disano illuminazione
www.disano.it

Lighting management systems

INDOOR and OUTDOOR lighting solutions
ELEMENTARY - MEDIUM - ADVANCED - SMART (IoT)

M A D E I N I T A L Y

The perfect light for any situation

Whether it's for indoor or outdoor areas, public or private offices, commercial or industrial spaces, Disano offers a **WIDE RANGE OF LIGHTING MANAGEMENT SOLUTIONS** that can help increase energy savings, visual comfort and safety.

Disano illuminazione offers a wide range of solutions that meet the design requirements of both simple and complex installations which include the concepts of **Smart Building** and **Smart City**, as well as **IoT infrastructure** where data are monitored and the system is analyzed to increase energy savings through personalized control strategies, which can be reconfigured endlessly to enable our lighting fixtures to interface with Building Automation IoT systems. Simple access and usage are crucial for making the technology available to everyone through smartphones and tablets.

INDOOR LIGHTING SOLUTIONS

OUTDOOR LIGHTING SOLUTIONS

DMX SOLUTIONS

HCL SOLUTIONS

NEW DISMART APP:
SIMPLE, RELIABLE AND INTUITIVE

Disano presents **DISMART**, the app that allows you to have complete control over your lighting system, now available for free in app stores.

The **DISMART** app has a simple interface that lets you easily programme and define lighting parameters and configure the system according to your lighting needs.

What are you waiting for? Come and check out our new App at page 28

INSTALLATION TIPS (products equipped with integrated sensor with microwave technology):

- *Do not install in unstable locations or where subject to vibration*
- *Do not install near metal or glass structures*
- *Do not install near water pipes*
- *Do not install near fluorescent tubes*
- *Follow the instructions for maximum mounting height*
- *Make sure there are no moving or interfering objects within the sensor's range*
- *The sensor's microwaves can pass through glass, windows, doors and walls*

INDOOR LIGHTING SOLUTIONS

ELEMENTARY SOLUTION

PLUG & PLAY systems with on-board sensors:

- Solution with built-in sensors
- Sensors attached to the lighting body and visible
- Programming via app or remote control of sensors or trimmers
- "PLUG&PLAY" no installation difference with a non-dimmable product
- The installer and the user do not require specific skills because the lighting fixture is configured to change lighting levels automatically
- No additional cabling
- No centralized controls
- No programming and commissioning from specialized technicians
- No remote communication

MEDIUM SOLUTION

CABLED solutions for DALI dimmable fixtures:

- The lighting fixture is equipped with a DALI PUSH DIM LED driver
- Simple additional cabling and possibility to use a standard NO switch

ADVANCED SOLUTION

High-tech WIRELESS solutions to be managed via app:

- System equipped with smart sensors with high level of automation
- Easy-to-use app and software that do not require skills from specialists (e.g. DALI commissioning or software engineer)
- Built-in or external sensors and, if requested, additional cabling that does not require complex circuitry

SMART (IoT) SOLUTION

COMPLEX solutions requiring lighting management hardware and software:

SMART solution:
- Wired and wireless solutions
- System with all fixtures and sensors are managed with the BUS link (or over the air) with the possibility of a limited, but extremely simple, management
- Possibility to configure via app/smartphone/tablet
- Suitable for medium-small systems
- Variable complexity, including situations that may require the intervention of specialized workers (e.g. commissioning)
- Scalable

IoT solution:
- Device complete with smart technology and hardware infrastructure with software for remote control

OUTDOOR LIGHTING SOLUTIONS

ELEMENTARY SOLUTION

Programmable luminaires:

- The luminaire is equipped with a smart LED driver
- Virtual Midnight
- lights can be dimmed in 4 steps (up to 8 steps upon request)

SMART SOLUTION

COMPLEX solutions requiring lighting management hardware and software:

The lighting fixture is designed to accept NEMA/ZHAGA socket
- Option to install sensors and remote control at a later time by using the fixture's socket
- No additional cabling is required
- External installation of fixture, no EMC issues

SMART (IoT) SOLUTION

COMPLEX solutions requiring lighting management hardware and software:

- Device complete with smart technology and hardware infrastructure with software for remote control

SPORTING SOLUTION

COMPLEX solutions requiring lighting management hardware and software:

- Small and medium-sized sports facilities
- Large-sized sports facilities (stadiums/sport centres/campuses)

Light control, visual comfort and high energy efficiency are the main requirements of modern control systems. Today, lighting systems must be designed to be easy to install and ensure maximum management flexibility.

INDOOR SOLUTION

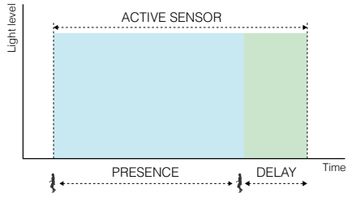
ELEMENTARY SOLUTION (INDOOR)

The Disano products equipped with **integrated sensor with microwave technology** must be ordered with **sub-code -19**. The BASIC – PLUG & PLAY solutions do not require additional cabling and special skills to be mounted, and apply to the following families of products:

Watertight fixtures in polycarbonate: **Ottima, Hydro,Thema, Echo**

Luminaires for interiors: **Oblò 2.0, Globo 2.0**

RADAR SENSOR - ON/OFF - TECHNICAL SPECIFICATIONS			
Power source	220-240V AC - 50/60 Hz	**Installing height**	ceiling: 1,5-3,5 m
High frequency	5,8GHz CW Radar, ISM band - 0,2 - <10 mW	**Power consumption**	<0,9 W
Detection area	ceiling: 360°	**Hold time (choice)**	min: 10sec (± 3 sec.) max: 12min (±1 min.)
Detection distance (adjustable)	ceiling: Ø 1-8 m	**Ambient light (choice)**	<3-2000 Lux
Detection motion speed	0,6-1-1,5 m/s		



FEATURES

- High-frequency motion detector for invisible light switching, especially suited for use in lighting fixtures.
- Detection range, twilight value and additional activation time may be set with a potentiometer.
- HF technology: it reacts to very small movements, regardless of temperature; it also sees through walls.
- Extremely short activation time.
- Light only when needed.

ELEMENTARY SOLUTION (INDOOR)

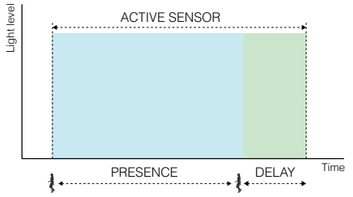
The Disano products equipped with **integrated sensor** must be ordered with **subcode -19**. The BASIC – PLUG & PLAY solutions do not require additional cabling and special skills to be mounted, and apply to the following families of products:

Industrial fixtures: **Astro e Saturno**

External **ON/OFF** motion sensor with twilight function:
- radar sensor with PIR technology
- operating modes and parameters can be set with remote control (OPTIONAL)

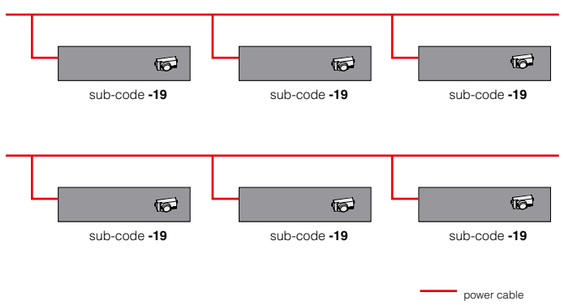
RADAR SENSOR - ON/OFF - TECHNICAL SPECIFICATIONS	
Power source	220-240 Vac - 50/60Hz
High frequency	5.8GHz±75MHz, ISM wave band, <0.5mW
Detection angle	ceiling: 360° - wall: 150°
Detection area	8 max (choice)
Detection motion speed	0.5~3m/s
Mounting height	ceiling: 3-15 m max.
Power consumption	≤0.5W (standby), <1W (operation)
IP degree	IP65
Technology	PIR
Operating temperature (sensor)	-35 ... +70 °C
Hold time (choice)	5s / 30s / 90s / 3min / 20min / 30min
Ambient light (choice)	5lux / 15lux / 30lux / 50lux /100lux / 150lux / Disable

(Optional cod. **81420019**) remote control to change parameters after installation, without opening the fixture

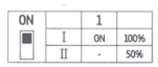


Example of application: parking garage

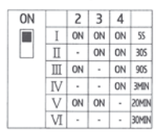
RADAR SENSOR - ON/OFF STAND ALONE



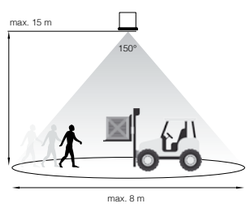
Example of application: warehouse or industrial plant



SCAN AREA:
can be reduced by selecting the relevant combination on the DIP switches to set sensor data for each application.



HOLD TIME:
refers to the amount of time the lamp stays on at 100% of the light level after no motion is detected.

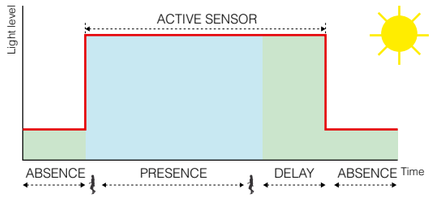


ELEMENTARY SOLUTION (INDOOR)

The Disano products equipped with **integrated sensor with microwave technology** must be ordered with **subcode -1219**. The BASIC – PLUG & PLAY solutions do not require additional cabling and special skills to be mounted, and apply to the following families of products:

Watertight fixtures in polycarbonate: **Ottima, Hydro,Thema, Echo**

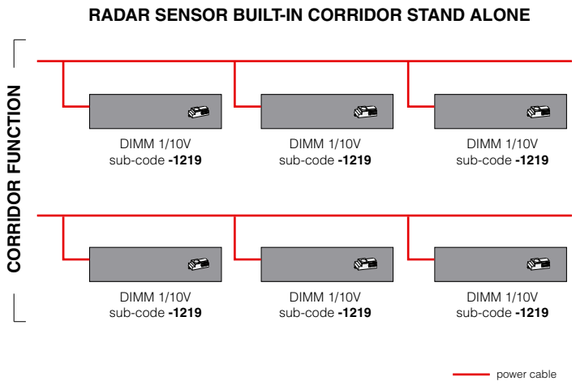
RADAR SENSOR - DIMM 1/10V - TECHNICAL SPECIFICATIONS			
Power source	220-240V AC - 50/60 Hz	**Rated Load**	600 W
		Power consumption	<0,9 W
High frequency	5,8GHz CW Radar, ISM band - 0,2 - <10 mW	**Mounting height**	ceiling: 2-8m
Detection area	ceiling: 360°	**Ambient light (choice)**	2-10-50-2000 Lux
Detection distance (adjustable)	ceiling: Ø 1-8 m	**Hold time (choice)**	min: 5sec (± 3 sec.) max: 30min (±1 min.)
Detection motion speed	0,6-1-1,5 m/s	**Stand-by period (choice)**	10s, 1min, 5min, 10min, 30min, 1H, +∞,0s
Detection range (choice)	10%-50%-75%-100%	**Stand-by DIMM level (choice)**	10%-20%-30%-50%



FEATURES

- High-frequency motion detector with dimmer for invisible light switching.
- Dimmable ballast with 1/10V interface.
- Detection range, twilight value and additional activation time may be set with a potentiometer.
- HF technology: 5.8GHz, it reacts to very small movements, regardless of temperature; it also sees through walls.

Example of application: transit areas, corridors and passageways



ELEMENTARY SOLUTION (INDOOR)

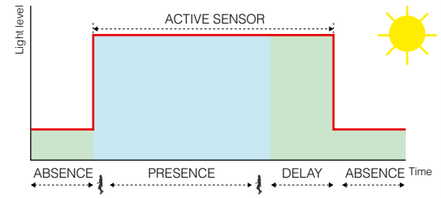
The Disano products equipped with **RADAR SENSOR** must be ordered with **subcode -1219**. The BASIC – PLUG & PLAY solutions do not require additional cabling and special skills to be mounted, and apply to the following families of products:

Industrial fixtures: **Astro e Saturno**

External **BI-LEVEL** motion sensor with twilight function:
- radar sensor with PIR technology
- operating modes and parameters can be set with remote control (OPTIONAL)

RADAR SENSOR - DIMM 1/10V - TECHNICAL SPECIFICATIONS	
Rated supply voltage	220-240 Vac - 50/60Hz
High frequency	5.8GHz±75MHz, ISM wave band, <0.5mW
Detection angle	ceiling: 360° - wall: 150°
Detection area	8 max (choice)
Detection motion speed	0.5~3m/s
Mounting height	ceiling: 3-15 m max.
Power consumption	≤0.5W (standby), <1W (operation)
IP degree	IP65
Technology	PIR
Operating temperature (sensor)	-35 ... +70 °C
Hold time (choice)	5s / 30s / 90s / 3min / 20min /30min
Ambient light (choice)	5lux / 15lux / 30lux / 50lux /100lux / 150lux / Disable
Stand-by period (choice)	5s / 5min / 10min / 30min / 1h / ∞
Stand-by DIMM level (choice)	10% / 20% / 30%/ 50%

(Optional cod. **81420019**) remote control to change parameters after installation, without opening the fixture



Example of application: warehouses or industrial plants

If the sensor does not detect motion, lights stay on constant for a pre-set time.

As soon as the sensor detects motion in the scan area, lights will automatically increase to 100%.

If no motion is detected after a certain amount of time, the sensor will dim back to the set level.

BASIC SOLUTION (INDOOR)

The Disano products equipped with **RADAR SENSOR** must be ordered with **subcode -0061**. The BASIC – PLUG & PLAY solutions do not require additional cabling and special skills to be mounted, and apply to the following families of products:

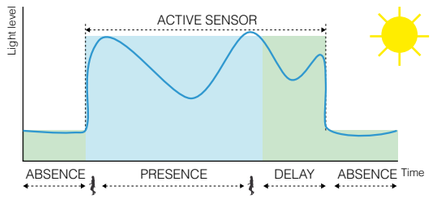
Industrial fixtures: **Astro and Saturno**

HIGH CEILINGS

External **motion and constant light sensor**:
- PIR multi-sensor combined with dimmable fixture (DALI)
- operating modes and parameters can be set with remote control (OPTIONAL)

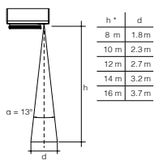
RADAR SENSOR DIMM DALI - TECHNICAL SPECIFICATIONS		
Rated supply voltage	220-240 Vac - 50/60Hz	
Power consumption	2 W	
Output, stand-by	0,5 W	
Operating temperature (sensor)	0 ... +60 °C	
IP degree	IP65	
Time delay (regolabile)	min: 30sec - max: 60min	
Technology	PIR	
Max. mounting height	16m	
Light detection angle	13 °	
Motion detection angle	high	low
	72°	60°
Momentary-action switch input for on/off switching and dimming		

All functions can be set by request or with the (optional cod. **81420022**) remote control



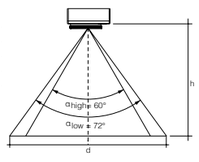
Example of application: warehouses or industrial plants

Light level recognition area



h *	d
8 m	1.8 m
10 m	2.3 m
12 m	2.7 m
14 m	3.2 m
16 m	3.7 m

Presence / motion detection

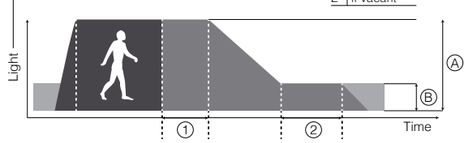


h *	Zoom	d
8 m	low	12.0 m
9 m	low	13.5 m
10 m	low	15.0 m
11 m	low	16.5 m
12 m	low	18.0 m
12 m	high	14.0 m
13 m	high	15.2m
14 m	high	16.4 m
15 m	high	17.6 m
16 m	high	18.8 m

Lights can be dimmed from 100% to 1% (with the option to go completely OFF)

Default Parameter Motion Detector

A	light-level
1	time delay
B	sec. level
2	if vacant



Time can be set from 30 sec. to 60 min.

PushDIMM - light control via N.O. switch

MEDIUM SOLUTION (INDOOR)

PushDIMM (or switchDIM): light control via N.O. switch

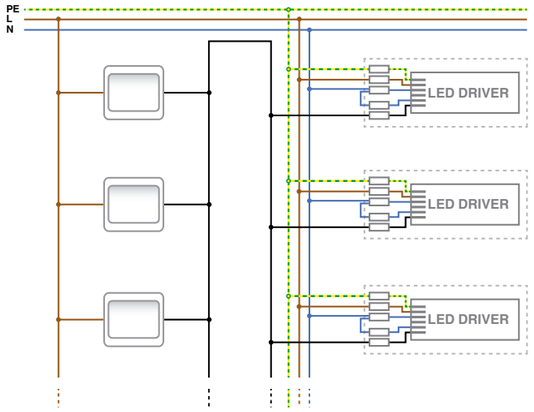
Main features:
• The lighting fixture is equipped with a dimmable LED driver DALI with PUSH function (*Note: not all LED DALI drivers on the market have this function*). With a particular connection between the driver and the DALI inlet you can enable functions such as power on/power off/dimming.
• The length of the cable and the number of fixtures that can be connected are virtually endless, but in practice, there is asynchrony in the reply to the power ON and dimming command over distances above 25 metres and if many LED drivers are installed. As a consequence, this type of dimming is recommended in installations such as small offices, small meeting rooms, and generally, where cables are shorter.

The Disano products equipped with **PushDIMM** driver must be ordered with **subcode -0045**. These solutions require simple additional cabling and can be used with standard N.O. switch and apply to the following families of product:

Luminaires for interiors: **Minicomfort, LED Panel, Compact**



Possible operations:
• Lights are powered on and off with a slight pressure of the button
• Lights are dimmed from off to 100% by holding the button down
• The dimming system is unidirectional, the information flows into one direction only, from the dimmer to the LED driver



In the case of a new installation or new ballast installed into an existing installation, it is possible that not all ballasts will be synchronous. In operation some ballasts will be switched off whilst others are switched on and the dimmed levels of the ballasts may not be the same. Pushing the button for longer than 10 seconds all ballasts will synchronize at a 50% light level and have the same point of departure for dimming. This process can be applied at any time during normal operation if any individual is unsynchronized.

