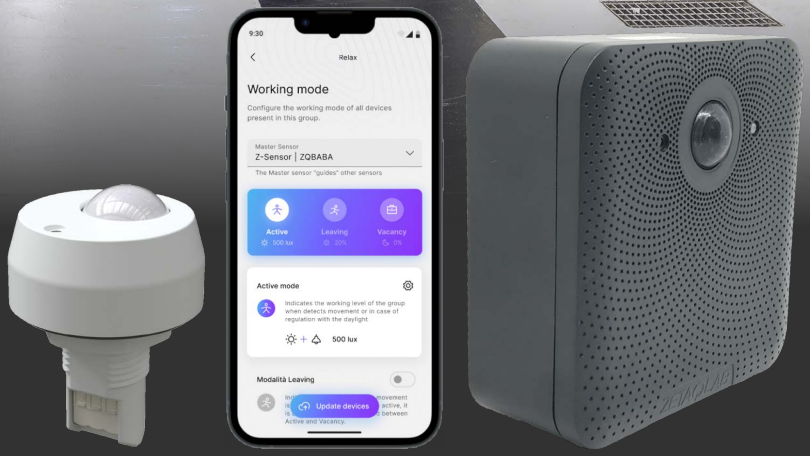
Wireless and Hybrid lighting control solutions for

Industry and Logistics



ZETAQLAB

Lighting Control Expert

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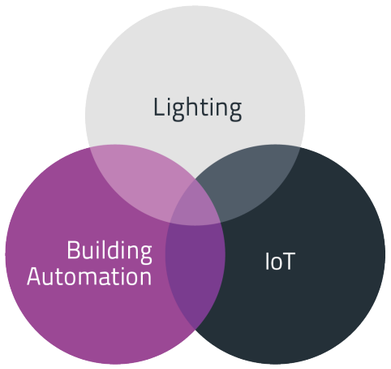
About us

ZETAQLAB designs hardware and software solutions for professional lighting digital control.
Our mission is to develop modular and scalable control systems, Stand-Alone and Connected, dedicated to highly professional contexts.



We are a team of experts in digital control systems.
Our skills represent the convergence of **Lighting, Building Automation** and **IoT (Internet of Things)** sectors.

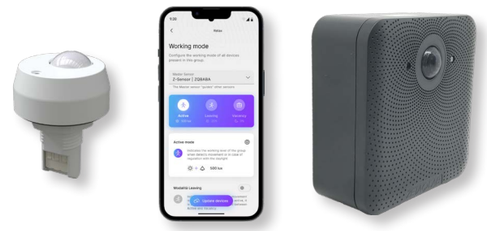
We design and manufacture Hardware, Firmware and Software (App and Cloud) and solution for Integration with third-party systems.

Video

ZETAQLAB was founded in 2014 and since 2021 has been part of **Starlight Group SpA**.
Watch our video: https://youtu.be/o0SVGM0e2LM

Innovative professional lighting control solutions for Industry and Logistics

ZETAQLAB wireless and hybrid solutions are ideal for energy saving, automation, integration and supervision of systems.



With our stand alone or fixtures integrated **motion and ambient light sensors** and management via time schedule, the solution allows **energy savings of up to 80%** of the installed power, over than savings allowed by LED technology.

Thanks to **wireless technology** it is possible to manage the sensors and fixtures in interconnected mode, **without changing the existing electrical system**. For new systems or where it is possible to lay a cable dedicated to control, our stand alone sensors allows the wired management of standard DALI fixtures, implementing a **Hybrid system**.

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Why choose ZETAQLAB solutions

Save energy, reduce wiring costs, automate and integrate the system

Energy saving

Lighting fixtures integrate **motion and ambient light sensors** that allow them to be turned on only when the area is occupied by users and to reduce the light intensity in order to exploit the supply of natural light.
Thanks to the various ZETAQLAB wireless accessories it is also possible to control the system via **weekly time schedule**, further optimizing the level of automation and energy saving.
Over the savings allowed by LED technology, the control system allows for **energy savings of up to 80%** of the installed power.

Simplify wiring and reduce installation, startup and maintenance costs

Thanks to the integrated wireless technology, system components can be **configured via App** and **operate in interconnected mode** with the other fixtures and sensors, allowing the use of existing electrical systems without requiring modification.

