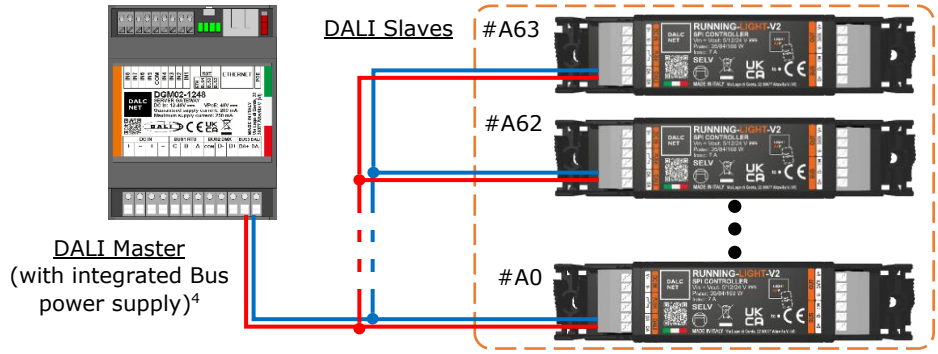


Figure 11: DALI wiring Topology, Bus-wiring

The DALI protocol supports up to 64 Control Gear slave devices (e.g. RUNNING-LIGHT-V2) connected with different wiring topologies shown in Figure 12: Bus-wiring, Star-wiring, Tree-wiring, or Line-wiring. Other topologies are excluded.

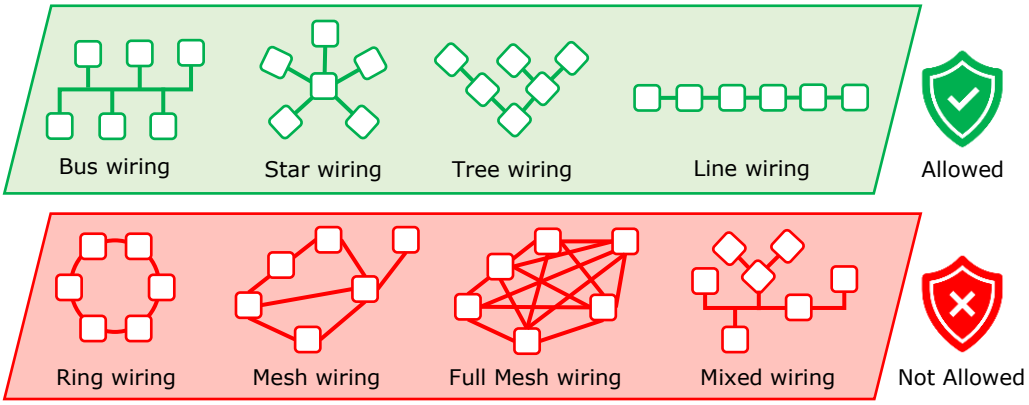


Figure 12: DALI wiring Topologies

DMX-BUS WIRING TOPOLOGY

To connect RUNNING-LIGHT-V2 to the DMX network, simply connect the bus cables to the terminals of the "BUS" terminal block: since no other topologies other than Bus-wiring are possible, the polarity of the "COM", "D+" and "D-" signals must be respected during connection.

Note that DMX remote control works only if the Control Type "DMX TO SPI" or "DMX SMART MAP" is configured on the RUNNING-LIGHT-V2 device.

The most used connectors are 3 and 5 pole XLR, where one pin is the cable shield (ground) and 2 pins are used for DMX signal transmission. In the case of 5-pole XLR, the other 2 pins are reserved for a secondary DMX balanced line[5].

[4] The bus can be powered by an external DALI power supply at 16 Vdc (or within the range of 12 ÷ 20 Vdc) or by a DALI Master with integrated bus power supply (e.g. DGM02-1248 shown in Figure 11). For more information, please visit our website: www.dalcnet.com.
[5] Optional, refer to chapter §4.8 of ANSI E1.11.

Signal Description	Pin# (3-Pin XLR)	Pin# (5-Pin XLR)	DMX Function
Common Reference	1	1	Datalink Common
Primary Datalink	2	2	Data 1-
	3	3	Data 1+
Secondary Datalink[5]	-	4	Data 2-
	-	5	Data 2+

Table 7: Three and Five pin XLR connector pinouts

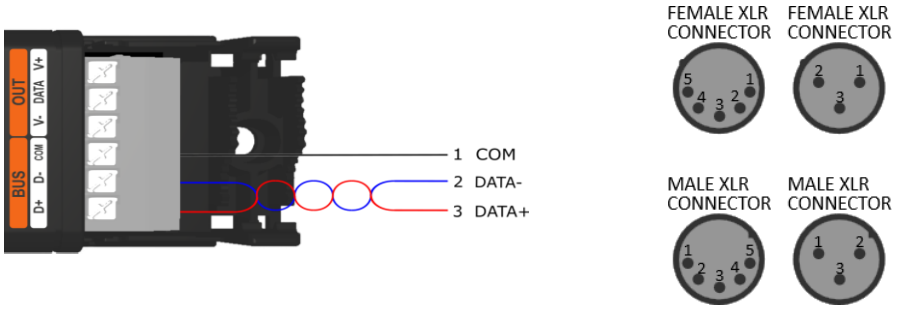


Figure 13: Bus Connection Pin-out and XLR Connectors

DMX protocol requires a single wiring topology, Bus-wiring, which is shown as example in the following figure.

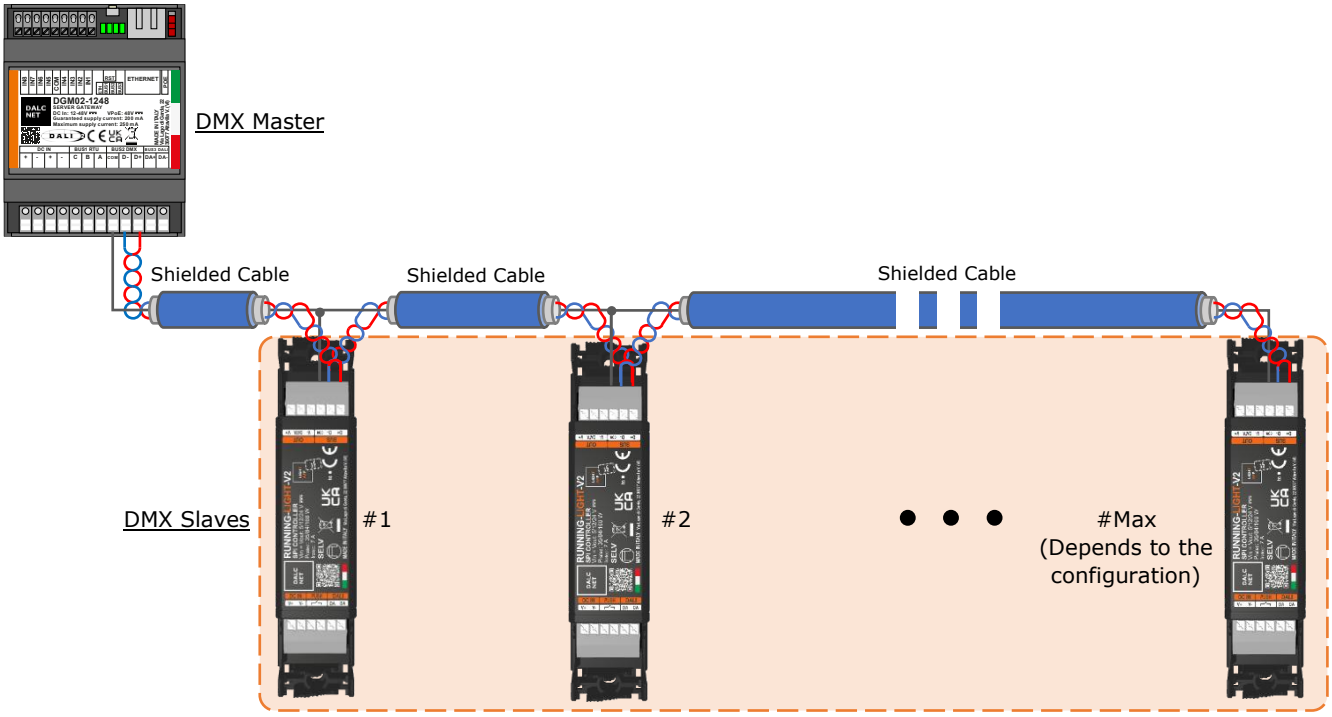


Figure 14: DMX Bus-wiring Topology

Power Supply Connection

RUNNING-LIGHT-V2 can be powered by a 5 Vdc, 12 Vdc or 24 Vdc constant voltage SELV power supply, depending on the operating voltage of the LED load. Once all above connections are performed, connect the power supply to the "+" and "-" terminals of the DC IN terminal.

Figure 15: Power Supply wiring Diagram

LOCAL CONTROL FUNCTIONALITY: PUSHBUTTON

RUNNING-LIGHT-V2 has one terminal for N.O. pushbutton or dry contact input, through which different operating parameters can be managed. Each action on the pushbuttons activates a specific function for the actual Effect configured via LightApp mobile app.

Note that the following Pushbutton functionalities are only available by configuring the RUNNING-LIGHT-V2 with Control Types "PUSH SYNCH", "SYNCH SLAVE", and "PUSH REPEATER" (refer to §Control Settings and §Push mode sections).

PUSHBUTTON FUNCTIONALITIES FOR "STATIC" AND "STATIC2"

The following table shows the functionality of the buttons for the Static and Static2 effects.

ACTION	FUNCTION
 Quick push	Turns the LED module ON/OFF (with Fade IN/OUT). A quick press during Fade IN brings the LED module to the set value, during Fade OUT it turns off the module.
 Long push	Brightness adjustment (Dimming)
 Double quick push	Turns the LED module ON/OFF (without Fade IN/OUT).
 Triple quick push	Change the effect (only available if the "Triple Push" button mode is selected). The list of effects can be configured from the LightApp mobile app.

Table 8: Pushbutton functionality for "STATIC" and "STATIC2" effects

PUSHBUTTON FUNCTIONALITIES FOR "FILL PARTIAL" EFFECT

In *Fill Partial* effect, the pushbuttons take over ON/OFF control functions, to adjust the brightness and to set the Partial sector length.

ACTION	FUNCTION
 Quick push	From OFF: starts the effect (once) without a partial sector. With partial sector moving: stops the partial sector. A subsequent quick press turns off the LED module.
 Long push (> 1s)	From ON: adjusts the brightness of the entire strip (Dimming). From OFF: configure the partial sector on the LED strip. The LEDs start lighting up one at a time to create the partial sector on the LED strip.
 Double quick push	From OFF: no effect. With partial sector moving: stops the partial sector. With Partial Sector stopped: starts the effect on the configured partial sector.
 Triple quick push	Change the effect (only available if the "Triple Push" button mode is selected). The list of effects can be configured from the LightApp mobile app.

