Environmental Monitoring Solutions

SOFTWARE

INDOOR-CUBE
(SWCLA4200)

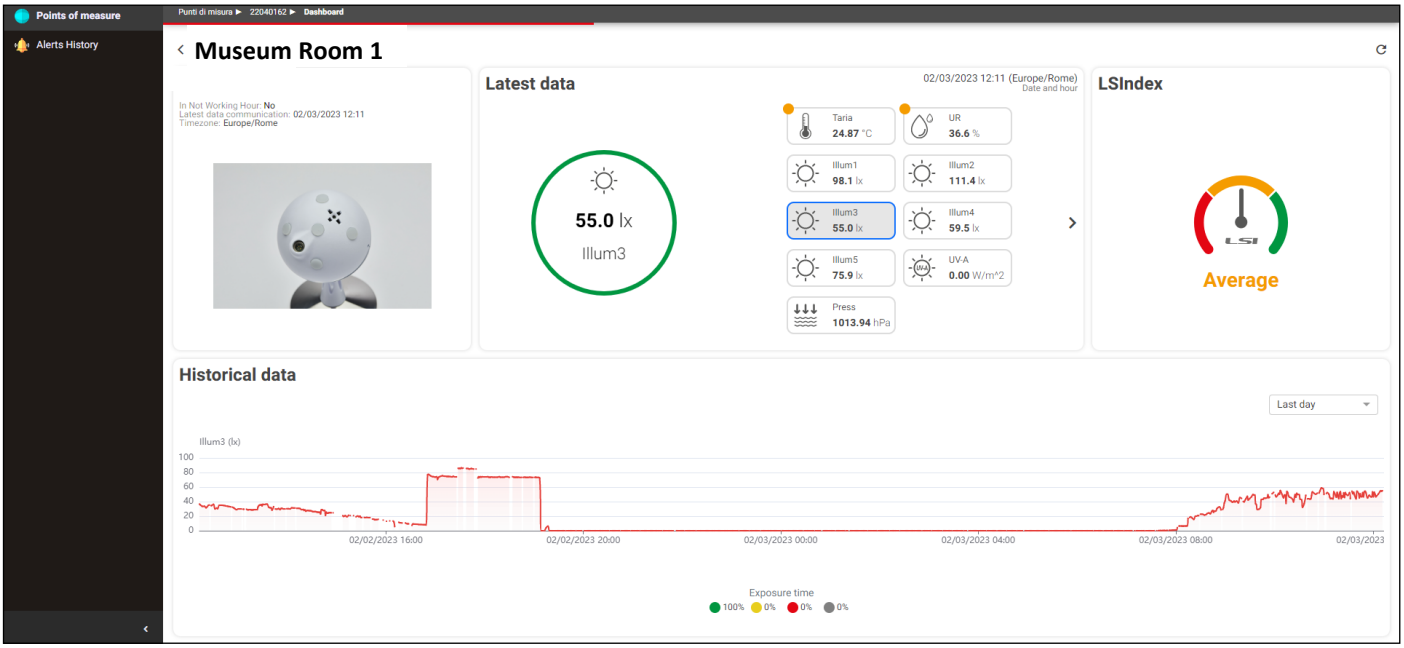
INDOOR³

The Indoor-Cube cloud platform allows to access the data from Sphensor sensors installed in indoor environment from any Internet location, both from desktop and mobile.
The Basic version is free and allows to view the Dashboard of the data, the Advanced version is offered on a subscription basis.
Indoor-Cube is a platform that can be widely configured by the user, which allows the visualization, download and processing of data collected by the user's sensor network. The website is modular and allows the authorization of different users with different access permissions to the data. Optional modules can be added for reporting or creation of monitoring projects. Sphensor sensors communicate with the platform via the Sphensor Gateway, which must be connected to the internet via LAN or Wi-Fi.