Automation, integration and supervision

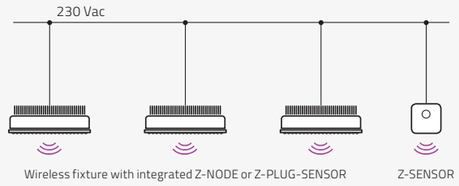
ZETAQLAB system has numerous accessory wireless modules useful for **managing, automating and integrating the lighting system** with standard buttons and switches, CCTV and security systems, PLC, SCADA and BMS. This makes the system ideal for **Industry 4.0** projects and for the implementation of new **IoT (Internet of Things)** functions such as Asset Tracking and analysis of the degree of space occupation.
The system can be **supervised in the Cloud**, guaranteeing remote control, diagnostics and maintenance.

Wireless and hybrid systems

Install without changing the electrical system or lay a dedicated control bus cable

WIRELESS SYSTEMS

Wireless fixtures and sensors

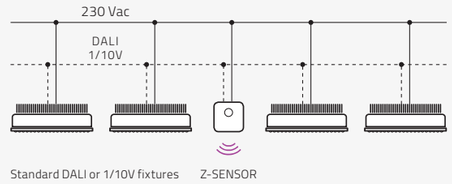


ideal solution for
Existing systems

Where it is not possible or convenient to change the electrical system, wireless fixtures and sensors have to be used. Thanks to the integrated wireless technology, all the fixtures and sensors interact each other, avoiding the need to connect them via a bus cable dedicated to regulation.

HYBRID SYSTEMS

One sensor for up to 32 standard fixtures

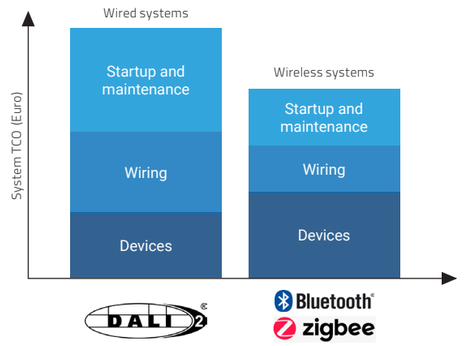


ideal solution for
New systems

In new installations, or if it is possible to change the electrical system, a Z-SENSOR is combined with a group of luminaires, connected via a bus cable for DALI or 1/10V regulation. The various sensors, thanks to the integrated wireless technology, can communicate each other.

Wireless: why is it convenient?

The TCO (Total Cost of Ownership) of a wireless or hybrid system is often lower than that of the corresponding wired system. Even if the cost of the system devices (hardware) is higher, you can obtain significant savings in the design and construction of the electrical system, thanks to the reduction of at least 40% on the total cables used. Furthermore, installation, activation (startup) and maintenance times are also reduced, thanks to management via App which eliminates the need for interventions by specialized technicians, as happens with DALI wired systems.



Energy saving

The system architecture, wired or wireless, does not impact the energy savings that can be achieved. In the following examples, the percentage value expresses the average annual energy saving, calculated according to the LENI (Light Energy Numeric Indicator) method described in the EN15173 standard.
You can perform these calculations using the free **Light360 Energy** web portal at **www.light360.cloud**.

Warehouse aisle
- Discontinuous occupation (20%)
- Good natural light contribution
- Wireless, DALI or 1/10V luminaires

Energy saving **80%**

Storage area
- Discontinuous occupation (50%)
- Good natural light contribution
- Wireless, DALI or 1/10V luminaires

Energy saving **65%**

Production area
- Continuous occupation (80%)
- Excellent natural light contribution
- Wireless, DALI or 1/10V luminaires

Energy saving **45%**

Design the system

Select the system components suitable for the installation height and and features desidered

Wireless controller and sensor for integration into fixtures

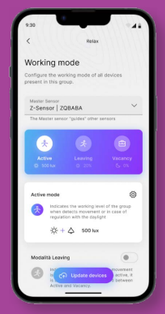
Wireless stand alone sensors

Wireless push button interfaces

Wireless to ethernet gateway

Configuration via App

Wireless fixtures, sensors and the other system components are configured via the **Light360 App**, which can also be used to manually control and maintain the system.
The App is simple and intuitive and can be used by the installer or maintenance person of the system, eliminating the need to request interventions from specialized technicians.



