

FEATURES

- ◆ LED DIMMER
- ◆ WHITE and MONOCHROME Light Control
- ◆ Power supply (DC IN): 12-24-48 Vdc (SELV)
- ◆ Output (LED): constant voltage output (= DC IN) modulated for Resistive loads LED-strips and dimmable LED-modules
- ◆ PWM modulation, frequency settable via Dalcnet LightApp® mobile application from 307 to 4000 Hz
- ◆ Remote Control via opto-isolated BUS (DALI)
- ◆ Local Command (INPUT): Analogic Automatic Detection of the Local Command
 - N.O. push-button
 - 0-10V signal,
 - 1-10V signal
 - 10 kΩ potentiometer
- ◆ Device configuration via Dalcnet LightApp® mobile application and via DALI, settable parameters:
 - DALI Address
 - Dimming Curve
 - Minimum, Maximum, Power-ON, and System Failure levels
 - Detection & Protection Features
 - Transition Parameters (Fade)
 - Groups and Scenarios
- ◆ Memory function: stores the last brightness level set
- ◆ ON/OFF and brightness soft dimming
- ◆ Suitable for use in Dry locations
- ◆ UL Features (see Table 5 for detailed technical specifications):
 - UL Recognized certified unit
 - Class 2 supply Input and Output (use Class 2 power supply only)
- ◆ Extended temperature range
- ◆ 100% Functional test

PRODUCT DESCRIPTION

MINI-1CV-DALI is a single-channel LED dimmer, PWM (Pulse Width Modulation) modulated at Constant Voltage (CV) and controllable via DALI (Digital Addressable Lighting Interface) digital protocol or via local command (automatically detected) by a N.O. (Normally Open) push-button, a 0-10V/1-10V signal or 10 kΩ potentiometer. The dimmer can be supplied by a SELV constant voltage (12 ÷ 48) Vdc power supply and is suitable for driving constant voltage loads such as White / single-color LED strip or dimmable LED module. The dimmer can deliver an output current of up to 10 A and has the following protections: over voltage protection, under-voltage protection, reverse polarity protection, input fuse protection, short circuit protection, short circuit detection and open circuit detection.

Through the Dalcnet LightApp® mobile application and smartphone equipped with Near Field Communication (NFC) technology it is possible to configure multiple parameters when the device is turned off, including modulation frequency, adjustment curve and maximum/minimum brightness levels. Dalcnet LightApp® is free to download from the Apple APP Store and Google Play Store.

→ For the up-to-date manual, please consult our website www.dalcnet.com or the QR Code directly on your smartphone.



PRODUCT CODE

CODE	POWER SUPPLY	OUTPUT LED	BUS CONTROL	LOCAL COMMAND ¹	APP CONFIG.
MINI-1CV-DALI	12-24-48 Vdc	1 x 10 A ^{2,3}	DALI	N°1 N.O. Pushbutton, 0-10V, 1-10V or 10 kΩ potentiometer	LightApp®

Table 1: Product Code

PROTECTIONS AND DETECTION

The following table shows the types of ingress and egress protection/detection present on the device.

ACRONYM	DESCRIPTION	TERMINAL	PRESENT
OVP	Over-voltage Protection ⁴	DC IN	✓
UVP	Under-voltage Protection ⁴	DC IN	✓
RVP	Reverse voltage (polarity) Protection ⁴	DC IN	✓
IFP	Input Fuse Protection ⁴	DC IN	✓
SCP	Short-Circuit Protection	LED	✓
SCD	Short-Circuit Detection	LED	✓
OCD	Open-Circuit Detection	LED	✓

Table 2: Protection and Detection Features

REFERENCE STANDARDS

MINI-1CV-DALI complies with the regulations listed in the following table.

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
IEC 62386-101 ED2	Digital addressable lighting interface – Part 101: General requirements – System components
IEC 62386-102 ED2	Digital addressable lighting interface – Part 102: General requirements – Control gear
IEC 62386-207 ED2	Digital addressable lighting interface – Part 207: Particular requirements for control gear – LED modules (device type 6)
UL 1310	Standard for Safety. Class 2 Power Units.
UL 8750 & CSA C22.2 No. 250.13-17	Standard for Safety. Light Emitting Diode (LED) Equipment for Use in Lighting Products.

Table 3: Reference standards

¹ The detection of the type of local command is done automatically.

² For specifications in a UL certified plant, refer to Table 5.

³ The maximum 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.

⁴ Protections refer to the control logic of the board.

TECHNICAL SPECIFICATIONS

CE TECHNICAL SPECIFICATIONS

Description	Acronym	Values			Units of Measure	Note
		Min		Max		
POWER SUPPLY INPUT (DC IN)						
Nominal Supply Voltage ⁵	V _{IN}	12	24	48	Vdc	-
Supply Voltage range	V _{IN-RNG}	10.8	÷	52.8	Vdc	-
Supply Current (max)	I _{IN}	10			A	-
Efficiency at full load	E _{FF}	> 95			%	-
Standby power absorption	P _{STBY}	< 0.5			W	-
OUTPUT (LED)						
Output Voltage	V _{OUT}	= V _{IN}			Vdc	-
Output Current (max)	-	@60°C	@45°C	@35°C	-	Refer to Figure 9
	I _{OUT}	6	8	10	A	
Rated Power Output	-	@12V	@24V	@48V	-	Rated @T _A <35 °C
	P _{OUT}	120	240	480	W	
Load type	L _{TYPE}	Resistive (LED)			-	Defined by design
DIMMING						
Dimming curve	C _{DIM}	Logarithmic, Linear			-	Selection via Dalcnet LightApp®
Method	M _{DIM}	PWM			-	Pulse Width Modulation
PWM frequency	f _{DIM}	307, 667, 1333, 2000, 4000			Hz	Selection via Dalcnet LightApp®
Dimming resolution	ReS _{DIM}	16			bit	Defined by design
Dimming range ⁶	RNG _{DIM}	1	÷	100	%	Defined by design
ENVIRONMENTAL						
Storage Temperature	T _{STORE}	-40	÷	+60	°C	Minimum values defined by design
Working Ambient temperature ⁷	T _A	-10	÷	+60	°C	
Max Temperature @T _c point	T _C	-	-	+80	°C	-
Working Environment type	ENV _{TYPE}	Dry location			-	-
Connector type	C _{TYPE}	Screw terminals			-	-
Wiring Section	WS _{SOLID}	0.05	÷	2.5	mm²	Defined by design
	WS _{STRAND}	30	÷	12	AWG	
Strip length	WS _{STRIP}	6.5			mm	-
Protection class	IP _{CODE}	IP20			-	-
Case material	M _{CASE}	Plastic			-	-
Packaging unit	UP	1			pcs	-
Dimensions	-	L	A	P		-
	MD	44	57	25	mm	Case
	PD	56	68	35	mm	Packaging
Weight	W	47			g	Included packaging