Upon request, to **automatically synchronize all the lights in a system,** use the **DALI - electronic synchronization device:** control unit with in-built DALI dimmer and manual switching of DALI fixtures with all standard buttons.

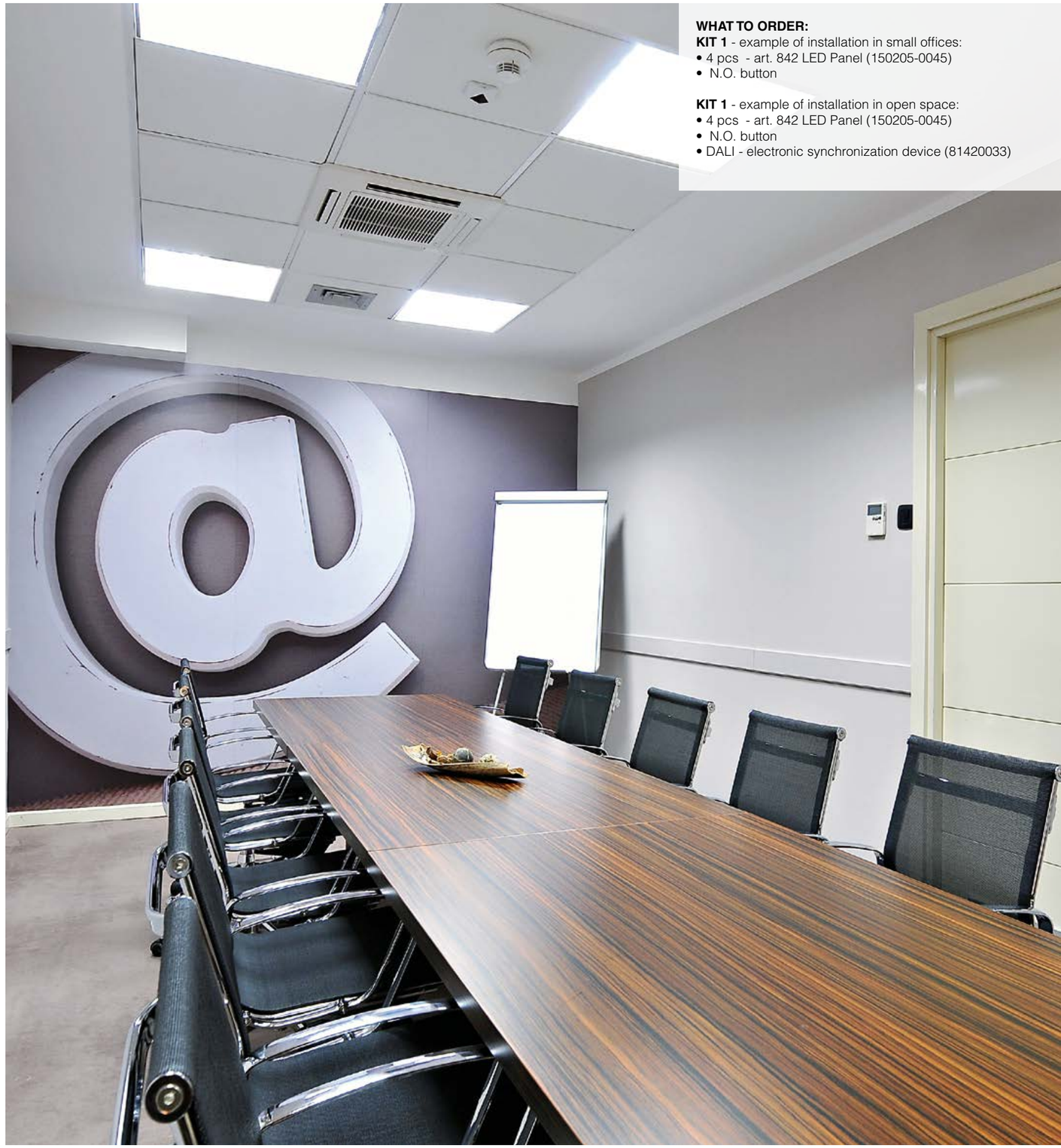
cod. 81420033

Main features
• Possibility to connect up to four parallel devices to setup multiple control points
• Automatic synchronization of control points
• Length of DALI cable: up to 300 m

Advantages
• Manual and intuitive dimming and switching
• Individual setting of minimum light level
• Suited for a maximum of 25 electronic drivers

Easy installation in standard flush boxes
Only one component is required for the entire light control. After the connection to the mains and DALI wires, the DALI control unit is placed into the flush box and connected to the pushbutton ready.

Example of application: ideal for industrial/residential spaces and small offices



WHAT TO ORDER:
KIT 1 - example of installation in small offices:
• 4 pcs - art. 842 LED Panel (150205-0045)
• N.O. button

KIT 1 - example of installation in open space:
• 4 pcs - art. 842 LED Panel (150205-0045)
• N.O. button
• DALI - electronic synchronization device (81420033)

MEDIUM SOLUTION (INDOOR)

PRESENCE SENSOR FOR INDOOR APPLICATIONS - DIMM DALI - NOT INTEGRATED

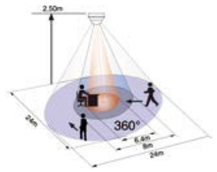
The presence detector adjusts the lights to a preset lighting value based on the people occupying a room and the amount of light at that moment. The integrated lighting sensor constantly measures the level of luminosity in the room and compares this value with the value set by the presence detector.

The **DALI** versions of Disano's products can be used with the presence detector by ordering with **subcode -0041**.

MASTER DALI

up to 3,5 m ceiling heights (2,5m recommended)

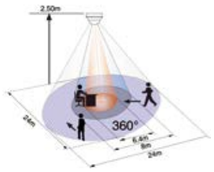
IP20
recessed version



acc. MASTER DIMM DALI - recessed	
Presence detector for large areas DIMM DALI.	code 986417-00

up to 3,5 m ceiling heights (2,5m recommended)

IP20
ceiling version



acc. MASTER DIMM DALI - ceiling	
Presence detector for large areas DIMM DALI. IP54 version with connection.	code 986418-00

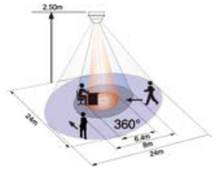
- Presence detector for **large scan areas** to adjust electrical lights based on the available daylight
- DALI interface for digital dimmable control as a group
- Possibility to switch from DALI with a remote control
- Enlargement of scan area with Slave units
- Possibility to activate lights manually through the touch of a button
- Further functions can be set with optional remote control

TECHNICAL SPECIFICATIONS FOR MASTER DALI	
Mains voltage	110-240 V AC , 50 / 60 Hz
Power consumption	0,9 W
IP degree	recessed = IP20 - ceiling = IP20 / Class II
DALI	max. 50 electronic ballast
Brightness	10 - 2000 Lux
Ambient temperature	from -25 °C to +50 °C
Channels	Channel 1
Time setting	1 - 30 min

SLAVE DALI

up to 3,5 m ceiling heights (2,5m recommended)

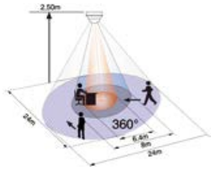
IP20
recessed version



acc. SLAVE DIMM DALI - recessed	
Presence detector for large areas DIMM DALI.	code 986423-00

up to 3,5 m ceiling heights (2,5m recommended)

IP54
ceiling version



acc. SLAVE DIMM DALI - ceiling	
Presence detector for large areas DIMM DALI. IP65 version with connection.	code 986419-00

- **To enlarge the scan area of a Master device;**
- Activation of the Master device if motion is detected regardless of the room's lighting

TECHNICAL SPECIFICATIONS FOR SLAVE DALI	
Mains voltage	110-240 V AC , 50 / 60 Hz
Power consumption	0,2 W
Detection area	vertical: 360°
IP degree	recessed = IP20 - ceiling = IP54 / Class II
Ambient temperature	from -25 °C to +50 °C
Impulse response	2 sec or 9 sec

Accessories available on request for MASTER DALI

IR-DIM-DALI
cod. 986421-00

IR-DIM-DALI Mini
cod. 986422-00

(Ø200 x 90)

Protection grid
cod. 81400047

IP54 CONNECTION

Accessories available on request for SLAVE DALI

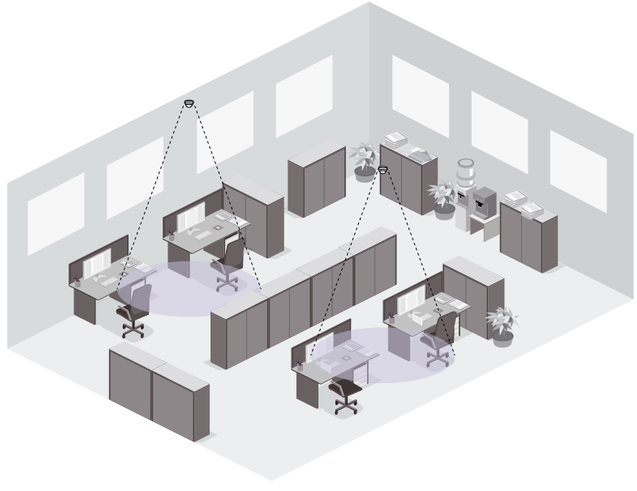
(Ø200 x 90)

Protection grid
cod. 81400047

IP65 CONNECTION

WHAT TO ORDER:
KIT 1 - example of installation in offices with:
- 8 pcs - art. 842 LED Panel (150205-0041)
- 1 pcs - MASTER DALI sensor (986418-00)
- 1 pcs - SLAVE DALI sensor (986419-00)
- 1 pcs - DALI remote control (986421-00)

Example of application: offices, meeting rooms, stores, corridors, bathrooms, transit areas



These areas generally require to be constantly illuminated with a minimum level of light even when they are not occupied in order to be ready to ensure the right visual comfort as soon as someone steps inside.

MEDIUM SOLUTION (INDOOR)

PRESENCE DETECTOR FOR INDOOR APPLICATIONS - DIMM DALI - HIGH CEILINGS

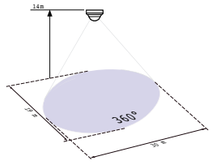
External light sensor with telescopic function that ensures constant light dimming when mounted on ceilings up to 16 m high. The sensor's scan area can be adjusted by simply setting the telescopic light sensor to the desired mounting height. Motion detection was developed especially for applications such as high bay warehouses and ceilings over 10 m high.

The **DALI** versions of Disano's products can be used with the presence detector by ordering with **subcode -0041**.

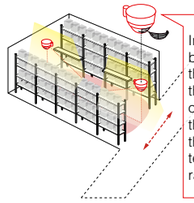
MASTER DALI

up to 16 m ceiling heights

IP54
ceiling version



acc. MASTER DIMM DALI - ceiling	
Presence detector for large areas DIMM DALI.	code
	986426-00



In case of installation in high-bay warehouses, make sure the detector is mounted in the high area of the aisles in order to scan motion only in the desired section thanks to the blades or through special technical mounting configuration.

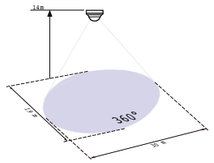
- DALI occupancy detector for surface mounting in **large mounting heights**
- External telescopic light sensor for a mounting height between 5 and 16 m (mechanically adjustable) for measuring the light according to the application.
- DALI / DSI interface for control of digital dimmable electronic ballasts as a group
- Manual switching and dimming via push button possible
- Logical switching or control output
- Permanent or time-limited orientation light

TECHNICAL SPECIFICATIONS FOR MASTER DALI	
Mains voltage	110-240 V AC , 50 / 60 Hz
Power consumption	0,9 W
IP degree	ceiling = IP54 / Class II
DALI	max. 50 electronic ballast
Brightness	10 - 2500 Lux
Ambient temperature	from -25 °C to +50 °C
Channels	Channel 1
Time setting	1 - 30 min

SLAVE DALI

up to 16 m ceiling heights

IP20
ceiling version



acc. SLAVE DIMM DALI - ceiling	
Presence detector for large areas DIMM DALI. IP54/65 version with connection.	code
	986427-00

- **To enlarge the scan area of a Master device;**
- Activation of the Master device if motion is detected regardless of the room's lighting

TECHNICAL SPECIFICATIONS FOR SLAVE DALI	
Mains voltage	110-240 V AC , 50 / 60 Hz
Power consumption	0,2 W
Detection area	vertical: 360°
IP degree	ceiling = IP20 / Class II
Ambient temperature	from -25 °C to +50 °C
Impulse response	2 sec or 9 sec

Accessories available on request for MASTER DALI

IR-DIM-DALI

cod. 986421-00

Accessories available on request for SLAVE DALI

(Ø200 x 90)

Protection grid

cod. 81400047

IP54 CONNECTION

IP65 CONNECTION

WHAT TO ORDER:
KIT 1 - example of installation in warehouses with:
- 4 pcs - art. 1789 Astro (330095-0041)
- 1 pcs - MASTER DALI sensor (986426-00)
- 1 pcs - SLAVE DALI sensor (986427-00)
- 1 pcs - DALI remote control (986421-00)l

Example of application: high-bay warehouses

Lights should depend on the movements inside the warehouse. Lights should not be triggered by forklift drivers or operators transiting across the main transit area and in other passageways, but only if the sensor detects their presence in the passage ways.

ADVANCED SOLUTION (INDOOR)

BASICDIM WIRELESS SYSTEM - FOR INDOOR APPLICATIONS

The wireless lighting management system is made up of the lighting system, the DALI driver and one of the basicDIM Wireless modules. The command profiles are saved at the factory. The lighting can be controlled via 4remote BT app or user interface. The Bluetooth connection allows controlling, in an easy and practical way, up to 250 light points, turning them on, off, dimming their intensity, grouping fixtures and creating lighting scenes. The **basicDIM Wireless,** is the ideal solution to make the lighting more modern without construction work. The usage area is substantially unlimited.

Disano's products Disano made with the basicDIM system can be ordered according to the following compositions:

- **COMPOSITION A**: order **DALI** version with **subcode -0041** + **basicDIM wireless** module code **81420072**.
- **COMPOSITION B**: order version **with integrated wireless technology subcode -23**.

For best management of the basicDIM system, order the wireless controllers and app separately.

Advantages for the commissioning technician:

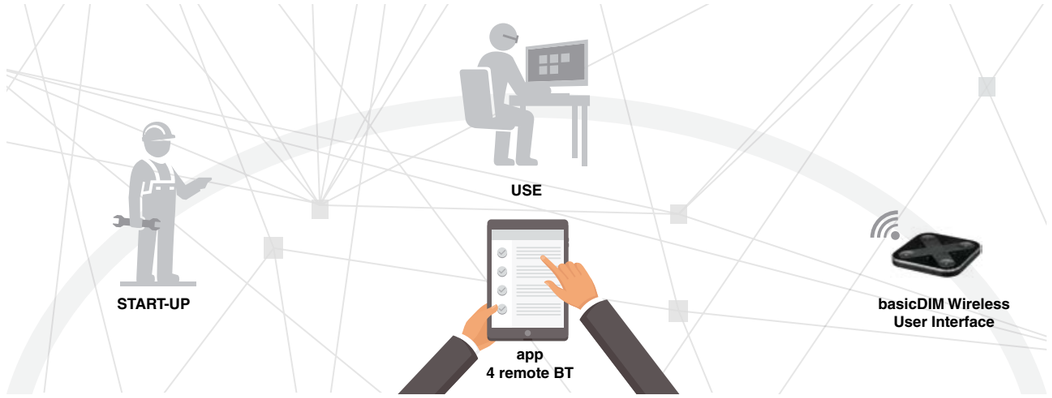
- Starting, programming and control of lighting fixtures in an easy way thanks to the app
- Easy location and wireless assignment of lighting fixtures
- Easy system adjustment

Advantages for the building operator:

- Easy updating
- Reduction of energy consumption
- Possibility of multifunctional use of rooms
- Wireless adjustment of the individual lights

Advantages for the user:

- Individual functioning of the individual lighting fixture
- Easy graphical selection of the lighting fixture
- Intuitive selection of light level and brightness



Options for use

Settings selection

Rapid access to the saved settings and adjustments made according to the use expected for the room

Colour temperature adjustment

Individual adjustment of the light level based on the lighting fixtures used

Dimming option

From 1% to 100%

Presence detection

Basic lighting according to requirements through the integration of sensors

Planning

Support for planning tasks thanks to internal clocks and calendars

Personalization

Adjustments to adapt to the changing usage requirements or to expand the system

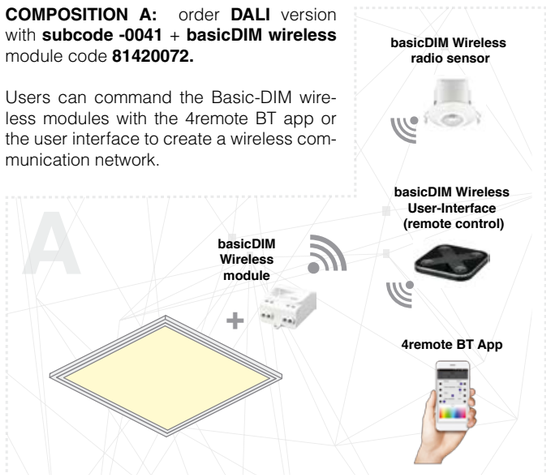
System with group circuits

Control of individual fixtures and groups of fixtures that can be adjusted at any time based on usage requirements through the 4remote BT app. Easy to expand thanks to wireless installation.

System composition

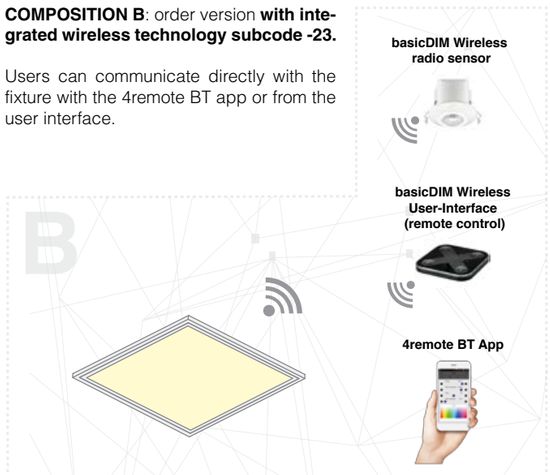
COMPOSITION A: order **DALI** version with **subcode -0041** + **basicDIM wireless** module code **81420072.**

Users can command the Basic-DIM wireless modules with the 4remote BT app or the user interface to create a wireless communication network.



