

4.1

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# Energy management and data logging Application User Manual



## **DELÉGO SERVER** **Visualisation webserver**

**EK-DEL-SRV01 / EK-DEL-SRV01-M**

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# 1 Introduction

## 1.1 Scope of this manual

This document contains all the information regarding the energy management, load control and data logging functionalities of DELÉGO SERVER, the multiprotocol webserver for the connected buildings by EKINEX. These functionalities are *transversal* with respect to the communication technology with the devices deputed to the measurement of consumption (KNX, MODBUS, MBUS).



This set of functionalities has been strongly reviewed and improved in release 2.7.0.

Read carefully the instructions contained in this manual in case of update of the project from previous versions.

The present user manual is part of the suite of application manuals dedicated to the DELÉGO SERVER, available on the section dedicated to this product in the EKINEX website. Before reading this document, it is recommended to consult the following application manuals:

| REF  | DOCUMENT                                    | DESCRIPTION                                                                 |
|------|---------------------------------------------|-----------------------------------------------------------------------------|
| [D1] | DOCUMENTATION PLAN                          | Overview of the application manuals of DELÉGO SERVER                        |
| [D2] | GENERAL FUNCTIONS - APPLICATION USER MANUAL | General installation manual of the webserver                                |
| [D3] | KNX - APPLICATION USER MANUAL               | Configuration and visualisation of a KNX automation system in DELÉGO SERVER |
| [D4] | MODBUS - APPLICATION USER MANUAL            | Configuration and visualisation of MODBUS devices in DELÉGO SERVER          |
| [D5] | MBUS - APPLICATION USER MANUAL              | Configuration and visualisation of M-BUS devices in DELÉGO SERVER           |

These documents are available for download in the area of the EKINEX website dedicated to the webserver.

## 1.2 Conventions

The following conventions are used in this manual:

|                      |                                                                                                                                                 |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| [KEY]                | The keyboard keys that the installer must press are shown in square brackets                                                                    |
| <i>Courier</i>       | Software messages generated by the DELÉGO SERVER configuration software are reported in the "courier" font                                      |
| <i>Function name</i> | Names of buttons, table fields or other graphic elements of the user interface of the DELÉGO SERVER configuration software are shown in italics |

[KEY] The keyboard keys that the installer must press are shown in square brackets



Information note



Important note that requires particular attention

## 1.3 Safety information

**DELÉGO SERVER is a product intended for trained and specialized personnel only;** anyone who interacts with the device must first read this documentation, especially this safety information. This document supplements and does not replace any legislation or legal directives on safety.

The device has been developed following the safety regulations currently in force; however, it is not possible to exclude with certainty possible damage or interactions with other devices during its operation. The device complies with EMC guidelines and harmonized European standards; any modifications to the device may affect EMC compatibility.

The supply voltage must be strictly within the range indicated in the GENERAL FUNCTIONS application manual and on the device; risk of fire or explosion if powered outside this range. The CE declaration of conformity of the device can be requested from EKINEX®, at the references on the site [www.ekinex-delego.com](http://www.ekinex-delego.com).



In compliance with Directive 2002/96/EC the DELÉGO SERVER electronic device must be disposed of in the appropriate facilities and not in the collection of solid urban waste.

## 1.4 Warnings

- This application manual is aimed at installers, system integrators and designers.
- The assembly, electrical connection, configuration and commissioning of the appliance can only be carried out by specialized personnel in compliance with the applicable technical standards and the laws in force in the respective countries
- Opening the appliance case causes the immediate interruption of the warranty period
- In the event of tampering, compliance with the essential requirements of the applicable directives for which the appliance has been certified is no longer guaranteed.
- EKINEX defective appliances must be returned to the manufacturer at the following address:

**Ekinex S.p.A. Via Novara 37, 28010 Vaprio d'Agogna (NO)**

## 1.5 Copyright

© Ekinex S.p.A. 2025

This application manual, the DELÉGO SERVER software and the DELÉGO iOS and Android apps are subject to copyright; all rights are reserved. Copying, reproduction, translation and/or modification, even partial, are expressly prohibited unless approved in writing by EKINEX®.

## 1.6 Open Source Licenses

DELÉGO SERVER contains open source software, such as the Linux operating system and its kernel. These software components are subject to various open-source licenses, including:

- GNU General Public License (GPL), <https://www.gnu.org/licenses/gpl-2.0.html>
- GNU Lesser General Public License (LGPL), <https://www.gnu.org/licenses/lgpl-2.0.en.html>

If you own a product, for a period of 3 years from the last production date, you can request from EKINEX the source code of the software components licensed under the GNU General Public License (GPL) or the GNU Lesser General Public License (LGPL), and use, distribute and modify them in accordance with the respective licenses.

EKINEX cannot be considered responsible in any way for the source code thus distributed, which is provided without guarantees. EKINEX cannot also be held responsible for any damage or consequence resulting from modifications (additions / removals) made to this software by third parties, unless specifically authorized.

## 1.7 More information

- For further information on the product, you can contact EKINEX technical support® to the e-mail address: [support@EKINEX.com](mailto:support@EKINEX.com) or consult the website [www.EKINEX.com](http://www.EKINEX.com)
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- KNX® ed ETS® are registered trademarks of KNX Association cvba, Brussels

The company reserves the right to make changes to this documentation without notice.

## 2 Energy diagrams

### 2.1 Introduction

DELÉGO SERVER can monitor the consumption and production of electric energy measured by *meters* based on different technologies:

- KNX
- Modbus
- M-bus

NEW

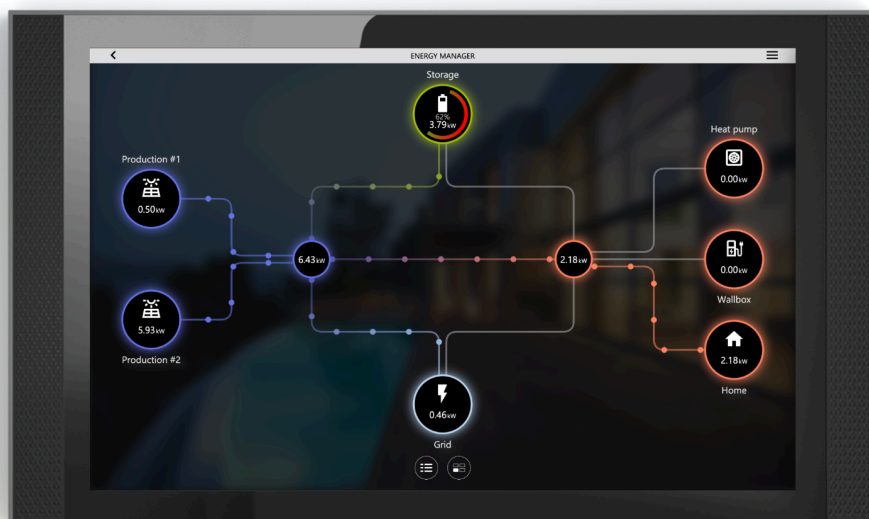
Starting from release 2.7.0, it is possible also to retrieve energy data directly from supported inverters and storage systems like SOLAREEDGE with their third-party APIs, without having to install additional equipment.

Despite the used technology for the measurement, it is required to create in DELÉGO SERVER a *meter* for each energy data; it is a special widget dedicated to the energy monitoring, carrying at least the following informations:

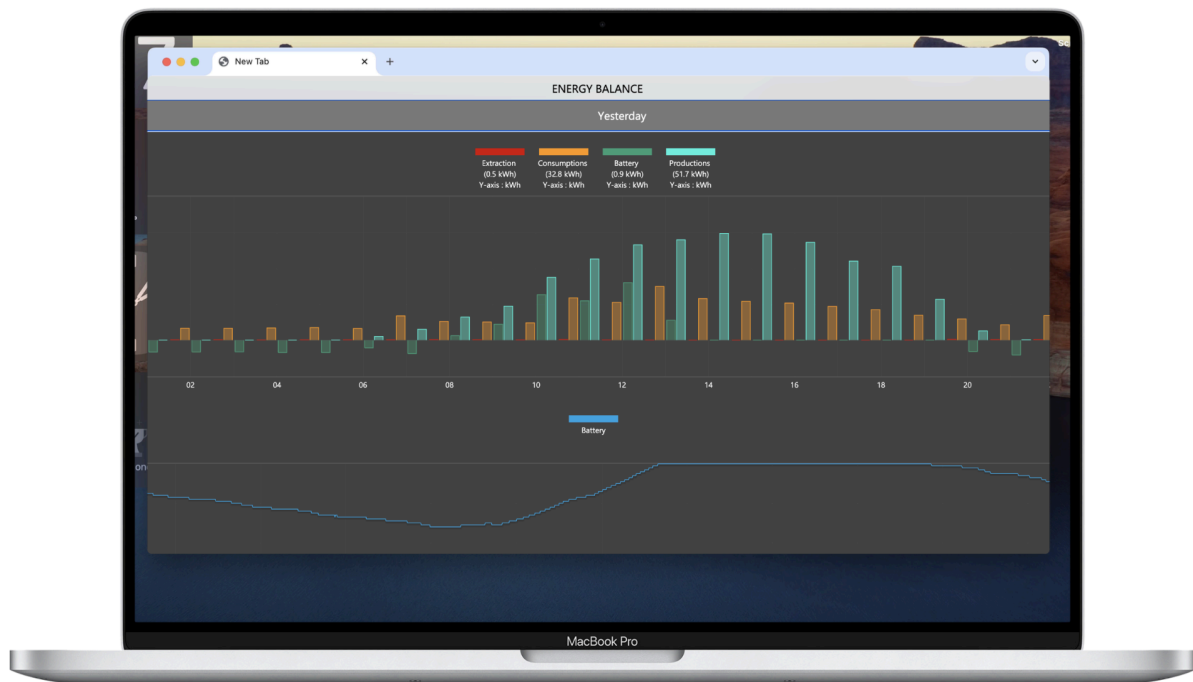
- Power (instant consumption or production)
- Energy (overall amount of the consumption or production along time)

These meters must be created in the respective *field technology* by following the specific instructions contained in the dedicated manual (KNX [D3], Modbus [D4], M-BUS [D5] respectively). The data to be entered is different among the several technologies, but the result is similar.

When all the meters have been configured and assigned properly to their “role”, DELÉGO SERVER offers to the customer a detailed overview of the energy fluxes in the building...



...and takes trace along the time of the energy consumed and produced, by giving the possibility to analyze them with charts automatically generated, as shown in the following example:



In case of third-party APIs integration like SOLAREDGE, the meters are created automatically, as better explained in the dedicated section of this manual.

## 2.2 Meters

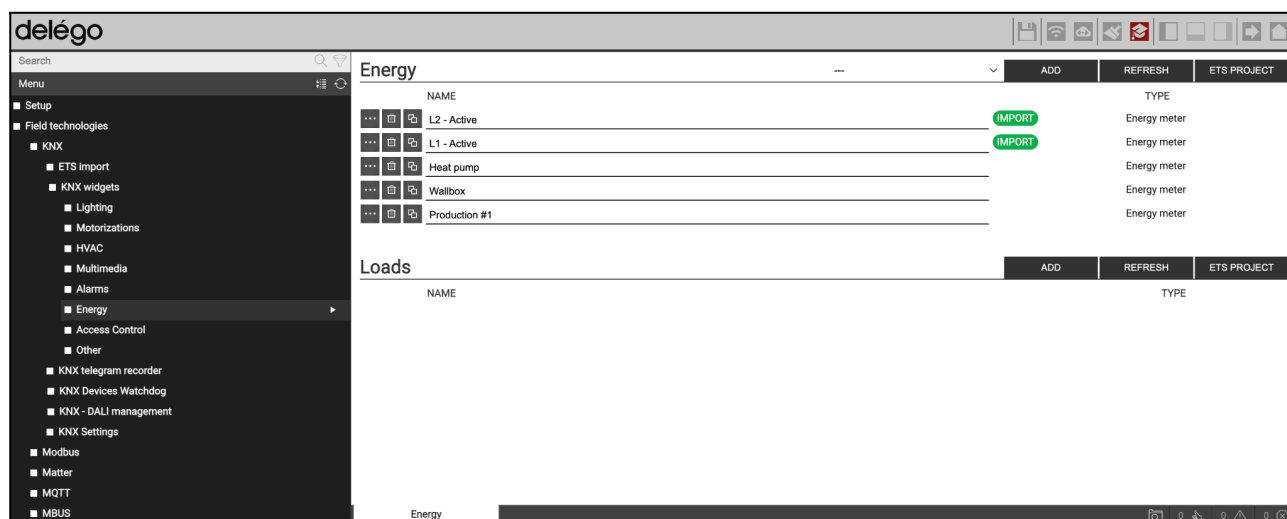
### 2.2.1 KNX meters

To create a new KNX energy meter, enter the following section of the administration menu:

FIELD TECHNOLOGIES > KNX > KNX WIDGETS > ENERGY

If a project has been imported from ETS, containing an Ekinex meter, the corresponding widgets should already appear in the list caller ENERGY; those widgets are identified by the IMPORT tag.

In any case, a new meter can be created by selecting “ENERGY METER” in the drop-down menu, and pressing the ADD button; the new element(s) appears in the list, as in the following example:



By entering the details of a meter, the following information can be entered in the general settings section:

## GENERAL INFORMATION

|             |                                                                                                                                                                     |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NAME        | Meter name. It is used in the visualisation to identify it.                                                                                                         |
| DESCRIPTION | Free description, available only in EXPERT mode (  )                           |
| UNIT        | Specify the unit for the measured energy, by choosing between Wh and kWh. This choice depends on the entity of the values read from the device; the default is kWh. |
| POWER UNIT  | In a similar way, specify the unit for the power between W and kW.                                                                                                  |
| TYPE        | Indicates the type of meter (Energy or Volume) selected at the moment of the creation.                                                                              |

## POWER

|               |                                                            |
|---------------|------------------------------------------------------------|
| MINIMUM POWER | Range of the power measured by the meter, expressed in kW. |
| MAXIMUM POWER | These limits are used to scale the display graphics.       |

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Search

Menu

- Setup
- Field technologies
  - KNX
    - ETS import
    - KNX widgets
      - Lighting
      - Motorizations
      - HVAC
      - Multimedia
      - Alarms
      - Energy
      - Access Control
      - Other
    - KNX telegram recorder
    - KNX Settings
  - Modbus
  - Matter
  - MQTT
  - MBUS
- User interface
- Basic functions
- Integrations
- Energy Management
- Trends
- Notifications
- Automations

**Object properties**

General information

Name: Heat pump

Unit: Wh

Power unit: kW

Type: Energy meter

Power

Minimum power: 0

Maximum power: 3

CLOSE REFRESH

**KNX addresses**

| FUNCTIONALITY           | FEEDBACK | STATE    |
|-------------------------|----------|----------|
| Power - measured value  | 10/1/1   | 0.000 kW |
| Energy - measured value | 10/1/7   | 1028     |

Energy Heat pump

In the KNX ADDRESSES section, in a very similar way of any other type of KNX widget, it is possible to specify the group addresses assigned in ETS to the power and the energy values; these values are expected to be sent to the KNX bus by the equipment, cyclically or upon a change. The group addresses can be entered manually or dropped from the ETS project (by opening it with the button on top of the list).

