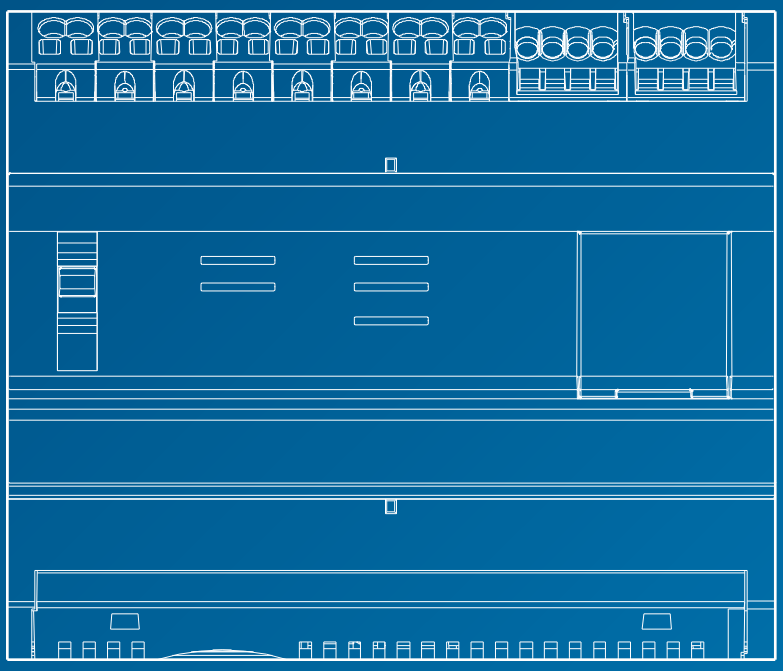
User manual

agardio. manager

Multi energy data logger & monitoring server HTG411H / HTG411L



hager

Contents

1 About the manual

Document scope

This manual describes how to operate the energy monitoring server during configuration, commissioning and maintenance.

Applicability note

This manual is intended for technicians, system integrators and operators (owners, facility managers). Skills and knowledge regarding construction, operation and installation of electrical equipment are required.

Revisions

Revision No.	Date
1.11	11/2024

Copyright

Liability

Hager Group disclaims any and all liability for personal injury or property damage including incidental and consequential damages which may arise out of the contents of this manual.

Further applicable documents

Document no.	Description
6LE002121B	Installation manual - EN
6LE007311B	Quickstart - EN - FR - DE - NL
16DE0118_01	Hager-Tipp - DIN VDE 0100-801

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Can be used anywhere in Europe CE and Switzerland

2 Safety information

Introduction

This chapter provides important information regarding safety of the energy monitoring server including the classification of the safety notes, qualification of the personnel, liability and intended use.

Chapter contents

2. 1 Classification of the safety information

Personal injury

This manual contains safety instructions that you must observe for your own safety.

The safety instructions are subdivided into three danger categories. These categories differ with regard to the severity of injuries that can result from non-compliance of these instructions.

The following symbols and terms are used for describing the three danger categories:

⚠ DANGER

DANGER indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury.

Property damage

This manual contains safety instructions that you must observe to avoid equipment damage. Further, it contains useful information. They are indicated as follows:

NOTICE

NOTICE indicates a property damage message.

NOTICE also indicates important user notes and especially useful information on the product to which special attention shall be given so as to have the subsequent activities performed effectively and safely.

2. 2 Safety information for the energy monitoring server

Qualified personnel

The energy monitoring server must be mounted, installed and serviced only by qualified personnel.

Qualified personnel has skills and knowledge regarding construction, operation and installation of electrical equipment. A qualified person has furthermore attended a safety training to be able to recognize and avoid the hazards involved.

Liability

The manufacturer shall not be held responsible for failure to comply with the instructions in this manual.

Intended use

The energy monitoring server

- is an energy and data logger designed as a compact embedded system to support the user to operate small and medium commercial buildings.
- collects and stores information like multi-energy (electricity, water, gas) and electrical power quality (U, I, P, f, THD) of the building distribution network.
- provides access to data as dashboards and graphics displayed with embedded web-pages, commissioning reports, file export.
- generates alarms for the user.

The manufacturer is not liable for any other than the described use.

Risk of electrocution, burns or explosion

⚠ WARNING

- ➢ Electrocution, burns or explosion
- ➢ Prior to any work on or in the energy monitoring server, isolate the voltage inputs and auxiliary power supplies.
- ➢ Prior to any work on or in the energy monitoring server, short-circuit the secondary winding of all current transformers.
- ➢ Always use an appropriate voltage detection device to confirm the absence of voltage.
- ➢ Put all mechanisms, door and covers back in place before energizing the energy monitoring server.
- ➢ Always supply the energy monitoring server with the correct rated voltage.

