

INSTRUCTIONS MANUAL

CONSTANT CURRENT CONTROL GEAR FOR LED MODULES

Types: **DLCM ...-E-DALI** and **DLCM ...-E-C2-DALI**

The constant current control gear for LED modules use sensitive electronic components and should be handled with the same care as any other electronic equipment. In order to achieve a long life and correct functioning, both in the control gear and in the LED module, it is necessary to follow these manufacturer's recommendations.

SECURITY



The control gear for LED modules must be installed inside the light fixture. Maintenance and replacement must be carried out by qualified personnel, with no voltage connected. The instructions given with the product and the current regulations must be strictly followed.

EARTH WIRE



The earth wire must be connected to the control gear and the light fixture. It is convenient to connect the metallic structure of the false ceiling (if one exists) to the earth wire.

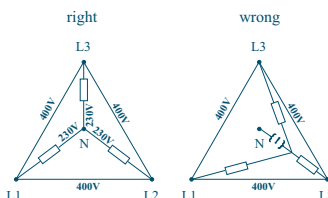
ELECTRICAL SUPPLY



The voltage and frequency of the power line must be within the normal working range specified on the equipment. The polarity indicated must be respected (phase and neutral).

Operation with constant direct current is only allowed in specially designed equipments.

In 400 V triphase installations, it must be ensured that the neutral is always connected; otherwise the 400 V could reach the equipment with the consequent risks. When the installation is being carried out the load distribution between phases must be balanced as much as possible.



Any procedure at LED lamp connection must be made without electrical supply.

INSULATION TEST



If an insulation test in the circuits which supply the LED driver in the installation is carried out, it must be done applying the test voltage between the phases and the neutrals all together and the earth wire. The test voltage must never be applied the phases and the neutral or between phases.

OPERATING TEMPERATURE



It must be ensured that the maximum atmospheric temperature in the installation does not exceed the t_a marked on the equipment, and an adequate degree of protection against humidity must be provided. Under no circumstances must the t_c temperature marked on the driver's casing be exceeded due to the fact that continued operation at higher temperatures produces a progressive reduction in life expectancy.

TERMINAL BLOCK AND WIRE PREPARATION



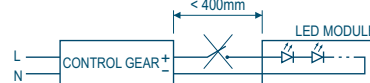
The use of only one rigid wire with a section between 0,5 and 1,5mm² and a stripped length 7-9 mm is recommended. If a previously inserted wire is to be extracted, do not use excessive force on the connection supports to avoid breaking.

INSTALLATION



Placing a switch in the output of the control gear is not allowed. May cause damages in control gear and LED module.

Any procedure at LED lamp connection must be made without electrical supply.

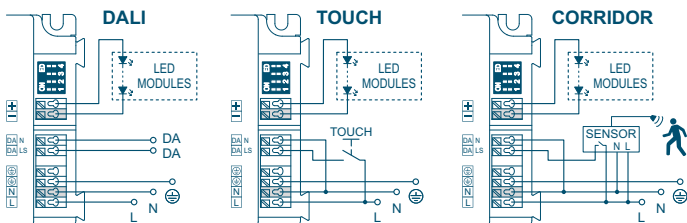


DIP SWITCH HANDLING



DIP switch handling once the device is working may cause its breakdown.

WIRING DIAGRAMS



RADIO FREQUENCY INTERFERENCES (RFI)

To comply with IEC / EN 55015 (EMC), the wiring length of the load terminals should not exceed 400 mm.

The mains power cables should not be crossed with the cables going to the load and separated as far as possible from these.

PROTECTION SWITCHES

Each group of control gear for LED modules must be protected by a magnetothermal circuit breaker and a differential dedicated circuit breaker. Equipments are resistant to transient overvoltages specified in regulations, and must be installed on different circuits separated from each other inductive loads (inductive ballasts, motors, fans etc.)



Differential circuit breaker.