- Wide configurability of the user's own organization (users and roles) and of his own sensor networks
- Multi-tenant platform open to integration into third-party systems
- Desktop and mobile versions
- Dynamic dashboards in real time
- Calculation of LSIndex, a synthetic index of healthiness of indoor environment
- Calculation of derived quantities starting from measured ones
- Display of historical values and statistical analysis of healthiness conditions
- Data export in text or Excel format
- Comparison of different Sphensors' quantities
- Configuration of alarms with range of validity or exceeding of thresholds
- Modules for report or monitoring projects creation

Principal characteristics

The desktop website for data visualization



*Visualization of the dynamic Dashboard of latest data, both in the **desktop** version and **full screen** with automatic update. Through the Dashboard it is possible to consult: the latest data, the status of the individual quantities, the LSIndex status, the photo of the sensor. **The Basic version of Indoor Cube includes this feature for free.***

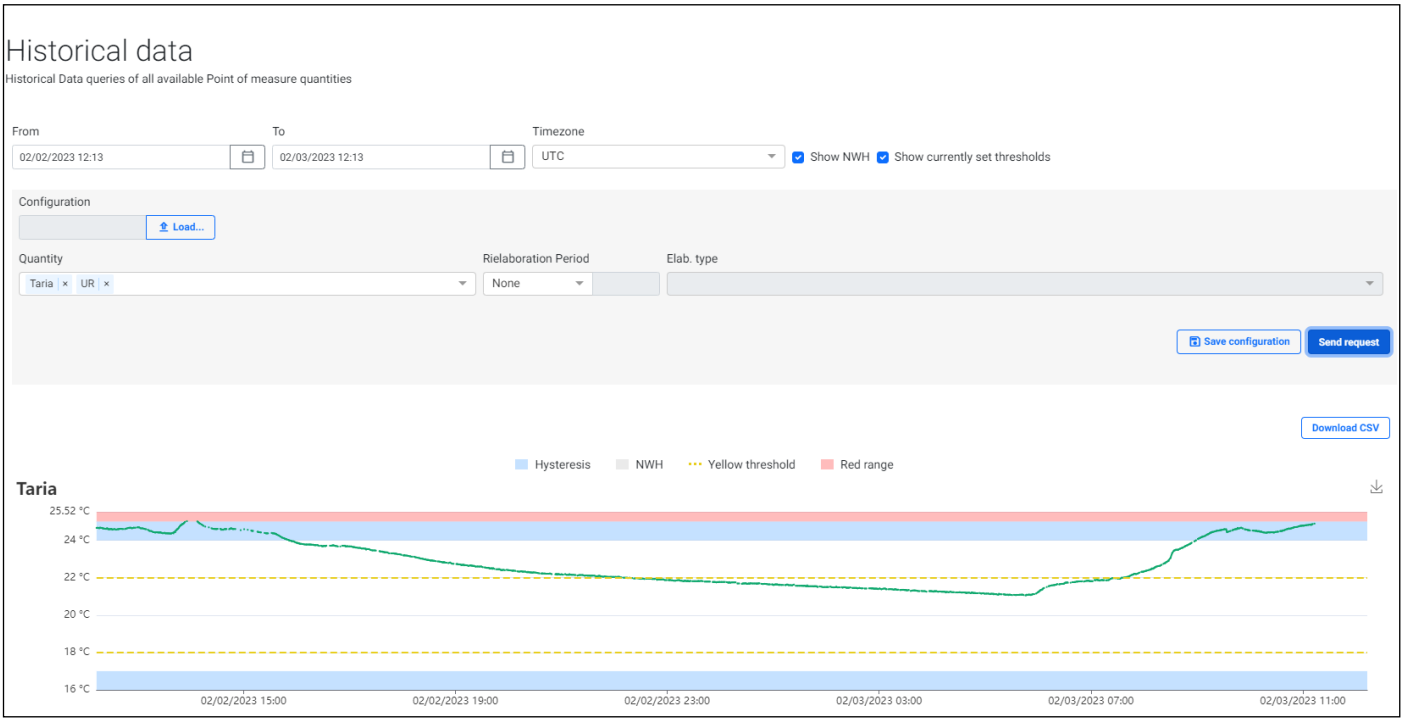
LSIndex

LSIndex is a **synthetic index of healthiness** of the indoor environment, which is calculated on the basis of the status of the different measured or calculated quantities by the Sphensor sensors. The various quantities are initialized by default with threshold values derived from literature. Based on the number of quantities belonging to the green, yellow or red status, the index will show the status of the monitored environment belonging to the category:

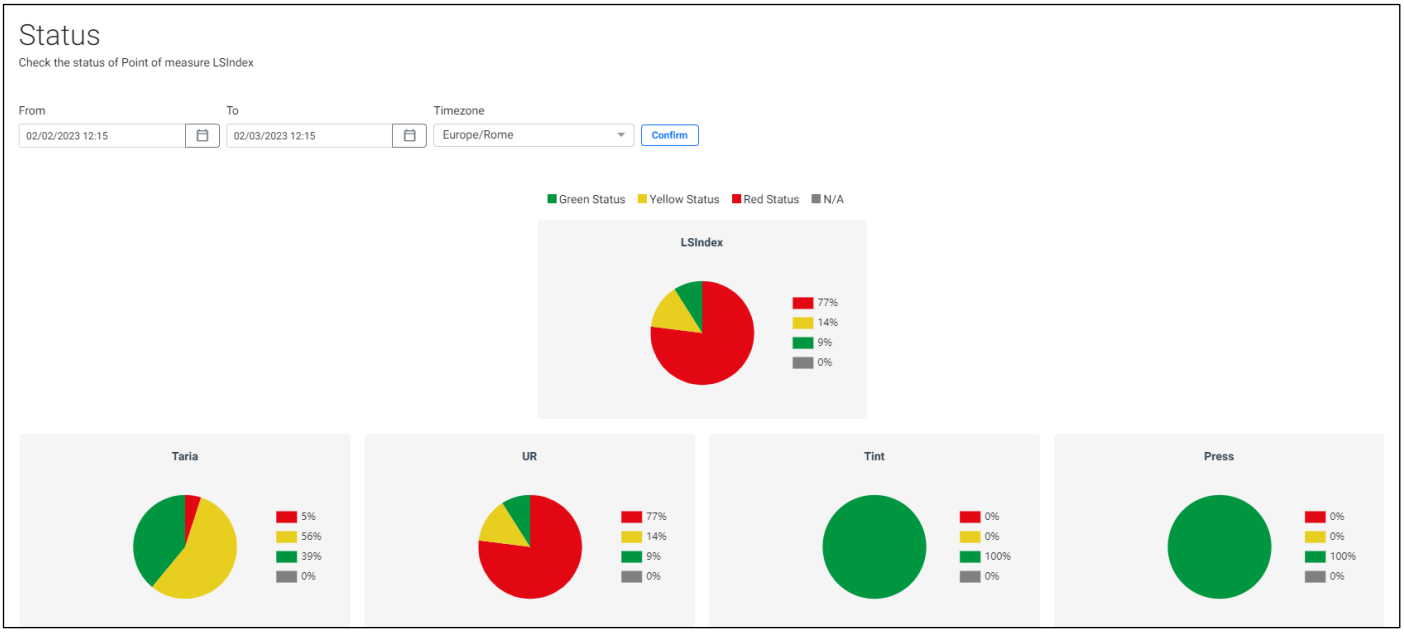
- **Good**
- **Average**
- **Poor**

The user can modify: thresholds of the individual measured and calculated quantities, the index calculation logic, which quantities to be included in the calculation, the importance of the quantities in determining the status of the index.