COMPOSITION B: order version **with integrated wireless technology subcode -23.**

Users can communicate directly with the fixture with the 4remote BT app or from the user interface.



BASICDIM WIRELESS SYSTEM - FOR INDOOR APPLICATIONS

System architecture: is made up of hardware and software modules. Communication with fixtures and sensors occurs via BLE - 2.4 GHz radio frequency (wireless) solutions.

basicDIM Wireless Module

cod. 81420072

The basicDIM wireless module allows easy wireless interaction with lighting fixtures, including their configuration, start-up and actual use. The lighting control system can also be managed via the 4remote BT app.

- Wireless command with Android/iOS devices
- Automatically creates a wireless communication network with max. 250 nodes
- Possibility to configure analogue/digital output
- Analogue output: 0 – 10 V / 1 – 10 V decreasing/increasing
- Digital output: DALI compatible

FEATURES:
- Power voltage: 220/240 V
- Frequency: 50/60 Hz
- Maximum radio receiver output power: + 4 Dbm
- Ambient temperature: -20 ÷ +50 °C
- Protection class: IP20

Power supply DALI PS3

cod. 986440-00

The DALI PS3 power supply is designed specifically for smaller DALI applications.

FEATURES:
- DALI-2 power supply providing 70 mA for DALI-2 installations
- Power voltage: 220/240 V
- Mains frequency: 50/60 Hz
- Power consumption: 1.75 W
- Ambient temperature: 0 ÷ +50 °C
- Degree of protection: IP20

BLE Passive module

cod. 986441-00

The BLE transmitter (passive module) creates a wireless network by interacting with the luminaires, hence eliminating the need for an additional network line. The lighting control system can also be managed via the 4remote BT app.

FEATURES:
- Automatically forms a wireless communication network with max. 250 nodes (no external gateway is required)
- Digital output: DALI compatible
- Max. DALI bus current: 250 mA
- Ambient temperature: 0 ÷ +50 °C
- Degree of protection: IP20

IP40 and IP66 boxes for remote installation

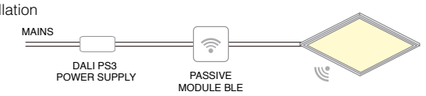
BOX - IP40

cod. 986447-00

BOX - IP66

cod. 997649-00

Example of installation



Wireless devices and Apps to manage the basicDIM system

basicDIM Wireless radio sensor

cod. 81420082

The wireless sensor allows controlling lights based on the amount of daylight and occupancy level. It was designed for the following applications: open space offices, training/presentation rooms, corridors, transit ways and garages.

- Command based on surrounding luminosity and presence
- Wireless control with Android/iOS devices
- Passive IR sensor technology
- Including shutter to optimize sensor scanning range

Accessory for radio sensor ceiling connection

cod. 81420085

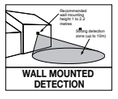
FEATURES:
- Power voltage: 220/240 V
- Frequency: 50/60 Hz
- Mounting height: max. 4 m
- Scan range (mounting height: 3 m): ø 8 m
- Lighting measurement on the head of the sensor: 1 – 2000 lx (± 20 %)
- Ambient temperature: 0 ÷ +50 °C
- Protection class: IP20

IP66 sensor for high mounting heights

cod. 986448-00

This sensor is ideal for high mounting. It has an IP66 degree of protection and can be installed either on ceilings or walls (indoor/outdoor). It was designed for the following main applications: corridors, passageways and garages.

- Command based on surrounding luminosity and presence
- Wireless control with Android/iOS devices
- Passive IR sensor technology



FEATURES:
- Power voltage: 220/240 V
- Frequency: 50/60 Hz
- Max. mounting height: : ceiling 17 m - wall 1÷2,2 m
- Scan range: ceiling ø 20 m - wall ø 10 m
- Lighting measurement on the head of the sensor: 5 – 2.000 lx
- Ambient temperature: -20 ÷ +50 °C
- Protection class: IP66

basicDIM Wireless User Interface

cod. 81420083

cod. 81420084

The basicDIM wireless user interface offers great interior design flexibility because furniture can be replaced and walls can be rebuilt without taking into account of the position of cables and switches.

- Control of all basicDIM Wireless devices
- Control of colour temperature
- Control of individual lighting fixture / Control of groups of lighting fixtures / Control of all lamps
- Saving of light scenes / Savings of animations
- Radio signal capacity: up to 60 m

App 4remote BT

The free app comes with a wireless basicDIM solution in all the development phases. Every operation can be done with an extraordinary comfort in an easy and quick way, starting from the installation and commissioning processes of the lighting fixtures to their daily use.

In order to be able to control basic wireless basicDIM lighting fixtures, you will need to connect (associate) them to a network. This is done with the 4remote BT app. All settings, such as names, images, groups, timers, scenes, and switch settings are saved on a network. If a unit is removed (disassociated) from the network, it will no longer have the specific network settings. If a wireless basicDIM wireless is not part of any network, the 4remote BT app will automatically display a pop-up window to add the unit to a network. The devices can be selected from specific profiles if a device is disassociated.

Timer

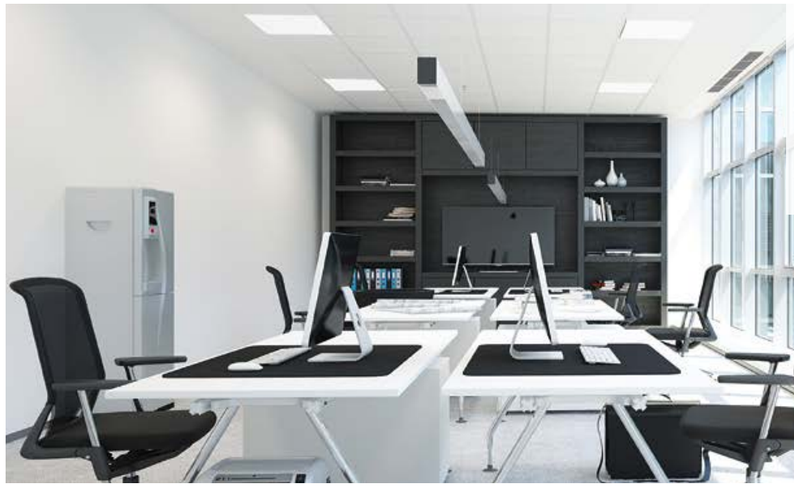
cod. 81420086

The timer is a device that will let you store lighting scenes data in case of temporary electricity shortage or black-out. Programming and synchronization settings are re-established when power is restored.

- Command: normally open switch that can be programmed via app
- Time memorization to keep the lighting scenes in case of black-out
- 24-hour network time memorization
- Synchronization of lighting scenes and programming settings in case of black-out or temporary electricity shortage
- Synchronization/storage of circadian profile via the App
- Power voltage: 12V-24V-48V
- Dimensions: 45 x 58 x 25 mm
- Protection: IP20

Example of application: classrooms, offices or open spaces

WHAT TO ORDER:
KIT 1 - example of installation in classrooms (ceiling mount):
- 6 pcs - art. 731 Miniconfort (143535-0041)
- 6 pcs - basicDim Wireless module (81420072)
- 1 pcs - basicDIM Wireless radio sensor (81420082)
- 1 pc - acc. basicDIM Wireless radio sensor ceiling mount (81420085)
- 4remote BT app
- basicDIM Wireless User Interface (Remote control - optional - 81420083)



WHAT TO ORDER:
KIT 2 - example of installation in offices (recess mount):
- 8 pcs - art. 844 LED Panel HE (150225-0041)
- 8 pcs - basicDim Wireless module (81420072)
- 1 pc - basicDIM Wireless radio sensor (81420082)
- 4remote BT app
- basicDIM Wireless User Interface (Remote control - optional - 81420083)

WHAT TO ORDER:
KIT 3 - example of installation in offices (**with integrated wireless technology**):
- 30 pcs - art. 844 LED Panel HE (150225-23)
- 8 pcs - basicDIM Wireless radio sensor (81420082)
- 4remote BT app
- basicDIM Wireless User Interface (Remote control - optional - 81420083)

ADVANCED SOLUTION (INDOOR)

DISMART: WIRELESS INDUSTRIAL REMOTE CONTROL SYSTEM

The **DISMART** system was designed to allow notable energy savings in large-scale indoor lighting systems, adjusting the lighting intensity emitted by the fixtures based on environmental and design parameters.

It constantly modifies the level of artificial light, setting a dimming level to guarantee the desired brightness according to the amount of daylight filling the room.

To have a **DISMART** system, please order:
1) **DIMM** version fixture with light controller module with **subcode -24**
2) **gateway** module with code **81420077** that creates the local Wi-Fi network
3) free **App** for mobile devices for complete system management and configuration

The solutions with DISMART system apply to the following families of product:

Watertight fixtures: **Ottima, Thema, Echo, Forma, Radon**

Industrial fixtures: **Astro and Saturno**

The system allows high energy savings:

• By exploiting the availability of daylight, you can lower the lumen emitted by fixtures (decreasing absorbed power) and guarantee the desired level of lighting, reducing consumption.

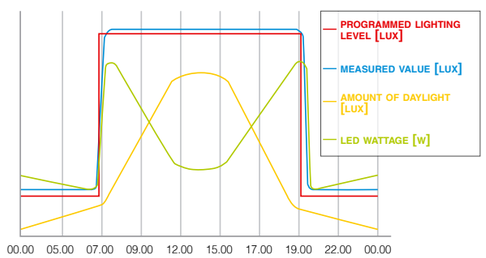


Figure 1: System parameters trend.

• By keeping a constant lumen level to reduce consumptions connected to over-dimensioning (background area of the chart) necessary to make up for the maintenance factor. The system will therefore avoid, from the first start-up, using full light when so much light is not needed.

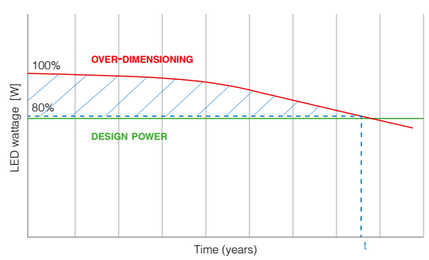


Figure 2: Maintenance factor – The over-dimensioning of lighting fixtures guarantees the same design power after a time t, without considering the reduction of the fixture's energy efficiency.

The DISMART system is ideal for warehouses and industrial plants where it is necessary to control lighting based on the amount of daylight in order to optimize consumptions and cut down running costs.

Main features

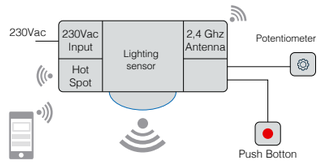
- Guaranteed energy savings
- Simple and fast installation
- Commissioning without the need for specialized staff
- Reliable, safe and easy to use
- Easy management via App

ADVANCED SOLUTION (INDOOR)

WIRELESS INDUSTRIAL REMOTE CONTROL SYSTEM

The system is made up of only two components in order to make installation and commissioning easier: **gateway module** and the lighting fixture with integrated **light controller module.**

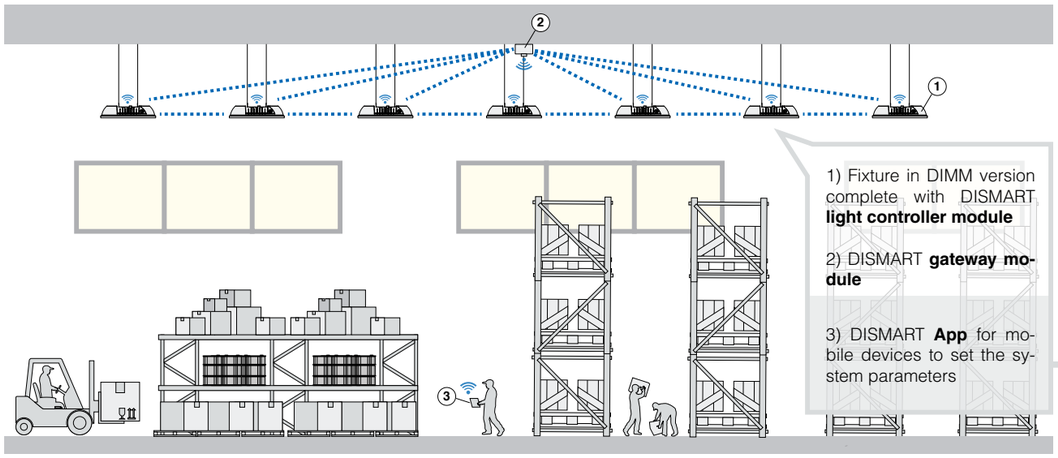
cod. 81420077



Gateway module:it serves as the gateway for the communication nodes on the lighting fixtures. It contains a lighting sensor that constantly measures the lighting value [lux] in the area where it is installed. Based on its measurements, the system processes and sends, in real time, a radio frequency command (2.4 GHz) to the light controller module (receiver node) housed inside the lighting fixture. The installation of the device requires a power supply (230Vac) and the positioning in a central zone with respect to the group of lighting points that it will manage.

TECHNICAL-FUNCTIONAL FEATURES	
Enclosure size	L 90mm x H 60mm x P 90mm
Electrical connection	Through push-in terminals
Power	100 - 240Vac
Clock	Built-in RCT
16-position selector switch	Determines the group of light points you want to manage [from 1 to 16 – Every photocell controls only one group]
Luminance sensor	Auto-regulation 0-80.000 lux [max 0.1 lux precision]
Connectivity	WI-FI for local access to device via APP
Digital input	1 digital input to activate one scene setting per event, configurable via APP
Potentiometer	Manual forcing of the dimming % on the lamps
Fixtures controlled	The system manages an endless number of fixtures
Communication frequency	Transceiver 2,4 GHz, sensibility -96 dBm, Tx power +4 dBm, data rate 1 MBps
Range of action	Max 50 metres outdoor point to point
Network	Auto-configuration MESH network
Transmission	Communication over 4 different channels [automatic selection of the most reliable channel]
Operating temperature	Ambient temperature -20 C + 70° C

System composition



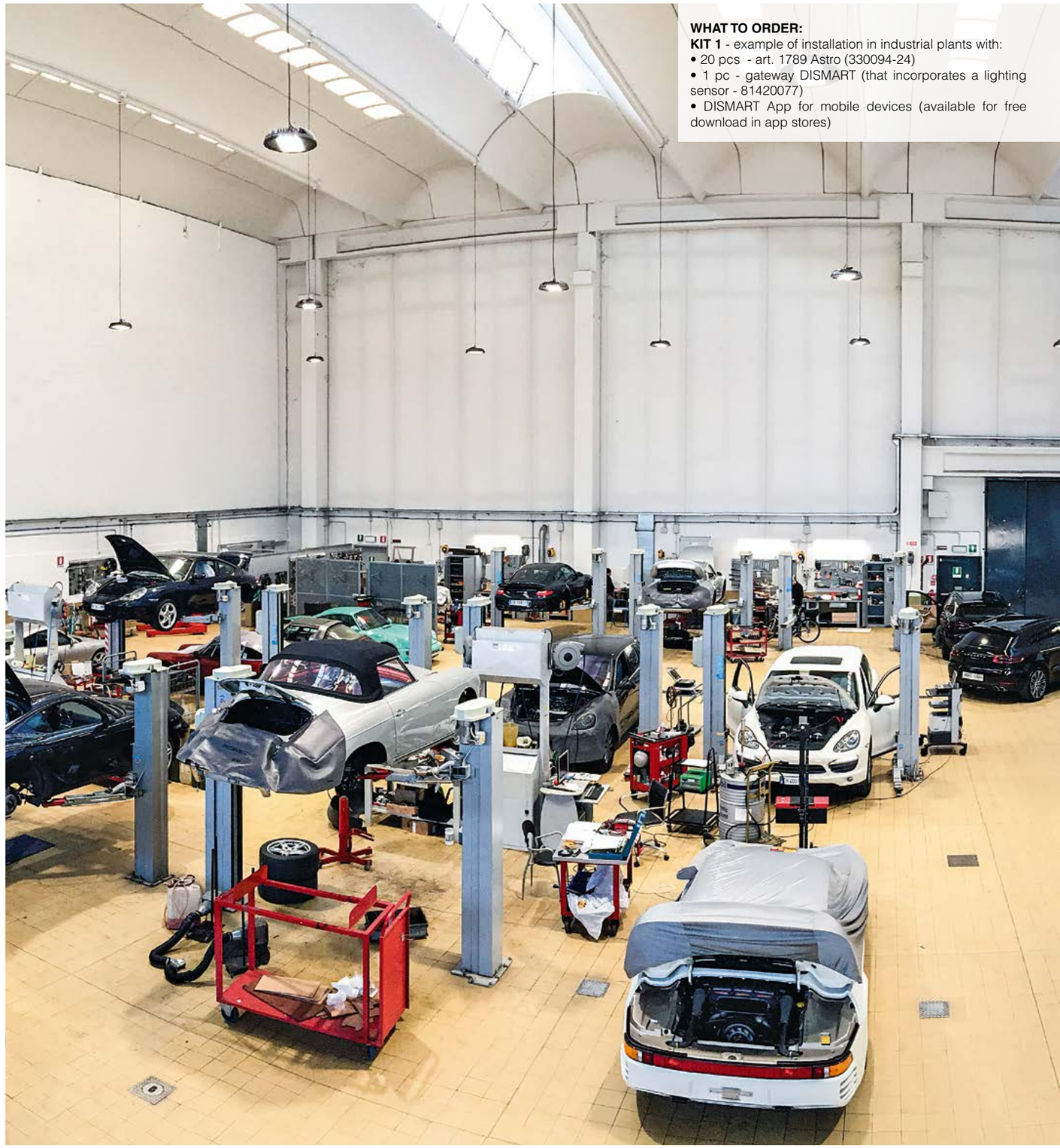
1) Fixture in DIMM version complete with DISMART **light controller module**

2) DISMART **gateway module**

3) DISMART **App** for mobile devices to set the system parameters

DISMART System – Radiofrequency mesh network communication

Example of application: warehouses or industrial plants



WHAT TO ORDER:
KIT 1 - example of installation in industrial plants with:
- 20 pcs - art. 1789 Astro (330094-24)
- 1 pc - gateway DISMART (that incorporates a lighting sensor - 81420077)
- DISMART App for mobile devices (available for free download in app stores)

SEE NEXT PAGES

DISMART APP: SIMPLE, RELIABLE AND INTUITIVE

Disano presents the **DISMART app** for the full management of your lighting system, now available for free on **https://dismart.disano.it**.

