USER GUIDE
DALI2-CV-M2

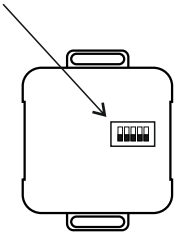
Dimming interface for voltage LED 12-24-48Vdc (CV)

General Characteristics

Plastic case
Device not for indipendent mounting
Electric class protection III
Case of reduced size
Protection degree IP20

DALI Product ID 11037
GTIN 8057760695917

ATTENTION!
The dip switch is located on the right side in the back of the dimmer case!



www.leflighting.it

Comando Command	1	2	3	4	5
PUSH 230V	-	-	-	-	-
PUSH 12-24-48V	-	-	-	-	-
DALI 1	-	-	-	-	ON
DALI 1 ibrida	-	-	-	ON	-
DALI 2	ON	-	-	ON	-
Taglio di Fase	-	-	ON	-	-
0-10V | 1-10V	-	-	ON	-	ON
Potenziometro	-	-	ON	-	ON
Interruttore	-	-	ON	ON	-
Sensore di presenza	-	-	-	ON	ON
SLAVE	-	-	ON	ON	ON
Output PWM freq. 390Hz	x	-	x	x	x
Output PWM freq. 3000Hz	x	ON	x	x	x

DALI 2 | DALI DT6 | DIM DALI | DIM LE TE | DIM PUSH 230Vac | DIM PUSH 12-24-48V | DIM 0-10V | DIM 1-10V | DIM POT 47KΩ

CODICE CODE	Tensione di ingresso Input voltage (Vdc)	Tensione di uscita Output voltage (Vdc)	Corrente di uscita Output current (A)	Potenza di uscita Output power (W) @12Vdc	@24Vdc	@48Vdc	Comando Command	CC CV	Peso Weight (g)
DALI2-CV-M2	12-24-48	12-24-48	12	**144**	**288**	**576**	**PHASE CUT | PUSH | DALI 2 | 0-10V | 1-10V POT47KΩ | SWITCH | SENSOR**	CV	30

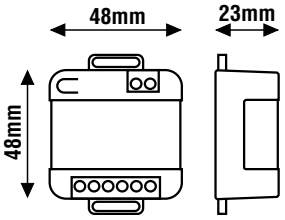
Reference Standards

EN 62386-207
EN 61347-1
EN 61347-2-11
EN 61547

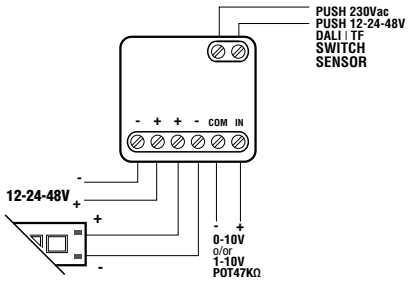
Default parameters:
- Start ON
- Minimum level 0.1%
- Fade ON 1 Sec
- Fade OFF 1 Sec
- LINEAR dimming curve
- PWM output frequency: 390Hz

Technical Features

Input voltage range 12-24-48Vdc | Output voltage range 12-24-48Vdc
Brightness regulator for LED modules 12-24-48Vdc
Phase-cut brightness adjustment with modes:
- LE Leading Edge
- TE Trailing Edge
Brightness adjustment through:
- push-button (PUSH 230V) (PUSH 12-24-48V)
- DALI signal
- 0-10V signal | 1-10V signal (active or passive)
- 47Kohm potentiometer
- switch | motion sensor
«LEVEL MEMORY» and «STATUS MEMORY» function
Maximum brightness function with double press of the button
Night light function with long press of the button when the light is off
Calibration (via procedure with external button) of:
- Minimum brightness level
- Fade ON | Fade OFF
- Output PWM frequency (390Hz, 3000Hz)
Possibility of syncro of more interfaces together
Open circuit protection (OCP)
Short Circuit Protection (SCP)
Overvoltage protection (OVP)
Protection against reversed polarity (RPP)
Operating ambient temperature Ta -20°C ÷ +50°C



Wiring Diagrams



To consult the complete instructions on the website www.leflighting.it scan the following QRCODE:

DALI2-CV-M2

ATTENTION:
The installation of the product must be followed by qualified personnel.
If the product is used for purposes other than the original ones or if it is connected incorrectly, LEF Lighting S.R.L. will not accept any responsibility for damages caused.

Reset to FACTORY PARAMETERS
With the light at 100%, press and hold for **at least 40 seconds** (the light will dim).
The dimmer resets and restarts at maximum brightness when the button is released.

PRODUCT TO BE DISPOSED DIFFERENTLY FROM URBAN WASTE
AEE Identification nr.IT18040000010321

SELV | IP20 | ta MAX 50°C | 576 WATT | DC 12V DC 24V DC 48V | CV | 55mm

22 PAP

MADE IN ITALY

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Modes of operation

PUSH-BUTTON mode

Comando Command	1	2	3	4	5
PUSH 230V	-	-	-	-	-
PUSH 12-24-48V	-	-	-	-	-

In order to activate this control/operation mode, the Dip switches must be set as shown above.

Control by push-button can be done by directly using the mains voltage (110÷230VAC) as in FIG. 1, or the output voltage of the power supply unit (12-24-48VDC), FIG. 2.
For the installation of the dimmer in the system, it is preferable to use the diagram shown in FIG. 1.
In this configuration the dimmer ensures isolation from the mains voltage.

The input range between DA P1 and DA P2 is DC: 10÷265V, AC 12÷265VAC 50÷65Hz.

The maximum current consumption of the PUSH interface is approximately 2mA.
The maximum distance of the dimmer from the push-button must not exceed 20m.
We recommend the use of shielded cables (in PUSH mode 12-24-48Vdc).
The dimmer, in the event of a **power failure**, saves the state of the output so as to restore the set level when power is restored.

PUSH interface operation

Single Click (rapid pressure <1sec)
- Switches the output on or off (ON/OFF).

Double Click (rapid pressure <1sec)
- Sets maximum brightness (output = 100%).
  Fast maximum light mode.