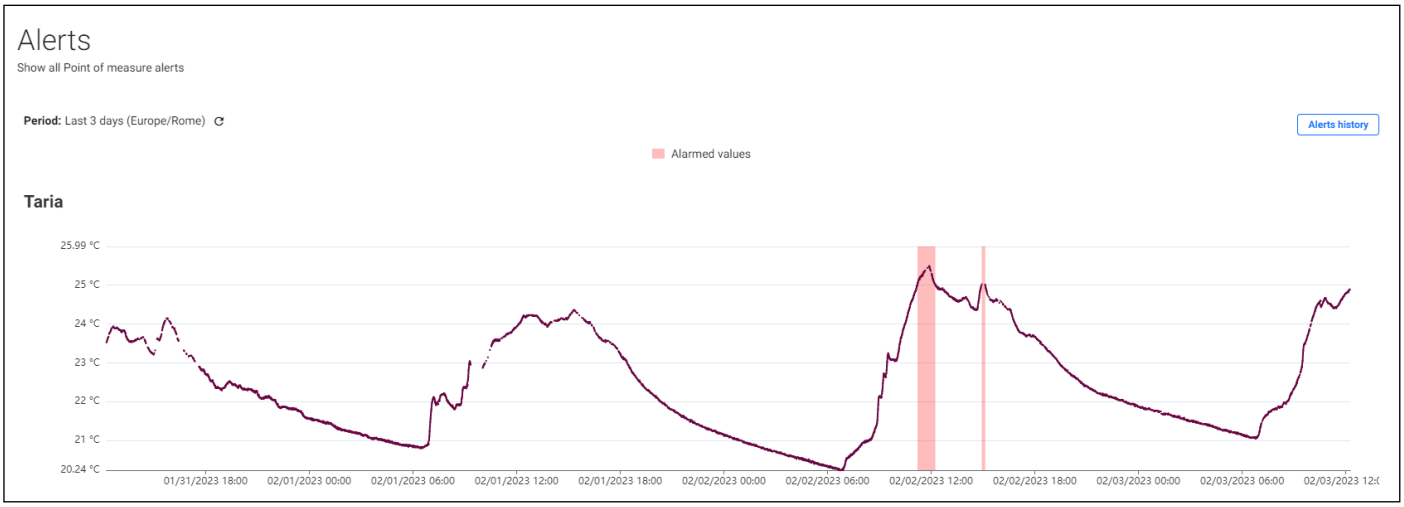
The desktop website



Visualizzation *and* ***download*** *of historical data. For each quantity it is possible to configure thresholds based on exceeding values, which can be visualized directly on the graphs. Data can be downloaded as raw values or aggregated with statistical time processing. The generated files are in* ***text*** *or* ***CSV*** *format.*
It is possible to ***save download configurations*** *(stations, measured quantities, processing rates) in order to easily repeat the same data export after some time.*

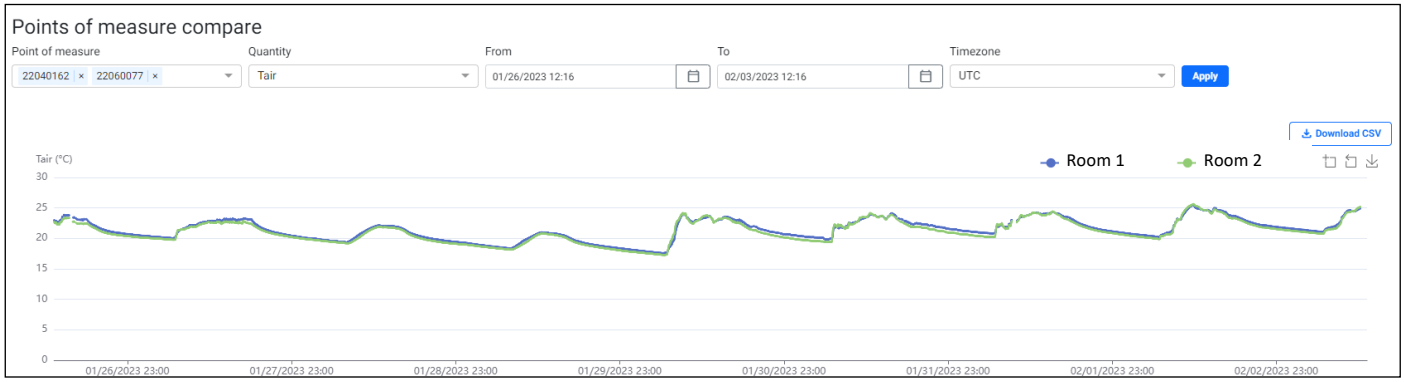


*Visualization of the **status**, in a selected period, of the measured and calculated quantities and of the LSIndex.*
*The user can evaluate the **percentage of time** in which a certain measured or calculated quantity has had values belonging to the green, yellow or red status.*
*The user can define **Non Working Hours** calendars to be associated with the sensors, to exclude certain periods of no interest in monitoring from the analysis of alarms and statuses (e.g. company closures, night time, maintenance periods, etc…)*