Table 9: Pushbutton functionality for "FILL PARTIAL" effect

PUSHBUTTON FUNCTIONALITIES FOR "FILL", "HORSE RACE", "PLASMA", "WAVE", "RAINBOW" AND "FIRE" EFFECTS

With *Fill*, *Horse Race*, *Plasma*, *Wave*, *Rainbow,* and *Fire* effects the pushbutton takes over the Start (ON)/OFF the effect.

ACTION	FUNCTION
 Quick push	Starts/Stops the effect on the LED module ON/OFF (with Fade OUT).
 Long push	Brightness adjustment (Dimming)
 Triple quick push	Change the effect (only available if the "Triple Push" button mode is selected). The list of effects can be configured from the LightApp mobile app.

Table 10: Pushbutton functionality for "FILL", "HORSE RACE", "PLASMA", "WAVE", "RAINBOW" and "FIRE" effects

THERMAL CHARACTERIZATION

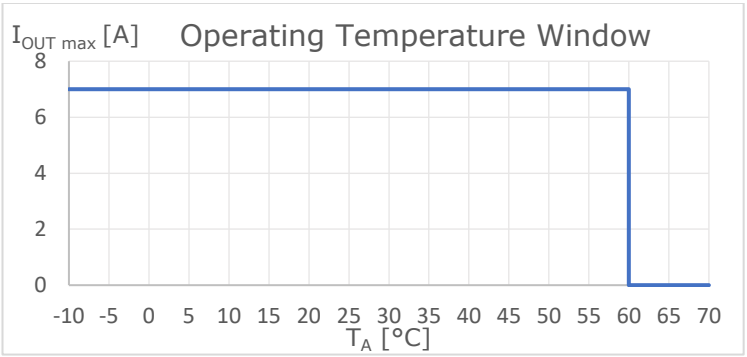


Figure 16: Operating Temperature Window

Figure 16 shows the maximum output current values that can be provided by the RUNNING-LIGHT-V2 as a function of the operating temperature[6] (or ambient temperature, T_A) of the operation, summarized below:

- T_A = (-10 ÷ +60) °C ⇢ $I_{OUT} \leq 7$ A

These maximum current (total) values can only be applied under proper ventilation conditions.

MECHANICAL DIMENSIONS

Figure 17 details the mechanical measurements and the overall dimensions [mm] of the outer casing.

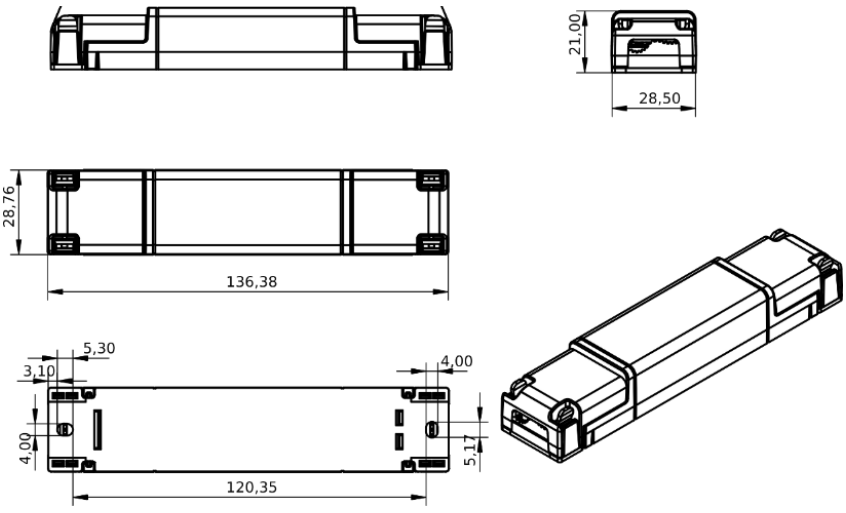


Figure 17: Mechanical dimensions

[6] If the product is installed inside an electrical panel and/or junction box, T_A refers to the temperature inside the panel/box.

TECHNICAL NOTES

INSTALLATION

ATTENTION! Installation and maintenance should always be carried out in the absence of DC voltage.
Before proceeding with the installation, adjustment, and connection of the device to the power supply, make sure that the voltage is disconnected from the system.

The device should only be connected and installed by qualified personnel. All applicable regulations, legislation, standards, and building codes in force in the respective countries must be adhered to. Incorrect installation of the device may cause irreparable damage to the device and connected loads.

Maintenance must only be carried out by qualified personnel in compliance with current regulations.

The product must be installed inside an electrical panel and/or junction box that is protected against surges/overvoltage.

The product is suitable for use in dry places, away from sources of moisture. Installation and use must take place in a dry environment.

The external power supply must be protected. The product must be protected by a properly sized circuit breaker with overcurrent protection.

Keep 230 Vac (LV) circuits and non-SELV circuits separate from SELV safety ultra-low voltage circuits and any product connections. It is strictly forbidden to connect, for any reason, directly or indirectly, the 230 Vac mains voltage to the product (control terminals included).

The product must be installed in a vertical or horizontal position, i.e. with the faceplate/label/top cover facing up or vertically. No other positions are allowed. The bottom position, i.e. with the faceplate/label/top cover facing downwards, is not allowed.

During installation, it is recommended to reserve adequate space around the device to facilitate its accessibility in case of future maintenance or updates (e.g. via smartphone).

Use in thermally harsh environments may limit the output power of the product.

For devices embedded within luminaires, the T_A ambient temperature range is a guideline to be carefully observed for the optimal operating environment. However, the integration of the device within the luminaire must always ensure proper thermal management (e.g. correct mounting of the device, proper ventilation, etc.) so that the temperature at the T_C point does not exceed its maximum limit under any circumstances. Proper operation and durability are only guaranteed if the maximum temperature of the T_C point is not exceeded under the conditions of use.

POWER SUPPLY AND LOAD

The device must be powered only with SELV power supplies with limited current at constant voltage, short-circuit protected and suitably sized power according to the specifications indicated in the product data sheet. No other types of power supply are permitted.

Size the power of the power supply respect to the load connected to the device. If the power supply is oversized compared to the maximum current drawn, insert an overcurrent protection between the power supply and the device.

Connecting to an unsuitable power supply may cause the device to operate outside of the specified design limits, voiding its warranty.

In the case of power supplies equipped with earth terminals, it is mandatory to connect ALL the protection earth points (PE= Protection Earth) to a state-of-the-art and certified earthing system.

The power cables of the device must be correctly sized with reference to the connected load and must be isolated from any wiring or equal to non-SELV voltage. It is recommended not to exceed 10m of connection between the power source and the product. Use double-insulated cables. If you want to use connection cables between the power source and the product longer than 10m, the installer must ensure the correct operation of the system. In any case, the connection between the power supply and the product must not exceed 30m.

The manufacturer recommends ensuring a cumulative leakage current of less than 3.5 mA on the control circuit.

The device has been designed to work with Digital-LED loads only. Connecting and powering unsuitable loads may cause the device to operate outside of the specified design limits, voiding its warranty. In general, the operating conditions of the device should never exceed the specifications indicated in the product data sheet.

Observe the intended polarity between the LED module and the device. Any polarity reversal results in no light emission and can often damage the LED modules.

It is recommended that the connection cables between the product and the LED module be less than 3m long. Cables must be properly sized and should be insulated from any non-SELV wiring or parts. It is recommended to use double-insulated cables. If you want to use connection cables between the product and the LED module longer than 3m, the installer must ensure the correct operation of the system. In any case, the connection between the product and the LED module must not exceed 30m.

It is not allowed to connect different types of loads in the same output channel.

LOCAL CONTROL AND BUS

The length of the connection cables between the local control (N.O. pushbutton) and the product must be less than 10m. For longer lengths, we recommend the use of an N.O. Dry Contact Relay module, connected between the "PUSH" terminal of the device (dry contact side of the relay) as shown in Figure 5. The cables must be sized correctly. Depending on the connection used, they must be isolated from any wiring or non-SELV voltage parts. It is recommended to use double-insulated cables, if deemed appropriate, also shielded.

All devices and control signals connected to the PUSH terminal with the symbol , must not supply any type of voltage.

The length and type of cables connecting to the buses must comply with the specifications of the respective protocols and current regulations. They must be isolated from any non-SELV wiring or live parts. It is recommended to use double-insulated cables.

All control devices and signals connected to the buses (DALI, DMX, or SYNCH) must be of the SELV type (the connected devices must be SELV or in any case provide a SELV signal).

It is strictly forbidden to connect, for any reason, directly or indirectly, any type of Voltage supply to the BUS terminal block.

The length and type of the connection cables at the BUS terminal wired as DMX connection must comply with the specifications of the respective protocols (i.e. by means of a three-wire, twisted and shielded cable, with a nominal impedance of 110 Ω) and current regulations. They must be isolated from any wiring or non-SELV live parts. It is recommended to use double-insulated cables.

The length and type of the connection cables at the BUS terminal wired as Master/Slave configuration (SYNCH) must be less than 15m and they must be isolated from every wiring or not-SELV voltage parts. To improve disturbance immunity at BUS side, the 3-wire double insulated twisted and shielded cables are recommended, with shield connected together and to the Earth Ground at one end only.

The length and type of the connection cables at the extension BUS connected to the PIXEL-REPEATER must be less than 250m and they must be isolated from every wiring or parts at voltage not SELV. To improve voltage balance at BUS side, the double insulated twisted-pair shielded cables shall be used, with shield connected to the COM terminals of the controller and the PIXEL-REPEATER.

NFC (Near Field Communication) Warnings

The NFC antenna is located inside the device, the contact surface of which is indicated with the symbol 

Position your smartphone so that its NFC antenna is in contact with the symbol on the device.

The location of the NFC sensor on the smartphone is dependent on the make and model of the smartphone itself. Therefore, it is recommended to refer to your smartphone's manual or the manufacturer's website to accurately determine where the NFC sensor is located. In most cases, the NFC reader is located on the back side near the top of the smartphone.

NFC technology works optimally with non-metallic materials. Therefore, it is not recommended to place the device near metal objects or reflective surfaces when using NFC.

For reliable communication, make sure that the contact surface is not covered or that it is free of metal objects, wiring, or other electronic devices. Any impediments could affect the quality of communication.

NFC technology works at a short distance, generally within a few centimeters. Make sure your device and smartphone are close enough to allow communication.

During firmware update and configuration, you should maintain stable contact (possibly without movement) between your smartphone and the device for the entire duration of the process (typically between 3 and 60 seconds). This ensures that the update goes smoothly and that the device is ready to use after the process is complete.