Long Press (long pressure >1sec)
- If the dimmer is in the OFF state, set the output to the minimum value (default= 1%).
  Disturbance-free night mode.
- If the dimmer is in the ON state, prolonged pressure allows the dimming of the output (up/down).

NOTE: check that the input and output connection cables are correctly inserted in the terminal carriage and not under the carriage itself. Incorrect insertion of the cable inside the carriage can lead to overheating or malfunctioning.

PUSH 230Vac mode

1

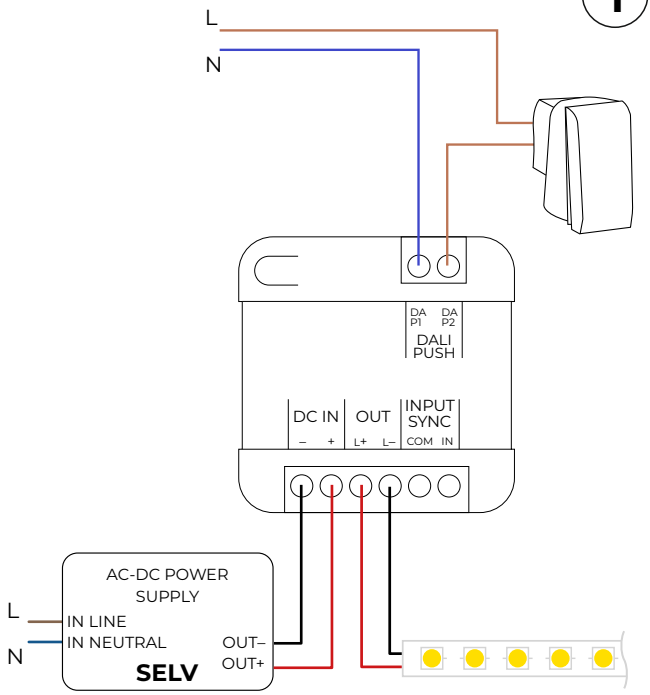

FIG. 1 - mains voltage push-button connection

PUSH 12-24-48Vdc mode

2

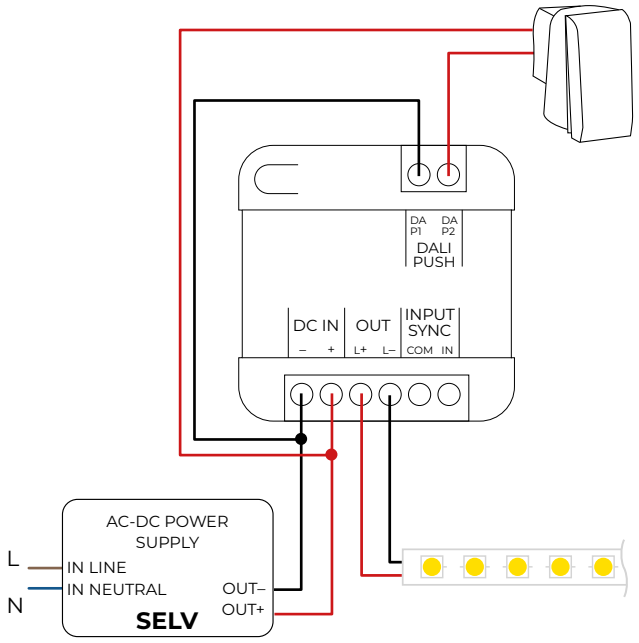

FIG. 2 - push-button connection with voltage from the power supply

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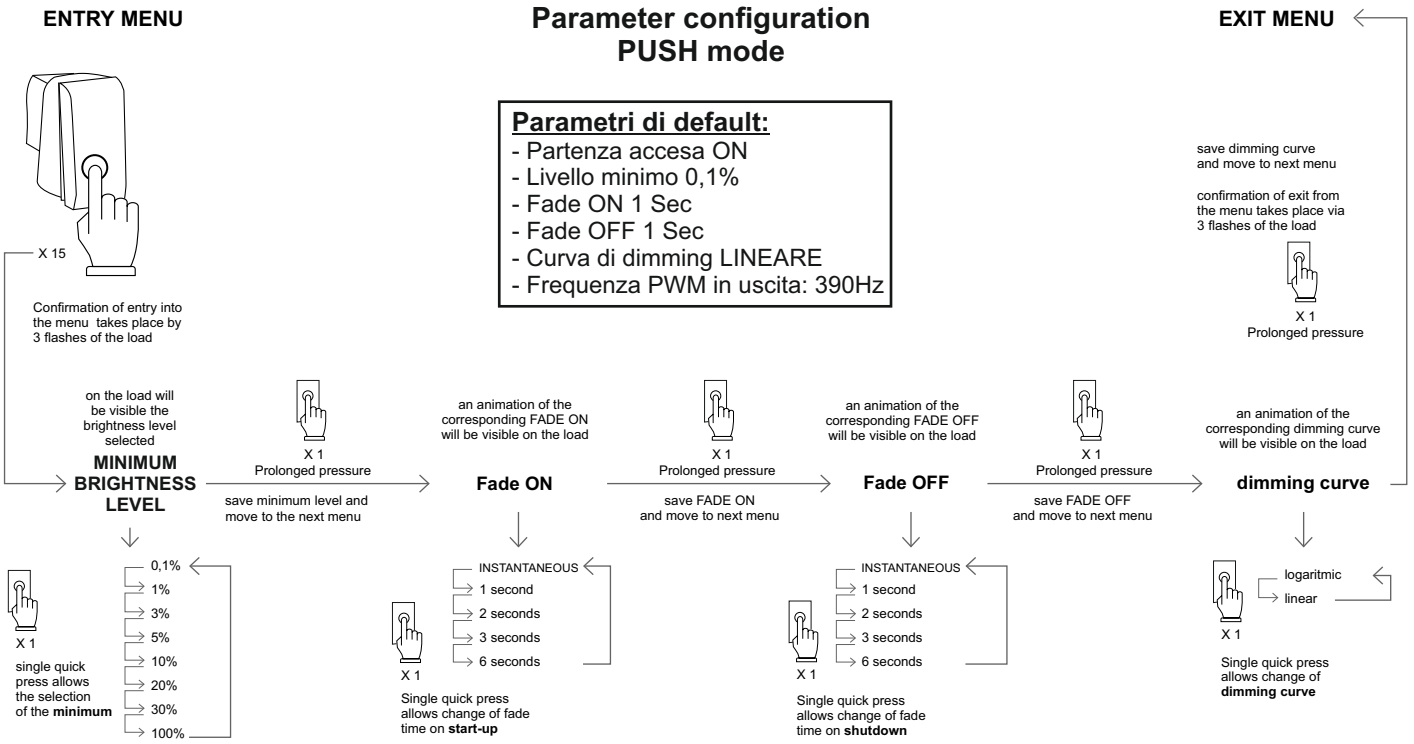

