iLC CORE

USER GUIDE

Fully PROGRAMMABLE control gear for LED modules

ORC < 5%

0...10V

ActiDIM

elt@elt.es - www.elt.es

1. INTRODUCTION

Thank you for choosing control gear for LED modules designed and manufactured by ELT (Especialidades Luminotécnicas S.A.U.). This user guide will help you learn about iLC CORE driver technology and configure your control gear so that it can be correctly integrated into your luminaire.

We advise you to check the latest available version of this document on the ELT website, **www.elt.es/en.**

1.1. Benefits of the technology

The iLC CORE series is a cost-efficient solution that incorporates multiple dimming modes and programmable functionalities. Given its extensive window of operation, long service life and resilience, the iLC CORE series joins the family introduced by our iLC PRO series, enabling you to choose the ideal lighting solution for every light point.

1.2. Classification and symbols

The nomenclature of the iLC CORE control gear, taking an example the **iLC 58C/350…700-XR**, is described as follows:

- iLC: Constant current control gear equipped with programmable technology.
- 58: Maximum output power.
- C: Symbol for the iLC CORE family.
- 350…700: Constant current output in milliamps in which regulation is permitted.
- XR: Casing format.

1.3. General features of the drivers

The main features of the iLC CORE control gear are:

- Build-to-use drivers with insulation double or reinforced insulation. IP20 ingress protection.
- Suitable for installation in Class I and Class II luminaires.
- Wide range of input voltages.
- High power factor.
- Low harmonic distortion.
- Low output ripple current.
- High quality light without flickering.
- Programmable by modulating output current size.
- Wide range of output current regulation.
- Configurable functionalities for an optimal lighting system design:
  - Adjustable output current (AOC).
  - LED module constant lumen output (CLO).
- Different regulation methods can be selected, adapting each lighting point to the needs of the installation:
  - 1-10V.
  - ActiDIM: stand-alone and dynamic dimming system that adapts to night hours.
  - ON/OFF: no regulation.

- Short circuit (from power-on), overload and open circuit protection.
- Control gear thermal protection.
- Protection against grid variations and power surges.
- Electronic circuit fully protected against humidity.
- Excellent thermal performance and extensive working temperature ranges.
- Up to 100,000h lifetime.

1.4. Portfolio

Ref nº	Model
9916176	iLC 58C/350…700-XR

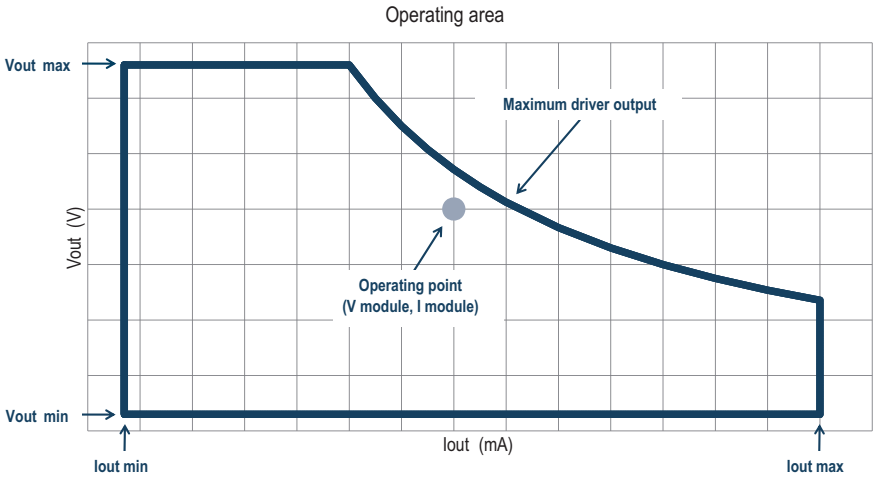
2. ELECTRICAL FEATURES

2.1. Electrical parameters

The iLC CORE control gear has a very extensive operating area, perfectly adjusting the operating point required in the design of each luminaire and each lighting system. The result is full flexibility, easily adapting to the continuous and fast evolution being experienced by LED technology lighting.

The operating area of the drivers is defined by the maximum and minimum load voltage that can be connected, by the maximum and minimum output current that can be programmed and by the maximum working power.

The operating point is defined by the maximum voltage of the LED module to be connected and the current which it is going to supply. This operating point must be within the operating area of the selected driver.



In terms of efficiency, the power factor, THD and dimming range of the iLC CORE drivers are positioned in the high performance segment of the lighting sector.

NOTE:
The technical specifications of each model and their corresponding data sheets can be viewed and are available for download via the ELT website at **www.elt.es/en**

2.2. Electrical insulation

The iLC CORE control gear has been designed in accordance with the EN 61347-1 and EN 61347-2-13 safety standards for double or reinforced insulation against electric shocks resulting from contact with accessible parts.

The insulation between the primary and secondary circuits, as well as between every circuit and the functional earth, is set out in the following table:

	Mains	1-10V	Functional earth	LED module	Accessible parts
Mains	X	Basic	Double	Double	Double
1-10V	Basic	X	Double	Double	Double
Functional earth	Double	Double	X	Double	Double
LED module	Double	Double	Double	X	Double
Accessible parts	Double	Double	Double	Double	X

NOTE:
When the devices are built into luminaires, the cabling between the different components must observe the insulation class for which these lighting fixtures have been designed, as well as comply with the EN 60598 standard.

3. THERMAL CHARACTERISTICS AND LIFETIME

The thermal operating conditions of the control gear are a critical factor for its lifetime and for the LED street lighting system into which it is integrated. This is why an understanding of the factors and parameters relating to this aspect is essential.