Risk of inaccurate data results

NOTICE

Inaccurate data results

- Do not incorrectly configure the software, as this can lead to inaccurate reports and/or data results.
- Do not base your maintenance actions solely on messages and information displayed by the software.
- Do not rely solely on data displayed in the dashboard or reports or file data export to determine if the system is operating correctly or meeting all applicable standards and requirements.
- Do not use data displayed in the software as a substitute for proper workplace practices or equipment maintenance.

Risk of equipment damage

Check the compliance with the following specifications:

	HTG411H	HTG411L
External safety extra low voltage power supply	24 V DC SELV +/- 10%	
Typical consumptions	7 VA	
Ethernet network communication	Ethernet - TCP/IP - RJ45/100 base-T/IEEE 802.3	
Modus network communication	RS485 Modbus RJ45	
Operating temperature	-25 to +70 °C	De -25 à +50 °C
Storage temperature	-25 to +50 °C	De -55 à + 50 °C
Humidity storage	Taux d'humidité max. de 95 % à 55 °C	
Binary digital input 1 and 2	De 15 à 27 V	-
Analogue input 4-20 mA 1 and 2	Impédance d'entrée <300 Ω	-
PT 100 input	2-wire probe - EN60751 compliance	
Binary digital output	5 to 30 V / ~ 10 mA to 3 A resistive dry contact	
Number of relay cycles	100000	
Analogue output 0-10 V	Min impedance >= 1kΩ	-
Power supply, digital inputs, digital output connection	0.75-2.5 mm^2	
Analogue input/output connection	0.2-1.5 mm^2	-
Degree of protection	IP20	
Weight	290 g	
Pollution degree	Class 3	Class 2
Altitude	Max. 2000 m	
Micro SD card	Class 10 Industrial type	
USB port 1 (front face)	USB 2.0 Type A standard connector	
USB port 2 (on the bottom of the product)	USB 2.0 Type A standard connector	

3 General information

Introduction

This chapter contains information regarding features and technical aspects of the energy monitoring server. The inputs and outputs of the energy monitoring server, the different types of measuring devices that can communicate with the energy monitoring server and central terms regarding the utilization of the energy monitoring server are explained.

The HTG411H is delivered with a µSD card of 4 Gbyte capacity. The HTG411L is the HTG411H with a slightly different hardware not equipped with any input or an analogue output. It is also less resistant to high temperatures and has only 512 Mo of RAM instead of 2 Go.

Chapter contents

3. 1 Main features

These are the main features of the energy monitoring server:

- Multi-energy management
- Power quality visualization
- Alarms and pre-alarms generation

The energy monitoring server enables these features using the following functions:

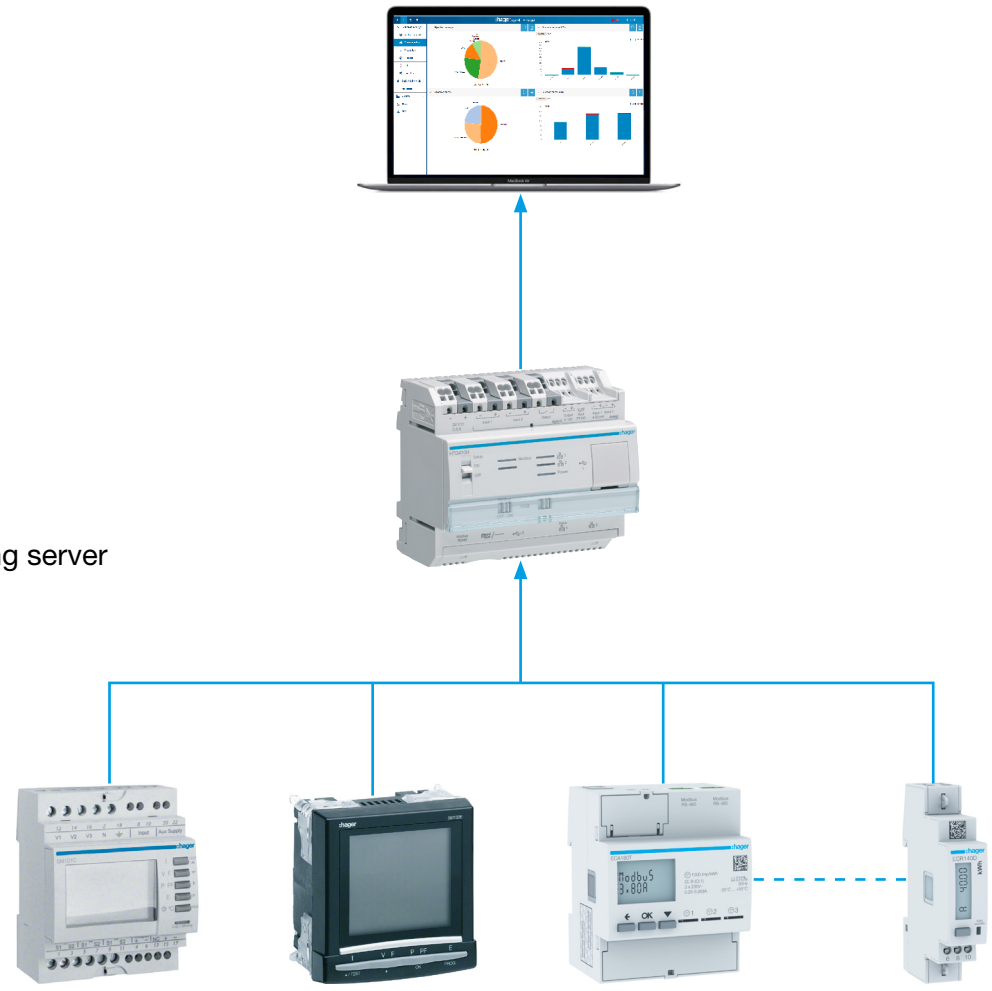
- Fieldbus management, i. e. real-time data is transferred by connected measuring devices
- Data storage (depending on the capacity of the embedded µSD card)
- Exporting data in PNG and CSV file formats
- Two Ethernet ports for local and remote operation
- Four supported protocols: HTTP (Hypertext Transfer Protocol), FTP (File Transfer Protocol), SMTP (Simple Mail Transfer Protocol), NTP (Network Time Protocol)
- Configuration via embedded web pages (system and products)
- Operation via embedded web pages (real-time, dashboard, historic)
- Alarm management
- Commissioning reports
- Maintenance (backup, product update, firmware update)
- user management with different user right levels
- EIEC class simulation tool in regards to IEC60364-8-1 international standard concerning energy efficiency for LV electrical network

The energy monitoring server has 2 operating modes:

- **Standalone mode :** the server remains in control of the installation and reads the measurements from the communicating products connected to **it (Energy meters, PMD, MCCB Energy, etc...).**
- **Supervised mode :** the server is used as a gateway to transmit data to the stream energy management software. Several functions in the menus are then not available.

Standalone mode

The energy monitoring server acts as an autonomous server.

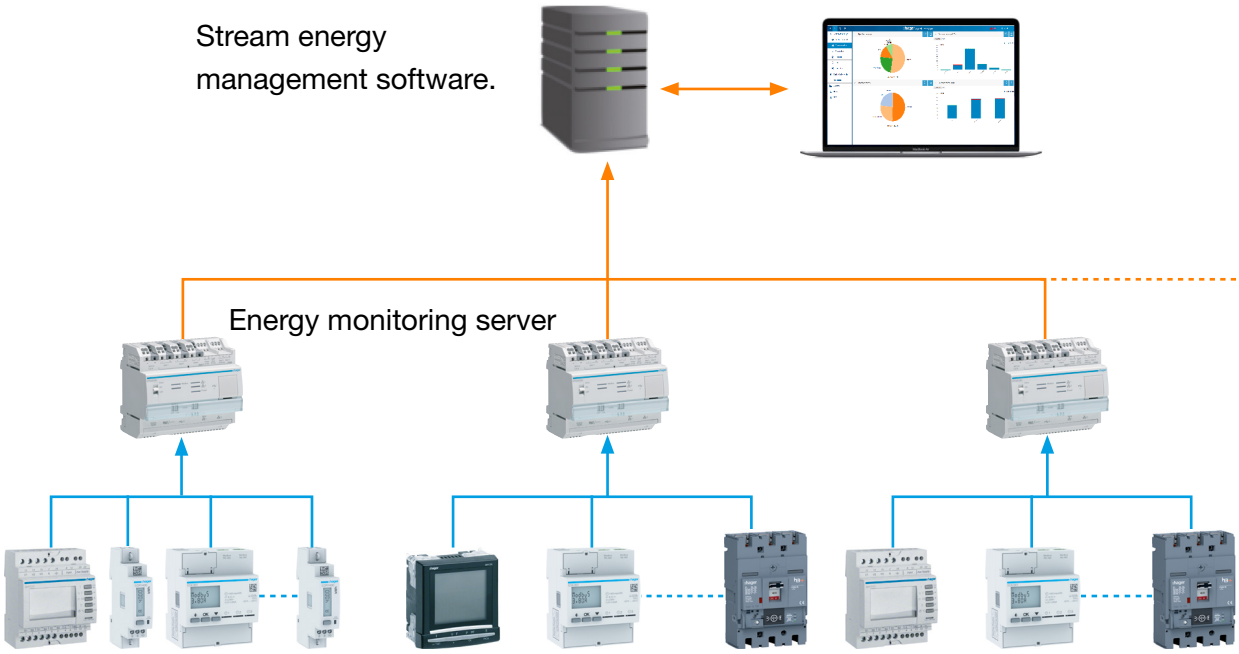


The energy monitoring server is the energy management server incorporated in the cabinet. This device collects data from the various devices (measurements, settings, alarms etc.) over fieldbus protocols