You can set the **Working Mode** of each fixtures group, for example:

- When there is movement the light level is adjusted based on the natural light contribution.
- When there is no more movement, the luminaires are setted to a minimum level for a pre-established time.
- If the area continues to be unoccupied, the luminaires are turned off.

Fixtures, sensors and accessories

Complete the system combining wireless fixtures, with Z-NODE v2 or Z-PLUG-SENSOR-HB integrated, Z-SENSOR stand alone multisensors and Z-PB4 or Z-PB2RL2 wireless interfaces for standard buttons and switches, that let you manage the system manually, temporarily disabling the sensors. By taking advantage of the clock integrated into Z-GWETH it is also possible to manage the system via weekly time schedule.

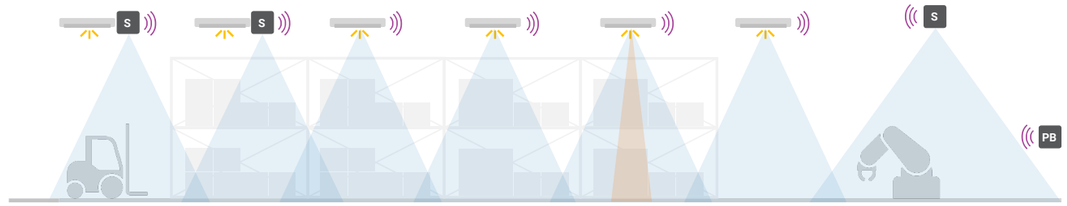
Z-NODE v2
Wireless controller with DALI interface. I/O connector for external sensors. Powered from 110-240Vac or via DALI bus (D4i drivers)

Z-PLUG-SENSOR-HB
Wireless multisensor with DALI interface. Motion and light sensors for up to 17m. Powered from 12-15Vdc or via DALI bus (D4i drivers)

Z-SENSOR-xB R1
Wireless multisensor with DALI and 1/10 interface for max 32 drivers. 5A power relay. Motion and light sensors for up to 17m. Powered from 110-240Vac or via DALI bus (D4i drivers)

Wireless systems

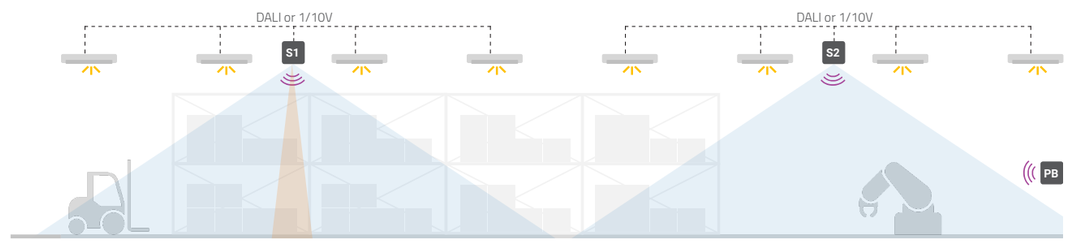
All fixtures integrates controllers (Z-NODE) or sensors (Z-PLUG) and/or are coupled to wireless sensors (Z-SENSOR). You can setup the system via Light360 App, creating functional groups of fixtures. For each group you can enable motion and/or ambient light sensor, configuring the *Working Mode* desidered. If needed, you can also add wireless stand alone sensors (Z-SENSOR). The system can be managed manually by buttons and switches connected to the Z-PB4 or Z-PB2RL2 (PB) wireless interfaces.