Once installed, the gateway module will generate a local Wi-Fi network where you can connect your mobile device (smartphone, tablet…) and, by using the **DISMART app**, you will be able to set the parameters for the lighting fixtures belonging to your system.

The software designed to manage your system will allow you to programme, on a daily or weekly basis, the lighting levels you wish to guarantee to the module's installation area. After a simple programming process, the system will work autonomously, enabling you to activate one light setting "per event" that will replace the "hourly programming" for a pre-set time during the programming via the app.

CONNECTED AND READY FOR USE IN 3 SIMPLE STEPS

1

DOWNLOAD:
download the free version of the app

2

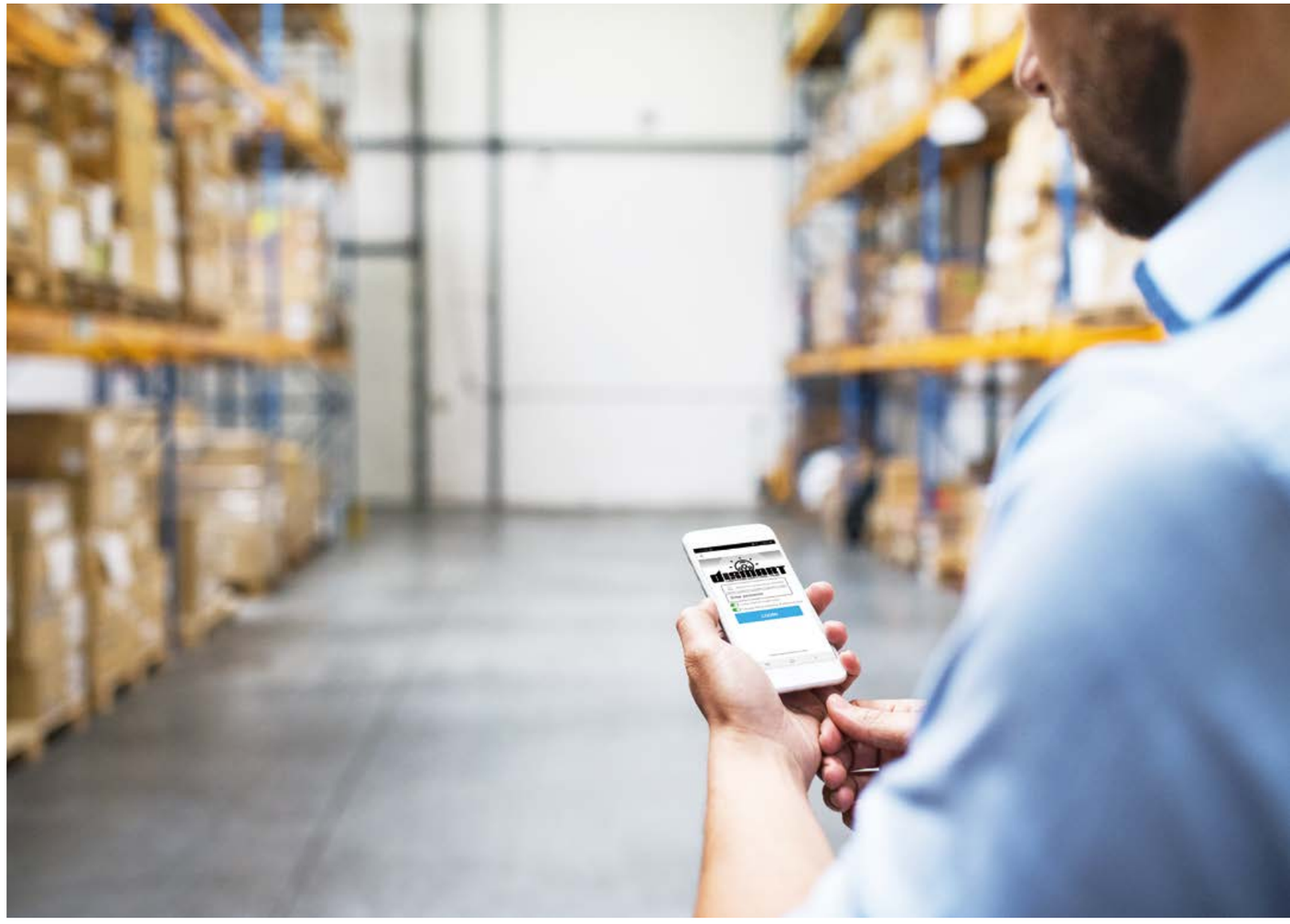
CONFIGURE:
programme desired time slots, light settings and lighting levels

3

MANAGE:
adjust the settings in real-time to the desired level

The main features of the "**APP DISMART**" include:

- Connection parameters configuration via local wireless connection to the gateway mode
- Definition of 4 different lighting levels
- Definition of 5 different time slots into which you can divide the day (weekly mode)
- Definition of 35 different time slots into which you can divide the week (daily mode)
- Associate independently the levels of lighting to each time slot
- Option to create light scenes on a daily or weekly basis for each time slot
- Possibility to associate a level of lighting to keep when activating the forcing command



INITIAL APP CONFIGURATION

1) Choose a language on the home screen (Italian or English).

2) Select the sensor you want to control on the login screen: it must be associated to the Wi-Fi network created by the gateway.

3) Search the network created automatically by the gateway in the device's Wi-Fi settings (e.g. MAIA_00000001).

4) Select the network and enter the 8-digit password identifying the Wi-Fi network (e.g. 00000001). Once the password is entered, you will be taken back to the login screen.

5) Enter the 4-digit password 0000 on the login screen (this password is to be changed at a later time).

6) You can start programming on the lighting levels screen.

MAIN SCREENS

Hourly programming – You can define time slots and apply a given lighting level for a single time slot on a daily basis. Moreover, to reduce configuration time, you can duplicate the settings for a day onto all the rest of the days of the week or only some of them.

Lighting levels – It allows defining up to 4 levels of lighting. The dimming range can be adjusted easily and in real-time to take the system to the desired light intensity which is set with a lux meter. During the programming stage, levels can be applied to the individual time slots or to a specific event.

Event programming (external command/signal) – The configuration of this section allows Enabling/Disabling the "event programming" and defining the lighting level for a single event, using an external command (push button).

Options – In the options page you can find a series of tools that are used to give general settings and that are not connected with the system's programming.

ADVANCED SOLUTION (INDOOR)

PREDICTIVE LIGHTING: ARTIFICIAL INTELLIGENCE

Disano **ActiveAhead** is a new type of lighting system. **It does not need to be programmed because it learns on its own from the first day it is installed and shares what it knows with its constituting modules**.

Improved comfort
An ActiveAhead lighting fixture starts learning as soon as it is switched on. The fixture will probably learn the first motion patterns within a couple of hours/days based on the amount of free movements in the space. The ActiveAhead lighting fixture learns motion patterns constantly and will therefore adjust to possible changes, such as the installation or the removal of a wall.

Easy installation
ActiveAhead fixtures are extremely easy to install. It is sufficient to fix the fixtures in the desired position and turn on the general switch. No need for control cables, programming or configuration. ActiveAhead is a real plug-and-forget solution.

Smart energy savings
Compared to a regular lighting system, ActiveAhead takes comfort to a completely new level, while offering remarkable energy savings. In addition to increasing lighting levels in a predictive way, it dims lights in a smart way based on actual occupancy.

ActiveAhead is a smart lighting solution managed by a motion detector that automatically controls the light emitted by fixtures via wireless based on people's movements, the amount of sunlight entering a room and a combination of parameters that can be configured via app in a simple and intuitive way. Once installed, fixtures will establish a mesh network based on the low energy wireless Bluetooth technology. They exchange information to help identify the most commonly used paths of the occupants of the room. The system "learns" to predict where light is necessary so that the fixtures can react literally "one step ahead" a person. In addition to saving energy, **ActiveAhead** is simple to install, without requiring the need to add complicated cabling.

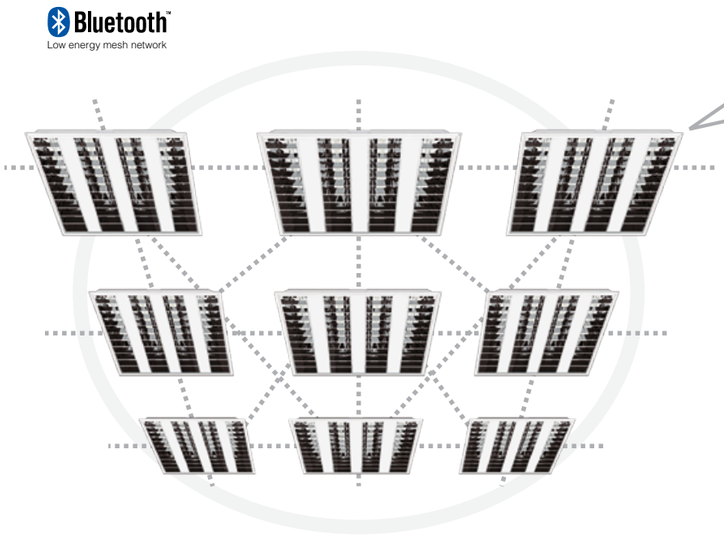
In general, **ActiveAhead** offers a good lighting experience in a space without the need for local adjustments. However, customizations, such as the adjustment of lower or higher lighting levels, turn off delays, groupings and assignments of work areas are possible via a smartphone with the **ActiveAhead** app. Moreover, **ActiveAhead**'s ability to predict motion models offers many advantages in applications such as stairways, corridors and underground parking spaces. **ActiveAhead** components can be used in lighting renovation projects where you cannot add cables.

ActiveAhead can be used in simple offices with open spaces, corridors, recreation areas and small and medium-sized meeting rooms with the need to control general lights.

The Disano products equipped with **ActiveAhead system** must be ordered with **subcode -25.** This solution can be applied to interior lighting fixtures such as **Minicomfort, Ibis and Heron.**

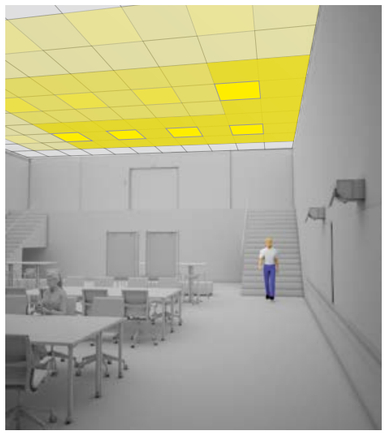
Example of application: offices, meeting rooms, stores, corridors, bathrooms, transit areas

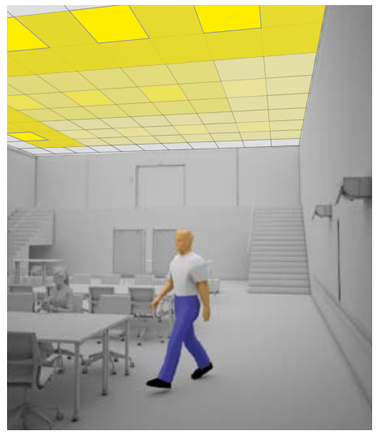
WHAT TO ORDER:
KIT 1 - example of installation in offices with:
• art. 841 Miniconfort (153535-25)



The ActiveAhead **App** allows you to define the parameters for lighting fixtures. The product, however, will work regardless of whether the app or any other software is configured or not. The app is available for all standard mobile devices (iPhone 4s, third-generation iPad or Android 4.4 and successive versions) equipped with Bluetooth Low Energy.

ActiveAhead is based on artificial intelligence that collects and analyzes the motion and lighting patterns detected by the sensors in each **ActiveAhead** lighting fixture. After collecting sufficient data to allow the algorithm to identify the most common motion patterns, it estimates when to control the lights based on the notification messages received by the nearby lighting systems in order to optimize both lighting levels and energy savings.





By “Smart Lighting” systems we mean all those “smart” systems that let you control lights and process data with other devices or “things” connected to a same lighting system.

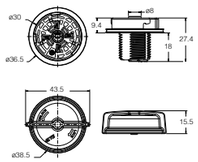
SMART - IoT SOLUTION

SMART SOLUTION (INDOOR)

The Disano products with **Zhaga Socket** must be ordered with **subcode -0054**. The socket provides electrical and mechanical connection between the sensor and the fixture necessary to manage industrial lights effectively and efficiently. This solution applies to the following families of product:

Industrial fixtures: **Astro and Saturno**

Main characteristics of the **Zhaga socket**:
- Standard interface for all wireless networks
- 24V power, not prone to spikes/overvoltage
- Simple and fast installation of wireless controller
- Ready network: the initial wireless installation and successive update through a wireless network controller
- Quick and simple management of the wireless controller

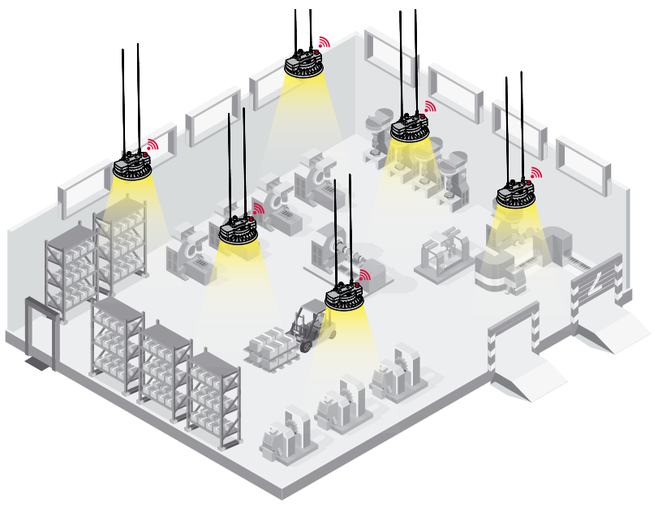


The **Zhaga** Consortium is an international consortium that includes many leading lighting manufacturers with the goal to standardize all the components regarding LED fixtures. With the new **Zhaga socket** (Book 18), the consortium standardized the mechanical and electrical interface between a wireless network and the fixtures' electronics.
The recent 2.0 version describes a smart interface between fixtures and communication nodes. It specifies the power and communication aspects in addition to mechanical ones and electrical PINs (characteristic of the previous 1.0 version). The Zhaga Consortium and the Digital Illumination Interface Alliance (DiiA) unveiled their joint certification zhaga-D4i programme that allows certified fixtures and nodes to bear the Zhaga and D4i logo. Book 18 Ed 2.0 allows any certified node to operate with any certified fixture.

Advantages:

- Easy tool-free mounting. The module is attached and secured with a bayonet clamp
- Compact dimensions for greater design flexibility
- The special (push-in) contacts reduce logistics problems arising from the need to use cables with various lengths for different lighting fixtures
- Single built-in seal that protects both the fixture and the modules, minimizing mounting times.

Example of application: warehouses or industrial plants



Thanks to the **Zhaga socket**, the end user can easily install any type of wireless controller (to be purchased separately) turning the fixture into a **SMART** fixture and therefore capable of being managed with the most common lighting control systems available on the market.
This type of solution is ideal in industrial environments where lights need to adjust constantly to maintain the desired lighting levels based on the amount of daylight inside.

WHAT TO ORDER:
With **subcode -0054** you can order fixtures with **ZHAGA SOCKET**

IoT SOLUTION (INDOOR)

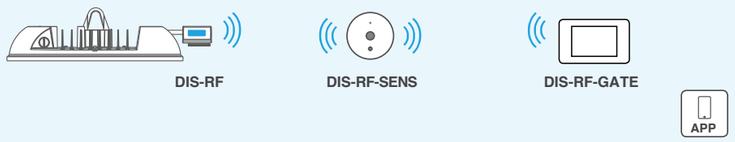
Thanks to their modular and scalable architecture, **wireless** solutions can be used in **stand-alone** applications. It is therefore possible to meet project requirements with the available budget or the expected return on investment. In stand-alone solutions, systems can be configured through a simple and easy-to-use APP without the need for further assistance from specialized technicians.

System architecture

The system is made up of hardware and software modules. Communication with **DALI sub-code -0041** fixtures and sensors occurs via radio frequency (wireless) solutions.

STAND-ALONE

Stand-alone
Controllers and sensors can work autonomously without being connected to the server. System configuration can be done in a simple and intuitive way using an App.



art. DIS-RF

Wireless control module for DALI drivers
The DIS-RF radio module controls a single lighting fixture equipped with **DALI** driver via a wireless network. The module operates in the **868 MHz** band and can implement the Mesh Network functionality. The DIS-RF module can also work as a stand-alone controller or through a centralized system.

FEATURES

- 12 Vdc (50 mA) power supply
- 868 MHz frequency (915 upon request)
- 13 dBm transmission power, wire antenna
- DALI outlet (max 4 “broadcast” drivers)
- Digital and serial I/O interface

art. DIS-RF-SENS

Wireless light and motion sensor
The DIS-RF-SENS multi-sensor detects light intensity and the presence of moving people and objects, sending the information in the **868 MHz** band via a wireless network. DIS-RF-SENS can be installed at elevated heights (up to 12 m). The sensor must be connected to the mains without having to be cabled to the rest of the system.