Table 4: CE Technical specifications

⁵ The product must only be powered by a LED power supply with SELV constant voltage output V_{OUT} < 60 Vdc certified according to IEC/EN 61347.

⁶ Measured on a 4 kHz linear dimming curve. Value dependent on the type of load connected.

⁷ Depends on ventilation conditions.

UL TECHNICAL SPECIFICATIONS

If the MINI-1CV-DALI shall be installed in a UL certified plant, please refer to the values in Table 5. These values are binding to ensure UL compliance within the system, which the installer must strictly adhere to.

Description	Acronym	Values			Unit of Measure	Note
		Min		Max		
UL Certification						
Product type	UL _{TYPE}				-	UL Recognized certified device
Manufacturer Certification file	UL _{FILE}	E514299			-	-
INPUT (DC IN)						
UL Input type	TYPE _{IN}	CLASS 2			-	-
Power Supply restrictions	SUP _{LIM}	CLASS 2 input only			-	Use Class 2 power supplies only
Nominal supply voltage ⁵	V _{IN}	12	24	48	Vdc	-
Supply Voltage range	V _{IN-RNG}	10.8	÷	52.8	Vdc	-
Current absorption (max)	I _{IN_UL}	5	4.16	2	A	While respecting the limits on I _{OUT_UL} and P _{OUT_UL}
Nominal Power absorption	P _{IN_UL}	60	100	100	W	
Efficiency at full load	E _{FF}	> 95			%	-
Standby power consumption	P _{STBY}	< 0.5			W	-
OUTPUT (LED)						
UL Output type	TYPE _{OUT}	CLASS 2			-	-
Output voltage	V _{OUT}	= V _{IN}			-	-
	-	@12V	@24V	@48V	-	-
Output current (max)	I _{OUT_UL}	5	4.16	2	A	For each channel and total
Nominal power output	P _{OUT_UL}	60	100	100	W	
Load type	L _{TYPE}	LED ARRAY			-	Resistive LED loads only
DIMMING						
Curve	C _{DIM}	Logarithmic, Linear			-	Selection via Dalcnet LightApp®
Method	M _{DIM}	PWM			-	Pulse Width Modulation
PWM frequency	f _{PWM}	307, 667, 1333, 2000, 4000			Hz	Selection via Dalcnet LightApp®
Resolution	Res _{DIM}	16			bit	Defined by design
Range	RNG _{DIM}	1	÷	100	%	Defined by design
ENVIRONMENTAL						
Storage Temperature	T _{STORE}	-40	÷	+60	°C	Minimum values defined by design
Working Environment Temp.	T _A	-10	÷	+40	°C	
Max Temperature at T _C point	T _{C_UL}	+60			°C	Measured under Q4
Working Environment type	ENV _{TYPE}	Dry location			-	-
Connector type	C _{TYPE}	Screw terminals			-	-
Wiring Section	WS _{SOLID}	0.05	÷	2.5	mm ²	Defined by design
	WS _{STRAND}	30	÷	12	AWG	
Stripping	WS _{STRIP}	6.5			mm	-
Protection Class	IP _{CODE}	IP20			-	-
Enclosure Material	M _{CASE}	Plastic			-	-
Packaging Unit (Piece/Unit)	PU	1			pcs	-
Dimensions	-	L	H	D	-	-
	MD	44	57	25	mm	Mechanical enclosure
	PD	56	68	35	mm	Packaging
Weight	W	47			g	Including packaging

Table 5: UL Technical Specifications

TC POINTS POSITIONING

The following figures show the positioning of the maximum temperature point (T_c point, highlighted in red) reached by the electronics inside the enclosure for CE and UL standards, located on the front (Top) and on the back (Bottom) sides.

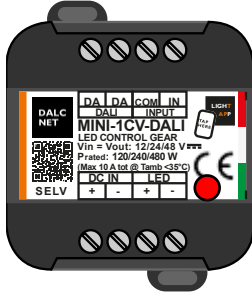


Figure 1: Position of the CE T_c point

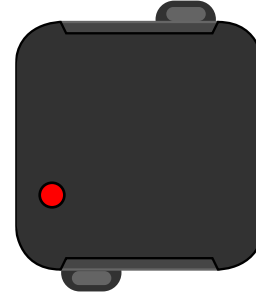


Figure 2: Position of the UL T_c point

INSTALLATION



WARNING! Installation and maintenance must always be conducted in the absence of voltage.

Before continuing 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 building regulations, legislation, rules, and codes must be complied with. Incorrect installation of the device may cause irreparable damage to the device and connected loads.

The following paragraphs show the diagrams of the connection of the dimmer to the remote/local controls, the load and the supply voltage. It is recommended that you follow these steps to install the product safely:

1. **Load wiring:** connect the load to the "LED" terminals respecting the indicated polarity.
2. **Local control wiring:** connect the N.O. button, the 0/1-10V signal or the 10 k Ω potentiometer to the "COM" (negative) and "IN" (positive) terminals of the "INPUT" respecting one of the wirings shown in the connection diagram in Figure 4.
3. **Remote control wiring:** connect the DA data bus signals to the "DALI" terminals with the "DA" symbols.
4. **Power supply wiring:** connect a 12-24-48 Vdc constant voltage SELV power supply (depending on the nameplate data of the LED load) to the "+" and "-" terminals of the DC IN section, respecting the indicated polarity.