LEGAL NOTES

Terms of Use

Dalcnet Srl (hereinafter referred to as "the Company") reserves the right to make changes to this device, in whole or in part, without prior notice to the customer. Such changes may affect technical aspects, functionality, design, or any other element of the device. The company is not required to notify you of such changes and your continued use of the device will constitute your acceptance of the changes.

The company is committed to ensuring that any changes do not compromise the essential functionality of the device and that they comply with applicable laws and regulations. In the event of substantial changes, the company undertakes to provide clear and timely information on the same.

The customer is advised to periodically consult the www.dalcnet.com website or other official sources to check for any updates or changes to the device.

SYMBOLS

CE	All products are manufactured in compliance with European Regulations, as reported in the Declaration of Conformity.
UK CA	All products are manufactured in compliance with UK Regulations and conform to UK safety, health, and environmental requirements for products sold in the UK, as reported in the UK Conformity Assessed.
	Independent lamp Controlgear: lamp controlgear consisting of one or more separate elements so designed that it can be mounted separately outside a luminaire, with protection according to the marking of the lamp controlgear and without any additional enclosure.
SELV	"Very Low Safety Voltage" in a circuit isolated from the mains supply by insulation not less than that between the primary and secondary circuits of a safety isolation transformer according to IEC 61558-2-6.
	At the end of its useful life, the product described in this data sheet is classified as waste from electronic equipment and cannot be disposed of as unsorted municipal solid waste. **Warning!** Improper disposal of the product may cause serious harm to the environment and human health. For proper disposal, inquire about the collection and treatment methods provided by the local authorities.

Table 11: Device's symbols

LIGHTAPP

LightApp is the official Dalcnet application through which it is possible to configure, in addition to the functions of the RUNNING-LIGHT-V2, also all the different Dalcnet products equipped with NFC technology.

Dalcnet LightApp can be downloaded free of charge from the Apple App Store and Google Play Store.

GET IT ON Google Play

Available on the App Store

START-UP AND APP OVERVIEW

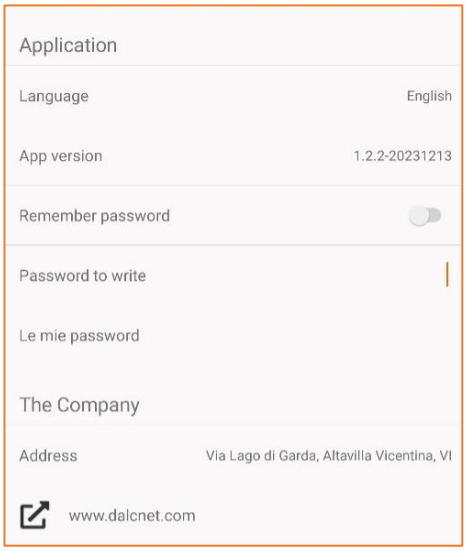
START SCREEN - CONFIGURE

On this screen, the app waits for the device parameters to be read.

To read the parameters, simply bring the back of the smartphone close to the device's label. The read-sensitive zone of the smartphone may vary depending on the model.
Once the connection is established, a quick loading screen will appear. You must remain in position with your smartphone until the parameters are fully loaded.

iOS variant: To read the parameters, you need to press the SCAN button at the top right. A pop-up will appear indicating when your smartphone is ready to scan. Move the smartphone closer to the device and remain in place until the parameters are fully loaded.

SETTINGS



On the Settings page, you can:

- Setting the language of the app (Italian or English)
- View the app version
- Enable password saving on your smartphone
- Setting the Password for Writing Parameters
- View your saved passwords
- View the references of the distribution company (Dalcnet Srl)

FIRMWARE UPLOAD

On the firmware page, you can update the firmware of your device.

The requested file must be of type **.bin* and can be downloaded from the official page of the device, which can be reached by scanning the QR code on the product.

Once the file has been uploaded, simply follow the on-screen instructions.

ATTENTION:

- **Once the upload has started, it will not be possible to pause it.**
- **If the process is interrupted, you will need to repeat the upload process. Alternatively, power cycle your device 4 times to restore the previous Firmware.**
- **At the end of the firmware loading, all previously set parameters will be retained.**

If the update was successful and the loaded version is different from the previous one, the next time you turn on the device you will see a series of flashes on the connected load.

HOW TO LOAD DEVICE PARAMETERS

READ

With the app in READ mode, the smartphone will scan the device and show its current configuration on the screen.

WRITE

In WRITE mode, the smartphone will write the parameter configuration set on the screen to the device.

In normal mode (*Write All* switched OFF) the app writes only the parameters that have changed since the previous read. In this mode, the write will only be successful if the serial number of the device matches the one previously read.

In *Write All* mode, all parameters are overwritten. In this mode, the write will only be successful if the device model matches the one previously read.
It is recommended to activate the *Write All* mode only when you need to replicate the same configuration on many devices of the same model.

WRITE PROTECTION

By means of the "padlock" button it is possible to set a protection when writing parameters. A screen will appear for entering a 4-character password. Once this password has been written into the device, all subsequent parameter changes can only be made if the correct password is written on the app's Settings page.

To remove the password lock, simply press the lock key and leave the Password field blank.

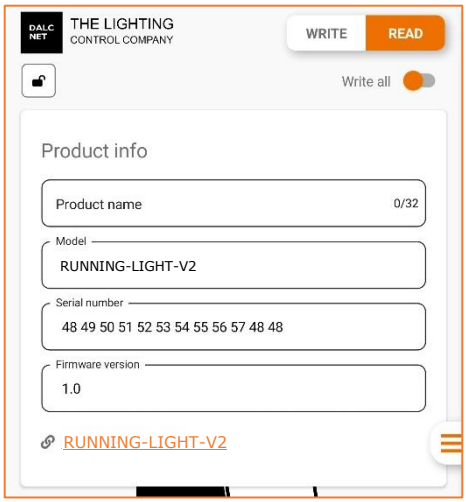
WRITE ERROR

After writing the parameters, if the load connected to the device flashes continuously at a frequency of 2 times per second when it is turned ON again, it means that the writing was not successful. Therefore, you will need to perform the following steps:

1. Turn OFF the device.
2. Perform a parameter rewrite.
3. Wait for the write to be successful or for no error messages to appear.
4. Turn the device back ON.

If that doesn't work, you can perform a factory reset by quickly turning the device OFF and ON 6 times.

PRODUCT INFORMATION



On the *Product Information* section, you can view a variety of information about the device you are about to configure.

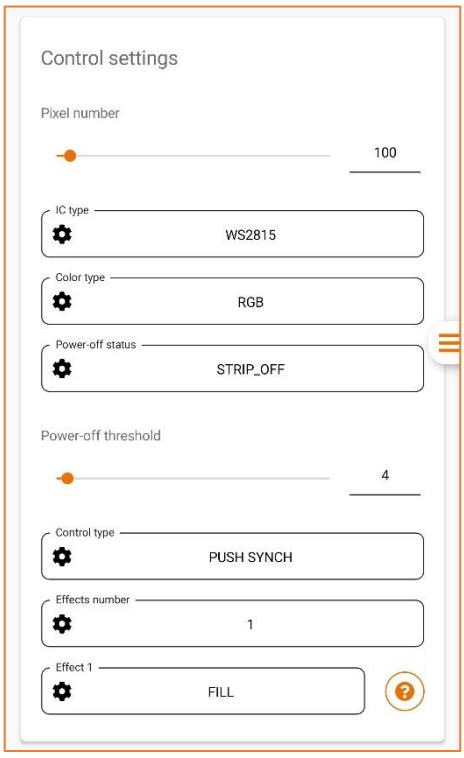
Product Name: User-settable field for easy identification (e.g. Office, Meeting Room, Lobby, etc.). By default, the product name is the same as the Model field.

Model: the model of the device (non-editable field).

Serial Number: uniquely identifies the device (non-editable field).

Firmware Version: identifies the firmware version currently loaded on the device (non-editable field).

CONTROL SETTINGS



In the *Control Settings* section, you can configure different parameters for the RUNNING-LIGHT-V2.

Pixel number: allows to set the total number of IC (Integrated Circuit) LEDs mounted on the Digital-LED strip.

IC Type: sets the IC LED family mounted on the Digital-LED Strip (refer to Table 4 and Table 5).

Colour type: allows to select the Colour type (RGB, RBG, ecc.) of Digital-LED strip (refer to Table 4).

Power-off status: sets the LED status when the device is turned off.
STRIP_OFF: turns OFF the LED module completely
BACK COLOR AT MIN: turns OFF the foreground and sets the background to the level set by the following parameter (Power-off threshold)

Power-off threshold: sets the minimum dimming value.

Control type: sets the operating mode of the device (PUSH SYNCH, PUSH REPEATER, SYNCH SLAVE, DALI REPEATER, DMX TO SPI, DMX SMART MAP). Refer to the different wiring diagrams (refer to §Installation section).

Effects number: allows to select how many Effects will be displayed on the Digital-LED strip, from 1 to 8 (not available with "DMX TO SPI" control).

Effect 1…8: set the Effect from the following list[7]:

- FILL
- FILL-PARTIAL
- STATIC
- RAINBOW
- WAVE
- PLASMA
- FIRE
- HORSE RACE
- STATIC 2

First you need to set (in this order) the *IC type*, *Colour Type*, and *Pixel Number* parameters as detailed in the following sections.

IC TYPE SETUP

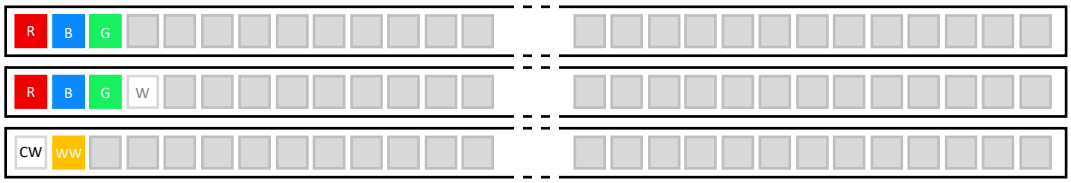
First, you have to setup the IC type parameter with the correct IC mounted on your Digital-LED strip. On the nameplate of the connected Digital-LED strip, check which IC LED family is mounted. Then tap on "IC type" menu and select the correct IC name. If you don't find in the menu the IC family mounted on your Digital-LED strip, check the compatibility on the Table 5 and select the compatible IC value on the menu.

[7] For the development of new custom effects, please feel free to contact us.