The iLC CORE control gear has been designed to offer maximum performance with the best thermal efficiency.

Once the drivers have been integrated into the lighting system, the thermal efficiency and lifetime depend on factors such as the connected load, luminaire design, its capacity to dissipate the heat generated inside the unit and the relative position of each of its components.

3.1. Temperature inside the casing (tc)

The parameter to control in order to ensure correct operation and life expectancy is the temperature inside the casing at a point called tc. The tc is a point of reference that represents the conditions under which the driver's internal components are working. Particular care must be taken to ensure that the maximum limits specified for each model are not exceeded.

The simplest way to measure the temperature at this point is by means of a thermocouple attached at the place indicated on the casing of each driver once thermal stability has been achieved.

3.2. Ambient temperature (ta)

The iLC CORE drivers have been designed to be able to operate within a very wide ambient temperature range. The maximum ambient temperature limit depends on the operating point, the value of the connected load and, largely, to the design of the luminaire itself and its ability to dissipate heat outwards.

The maximum permitted ambient temperature for control gear can serve as a guideline or an indicator of the conditions under which that device is able to work, however must not be used as the control parameter to guarantee its estimated lifetime.

3.3. Lifetime

The iLC CORE control gear can achieve up to a 100,000 hour lifetime depending on the working temperature at point tc.

NOTE:
Thermal data and the lifetime of each model can be viewed on their corresponding data sheets, available for download via the ELT website at **www.elt.es/en**

4. PROTECTION

The iLC CORE drivers are equipped with internal protection to ensure that the they and every component of the luminaire in which they are installed operate correctly.

4.1. Short circuit protection

In the case of a short circuit in the load terminals, the driver goes into hiccup mode (power-on retries), in which it remains as long as the fault continues. This protection resets automatically, so that when the short circuit event is resolved, the driver comes out of protection mode and the power supply restarts.

4.2. Overload and open circuit protection

In the event of overload, the driver goes into protection mode, where it remains for a specific time depending on the severity of the overload. The protection mode maintains a constant output, making it impossible to perform any type of programming while it is in this mode. When the overload exceeds 150V, the driver goes into hiccup mode, where it will remain as long as the fault continues.

In the event of an open circuit, the driver goes into hiccup mode, where it will remain as long as the fault continues.

If it is connected at a load lower than that permitted in the operating area, the driver will supply a current of 70mA as long as this situation is maintained.

4.3. Thermal protection

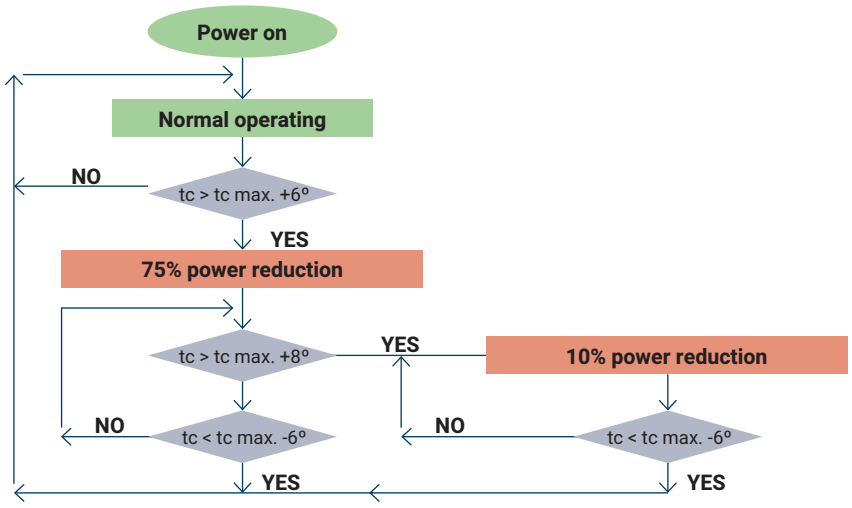
The iLC CORE control gear benefits from thermal protection so that the power supplied is reduced when a temperature excess is detected.

If, under normal operating conditions, the temperature at tc exceeds its maximum permitted value by 6ºC, the driver will reduce the power supplied by up to 75% of the total.

If, during power reduction mode, the temperature at tc continues to rise until it exceeds its maximum permitted value by 8ºC, the driver will reduce the load by up to 10% of the total.

While in either of the 2 power reduction modes, if the temperature at tc drops 6ºC lower than its maximum permitted value, the driver will return to its initial normal operating mode.

This process is illustrated in the flowchart on the following page:



4.4. Out-of-range mains voltage protection

The iLC CORE control gear is designed to withstand temporary fluctuations in mains voltage that are outside the permitted range.

In the event of a low mains voltage value that is between the permitted minimum and the brownout value, the driver will remain on. If this situation continues over time resulting in over-heating, the driver will reduce the power supplied to the load and even disconnect it in extreme cases.

In the event that a mains voltage value is less than the brownout value, the driver switches itself off for protection.

In the event that a mains voltage is above the maximum permitted value, the driver will remain on, generating stress on its internal components and potentially affecting its lifetime. Possible adverse effects are increased the greater the value and the longer the time that the power surge continues.

Even though the drivers are able to withstand power surges of 380Vac for 2 hours, extreme care must be taken to avoid this type of situation.

4.5. Shock wave protection

The iLC CORE drivers are designed to offer improved protection of the supply terminals against shock waves such as those caused by radio storms. They benefit from levels of protection, in both differential and common modes, that are higher than the minimums defined by the immunity requirements for lighting equipment under EN 61547.