If the meter is associated to a device which gives also a charge percent state, like a battery storage, it is possible to add manually an item for it, by pressing the ADD button and selecting “BATTERY CHARGE” as its FUNCTIONALITY (and filling the corresponding KNX group address, of course):

**KNX addresses**

| FUNCTIONALITY           | FEEDBACK | STATE    |
|-------------------------|----------|----------|
| Power - measured value  | 10/2/0   | 0.000 kW |
| Energy - measured value | 10/2/6   | 0        |
| ✓ Battery charge        | -/-      | 0% +     |

## 2.2.2 Modbus meters

To create a new MODBUS energy meter, enter the following section of the administration menu...

FIELD TECHNOLOGIES > MODBUS > MODBUS MASTER

and create, if necessary, a MODBUS LINE, which instructs DELÉGO SERVER how to connect to the device(s) collecting the power and energy data. If a line has been already created, enter its detail page.

Identify the METERS section, select ENERGY METER in the drop-down menu and press the ADD button; a new item is added to the list.

**Generic settings**

**General information**

Name: Energy meters

Communication: Serial / USB

Serial port: RS485

Baud rate: 19200

Parity: None

Data bit: 8

Stop bit: 1

Communication mode: RS485

Debug: None

Enable bus monitor: ☐

**Appearance**

Execution state: STOPPED

**Permissions**

Enable communication: ☒

Execute at startup: ☒

**Widgets**

| NAME   | FUNCTION     | ADDRESS | CLOUD | ROOM |
|--------|--------------|---------|-------|------|
| Meters | Energy meter |         |       |      |
| ...    | Wallbox      |         |       |      |

By entering the details of a meter, the following information can be entered in the general settings section:

## GENERAL INFORMATION

|             |                                                                                                                                                                     |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NAME        | Meter name. It is used in the visualisation to identify it.                                                                                                         |
| DESCRIPTION | Free description, available only in EXPERT mode (  )                           |
| UNIT        | Specify the unit for the measured energy, by choosing between Wh and kWh. This choice depends on the entity of the values read from the device; the default is kWh. |
| POWER UNIT  | In a similar way, specify the unit for the power between W and kW.                                                                                                  |
| TYPE        | Indicates the type of meter (Energy or Volume) selected at the moment of the creation.                                                                              |

## POWER

|               |                                                            |
|---------------|------------------------------------------------------------|
| MINIMUM POWER | Range of the power measured by the meter, expressed in kW. |
| MAXIMUM POWER | These limits are used to scale the display graphics.       |

**Generic settings**

**General information**

Name: Wallbox  
Address: 1  
Unit: Wh  
Power unit: kW  
Type: Energy meter

**Power**

Minimum power: 0  
Maximum power: 3

**Modbus registers**

| FUNCTIONALITY           | ENABLE                              | COM | SLAVE | REGISTER    | TYPE | R                                   | READ | W | WRITE | R/W     | ENCODE | BIT | MULTIPL. | OFFSET | COV | STATE    | LIBRARY |
|-------------------------|-------------------------------------|-----|-------|-------------|------|-------------------------------------|------|---|-------|---------|--------|-----|----------|--------|-----|----------|---------|
| Power - measured value  | <input checked="" type="checkbox"/> | 1   | 10    | Numeric - F | FC3  | <input checked="" type="checkbox"/> |      |   | 1     | Unsigne |        |     |          |        | 10  | 0.000 kW |         |
| Energy - measured value | <input checked="" type="checkbox"/> | 1   | 11    | Numeric - F | FC3  | <input checked="" type="checkbox"/> |      |   | 1     | Unsigne |        |     |          |        | 10  | 0 Wh     |         |

In the MODBUS REGISTERS it is possible to fill the data necessary to retrieve the information from the device; some attributes are already filled with default values, but they can be obviously changed according to the documentation of the manufacturer. If the configuration is right, the “COM” indicator becomes green.

If the meter is associated to a device which gives also a charge percent state, like a battery storage, it is possible to add manually an item for it, by pressing the ADD button and selecting “BATTERY CHARGE” as its FUNCTIONALITY (and filling the necessary attributes of the corresponding register, of course).

For more information about the configuration of the MODBUS registers, please refer to the MODBUS FIELDBUS TECHNOLOGY CONFIGURATION MANUAL [D4].

## 2.3 Energy manager

When all the meters have been configured, it is possible to assign them a CATEGORY, which determines where the related power values have to be placed in the energy diagrams. To do so, enter in the following section of the administration menu:

ENERGY MANAGEMENT > ENERGY MANAGER

DELÉGO SERVER supports the following categories:

|              |           |                                                                                   |
|--------------|-----------|-----------------------------------------------------------------------------------|
| CONSUMPTIONS | HOME      | The general consumption of the building, except for the following “big consumers” |
|              | WALLBOX   | The electric vehicle charging station(s)                                          |
|              | HEAT PUMP | The electric heating / cooling generator                                          |
| PRODUCTION   |           | Up to 3 photovoltaic inverters, or any other green energy                         |

|         |                                                                                                                                                                                  |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | production systems                                                                                                                                                               |
| BATTERY | Up to 3 energy storages that can be charged (when the production exceeds the building demand) and used to cover the power needs, before / instead of taking energy from the grid |

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Search

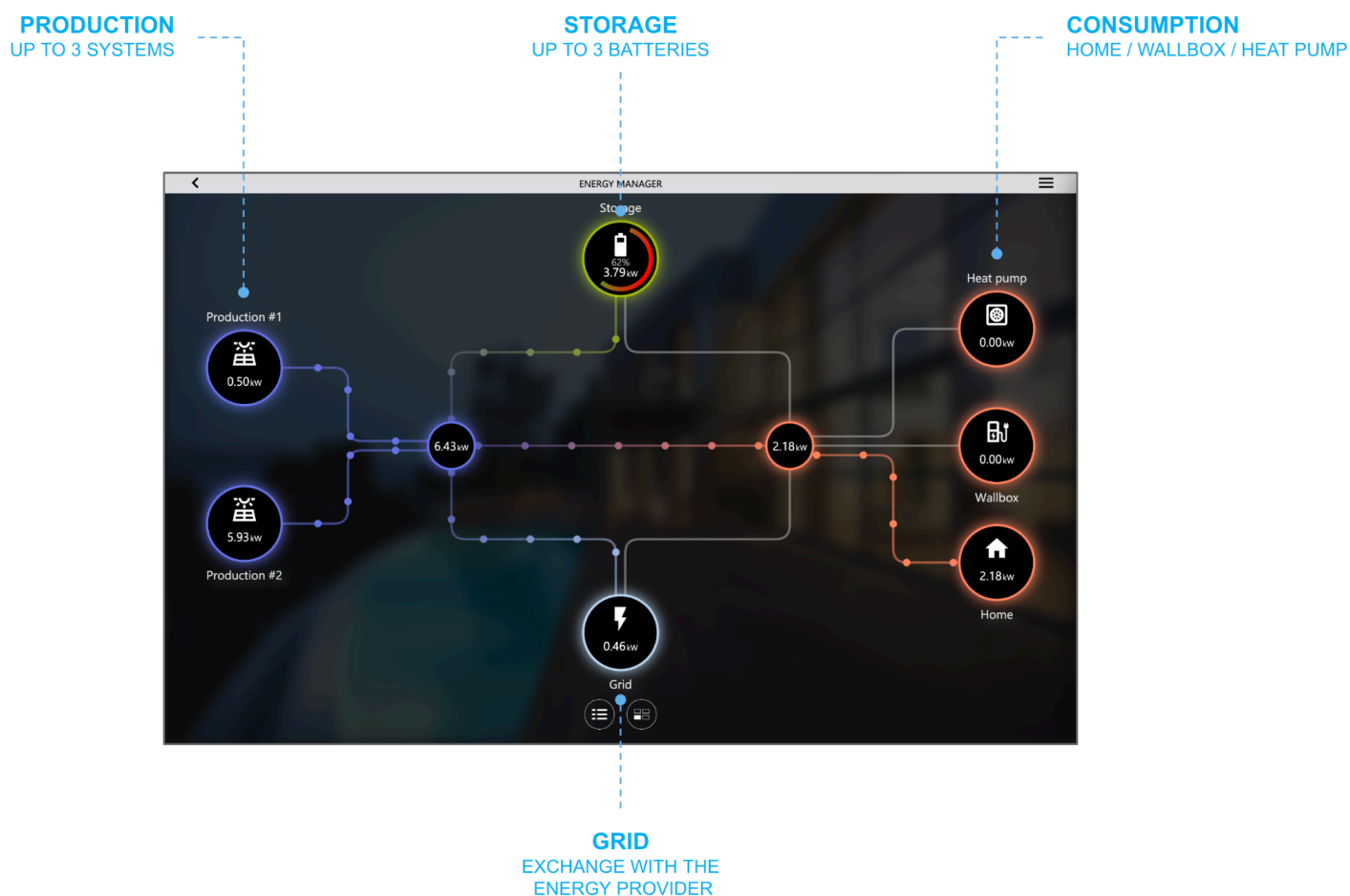
Menu

- Setup
- Field technologies
- User interface
- Basic functions
- Integrations
- Energy Management
  - Energy Manager
  - SolarEdge
  - Consumption monitor
- Trends
- Notifications
- Automations
- Guest room management
- Settings

Meters

| NAME          | TYPE      | CATEGORY   | POWER    | CHECK |
|---------------|-----------|------------|----------|-------|
| L1 - Active   | KNX       | ---        | 0 W      | OK    |
| L2 - Active   | KNX       | ---        | 0 W      | OK    |
| Production #2 | SolarEdge | Production | 5.750 kW | OK    |
| Home          | SolarEdge | Home       | 3.620 kW | OK    |
| Storage       | SolarEdge | Battery    | 0.000 kW | OK    |
| Heat pump     | KNX       | Heat pump  | 0.000 kW | OK    |
| Wallbox       | KNX       | Wallbox    | 0.000 kW | OK    |
| Production #1 | KNX       | Production | 0.500 kW | OK    |
| Wallbox       | Modbus    | Wallbox    | 0.000 kW | OK    |

The following figure shows where the different meter categories are placed in the energy diagrams:



The energy exchanged with the external grid is automatically calculated, as the difference among the produced and consumed power, taking into account the power of the storage (that can be positive, during the charge, or negative, in discharge).

## 2.4 Solaredge

It is possible to integrate a SOLAREEDGE production system in the energy management of DELÉGO SERVER; the webserver retrieves automatically the energy data from Solaredge cloud API, without having to install dedicated meters. An internet connection is required.

To add a new SOLAREEDGE system, select the menu item

ENERGY MANAGEMENT > SOLAREEDGE

and press the [+] button. Enter the details page of the new element, and enter the following information:

|           |                                                                                       |
|-----------|---------------------------------------------------------------------------------------|
| SITE CODE | The numeric identifier of the SOLAREEDGE installation                                 |
| API KEY   | The secret key provided by SOLAREEDGE to connect to the system through the cloud APIs |

If the EXPERT mode is active (  ) it is possible also to set the interval between the calls to the cloud; a higher frequency means more accurate data, but a more intense use of the SOLAREEDGE APIs (which have a limitation on the number of allowed calls per day).

Press the START button to initiate the communication; after a few seconds, one or more *meters* are automatically created, according to the configuration of the connected system (if it has, for example, a storage or not). The meters appear immediately also in the ENERGY MANAGER, already associated to the appropriate category, and start displaying data in the energy diagrams.

## 3 Load control

### 3.1 Introduction

DELÉGO SERVER can monitor the consumption of the building and automatically switch OFF certain appliances if an excessive power demand is detected.

For that purpose, special widgets have to be created - called "LOADS" - in the specific technology to be used to control them: KNX, Modbus etc...

The loads can be assigned to a priority: the higher is the priority, later they will be switched OFF (if the excessive power demand condition continues) as explained below.

### 3.2 Algorithm

If at least one load is defined, DELÉGO SERVER checks continuously if the power requested from the GRID exceeds a given **RED THRESHOLD**; the check is done each 5 seconds, or another **CHECK INTERVAL** that can be set in the ENERGY MANAGER options.

Normally the algorithm is in an **IDLE** condition. When the consumption exceeds the **RED THRESHOLD**, the check is repeated for a certain amount of times (the **CYCLES UNTIL BREAK** parameter, 3 by default); if the alarm condition persists for the so-called **ON TIME**...

$$\text{ON TIME} = \text{CHECK INTERVAL} \times \text{CYCLES UNTIL BREAK}$$

... the priority is increased to 1, and the corresponding loads are switched OFF. The check continues, and unless the consumed power goes under the **RED THRESHOLD**, the priority continues to be increased every **ON TIME**.

This phase is called **BREAK**.