LOAD WIRING

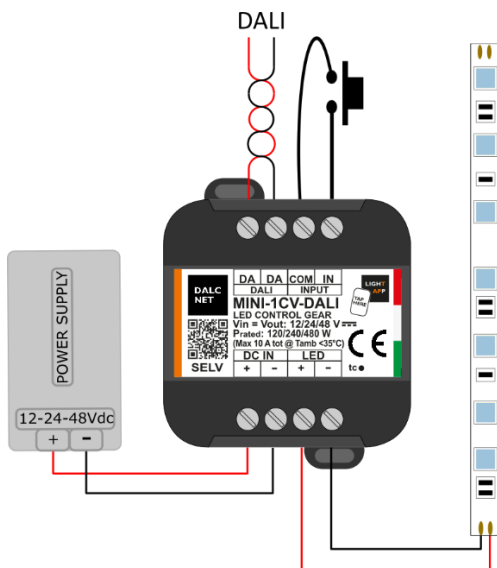


Figure 3: Wiring diagram for resistive LED loads

MINI-1CV-DALI has 1 output channel that can be driven independently.

The connection diagram on the side allows you to drive 1 DC resistive load, on the LED output channel.

LOCAL COMMAND WIRING

MINI-1CV-DALI can be controlled via Local Control with three different modes, automatically detected at startup: Normally Open (N.O.) push-button, 0-10V or 1-10V analog signals, and 10 k Ω potentiometer.

 To connect the MINI-1CV-DALI to local control, simply connect the Local Control to the INPUT terminal. The following images show the indicated connection diagram for short distances (<10 m).

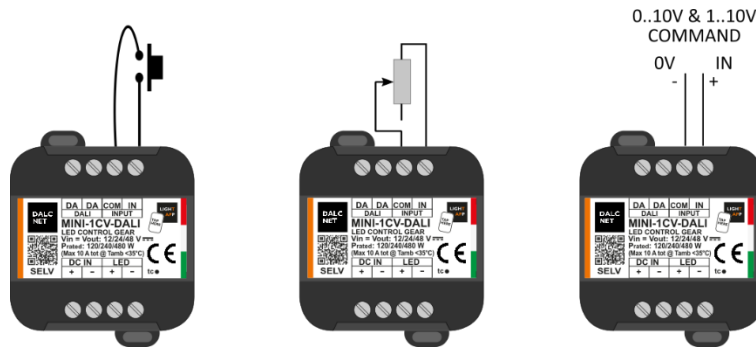


Figure 4: Local Command wiring diagram

AUTOMATIC DETECTION OF LOCAL COMMAND

At the first power ON, the device is set by default to N.O push-button control.

If a 0-10V/1-10V command or a 10 k Ω potentiometer is connected, a quick change in the signal or potentiometer adjustment is sufficient for the device to recognize the new type of command.

If an N.O. button is connected, 5 quick presses are sufficient for the device to recognize the new type of command.

REMOTE CONTROL WIRING

MINI-1CV-DALI can be controlled remotely via DALI digital bus by means of a simple two-wire cable (non-twisted and unshielded). The control is carried out by means of a DALI Master that provides commands to the devices in the DALI network and, possibly, the power supply⁸ to the network itself. DALI supports several cabling topologies, including the Bus-wiring shown as an example in Figure 5.

 To connect MINI-1CV-DALI 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 respect the polarity of the "DA+" and "DA-" signals of the bus during connection.

DALI WIRING TOPOLOGIES

DALI supports several cabling topologies, such as bus cabling, shown as an example in Figure 5.

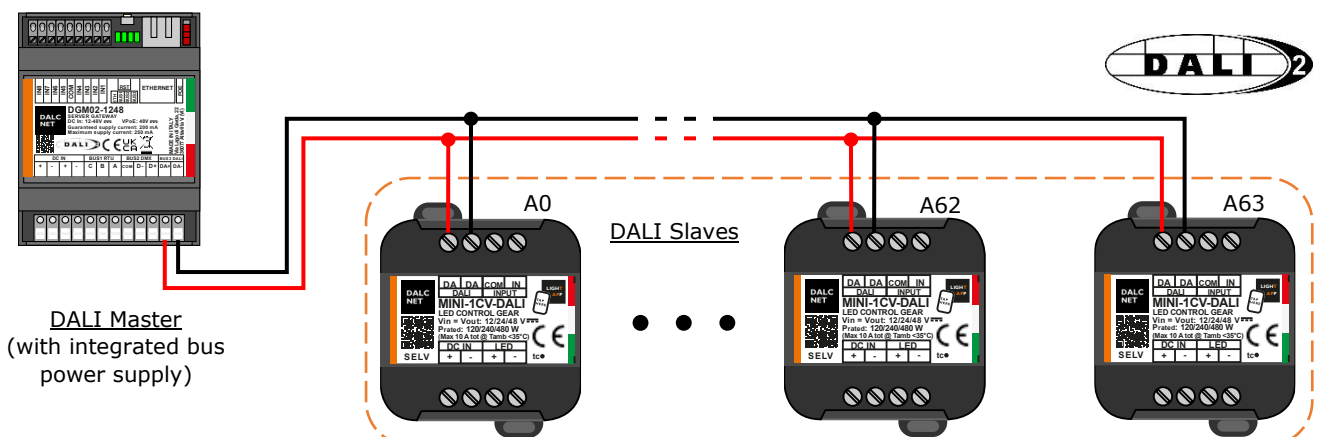


Figure 5: Remote Control Connection, Bus-wiring

⁸ Bus power can be supplied via an external 16 Vdc power supply (or within the range of 12 ÷ 20 Vdc) or by a DALI Master with integrated Bus power supply. For more information, please consult our website: www.dalcnet.com.

The DALI-2 protocol supports up to 64 power slave devices (e.g. MINI-1CV-DALI) connected with different wiring topologies shown in Figure 6: bus, star, tree, or in-line. All other topologies are excluded.