- Protection in differential mode (L - N): 6kV / 3kA
- Protection in common mode (L - Earth / N - Earth): 8kV

If higher levels of protection are required, external devices can be added to the luminaire or to another point in the street lighting installation.

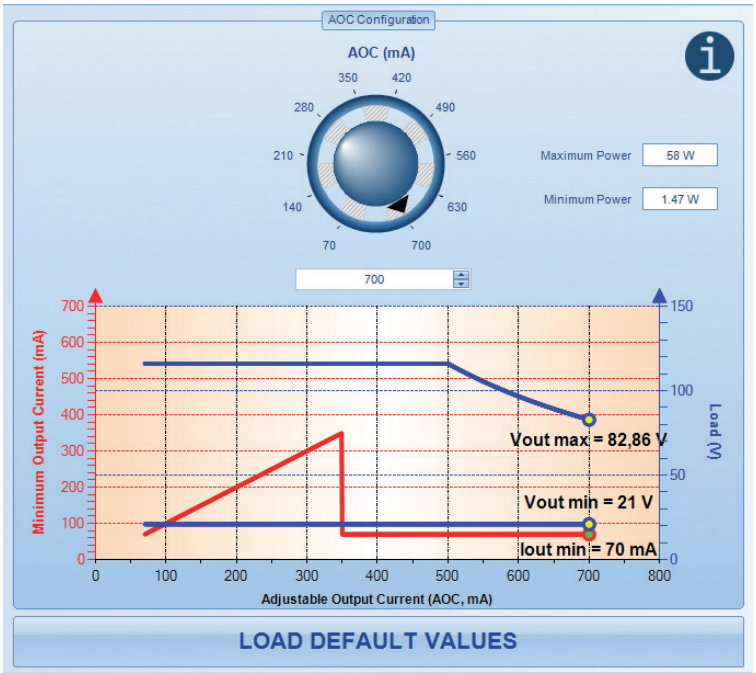
NOTE:
Fault conditions and the response of each model can be viewed on their corresponding data sheets, available for download via the ELT website at **www.elt.es/en**

5. FUNCTIONALITIES

5.1. Adjustable output current (AOC)

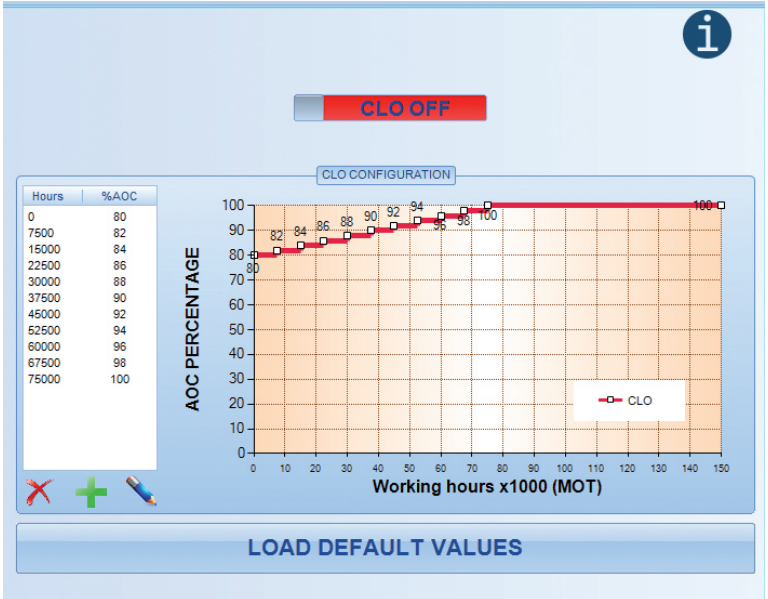
The adjustable output current (AOC) is a feature that configures the nominal value of the output current from a driver.

The output current value selected is understood to be the nominal value used to achieve 100% of the light level in any of the selected dimming modes that can be programmed within the entire permitted range.



5.2. LED module constant lumen output (CLO)

This feature allows a gradual increase curve of the output current over time to be defined for the constant lumen output depreciation of the LED module.

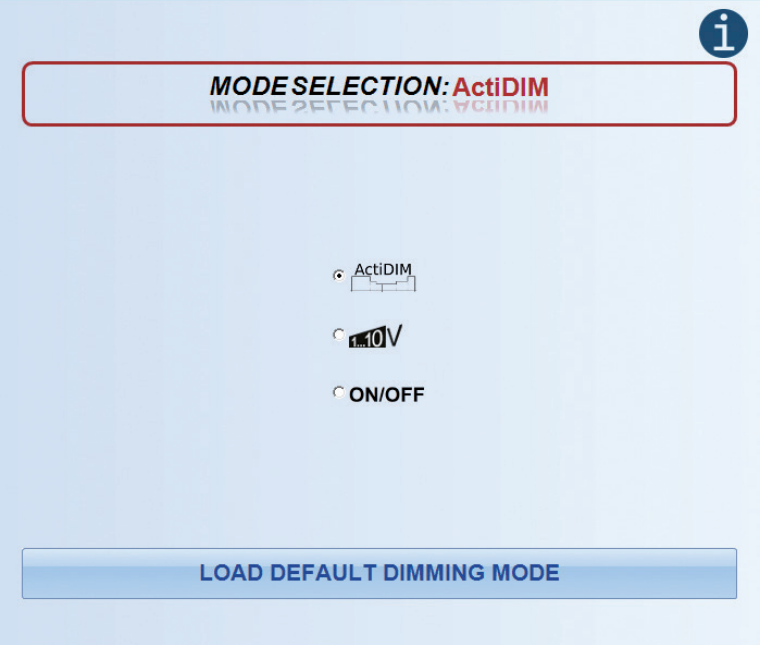


To correctly use and configure this functionality, the depreciation curve of the LED module lumen output to be supplied must be known. This curve can differ for the different LED modules on the market and depends on both the operating point and the thermal conditions under which it is working.

