

## INSTRUCTIONS MANUAL

# 1...10V DIMMABLE CONSTANT CURRENT CONTROL GEARS FOR LED MODULES

Types: DLC ...-E-1...10V

The constant current control gears 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



A very low voltage installation (LVI) must be carried out whilst taking the necessary precautions in order to respect the safety of all its parts. The contact or crossing between the mains supply conductors and the very low voltage installation conductors must be avoided and the insulation between the conductors must be > 4kV. Maintenance and the changing of parts must be carried out by a qualified person with the mains disconnected and the instructions and current regulations must be strictly followed.

### EARTH WIRE



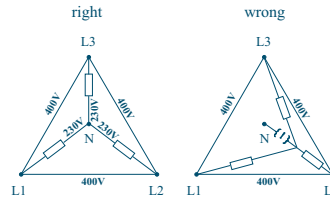
The earth wire must be connected to the control gear and the light fixture. It is convenient to connect the metallic structure of the false ceiling (if one exists) to the earth wire.

### 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).

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.



### 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 between 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



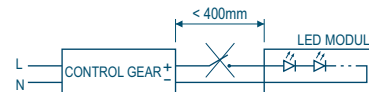
The use of only one rigid wire with a section between 0,5 and 1,5mm<sup>2</sup> and a stripped length 7-9 mm is recommended. If a previously inserted wire is to be extracted, do not use excessive force on the connection supports to avoid breaking.

### 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.**

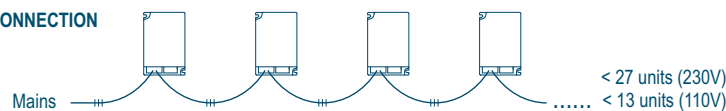


### RADIO FREQUENCY INTERFERENCES (RFI)



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.

### LOOP THROUGH POWER CONNECTION



## 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				Constant current control gear for led modules and protection system response				
	I. Peak A	Time µs	Type B 10A	Type B 16A	Type C 10A	Type C 16A	RCCB 30mA	Absence of LED module. Open circuit	Overload	Short-circuit	Overtemperature
DLC -E-1...10V	23	240	10	13	14	22	35	Blocks	Blocks	It restarts when problem is solved	Blocks

Block: The driver is in protection mode. The disconnection and connection of the mains will make operate again the equipment.

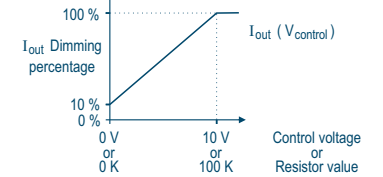
The dimming of the lighting is done by means of the control signal 1-10V :

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.



ELT of interfaces	Other products market
<p>Potentiometer EP : Regulation up to 150 ballast.</p>	<p>Any market system adapted to control technology 1-10V. Great ability of control, can command via radio....</p>
<p>Amplifier : ADB-50 + Potentiometer = 500 drivers maximum</p>	<p>For the dimming of an equipment it is possible a resistive potentiometer of 100 K - 470 K value.</p>
<p>Photodell.</p>	<p>Standard electronic dimmer for electronic fluorescence 1-10V. Manual rotary dimming The maximum current of the control stage is 150 µA per equipment, this parameter is extremely useful to know the maximum number of drivers that can be installed with a single control interface.</p>
<p>ADB-50 + Photodell SDB + Potentiometer = 500 drivers maximum</p>	<p>Sensor of light 1-10V with detection of presence incorporated and activable 1-10V.</p>

## WIRING DIAGRAMS