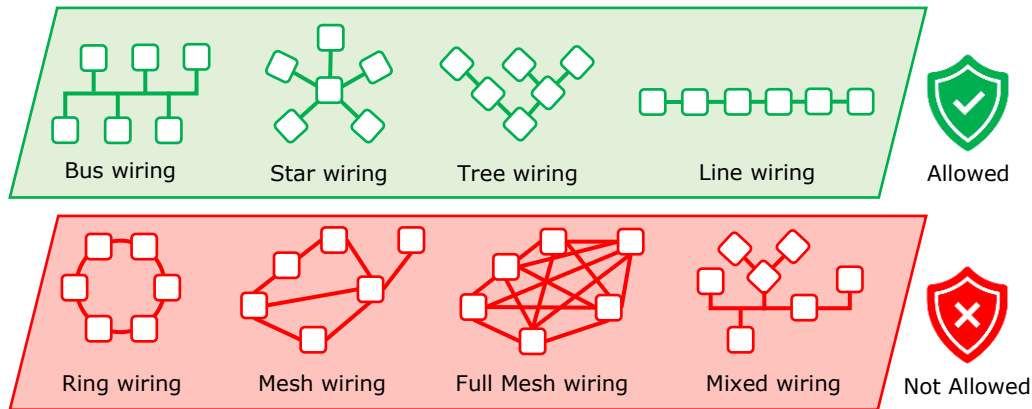


Figure 6: DALI wiring Topologies

POWER SUPPLY WIRING



MINI-1CV-DALI can be powered by a 12 Vdc, 24 Vdc or 48 Vdc constant voltage SELV (and Class 2 if installed within a UL certified plant) power supply and supplies the same voltage (dimmed) to the output. Once load and remote control (DALI bus) are wired, connect the power supply respecting the polarity conventions to the "+" and "-" labels of the DC IN terminal.

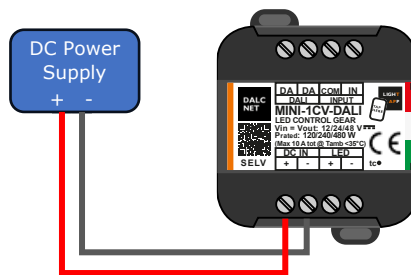


Figure 7: Power Supply wiring diagram

LOCAL COMMAND FUNCTIONALITIES

During the normal use of MINI-1CV-DALI, the light intensity and the status change (ON/OFF) of load connected can be controlled by the connected Local Control as listed in the following tables.

PUSH-BUTTON DIMMING

When N.O. push-button is connected to the INPUT terminal, the light intensity and the status (ON/OFF) can be set from the push-button by the following action.

ACTION	FUNCTION
 Quick press	Soft ON/OFF of the output channel
 Double quick press	Output ON with Maximum intensity 100% (without fade).
 Long press	Brightness adjustment (Dimming)

Table 6: Pushbutton functionality

0/1-10V & POTENTIOMETER DIMMING

When 0-10V, 1-10V signal or 10 k Ω potentiometer is connected to the INPUT terminal, the light intensity and the status (ON/OFF) can be set by the input voltage variation.

ACTION	FUNCTION
 Voltage signal variation	Signal 0-10V: input voltage variation from 0V (output OFF) to 10V (output ON, light intensity 100%). Signal 1-10V: input voltage variation from 1V (output OFF) to 10V (output ON, light intensity 100%).
 Cursor rotation	Potentiometer: cursor rotation from position 0% (output OFF) to 100% (output ON, light intensity 100%).

Table 7: 0-10V, 1-10V & Potentiometer dimming functionality

REMOTE CONTROL: DALI PROTOCOL

DALI (Digital Addressable Lighting Interface) is a protocol developed by the DALI Alliance (DIIA) to allow the management, configuration and programming of LED lighting systems in digital mode: through a two-way communication process between devices and control units, it is possible to execute ON, OFF or dimmer commands, report faults or information of various kinds. Based on a Master/Slave architecture, the DALI standard allows both single digital control of devices and programming in groups and/or broadcast.

In its second version, DALI-2 allows first full compatibility with the earlier protocol, and secondly brings numerous improvements compared to DALI-1:

1. Addition of lighting control devices: e.g. buttons, sensors, and LED drivers that were not included in the earlier version. In addition, to obtain DALI-2 certification, the new protocol requires the execution of functional and compliance tests by DIIA.
2. Introduction of the Multi Master architecture: with the regulation of the various lighting control devices, it is possible to send commands and signals to the DALI-2 bus from multiple sources, easing independent, immediate, and simultaneous data communication.
3. Development of functional and application standards: new extensions have been drawn up for DALI-2 devices, e.g. for emergency lighting or colour control, creating a new product standard for smart lighting and IoT systems called D4i.

PROFILE MAPPING: OPERATION MODE

The DALI protocol provides two configurations depending on the light characteristics to be obtained through the LED module connected to the outputs. Each profile is composed of a defined number of 8-bit channels, whose values can be set in the range (0 ÷ 254), each of which stands for a light characteristic (e.g. brightness, colour, temperature, etc.) to be modulated on the LED load.

MINI-1CV-DALI supports only the DT6 profile to provide adjustment of the light intensity for the single output channel.

DT6 - 1 CHANNEL

The "DT6" profile allows you to adjust the light intensity for the output channel. The DALI-2 protocol supports up to 64 power slave devices (e.g. MINI-1CV-DALI) connected.

Address	Function	Level
A0	DIMMER 0	Intensity [0...254]
...		
A63	DIMMER 63	Intensity [0...254]

ADDRESSING

MINI-1CV-DALI supports the Simplified addressing method (one ballast connected at time) and the Random Address Allocation.