Acting as a server, it provides web services for purposes of administration, configuration of the managed perimeter (zones, usage rights etc.) and the display of collected data.

Supervised mode

The energy monitoring server is monitored by the stream energy management software.



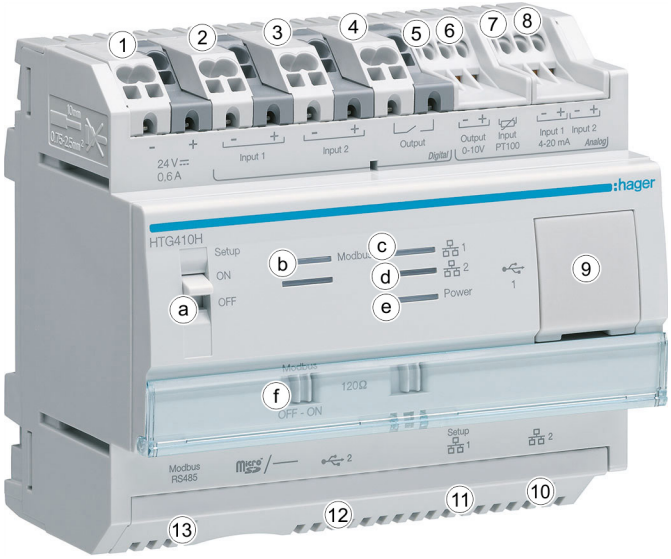
Communicating devices

In supervised mode, the energy monitoring server can be connected to its supervisor.

The stream EMS software monitors the energy monitoring server to assist the installer responsible for configuring the whole installation. All configuration tasks are centrally monitored by the stream EMS software and the energy monitoring server acts as a gateway.

3. 2 Front view

The energy monitoring server disposes of the following inputs/outputs, switches and LED elements:



Inputs and outputs

No.	Description	Application
1	24 V/DC SELV	Power supply
2 & 3	Digital input 1 & 2*	Read pulse count of a product sub-meter or states (ON/OFF)
4	Normally open relay (24 V/DC, 3A)	Command process
5	0 - 10 V output*	Proportional command
6	PT 100 input	Temperature probe
7 & 8	Analogue input 1 & 2 (4-20 mA)*	Read any analogue measurement
9	USB 2.0	Connection for USB sticks (e.g. Backup), Wi-Fi or Ethernet interface for configuration
10	Ethernet port 2	Ethernet connection to the user interface
11	Ethernet port 1	Ethernet connection to the user interface and connection for setup/first configuration
12	USB 2.0	Connection for USB sticks (e.g. Backup)
13	RS 485 Modbus	Read Modbus RTU products out

*Not available on HTG411L

Refer to the installation guide for more detailed information concerning inputs and outputs. **Switches**

Description	Application
Setup (a)	ON: After a reboot the energy monitoring server enters setup mode (see p. 23) OFF: After a reboot the energy monitoring server enters standard mode
Modbus 120 Ω (f)	ON: Activate the Modbus terminating resistor of 120 Ω OFF: Deactivate the Modbus terminating resistor of 120 Ω

Refer to the installation guide for more detailed information concerning the Modbus 120 Ω switch.

LED information

Colour & state	Status	Solution
Modbus (b)		
Green blinking	Connected and functional network.	/
Red fixed	Communication fault.	Check the Modbus fieldbus connection.
Red blinking	Communication fault.	Check the parameters of the Modbus link (speed, parity or number of stop bits) Disable devices on the bus that do not communicate (time-out).
Off	No communication network detected, Modbus is off.	Define a Modbus RTU product that communicates with the energy server.
Network 1 (c) / 2 (d)		
Green fixed	Network detected and IP address assigned	/
Green blinking	In connection	/
Red fixed or blinking	Communication fault.	Check the connection.

Colour & state	Status	Solution
Power (e)		
Green fixed	Functional product.	/
Green or orange blinking	Product initialisation.	Wait for initialisation.
Red blinking	Product enters into power reserve.	Wait until the shutdown progress.
Red or orange fixed	Software startup problem.	Perform a reset by switching off the power supply. Wait for the LED to get off before switching on the power supply again.
Off	Product not powered.	Check the power supply.