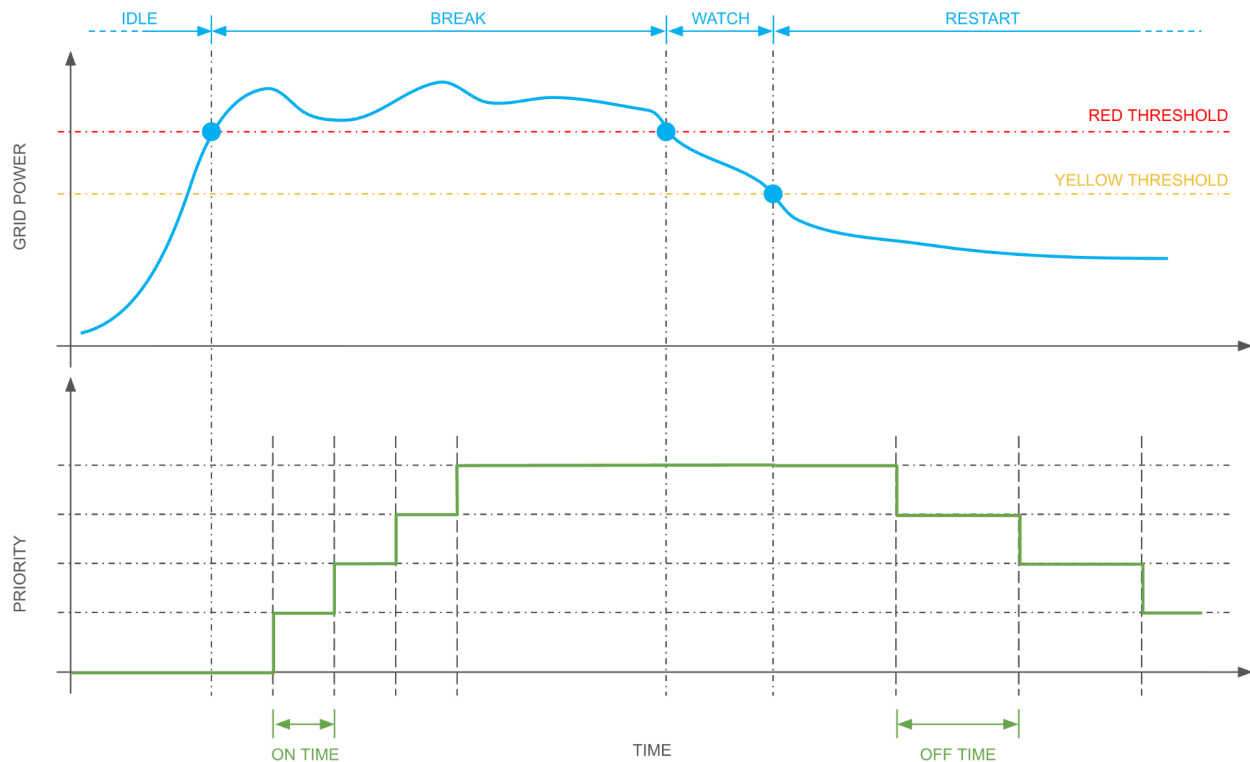
If, at a certain moment, the grid power returns under the **RED THRESHOLD**, until it remains over another **YELLOW THRESHOLD**, nothing is done. This phase is called **WATCH**.

Only if the consumption goes also under the **YELLOW THRESHOLD**, the algorithm inverts the priority, by reducing it, after an **OFF TIME** given by the **CHECK INTERVAL** multiplied for the **CYCLES UNTIL RESTART** parameter (which is 60 by default).

$$\text{OFF TIME} = \text{CHECK INTERVAL} \times \text{CYCLES UNTIL RESTART}$$

This phase is called **RESTART**.

The following diagram shows in a graphical way the load control algorithm:



## 3.3 Loads

### 3.3.1 KNX loads

To create a new KNX load, enter the following section of the administration menu...

FIELD TECHNOLOGIES > KNX > KNX WIDGETS > ENERGY

... and press the ADD button of the LOADS section.

By entering the details of a load, it is possible to associate the following group addresses:

|            |                                                                                                                |
|------------|----------------------------------------------------------------------------------------------------------------|
| ON/OFF     | KNX group address to be used to switch the load ON or OFF                                                      |
| OVER LIMIT | Optional KNX group address where DELÉGO SERVER sends a 1 value if the load is switched OFF by the load control |

Additionally, the following virtual items are also available (and can be set not only in this page, but also from the visualisation, as better explained below):

|          |                                                                                                                           |
|----------|---------------------------------------------------------------------------------------------------------------------------|
| AUTO/MAN | If set to MANUAL, a load is no longer managed by the load control, until it returns back to AUTO                          |
| PRIORITY | The priority level of the load; the minimum is 1 (the load is immediately switched OFF in case of excessive consumption). |

### 3.3.2 Modbus loads

To create a new MODBUS load, enter the following section of the administration menu...

FIELD TECHNOLOGIES > MODBUS > MODBUS MASTER

and create, if necessary, a MODBUS LINE, which instructs DELÉGO SERVER how to connect to the device(s) collecting the power and energy data. If a line has been already created, enter its detail page.

Identify the LOADS section and press the ADD button; a new item is added to the list. By entering the details of a load, the following information must be entered:

|         |                                                             |
|---------|-------------------------------------------------------------|
| NAME    | Meter name. It is used in the visualisation to identify it. |
| ADDRESS | The MODBUS address of the slave on the line                 |

The screenshot shows the 'delégo' web interface. On the left is a navigation menu with options like Setup, Field technologies, Modbus, and User interface. The main area is titled 'Generic settings' and shows 'General information' for 'Load 1' with fields for Name and Address. Below this are buttons for CLOSE, REFRESH, CLONE, and EXPORT. The 'Modbus registers' section contains a table with columns for FUNCTIONALITY, ENABLE, COM, SLAVE, REGISTER, TYPE, R, READ, W, WRITE, R/W, ENCODE, BIT, MULTIPL., OFFSET, COV, STATE, and LIBRARY. The table lists four registers: ON/OFF, AUTO/MAN, Priority, and Over limit, each with specific configuration values.

| FUNCTIONALITY | ENABLE                              | COM | SLAVE | REGISTER     | TYPE | R                                   | READ | W | WRITE   | R/W | ENCODE | BIT | MULTIPL. | OFFSET | COV | STATE | LIBRARY |
|---------------|-------------------------------------|-----|-------|--------------|------|-------------------------------------|------|---|---------|-----|--------|-----|----------|--------|-----|-------|---------|
| ON/OFF        | <input checked="" type="checkbox"/> | 1   | 10    | Boolean (O)  | FC1  | <input checked="" type="checkbox"/> | FC05 | 1 | Unsigne |     |        |     |          |        |     | On    | +       |
| AUTO/MAN      | <input checked="" type="checkbox"/> | 1   | 11    | Boolean (O)  | FC1  | <input checked="" type="checkbox"/> | FC05 | 1 | Unsigne |     |        |     |          |        |     | Auto  | +       |
| Priority      | <input checked="" type="checkbox"/> | 1   | 12    | Numeric - li | FC3  | <input checked="" type="checkbox"/> | FC06 | 1 | Unsigne |     |        |     |          |        |     | 0     | +       |
| Over limit    | <input checked="" type="checkbox"/> | 1   | 13    | Boolean (O)  | FC1  | <input checked="" type="checkbox"/> |      | 1 | Unsigne |     |        |     |          |        |     | OK    |         |

In the MODBUS REGISTERS it is possible to fill the data necessary to retrieve the information from the device; some attributes are already filled with default values, but they can be obviously changed according to the documentation of the manufacturer. If the configuration is right, the “COM” indicator becomes green.

For more information about the configuration of the MODBUS registers, please refer to the MODBUS FIELDBUS TECHNOLOGY CONFIGURATION MANUAL [D4].

### 3.4 Options

In the lower part of the ENERGY MANAGER page, it is possible to set the following options which regulate the algorithm of the load control; the majority of them is visible only by activating the EXPERT mode ().

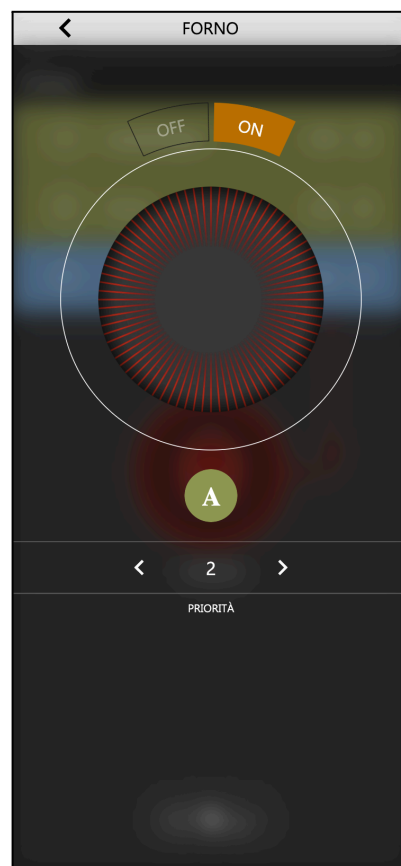
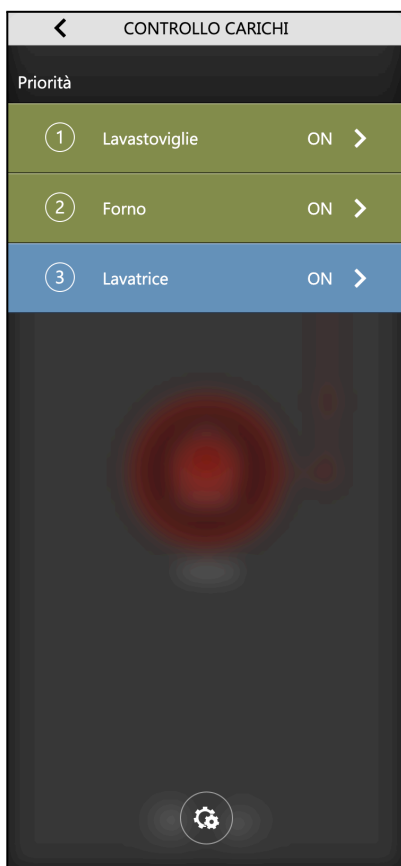
|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CONTROL TYPE                               | Select ACTIVE to enable the integrated load control algorithm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| CYCLE TIME                                 | Time (in seconds) between each check of the power consumption                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| CYCLES UNTIL BREAK<br>CYCLES UNTIL RESTART | <p>Number of basic cycles (whose duration depends on the previous parameters) that the system waits before increasing the priority (thereby releasing the loads of the next priority) if the absorption condition above the threshold persists, or - vice versa - the number of cycles that the system waits before reducing the priority, restoring the corresponding loads.</p> <p>Usually a reduced number of cycles is inserted for the disconnection, and a high number for the restoration, in order to reduce the risk of stress on the users, and of creating a sort of "loop" which does not solve the problem of excessive absorption.</p> |
| MAX PRIORITY VALUE                         | Maximum number of priorities managed by the load control logic; the system does not increase beyond this number, therefore not managing loads with subsequent priorities                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

### 3.5 Usage

In the ENERGY page of the visualisation, by pressing the left button in the bottom part of the screen, a popup with the list of loads is shown.

By pressing on a load, it is possible to:

- Switch it manually ON or OFF (buttons on the top)
- Set it to MANUAL or AUTO (bottom button)
- Assign a new PRIORITY



By pressing the bottom button, it is possible to adjust the **RED THRESHOLD** and the **YELLOW THRESHOLD**, and to see in which **PRIORITY** is the algorithm at the moment.

## 4 Consumption monitor

DELÉGO is able to control the building's consumption through a special monitoring module, compatible with different technologies and types of meters.

This section of the manual contains all the information necessary to configure and manage the following functions within the DELÉGO supervision:

- configuration of the different consumption categories managed by the monitor
- assignment of meters to the consumption monitor
- creating custom comparisons
- management of the information collected and historicized within the visualization

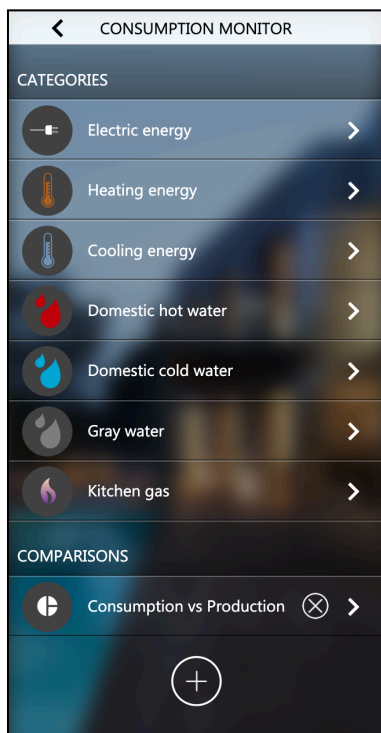
In particular, for the correct functioning of this module, it is necessary to have previously configured one or more meters within DELÉGO, based on supported technologies:

- KNX
- Modbus
- M-Bus

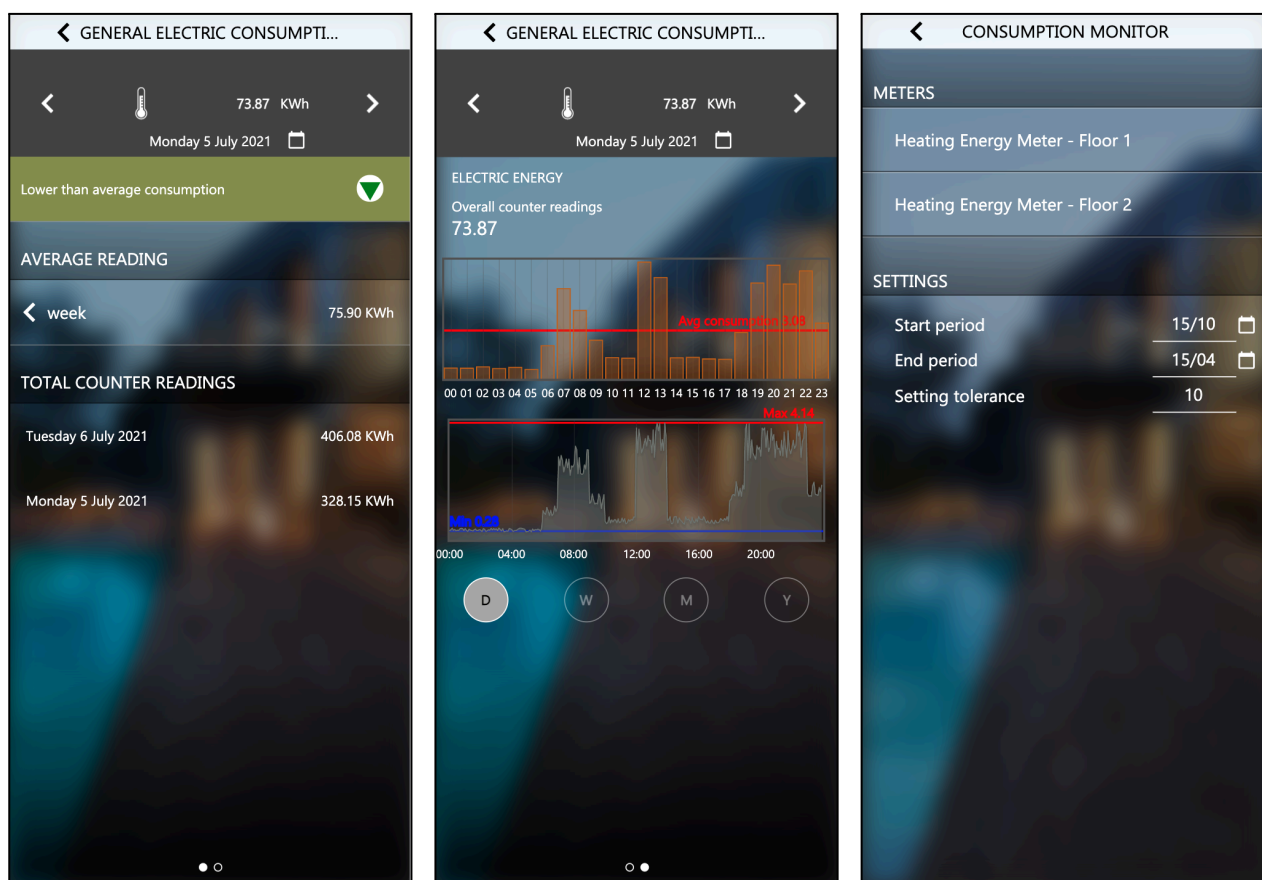
For this purpose, reference is made to the respective sections of this manual and to the section concerning load control.