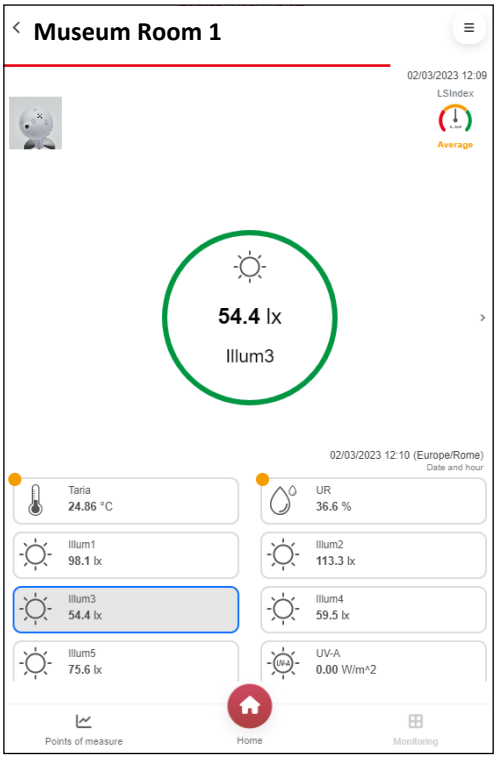
Measure	Point of measure	Alarm type	Message	Sent	Terminated	Created at	Registered at
	66660001				Tutti		
N/A	66660001	Communication Timeout	Last value received at 02/02/2023 22:03 (Europe/Rome). Expe…	Si	No	02/02/2023 22:03	02/02/2023 22:04
N/A	66660001	Communication Timeout	Closed	Si	Si	02/02/2023 12:26	02/02/2023 12:26
N/A	66660001	Communication Timeout	Last value received at 02/02/2023 12:22 (Europe/Rome). Expe…	Si	Si	02/02/2023 12:22	02/02/2023 12:23
N/A	66660001	Communication Timeout	Closed	Si	Si	02/02/2023 11:28	02/02/2023 11:28
N/A	66660001	Communication Timeout	Last value received at 02/02/2023 11:00 (Europe/Rome). Expe…	Si	Si	02/02/2023 11:00	02/02/2023 11:06

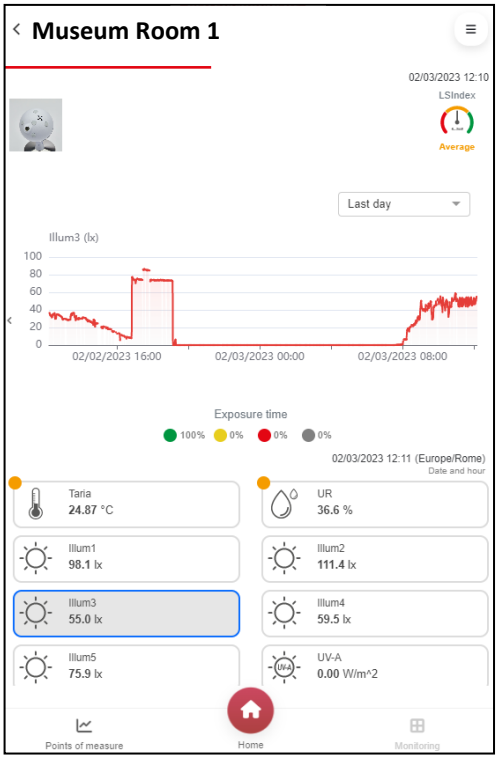
***Alarms:** for each quantity it is possible to modify the pre-set thresholds, it is also possible to define whether, once in the red status, the single quantity should produce an alarm. The user can configure e-mail distribution lists to send **alarm messages**, and can visualize **graphs** of the periods in which the quantities have generated alarms.*
*In the alarm history is possible to consult also the **communication timeout** alarms.*



*The platform allows the **comparison between data coming from different sensors**. It is possible to visualize the comparison chart or to download a CSV file with numerical values.*

The mobile website





*The **mobile website** allows quick **consultation of real-time data** from Sphensor sensors by displaying the latest numerical values and graphs of the last 1, 3 or 7 days. **The Basic version of Indoor Cube includes this feature for free.***
From the mobile website it is possible to consult: the list of associated sensors, the dynamic dashboard of the different sensors with the latest data, the status of the quantities, the LSIndex synthetic status, the photo of the sensor.

Wide configurability through the Management App

The administrator user can **extensively configure the platform of his organization** by managing settings, devices, measuring points, modules, licenses, roles, members, etc...

Safety and Reliability

The Indoor-Cube cloud platform guarantees a high level of data security and high system reliability:

- **Authentication** (user/password) with database partitioning
- Multi-tenant platform with **logical or physical data separation**
- Possibility of creating **different platform access roles** with different management permissions
- Permission management at **user level** or at **measurement point level**
- Horizontal and vertical scalability of instances and nodes **without system downtime**
- High platform security thanks to **third-level URLs**

Additional Modules

Report Module (SWCLA4010)

It allows the configuration and generation of **Reports on single sensors**, including:

- Device information
- Data statistics
- Historical data, Status, Alarms
- Comparison of data on different time periods