FEATURES

- 100-240Vac 50-60 Hz power supply (max 3W)
- 868 MHz frequency, Mesh Network
- 13 dBm transmission power, wire antenna
- PIR motion sensor for elevated heights (max 12 m) and ambient light sensor
- Recessed installation in plastic housing (sensor front protection: IP54)
- Signal status LED

art. DIS-RF-GATE

868 MHz Bluetooth gateway
DIS-RF-GATE is a portable battery-powered gateway that allows the wireless configuration of systems through App, compatible with Low Energy Android iOS Bluetooth smartphones. The App allows the identification and grouping of 868 MHz wireless network nodes, configuring light and motion sensors. DIS-RF-GATE integrates a digital lux meter that can be used to cable light sensors and set the luminous levels to work in the DLR (Day Light Regulation) mode.

FEATURES

- 9-12 Vdc power supply (max 1W)
- Radio interface with Low Energy Bluetooth for smartphone connection
- ON button with automatic OFF function
- 4 configurable buttons to send wireless commands
- 868 MHz radio interface to control wireless systems

GUIDELINES ON HOW TO BUILD A CONTROL SYSTEM

Designing a control system with smart solutions is fast and simple! Thanks to **wireless** technologies and a modular and scalable architecture, it is possible to implement stand-alone and networked systems by developing lighting control devices and adding sensors and all the necessary hardware and software modules to network the system. To select the right technology, you must be aware of the system’s intended use and determine whether you should use sensors, pre-setting and/or scheduling solutions.

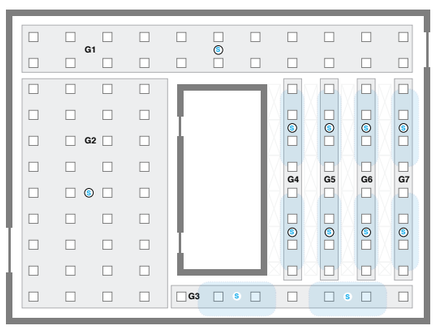
STAND-ALONE SYSTEMS

Point-to-point wireless solution:
this solution is used when it is not possible to cable the fixtures’ dimmers because each point needs to be replaced and the electrical installation cannot be changed. In this case, you will need to install a **DIS-RF**.

Motion/light sensors:
motion and light sensors can make you save energy when the area is occupied randomly throughout the day and when the room is illuminated by daylight. The **DIS-RF-SENS** multi-sensor is used when fixtures are installed at heights of up to 12 m above ground. It can be programmed as a motion sensor and/or a light sensor using an App.

Fully wireless system
When the electrical system cannot be changed, each replaced luminaire must be connected to the **DIS-RF** wireless controller. The system can be connected to standard DALI fixtures (without any modification needed) and then connected only to the power mains. If, instead, the electrical system can be changed or built from scratch as a new installation, it is often useful to implement a control system for one group of luminaires to be connected to each other through a dedicated dimming cable.

Example of application: industrial systems, retailing spaces, garages and similar areas



□ = **DALI sub-code -0041** fixtures
Ⓢ = DIS-RF-SENS

All these systems illuminate very large spaces and require the fixtures to be divided into dedicated functional groups to control independent zones, each of which can include sensors or require manual commands and scheduling. By way of example, let us consider an industrial area, which includes transiting, production and storage zones.

Features required for each zone corresponding to different groups of fixtures:

Group G1 – Main access zone:
The luminaires in this zone must stay ON day and night and are controlled depending on the amount of daylight.

Group G2 – Production zone:
The luminaires in this zone must stay ON day and night and are controlled depending on the amount of daylight.

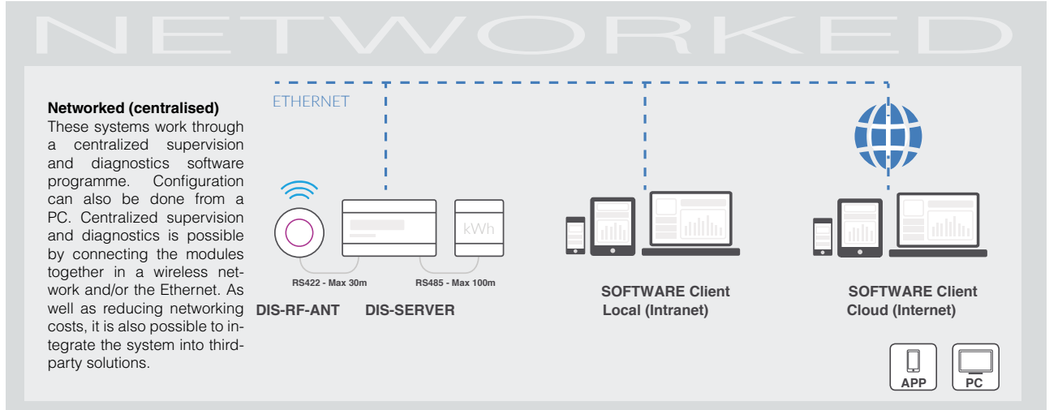
Group G3 – Transiting zone:
The luminaires in this zone must be switched ON only when sensors detect movement inside its scan area. The lighting level must be dimmed based on the amount of daylight. When no motion is detected lights switch ON to a background level corresponding to 10% of its total power and then switch OFF after a few minutes.

Groups G4-G7 – Storage zone:
The luminaires illuminate the aisles of a store and behave like the luminaires of Group G3, i.e. depending on the amount of daylight. Each aisle must be independent from the other and the background lighting level must be 20%. Luminaires should never switch OFF completely.

IoT SOLUTION (INDOOR)

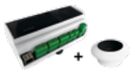
Thanks to their modular and scalable architecture, **wireless** solutions can be used in **network** applications. It is therefore possible to meet project requirements with the available budget or the expected return on investment. In networked systems, instead, you can use PCs to also control setup operations.

System architecture
The system is made up of hardware and software modules. Communication with **DALI sub-code -0041** fixtures and sensors occurs via cables (wired) or radio frequency (wireless) solutions.



Networked (centralised)
These systems work through a centralized supervision and diagnostics software programme. Configuration can also be done from a PC. Centralized supervision and diagnostics is possible by connecting the modules together in a wireless network and/or the Ethernet. As well as reducing networking costs, it is also possible to integrate the system into third-party solutions.

art. DIS-SERVER + DIS-RF-ANT



Ethernet server with modular interfaces
The DIS-SERVER module allows the configuration, control and monitoring of cabled DALI lighting fixtures, wireless devices (controllers and sensors) and energy meters. Thanks to the integrated web server and the Ethernet interface, it can be controlled via web browser, allowing centralization and remote access from the software application. DIS-SERVER integrates a weekly scheduler, 8 opto-isolated digital inputs and 3 modular serial slots for the insertion of plug-in cards dedicated to various communication interfaces. Combined with an DIS-RF-ANT antenna, DIS-SERVER can control up to 250 wireless devices (controllers and sensors).

FEATURES
- 24 Vdc, 2A power supply
- Ethernet interface with RJ45 plug-in
- 8 opto-isolated digital inputs
- 10 programmable digital inputs (dipswitch)
- 3 modular serial slots (Serial 1, Serial 2, Serial 3)
- Integrated web server; weekly scheduler
- Web App optimized for mobile devices (tablets, smartphones)
- Internal SD memory (optional)
- Status LED: Power, SD, Serial 1, Serial 2, Serial 3, Error

ACCESSORIES
- Serial 1: RS422 interface for the DIS-RF-ANT connection
- Serial 2, Serial 3: DALI interface (64 drivers in addressable mode)
- Serial 3: RS485 interface for Modbus meters connection
- DIS-RF-ANT: 868 MHz wireless antenna with RS422 interface

CONNECTION
DIS-SERVER must be installed on DIN guide and thanks to the remote DIS-RF-ANT antenna, which needs to be in a visible position for the wireless devices, it can also be housed in skylight wells and shielded electrical boards. Peripherals can be connected by following the distances shown in the diagram.

Software

Software for centralized supervision and diagnostics
An application for the local (Intranet) and remote (Internet) control of each automation system integrated into the platform. Thanks to the software modular and scalable architecture it is capable of viewing the contents on each type of device equipped with a web browser, such as PCs, notebooks, tablets and smartphones. With the software it is possible to configure, monitor and command each integrated system and each connected device both through manual operations and through automatic algorithms based on calendar, events and conditional logic.

FEATURES
- Web-based application for Windows and Linux
- Standard MySQL database
- Configurable for Intranet and Cloud
- Control of the system through graphical maps
- User profiling for single-site and multi-site applications
- Programming of activities based on time/date
- Control of energy consumptions
- Export of technical data and reports
- Integration with other Building Automation systems (customizable plug-ins)
- Export of data to BMS and SCADA systems (web services)

HOME: this section can be fully customized like any normal HTML page. It displays technical, logistic and marketing information.

ENERGY: this section allows you to graphically display measured energy consumptions and export them into a .csv file.

MAPS: this section displays systems as tree lists and charts, organized in hierarchies to ensure simple and intuitive navigation.

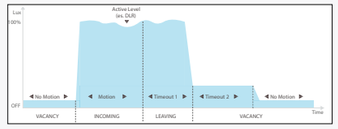
SCHEDULER: this section allows you to create advanced algorithms based on hourly or calendar programming.

APP

App for the configuration of wireless devices
With the application, available for Apple and Android smartphones, it is possible to set all operating parameters of wireless systems equipped with RF 868 MHz interface. The simple and intuitive graphical interface allows the selection of various pre-configured usage applications, which will only require fine-tuning such operating parameters as motion time-outs and the desired lighting levels. The Advanced section is used to configure more professional functionalities, typically used in network systems.

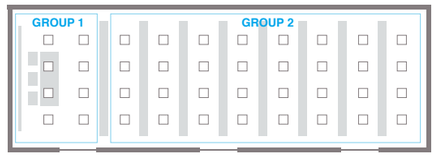
FEATURES
- Application for Apple and Android smartphones
- Simple and user-friendly graphical interface
- Configuration of wireless devices operating in 868 MHz
- "**Basic**" section for the configuration of simple functions
- Pre-configured usage profiles for the most common applications
- Customization of operating parameters (timeout, lighting levels, etc.)
- Assignment of devices to their corresponding work groups
- "**Advanced**" section for the configuration of more professional functionalities
- Calibration of lighting sensors through the built-in lux meter in RF-WiFi
- Saving of favourite configurations

The App interface allows the customization of simple operating parameters, such as the timeouts determining the transitions based on motion and the desired lighting levels under various conditions.



Examples of use: offices, meeting rooms, open spaces, entrance halls, corridors and community areas

All these systems are made to illuminate spaces in office buildings with mounting heights of up to max. 4 m, typically with false ceilings. The "local" cabling of controllers and sensors is always possible, even in case of relamping solutions. Therefore, we use systems that allow managing independent areas through sensors and manual commands. Thanks to the 868 MHz wireless network, the system can be easily supervised from the software.



☐ = **DALI sub-code -0041** fixtures

Conference rooms
In this type of rooms, lighting control is connected with the need to create static light settings to adjust levels to group of fixtures. We typically use DALI fixtures with systems that allow implementing the several lighting scenes manually through standard buttons or mobile devices.

GUIDELINES ON HOW TO BUILD A CONTROL SYSTEM

Designing a control system with smart solutions is fast and simple! Thanks to **wireless** technologies and a modular and scalable architecture, it is possible to implement stand-alone and networked systems by developing lighting control devices and adding sensors and all the necessary hardware and software modules to network the system. To select the right technology, you must be aware of the system's intended use and determine whether you should use sensors, pre-setting and/or scheduling solutions.

NETWORKED SYSTEMS

Presetting and scheduling:
these functions are particularly useful when the system is required to meet different needs throughout the day or week. For example, you can set lower lighting levels when performing maintenance and cleaning, and higher levels during the workday. To control the system based on preset scheduling times and different work modes you must use a **DIS-SERVER**.

Centralized supervision/diagnostics software:
this application is used for the local (Intranet) and remote (Internet) control of each automation system that can be integrated in the platform. With the software, it is possible to configure, monitor and command each integrated system and connected device through manual operations and automatic algorithms using the calendar, events and conditional logic on any device equipped with a web browser, including PCs, notebooks, tablets and smartphones.

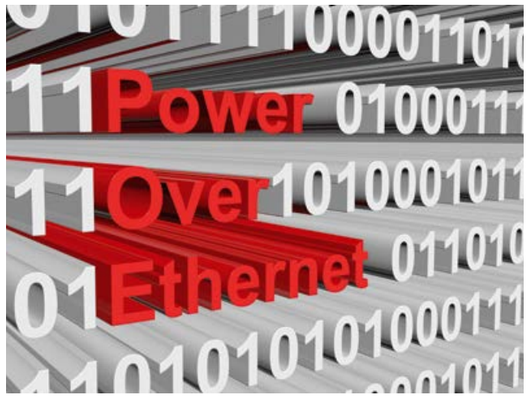
Systems with advances functions
To control zones in manual mode and through time scheduling, it is necessary to use **DIS-SERVER**. With additional hardware and software, it will be possible to connect the system to the Ethernet network and control it through an integrated web APP remotely (Internet). The system can be monitored and controlled through graphical maps with the software installed on a PC or pre-loaded on the server. Thanks to this software, it is also possible to control the system remotely through Intranet-based and/or Cloud-based solutions.

IoT SOLUTION (INDOOR)

Energy efficiency has guided the evolution of lighting, but the next step will take it in the era of the Internet of Things (IoT). The main innovation of this phase consists in the replacement of the electrical supply of the LED lights with an alternative source already present - Power over Ethernet (PoE).

PoE supplies energy and data via a cat. 5 or cat. 6 cable from a switch directly to the network port of a connected device. This allows, for example, network administrators to distribute devices, such as IP surveillance cameras, in places that do not have access to a nearby current socket. PoE not only makes implementation easier, but it also eliminates the need for a professional electrician to install additional electrical circuitry in the office.

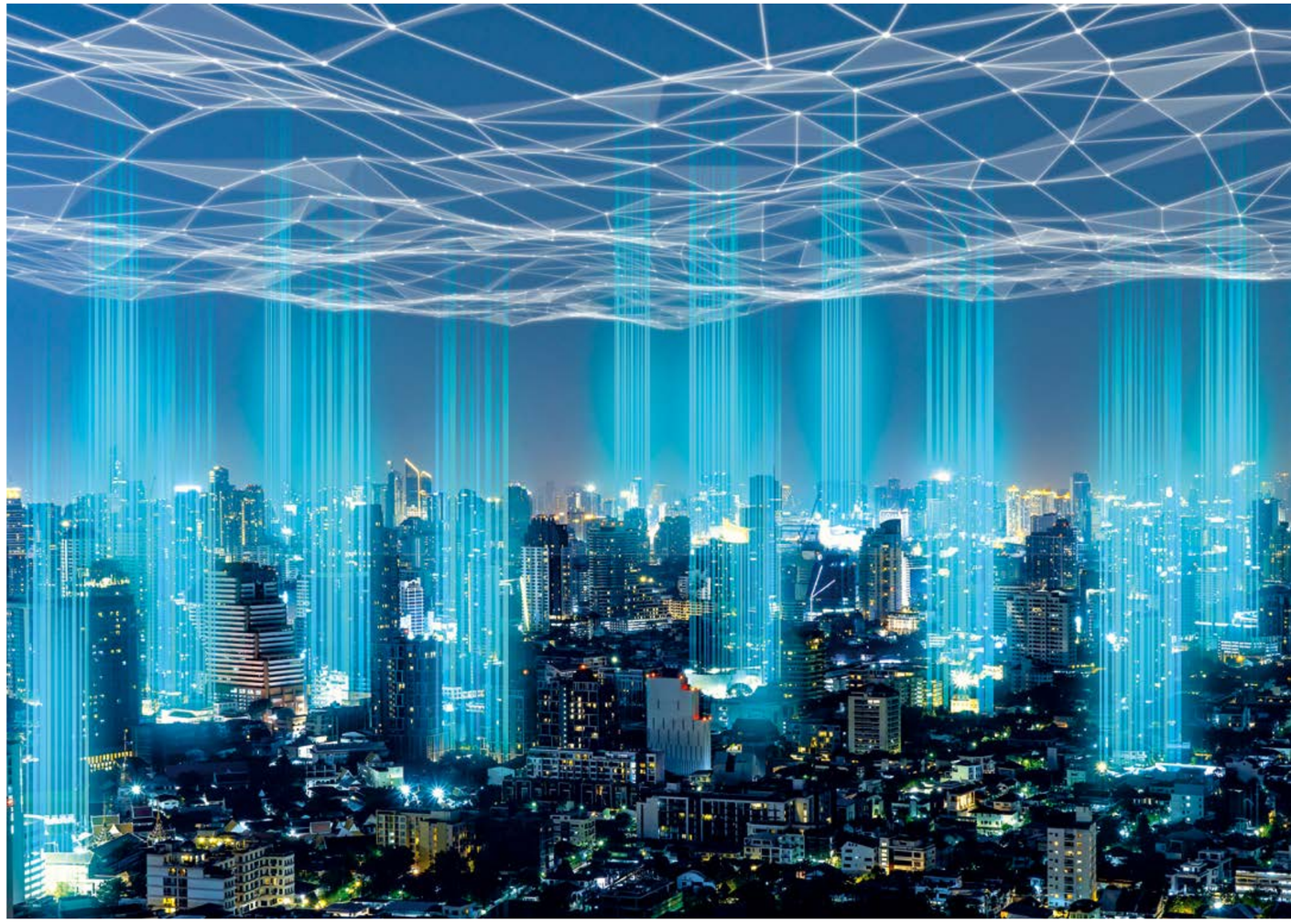
Network devices can also supply energy to LED lights through a standard cable. The ultra-low power requirement of the LED lights allows the PoE to power these light sources. LED lights boast an average duration of about 50000 hours and use less power than fluorescent lamps. The PoE 802.3af standard - the standard with the lowest power - produces up to 15.4 watt of power and can easily support the standard requirements of LED lighting applications. PoE will soon have the possibility to supply more power, reaching up to 60 watt, covering 80% of indoor lighting requirements. The PoE technology not only simplifies the implementation, it connects the LED lights to the Internet and provides users with access to the “Smart Lighting” technology. With the Internet and “Smart Lighting”, users can control their lighting systems remotely with their own mobile client device.