NOTICE
When the product is turned on, the LED flashes only after about 5s.

3. 3 Architecture

Conditions

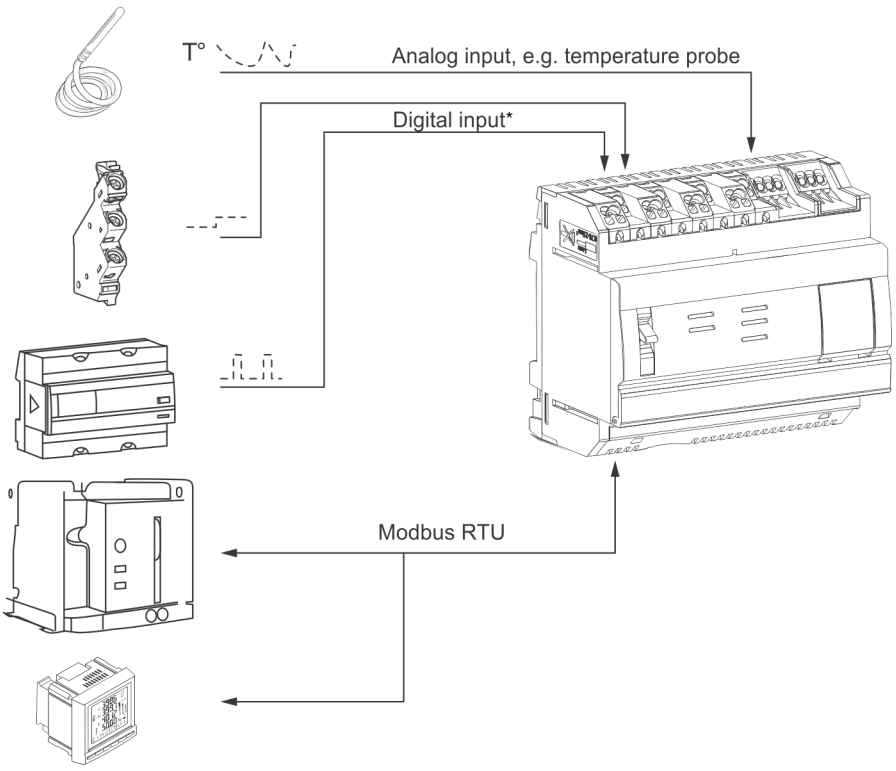
The energy monitoring server is dedicated for small and medium size commercial buildings (e. g. hotels, shops, offices).

To install the energy monitoring server the following is needed:

- the 24 V/DC power supply
- the products to communicate with the energy monitoring server
- an active fieldbus (Modbus RTU + Modbus TCP)

Overview of measuring devices

The following figure shows the measuring devices that could be present in the architecture:



Digital and analogue measuring devices*

The following sorts of digital and analogue measuring devices are able to communicate with the energy monitoring server:

Type of application	Input
Auxiliary contact of a product (MCB, MCCB, door contact) delivering 24 V/DC	Digital 1 & 2
Analogue sensors (current, voltage, frequence, others)	Analogue 1 & 2

Energy sub-meters (gas, water, pressure) with pulse output are able to communicate via:

*Not available on HTG411L

- digital input*
  or
- Modbus RTU if they are linked to an EC700 measuring device (see below).

Modbus RTU / Modbus TCP devices

The following measuring devices are able to communicate with the energy monitoring server on Modbus RTU / Modbus TCP:

Product	Article no.
Energy meters single phase:	
40 A direct	ECR 140D
80 A direct	ECR180D, ECA180D, ECR181D, ECA181D
Energy meters 3ph:	
5A direct	ECR 300C, ECR301C, ECA300C, ECA301C
80A direct	ECR380D, ECR381D, ECA380D, ECA 381D
100A direct	EC366, EC367M
125A direct	ECR310D, ECR311D, ECA310D, ECA311D
Via current transformer:	
80A	ECR180T, ECA180T
100A	EC376, EC377M
Multifunction meters:	
PMD (Power measurement device) with integrated Modbus	SM101C
PMD with associated Modbus module	SM102E + SM210
	SM103E + SM211/SM214
ACB (Air Circuit Breaker)	HWTxxxx with release unit AGR21, AGR22 ou AGR31
	HW1xxxxxE
ATS Controller	HZI825, HZI855
PFC (Power Factor Correction)	SPC06HM
Pulse concentrators	EC700
NH_Measurement_Adapter	LZMxxx
Energy circuit breaker (MCCB)	HHTxxxxxxx
Electric vehicle charging station (with MID meter) **Communicates only via Modbus TCP**	XEV1R22T2, XEV1R22T2TE/ER, XEV1R22T2M3, XEV1R07T2M1, XEV600C, XEV601C, XEV653C

The energy monitoring server is able to communicate with up to 31 measuring devices on Modbus RTU.