The DALI2-CV-M2 dimmer is equipped with a configuration menu for operating parameters.
Entry into the configuration menu of the 4 operating parameters takes place with 15 quick presses or more of the control button.
Confirmation of entry into the menu takes place via **three slow flashes of the load**.

- **First menu parameter: MINIMUM LEVEL (8 values)**
  Settable minimum levels: 0,1%, 1%, 3%, 5%, 10%, 20%, 30%,100%. **Default: 0,1%**
  Switching between the different levels is done with a quick press of the control button.
  A long press saves the minimum level and the menu automatically switches to the second parameter.

- **Second menu parameter: FADE ON (5 values)**:
  This FADE ON time makes switching on the load 'soft'.
  Settable times: INSTANTANEOUS, 1 second, 2 seconds, 3 seconds, 6 seconds. **Default: 1 second**
  Switching between the different times is done by quickly pressing the control button.
  In this parameter the dimmer shows a cyclic simulation of a Fade ON (0%-100% in the set time).
  A long press saves the Fade ON time and the menu automatically switches to the third parameter.

- **Third menu parameter: FADE OFF (5 values):**
  This FADE OFF time makes switching off the load 'soft'.
  Settable times: INSTANTANEOUS, 1 second, 2 seconds, 3 seconds, 6 seconds. **Default: 1 second**
  Switching between the different times is done by quickly pressing the control button.
  In this parameter the dimmer shows a cyclic simulation of a Fade OFF (100%-0% in the set time).
  A long press saves the Fade OFF time and the menu switches to the fourth parameter

- **Fourth menu parameter: Curve change (2 values):**
Allows each quick press to change curves and simulate them.
Settable dimming curves: LINEAR or LOGARITHMIC. **Default: LINEAR dimming curve.**
A long press saves the dimming curve and exits the dimmer from the parameter menu.
Confirmation of successful saving and exit from the menu takes place via **three slow flashes of the load**.

Reset to FACTORY PARAMETERS

To reset the dimmer to factory settings, press the button twice to set the load to maximum brightness, then hold for **at least 40 seconds** (the light will dim).When the button is released, the dimmer will be reset and restart at maximum brightness.

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DALI mode

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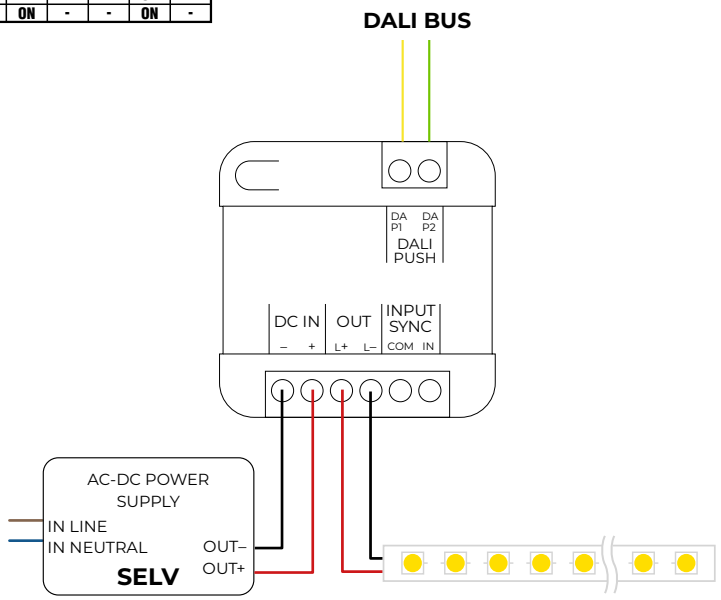
Comando Command	1	2	3	4	5
DALI 1	-	-	-	-	ON
DALI 1 ibrida	-	-	-	ON	-
DALI 2	ON	-	-	ON	-

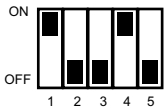


DALI 1

High compatibility for voltage-current converters
Short-circuit detection: OFF
Open-circuit detection: OFF

DALI hybrid

High compatibility with open-circuit detection
Short-circuit detection: OFF
Open-circuit detection: ON



DALI 2

Full compliant DALI2
Short-circuit detection: ON
Open-circuit detection: ON

FIG. 3 - DALI connection

n order to activate this control/operation mode, it is necessary to set the Dip Switches on the back of the box and connect the DA P1 and DA P2 inputs to the DALI bus.The dimmer offers 3 different operating modes with DALI2 input:

- The **'High Compatibility for Voltage-Current Converters'** mode allows the control of resistive and resistive/capacitive loads such as switching voltage-current converters or other loads with small capacitances. In this mode, short-circuit and open-circuit flags are not reported on the DALI bus.

- The **'High Compatibility with Open Circuit Detection'** mode allows the control of resistive and resistive/capacitive loads such as switching voltage/current converters or other loads with small capacitances. In this mode, the short-circuit flag is not reported on the DALI bus.

- The **'Full compliant DALI2'** mode allows control of resistive loads only. In this mode the short circuit and open-circuit flag are reported on the DALI bus. Note: When used with capacitance loads, the dimmer will switch off the load once the short-circuit flag is reported. The open circuit flag may be reported in the case of low power loads with reduced dimming.