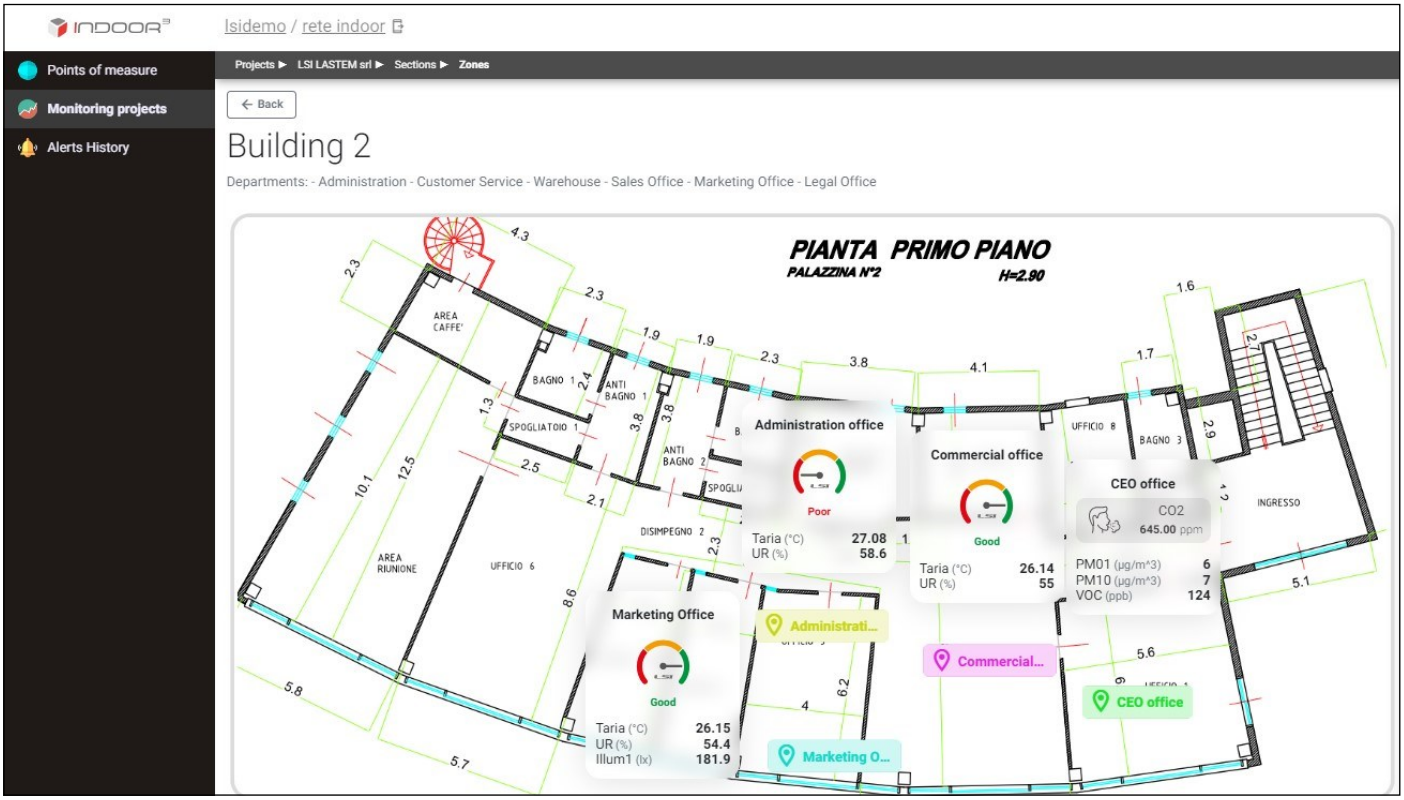
The generated file is in Word or PDF format. It is possible to **save** Report **configurations** in order to easily repeat the same Report after some time.

Building monitoring projects Module (SWCLA4020)

It allows the creation of real monitoring environments, with the introduction of building plans or renderings on which to place measuring points.
The main features of the Module are:

- Loading of **building plans and photos**
- Aggregation of Measurement Points into **Measurement Zones** consisting of several sensors
- Joint display of measurement zone data
- Display of building sections with identification of Measurement Zones and associated **Mini-Dashboards**
- Possibility to create **Measurement Zone Reports** (if Report Module is available)

***Dashboard** of measurement zone*



*Visualization of **Mini-Dashboard** on building plan. It is possible to display the LSIndex and measured values for individual measurement zones located in the building in a single screen.*

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