*Not available on HTG411L

3. 4 Important terms

To enable and maintain the multi-energy and power quality management, data regarding several aspects of the monitored building is needed.

The following terms play an important role within the energy monitoring server:

Term	Meaning
Building	Location of the electrical installation
Zone	Part or area of a building or infrastructure and its equipments considered for energy efficiency. Zone represents a surface area in m^2 or a location where the electrical energy is used, e. g. a - Floor, - Room, - Window area or inner area of the building (without windows), - Swimming pool (inside or outside the building), - Parking (external), - Kitchen in a hotel.
Usage	Type of application for which electrical energy is used, e. g. lighting, heating, motor, hot water, hvac (heating, ventilation and air conditioning)
Cabinet	Switch cabinets in the building like low-voltage main distribution board, sub distribution board etc.
Source	The origin of the electrical energy monitored by a product, such as Main Grid, Wind, Solar, Genset, or Biomass

NOTICE

If you wish to visualise the data collected from a measuring device based on the perimeter it monitors, you need to allocate it to a defined

- zone,
- usage and
- source.

Thus, the energy monitoring server is able to visualize the values of the measuring device.

4 Commissioning of the energy monitoring server

Introduction

This chapter provides information regarding step-by-step commissioning of the energy monitoring server. This includes the technical equipment to be used (configuration machine and compatible web browsers) and the different ways of connecting the energy monitoring server to the configuration machine. Furthermore, the chapter contains a note about the recycling of the energy monitoring server.

Chapter contents

4. 1 Compatible browsers

Configuration machine

To configure the energy monitoring server use one of the following:

- computer (desktop and laptop)
- tablet

Hager recommends to use a computer.

The energy monitoring server requires a web browser that is compliant with HTML5.

Desktop and laptop computers

Hager recommends to use Chrome, Firefox and IE from the version 10 and above.

4. 2 Setup mode

Connection

The setup mode is used to connect the energy monitoring server with the computer via the

- Ethernet port 1
  or
- USB to RJ45 Ethernet interface on the front USB port
  or
- USB to Wi-Fi interface on the front USB port.

Proceeding

In order to switch the energy monitoring server to setup mode proceed as follows:

Step	Action
1	Set the **Setup** switch of the energy monitoring server to position **ON.**
2	Turn off the power supply for more than 10 seconds.
3	Turn on the power again.

TCP/IP configuration

The setup mode allows a special TCP/IP configuration where the energy monitoring server acts as a DHCP server. In this mode, network connectors are configured with following static addresses:

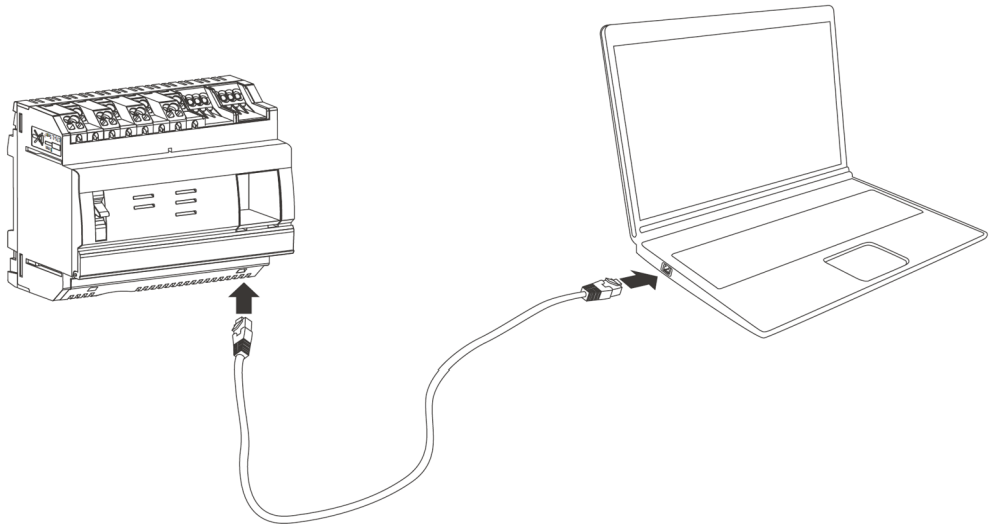
Network connector	IP address
Ethernet port 1	192.168.0.1
USB to RJ45 Ethernet interface	192.168.2.1
USB to Wi-Fi interface	192.168.3.1

A DHCP server delivers an IP address.