This system offers a scalable and open architecture for IoT systems that can be updated for future IPv6 connectivity up to the final node (lighting fixture). It allows any device, including lighting fixtures and cabled and wireless sensors, to communicate directly over a shared network without using special gateways. Disano offers the first hybrid lighting fixture that allows accessing all lighting design data without a gateway, regardless of type, either wireless or through cables.

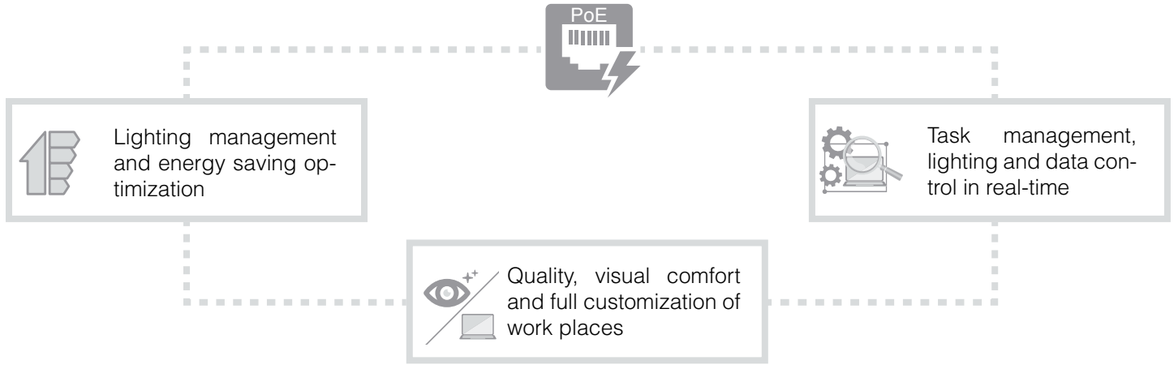
Once you identified the right solution, you will no longer need to choose: you will be able to configure the system in wireless or in PoE or both. The PoE solution replaces complex bus systems and traditional power infrastructure, offering all the benefits of a network shared by telephones, CCTV or other PoE-based systems that require data exchange. The wireless solution is a IoT low-cost lighting solution that is becoming more widely used in new or renovated buildings. The last part of the system is another hybrid component.

The new wireless communication module connects the stable and scalable wireless module with the DALI system, supplied with sophisticated, smart and intuitive tools for an efficient programming and commissioning. net4more is a scalable and open system with a technology that can be used by any lighting fixture manufacturer.



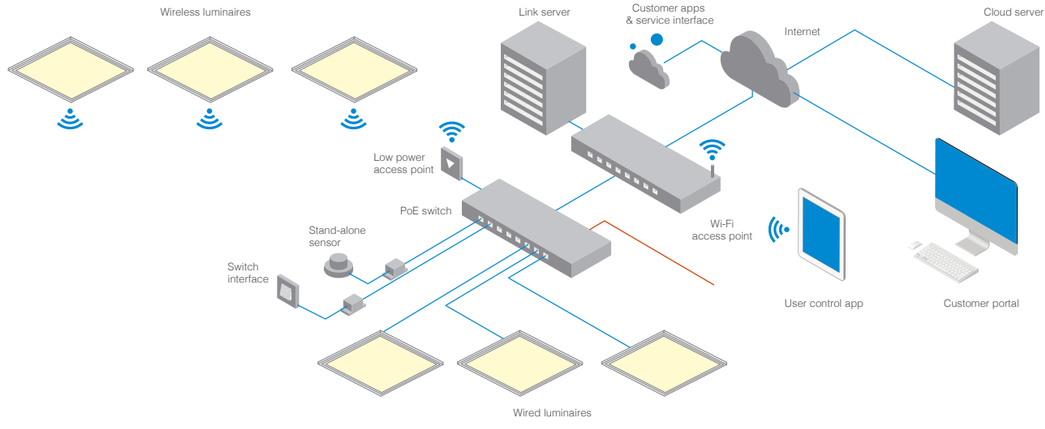
Advantages and benefits

The connected lighting system can exploit the LED and PoE technology, eliminating the electrical power and combining the IT infrastructure with the lighting infrastructure. This benchmark technology allows managing services that “standard” lighting systems alone cannot manage. A lighting system carefully designed to supply the correct amount and quality of light in different times of the day can have an extremely positive effect on our concentration, relaxation and quality of sleep, helping us to feel more comfortable in our work places.



System composition

Unlike normal IoT devices that work with automation standards like Z-Wave, Zigbee BLE, LED lighting with PoE does not require a home gateway to work. Lights receive their own IP address once they are connected to a LAN network though an Ethernet cable, significantly reducing the components of the management infrastructure.



In cities and suburban areas, the proper illumination of big or small streets, bridges and public spaces increases the sense of safety and energy savings. Disano offers lighting management solutions capable of meeting the stringent demands of outdoor lighting.

OUTDOOR SOLUTION

ELEMENTARY SOLUTION (OUTDOOR)

VIRTUAL MIDNIGHT, A SMART DEVICE THAT SAVES ENERGY

The **virtual midnight** calculation is based on a mechanism that can be applied to public lights, and more generally to outdoor luminaires, which allow programming a reduction of the luminous flux, when you don't need the luminaire to operate at full power all the time. For example, during the central hours of the night, in areas where vehicle and pedestrian traffic is low, a **reduction of the luminous flux will keep lighting levels within safety standards while saving energy**. Multiply by hundreds or even thousands of street lamps and the savings become significant. This type of device, applied to a LED lighting system, results in considerable energy savings compared to old technology.

It is worth noting that the initial system setup – if necessary – can be easily customized from the operating board. Therefore, the system doesn't require much effort or costs for running and maintenance. In this way, town administrators have the chance to make their streets, squares, big and small neighbourhoods safer and more liveable with a contained investment, which is mostly compensated by the energy savings.

High-quality, eco-friendly technology within anyone's reach: the advantages

- Lower consumptions using light only when and where needed
- No need to change the whole system
- A preset, easily customizable mechanism with no running and maintenance costs
- An eco-friendly solution, which is based on a smart technology that anyone can afford

Disano outdoor lighting products are divided into two ranges that provide the end user with different types of technology:

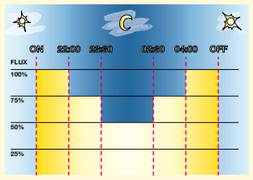
Advanced Prog (CLD PROG wiring): luminaires made to meet specific technological needs and designed, as standard, to integrate special functions to ensure high energy-savings, customization options and versatility of use in many applications (e.g. installation with dimmers or emergency supply). *These functions are already available on standard products and must be enabled on request (**except** for versions with **LED COB**)*. These products do not require any modification to the entire system because the lamp only needs to be connected to mains power supply no pilot cable and/or control bus required.
When ordering with **subcode -30**, the luminaire will be set to the Virtual Midnight factory settings.

Basic Prog (CLD BASIC wiring): luminaires developed to grant great flexibility of use thanks to the possibility to vary luminous flux intensity.
When ordering with **subcode -30**, the luminaire will be supplied with a Virtual Midnight device set to factory settings.

VIRTUAL MIDNIGHT - Stand-alone system with automatic luminous flux reduction in **4 steps**

To increase energy savings at night when there are fewer people and vehicles around, a lighting fixture can be programmed according to a specific profile (customizable on request). The fixture reduces its luminous flux through a self-learning process which, depending on the previous switching on and off times, will determine a hypothetical "virtual midnight". This is the average value between the time the fixture is switched on (sunset) and switched off (sunrise). The "virtual midnight" is the reference point for dimming lights according to the desired profile. The device is integrated in the LED driver and therefore does not require any modification to the system.

In order for the system to function correctly, the system must be adjusted by a device that turns the system on and off on a regular basis every day.

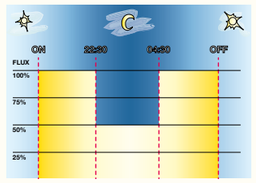


Factory settings	
Time	Flux
on ÷ 22:00	100%
22:00 ÷ 23:30	75%
23:30 ÷ 02:30	50%
02:30 ÷ 04:00	75%
04:00 ÷ off	100%

Virtual Midnight subcode -30: fixtures are equipped with a device to reduce flux in **4 steps** based on the calculation of the virtual midnight.

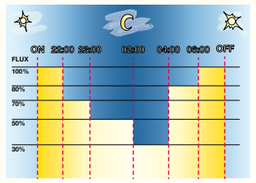
***ATTENTION:** original settings and time slots for the "virtual midnight" value can be customized in up to 8 steps upon request.*

Example of virtual midnight in 2 steps



Settings upon request	
Time	Flux
on ÷ 22:30	100%
22:30 ÷ 04:30	50%
04:30 ÷ off	100%

Example of virtual midnight in 5 steps



Settings upon request	
Time	Flux
on ÷ 22:00	100%
22:00 ÷ 23:30	70%
23:00 ÷ 02:00	50%
02:00 ÷ 04:00	30%
04:00 ÷ 06:00	80%
06:00 ÷ off	100%

WHAT TO ORDER:
subcode -30 you can order fixtures equipped with **VIRTUAL MIDNIGHT DEVICE**

Example of fixtures with VIRTUAL MIDNIGHT

SMART SOLUTION (OUTDOOR)

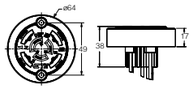
To monitor and manage public lighting centrally, lighting fixtures will always be more equipped with wireless controls that will allow their integration with the IoT. Today the market offers two solutions: **NEMA and ZHAGA**. Both solutions offer an electrical and mechanical connection between the control antenna and the lighting fixture.

Applications: ideal for use in public or private street lights, car parks, cycle and pedestrian lanes, corridors within hospitals, schools and industrial plants and urban amenities and generally in any area where you need a “smart” control of lighting fixtures.

Nema Socket

Disano’s luminaires with **subcode -40** come with the **Nema Socket** to enable the electrical and mechanical connection between the sensor and the light fixture. The socket is made in plastic material and is complete with a gasket to ensure perfect IP protection; moreover, thanks to its removable structure, it can be installed directly onto the luminaire’s body (without accessing any internal parts) and **without using tools**, hence facilitating future maintenance; **upon request**, the sealing cap can be installed. The Nema Socket can be adapted to **5/7 poles**: 3 for the electrical connection, and the remaining 2/4 to carry 1/10V or DALI signals; it is also perfectly suited to integrate all “smart” devices for remote lighting control.

Upon request, the **sealing cap can be installed**



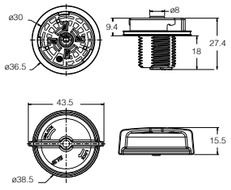
The ANSI C136 standard defines the dimensions of the socket, the type of block and other details. It provides a connection between the power grid and the twist-lock control signals.
The **Nema socket** in lighting fixtures can have 5 or 7 terminals:
3 terminals are used for the connection of the power supplier, the remaining 2 or 4 terminals are used to carry the pilot signal and the other signals. The power terminals can carry current up to 15A. Signal terminals are limited to 100mA. Signal contacts can support (0)1/10VDC or DALI protocol. The sockets are made in durable polycarbonate and in order to prevent water from leaking inside the fixture, it is sealed at the bottom. This socket, which can be opened and closed manually without the use of tools, will be the essential solution for smart city applications.
Nema sockets are very popular in the United States, especially in outdoor lighting installations, such as street lights. A lighting fixture with a Nema socket is opened to new developments. In fact, when a new technology is developed for the control system, the device can be changed/upgraded without the need to change the lighting fixtures.

Advantages:
- Easy installation without tools
- Up to 355-degree rotation
- Robust twist-lock contacts for reliable power interconnection
- The socket is pre-terminated with wire conductors to facilitate the integration into new and existing lighting systems
- It accepts DIMM dimmable photocells (ANSI standard) to enable connection between the photocell and the lighting fixture
- Available with two or four dimming contacts to support dimming protocols over one or two channels

Zhaga Socket

Disano’s fixtures with **subcode -0054** are compatible with the **Zhaga Socket** that ensures an electric and mechanical connection between the sensor and the luminaire, simplifying the complex architecture of street lighting installations and removing the need for accessory modules and cabling. The **Zhaga Socket** consists of a standard interface between the receptacle on the fixture and its basic components and cover that, together, form the housing of the control module. The built-in low friction seals, that can be coupled together, protect both the fixture and the module. UV-resistant and strong materials complete the features of this reliable connector.

Sealing cap supplied **as standard**



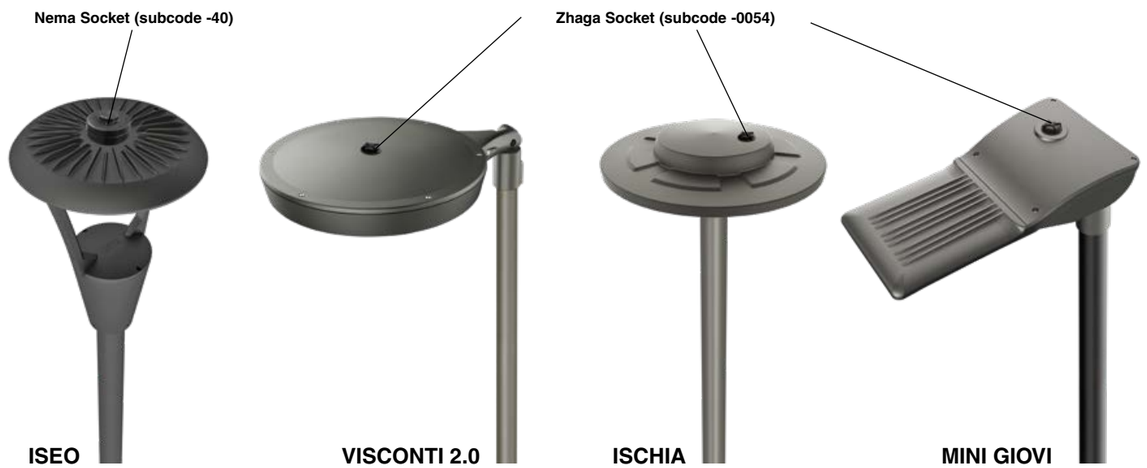
The **Zhaga** Consortium is an international consortium that includes many leading lighting manufacturers with the goal to standardize all the components regarding LED fixtures. With the new **Zhaga socket** (Book 18), the consortium standardized the mechanical and electrical interface between a wireless network and the fixtures’ electronics.
The recent 2.0 version describes a smart interface between fixtures and communication nodes. It specifies the power and communication aspects in addition to mechanical ones and electrical PINs (characteristic of the previous 1.0 version). The Zhaga Consortium and the Digital Illumination Interface Alliance (DiiA) unveiled their joint certification zhaga-D4i programme that allows certified fixtures and nodes to bear the Zhaga and D4i logo. Book 18 Ed 2.0 allows any certified node to operate with any certified fixture.

Main characteristics of the **Zhaga socket**:
- Standard interface for all wireless networks
- 24V power, not prone to spikes/overvoltage
- Simple and fast installation of wireless controller
- Less aesthetical impact than a Nema socket
- Ready network: the initial wireless installation and successive update through a wireless network controller
- Quick and simple management of the wireless controller

Advantages:
- Easy tool-free mounting. The module is attached and secured with a bayonet clamp
- Compact dimensions for greater design flexibility
- The special (push-in) contacts reduce logistics problems arising from the need to use cables with various lengths for different lighting fixtures
- Single built-in seal that protects both the fixture and the modules, minimizing mounting times.

WHAT TO ORDER:
The Disano products equipped with the remote lighting management device can be ordered with:
NEMA SOCKET with **subcode -40**
ZHAGA SOCKET with **subcode -0054**

Example of fixtures with ZHAGA and NEMA SOCKETS

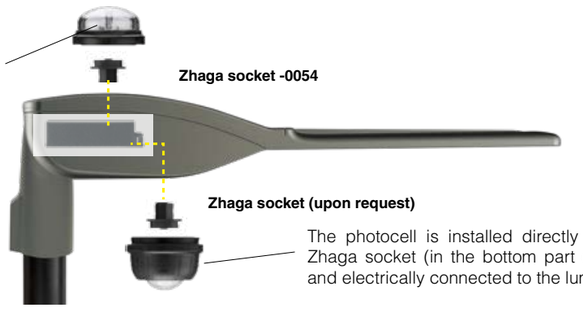


SMART SOLUTION (OUTDOOR)

PHOTOCELL AND LIGHTING-MOTION SENSOR

Luminaires compatible with Zhaga receptacles may be equipped with photocells or light/motion sensors. In this way, the luminaire will have the necessary “intelligence” to adjust to specific needs.

The photocell is installed directly to the supplied Zhaga socket (in the upper part of the luminaire) and electrically connected to the luminaire driver

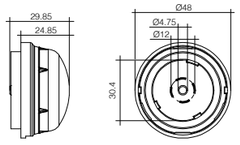


The photocell is installed directly to the supplied Zhaga socket (in the bottom part of the luminaire) and electrically connected to the luminaire driver.

PHOTOCELL for DALI-2 street lighting

cod. 986450-00

bottom view



Main features:
- Monitoring of ambient lighting for stand-alone or network applications
- Ready for Zhaga receptacles for quick installation to the luminaire
- Precise light measurement from 0.2 to 20,000 Lux
- Detection angle for light measurement: 150° - Start time: ≤ 5 s
- Designed to be installed to the upper side of the luminaire
- Service life up to 100,000 h at a TC of 60 °C

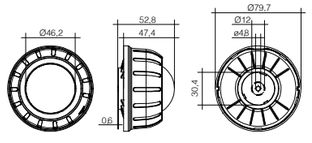
Structural features:
- Body: grey plastic
- Lens: plastic, smoked grey
- Protection up to IP66
- Impact resistance ≤ IK09

Advantages:
- Innovative: simple start-up for stand-alone applications, Plug & Play interface
- Flexible: luminaire switches on/off depending on ambient light
- Reliable: tested for critical outdoor conditions

MOTION AND LIGHT SENSOR for DALI-2 street lighting

cod. 986451-00

bottom view

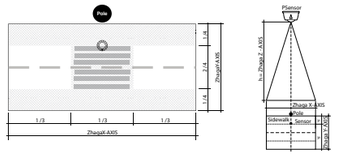


Main features:
- Monitoring of ambient light and presence detection
- Integrated temperature measurement
- 2 PIR sensors with extended features such as detecting objects with side orientation
- Ready for Zhaga receptacle for quick installation to the luminaire
- Rectangular detection range, ideal for street applications - Start time: 30 s
- Detection angle for light measurement: 76°
- Precise light measurement from 1 to 4,000 Lux
- Integrated pressure equalizing membrane
- Service life up to 100,000 h at a TC of 60 °C

Structural features:
- Body: dark grey (RAL 7040)
- Protection up to IP66
- Impact resistance IK08 (without lens)

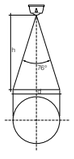
Advantages:
- Innovative: first DALI-2 asymmetric motion sensor based on Zhaga socket
- Flexible: adjustment of parameters with configuration software
- Reliable: tested for critical outdoor conditions

Motion detection: the motion sensor detects moving objects that radiate warmth (mainly pedestrians) thanks to PIR technology that reacts to heat changes within a rectangular coverage area (part of a street). The entire coverage area is rectangular, while the highlighted area is the one optimised for the detection of pedestrians. The sensitivity of the sensor can be adjusted via the application.