Once the dimmer is configured in DALI mode, and disconnected from the DALI bus, the output status switches to the POWER ON LEVEL set via the DALI bus (default 255).

The maximum current drawn by the DALI bus is approximately 2mA.

DALI reference standards:
- IEC 62386-101 Ed2
- IEC 62386-102 Ed2
- IEC 62386-207 ED2 (DT6)

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Modes of operation

PHASE CUT 2 POLES mode

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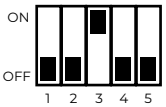

Comando Command	1	2	3	4	5
Taglio di Fase	-	-	ON	-	-

In order to activate this operating mode it is necessary to set the Dip Switches located on the back of the box and connect to terminals **DA P1** and **DA P2** an alternating voltage signal (voltage range AC 12÷265Vac 50÷65Hz) interrupted by a phase cut dimmer.

The control input can operate with phase cut or neutral cut.The input signal does not require polarisation.
The maximum current drawn by the phase-cut interface is approx. 2mA.

The picture in FIG. 4 represents the connection diagram with a dimmer equipped with two output poles for phase cutting.
The connection of DALI2-CV-M2 should be realised as if the interface were a dimmable mains voltage load.

The interface is able to work with all types of Phase cutting:
- TE: Trailing Edge: Descending phase
- LE: Leading Edge: Ascending Phase
- Hybrid, central, delayed and mixed phase cutting.

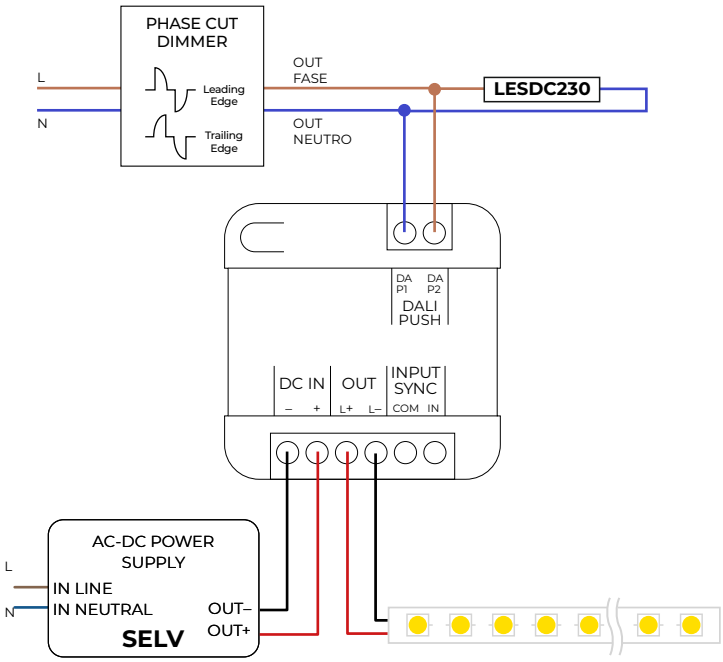

FIG. 4 - connection with 2-pole PHASE CUT dimmer

Phase cut dimmers that do not handle a minimum current of 2mA may lead to flashing or flickering of the dimmer output. If flickering or flashing occurs, it may be necessary to increase the output load of the phase cut dimmer.To increase the load, the following load resistor can be used and placed at the output of the Phase Cut dimmer between terminal DA P1 and DA P2:

CODICE CODE	**Tensione di ingresso** Input voltage **(Vac)**	**Frequenza di rete** Input frequency **(Hz)**	**Potenza dissipata** Dissipated power **(W)**	**Funzione** Function	**Peso** Weight **(g)**
LESDC230	220-240	50÷60	**1,3**	**SOPPRESSORE DI CORRENTE RESIDUA**	10

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PHASE CUT 1 POLE mode

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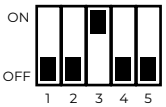

Comando Command	1	2	3	4	5
Taglio di Fase	-	-	ON	-	-

In order to activate this operating mode it is necessary to set the Dip Switches located on the back of the box and connect to terminals **DA P1** and **DA P2** an alternating voltage signal (voltage range AC 12÷265Vac 50÷65Hz) interrupted by a phase cut dimmer.

The control input can operate with phase cut or neutral cut.
In the case of a cut phase it will be necessary to bring the system neutral directly to DA P1 and the cut phase to DA P2.
In case of cut neutral it will be necessary to bring directly to DA P1 the system neutral and to DA P2 the cut neutral.
The input signal does not require polarisation.
The maximum current drawn by the phase-cut interface is approx. 2mA.

The image in FIG. 5 represents the connection diagram with a dimmer equipped with an output pole for phase cutting.
The connection of DALI2-CV-M2 should be realised as if the interface were a dimmable mains voltage load.

The interface is able to work with all types of Phase cutting:
- TE: Trailing Edge: Descending phase
- LE: Leading Edge: Ascending Phase
- Hybrid, central, delayed and mixed phase cutting.