Based on this information, a table can be defined to incrementally assign an output current value for each operating interval, so that the loss of LED module lumen output during that period is compensated.

The output current value can be assigned in increments of 1% within a range from 0 to 100%, where 100% is the value defined by the AOC. The intervals can be configured in steps of 500 hours.

6. DIMMING METHODS



The iLC CORE control gear is able to select the most suitable dimming method for each application. The choice of a specific dimming mode activates its configuration parameters and deactivates other dimming methods.

Dimming is achieved through the amplitude modulation (AM) of the output current, obtaining flicker-free light at each regulation point

The main features of each method are explained below.

6.1. 1-10V mode

This dimming system is able to vary the light flow by means of an analogue control signal that reaches the drivers via an additional two-wire control line, whose positive and negative polarity must be observed when making the connection.

This one-way system, in which the control information only flows from the controller towards the control gear, is not addressable, given that every device connected by cable to the control line reacts to a set point.

The analogue control signal is a continuous voltage level within a range from 1V to 10V. This signal can be obtained directly from an active control device (analogue control cards or power supply sources) or indirectly from a passive control device (variable resistance or potentiometer) through which the output current generated by the devices in their control terminals circulates.

To ensure that these active control devices work correctly, they must have the capacity to absorb a quantity of current greater than that generated by all the connected devices together.

Nº of devices to control x Maximum output current of the 1-10V control terminals

Where a potentiometer is used for regulation, this device must have the resistance value indicated in the electric input parameters of the driver. When various devices are going to be connected to the same potentiometer, the following formula has to be applied to calculate its resistance value, adequately sizing it in terms of the power to dissipate.

$$\text{Potentiometer value} = \frac{560\ \text{k}\,\Omega}{\text{nº devices in parallel}}$$

The ratio of the resistance value of the potentiometer compared to the control voltage level and the light regulation level generated is not linear, which means that logarithmic control potentiometers can be used to improve the dimming experience.

The use of active control elements that generate the analogue 1-10V signal is the recommended option over the use of passive elements such as a potentiometer in cases where stricter control is required over the regulation point or where the device is expected to work in extreme temperature ranges.

In 1-10V dimming, the maximum dimming level is obtained by leaving the control terminals in open circuit or with a signal equal to 10V. This is the 100% level and cannot be configured. The minimum level, however, is obtained by short-circuiting the control terminals or via a signal lower than or equal to 1V.

NOTE:
Drivers from different manufacturers may produce different responses to the same control signal value.

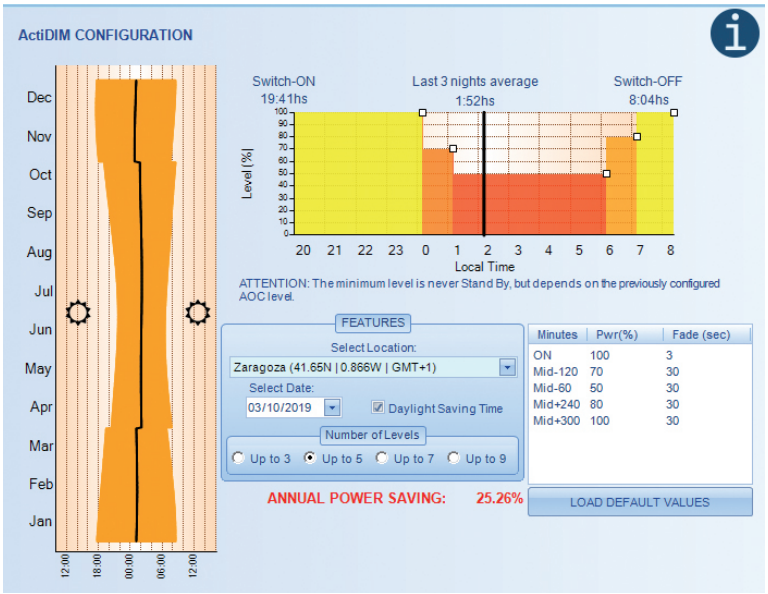
6.3. ActiDIM mode

The ActiDIM operating mode is a stand-alone dimming system that simulates astronomical behaviour to provide energy saving without the need to wire in a control line.

The automatic dimming algorithm controls the times at which a change of light level has to take place. It takes as a reference the average night time duration point, calculated based on the average of the last three nights. The duration of each night is defined as the time measured from when the street lighting is switched on to the time it is switched off.

NOTE:
When the lighting is switched on for less than 4 hours (for example, to carry out maintenance tasks or during power outages) and in cases where it is on for more than 20 hours, the control gear does not memorise that period as a 'night' and therefore does not take it into account when applying the ActiDIM calculation algorithm.

This system is able to configure different dimming profiles, selecting up to maximum of 9 levels, their value, the duration of the transitions and the changes between them.



6.8. ON/OFF mode

The driver can be configured in ON/OFF mode where no type of regulation is required.

If the user configures the driver with an output current below 350mA by means of the AOC functionality, the driver will enter ON/OFF mode by default and no type of regulation will be allowed.

