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INSTRUCTIONS MANUAL

CONSTANT CURRENT CONTROL GEAR FOR LED MODULES

Types: DLCM ...-2E-C2-M4D

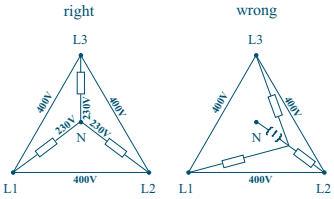
The constant current control gear for LED modules use sensitive electronic components and should be handled with the same care as any other electronic equipment. In order to achieve a long life and correct functioning, both in the control gear and in the LED module, it is necessary to follow these manufacturer's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

SECURITY

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.

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).
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.
Between the primary terminal and the secondary terminal satisfy reinforced insulation.

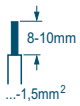
BASIC AND REINFORCED INSULATION

Basic insulation is maintained between live parts (AC-L, AC-N, PUSH terminal) and DALI circuits (DA1, DA2 terminal), supplementary is maintained between DALI circuits and output circuits (DIM+, DIM-, LED+, LED- terminal) (based upon working voltage equal to 240VAC).
Reinforced insulation is maintained between live parts and output dimming (DIM+, DIM-terminal)/ output (LED+, LED- terminal), no insulation was maintained between output dimming and output.
Output dimming terminal shall be connection to a SELV source.

OPERATING TEMPERATURE

It must be ensured that the maximum atmospheric temperature (-20ºC...+45ºC) in the installation does not exceed the ta marked on the equipment, and an adequate degree of protection against humidity must be provided.
Under no circumstances must the tc 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.

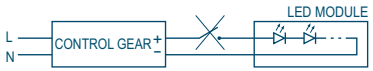
TERMINAL BLOCK AND WIRE PREPARATION



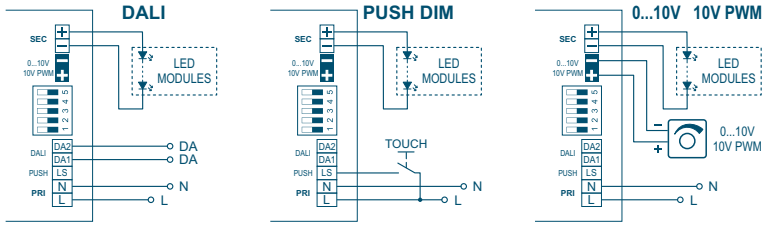
The use of only one rigid wire (cord type at least H03VVH2-F) with a section between 0,75 - 1,5 mm² at the primary side and 0,5 - 1,5 mm² at the secondary is recomendered.
If a previously inserted wire is to be extracted, press down the "push button" and remove the cable from front, do not use excessive force on the connection supports to avoid breaking. Wire preparation as below.

INSTALATION

Placing a switch in the output of the control gear is not allowed. May cause damages in control gear and LED module.
Connection for LED modules shall be installed by professional person.
Any procedure at LED lamp connection must be made without electrical supply.

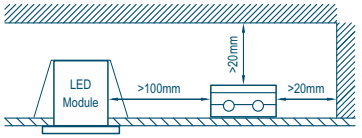


WIRING DIAGRAMS



FIXING CONDITIONS

Distances minimal recommended



RADIO FREQUENCE INTERFERENCES (RFI)

To comply with IEC / EN 55015 (EMC), the wiring length of the load terminals must be kept as short as possible.
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 magnetothermical 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 monophase 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 magnetothermical protection is recommended. See table.

Type	Inrush Current		Max no. of equipment per circuit breaker				
	I. Peak	Time	Type B		Type C		RCCB
	A	µs	10A	16A	10A	16A	30mA
DLCM 25/250...600-2E-C2-M4D	30	35	30	48	35	55	35
DLCM 46/650...1100-2E-C2-M4D	35,6	50	18	28	21	34	35

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 ...-2E-C2-M4D	Blocks: Waits for a lamp replacement	Blocks	It restarts when problem is solved	Risk of fault	Dynamic thermal protection

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
- Polarity free.
- Constant voltage : Not permitted.

~ Maximum length of control wire from the push-button to the control gear : 105 mts.

~ Compensation measures must be applied for line lengths required to be more than 25 meters long (bell tranformer, resistance).

~ The PUSH button can only be connected to the AC/L and PUSH terminals of the driver. It results in the short circuit if the PUSH button is connected to the AC/N terminal.