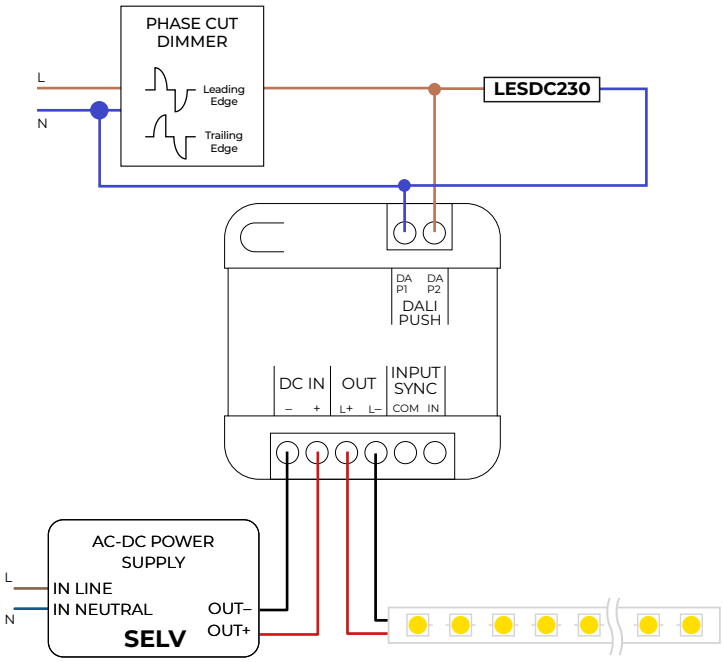

FIG. 5 - connection with 1-pole PHASE CUT dimmer

Phase cut dimmers that do not handle a minimum current of 2mA may lead to flashing or flickering of the dimmer output. If flickering or flashing occurs, it may be necessary to increase the output load of the phase cut dimmer.<u>To increase the load, the following load resistor can be used and placed at the output of the Phase Cut dimmer between terminal DA P1 and DA P2:</u>

CODICE CODE	**Tensione di ingresso** Input voltage **(Vac)**	**Frequenza di rete** Input frequency **(Hz)**	**Potenza dissipata** Dissipated power **(W)**	**Funzione** Function	**Peso** Weight **(g)**
LESDC230	220-240	50÷60	**1,3**	**SOPPRESSORE DI CORRENTE RESIDUA**	10

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0-10V/1-10V mode

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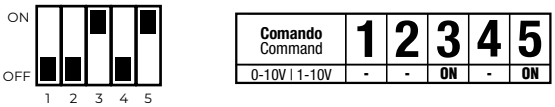

In order to activate this control/operation mode, it is necessary to set the Dip Switches on the back of the box and **connect the control signal from an active or passive 0-10/1-10V actuator to the INPUT COM (negative pole) and INPUT IN (positive pole) terminals.**

The maximum current absorbed by the dimmer from the 0-10V interface is 0.2 mA.
By default the dimming curve follows a LINEAR course proportional to the control voltage.
A voltage value below 1V is interpreted as load off.

If the 0-10V/1-10V signal is disconnected, the dimmer sets the output to the maximum level.
The maximum distance of the dimmer from the 0-10/1-10V actuator must not exceed 10m; the use of shielded cables and double SELV isolation from the mains voltage is recommended.

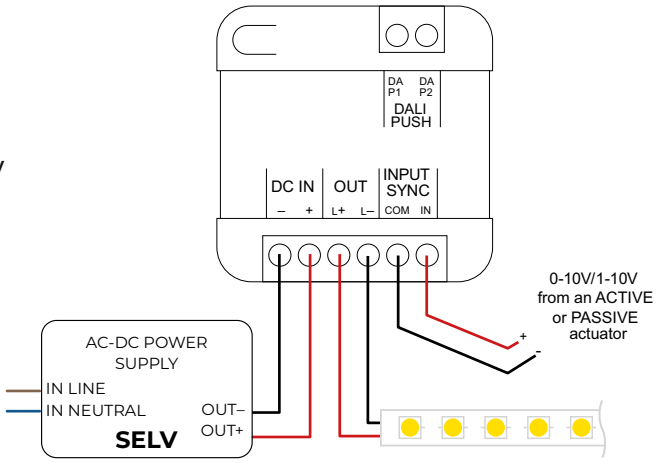

FIG. 6 - connection with active or passive 0/1-10V actuator

POTENTIOMETER mode

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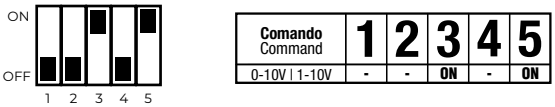

In order to activate this control/operation mode, it is necessary to set the Dip Switches on the back of the box and **connect the control signal from a 47Kohm linear potentiometer to the INPUT COM and INPUT IN terminals.**

A resistance value below 2.5 Kohm is interpreted as load off. The maximum brightness value is reached when the value of 45 Kohm.If the potentiometer is disconnected, the dimmer sets the output at maximum brightness.

We recommend the use of good quality potentiometers to avoid flickering or output instability.
The maximum distance of the dimmer from the potentiometer should not exceed 2m.We recommend the use of shielded cables and SELV double-isolation separation from the mains voltage.

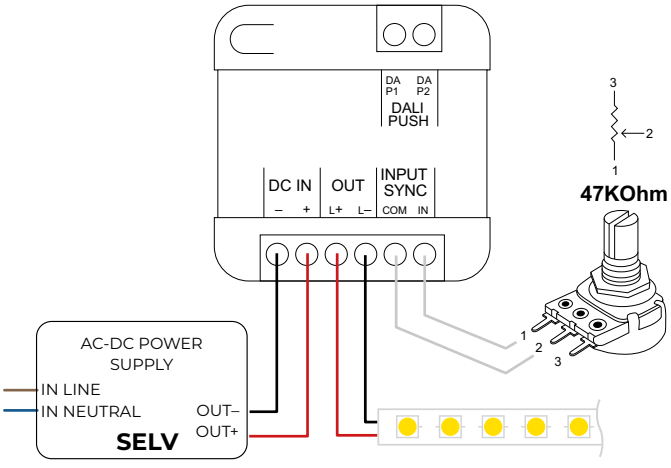

FIG. 7 - connection with a linear 47kohm potentiometer

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DIMMING mode with SWITCH

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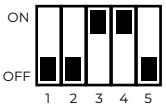
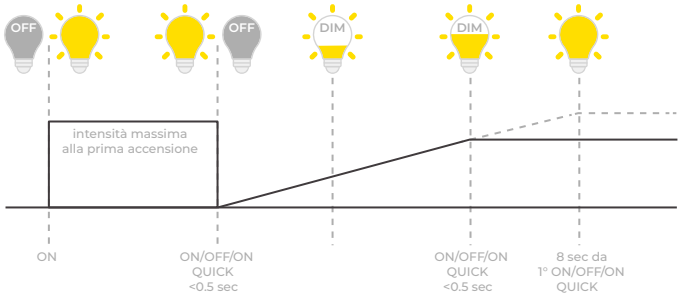


Comando Command	1	2	3	4	5
Interruttore	-	-	ON	ON	-

In order to activate this control/operation mode, it is necessary to set the Dip Switches on the back of the box and connect the PHASE and NEUTRAL coming from the system to the terminals DA P1 and DA P2.
This PHASE or NEUTRAL can be interrupted by a switch, diverter or inverter to switch on, switch off and dim the load connected to the dimmer.