7. INSTALLATION

7.1. General observations

The constant current power supply drivers for LED modules use sensitive electronic components. They have to be handled and manipulated with care, as with any other electronic equipment.

The installation, maintenance and replacement of the drivers must be carried out by qualified personnel, strictly in line with the given instructions for the product and current regulations, in order to achieve the correct level of durability and operation for both the driver and the LED module it supplies.

To guarantee protection against electric shocks during any intervention involving the driver, the power supply must be disconnected

7.2. Installation in luminaires

The iLC CORE control gear, classified as “build-to-use” drivers, must be installed inside the luminaire or in other housings that guarantee protection from environmental conditions such as humidity, water, snow, ice and dust. ELT recommends the use of luminaires with a minimum protection rating of IP54, however depending on the application, higher protection levels may be necessary.

The luminaires, as well as the entire street lighting system, must provide adequate protection against electric shocks. The iLC CORE control gear is categorised as equipment with “double and reinforced” insulation and is suitable for installation in both Class I and Class II luminaires.

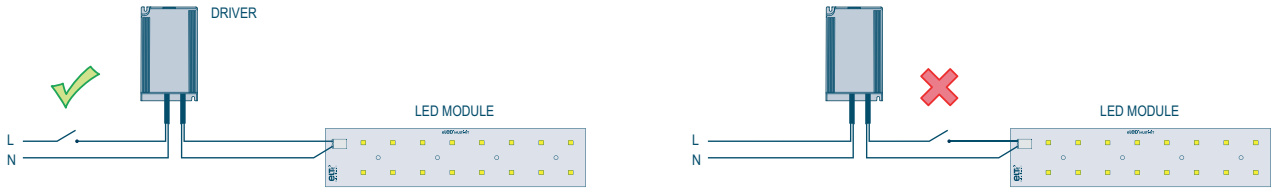
Insofar as it is possible, they must be installed away from heat sources and be fitted to maximise heat dissipation.

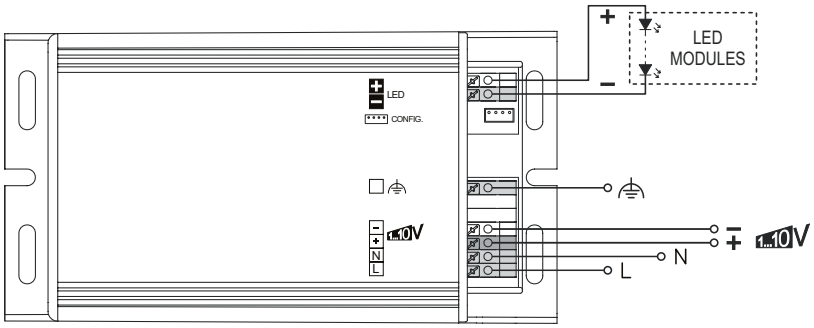
7.3. Connecting the drivers

To ensure that the iLC CORE drivers are correctly connected and work properly, the following instructions must be taken into account:

- Do not exceed the permitted ranges for the electrical input and output values for the different connection terminals of the drivers.
- The polarity indicated on the labelling must be observed at all times.
- DC operation is only allowed for equipment that has been specifically designed for the purpose.
- In three-phase 400V installations, ensure that the neutral is always connected. If this connection is broken, the 400V could reach the equipment, with the consequent risk of a breakdown. During installation, the distribution of loads between phases must be balanced out as much as possible.
- The stripped length and cable section indicated on the equipment labelling must be respected for each connection terminal.
- As regards the output terminals, the equipment should be installed as close as possible to the LED module. In any event, for correct operation, the maximum accepted distance between the driver and the LED module is 2 metres.
- The connection cables must be appropriately insulated for the working voltage and comply with the level of protection against electric shocks provided by the street lighting system.
- To avoid damaging the driver connectors, press the connector drive carefully when inserting or removing a cable.

- Ensure that the chassis and other internal metal parts, such as assembly plates, supports or dissipaters, are always connected or electrically isolated. Make a reliable electrical connection between them by using serrated washers and sufficiently tightened screws, ensuring that the connecting cables are as short as possible to minimise inductances and thereby maximise their efficacy.
- In Class I luminaires, the protective earth conductor is strictly compulsory. Connect the protective earth to the chassis and to the internal metal parts.
- In Class II luminaires, ELT recommends installing an equipotential connection or a star configuration functional earth conductor between the chassis and every inaccessible conductive element of the lighting fixture, to avoid issues with electromagnetic compatibility and to provide protection against shock waves.
- The installation of a switch at the driver output is not allowed as this could damage the LED modules as well as the driver itself.





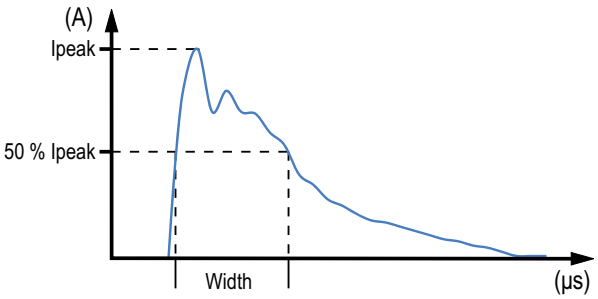
7.4. Protective switches

Each group of drivers has to be protected by an automatic circuit breaker and, in Class I installations, by a single-circuit trip switch.