Motion and light sensors detection area

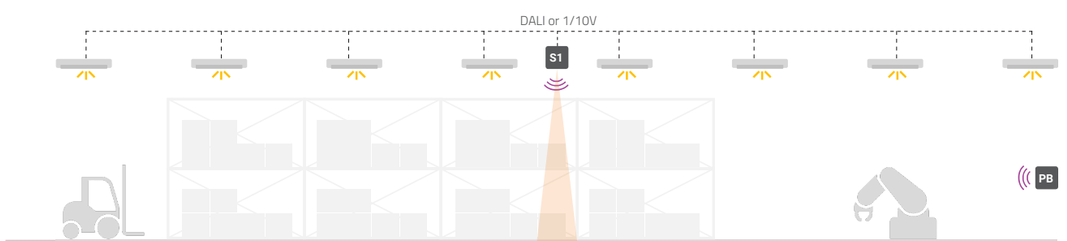
Hydbrid systems

For this kind of solutions you have to consider Z-SENSOR. The number of sensors is defined considering the dimension of the detection area (see next page - Table 1), so that all or most of the illuminated area is covered. For example the fixtures wired to each sensor can belong to the two distinct functional groups S1 and S2, which will be turned on, off and regulated exclusively by the relevant sensor. If desired, it is possible to create a single functional group S1+S2, in which the fixtures will be controlled by both sensors, which will activate each other if one or both detect movement. In all configurations it is possible to enable constant light management based on natural light contribution and, if necessary, the system can also be managed manually by buttons connected to the Z-PB4 or Z-PB2RL2 (PB) wireless interfaces.



Motion and light sensors detection area

If the system have to be managed exclusively based on natural light contribution, it'is possible to use only one Z-SENSOR to control up to 32 fixtures (drivers). The sensor must be positioned in a barycentric point of the illuminated area. The fixtures will be turned on/off by manual control, with buttons connected to the Z-PB4 or Z-PB2RL2 (PB) wireless interfaces, and regulated by the relevant sensor in order to maintain a constant light level based on the natural light contribution.



Light sensor detection area

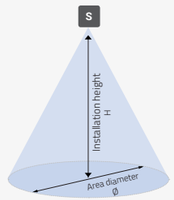
Z-SENSOR

A flexible solution for wireless and hybrid systems

Controls every type of lighting fixture, on/off or dimmable DALI and 1/10V

Z-SENSOR can be used in different ways:
- As stand alone wireless multisensor
- Coupled to one on/off or dimmable DALI or 1/10V lighting fixture
- Wired to a groups of standard on/off or dimmable DALI or 1/10V lighting fixtures

Z-SENSOR is available in two versions: MB (Mid Bay) for installation height of max 10m and HB (High Bay) for max 17m.

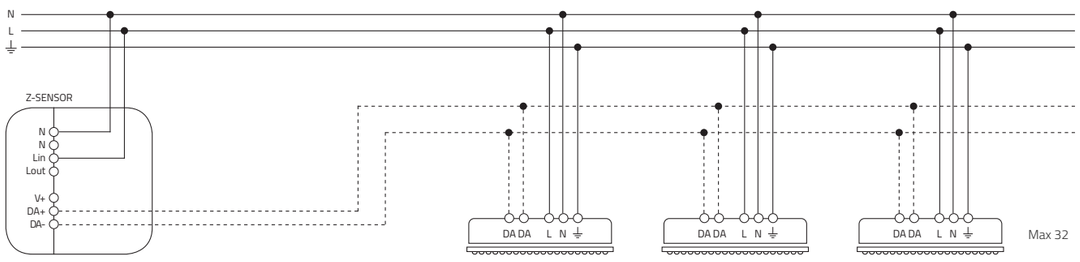


H	MB Ø	HB Ø	H	MB Ø	HB Ø
6 m	16,5 m	8,2 m	12 m	-	16,5 m
8 m	22,0 m	11,0 m	14 m	-	19,2 m
10 m	27,5 m	13,7 m	17 m	-	23,4 m