The logic with which the dimming of the load will be carried out is shown in the diagram below:



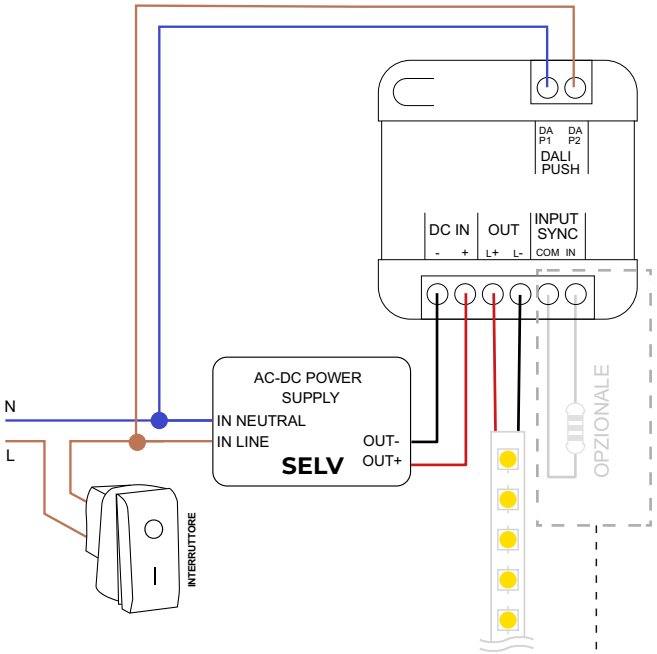


FIG. 8 - dimming connection on power failure

- Use the wall switch to switch the lights on.
- Quickly switch the lights off with the wall switch and then on again (within a maximum of 0.5 seconds).
The brightness will gradually increase.
- Press the switch again at the desired brightness to adjust it.
The chosen brightness will be stored automatically.
- If the switch is not pressed again within 8 seconds, the brightness will reach the maximum level.
This level will be stored automatically.

To adjust the minimum brightness level, if different from 5% (default), a resistor (1/4 watt or higher) or potentiometer can be inserted between the INPUT SYNC COM and IN poles.The minimum level will vary in relation to the resistor value according to the following table:

MINIMUM LEVEL	RESISTOR VALUE
5%	Not present o >47Kohm
10%	37Kohm
20%	35Kohm
30%	30Kohm
40%	27Kohm

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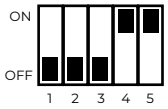
PRESENCE SENSOR mode - timed switch-off

Comando Command	1	2	3	4	5
TIMER	-	-	-	ON	ON



In order to activate this control/operation mode, the Dip switches must be set as shown above.

Control via push-button can take place using directly the mains voltage (110÷230VAC) as in FIG. 9,or the output voltage of the power supply unit (8÷53VDC), FIG. 10.
For the installation of the dimmer in the system, it is preferable to use the diagram shown in FIG. 9.In this configuration, the dimmer ensures isolation from the mains voltage.

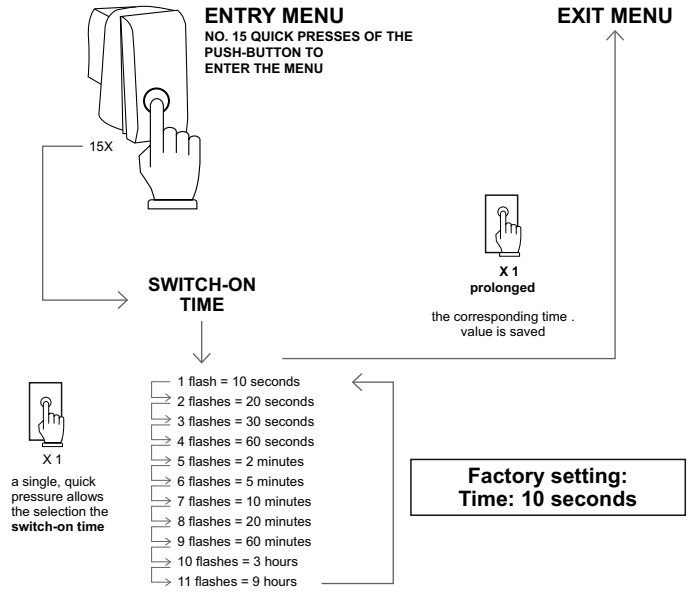
The input range between DA P1 and DA P2 poles is DC: 10÷265V, AC 12÷265VAC 50÷65Hz.

The maximum current drawn by the PUSH interface is approx. 2mA.
The maximum distance of the dimmer from the switch must not exceed 20m.
We recommend the use of shielded cables (in PUSH mode 12-24-48Vdc).

The dimmer, **in the event of a power failure**, saves the state of the output so as to restore the set level on its return.

PUSH Interface operation

Single Click (rapid pressure <1sec)
- With the first command impulse, timing starts; with each subsequent pulse the timing resumes according to the set time.At the end of the timing, the load switches off.