FLICKER PERFORMANCE

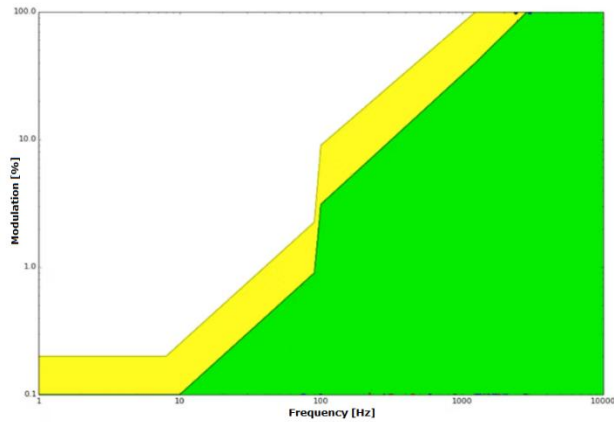


Figure 8: Flickering Perception Threshold

Thanks to the 4kHz dimming frequency, the MINI-1CV-DALI reduces the occurrence of the Flicker phenomenon. Depending on an individual's sensitivity and the nature of their activities, flickering can affect one's well-being, even if the changes in luminance are beyond the threshold detectable by the human eye.

The graph shows the phenomenon of Flickering in function at the frequency, measured throughout the dimming range.

The results show the low-risk zone (yellow) and the no-effect zone (green), defined by IEEE 1789-2015⁹.

THERMAL CHARACTERIZATION

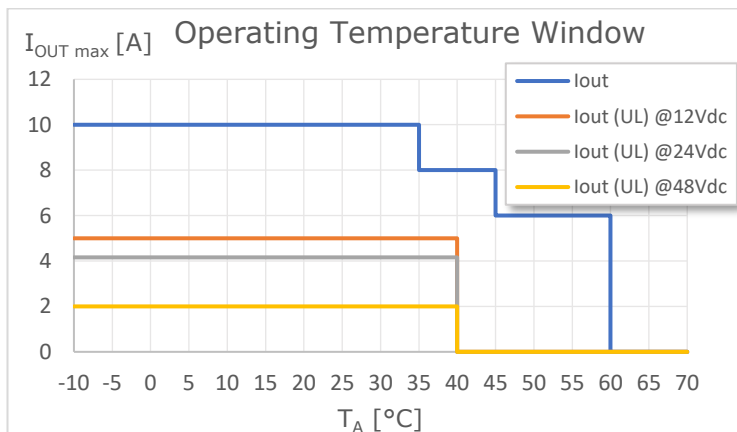


Figure 9: Operating Temperature Window

Figure 8 shows the maximum output current values that can be supplied by the MINI-1CV-DALI as a function of the operating temperature¹⁰ (or ambient temperature, T_A) of work, summarized below:

- ♦ $T_A = (-10 \div +35)^\circ\text{C} \rightarrow I_{\text{OUT}} \leq 10\text{ A}$
- ♦ $T_A = (+35 \div +45)^\circ\text{C} \rightarrow I_{\text{OUT}} \leq 8\text{ A}$
- ♦ $T_A = (+45 \div +60)^\circ\text{C} \rightarrow I_{\text{OUT}} \leq 6\text{ A}$
- ♦ $T_A = (-10 \div +40)^\circ\text{C} \rightarrow I_{\text{OUT_UL@12V}} \leq 5\text{ A}$
- ♦ $T_A = (-10 \div +40)^\circ\text{C} \rightarrow I_{\text{OUT_UL@24V}} \leq 4.16\text{ A}$
- ♦ $T_A = (-10 \div +40)^\circ\text{C} \rightarrow I_{\text{OUT_UL@48V}} \leq 2\text{ A}$

These maximum current values can only be applied under suitable ventilation conditions.

DIMMING CURVES

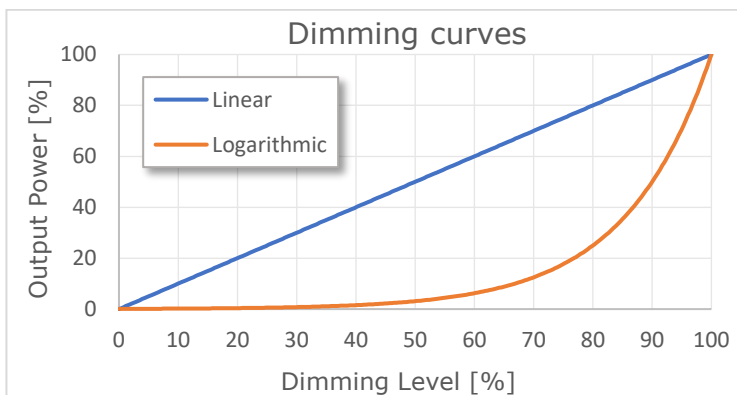


Figure 10: Dimming Curves

Figure 10 shows the dimming curves supported by the MINI-1CV-DALI dimmer. Curve selection can be done using the Dalcnet LightApp[®] (see §Control Settings section of this manual).

⁹ Institute of Electrical and Electronics Engineers (IEEE). *IEEE std 1789: Recommended Practices for Modulating Current in High-Brightness LEDs for Mitigating Health Risks to Viewers.*

¹⁰ In the event that the product is installed inside an electrical panel and/or junction box, T_A refers to the temperature inside the panel/box.

MECHANICAL DIMENSIONS

Figure 11 details the mechanical measurements and overall dimensions [mm] of the outer casing.