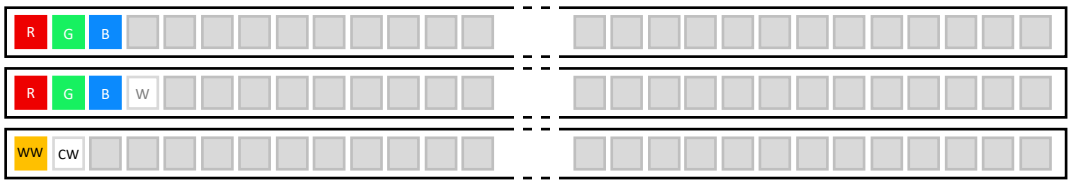
COLOUR TYPE SETUP

Second, the "Colour type" parameter needs to be set. This parameter sets the channel sequence of the basic colour mapped on the IC-LED. To set the Colour type, verify the nameplate of the Digital-LED strip and select the value accordingly. If the value is not present on the strip nameplate or you want to verify if the selected colour type is correct for the Digital-LED strip, perform the following steps:

1. Tap on the "Colour type" menu, select a different value from "RGB" (default value), then select the color sequence "RGB" for RGB Digital-LED strip ("RGBW" for RGBW LEDs, or "WW-CW" Warm White - Cool White for TW LEDs).
2. Look at the LED strip, for few seconds the first pixels on Digital-LED strip will light with the colour sequence equal to the correct "Colour type" value to be selected in the menu (e.g. RBG/RBGW/CW-WW in the following example).



3. Select the colour sequence you see lighted in the LED strip in the "Colour Type" menu.
4. The first pixels now will light with the right colour sequence. When you see the RGB, RGBW, or WW-CW colour sequence on the LED strip, it was set correctly.

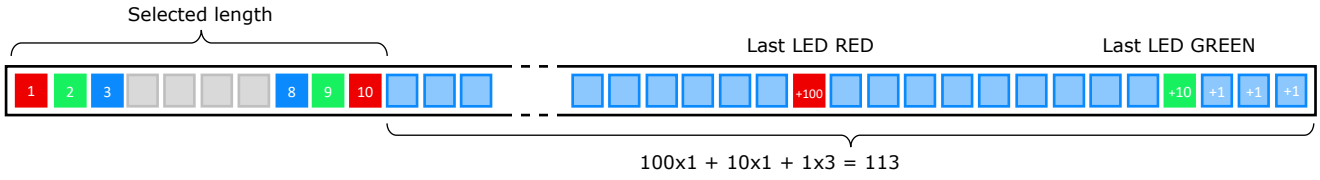


PIXEL NUMBER SETUP

Third, you have to set the "Pixel Number" parameter (100 by default). This parameter sets the total number of IC-LEDs mounted on the Digital-LED strip. To set the "Pixel Number", verify the nameplate of the Digital-LED strip and select the value accordingly. If the value is not present on the strip nameplate, the strip length was modified or you want to verify the total Pixel Number mounted on the Digital-LED strip, perform the following procedures.

How to setup Pixel Number on RGB/RGBW Digital-LED strips

1. From the "Number of Pixels" menu, set a low-medium value (e.g. 10), then write the parameter on the device via NFC.
2. Look at the LED strip, for few seconds the strip will light according to the value set. The first sector of the LED strip will be lighted at the length you selected, delimited by three pixels R-G-B-...-B-G-R. The rest of the LED strip will light according to the following legend:
   a. +100 Red LED: after the initial sector, indicates the Hundreds to be added to the current Pixel Number
   b. +10 Green LED: after the last RED LED, indicates the Tens to be added to the current Pixel Number
   c. +1 Blue LED: after the last GREEN LED, indicates the Units to be added to the current Pixel Number



3. Count the total Red LED lighted on the LED strip (after the selected length); then count the total Green LED lighted after the last Red LED; at the end, count the total Blue LED lighted after the Last Green LED. Adding the number of LEDs just counted associated with their value (e.g. 100x1 + 10x1 + 1x3 = 113 in the example above) gives you the value to be added to the current Pixel Number (e.g. 10+113=123).

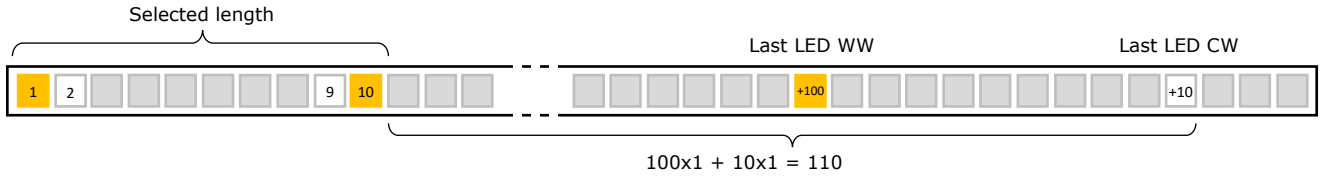
   Note: alternatively, you can repeat the steps from 1 to 3 counting and setting the value separately for each red, green, and blue colour depicted above. Firstly, counting after the selected length all the Red LEDs (+100 each LED) to be added and setting the Pixel Number (e.g. 10+100=110); then counting the remaining Green LEDs (+10 each LED) and setting the

corresponding value (e.g. 110+10=120), and finally counting the remaining Blue LEDs (+1 each LED) to be added and updating the Pixel Number (e.g. 120+3=123) with the right value.

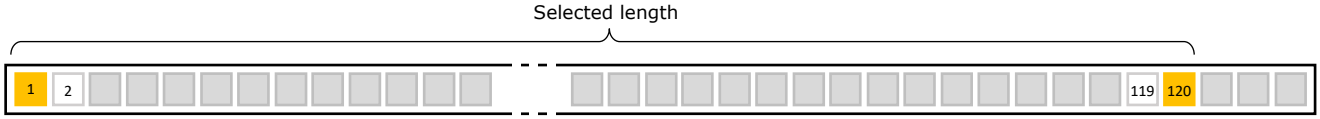
4. Tap on the "Pixel Number" menu and set the correct value (e.g. 123).

How to set the Pixel Number on Tunable White (TW) Digital-LED strips

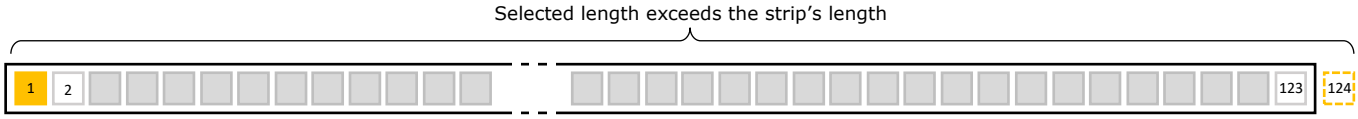
1. From the "Number of Pixels" menu, set a low-medium value (e.g. 10), then write the parameter on the device via NFC.
2. Look at the LED strip, for few seconds the strip will light according to the value set. The first sector of the LED strip will be lighted at the length you selected, delimited by two pixels WW-CW-...-CW-WW. The rest of the LED strip will light according to the following legend:
   a. +100 LED WW (Warm White): indicates the Hundreds to be added to the current Pixel Number
   b. +10 LED CW (Cool White): after the last WW LED, indicates the Tens to be added to the current Pixel Number



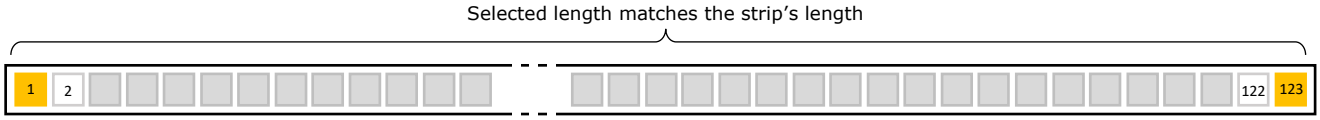
3. Count the total WW LED lighted on the LED strip (after the selected length); then count the total CW LED lighted after the last WW LED. Adding the values associated with the number of LEDs just counted (100x1+10x1=110 in the example above) gives you the value to be added to the current Pixel Number (e.g. 10+110=120).
4. Tap on the "Pixel Number" menu and set the obtained value (e.g. 120).
5. Look at the LED strip, for few seconds the strip will light according to the value set with first sector of the LED strip (delimited by pattern WW-CW-...-CW-WW) will be lighted at the length you selected.



6. Change the "Pixel Number" value (e.g. 124) by adding units until the Warm White (WW) LED at the end of the sector disappears from the Digital-LED strip.

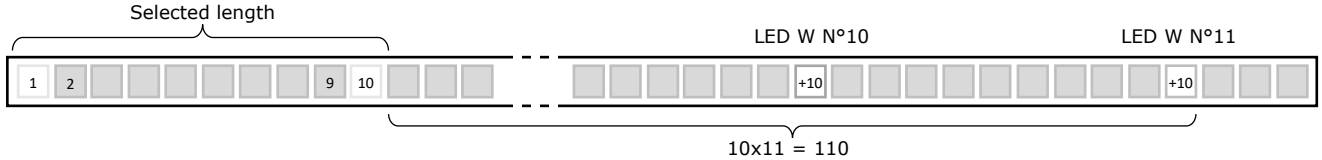


7. Change the "Pixel Number" value (e.g. 123) by subtracting one unit to make the last WW LED at the end of the sector visible again.

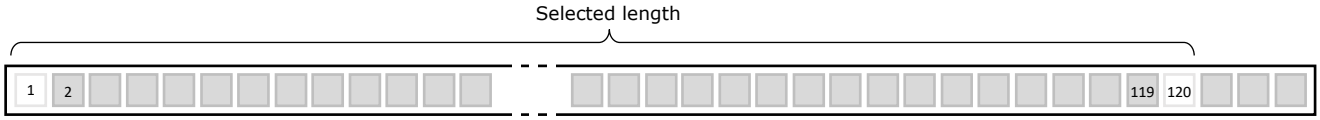


How to Set the Pixel Number on Monochrome (WWW) Digital-LED Strips

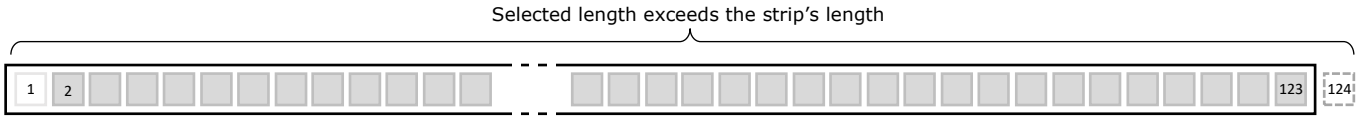
1. From the "Number of Pixels" menu, set a low-medium value (e.g. 10), then write the parameter on the device via NFC.
2. Look at the LED strip, for few seconds the strip will light according to the value set. The first sector of the LED strip will be lighted at the length you selected, delimited by two pixels W-...-W with highest intensity (100%). The rest of the LED strip will light according to the following legend:
   a. +10 W (White/Monochrome) LED, 50% intensity: indicates the Tens to be added to the current number of pixels



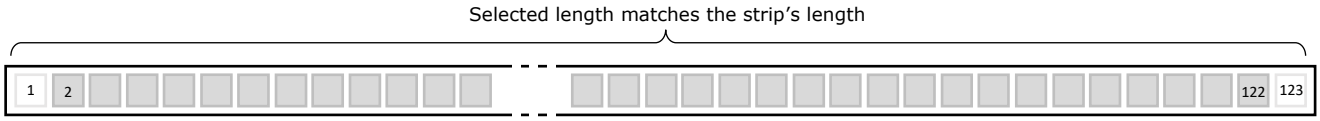
3. Counts the total W LEDs lit with the lowest intensity (about 50%) on the LED strip (after the selected length). Adding the values associated with the number of LEDs just counted (e.g. 10x11=110 in the example above) gives the value to be added to the current Number of Pixels (e.g. 10+110=120).
4. Tap the "Number of Pixels" menu and set the value obtained (e.g. 120) via NFC.
5. Look at the LED strip, for a few seconds the strip will light up according to the set value, with the first sector of the LED strip (bounded by the W-...-W pattern) lighting up at the selected length with maximum intensity (100%).