Factory setting:
Time: 10 seconds

TIMER FUNCTION - PUSH 230V

9

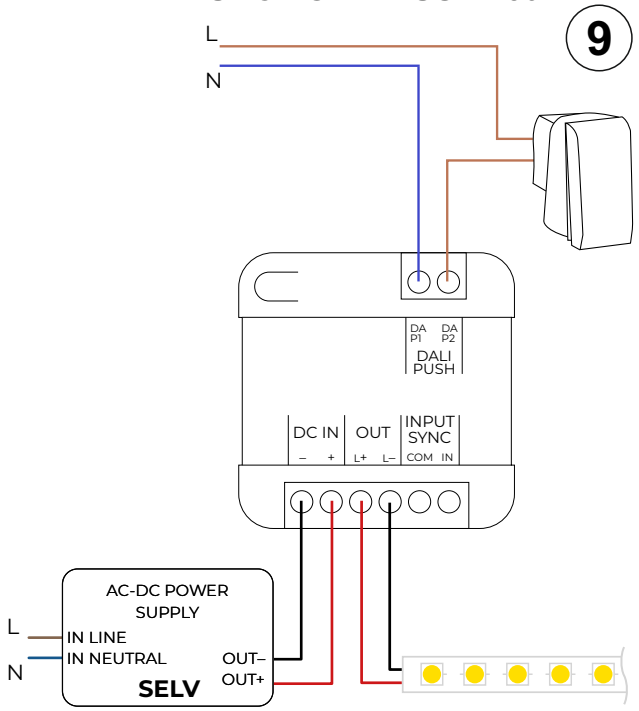


FIG. 9 - mains voltage push-button connection

TIMER FUNCTION - PUSH 12-24-48Vdc

10

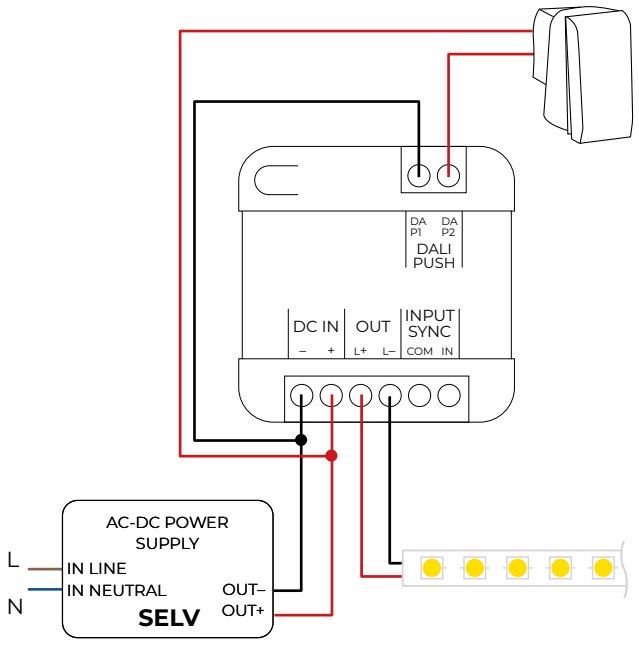


FIG. 10 - push-button connection with voltage from the power supply

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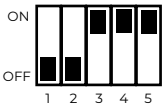
SLAVE Mode



Comando Command	1	2	3	4	5
SLAVE	-	-	ON	ON	ON

11

In order to activate this control/operation mode, the Dip switches must be set as shown above.In SLAVE mode the dimmer is able to receive a digital synchronisation signal from another DALI2-CV-M2.The DALI2-CV-M2 generating the synchronisation signal must be configured in any mode except those using the INPUT SYNC COM and IN poles as input.
SLAVE mode cannot be used with the following control signals:
- 0-10V Signal(active/passive)
- 1-10V Signal (active/passive)
- Potentiometer

The maximum connection distance between DALI2-CV-M2 should not exceed 20m.
The use of a shielded cable with a COM pole cross-section appropriate to the type of slave load used is recommended:
From 2A to 4A: >1,5mm²
From 4A to 12A: >2,5mm²
This indication is necessary for the correct alignment of the negative pole of the DC power supply - which corresponds to the INPUT SYNC COM pole.

It is possible to control the MASTER with the following control modes:
- PUSH 230Vac mode (see diagram (1))
- PUSH 12-24-48Vdc mode (see scheme (2))
- DALI mode (see scheme (3))
- PHASE CUT mode (see scheme (4) and (5))