The iLC CORE drivers are resistant to temporary power surges as specified in the regulations and must be installed in independent circuits separated from other inductive loads such as inductive ballasts, motors, etc

Automatic circuit breaker

The moment the control gear is connected, the driver's condensers create a high pulse of current that lasts for a very short period. This is called the inrush current.



The simultaneous ignition of several drivers can activate the protective automatic circuit breakers, which is why depending on the type and features of each, ELT recommends the installation of a maximum number of drivers.

The inrush current values and the maximum number of drivers that can be connected to each automatic circuit breaker can vary depending on the nominal voltage and impedance of the grid to which they are going to be installed.

These values, which can be viewed on the specific data sheets for each reference, have been empirically obtained using the set-up and measurement method proposed under the draft standard IEC 63129, for a 277V AC reference power grid as defined under NEMA standard 410 of 240Vac with a line impedance of 450mΩ and 100µH.

The inrush current values of the control gear will reduce, thereby increasing the number of drivers to be connected to each circuit breaker; the lower the voltage, the greater the impedance of the power grid (and vice versa). As such ELT recommends that it is checked for each installation.

Steps can be taken to reduce the effects of the inrush current, such as the use of external devices to limit it; carrying out a sequential ignition of the control gear; dividing the installation into different circuits; or selecting automatic circuit breakers with a less sensitive response curve.

NOTES:
The maximum number of drivers that can be connected to an automatic circuit breaker will be the most restrictive value that is obtained from the evaluation of the inrush current and the maximum connected load.

Single-circuit trip switch

The interference suppression filters of the LED control gear is designed to earth interferences in the form of leakage current, whose typical value is less than 0.5mA in iLC CORE drivers.

The total leakage current of the luminaire can be greater because of the current introduced by elements such as the LED module or the cabling.

This leakage current has to be taken into account in Class I installations so that the protective single-circuit trip switches can be appropriately sized.

In three-phase modules, leakage currents are compensated by balancing the distribution of the luminaires' connection between the three phases, while for single-phase networks, the maximum number of luminaires that can be connected to each switch has to be calculated.

NOTES:

- Typically a maximum of 35 luminaires can be connected in a 30mA residential single-circuit trip switch. As this maximum number can vary depending on the installation, ELT recommends that this is checked.
- The functional earth terminal may not be disconnected from the driver to reduce the leakage current value.

8. ELECTROMAGNETIC COMPATIBILITY

The control gear manufactured by ELT is designed in accordance with the EN 55015 standard on Electromagnetic Compatibility.

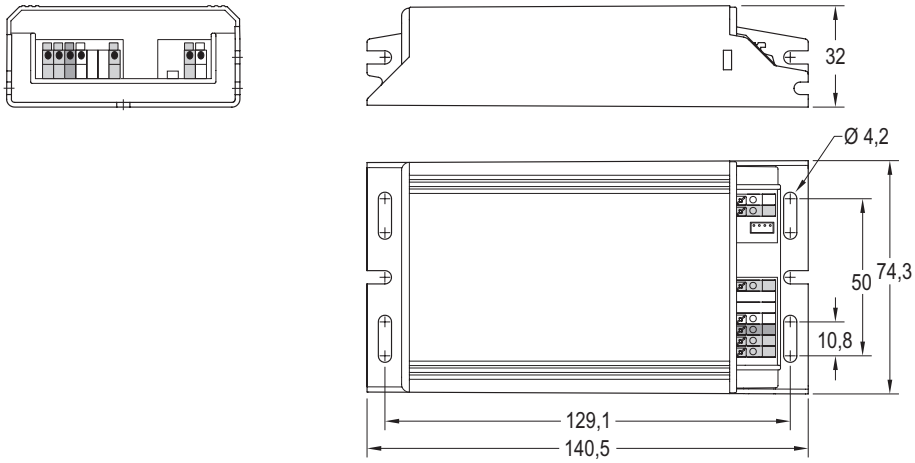
To guarantee compliance with this regulation, the following recommendations should be followed:

- Adjust the length of the cables between the LED module and the control gear to the minimum distance possible between connections.
- The connection wires to the LED module must run together, avoiding the creation of loops.
- The power cables, control cables and the connection to the LED module must be physically separated and never crossed.
- Running a cable over or sticking it to the control gear is not recommended.
- ELT recommends that the functional earth of every metallic component of the luminaire is connected to the protective earth in Class I luminaires, even though this connection is not designed to protect from electric shocks.

The iLC CORE control gear is of a “build-to-use” type. This means that the tests corresponding to standard EN 55015 have taken place on a benchmark luminaire using the driver, the LED module and the dissipater fixed to a metal mounting plate with a 20-cm long connecting cable between them. Respecting this benchmark assembly, the above-described recommendations and the indications contained in standard EN 55015, ELT guarantees test compliance.

9. MECHANICAL FEATURES

iLC CORE –XR format



10. DRIVER CONFIGURATION

Thanks to the interface and configuration software, it is possible to make the most of the full flexibility and potential offered by iLC CORE, achieving solutions that perfectly adapt to the numerous and varied lighting applications that can be found.

10.1. iSOFT

iSOFT is the programming software that enables easy and intuitive configuration of control gear equipped with eSMART and iLC CORE technology, facilitating the creation of templates to configure functionalities and the required operating mode that best adapts to your application.