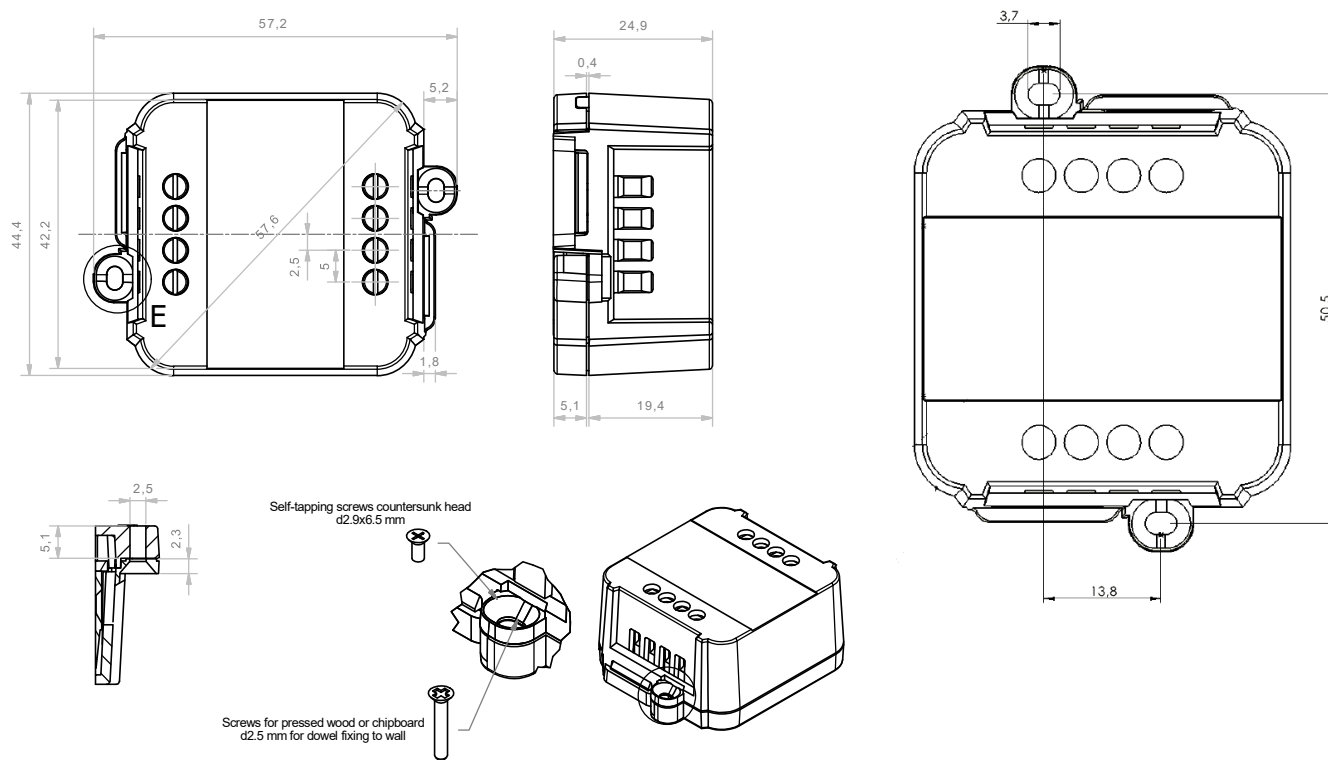


Figure 11: Mechanical dimensions

TECHNICAL NOTES

INSTALLATION



WARNING! Installation and maintenance should always be performed 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 conducted by qualified personnel in compliance with current regulations.

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

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, NFC).



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 type power supplies (and Class 2 if installed within a UL certified plant) with limited current at constant voltage, short circuit protection and power suitably sized according to the specifications indicated in the product data sheet. No other types of power are allowed.

Size the power supply with reference to the load connected to the device. If the power supply is oversized compared to the maximum current drawn, insert an overcurrent protector between the power supply and the device.

Connecting to an unsuitable power supply may cause the device to work 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 non-SELV voltage wiring. 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 Resistive 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 diverse types of loads in the same output channel.

LOCAL COMMAND AND REMOTE CONTROL



The length of the connection cables between the local control (N.O. button or other) and the product must be less than 10m. Cables must be sized correctly. Depending on the connection used, they must be isolated from any non-SELV live wiring or parts. It is recommended to use double-insulated cables, if deemed appropriate also shielded.



It is absolutely forbidden to connect, for any reason, directly or indirectly, the 230 Vac mains voltage to the DALI terminals of the BUS.

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

All devices and control signals connected to the bus must be of the SELV type (the connected devices must be SELV or otherwise provide a SELV signal) and supplied by a Class 2 power supply (if installed within a UL certified plant).

NFC (NEAR FIELD COMMUNICATION) WARNINGS



The NFC antenna is located inside the device, the contact surface of which is indicated by 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 your smartphone depends on the make and model of your smartphone. 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 near the top of the smartphone.

Please note that NFC technology works optimally with non-metallic materials. Therefore, it is not recommended to place the device near metal objects or reflective surfaces while using with 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 the firmware update and configuration, you must maintain stable contact (possibly motionless) between your smartphone and the device throughout the process (usually between 5 and 60 seconds). This ensures that the update is successful, and that the device is ready for 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 that 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

	All products are manufactured in compliance with European Directives, as reported in the EU Conformity Declaration.
	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.
CLASS 2	UL Class 2 device: product compliant to UL1310 standard, designed to ensure that the device's outputs are safe to touch and does not necessitate additional safety protections at the level of outputs. Essentially, the device is designed to minimize the risk of electric shock or overheating, thereby ensuring its safety for use in various contexts.
	UL Recognized certified unit for Canadian and U.S. markets: see technical specifications in Table 5.
SELV	"Extra Low Safety Voltage" in a circuit isolated from the mains supply by means of an isolation not inferior to that between the primary and secondary circuits of a safety isolation transformer according to IEC 61558-2-6.
	The product described in this technical datasheet at the end of its useful life is classified as waste from electronic equipment and cannot be disposed of as unsorted municipal solid waste. Warning! Incorrect disposal of the product may cause serious harm to the environment and human health. For correct disposal, inquire about the collection and treatment methods provided by the local authorities.

LIGHTAPP

LIGHT
APP

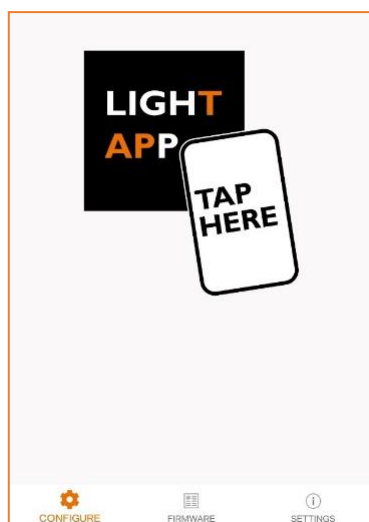
LightApp® is the official Dalcnet application through which it is possible to configure, in addition to the functions of the MINI-1CV-DALI, also all the different Dalcnet products equipped with NFC technology.

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



START-UP AND FIRST INSTALLATION

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.