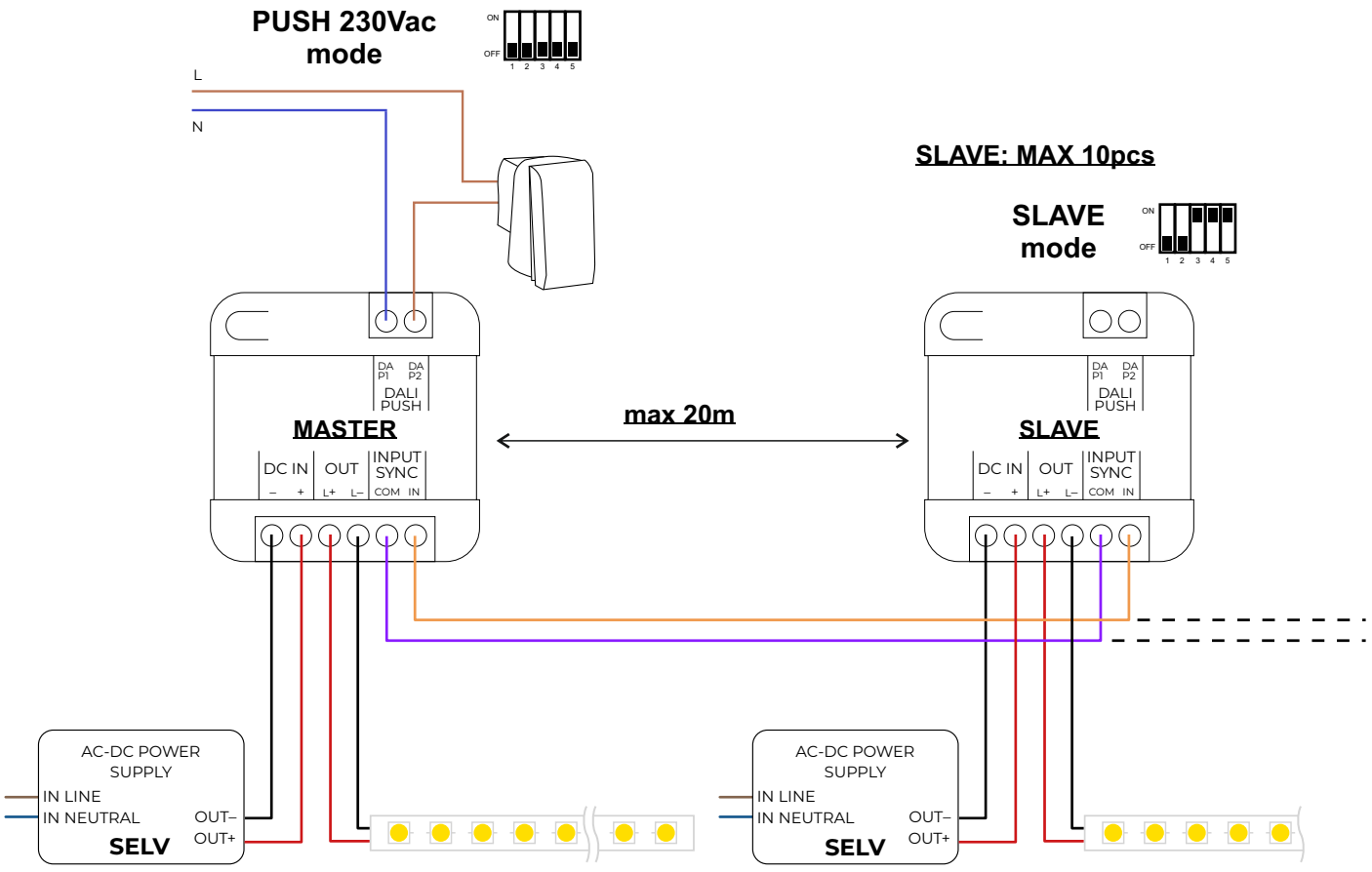


FIG. 11 - SLAVE connection to DALI2-CV-M2 with PUSH-BUTTON input

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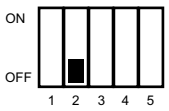
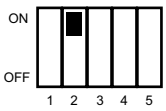
USER GUIDE
DALI2-CV-M2

Modes of operation

Setup PWM output frequency



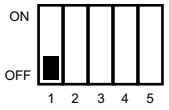
PWM output frequency **390Hz** (default)



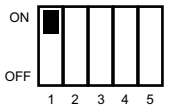
PWM output frequency **3000Hz** (Flicker Free)

The PWM output frequency can be set via **dip-switch 2.**
The default output frequency is 390Hz (Dip Switch 2 to OFF).
This frequency is suitable for the use of all resistive or resistive-capacitive loads including voltage-current switching converter or linear converters with frequency-limited.Setting dip switch 2 to ON sets the output frequency to 3000Hz. This parameter allows the dimmer to comply with the IEEE1789-2015 directive and be declared FLICKER FREE. Setting the output frequency to 3000Hz does not lower the maximum current of 12A.The use of the 3000Hz frequency output must be adapted to the type of load used, which must allow this frequency to be used.
The use of loads not suitable for PWM dimming with a frequency of 3000Hz may compromise the operation of the dimmer or the load and lead to irreversible damage to them.
When using the 3000Hz output with capacitive loads, which are suitable to be dimmed via high-frequency PWM, it is recommended to disable the active internal short-circuit protection. This disabling is done by setting dip switch 1 to OFF.

Dip switch setting to enable/disable short circuit ACTIVE:



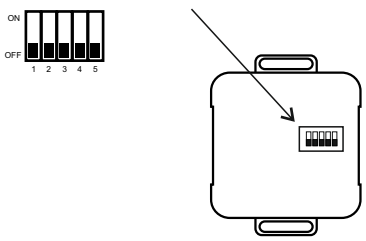
short-circuit protection ACTIVE: OFF



short-circuit protection ACTIVE: ON

When disabling the short-circuit protection ACTIVE, always use a short-circuit protected power supply unit for LEDs according to EN61347-1, EN647-2-13 or equivalent. Alternatively, use an external fast fuse with a tripping current commensurate with the load. Failure to take these precautions in the event of a short circuit could lead to irreversible damage to the dimmer.

ATTENTION!
The dip switch is located on the right side in the back of the dimmer case!



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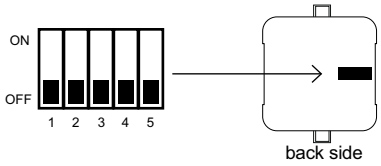
ISTRUZIONI
DALI2-CV-M2

Modalità di funzionamento

ATTENTION!
The dip switch is located on the right side in the back of the dimmer case!



Dip switch settings summary

PUSH mode

See diagram ① and ②

PHASE CUT mode

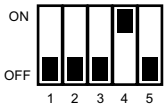
See diagram ④ and ⑤

DALI DT6 mode

See diagram ③

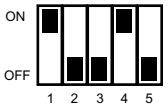
High compatibility for voltage-current converters
Short-circuit detection: OFF
Open-circuit detection: OFF

DALI 1



High compatibility with open-circuit detection
Short-circuit detection: OFF
Open-circuit detection: ON

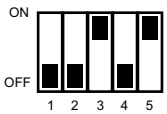
DALI 1 hybrid



Full compliant DALI2
Short-circuit detection: ON
Open-circuit detection: ON

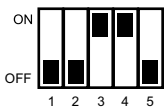
DALI 2

Active/passive 0-10V/1-10V and linear 47Kohm POTENTIOMETER mode



See diagram ⑥ e ⑦

Dimming mode on power failure

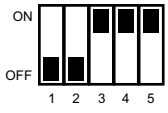


See diagram ⑧

Timed switch-off mode (TIMER) via switch or presence sensor

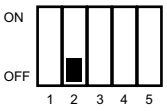
See diagram ⑨ ⑩

Slave mode

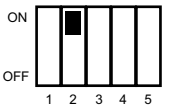


See diagram ⑪

Setup PWM output frequency



PWM Output frequency **390Hz** (default)



PWM Output frequency **3000Hz** (Flicker Free)

[AA] Rev. V2.11 22/07/2025

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