The iSOFT tool and its user guide, including a step-by-step explanation of every detail to install, use and configure the drivers, is available to be downloaded for free via the following link: **www.elt.es/en/download-isoft-software**

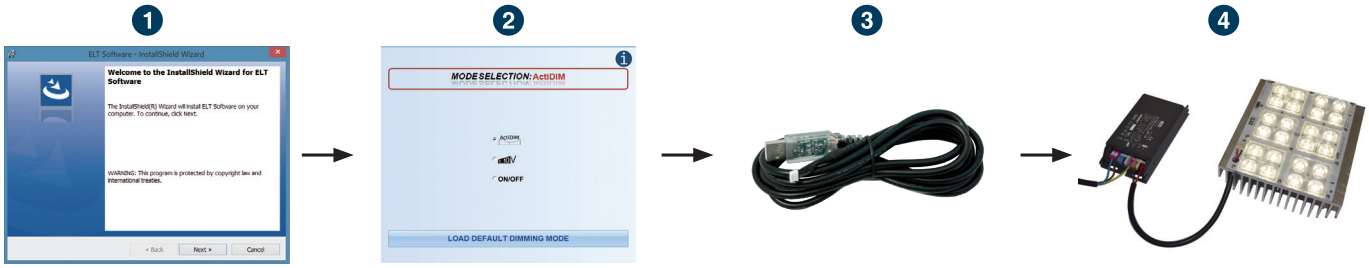
10.2. USB connection cable

The USB set-up cable provided with the iLC CORE drivers makes it possible to modify both the programmable features (AOC and CLO) as well as the available dimming modes (1-10V, ActiDIM, ON/OFF).

There is no need to connect the driver to the power supply in order to configure the device, making set-up faster and more direct.

NOTE:
Do not connect the USB cable when the driver is turned on. Connecting while the driver is on can run the risk of a failure.

10.3. Quick start guide



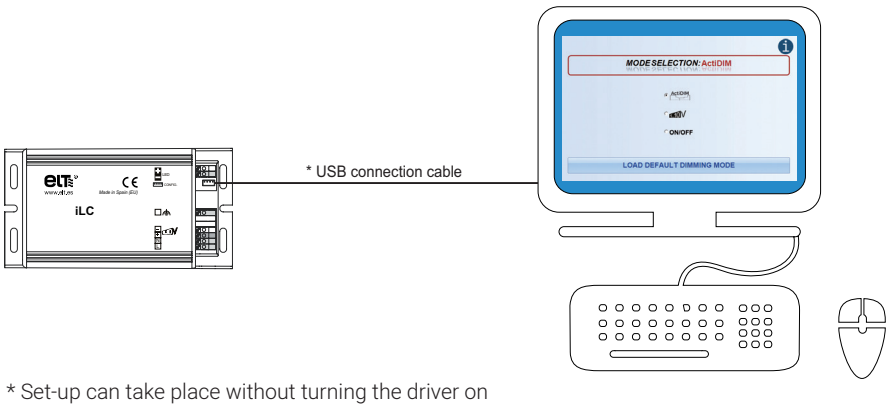
Download and install the iSOFT programming software.

Activate and configure the features and dimming modes.

Download the chosen configuration via the USB connection cable

Your driver is ready to use.

Programming the iLC CORE drivers is a simple process. All you have to do is download and install the iSOFT programming software into your computer, select the required parameters and dimming modes for your application and then send the configuration to the driver following the connection layout illustrated below. Once the desired configuration has been sent, the driver is ready to use.

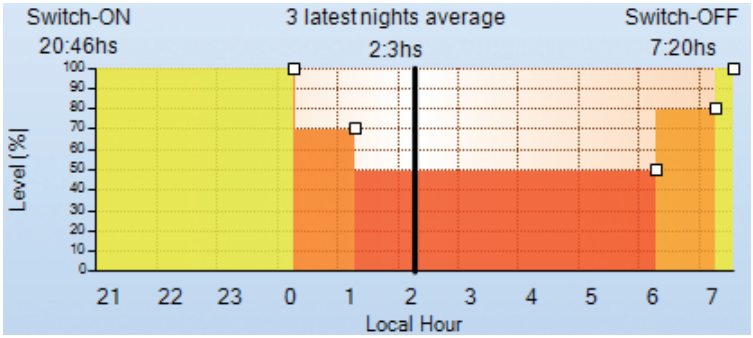


* Set-up can take place without turning the driver on

10.4. Factory default configuration

Enabled functionalities	
Dimming method	ActiDIM (5 steps)
Adjustable Output Current (AOC)	**700 mA**
Constant Lumen Output (CLO)	NOT ACTIVATED

Enabled dimming mode: ActiDIM	
Step 1: Power-on	100% output power
Step 2: 2 hours before the middle of the night	70% output power
Step 3: 1 hour before the middle of the night	50% output power
Step 4: 4 hours after the middle of the night	80% output power
Step 5: 5 hours after the middle of the night	100% output power



The above graph illustrates an hourly simulation

11. MARKINGS AND INDICATIONS

CE	Marking that confirms product compliance with European directives.
01	Certification mark conferred by an official organism that accredits compliance with international safety and operating standards.
	Equipment with reinforced insulation.
	Lamp control gear with double or reinforced insulation between the primary and secondary circuits, resistant to short circuits.
100	Device with over-temperature protection. The number indicated inside the triangle shows the maximum temperature at any point of the surface of the casing in the event of driver failure.
1...10V	Marking for drivers programmable by means of an analogue signal ranging from 0V to 10V that cannot enter into standby mode.
ORC < 5%	Percentage of output ripple current, given as ±% over the nominal rms value.
	Device that incorporates protection against shock waves and power surges.
ActiDIM	Indicates drivers that incorporate stand-alone and dynamic dimming that adapts to night hours.