6. Change the "Number of Pixels" value (e.g. 124) by adding units until the White LED (W) at the end of the sector disappears from the LED strip.

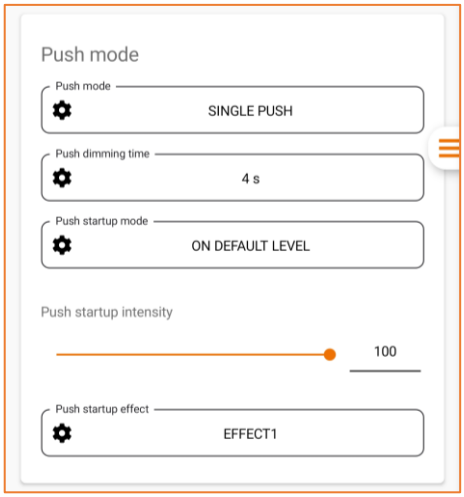


7. Change the "Number of Pixels" value (e.g. 123) by subtracting one unit to make the last W LED visible again at the end of the sector.



PUSH MODE

On the *Push mode* section, you can configure the pushbutton parameters for the effect selected (available only with "PUSH SYNCH", "SYNCH SLAVE", and "PUSH REPEATER" control types).



Push mode: allows to select the Effect change mode (SINGLE or TRIPLE PUSH).

Push dimming time: time taken to go from the minimum level set to 100% (and vice versa). With Control Type *SYNCH SLAVE*, the Slave device inherits the value of the Master.

Push startup mode: allows you to select the starting behavior of the LED strip after powering on.

OFF: when the controller is Powered ON, the LED module remains off.
ON DEFAULT LEVEL: when the controller is Powered ON, the LED strip lights up at the value set by the "Push startup intensity" slider
ON LAST PWOFF LEVEL: when the controller is Powered ON, the LED module lights up at the last value set before powering OFF.

Push startup intensity: sets the intensity of the digital LED strip after powering on (from 0 to 100%, only available for ON DEFAULT LEVEL).

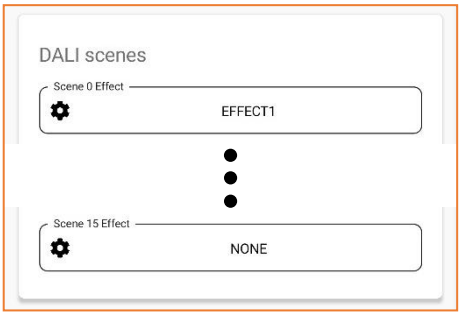
Push startup effect: Set the startup effect after powering on.

EFFECT1: the start effect is the one selected as Effect1 (see §Control Settings section)
LAST PWOFF EFFECT: the start effect is the last active effect before powering OFF.

DALI

On the *DALI* section, you can configure all the DALI parameters and scenes (available only with "DALI REPEATER" control type).

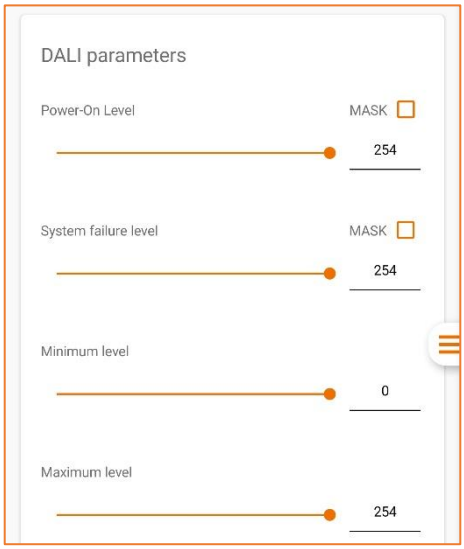
DALI SCENES



On the *DALI scenes* section, you can associate an effect for each DALI scene (available only with "DALI REPEATER" control type).

Scene 0...15 Effect: allows to set the light Effect (up to 8) to be associated to the DALI scene. The Effects type can be set in the §Control Settings section of LightApp.

DALI PARAMETERS



When "DALI REPEATER" is selected as control type, the following section appears on LightApp allowing to set the DALI parameters.

Power-On Level: this is the intensity value to which the output is brought as soon as the device is powered.

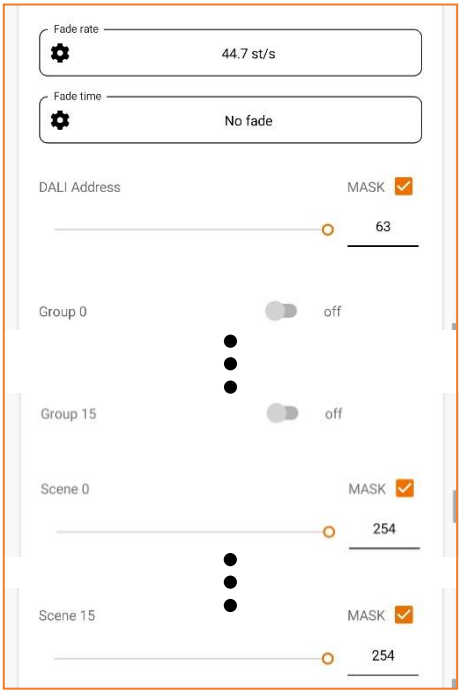
Mask: Enables or disables control.

System Failure Level: this is the intensity value to which the output is brought when a system error occurs.

Mask: Enables or disables control.

Minimum Level: sets the minimum level of light intensity that can be reached via remote control (default value = 1).

Maximum Level: sets the maximum level of light intensity that can be reached via remote control (default value = 254).



Fade rate: indicates the amount of light intensity levels into which the fade time should be divided.

Fade time: sets the time it takes for the output to make a transition from one light intensity level to another.

DALI Address: Sets the address associated with the device in the DALI network.

Mask: Enables or disables control.

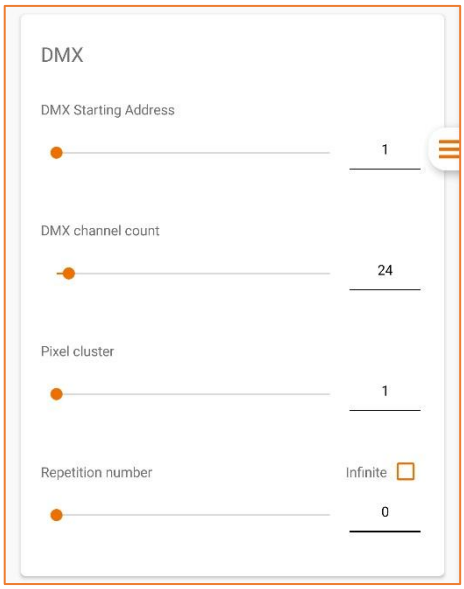
Group 0...15: allows to associate the device address with one or more groups.

Scene 0...15: allows to pair the Effect with one or more scenes.

Mask: Enables or disables control.

DMX

On the *DMX* section, you can set the DMX bus parameters (available only with "DMX TO SPI" and "DMX SMART MAP" control types).



DMX Starting Address: set the Starting Address of the device (from 1 to 512).

DMX channel count: represents the number of channels available in the DMX universe (from 1 to 512, not available with the "DMX SMART MAP" control type).

Pixel cluster: allows you to group the digital LEDs into clusters, indicating the number of pixels per cluster (from 1 to 1000, not available with the "DMX SMART MAP" control type).

Repetition number: allows you to create one or more repetitions of pixels (Pixel Grouping ≤ 1) or sectors (Pixel Grouping ≥ 1) on the LED strip (not available with the "DMX SMART MAP" control type).

Infinite: Set infinite repetitions.

DMX Smart Map: allows you to select the Smart map (RGB, RGBW, TW and WWW) to set effects through pre-configured DMX channels (not available with the DMX TO SPI control type).

Overview of Operating Modes

RUNNING-LIGHT-V2 has 6 operating modes, depending on the selected Control Type (PUSH SYNCH, PUSH REPEATER, SYNCH SLAVE, DALI REPEATER, DMX TO SPI and DMX SMART MAP). Each operating mode only works with the dedicated wiring type (refer to §Installation section).

PUSH SYNCH e SYNCH SLAVE

The Control Types "PUSH SYNCH" and "SYNCH SLAVE" allow you to configure the System in Master & Slave mode.
Up to 10 RUNNING-LIGHT-V2 (1 Master and 9 Slave) can be connected to achieve synchronized effects on 10 digital LED strips (see connection diagram in the §SYNCH wiring section).
This mode is particularly useful for creating synchronized lighting effects, setting functional delays between the effects managed by the devices and controllable by a single device through the button input.
The Control Type "PUSH SYNCH" activates the operating mode reserved for the RUNNING-LIGHT-V2 Master to control the connected RUNNING-LIGHT-V2 Slave devices via the push-button, which in turn are set with the Control Type "SYNCH SLAVE".

PUSH REPEATER

The "PUSH REPEATER" Control Type allows the RUNNING-LIGHT-V2 to be used in push-button mode, with the possibility of duplicating the effect on a second Digital-LED strip up to 250m away from the controller via the PIXEL-REPEATER module (optional).
The effect is transmitted through the expansion BUS and is duplicated in real time on the second LED strip connected to the PIXEL-REPEATER module (refer to connection diagram at §REPEATER wiring section).
However, it is possible to use this mode with the button control only, without the optional module attached.