Height	Detection area				Covered area
h	x	y	y1	y2	~
4.0 m	17.0m	8 m	2.0 m	6.0 m	136 m²
4.5 m	19.3m	9 m	2.3 m	6.8 m	173 m²
5.0 m	21.5m	10 m	2.5 m	7.5 m	215 m²
5.5 m	23.8m	11 m	2.8 m	8.3 m	261 m²
6.0 m	26.0m	12 m	3.0 m	9.0 m	312 m²
6.5 m	28.3m	13 m	3.3 m	9.8 m	367 m²
7.0 m	30.5m	14 m	3.5 m	10.5 m	427 m²
7.5 m	32.8m	15 m	3.8 m	11.3 m	491 m²
8.0 m	35.0m	16 m	4.0 m	12.0 m	560 m²

Brightness detection: the detection angle for light measurement is 76°.



Height	Detection area	Covered area
h	d	~
4.0 m	6.2 m	31 m²
4.5 m	7.0 m	39 m²
5.0 m	7.8 m	48 m²
5.5 m	8.6 m	58 m²
6.0 m	9.4 m	69 m²
6.5 m	10.2 m	81 m²
7.0 m	10.9 m	94 m²
7.5 m	11.7 m	108 m²
8.0 m	12.5 m	123 m²

SMART SOLUTION (OUTDOOR)

WIRELESS ANTENNAS WITH REMOTE CONTROL

Thanks to Zhaga compatibility, remote communication modules can now be effectively used for lighting control and data transmission. Each RF node has the necessary “intelligence” to control multiple DALI devices while simultaneously setting up a stable wireless network.

The antenna is installed directly to the supplied Zhaga socket (at the top of the luminaire) and allows easy control and individual adjustment of DALI devices.

WIRELESS ANTENNA for DALI-2 Street Lighting

cod. 986445-00

cod. 986446-00

Main features:
- Each control unit stores information about its own configuration and the configuration of the rest of the controls installed in the same network.
- Configuration and control can be done from a mobile phone or a tablet using the free CASAMBI APP (available for iOS and Android).
- Remote control of the installation is also possible via cloud through a Casambi router connected to the Internet.
- Electrical connection and mechanical fixing are done through standard ZHAGA Book 18 compatible socket by twisting and locking into place, without tools.
- No need for hubs, master devices, computers or programmes. Communication is via a Bluetooth 4.0 mesh network.

FEATURES	
Nominal input voltage	24 VDC SELV
Energy consump. in standby mode	0,5W
Energy consump. in operating mode	0,6W
Control interface	DALI/DALI2
DALI output current	40mA max.
Dimming	0-100%
RF communication interface	Bluetooth 4.0 BLE
RF communication protocol	Casambi
Wireless class	Class 2
Firmware update	OTA (Over the air)
Casing material	PC con trattamento UV
IP - IK	66 - 09
Connectors	ZHAGA Book 18
Dimensions (diameter - height)	986445-00 Ø48mm. H 44mm
	986446-00 Ø80mm. H 50mm

Operation and configuration:
From the **CASAMBI APP** it is possible to group luminaires by street, set dimming levels according to time, schedule special events for particular days, etc. The communication range between controllers is up to **70m** outdoors. Since devices are operating on a mesh network, controllers communicate with each other until the information reaches the controller for which it was intended, even if it is far away. During setup it is sufficient to be located in the range of one of the controllers.

Communication security is guaranteed through encrypted messages. It is possible to set different access levels and configuration permissions. Network configuration information can optionally be stored in the CASAMBI cloud and restored if necessary. When a controller receives a firmware update, it will automatically retransmit the update to the other controllers. Each network can support up to **250 controllers**.

Several operating modes are possible (on/off, 0-100% dimming, circadian control, tunable white, etc.). Different communication profiles can be configured to meet the requirements of different luminaires. The monitoring of internal temperature is done via the Casambi App. Information is received from the associated driver (energy consumption, temperature, etc.) and sent to the cloud.

PHOTOCELL
cod. 986450-00

ISCHIA

LIGHTING-MOTION SENSOR
cod. 986451-00

GIOVI

WIRELESS ANTENNAS
cod. 986445-00

GARDA

WIRELESS ANTENNAS
cod. 986446-00

MINI GIOVI

IoT SOLUTION (OUTDOOR)

What is a smart city?
A smart city is a city where there is a better quality of life and where public spaces can help citizens achieve their full potential and move more freely, while saving time and respecting the environment. The intelligence of a «Smart City» is a distributed, shared, horizontal and social intelligence. It is an intelligence that promotes the participation of citizens and the organization of the city towards a greater optimization of resources and results. Energy consumption, public resource use and time are all optimized.

With the Web and the new technologies, access to services is easier and public spaces can be organized to favour mobility, save time and turn our cities smarter. Remote management systems make objects more intelligent and recognizable, so that they can communicate data and provide access to aggregated information. Thanks to a more efficient use of the Web, everything within a city (urban fittings, public buildings, monuments, etc.) can play an active role and become collectors and distributors of information about traffic, energy consumption, services and assistance to citizens, cultural and touristic attractions and much more.

The fixture can be equipped with a **control system which provides lighting managers with the ability to improve the performance of urban and street lighting** installations while saving costs by lowering energy usage, optimizing operation and reducing CO_2 emissions. The system incorporates the latest technologies in power electronics, communications and IoT. This makes possible, among other features, an on/off scheduled switching, a dynamic programming of lighting levels, map-based visualizations, automatic alarm reports, real-time fixture monitoring and maintenance scheduling of every single luminaire of multiple installations at once. The system has a friendly and secure web-based user interface which can be operated anywhere and anytime from any web-connected device such as computers, smartphones and tablets providing real time and accurate control of the lighting infrastructure.

System Highlights

- Flexible solution
  - Valid for new installations as well as for lighting renovation
  - Autonomous system but integrable with other city services platforms
  - Valid worldwide
  - Compatible with most Smart City services platforms
- Values and revenues
  - Better lighting performance
  - Money savings
  - Energy costs reduction
  - Operation costs reduction
- Users
  - Municipalities and County Councils
  - Smart City platforms operators
  - Managers of large infrastructure
- Applications
  - Street and residential lighting (streets, roads)
  - Urban & architectural lighting (monuments, public spaces)
  - Large infrastructure lighting (airports, ports)
  - Large areas and sport lighting (car parks, stadiums)
  - Urban events lighting (celebrations, demostrations)

System Architecture & Components

- System architecture
  - Smart power electronics: LED drivers
  - Wireless network hardware
  - RF Nodes and GSM Gateways
  - Cloud-based data acquisition and network management
  - Management software suite (Network & data management)
  - Web-based multi-device user friendly interface
- Technical aspects
  - Fully programmable electrical parameters and functionalities
  - Connectivity of sensors
  - Self-diagnosis, notification of alarms
  - Mains voltage and frecuency monitoring
  - High efficiency
- Lighting network nodes
  - Multi-hop wireless mesh network
  - IP-based protocol, broad coverage
  - Automatic neighbour discovery, self-organization, ad hoc configuration
  - Extensibility, interoperability, open standards
  - Robust link, reliable and high-performance network
  - Additional sensor data acquisition (optional)
- Gateway
  - Mesh network concentrator
  - 2G/3G/LTE network gateway
  - Time and date precise synch

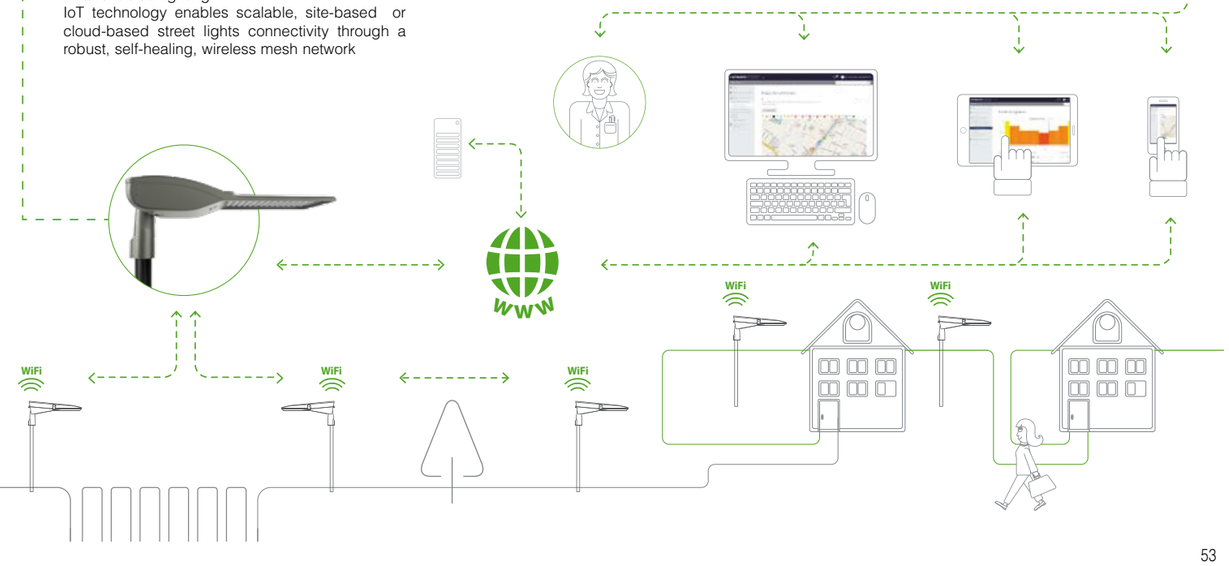
- Central host and database
  - Local or cloud hosting available
  - End-to-end secured system
  - Smart City and other horizontal management platforms integrability
  - Multi-level data interchange capabilities, app interfaces
  - Business Intelligence and data analytics
- Management Software Suite
  - Lighting configuration, management and maintenance
  - Easy installation, test capabilities
  - Data network management and configuration
  - Reports, statistics and data visualization tools
- Fast commissioning
  - Ease of installation
  - Assembling outside fitting
  - Remote configuration
  - Reliable, outdoor-proof
- Accuracy
  - GPS accurate location
  - Point-to-point management
  - Real-time operation

Smart City Lighting

- Flexible and avant-garde lighting
  - Programmable lighting
  - Dynamic lighting
  - Reactive to events
  - Makes possible a human centric lighting
  - Increases citizen satisfaction
  - Helps to improve safety on streets
  - Compatible with most existing Smart City & urban services management platforms and easily adaptable thanks to its open architecture
- Environmental sustainability
  - Energy savings
  - Reduction of CO_2 footprint
  - Lower lighting pollution
- Data-enabled lighting
  IoT technology enables scalable, site-based or cloud-based street lights connectivity through a robust, self-healing, wireless mesh network

User Friendly Web-based Interface

- Main functionalities
  - Easy lighting levels & timing configuration
  - Creation of customized lighting schedules
  - Energy consumption monitoring
  - Power supply monitoring
  - Alarms and events reporting
  - Operation time recording
  - Geolocation and mapping of luminaires (multiple map choice)
  - Easy allocation of luminaires by town, street, coordenates, type
  - Manteinance planning
  - Multiple users administration
- Optimum lighting maintenance
  - Possibility of preventive maintenance
  - Optimization of reactive maintenance
- Privacy and security commitment
  - Encrypted communications
  - Safe communications exchange through highest encryptation levels
  - Database access security
  - Secure hosting
  - Cloud protection and data confidentiality
  - Safe access with authentication
  - Highest protection against unauthorized access



Disano offers lighting management solutions for sporting facilities hosting football, tennis, rugby, basketball and volleyball games.

There are three lighting control systems that can adjust perfectly to all facilities, from the smallest to the biggest and most complex ones:
- ELEMENTARY WIRELESS
- ADVANCED WIRELESS
- DMX TOP SOLUTION

SPORTING SOLUTION

COMPLEX solutions requiring hardware and software

SPORTING SOLUTION

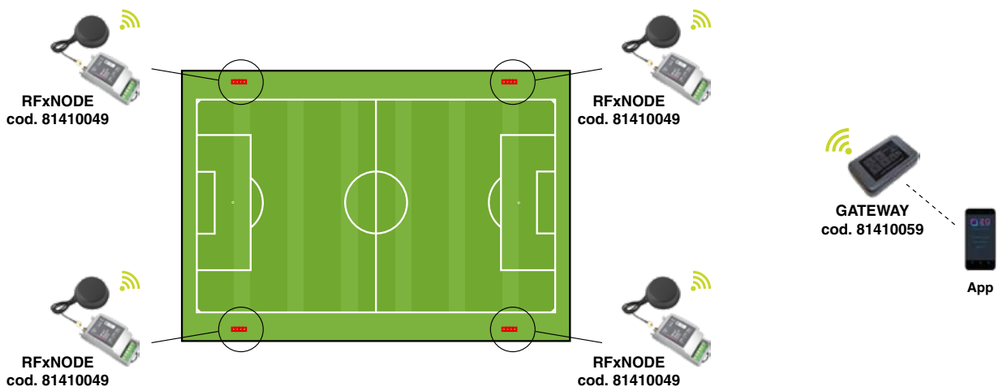
ELEMENTARY WIRELESS: a wireless lighting control solution conceived for small and medium-sized non-professional sporting centres to adjust lighting levels according to the sporting events held.

This solution applies to the following families of product:

Floodlights: **Rodio, Satuno, Astro and Forum**

Example of use: small and medium-size arenas

System architecture
The system is made up of hardware and software modules. The communication with the lighting fixtures occurs via a **RFxNODE wireless module** (that can control up to 32 DALI drivers) to be installed in an electrical board at the base of the light post and that can be easily configured with the **wireless button panel** or via app.



WIRELESS SYSTEM - for sports facilities

SPORTING SOLUTION

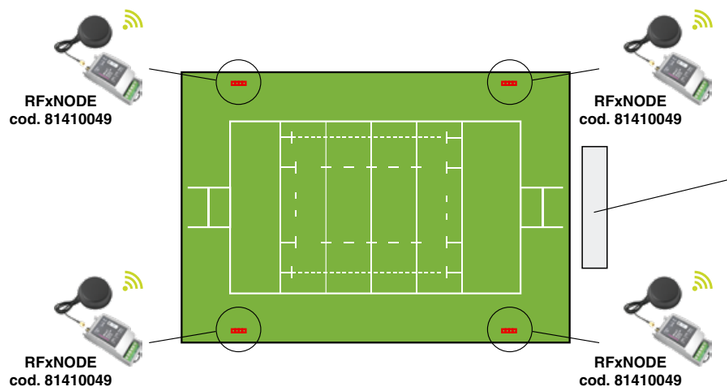
ADVANCE WIRELESS: wireless lighting control solution conceived for small and medium-sized non-professional sporting centres to adjust lighting levels according to the sporting events held.

This solution applies to the following families of product:

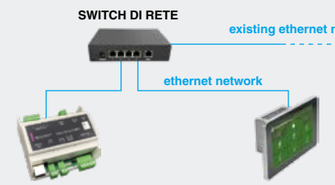
Floodlights: **Rodio, Astro and Forum**

Example of use: small and medium-size arenas

System architecture
The system is made up of hardware and software modules. The communication with the lighting fixtures occurs via a **RFxNODE wireless module** (that can control up to 32 DALI drivers) to be installed in an electrical board at the base of the light post and that can be easily configured with a **server** with a wireless interface connected to a **switch** (not included). Lights are managed via a **touch panel**.



Installation of system components in secondary room:



cod. 81418573
SERVER: to be installed in electrical board to ensure protection from mechanical damage. The server is supplied with external antenna and a 2 m long cable.

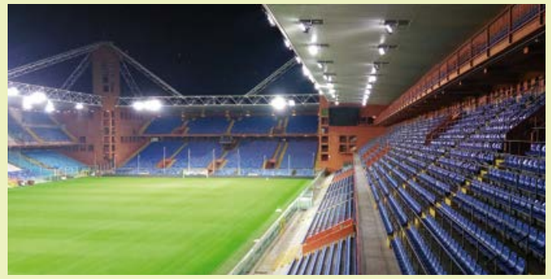
cod. 986442-00
TOUCH PANEL: for easy lighting control. Up to 5 lighting levels possible. Password locking. Display turns off after 1 min.