The function of the anti-interference filters in control gear is to divert interference to the earth wire as leakage current. In triphase systems, Distribute the light fixtures equally between the three phases. The leakage currents will compensate each other. In monophasic systems, The use of a maximum of 35 control gears with each circuit breaker with 30mA sensitivity is recommended.



Automatic circuit breaker.

The ignition of LED modules with these control gears is simultaneous. At the moment of connection, the equipment's capacitors create a strong pulse of current of very short duration, this is called Inrush current. The installation of a maximum number of control gear depending on the type and characteristics of the magnetothermal protection is recommended. See table.

Type	Inrush Current		Max no. of equipment per circuit breaker				RCCB 30mA
	I. Peak A	Time µs	Type B		Type C		
			10A	16A	10A	16A	
DLCM ...-E-DALI	23	240	10	13	14	22	35
DLCM ...-E-C2-DALI							

CONSTANT CURRENT CONTROL GEAR FOR LED MODULES AND PROTECTION SYSTEM RESPONSE					
Type	Absence of LED module. Open circuit	Overload	Short-circuit in output to LED module	Supply voltage > 264V	Overtemperature
DLCM ...-E-DALI	Blocks: Waits for a lamp replacement	Blocks	It restarts when problem is solved	Risk of fault	Dynamic thermal protection
DLCM ...-E-C2-DALI					

Block: Stand-by or rest situation

TOUCH DIM

Dimming system by using standard normally open switches.

- ~ Memory function included:
 - In normal operation mode, it switches on in the dimming level existing before going to standby mode.
 - After a mains supply failure, it returns to the dimming level existing before the failure.
- ~ Control wires requirements:
 - Standards according to regulations for 230V installations.
- ~ Control signal:
 - Nominal value: 220-240 VAC / 50-60 Hz
 - Permitted input voltage AC: 198-264 VAC / 50-60 Hz
 - Polarity free.
 - Constant voltage: Not permitted.
- ~ Maximum length of control wire from the push-button to the control gear: no limit.
- ~ Maximum number of control gears per control wire: 25 units.
- ~ Maximum number of push-buttons in parallel per control wire: no limit.
- ~ Touch DIM and DALI control modes cannot be used simultaneously.
- ~ Disconnect mains before changing between Touch DIM and DALI control modes.
- ~ Asynchronisms: the greater the number of control gears connected and the length of the line of control the more asynchronisms may appear in the power on and regulation of different points of light. In this case, the synchronization dimming pulse should be done (long pulse > 10s).
- ~ Touch Dim responses:

Pulse type	Pulse duration	Control gears reactions	
Voltage dips	0 - 50 ms	Ignore	Do not change state
Short	50 ms - 500 ms	ON / OFF (standby)	Switch between on/off (standby)
Long	500 ms - 10 s	Dimming	Dim in the opposite direction of the last dimming mode towards either minimum or maximum light level.
Extended	> 10 s	Synchronize	Dim up to 50%. In the next dimming pulse, all connected devices will dim in the same direction, towards maximum light level.

CORRIDOR FUNCTION

Dimming system that controls light level when a presence is detected by a conventional mains on/off sensor connected in DALI input.

- ~ Corridor function is implemented in all DLCM-E-DALI control gears, but it is not activated. For activating corridor mode, a conventional mains on/off sensor must be connected in DALI input (look at wiring diagrams) and detects at least 120 seconds of motion.
- ~ For disarming the corridor function is necessary to detect 5 presences (or pulses by using standard normally open switch) in an interval between 2 and 3 seconds. Corridor function can also be deactivated by receiving any DALI command.
- ~ Operation:
 - Presence detection: control gear dim up to 100% light level in less than 0.5 seconds.
 - Non presence detection: When no presence is detected, control gear keeps on providing 100% light level during 60 seconds. Then, control gear decreases to 10% light level by performing a soft dimming during 32 seconds.
 - Without a presence: control gear keeps on providing 10% light level indefinitely.