DALI REPEATER

The Control Type "DALI REPEATER" allows you to control the RUNNING-LIGHT-V2 via the supplied DALI bus. Through the dedicated parameters it is possible to configure DALI Scenes with different effects, which can be set using the Dalcnet LightApp mobile application.
Like "PUSH REPEATER", "DALI REPEATER" also allows you to duplicate the effect on a second digital LED strip connected to the PIXEL-REPEATER module (optional) or to use RUNNING-LIGHT-V2 with DALI control only (refer to connection diagram at §REPEATER wiring section).
RUNNING-LIGHT-V2 currently only supports the "DT6" profile, future updates may be released in the future. The "DT6" profile allows you to adjust the light intensity for of all the effects set in the dedicated Dalcnet LightApp section.

Address	Function	Value
A0	INTENSITY	0…254

Table 12: DALI DT6 profile mapping

DMX TO SPI

The "DMX TO SPI" control type allows you to create dynamic custom effects that can be controlled through DMX channels. Parameters such as color, brightness, speed of the effect are then managed in synergy between the configuration of the DMX parameters on LightApp and the values sent through the DMX universe (refer to connection diagram at §DMX wiring section).
To configure this type of control correctly, follow the steps below:

1. Set the Starting Address via the Starting Address parameter in the DMX section of the LightApp.
2. Set the number of DMX channels available in the DMX universe to which RUNNING-LIGHT-V2 is connected, using the "DMX Channel count" parameter (N_{DMX-CH} in the tables below). This value represents the number of DMX addresses that you intend to use to manage the effect, the value of which is linked to the type of color (RGB, RGBW, TW or W) set for the digital LED strip (refer to §Colour type setup).
3. Set the "Pixel Cluster" to define the length of the grouping expressed in number of pixels.
4. Set the "Repetition number" to obtain a series of clusters repeated along the LED strip and managed by the DMX channels.

The following tables show an example of the configuration of DMX channels according to the Color Type set, assuming 001 as Starting Address.

Address	Function	Pixel/Cluster	Value
001	RED DIMMER	1	0…255
002	GREEN DIMMER		0…255
003	BLUE DIMMER		0…255
004	RED DIMMER	2	0…255
005	GREEN DIMMER		0…255
006	BLUE DIMMER		0…255
…	…	…	…
N_{DMX-CH} - 2	RED DIMMER	$\frac{N_{DMX-CH}}{3}$	0…255
N_{DMX-CH} - 1	GREEN DIMMER		0…255
N_{DMX-CH}	BLUE DIMMER		0…255

Table 13: DMX TO SPI Channel Configuration for RGB

Address	Function	Pixel/Cluster	Value
001	RED DIMMER	1	0…255
002	GREEN DIMMER		0…255
003	BLUE DIMMER		0…255
004	WHITE DIMMER		0…255
005	RED DIMMER	2	0…255
006	GREEN DIMMER		0…255
007	BLUE DIMMER		0…255
008	WHITE DIMMER		0…255
…	…	…	…
N_{DMX-CH} - 3	RED DIMMER	$\frac{N_{DMX-CH}}{4}$	0…255
N_{DMX-CH} - 2	GREEN DIMMER		0…255
N_{DMX-CH} - 1	BLUE DIMMER		0…255
N_{DMX-CH}	WHITE DIMMER		0…255

Table 14: DMX TO SPI Channel Configuration for RGBW

Address	Function	Pixel/Cluster	Value
001	WARM WHITE DIMMER	1	0… 255
002	COLD WHITE DIMMER		0… 255
003	WARM WHITE DIMMER	2	0… 255
004	COLD WHITE DIMMER		0… 255
…	…	…	

Address	Function	Pixel/Cluster	Value
N_{DMX-CH} - 1	WARM WHITE DIMMER	$\frac{N_{DMX-CH}}{2}$	0... 255
N_{DMX-CH}	COLD WHITE DIMMER		0... 255

Table 15: DMX TO SPI Channel Configuration for TW

Address	Function	Pixel/Cluster	Value
001	MONOCHROME DIMMER	1	0...255
002	MONOCHROME DIMMER	2	0...255
003	MONOCHROME DIMMER	3	0...255
...	...	...	
N_{DMX-CH} - 1	MONOCHROME DIMMER	N_{DMX-CH} - 1	0...255
N_{DMX-CH}	MONOCHROME DIMMER	N_{DMX-CH}	0...255

Table 16: DMX TO SPI Channel Configuration for W (Single Color)

Practical example: Dynamic tricolor flag via DMX

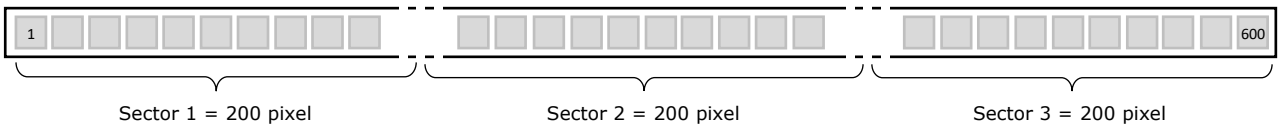
Suppose you want to create a "tricolor flag" effect, whose colors can be dynamically managed through DMX channels. So let's proceed by following the steps listed in the previous paragraphs:

1. First, set the type of IC, the color type (e.g. RGB) and the number of pixels (e.g. 600 pixels) of the LED strip as indicated in the §Control Settings section.
2. Setting the "Starting Address": set the DMX Starting Address using the dedicated parameter.

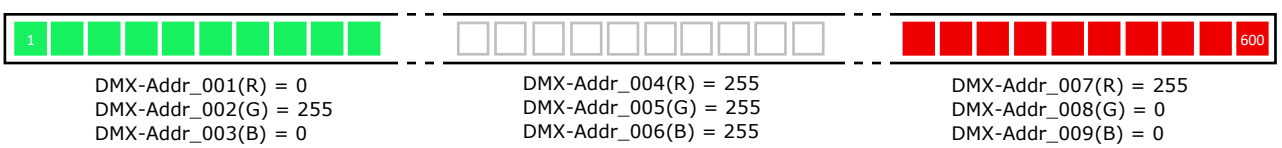
3. Setting the "DMX channel number": the goal is to independently control the colors of the individual sectors that make up the tricolor flag. For an RGB digital LED strip, three DMX channels (Red+Green+Blue) are therefore required for each of the three sectors of the flag (see table below). Then set "DMX Channel Count" = 9.

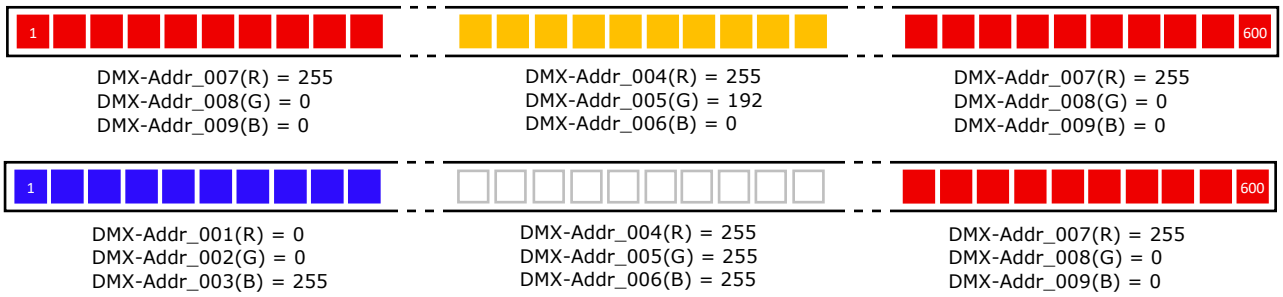
Address	Function	Sector	Value
001	RED DIMMER	1	0...255
002	GREEN DIMMER		0...255
003	BLUE DIMMER		0...255
004	RED DIMMER	2	0...255
005	GREEN DIMMER		0...255
006	BLUE DIMMER		0...255
007	RED DIMMER	3	0...255
008	GREEN DIMMER		0...255
009	BLUE DIMMER		0...255

4. Setting the "Pixel Grouping": to obtain the flag effect along the entire strip length, you have to divide the number of pixels by the 3 sectors to be created (e.g. 600/3 = 200). Then set "Pixel Cluster" = 200 and "Number of Repeats" = 0.



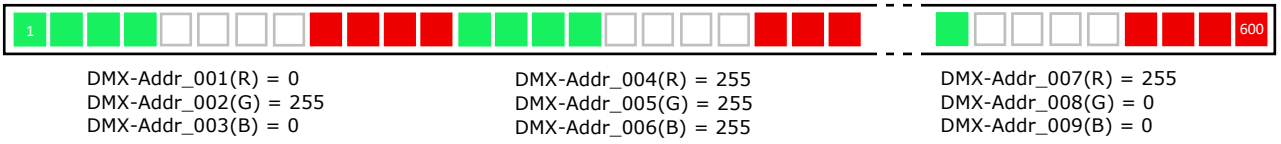
5. Through DMX channels, it is now possible to dynamically control the colors of each sector.





6. By changing the DMX parameters, you can get different dynamic effects as per your preference.

Pixel cluster = 4, Repetition number = 50



DMX SMART MAP

The Smart map consists of a custom DMX channel configuration where each channel is associated with a specific parameter for the desired effect. Up to 4 Smart maps are available (RGB, RGBW, TW and WWW) in which the DMX channels are divided according to the color type. The connection diagram required for this operating mode can be found in the §DMX wiring.

In the following tables, 001 is assumed as the Starting Address.

RGB MAP

The *RGB MAP* allows to configure the Effect parameters for the RGB IC-LEDs through 11 DMX channels.

Address	Function	Applicable Effects	Value							
001	MASTER DIMMER	All	0…255							
002	FRONT RED	All	0…255							
003	FRONT GREEN	All	0…255							
004	FRONT BLUE	All	0…255							
005	BACK RED	All	0…255							
006	BACK GREEN	All	0…255							
007	BACK BLUE	All	0…255							
008	EFFECT DURATION	Fill, Fill Partial, Rainbow, Wave, Plasma, Horse	0s…255s							
		Fire	0…255 (time parameter)							
		Static, Static2	Not used							
009	DIRECTION	Fill	Forward/Forward 0…63	Forward/Backward 64…127	Backward/Backward 128…191	Backward/Forward 192…255				
		Fill Partial, Rainbow, Wave, Horse	Backward 0…127		Forward 128…255					
		Static, Plasma, Fire, Static2	Not used							
010	PLAY / STOP	Fill	Single 0…127		Continuous 128…255					
		Fill Partial, Rainbow, Wave, Plasma, Fire	Stop 0…127		Play 128…255					
		Static, Static2	Not Used							
011	EFFECT SELECTOR	-	Fill 0…31	Fill Partial 32…63	Static 64…95	Rainbow 96…127	Wave 128…159	Plasma 160…191	Fire 192…223	Horse 224…255

Table 17: RGB Smart Map

RGBW MAP

The *RGBW MAP* allows to configure the Effect parameters for the RGBW IC-LEDs through 13 DMX channels.