### 4.1 General information

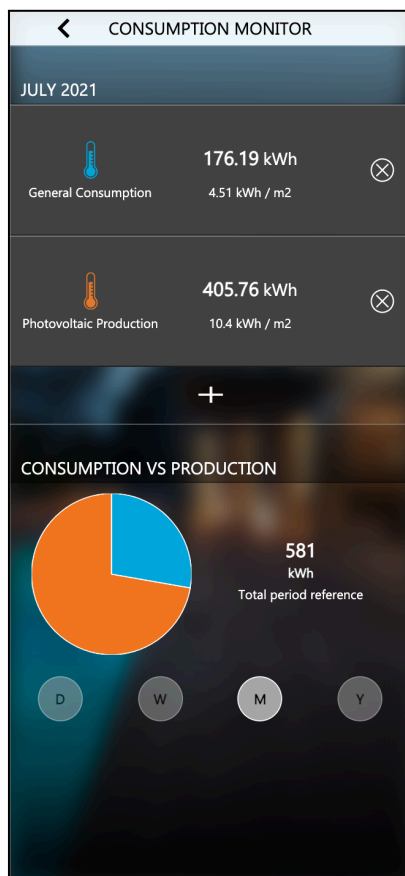
The consumption monitor allows you to manage different categories of consumption within the building.



For each of the categories it is possible to monitor, on one or more meters, both the values detected in real time and the trend over time, comparing the energy performance with other previous periods, based on a series of parameters that can be set directly by the user from the app:



The user can also compare the consumption of multiple meters, creating personalized comparisons, which allow immediate comparison, both in real time and over time:



## 4.2 Categories

The consumption monitor allows you to manage the following consumption (or production) categories:

- Electricity
- Thermal heating energy
- Thermal cooling energy
- Domestic hot water volume (DHW)
- Domestic cold water volume (ACF)
- Gray water volume
- Gas volume for kitchen use

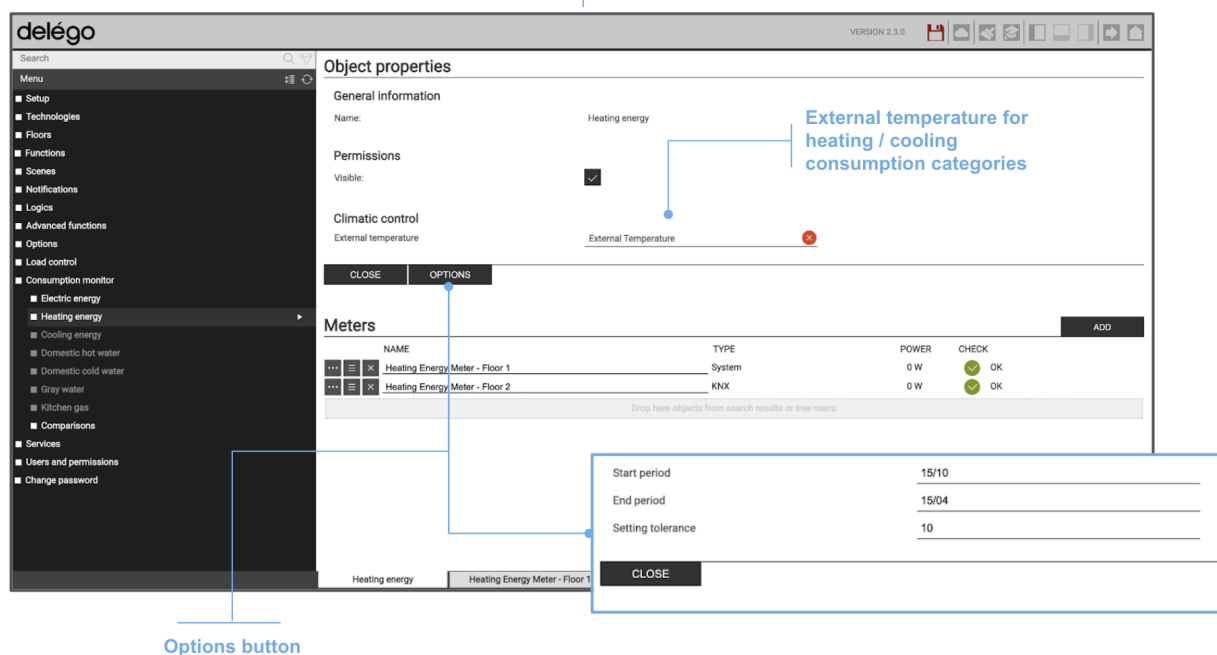
Within each category it is possible to insert one or more meters, created preliminarily in the DELÉGO sections dedicated to the technology on which they operate (KNX, MODBUS or MBUS). This chapter is dedicated to the configuration of these categories and the related customization and visualization aspects.

## 4.2.1 Enabling

The categories can be enabled for viewing by accessing the section in the configuration environment

ENERGY MANAGEMENT > CONSUMPTION MONITOR > [CATEGORY]

and changing the VISIBLE flag. If a category, in a given system, has no associated meters, it can be left hidden, so that the user does not enter an empty section, being displayed.



## 4.2.2 Options

Some categories offer the possibility of modifying certain options, which regulate the functioning of the procedures for extracting data from the history and comparing it with previous periods.

In particular, the following table lists the options available for the different categories:

| CATEGORY           | OPTION                               | DESCRIPTION                                                                                                                                                                                                                                       |
|--------------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HEATING<br>COOLING | Season start date<br>Season end date | They determine the period of the year in which the thermoregulation system is considered active.<br><br>The calculations of the reference averages refer only to this period; any consumption outside the period is not taken into consideration. |

|  |           |                                                                                                                                     |
|--|-----------|-------------------------------------------------------------------------------------------------------------------------------------|
|  | Tolerance | Percentage tolerance in comparison with the reference periods, to establish whether current consumption is in line, or lower/higher |
|--|-----------|-------------------------------------------------------------------------------------------------------------------------------------|

To set these parameters, simply press the **OPTIONS** button in the category tab in question, and fill in the proposed fields appropriately.

The **HEATING** and **COOLING** categories also allow you to associate an object that represents the external temperature; to do this, proceed as follows:

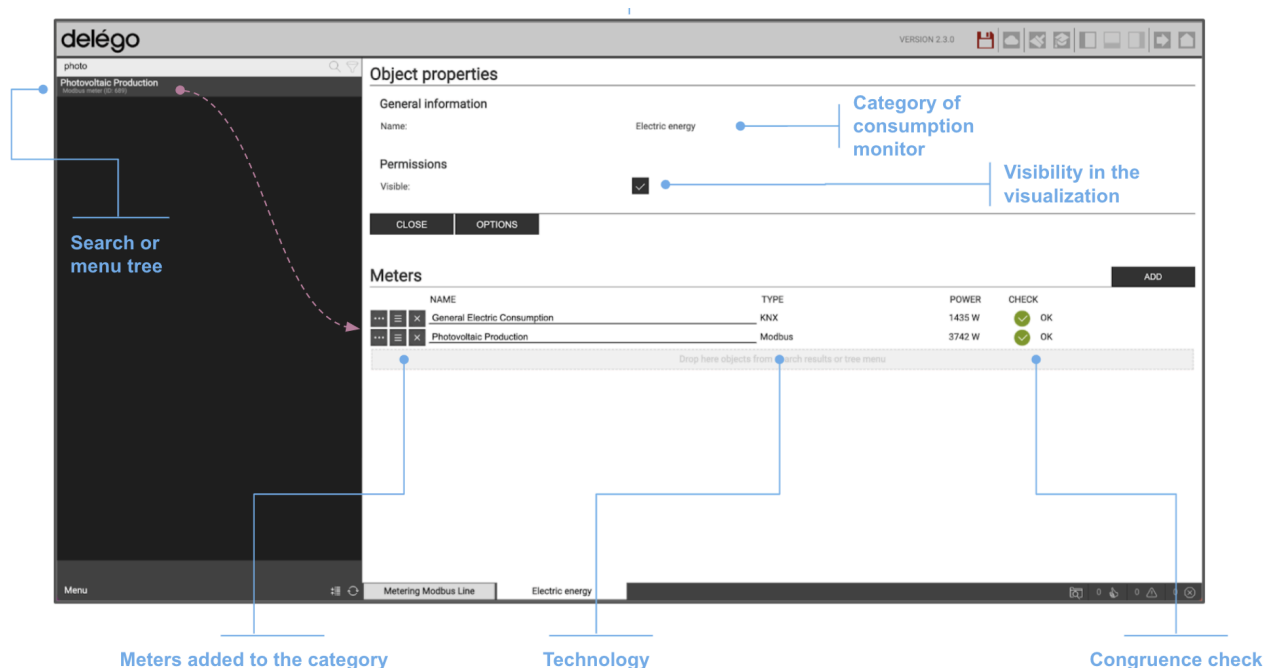
1. Identify the object via side tree or search engine (in the case of KNX technology, it can be either the single object that represents the temperature itself, or a widget that contains it)
2. Drag it into the **OUTDOOR TEMPERATURE** field within the **CLIMATE CONTROL** section of the category detail sheet

In this way, as better illustrated below, the temperature trend will be represented in overlap with that of energy consumption, thus offering an overall view and the possibility of interpreting the consumption data, also in light of the climatic conditions outside the building.

## 4.2.3 Adding meters

To add a meter within a category, it is necessary to have previously configured it in the reference technology. In summary, the procedures for creating the different types of meters are reported below. For further details, please refer to the documentation of the different technologies, and to the section of the manual regarding **LOAD CONTROL**.

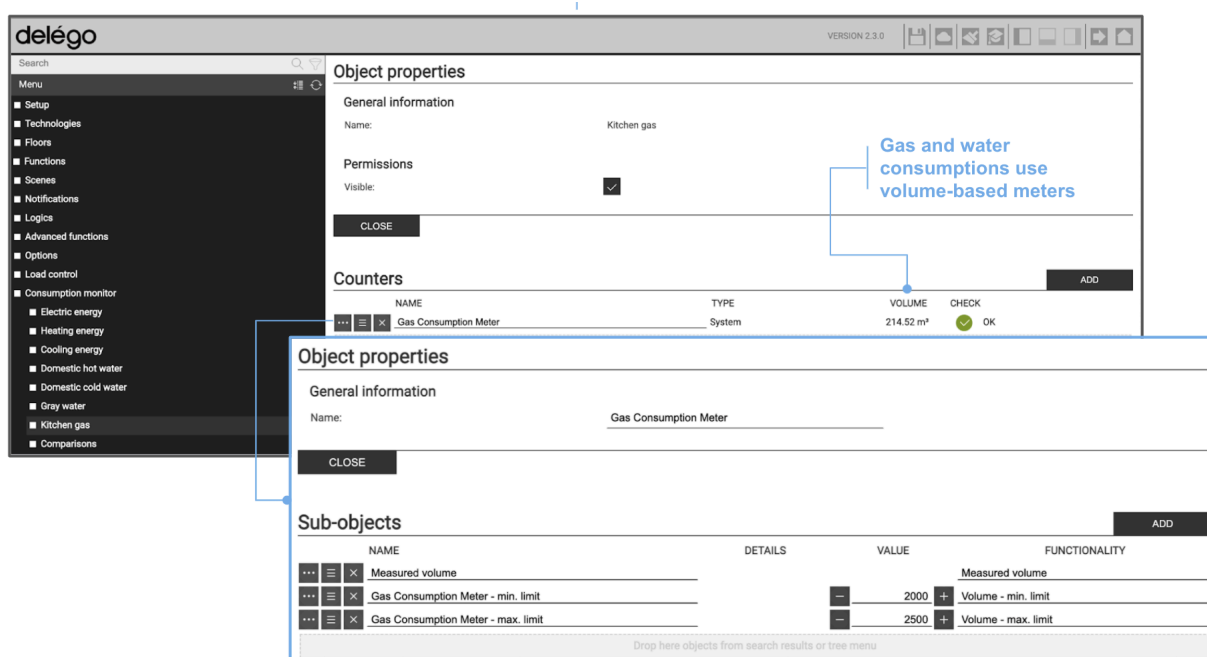
Once you have identified the meters in the side tree or in the search engine, simply drag them into the list of meters for the active category. Automatically, they will be visible in the **DELÉGO** display.