12. APPLICABLE STANDARDS

The iLC CORE drivers manufactured by ELT, ENEC tested and certified, have been designed in accordance with the following international standards:

EN 61347-1	Lamp control gear. Part 1: General and safety requirements.
EN 61347-2-13	Lamp control gear. Part 2-13: Particular requirements for DC or AC supplied electronic control devices for LED modules.
EN 62384	DC or AC supplied electronic control devices for LED modules. Operational requirements.
EN 62493	Assessment of lighting equipment related to human exposure to electromagnetic fields.
EN 61000-3-2	Electromagnetic compatibility (EMC). Part 3-2: Limits. Limits for harmonic current emissions (equipment input current ≤ 16 A per phase).
EN 61000-3-3	Electromagnetic compatibility (EMC). Part 3-3: Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems for equipment with rated current ≤ 16 A per phase and not subject to conditional connection.
EN 55015	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar.
EN 61547	Equipment for general lighting purposes. EMC immunity requirements.

NOTE:
To view editions of the abovementioned standards, under which the certifications have been issued, please contact us by email at **elt@elt.es**, or by telephone on +34 976 573 660 or via our sales network.

13. PRODUCT WARRANTY

The iLC CORE drivers are manufactured under the most demanding quality criteria, based on the ISO-9001 and ISO-14001 management standards, among others. This ensures a high level of durability, accompanied by a 5-year warranty for every product in this range.

Warranty conditions:

- The warranty period starts as from the date of delivery of the product.
- The warranty covers the replacement of the product and its corresponding labour costs. ELT accepts no liability for any other indirect costs that may arise. (As a reference to establish the replacement cost, please refer to the indications in the following document: "Application and maintenance recommendation for the use of electronic ballasts in view of the directive 99/44/EC" from CELMA which establishes that: "It is understood that professionally installed ballasts and lighting are replaceable within a maximum of 10 minutes").
- ELT reserves the right to request the return of the affected product to its premises in Zaragoza (Spain) to verify and subsequently validate the warranty claim.
- The warranty exclusively covers material defects and manufacturing faults in the components made and supplied by ELT.

The application of the warranty is subject to compliance with the following paragraphs:

- Operation of the lighting system in line with current IEC and/or EN international standards and the particular specifications provided by ELT in this user guide.
- Correct usage, handling and storage of the product to guarantee the absence of third party damage.

This warranty excludes claims under which ELT is not liable for defects or faults and, specifically, those **which fall within any of the following cases**:

- Incorrect handling, abusive use or any type of failure attributable to the customer or a third party, particularly in the case of non-compliance with the installation and usage conditions as defined by ELT contained in our catalogues, product sheets and technical documentation.
- Faults or fluctuations in the power supply.
- Anomalous operating conditions.
- Force majeure, such as: fire, flood, acts of war, violence or vandalism or similar situations.
- Faults in any accessory or other component (even in the event they were manufactured or supplied by ELT) that do not form part of the components covered by this warranty.
- Attempts to change or maintain the component by any individual other than an authorised installer.
- Where the component's batch number is damaged, changed or deleted.

The statutory warranty rights applicable to ELT's products do not vary as a result of this warranty and continue to have independent validity.

ELT reserves the right to take the final decision regarding any claim under the warranty and undertakes to quickly, fully, reliably and honestly process any claim submitted.

ELT reserves the right to modify these terms and conditions, without prior notice.

14. DISCLAIMER

This user guide for iLC CORE products cancels and replaces all previous versions.

ELT reserves the right, without prior notice, to make changes to the data and information contained in this user guide, to the features of the product itself to which the guide refers and/or to cease manufacturing and/or commercialising the said product. ELT accepts no liability for any damage arising from the use of this guide or the use of the product to which it refers, beyond that explicitly established in the contract.

ELT has taken the utmost care in the drafting of this user guide and the information and data contained herein has been revised with all due diligence. Nevertheless, the appearance of editorial errors may not be ruled out, in respect of which ELT shall in no event be held liable. The reader is kindly requested to notify ELT of any error identified in this user guide.

ELT has provided all the information and data contained in this user guide to the best of its knowledge and understanding, however this information and data shall in no event constitute a guarantee, beyond that established by law. ELT expressly disclaims any commitment or liability based on the data and information contained in the user guide and the individuals responsible for the end product may not consider themselves released from the requirement to undertake their own tests and verifications.

The recommendations included in the user guide are based on the experience of ELT, but this does not signify that they are the best-known technical or commercial options. ELT accepts no claim based on any damage arising from the application of the above recommendations.

The data contained in this user guide that refers to technical features and product testing is for information purposes only and is not considered to be an official certification that supports the release of the end product into which the product the object of this guide is to be assembled. The manufacturer of the end product is responsible for testing the product in an accredited laboratory with a view to demonstrating compliance with the legal standards required by the end product in its place of installation, as well as the necessary requirements for every marking displayed on the end product (such as CE, ENEC, etc).

The product the object of this user guide is classified as “build-to-use” type control gear and as such, the data and features indicated in this guide may be affected by the end product into which it is assembled. ELT accepts no liability for damage arising from the adverse effects that the configuration of the end product may cause to the data and features of the product mentioned in this user guide.

ELT accepts no liability for possible unforeseen and adverse effects that may occur because of the interaction of the product the object of this user guide with any other product that forms part of the assembly of the end product, whether manufactured or not by ELT.

ELT kindly requests the user of this guide to ensure they are using the most up-to-date documentation and review its content when placing orders or using the product covered by this guide. The most recent approved version of our product guides can be found on the ELT website **www.elt.es/en**.

Innovation in lighting technology

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