Address	Function	Applicable Effects	Value							
001	MASTER DIMMER	All	0…255							
002	FRONT RED	All	0…255							
003	FRONT GREEN	All	0…255							
004	FRONT BLUE	All	0…255							
005	FRONT WHITE	All	0…255							
006	BACK RED	All	0…255							
007	BACK GREEN	All	0…255							
008	BACK BLUE	All	0…255							
009	BACK WHITE	All	0…255							
010	EFFECT DURATION	Fill, Fill Partial, Rainbow, Wave, Plasma, Horse	0s…255s							
		Fire	0…255 (time parameter)							
		Static, Static2	Not used							
011	DIRECTION	Fill	Forward/Forward 0…63	Forward/Backward 64…127	Backward/Backward 128…191	Backward/Forward 192…255				
		Fill Partial, Rainbow, Wave, Horse	Backward 0…127		Forward 128…255					
		Static, Plasma, Fire, Static2	Not used							
012	PLAY / STOP	Fill	Single 0…127		Continuous 128…255					
		Fill Partial, Rainbow, Wave, Plasma, Fire	Stop 0…127		Play 128…255					
		Static, Static2	Not Used							
013	EFFECT SELECTOR	-	Fill 0…31	Fill Partial 32…63	Static 64…95	Rainbow 96…127	Wave 128…159	Plasma 160…191	Fire 192…223	Horse 224…255

Table 18: RGBW Smart Map

TW MAP

The *TW MAP* allows to configure the Effect parameters for the Tunable White IC-LEDs through 9 DMX channels.

Address	Function	Applicable Effects	Value			
001	MASTER DIMMER	All	0…255			
002	FRONT WARM WHITE	All	0…255			
003	FRONT COOL WHITE	All	0…255			
004	BACK WARM WHITE	All	0…255			
005	BACK COOL WHITE	All	0…255			
006	EFFECT DURATION	Fill, Fill Partial, Rainbow, Wave, Plasma, Horse	0s…255s			
		Fire	0…255 (time parameter)			
		Static, Static2	Not used			
007	DIRECTION	Fill	Forward/Forward 0…63	Forward/Backward 64…127	Backward/Backward 128…191	Backward/Forward 192…255
		Fill Partial, Rainbow, Wave, Horse	Backward 0…127		Forward 128…255	
		Static,Plasma,Fire,Static2	Not used			
008	PLAY / STOP	Fill	Single 0…127		Continuous 128…255	
		Fill Partial, Rainbow, Wave, Plasma, Fire	Stop 0…127		Play 128…255	
		Static, Static2	Not Used			

Address	Function	Applicable Effects	Value							
009	EFFECT SELECTOR	-	Fill 0…31	Fill Partial 32…63	Static 64…95	Rainbow 96…127	Wave 128…159	Plasma 160…191	Fire 192…223	Horse 224…255

Table 19: TW Smart Map

WWW MAP

The *WWW MAP* allows to configure the Effect parameters for the White or monochrome IC-LEDs through 7 DMX channels.

Address	Function	Applicable Effects	Value							
001	MASTER DIMMER	All	0…255							
002	FRONT LIGHT	All	0…255							
003	BACK LIGHT	All	0…255							
004	EFFECT DURATION	Fill, Fill Partial, Rainbow, Wave, Plasma, Horse	0s…255s							
		Fire	0…255 (time parameter)							
		Static, Static2	Not used							
005	DIRECTION	Fill	Forward/Forward 0…63	Forward/Backward 64…127	Backward/Backward 128…191	Backward/Forward 192…255				
		Fill Partial, Rainbow, Wave, Horse	Backward 0…127				Forward 128…255			
		Static, Plasma, Fire, Static2	Not used							
006	PLAY / STOP	Fill	Single 0…127				Continuous 128…255			
		Fill Partial, Rainbow, Wave, Plasma, Fire	Stop 0…127				Play 128…255			
		Static, Static2	Not Used							
007	EFFECT SELECTOR	-	Fill 0…31	Fill Partial 32…63	Static 64…95	Rainbow 96…127	Wave 128…159	Plasma 160…191	Fire 192…223	Horse 224…255

Table 20: WWW Smart Map

EFFECT SETTINGS

In this section can be configured the Effect's parameters for each effect selected in Control Settings menu.

STATIC

The *Static* effect performs a customizable colour effect without animation.[8]

Intensity: sets the overall light intensity.

Fade time: sets the time it takes for the output to completely turn ON and OFF (from 1 to 10 seconds)

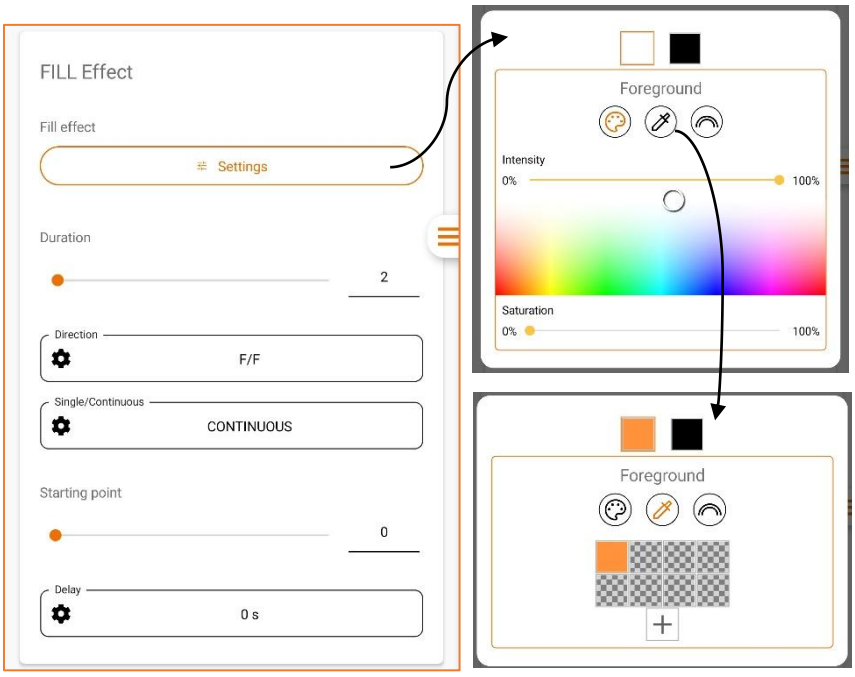
Sequence: set the orientation of the effect (STRAIGHT or REVERSE).

Settings: customize the colours of the digital LED strip. The strip is divided into 30 sectors, for each of which you can set a colour from a wide variety.
To customize the sectors, select the colour from the colour palette: a colour map will appear allowing you to set the Colour/CCT, Intensity, and the Saturation. Then:

- tap the "paint-bucket" icon to fill all the sectors with the same colour;
- tap the "paint-brush" icon to select the sectors to fill with colour;
- tap the "eraser" icon to select the sectors to erase.

FILL

The *Fill* effect perform a customizable colour effect with Fill animation.[8]



Settings: customize the colours of the digital led strip. From the colour palette, you can set the foreground and background colour of the effect from a wide variety.
To customize the effect, choose the Foreground/Background section, then set the Colour/CCT, Intensity, and the Saturation from the colour palette.

Custom: sets the colour of the Foreground/Background from a saved colour selection.

Duration: set the duration of the effect (from 0 to 255 seconds)

Direction:: allows to set the ON and OFF direction. Value that can be selected:

- F/F: ON Direction = Forward, OFF Direction = Forward
- F/B: ON Direction = Forward, OFF Direction = Backward
- B/B: ON Direction = Backward, OFF Direction = Backward
- B/F: ON Direction = Backward, OFF Direction = Forward

[8] Other functions (e.g. dimming) are available at runtime by means of a button (if provided by the selected Control Type, see section §Local Control functionality: Pushbutton).

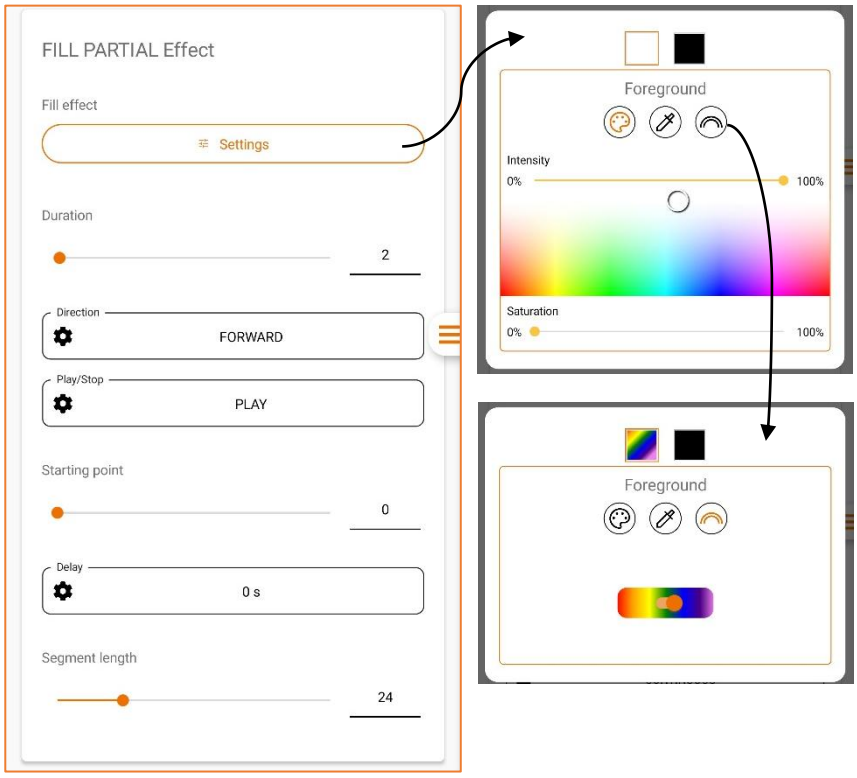
Single/Continuous: allows to set if the effect shall be played one time (Single) or continuously (Continuous).

Starting Point: select the point of the strip [%] from which the effect starts. If > 0%, the effect propagates specularly from the Starting Point.

Delay: sets the delay time of the effect start (from 0 to 10 seconds).

FILL PARTIAL

The *Fill Partial* effect perform a customizable colour effect with Fill animation.[8,9]



Settings: customize the colours of the digital led strip. From the colour palette, you can set the foreground and background colour of the effect from a wide variety.
To customize the effect, choose the Foreground/Background section, then set the Colour/CCT, Intensity, and Saturation from the colour palette.