The list of energy meters offers the following information:

|       |                                                                                                                                                                                      |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NAME  | Meter identifier                                                                                                                                                                     |
| TYPE  | Reference technology                                                                                                                                                                 |
| POWER | Instantaneous power data detected                                                                                                                                                    |
| CHECK | Configuration consistency check.<br><br>The control is red in case of incomplete configuration of the sub-objects; if the check is yellow, you need to open the detail tab to check. |

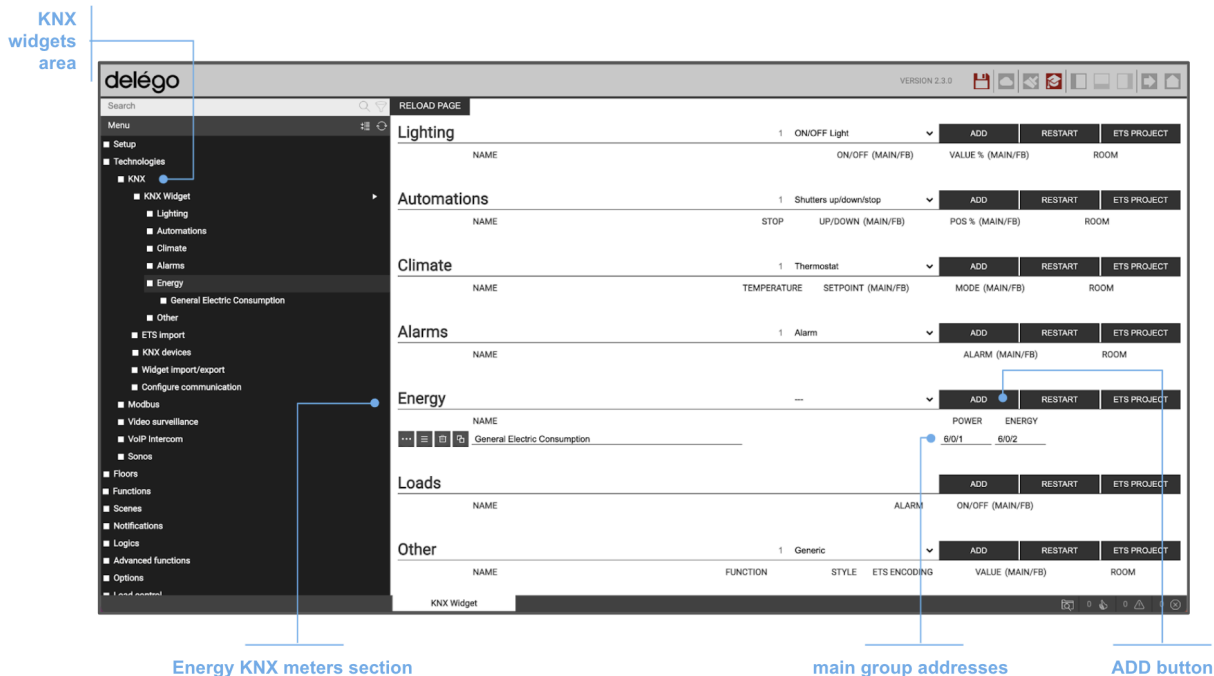
For categories that include volume-based meters, the information displayed is slightly different, as exemplified in this figure:



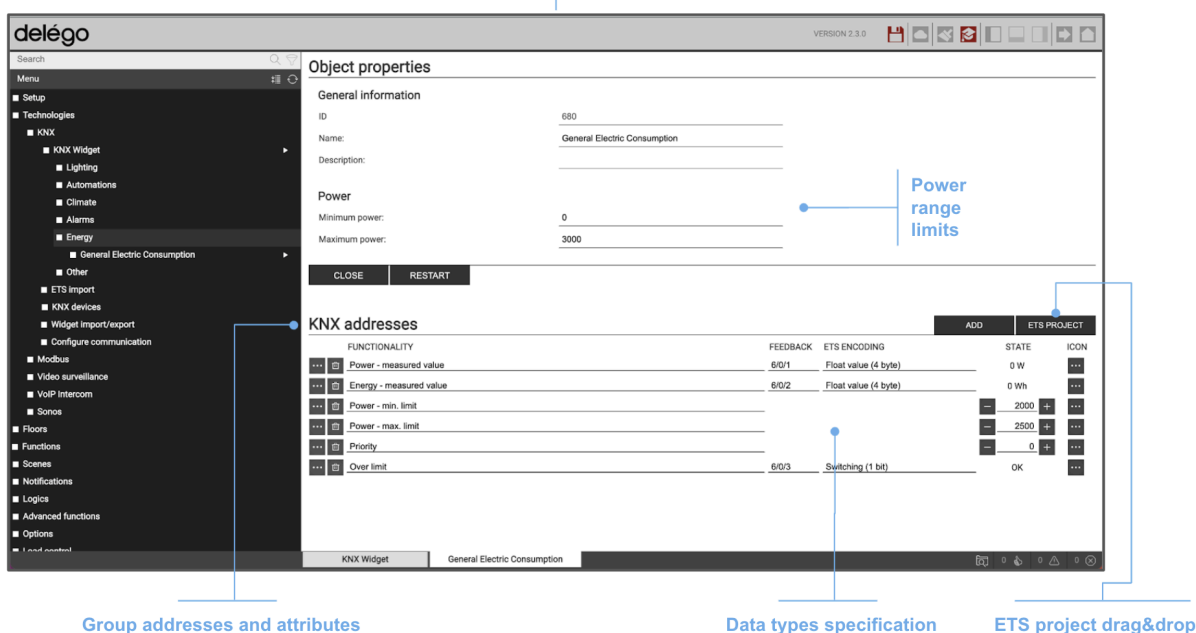
Also in this case, by pressing the edit button of a meter, you directly access the detail sheet, regardless of the technology on which it is based.

## 4.2.3.1 KNX

1. Access the TECHNOLOGIES > KNX > KNX WIDGETS page
2. Identify the ENERGY section
3. Select the type of meter (whether energy or volume, suitable for measuring water or gas) and press ADD

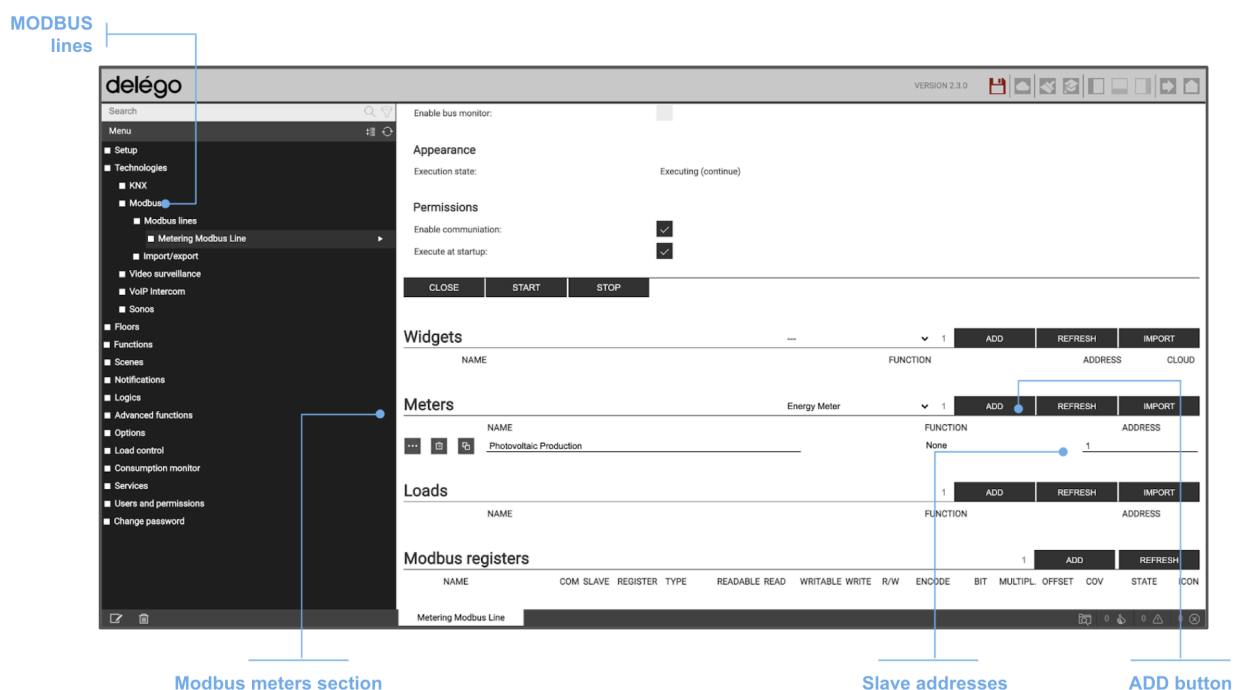


4. Access the detail sheet and enter the corresponding group addresses, for power and energy (in the case of energy meters) or the volume data
5. If necessary, drag these group addresses from the ETS PROJECT using the appropriate button
6. Press RESTART when configuration is complete to make the changes effective



## 4.2.3.2 Modbus

1. Access the TECHNOLOGIES > MODBUS > MODBUSMASTER
2. If not already done previously, create a new LINE with a [+] button in the toolbar, then access its tab
3. Identify the METER section
4. Select the type of meter, whether energy or volume (for water and gas) and press ADD
5. Enter the slave address of the device in the appropriate ADDRESS field
6. Access the detail sheet, and enter for each of the sub-objects, the information necessary to access the registers containing the power and energy information, or volume (depending on the type of meter)
7. Press UPDATE when finished to make the changes effective



## 4.2.3.3 M-Bus

1. Access the TECHNOLOGIES > MBUS page
2. If not already done previously, create a new LINE with a [+] button in the toolbar, then access its tab
3. Carry out, if not done previously, a DISCOVERY of all connected devices
4. Select the devices you intend to add to the project, and press the CONFIGURE button
5. If the devices are already suitable for inclusion in the consumption monitor (this can be deduced from the presence of the SUB-OBJECTS FOR CONSUMPTION MONITOR section), drag them directly into the desired category
6. If not, create a generic meter, and drag the quantity detected by the MBUS device into its tab

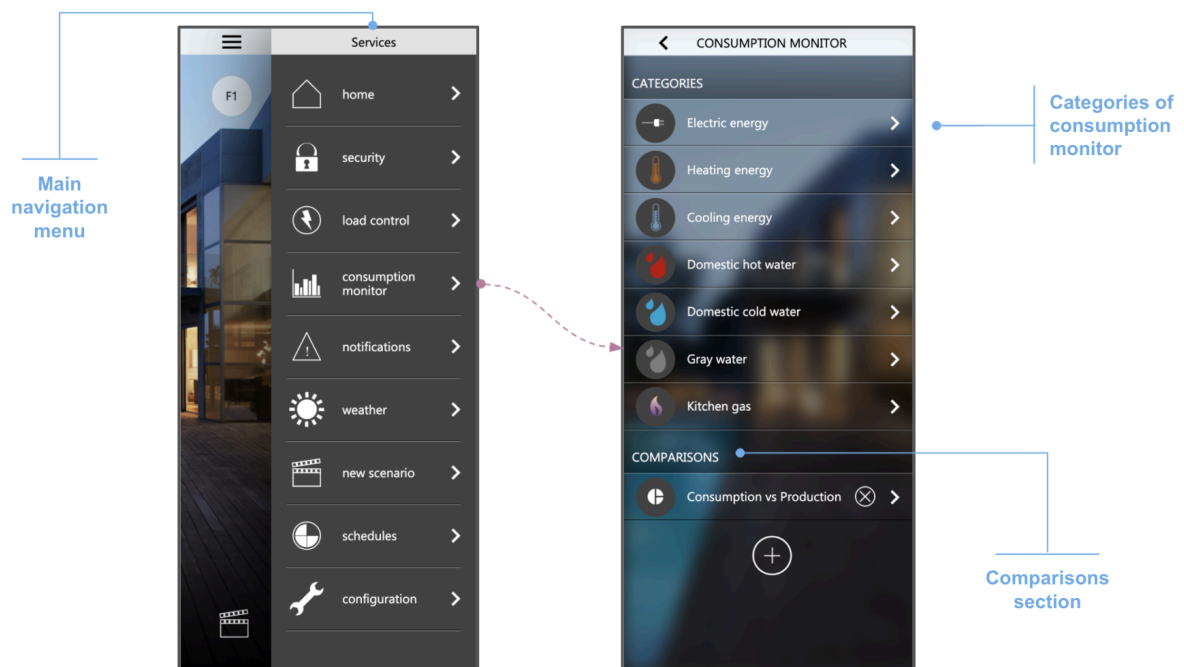
#### 4.2.3.4 Generic

1. Access the LOAD CONTROL page
2. Identify the METER section
3. Press the ADD button
4. Access your card
5. Drag the object of the reference technology that represents the quantity to be measured into the SUB-OBJECTS section

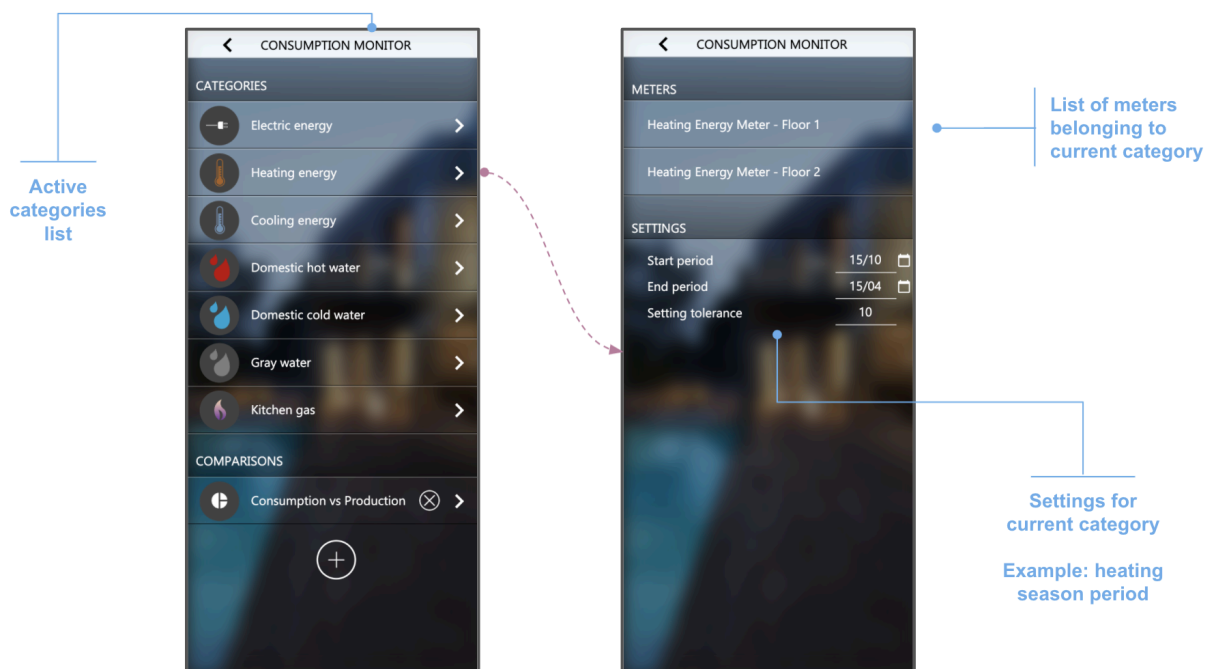
## 4.3 Visualization

Once the categories have been configured and the relevant meters associated, it is possible to view them within the browser in the viewing environment or in the app, by accessing the CONSUMPTION MONITOR section of the main menu.