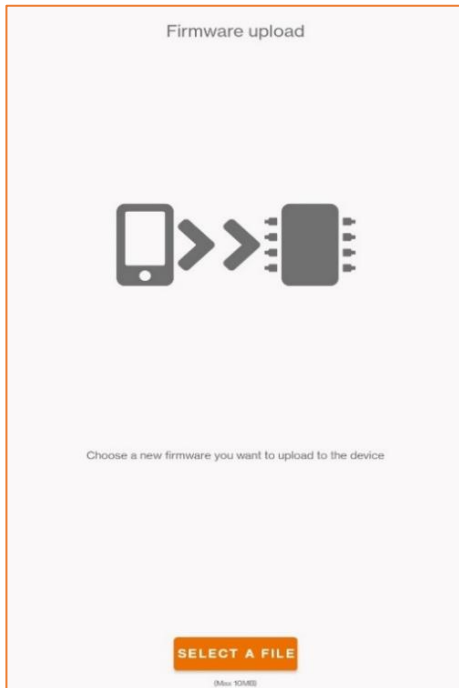
SETTINGS

Application	
Language	English
App version	1.2.2-20231213
Remember password	☐
Password to write	
Le mie password	
The Company	
Address	Via Lago di Garda, Altavilla Vicentina, VI
 www.dalcnet.com	

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



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

The requested file must be of type *.bin.

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

ATTENTION:

- ♦ **The upload procedure is irrevocable. Once the upload has started, it will not be possible to pause it.**
- ♦ **If the procedure is interrupted, the firmware will be corrupted and you will need to repeat the loading procedure.**
- ♦ **At the end of the firmware load, all previously set parameters will be reset to factory defaults.**

If the update is successful and the loaded version is different from the previous one, the device will flash 10 times on the connected load.

PARAMETERS LOADING

IMPORTANT: The parameters must be written when the device is switched OFF (without input power).

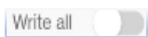
READ



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 written. 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 examples of the same model.

WRITE PROTECTION



By means of the padlock button it is possible to set a lock 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.

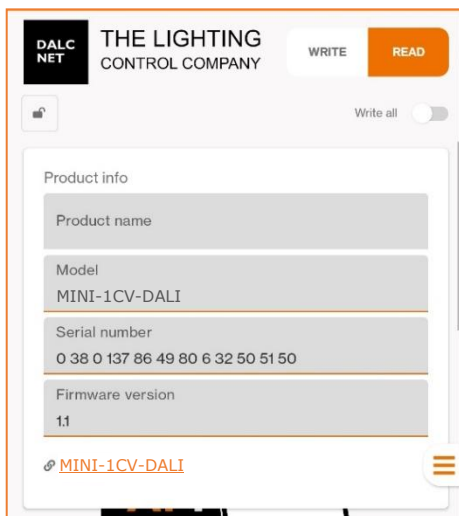
WRITE ERROR

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* screen, you can view a variety of information about the product you are about to configure.

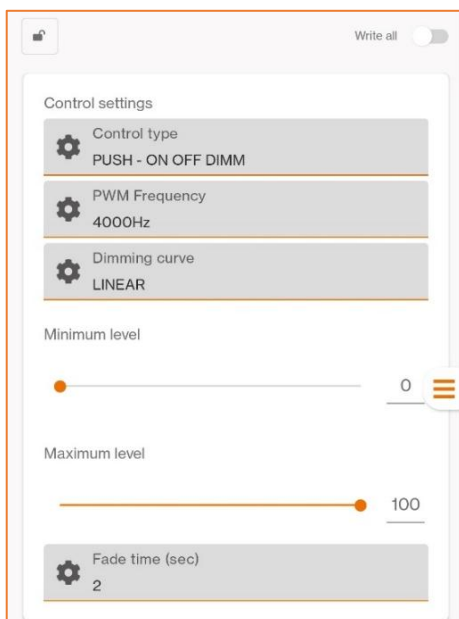
Product Name: User-settable field for easy identification (e.g. Office, Meeting Room, Lobby, etc.). By default, the product name is the same as the Model field.

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



On the *Control Settings* screen, you can configure the different parameters for the driver's operation mode.

Control type: allows you to set the operating logic of the analog input in case of connection to a button or switch (see next paragraph).

PWM Frequency: sets the frequency¹¹ of the PWM modulation of the output.

Dimming curve: sets the dimming curve of the device for operation with local control. For details on the different curves that can be set, see the [Dimming Curves](#) section of this manual.

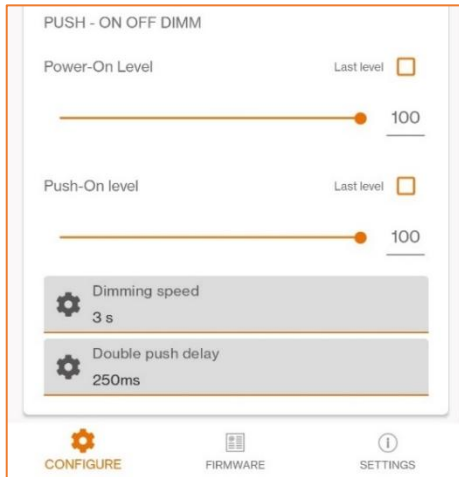
Minimum Level: sets the minimum level of light intensity that can be reached via local command (default value = 1).

Maximum Level: sets the maximum level of light intensity that can be reached via local command (default value = 100).

Fade time: the time in seconds that the output takes to make a transition from one level of light intensity to another.

¹¹ In the case of applications under severe thermal conditions, it is advisable to lower the PWM frequency to a minimum (307 Hz).

CONTROL TYPE: PUSH-ON/OFF/DIMM



Within the "Control type" is configured as push-button (Push-ON/OFF/DIMM), you can set the local command parameters available for MINI-1CV-DALI.

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

Last level: enable the memory function. The Power-On level will correspond to the last level assumed before the supply voltage was removed.

Push-On level: it is the intensity value to which the output is brought when the device is accessed by means of a button.