Rainbow: set the colour of the Foreground/Background like a rainbow.

Duration: set the duration of the effect (from 0 to 255 seconds)

Direction: set the direction of the effect when it starts, FORWARD (from the beginning of the strip) or BACKWARD (from the end of the strip).

Play/Stop: allows to start (Play) or Stop the effect animation.

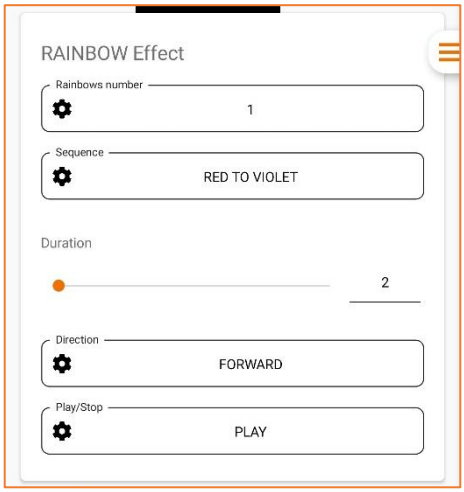
Starting Point: select the point of the strip [%] from which the effect starts.
If > 0%, the effect propagates specularly from the Starting Point.

Delay: sets the delay time of the effect start (from 0 to 10 seconds).

Segment length: sets the length [%] of the partial sector, from 0% to 100%.

RAINBOW

The *Rainbow* effect performs a colour effect where the LED strip change dynamically and softly the colour animation.[8]



Rainbow number: set the number of visible rainbows on the digital LED strips (from 1 to 10).

Sequence: sets the sequence of the colours inside the rainbow(s). Value that can be selected:

- RED TO VIOLET: the color sequence starts from Red and ends in Violet.

- VIOLET TO RED: the color sequence starts from Violet and ends in Red.

Duration: set the duration of the effect (from 0 to 255 seconds).

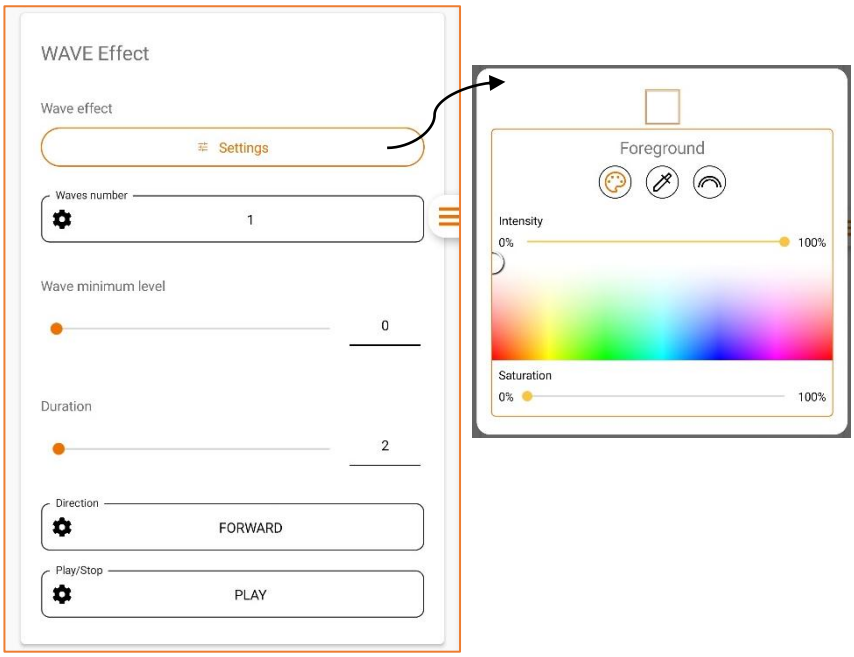
Direction: set the direction of the effect when it starts, FORWARD (from the beginning of the strip) or BACKWARD (from the end of the strip).

Play/Stop: allows to start (Play) or Stop the effect animation.

[9] On the Fill-partial effect, the Fill sector is customizable directly via the pushbutton (refer to Table 9) or via LightApp.

WAVE

The *Wave* effect performs a customizable colour effect with wave animation.[8]



Settings: customize the colours of the digital led strip. From the colour palette, you can set the foreground colour of the effect from a wide variety.
To customize the effect, set the Colour/CCT, Intensity, and Saturation of Foreground section from the colour palette.

Waves number: sets the quantity of waves within a range from 1 to 10. The Digital-LED strip will be divided into equal sectors, as many as the number of waves selected.

Duration: sets the time [s] needed to complete the effect on the configured pixel number, from 0s to 255s.

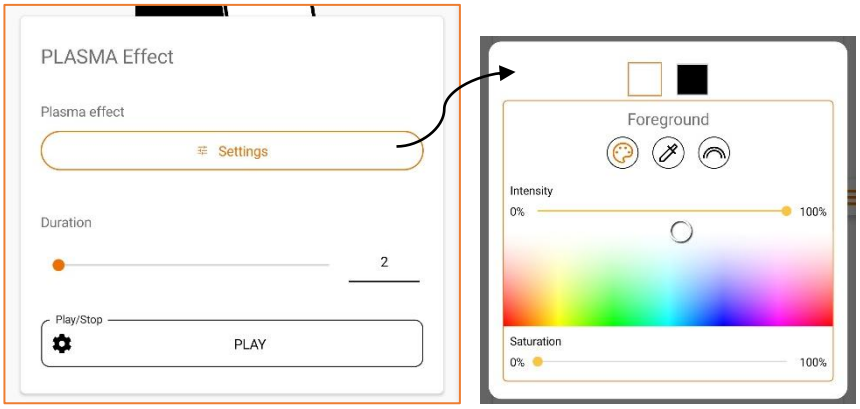
Direction: set the direction of the effect when it starts, FORWARD (from the beginning of the strip) or BACKWARD (from the end of the strip).

Play/Stop: allows to start (Play) or Stop the effect animation.

Minimum wave level: sets the brightness of the minimum wave level.

PLASMA

The *Plasma* effect performs a customizable colour effect with plasma bubble animation.[8]



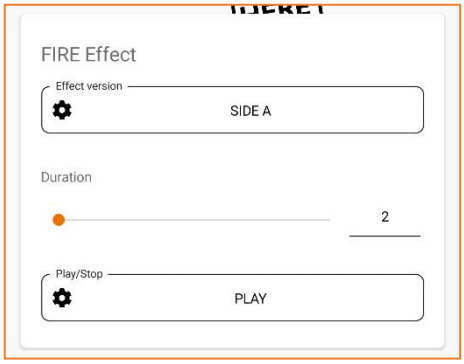
Settings: customize the colours of the digital led strip. From the colour palette, you can set the foreground and background colour of the effect from a wide variety.
To customize the effect, choose the Foreground/Background section, then set the Colour/CCT, Intensity, and Saturation from the colour palette.

Duration: sets the time [s] needed to complete the effect on the configured pixel number, from 0s to 255s.

Play/Stop: allows to start (Play) or Stop the effect animation.

FIRE

The *Fire* effect performs a fire light effect where the LED strip change dynamically the animation.[8]



Effect Version: allows you to set the direction of the flame animation. Value that can be selected:

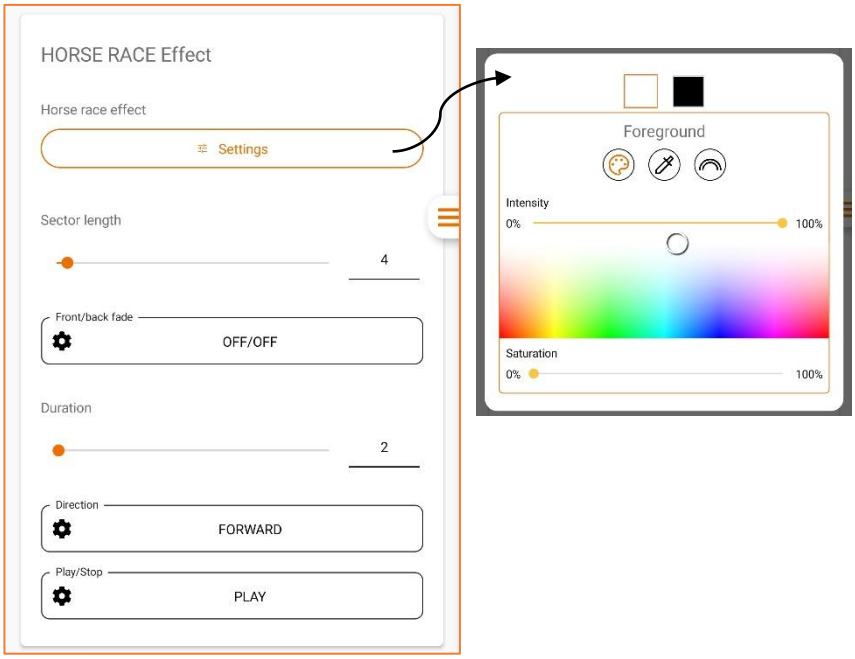
- SIDE A: single flame starts from the beginning of the strip (base of the flame facing the controller side of the strip)
- SIDE B: single flame starts from the end of the strip (base of the flame facing the controller opposite side of the strip)
- A+B LATERAL: double flame starting from the edges of the strip (base of the flames facing the beginning and the end of the strip)
- A+B CENTRAL: double flame starting from the center of the strip (base of the flames in the middle of the strip)

Duration: set the duration of the effect (from 0 to 255 seconds)

Play/Stop: allows to start (Play) or Stop the effect animation.

HORSE RACE

The *Horse Race* effect performs a customizable colour effect with partial sector movement animation.[8]



Settings: customize the colours of the digital led strip. From the colour palette, you can set the partial sector and background colour of the effect from a wide variety.
To customize the effect, choose the Foreground/Background section, then set the Colour/CCT, Intensity, and Saturation from the colour palette.

Sector length: sets the length [%] of the moving sector, from 0% to 100%.

Front/Back fade: allow to set the frontward and backward fading. Value that can be selected:

- OFF/OFF: no fade
- ON/OFF: moving sector fade in, no fade out
- OFF/ON: moving sector fade out, no fade in
- ON/ON: moving sector fade in and fade out

Duration: sets the time [s] needed to complete the effect on the configured pixel number, from 0s to 255s.

Direction: set the direction of the effect when it starts, FORWARD (from the beginning of the strip) or BACKWARD (from the end of the strip).

Play/Stop: allows to start (Play) or Stop the effect animation.

STATIC2

The *Static2* effect performs a second customizable colour effect without animation. The settings page is the same of the Static effect (refer to §STATIC section).[8]