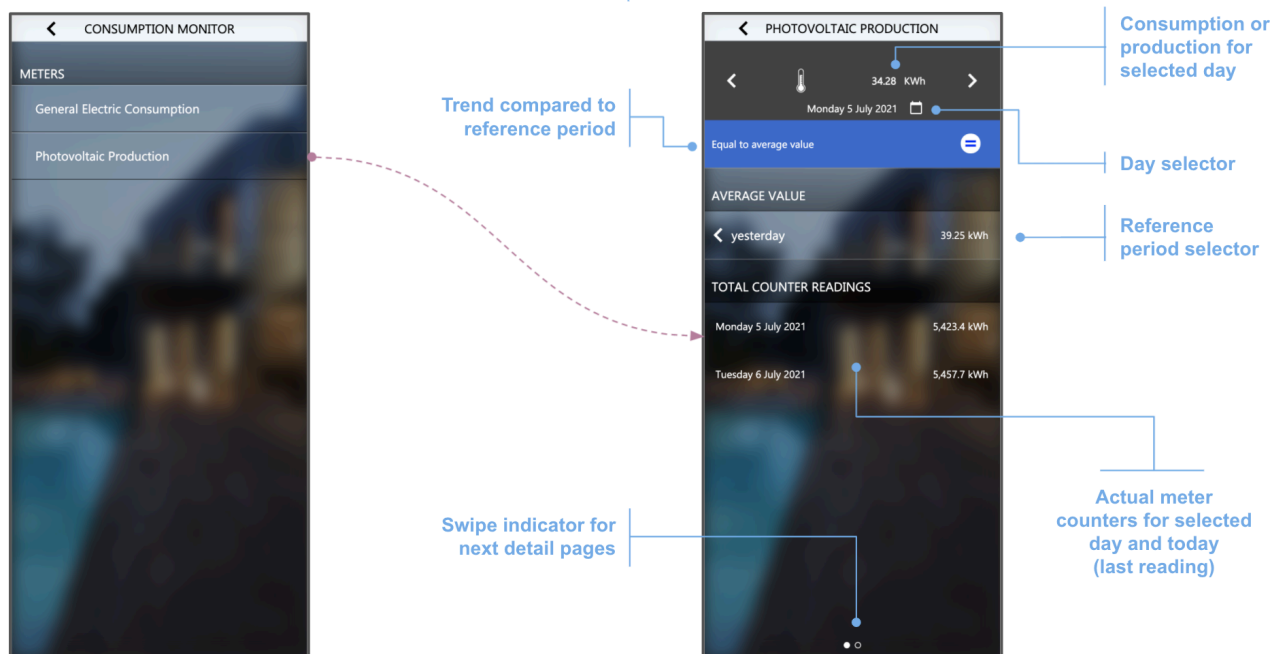
The first navigation level contains the list of categories; in the example below all the categories are listed, but as seen previously, the list depends on how many categories have been enabled in the configuration, based on the types of meters installed in the system.



Finally, by selecting a category, the list of associated meters is displayed, as in the following example; furthermore, in the case of categories that provide it, it is also possible to customize the options already seen previously:



Finally, by selecting a meter, the detail sheet is shown:

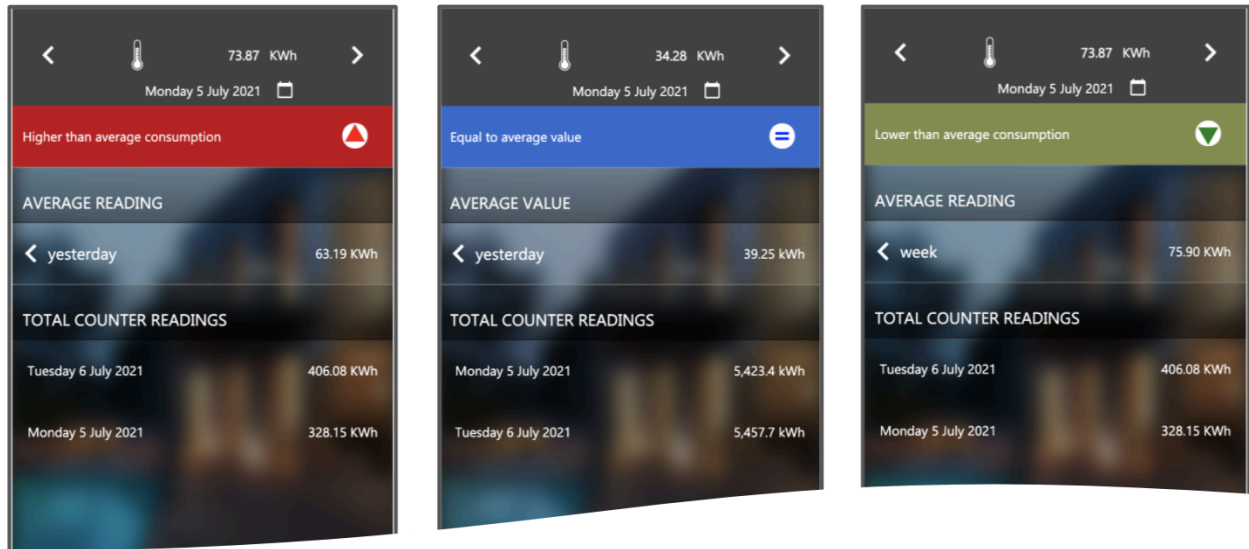


As highlighted in the figure, this screen contains the following information:

|              |                                                                                                                            |
|--------------|----------------------------------------------------------------------------------------------------------------------------|
| DAY SELECTOR | Allows you to select the current day, for which the measurement data are displayed and against which comparisons are made. |
|--------------|----------------------------------------------------------------------------------------------------------------------------|

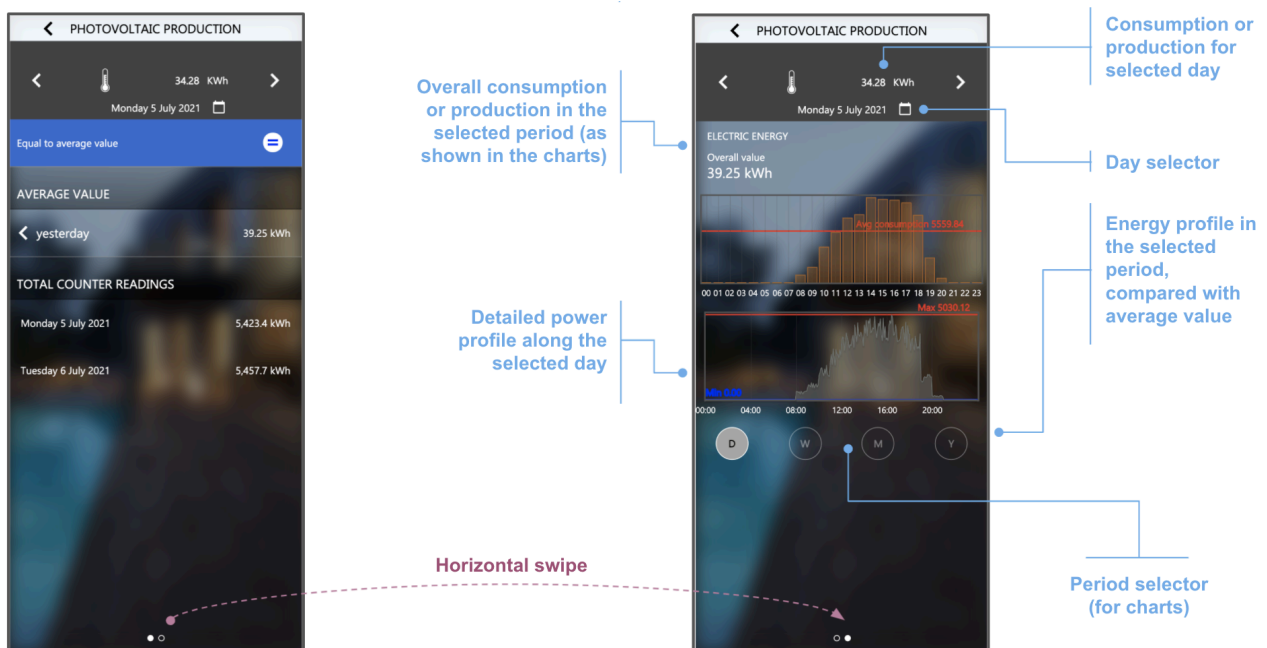
|                                         |                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         | As an alternative to selecting a day on the calendar, it is possible to move sequentially day by day, using the side arrows at the top of the screen.                                                                                                                                                                                                                    |
| CONSUMPTION (OR PRODUCTION) CURRENT DAY | The data shown at the top, above the day selector, represents the consumption (or production) of the selected day                                                                                                                                                                                                                                                        |
| COMPARISON WITH REFERENCE PERIOD        | Colored band under the header section, which represents the comparison of the current value with the daily average of the reference period, selected below                                                                                                                                                                                                               |
| REFERENCE PERIOD SELECTOR               | <p>Compared to the current day selected above, it allows you to select the period in which to calculate the average, with which to make the comparison.</p> <p>Possible values:</p> <ul style="list-style-type: none"> <li>• Yesterday (previous day)</li> <li>• Week</li> <li>• Month</li> <li>• Year, or season (in the case of categories that require it)</li> </ul> |
| COUNTER READINGS                        | Latest meter readings (overall value on the meter "display") respectively relating to today (the day on which the display is consulted) and the current day selected above                                                                                                                                                                                               |

Based on the outcome of the comparison, the colored band can assume one of the following states, depending on whether the current day's consumption is higher, in line or lower than the average of the reference period:



To consider today's consumption in line with the reference average, the tolerance margin set at the category options level is applied.

By swiping horizontally in the detail pop-up of a meter, you switch to viewing the historical trends:



The section at the top, which does not scroll, continues to display the data relating to the current day and allows you to change the date.

In the lower portion the user can choose the reference period (day, week, month or year); based on this choice, the relevant data from the history is loaded and displayed in the bar graph immediately under the day selector. The graph also shows the average value relating to the reference period, in the form of a comparison line superimposed on the histogram.

In the case of day view and for some specific categories, under the consumption graph, a graph is also drawn which contains the detail (not aggregated for now) of the following quantities:

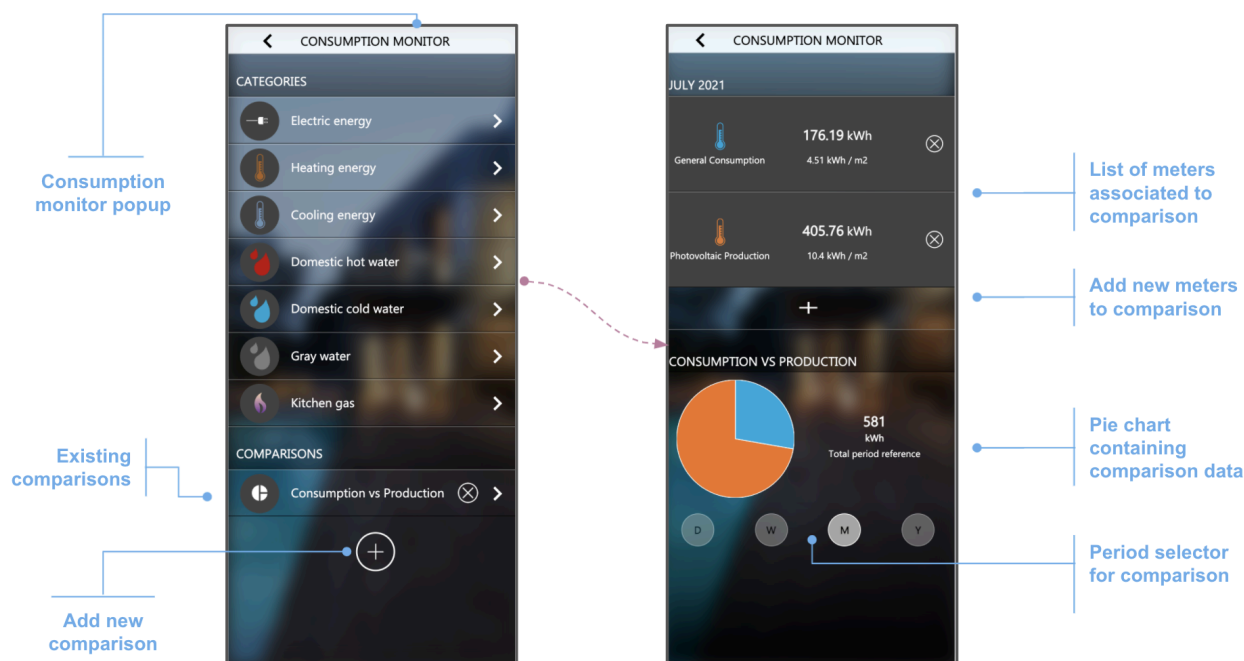
| CATEGORY           | DESIGNED QUANTITY                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ELECTRICAL ENERGY  | <p>Measured electrical power</p> <p>This graph allows you to precisely observe the absorption trend in a timely manner, and shows exactly all the data received over a 24-hour period.</p> <p>The visual overlap with the energy graph allows not only to correlate the two trends, but also to highlight any peaks or specific behaviors that are not appreciable in the aggregate consumption bars on an hourly basis.</p> |
| HEATING<br>COOLING | <p>Outside temperature</p> <p>This graph allows you to compare the consumption trend with the climatic conditions outside the building.</p> <p>To view this graph, it is necessary to first associate an object to the category that contains the temperature data, as seen previously.</p>                                                                                                                                  |