~ Maximum number of control gears per control wire : 20 units.

~ Maximum number of push-buttons in parallel per control wire : 20 units.

~ 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.

Synchronization maneuver:

1º -	Pulse long	> 0,5 seg	All luminaires switch on.
2º -	Pulse short	< 0,5 seg	All luminaires switch off.
3º -	Pulse long	> 0,5 seg	All luminaires switch on and dimming.

Pulse type	Pulse duration	Control gears reactions	
Voltage dips	< 0,04 seg	Ignore	Do not change state.
Short	0,04 seg - 0,5 seg	ON / OFF (standby)	Switch between on/off (standby).
Long	0,5 seg - 5 seg	Dimming	Dim in the opposite direction of the last dimming mode towards either minimum or maximum light level. (2% , 100%)
Extended	> 5 seg	Ignore	Do not change state.

DALI REGULATION

Compatible with both DALI and DALI-2.

Addressing possible: - Individually (max. 64 IP addresses).
- In groups (max. 16).
- All together.

Signal voltage requirements:

DALI input	Min.	Typ.	Max.
High level	9,5 V	10 V	22,5 V
Low level	- 6,5 V	0 V	6,5 V

0-10V or 10V DIMMING

Compatible with both passive and active 0-10V dimmer.

For active dimmer, over 11VDC output to EGC is not permited.

The maximum permissible length of the control line is 100 meters.

The dimming of the lighting is done by means of the control signal 1-10V :

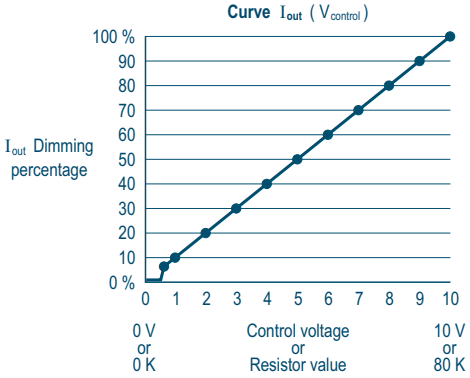
10 V = Maximum Level = Control Circuit opened

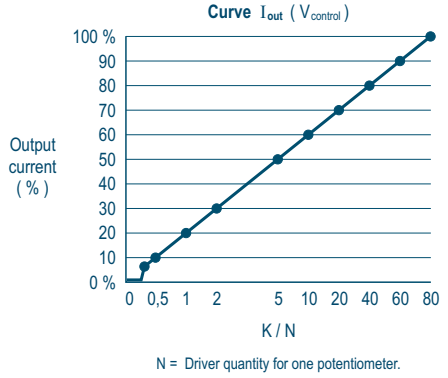
0 V = Minimum Level = Control Circuit closed.

The tension of the control circuit is generated by the driver itself and is separated from the mains voltage.

In three-phase installations, the control signal can be the same for equipment connected to different phases.

	Max. output level	Min. output level	Output level when dimming signal leas than 0,57V	Output level when dimming wire is shorted
DC 0-10V	100 %	5,7 %	0	0





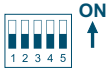
N = Driver quantity for one potentiometer.

DIP SWITCH HANDLING

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

DLCM 25/250...600-2E-C2-M4D

P in W	Io DC mA	P out W	1	2	3	4	5
13	250	10,5	—	—	—	—	—
16	300	12,6	ON	—	—	—	—
18	350	14,7	—	ON	—	—	—
20	400	16,8	ON	ON	—	—	—
22	450	18,9	—	—	ON	—	—
25	500	21,0	ON	—	ON	—	—
27	550	23,1	—	ON	ON	—	—
29	600	25,2	ON	ON	ON	—	—



DLCM 46/650...1100-2E-C2-M4D

P in W	Io DC mA	P out W	1	2	3	4	5
31	650	27,3	—	—	—	—	—
34	700	29,4	ON	—	—	—	—
36	750	31,5	—	ON	—	—	—
39	800	33,6	—	—	ON	—	—
41	850	35,7	ON	—	ON	—	—
43	900	37,8	—	ON	ON	—	—
46	950	39,9	—	—	ON	ON	—
48	1000	42,0	ON	—	ON	ON	—
51	1050	44,1	—	ON	ON	ON	—
53	1100	46,2	ON	ON	ON	ON	—

DIMENSIONS AND Tc POINT