Table 1 - Motion sensor detection area

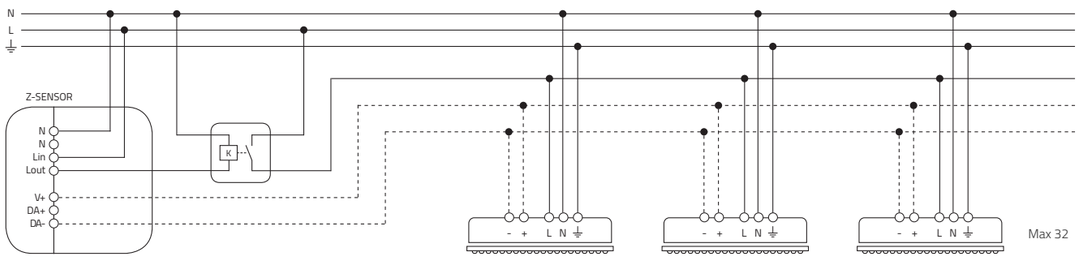
Wiring a group of DALI fixtures

The DALI luminaires can be turned on, off and dimmed via the only DALI bus, avoiding using power management via the internal relay. Z-SENSOR can manage up to 32 DALI drivers in regulation (in *broadcast* mode).



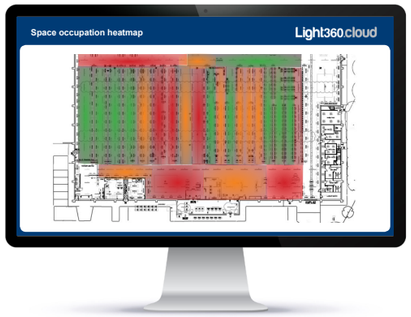
Wiring a group of on/off or 1/10V fixtures

When it is necessary to control the switching on and off of a group of non-dimmable or 1/10V luminaires, whose total current absorption is close to 5A, it is necessary to use a support contactor. Z-SENSOR can manage up to 32 1/10V drivers in regulation (in *broadcast* mode).



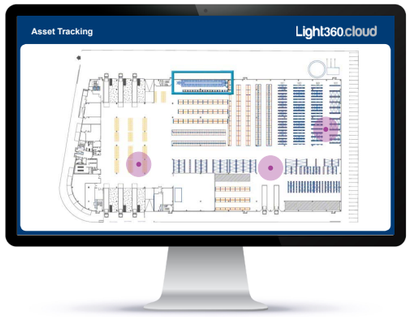
IoT solutions and Industry 4.0

Generate data from the system: space occupancy statistics and asset tracking



Occupancy heat map

ZETAQLAB systems have been designed not only to manage lighting but also to create new features typical of the **IoT** (**Internet of Things**). An example is the possibility of mapping the illuminated areas, covered by motion sensors, in order to obtain statistical data on their degree of occupation. This data, in addition to being shared and exported, can be presented graphically in Light360 Cloud via customized heat maps.



Indoor tracking system for assets and people

Thanks to **Bluetooth Beacon** technology, our systems allow the identification, localization, tracking and monitoring of assets and people in indoor environments. These solutions, indicated with the acronym **RTLS** (**Real Time Location System**), allow you to map assets and people in real time, producing data that can be shared with other **Industry 4.0 automation systems**.

Asset Tracking

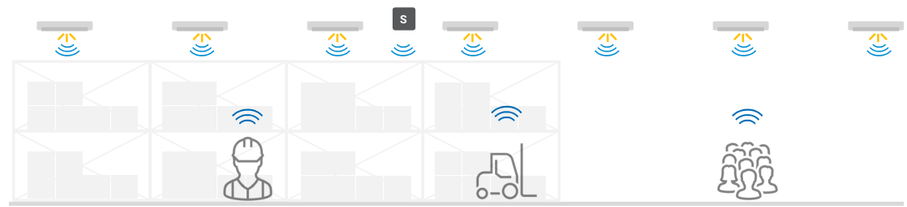
The adoption of IPS systems (Indoor Positioning Systems) with Bluetooth LE tags applied to assets, vehicles and goods in the hospital, production or logistics sectors allows you to have a global vision of the location of all objects at any time and allows you to track a travel history.

Personnel Management

Thanks to wearable Bluetooth LE beacons, tags and badges, it is possible to optimize processes, efficiency and quality of work. For example, it is possible to carry out a rapid search for operators and staff within the plant, minimizing intervention times and encouraging the correct execution and commissioning of emergency plans.

Job security

Thanks to real-time localization it is possible to detect the possible presence of isolated operators in critical or highly dangerous areas, detect impacts or falls and "man-down" alarm situations or identify unauthorized access, drastically reducing the associated risks to adverse events.