## 4.4 Comparisons

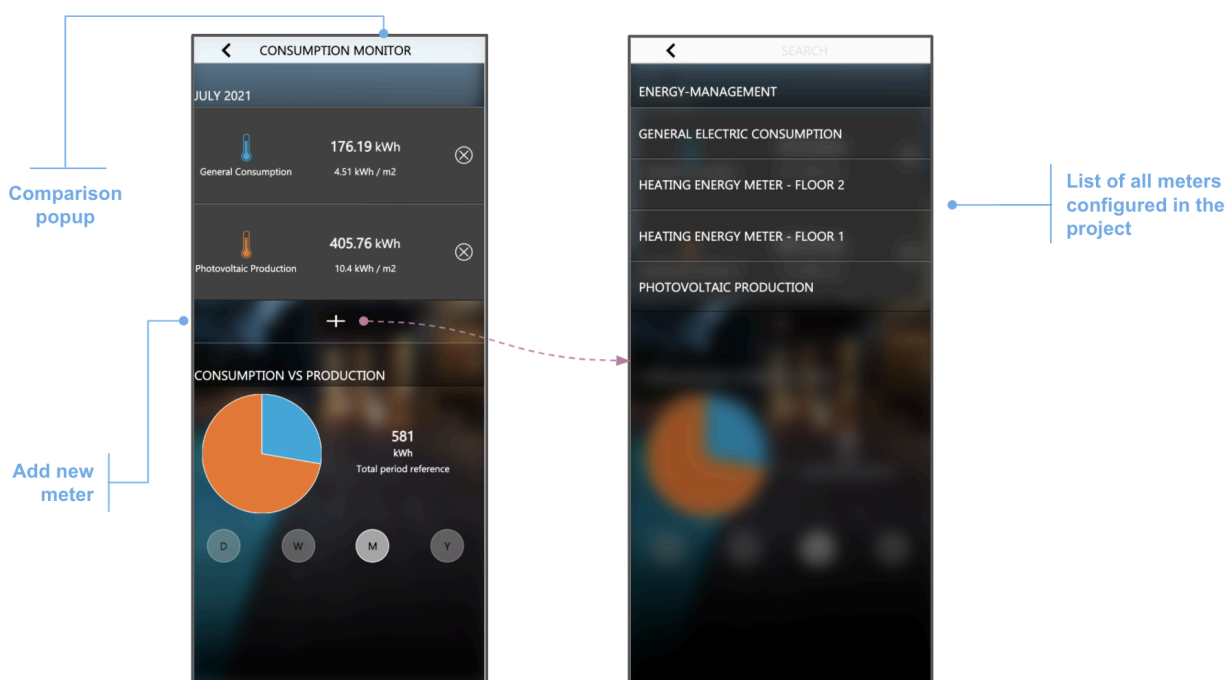
The consumption monitor allows the user to configure one or more comparisons between the meters present in the system. Comparisons can be set both in the configuration environment and in visualization; the procedure displayed is described below, as the configuration is completely similar.

### 4.4.1 New comparison

In the main pop-up of the consumption monitor, under the list of categories, the button to add a new comparison is available (and, subsequently, this section contains the list of comparisons created previously):



When accessing the detail view of a comparison, the screen is initially empty; by pressing the add meters button, a list of all compatible meters is shown:



By repeating the operation several times, you can insert all the meters you want to compare. In the top section of the sheet, the list of meters is shown, each with the relative consumption data (both in absolute value and in relation to the surface area of the property, set at the general configuration level).

In the lower part, it is possible to select the period for which you are interested in obtaining data from the history (in a similar way to what was seen for the display of the meters) and, consequently, generate the comparison pie chart.

#### 4.4.2 Modification and cancellation

To remove a comparison, simply press the corresponding button in the comparison list. To modify a comparison, on the other hand, you need to access the corresponding tab and then carry out the following operations:

- Remove a meter: Press the corresponding delete button
- Add a meter: repeat the operation seen previously in case of new comparison
- Change name: press the name of the comparison and enter the new wording

## 5 Trends

The consumption monitor displays meter data in a pre-established display format. If you wish to view the trend of a quantity not directly correlated with consumption, it is possible to create a generic graph within DELÉGO.

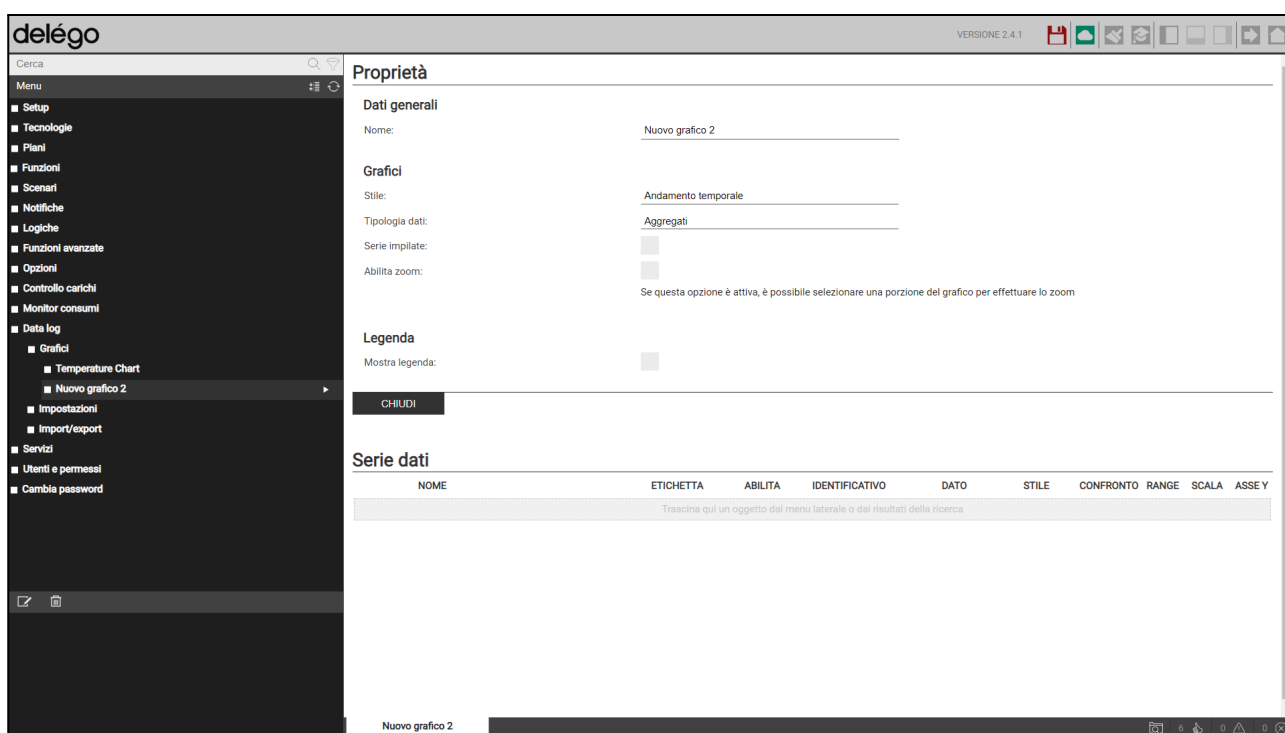
This chapter explains how to set up a chart and how to use it in your visualization.

### 5.1 New graph

To create a new custom chart, highlight the section

TRENDS > GRAPHS

in the administration menu, and press the [+] button in the toolbar. Once the new graph has been created, access its detail sheet, which appears as in the following figure:



#### 5.1.1 General settings

In the main section of the tab, you can specify the following options:

|       |                                                               |
|-------|---------------------------------------------------------------|
| NAME  | Identifies the graph within the project                       |
| STYLE | Allows you to establish the type of graph. Available options: |

|              |                                                                                                                                                                                                                                                                                                                                                                           |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <ul style="list-style-type: none"> <li>• Time trend</li> <li>• Cake</li> <li>• Donut</li> <li>• Radar</li> </ul>                                                                                                                                                                                                                                                          |
| DATA TYPE    | <p>Establishes whether the graph should be based on data received directly from the field (RAW data) or on data processed every hour, day, week and month.</p> <p>In the case of detailed graphs (RAW), it is possible to view only the data of the last 48 hours, unless you use an external USB memory. For further details, please refer to the following chapter.</p> |
| STACK SERIES | In the case of a time trend graph, it allows you to establish whether the series should be shown side by side (default) or stacked (i.e. one on top of the other)                                                                                                                                                                                                         |
| SHOW LEGEND  | Allows you to establish whether or not the legend should be shown                                                                                                                                                                                                                                                                                                         |
| ENABLE ZOOM  | If this option is enabled, the user can zoom on graphs via rectangular selection, both on PC and mobile devices                                                                                                                                                                                                                                                           |

By enabling ADVANCED mode, the following options are also available.

### 5.1.2 Legend

|         |                                                                                                                                |
|---------|--------------------------------------------------------------------------------------------------------------------------------|
| COLUMNS | Forces the number of columns in which the legend indicators are organized. If not specified, they are organized automatically. |
|---------|--------------------------------------------------------------------------------------------------------------------------------|

### 5.1.3 Primary Y axis / Secondary Y axis

|                                |                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MINIMUM VALUE<br>MAXIMUM VALUE | They allow you to force the limits of the values on the axes. If not specified, they are calculated automatically                                                                                                                                                                                                                                             |
| LABELS                         | <p>It allows you to specify, in JSON format, the list of labels to use for the graph, instead of the automatic numerical indications.</p> <p>Example: to force the labels to the values 0,25,50,75 and 100, associating them respectively with the words "0%", "25%" ... "100%", use the following wording:</p> <pre>[[0,"0%"],[50,"50%"],[100,"100%"]]</pre> |

## 5.2 Data series

Once the general properties of the graph have been defined, it is necessary to add at least one object, whose historical data will be used as the same number of data series. It is possible to associate up to 3 objects for each graph.

To add an object to a chart:

- Identify it in the side tree, or search for it with the search engine
- Drag it into the "DATA SERIES" section

In the case of widgets, you need to drag the specific sub-object you want to plot into the graph onto the graph. To this end, we therefore recommend:

- Access the detail sheet of the sub-object (if accessible), enable ADVANCED mode and identify its ID
- Search for the object with the search engine by entering its ID or, alternatively, its name or a unique attribute (e.g. its KNX address)

Once an object has been associated as a data series, it is necessary to specify the following options, in order to set the criteria with which the chart should extract and use the object's data:

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LABEL         | Text to use to identify the object within the legend                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| ENABLE        | Check this box to enable the data series. If this item is not selected, the data series is not visible                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| FUNCTIONALITY | Choose the data set number corresponding to the object, from 1 to 3 (each object must have a unique data set number)                                                                                                                                                                                                                                                                                                                                                                                                                               |
| DATA          | <p>Specify which data in the historical database should be used for representation in the graph, choosing between:</p> <ul style="list-style-type: none"> <li>• Average value</li> <li>• Minimum value</li> <li>• Maximum value</li> <li>• Sum</li> <li>• Counter</li> <li>• Difference</li> <li>• Whole wheat</li> </ul> <p>Note: This field is only available for charts with aggregated data; in the case of detailed data, in fact, the data received are used directly, and not their aggregation (with one of the functions in question)</p> |
| STYLE         | <p>Select (in the case of "time trend" type graphs) which graphic appearance the data series should have, choosing between:</p> <ul style="list-style-type: none"> <li>• Lines</li> <li>• Points</li> <li>• Lines and dots</li> <li>• Curve</li> <li>• Steps</li> <li>• Barre</li> <li>• Area</li> </ul>                                                                                                                                                                                                                                           |

|              |                                                                                                                                                                                |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <ul style="list-style-type: none"> <li>Range</li> </ul>                                                                                                                        |
| COMPARISON   | Select this option to overlay the average values calculated over previous historical periods on the data series                                                                |
| RANGE        | Select this option to superimpose a colored band on the data series that identifies the range (between minimum and maximum) of values collected in previous historical periods |
| SCALE FACTOR | If necessary, specify a scale factor to multiply with the historical values before representing them in the graph                                                              |
| Y-AXIS       | In the case of "time trend" type graphs, specify whether the data series should use the main or secondary Y axis                                                               |

Example of temperature type objects associated with a graph:

| Serie dati                                                              |                          |                          |                              |           |                                     |                |      |       |           |          |
|-------------------------------------------------------------------------|--------------------------|--------------------------|------------------------------|-----------|-------------------------------------|----------------|------|-------|-----------|----------|
| ...                                                                     | ...                      | ...                      | NOME                         | ETICHETTA | ABILITA                             | IDENTIFICATIVO | DATO | STILE | CONFRONTO | ASSE Y   |
| <input type="checkbox"/>                                                | <input type="checkbox"/> | <input type="checkbox"/> | Working Area 1 - Temperatura | Area 1    | <input checked="" type="checkbox"/> | Serie dati 1   |      | Linee |           | 1 - Prin |
| <input type="checkbox"/>                                                | <input type="checkbox"/> | <input type="checkbox"/> | Working Area 2 - Temperatura | Area 2    | <input checked="" type="checkbox"/> | Serie dati 2   |      | Linee |           | 1 - Prin |
| <input type="checkbox"/>                                                | <input type="checkbox"/> | <input type="checkbox"/> | Working Area 3 - Temperatura | Area 3    | <input checked="" type="checkbox"/> | Serie dati 3   |      | Linee |           | 1 - Prin |
| Trascina qui un oggetto dal menu laterale o dai risultati della ricerca |                          |                          |                              |           |                                     |                |      |       |           |          |

In the case of graphs with aggregated data, the choice of the type of data to associate with a data series is fundamental for the correct representation of the desired information and depends on the type of values that are stored by DELÉGO.

If numerical values arrive from the field that you want to represent directly in the graph, you typically choose "average value" or, alternatively, "minimum value" (if you want to show the lowest value within the selected period, for example a time) or "maximum value".