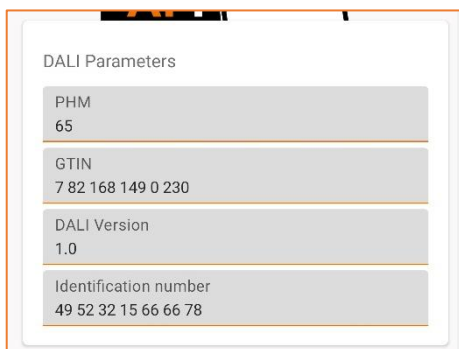
Last level: enable the memory function. The Push-On level will correspond to the last level assumed before the device was turned off by button.

Dimming speed: it is the time needed to dim the light from 100% to 0%.

Double push delay: allows you to set the speed at which you need to perform the double-quick press.

DALI PARAMETERS

The following information can be viewed via LightApp®.



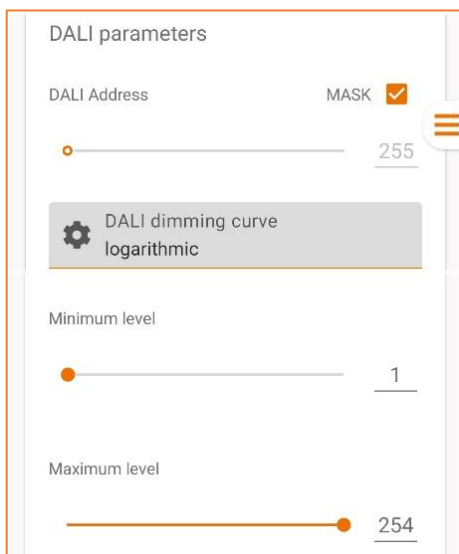
PHM: indicates whether the switched-ON device is switchable only (PHM=254) or dimmable (PHM<254) (non-editable field).

GTIN: the unique DALI code of the product (non-editable field).

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

Identification Number: serial number of the microcontroller (non-editable field).

The following parameters can be configured and displayed for the output.



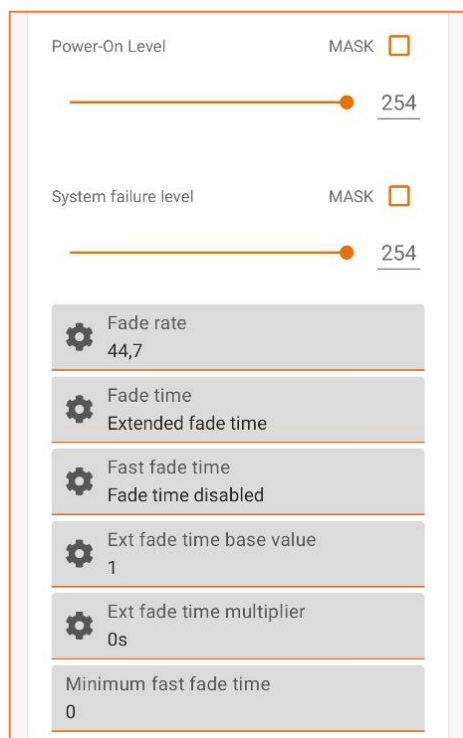
DALI Address: Sets the address associated with the device in the DALI network.

Mask: Enables or disables control.

Dimming Curve: Sets the dimming curve of the device for operation with remote control. For details on the different curves that can be set, see the §[Dimming Curves](#) section of this manual.

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).



Power-On Level MASK ☐
254

System failure level MASK ☐
254

Fade rate 44,7

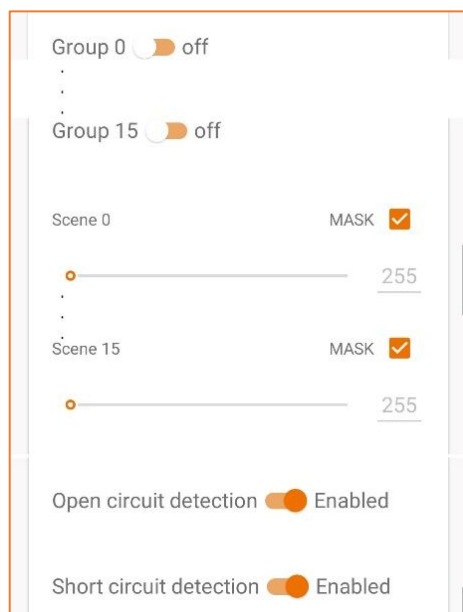
Fade time Extended fade time

Fast fade time Fade time disabled

Ext fade time base value 1

Ext fade time multiplier 0s

Minimum fast fade time 0



Group 0 off

Group 15 off

Scene 0 MASK ☒
255

Scene 15 MASK ☒
255

Open circuit detection Enabled

Short circuit detection Enabled

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.

Fade rate: indicates the rate (in steps/second) at which the output changes in brightness when the UP and DOWN commands are received.

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

Fast fade time: sets the amount of time it takes for the output to make a *quick* transition from one light intensity level to another.

Extended Fade time base value: sets the base value for the Extended Fade time (available if "Fast fade time" is disabled).

Extended Fade time multiplier: sets the multiplier value for the Extended Fade time (available if "Fast fade time" is disabled).

Minimum fast fade time: Shows the minimum time for the fast transition (non-editable field).

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

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

Mask: Enables or disables control.

Open Circuit Detection: enables or disables output open-circuit detection (refer to the following section).

Short-Circuit Detection: enables or disables output short-circuit detection (refer to the following section).

OPEN-CIRCUIT AND SHORT-CIRCUIT DETECTION

By the Lamp-Failure command, the DALI protocol allows you to detect situations in which the LED load connected to the output of the MINI-1CV-DALI may not work as expected, such as an incorrect connection (detecting it as an Open Circuit error) or a defect in the LED load (detecting it as a short circuit).



Open circuit detection Enabled

Short circuit detection Enabled

Enable/Disable the Open Circuit function: if a very small load is connected to the output of the dimmer, false open-circuits may be detected in some cases. In this case, it is recommended to disable the Open Circuit detection function.

Enable/Disable the Short Circuit function: if a load with a high in-rush current is connected to the dimmer output, in some cases false short-circuits may be detected. In this case, it is recommended to disable the Short Circuit detection function.