NOTICE
The setup mode is only used temporarily for the first configuration or a special maintenance operation.

4. 3 Setup connection using Ethernet Port 1/Ethernet cable

An Ethernet cable (direct or crossed one) connects the energy monitoring server (port 1 only) directly to the computer.



The setup mode is activated. The energy monitoring server acts as the DHCP server.

NOTICE

Do not connect the Ethernet port 1 to an existing network if the setup mode is activated. The embedded DHCP and the static address could come into conflict with the existing network.

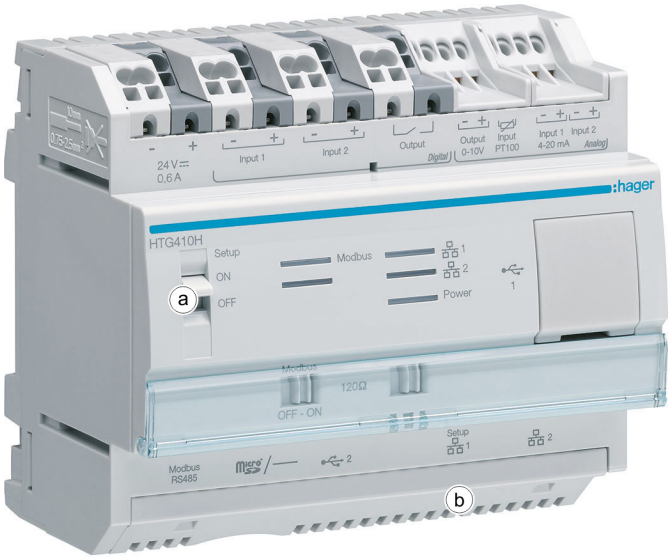
We recommend to use the Ethernet port 1 only for setup. To connect your network with the energy monitoring server use only Ethernet port 2.

4. 4 First configuration

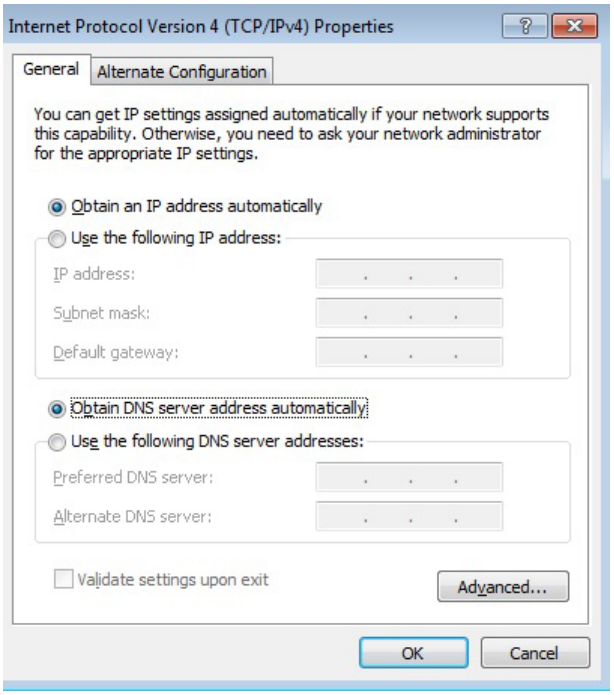
During the installation, most of the time the LAN (Local Area Network) connection is down, is not established or the energy monitoring server is not physically linked to it. Wait until the installation is finished, before you try to establish the first connection to the energy monitoring server.

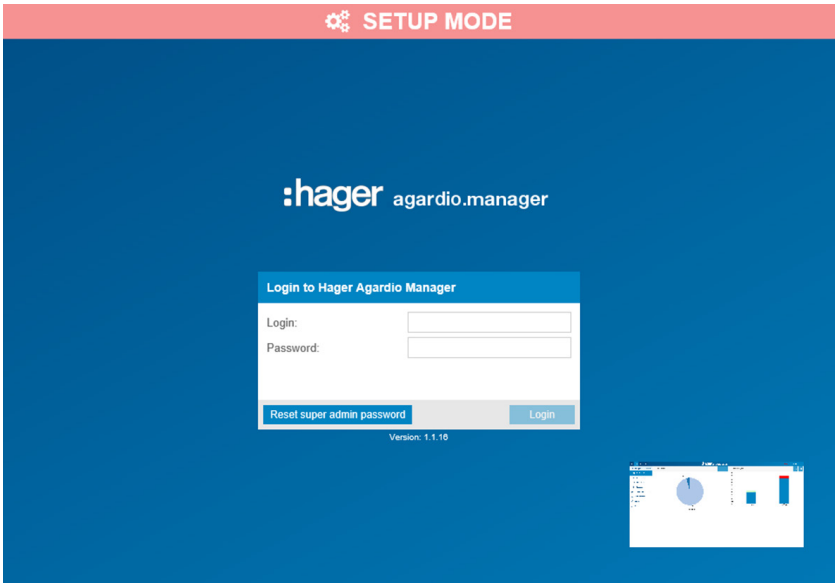
During the setup phase, never connect the energy monitoring server to the LAN but only to a local computer using Ethernet cable.