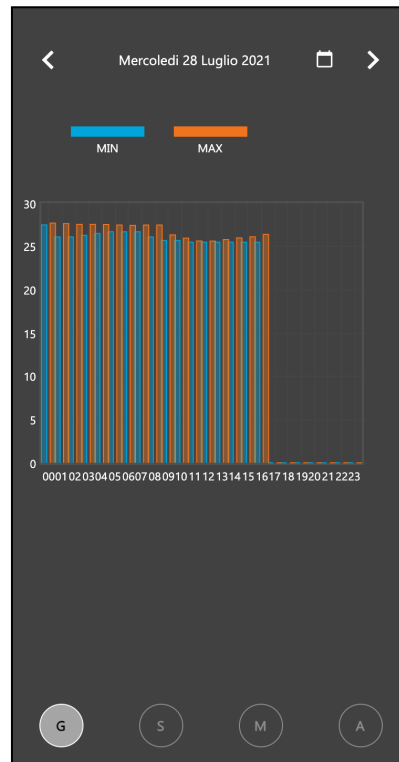
If, on the other hand, you want to represent an impulsive object, i.e. one that periodically sends a value (for example, every kWh of electricity or m3 of gas/water), the "counter" type should be chosen, because it is precisely the number of times in which data is received (and not the data itself, which is typically always the same, for example "1") to represent the data to be displayed. Alternatively, the "sum" data type is suitable, for example, if values "0" and "1" pass through, and you want to count only the "1s".

In the case of energy data (or more generally, a cumulative value that grows indefinitely over time), vice versa, the most significant information is the "*difference*" between the value received at the beginning of the period and the final one, rather than the value in an absolute sense (which, in the case of an energy meter for example, represents the consumption since the meter was activated). Finally, if you want to calculate an energy from a power data, or from a 0/1 value you want to calculate the time in which the object was at 1, the data type "*whole wheat*", which calculates the mathematical integral of the reference data.

## 5.3 Visualization

The graphs can be consulted in the viewing environment in the GRAPHS section of the main menu.

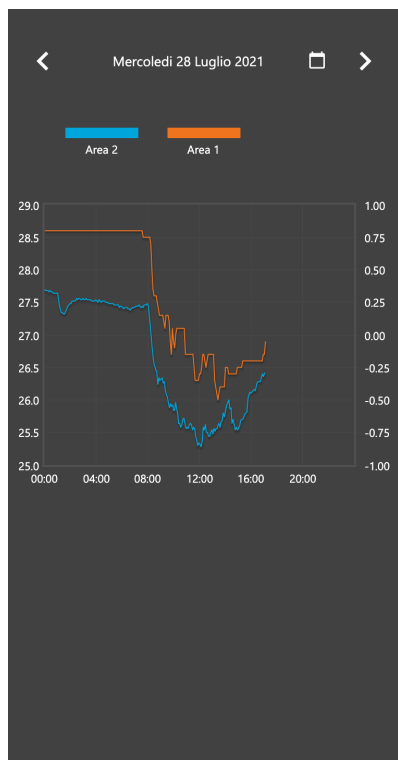
A popup containing the list of configured graphs is shown; by selecting a graph, it is shown as in the following example:



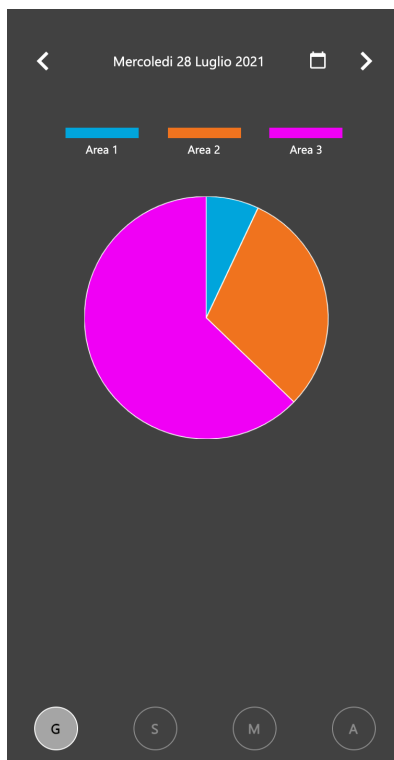
The section at the top of the popup allows you to change the reference date. The legend is displayed immediately below, which contains a reference to the series (with the associated wording during the configuration phase) and the color assigned (based on the order of the series) in the graph itself.

At the bottom of the popup, you can change the graph's reference period; the available options depend on the type of data: in the case of detailed data, in fact, it is possible to represent only daily graphs, not over several days.

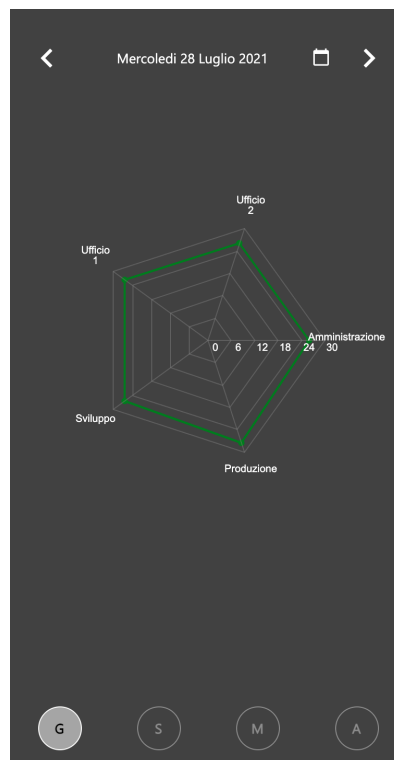
Below are some examples of different types of graphs:



LINES



PIE



RADAR

## 5.4 Data storage

The logging functions that characterize the consumption monitor and the management of generic graphs are based on a database resident within the webserver DELÉGO, dedicated to trend data (therefore distinct from the project database).

To avoid excessive strain on system resources, data storage in this database is subject to limitations. To overcome these limitations, it is possible to connect an external SD flash memory to the webserver and configure the software to save the data internally.

This chapter highlights the limitations of integrated storage and illustrates how to set DELÉGO to use external memory for saving data.

### 5.4.1 Tracking flags

During the operation of the webserver, not all the state data of the entities configured in the project are saved in the history.

Only objects inserted inside a meter, or associated with a graph, are marked in the project with the so-called "tracking flag". In some specific screens, it is also possible to set this flag (marked "TRACK").

Once an object has the tracking flag, every time the webserver receives a change of state from the field, in addition to the normal updating of the graphics (and the execution of any logic associated with this change of state) a trace is inserted into the database history, with object reference, date/time and value received.

### 5.4.2 Data organization

The data stored within the history database is organized in two different tables:

| TABLE          | DESCRIPTION                                                                                                                         |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------|
| RAW DATA       | Contains all state changes of objects marked for tracking in the history.                                                           |
| PROCESSED DATA | It contains processing, carried out in the background on an hourly basis, of the data contained in the RAW table, as detailed below |

The detailed data (RAW) is processed every hour to calculate a series of summary data, which summarizes the progress of the object over the hour:

- Initial value (at the beginning of the hour)
- Final value (at the end of the hour)
- Difference (between final and initial value)
- Minimum
- Maximum
- Sum
- Counter (number of state changes)
- Whole wheat

These same indicators are also calculated on a daily, weekly, monthly and annual basis.

All the graph generation or historical data processing functions, with specific exceptions, refer to the table of processed data, as it is not necessary to go back to the detail of the individual data received from the field.

### 5.4.3 Limits

Once the summary data has been calculated, the RAW data is kept in the main database for 48 hours and then deleted, in order to contain the size of the database and therefore cannot be consulted subsequently.

Even the processed data is not maintained indefinitely in the main database; in particular, data aggregated on an hourly basis are kept for 14 days, daily data for 12 months and monthly data for 10 years; these settings can be changed by accessing the page

#### TRENDS > TREND SETTINGS

although it is not recommended to alter them, given that an excessive number of records in the main database (especially in the presence of projects with a large number of objects with the tracking flag) could compromise the correct functioning of the system.

### 5.4.4 Memory expansion

It is possible to overcome the limits on internal data storage by inserting an external memory; DELÉGO SERVER supports the following memories, depending on the version:

- 2 DIN module version: USB flash memory
- 4 DIN module version: micro SD memory or USB flash

By appropriately enabling the storage of historical data on it, the system makes a copy of the main database inside it on a daily basis and in this way it is subsequently possible to trace data that would normally have been removed.

For this purpose it is necessary to insert the external memory and access the following page:

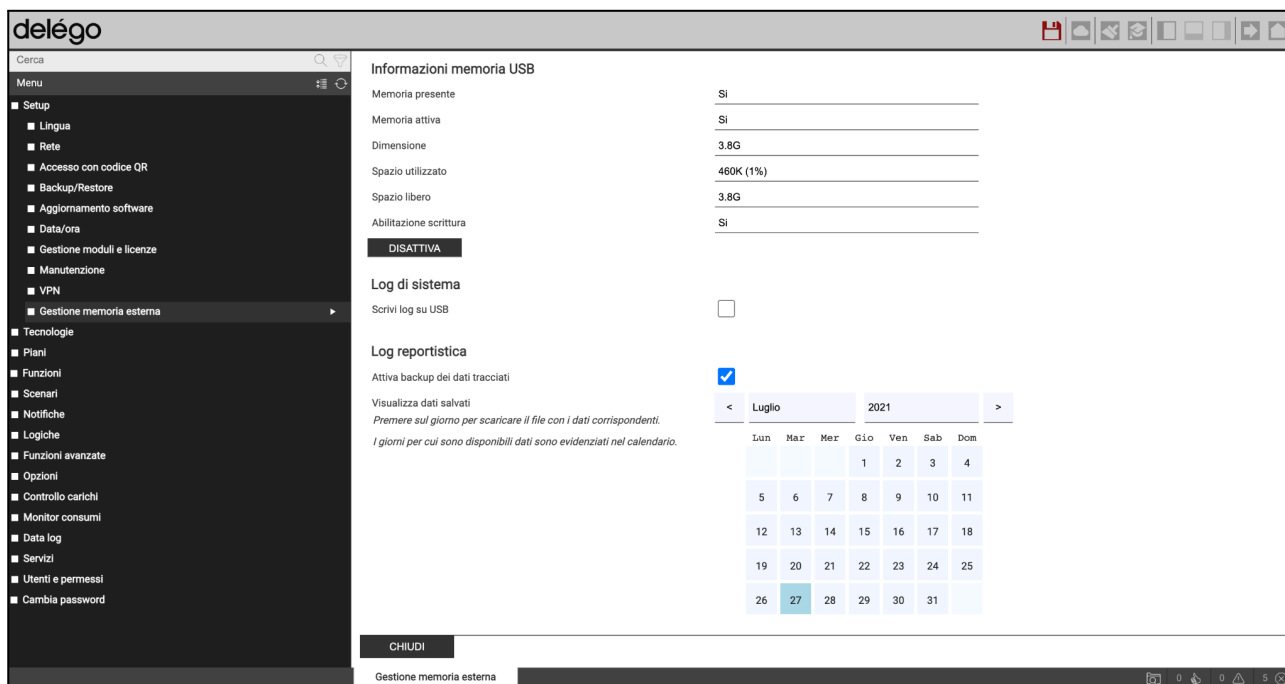
#### SETUP > EXTERNAL MEMORY MANAGEMENT

The following information is reported in the MEMORY INFORMATION section:

|                          |                                                                                        |
|--------------------------|----------------------------------------------------------------------------------------|
| TYPE                     | Where available (4 DIN module hardware version only), select the type of memory to use |
| PRESENT MEMORY           | Indicates whether a USB memory was detected or not                                     |
| ACTIVE MEMORY            | Indicates whether memory is active and available to the system or not                  |
| SIZE                     | Total size of memory detected                                                          |
| SPACE USED<br>FREE SPACE | Resources in use and free on flash memory                                              |
| WRITING ABILITY          | If the memory is active, it indicates whether or not the USB flash can be written to   |

If the memory is not active (for example because it was inserted after starting the system), press the **ACTIVATE** button to make it available; at the end of the operation, the status fields are updated based on the information read. Similarly, to remove memory without turning off the system, press **DISABLE**.

If the memory is active, the page looks like the following example screenshot:



It is possible to persistently save the DELÉGO operating system logs on the USB memory by enabling the corresponding flag; use this method if requested by technical assistance (we do not recommend doing so under normal conditions, as this slows down system performance).

To start storing historical data on external memory, enable the corresponding flag; the on-screen calendar highlights which days data is already available on the external memory, and (by clicking on it) allows you to download the data relating to that day in CSV format.



It is not recommended to save DELÉGO operating system logs on external memory, unless strictly requested by technical assistance: this option slows down system performance.

## 5.4.5 Import/export

It is possible to export the history data stored within DELÉGO through the page

TRENDS > IMPORT / EXPORT DATA

By choosing the “EXPORT” item, it is possible to filter the data to be exported:

|                    |                                                                                             |
|--------------------|---------------------------------------------------------------------------------------------|
| DATA TYPE          | Specify whether you want to export all data, or only hourly, daily, monthly, or annual data |
| DATE YES<br>DATA A | Specify the period over which you want to export the data                                   |
| OBJECT             | If necessary, filter the history for just one object                                        |



If there is a lot of data tracked in the history, the export of the entire database may time out. In these cases, it is necessary to apply filters to reduce the number of data to be exported, and therefore allow the export procedure to function correctly.

Once the filters have been set, pressing the RUN button starts the export procedure which, upon completion, downloads a CSV file to your PC/MAC, containing all the history information. This file can be processed with a spreadsheet, or imported onto another DELÉGO to load the history data into it (which is not contained in the normal backup of the supervision project).

To import previously exported log data into DELÉGO (possibly from another DELÉGO), select the “IMPORT” item, select the CSV file and press the EXECUTE button; at the end of the procedure, a confirmation message is shown.

## 6 Revision history

The following table contains the most relevant changes in the software releases, concerning the topics of this application manual:

| Release | Changes                                       | Date       |
|---------|-----------------------------------------------|------------|
| 2.8.0   | Minor changes                                 | 15/04/2026 |
| 2.7.0   | Added new energy diagrams section             | 01/09/2025 |
|         | Revised section dedicated to the load control |            |
| 2.6.0   | First revision of the document                | 02/04/2025 |



Before the software release 2.6 the application manuals of DELÉGO SERVER were organized differently. An exact correspondence with older versions of the manuals and the changelog could not be found for this reason.