System integration

Interconnect the lighting system with CCTV and security systems, PLC and BMS

Z-GWETH v1
Ethernet gateway for the integration of 2.4 GHz wireless nodes. Modbus TCP interface. Integrated Clock. Power from PoE or 12-24Vdc

Z-PB4 v1
Wireless push buttons and switches interface. 4 digital inputs (not isolated). Power from 110-240Vac

Z-PB2RL2
Wireless push buttons and switches interface. 2 digital inputs (not isolated). 2 solid state relay outputs. Power from 110-240Vac

Thanks to these accessory modules it is possible to integrate the lighting system with other automation systems, SCADA and PLC as well as CCTV and security systems. By taking advantage of the clock integrated into Z-GWETH it is also possible to manage the system via weekly time schedule. For further information on system integration contact our technical office.

Cloud supervision of the system

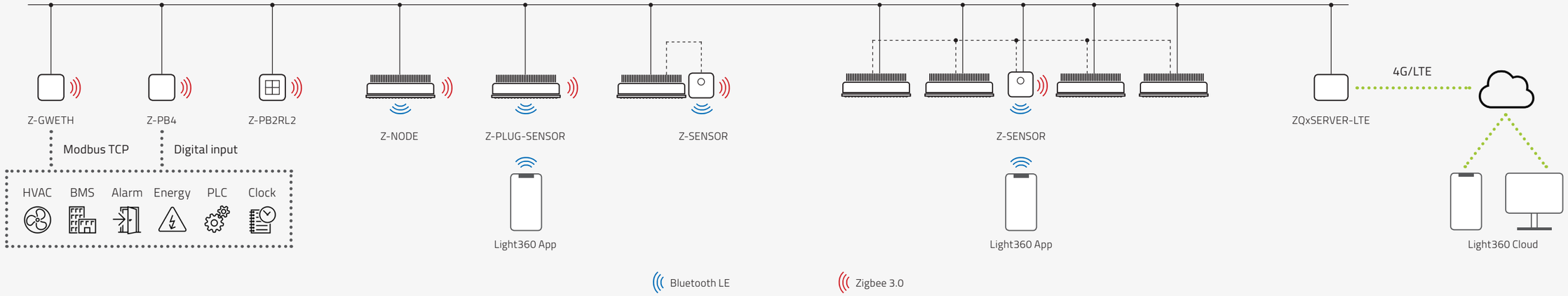
Manage energy consumption, maintenance and emergency lighting via software

Light360|cloud

Light360 Cloud is a software application that allows you to manage your systems via the internet and perform maintenance and remote control of the installation:

- Multi-Site and Multi-User systems
- Custom maps, graphs and widgets
- Remote maintenance and diagnostics
- Emergency lighting management
- Energy consumption management

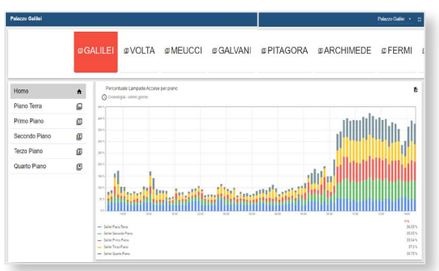
Thanks to Light360 Cloud you can check the status of functional fixtures, that of emergency luminaires according to the EN50172 standard, obtain spaces occupancy degree heat maps and view the position of your assets.
For further information about our software application visit **www.light360.cloud**.



Standard wireless technology

ZETAQLAB systems are equipped with a **2.4 GHz Wireless Mesh Network interface with dual Bluetooth/Zigbee technology**, which simultaneously allows the connection of mobile devices via Bluetooth LE and the interconnection of system nodes thanks to the standard Zigbee 3.0 protocol.

Each node of the Zigbee network receives, regenerates and sends the signal again to the subsequent nodes, thus creating a wireless *Mesh Network*. Thanks to this solution, even if the maximum recommended distance between two nodes in optical visibility is approximately 20-30 m, the total system can have much larger dimensions.



Advantages of Cloud supervision

- Centralized management of the systems
- Reduction of maintenance costs, especially for emergencies
- Energy consumption and savings verification
- IoT sensors data analysis
- Spaces occupancy degree analysis
- Asset and people tracking via RTLS applications
- Integration with other Building Automation systems.

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