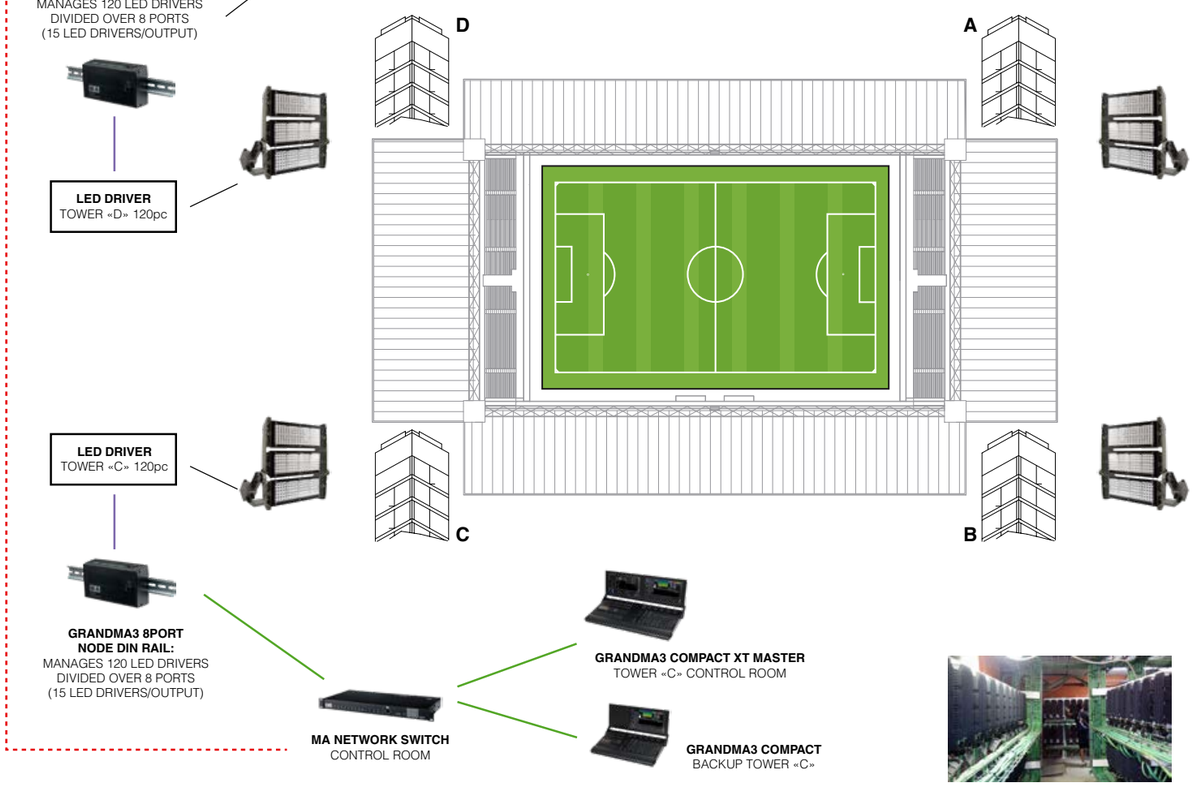
DMX SYSTEM - for sports facilities

SPORTING SOLUTION

DMX TOP SOLUTION: a lighting control system conceived for large professional arenas that require very high and evenly distributed lighting levels to meet HDTV needs. The system allows adjusting the brightness of lights and creating spectacular lighting effects that produce a strong visual impact on viewers.

Forum LED is equipped with **DMX compatible drivers**. DMX protocol is needed for dynamic light thanks to its immediate reaction time and virtually unlimited number of addresses. DMX can also be used in functional dimming using simple lighting controls in high-end sports installations. DMX allows all range of scenic effects, as well as the monitoring of each luminaire and ease of configuration thanks to the self-addressing DMX-RDM functions.





The **Luigi Ferraris stadium in Genoa** is one of the sporting facilities that made the history of Italian football.

The new lighting system features **Forum LED fixtures**, a top quality and environmentally friendly solution thanks to the high energy efficiency of its lighting sources and the construction excellence of its materials. With its modular configuration, Forum allows creating a lighting system which is “tailor-made” to fit all lighting needs.

Moreover, the new lights installed in Genoa are equipped with a **DMX driver and a central lighting control console**. The DMX (Digital multipleX) protocol is the most common digital system used for controlling lights during shows and sporting events. The whole system is managed from a central console that allows setting different lighting scenarios and creating spectacular light plays. This type of system, which adds a lot of emotion and atmosphere to a game, is becoming more popular in the lighting of major stadiums.

SPORTING SOLUTION

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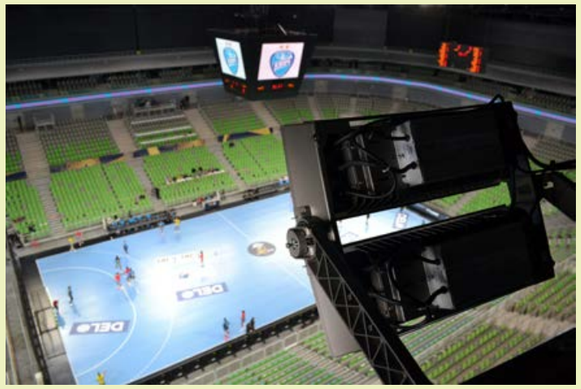
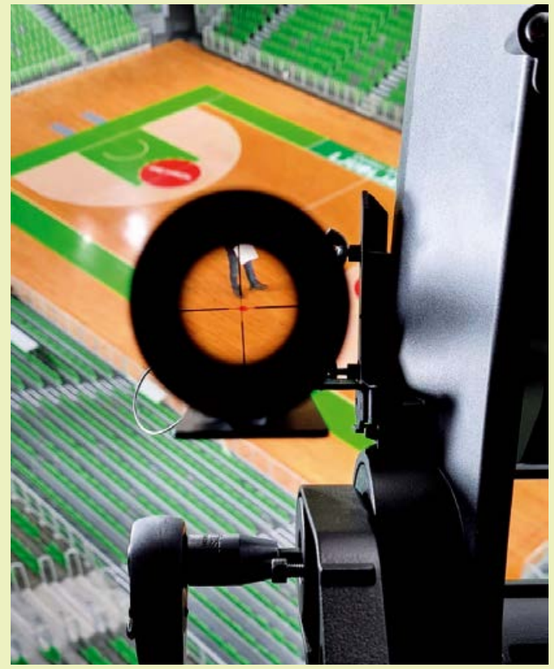




To create ambience lighting that highlights important architectural structures and gives otherwise anonymous buildings an unimaginable aesthetic value. The possibilities offered by coloured lights can be further enhanced with an additional element: dynamism.

DMX SOLUTION FOR RGBW LEDs

DMX SOLUTION

Colours and light intensity can be changed using dynamic moving floodlights to create a truly spectacular change of scene.

This type of solution applies to the following products: **Rodio, Elfo, Sicura, Floor, Microfloor and Midifloor.**

Disano offers different solutions depending on the complexity of the setting and the number of lighting fixtures to be controlled:

• DOP CONTROLLER:
Ideal for less complex settings with luminaires that change colour simultaneously. For users who are unfamiliar with the technology, there is a simple rotary potentiometer that can easily create colour-changing scenes.

• DMX MINI CONTROLLER:
Ideal for medium-complexity sets, it comes with 10 pre-set scenes that can be simply recalled using a special button on the controller (e.g. single fixed colour, continuous colour sequence, Italian flag). A computer or smartphone is required for programming customised scenes.

• BLE DMX CONTROLLER:
Controller featuring IP66 protection and CASAMBI Bluetooth technology to programme and control a simple DMX installation in broadcast mode via free APP available for mobile devices.

• DMX/RDM CONTROLLER:
Ideal for installations with a large number of luminaires and complex set designs. The RDM technology allows creating extremely flexible systems that can be managed with special software and recalled via Apps for smart devices.

RDM type: RDM stands for Remote Device Management and is a communication protocol (based on DMX) whose purpose is to enable two-way communication between a DMX controller and a luminaire. The purpose is to communicate remotely with RDM luminaires without having to open the fixture itself. It is sufficient to simply connect the luminaires to the DMX controller with RDM function to detect them and assign the desired address once the installation is complete.

Disano RGBW DMX/RDM products with built-in driver are equipped with this technology.

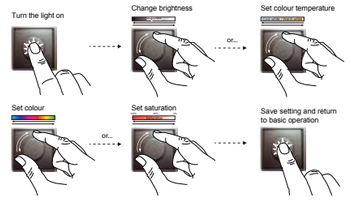
DMX controller

DOP controller - IP20

cod. 986563-00

Recessed rotary DMX controller to set colour, dimming level and rotating programmes for RGB and RGBW luminaires with DMX technology.

FEATURES:
- One rotary button for On-Off/dimming/colour/animation control
- Required power supply: 12 - 32Vdc; min. power 2W (power supplier not included)
- Configuration mode via Dip-Swich
- Device control in broadcast mode
- Suitable for recessed mounting in 502 box



DMX mini controller - IP20

cod. 986460-00

The solution for simple DMX installations where standalone control is sufficient. Equipped with a DIN rail adapter, it can be easily mounted in an electrical control cabinet. It is possible to create your own static or dynamic lighting scenes with the ESA2 software or via a free app from any smart device and upload them to the DMX MINI CONTROLLER via the supplied USB connector.

FEATURES:
- Supplied with 10 pre-set scenes that can be recalled using a front button - 60 channels
- Configuration mode via ESA2 software (free download) and via smartphone with OTG function, with Arcolis APP (free download)
- DIN rail adapter and USB cable included
- Necessary power supply: 5 - 5.5Vdc via micro USB (power supplier not included)
- DMX connection (screw terminals)
- Compact dimensions (52 x 29 x 24 mm

App

BLE DMX controller

cod. 81420057

Wireless DMX controller with CASAMBI technology. It programmes and controls a simple DMX installation via APP from any smart device. It can be integrated into existing CASAMBI networks.

FEATURES:
- Programming and scene recall with CASAMBI technology
- Device control via broadcast mode
- Necessary power supply: 230V
- DMX connection screw terminals
- Compact dimensions (115 x 123 x 62 mm)
- Suitable for indoor and outdoor applications (IP67 enclosures)

App

DMX/RDM controller

IP20
cod. 986562-00

BOX-IP65
cod. 986557-00

DMX controller with RDM addressing function. Built-in Wi-Fi connection for wireless management. Suitable for highly complex semi-professional DMX installations. Connected via USB cable to a PC, it turns it into a DMX console (with software installed and running). Stand Alone function by uploading the programmes created with dedicated software to the internal memory.

FEATURES:
- Up to 99 settable scenes via front micro-buttons - 512 channels expandable to 1024
- Configuration mode via ESA2 software (free download)
- USB cable included
- Necessary power supply: 5 - 5.5Vdc via micro USB Type C (power supplier not included)
- DMX cannon connector
- Compact dimensions (77 x 87 x 40 mm)

App

DMX accessories

DMX/RDM splitter

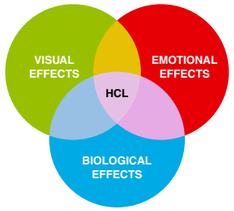
IP20
cod. 986461-00

BOX-IP65
cod. 986513-00

If the system has more than 32 luminaires and/or the DMX line has an extension of more than 250 m, a splitter must be inserted. This will amplify, regenerate and branch the signal, distributing it to 4 outputs for a maximum of 128 luminaires (32 for each output).

FEATURES:
- Necessary power supply: 12 - 24 - 48Vdc; max. current 500mA (power supplier not included for IP20 version)
- 4 outputs for up to 128 luminaires (32 for each output)
- Adapter for installation on 4 DIN rail modules
- Dimensions (72 x 92 x 71 mm

COMPLEX solutions requiring hardware and software

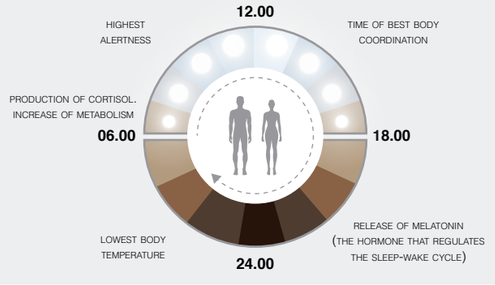


What is Human Centric Lighting and how can we achieve it?

Human Centric Lighting (HCL) is a concept that represents a deep cultural change that aims to achieve a healthier and more balanced relationship with the spaces we live in. It follows criteria that show the beneficial and positive effects of natural and artificial lighting on our health, wellbeing, quality of life and daily activities in both the long and short terms.

Our modern lifestyle is not aligned with nature's rhythms. We spend most of our time indoors where artificial lighting has virtually abolished the difference between day and night. Over the last decades, however, scientific research has made it clear that light isn't just for seeing, but also for governing how our body works from both the biological and psychological points of view.

And this is precisely the basic goal of Human Centric Lighting: **to design lights that don't take into account only of the visual effects, but also of the biological and emotional impact on humans**.



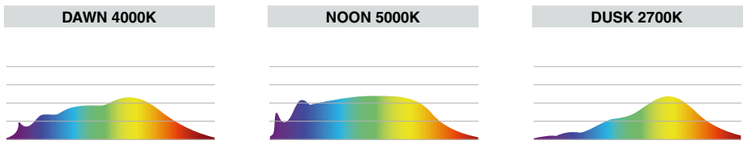
The biologic clock (circadian rhythm)

We use the definition of "**biological clock**" because, over the course of the day, the variations of light, from dawn to dusk, up to the dark of the night, send precise signals to our body, triggering specific psychological responses. **Blood pressure**, **body temperature** and the production of **specific hormones** vary over the course of 24 hours.
When we wake up, the morning light triggers processes that stimulate attention span, which reaches its peak during the central hours of the day, to then decline with the arrival of the evening in order to prepare our body for night-time rest. This mechanism, which varies according to seasons and individual characteristics, is necessary for our body to work properly.

A systematic disruption of our biological clock is harmful for our health

Numerous studies prove that the disruption of our sleep-wake cycle provokes **fatigue and sleeping disorders**, it has a negative impact on mood and on our psychological wellbeing, it can cause **anxiety or depression**, as well as **gastro-intestinal disorders** and, if prolonged over time, it increases the risk of **cardio-vascular diseases** (strokes and heart attacks) and **metabolic disorders** (such as obesity and diabetes). Lastly, it can weaken the immune system favouring the outburst of some cancers.

Therefore, according to research, it is important that **our body** receives the signals from **natural light** and its evolution **throughout the day**. Natural light has a different light spectrum with different wavelengths based on the time of the day:

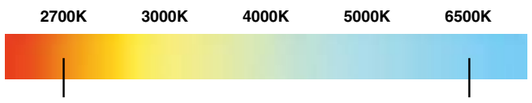


LED sources generally emit light in the blue wavelength spectrum, which is potentially harmful for our eyes and our health because they can influence the production of melatonin that may in turn impact our biological clock and alter our sleep-wake cycle.

Using lighting sources like **LED Tunable White** that can mimic the quality of natural light is key.

LED Tunable White for HCL applications

It is a latest generation LED technology that allows adjusting colour temperatures from 2700K to 6500K, from a warm light to a cold light. LED Tunable White modules for HCL applications contain two adjacent diodes that emit light at 2700K and 6500K, as well as intermediate colours by mixing colour temperatures.



Researchers have demonstrated that our brain is stimulated:
- by the **warm light** of morning and evening hours (2700K) increasing our sense of relaxation;
- by the **cold light** of daylight (6500 K) making us feel more energetic and concentrated.

This concept offers excellent visual and working conditions, but above all, it focuses on our **circadian rhythm**, which governs our biological clock. Our biorhythms depend on the signals deriving from the **amount and quality of natural light** and from the environmental **colour temperature**. In this way, Tunable White creates an environment capable of helping us in a natural way, just like daylight would do.

Human Centric Lighting

THE NEW FRONTIER OF HUMAN CENTRIC LIGHTING

The new LED lighting fixtures have features that allow artificial lights to mimic the **quality of natural light**, and have the necessary amount of light to allow us to complete, as best as possible, different work and study activities, as well as create a pleasant environment where lights can follow the natural trend of daylight.

Designers who follow the principles of **Human Centric Lighting** using the new LED fixtures will achieve:

• Greater amount of light:
LED sources cut down energy costs while achieving a high luminous flux in accordance with sustainable consumption patterns.

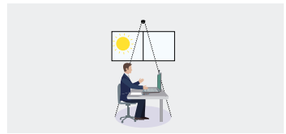
• Improved light quality:
the new sources combine high colour rendering and correct light distribution, guaranteeing maximum visual comfort; while anti-glare optics and the low-flicker sources protect human eyesight.

• Efficient light control:
the possibility to adjust lights via more accurate and programmable control systems can dim lights during the day in order to reproduce the rhythm of outdoor light or automatically adjust them to the amount of daylight. Moreover, it is possible to choose the best amount of light for a certain type of activity, whether it is reading, working at the PC or a business meeting.

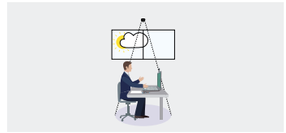
PRESENCE AND LIGHT SENSORS FOR HCL APPLICATIONS

In addition to the **Tunable Light technology**, the fixtures can be equipped with **presence and lighting sensors** that allow adjusting artificial lighting, while keeping the lumen value set according to the room's occupancy and the contribution of natural light. The built-in sensor measures constantly the luminosity value in the environment and compares it with the value set in the presence detector.

1. Immediate detection of anyone entering within its range.



2. Adjustment of lights based on daylight



3. Constant measurement of the environment's lighting level.

As we spend most of our time working or living indoors, we are forced to compensate for the lack of daylight with artificial lighting. Below are some examples of why it is important to achieve HCL in our common living spaces and workplaces.

Why choose HCL in the workplace?
High quality lighting, together with good interior design and an adequate ventilation/air conditioning of spaces are key elements of the ideal office. In particular, a lighting system that applies, even if only partly, the principles of Human Centric Lighting (HCL) allows building a space that facilitates work, improves concentration and protects the health of workers.

Why choose HCL in education institutions?
The possibility to study in a comfortable, pleasant and well-illuminated environment increases academic performance. This means that fixtures installed in classrooms, laboratories and corridors should be chosen not only to meet viewing needs, but also to create a study and work environment that is pleasant and functional, while also being energy-efficient and low-cost.

Why choose HCL in healthcare facilities?
With the right fixtures and the correct Human Centric Lighting approach it is possible to choose different colour temperatures and light levels for different rooms based on the amount of daylight entering the room at specific hours of the day, with pleasant and soothing results..

Why choose HCL in industrial plants?
Safety, health and productivity are the keywords that summarize the benefits of a technologically up-to-date lighting system in an industrial environment. These benefits are also at the basis of the revolutionary Human Centric Lighting approach that puts people and their wellbeing at the centre of lighting design.

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