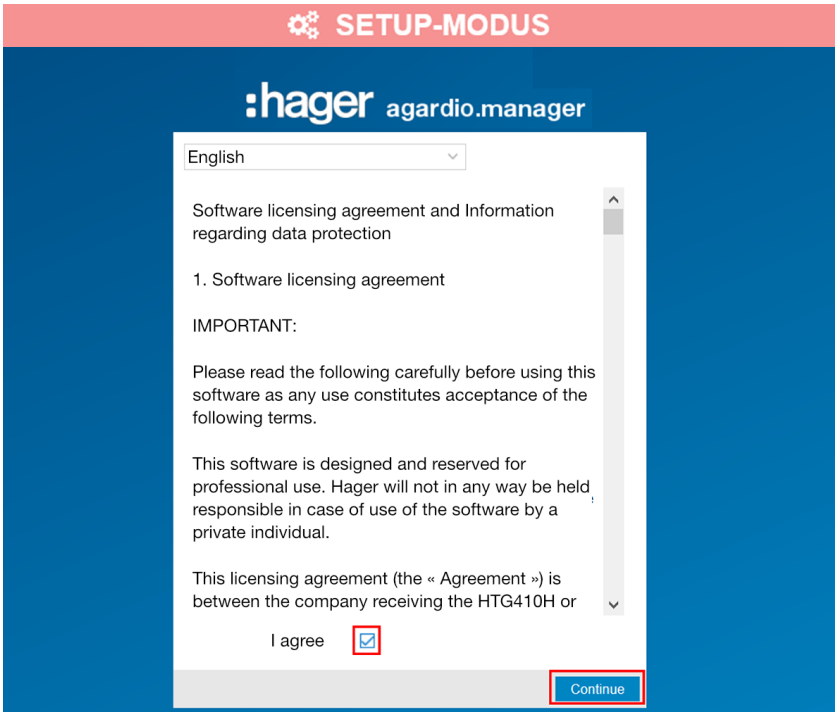
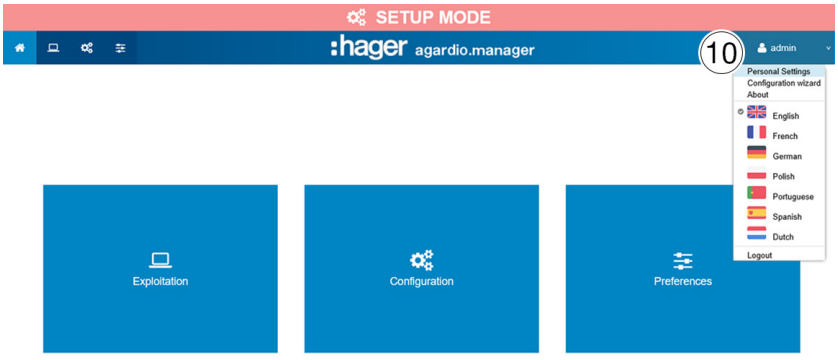
In accordance with your IT network administrator, connect to the energy monitoring server as follows:

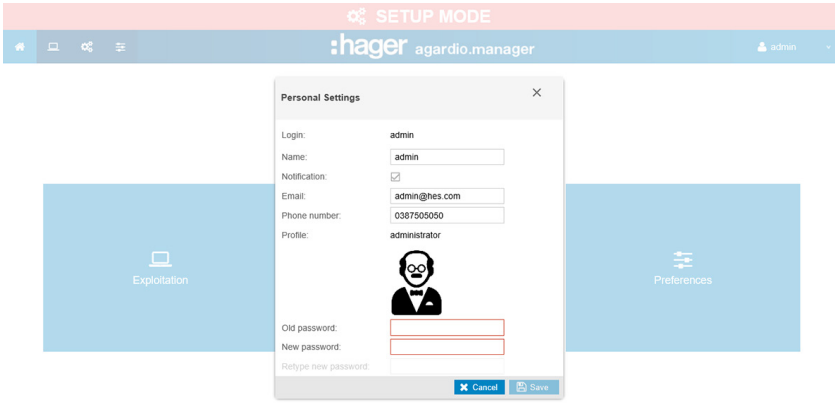
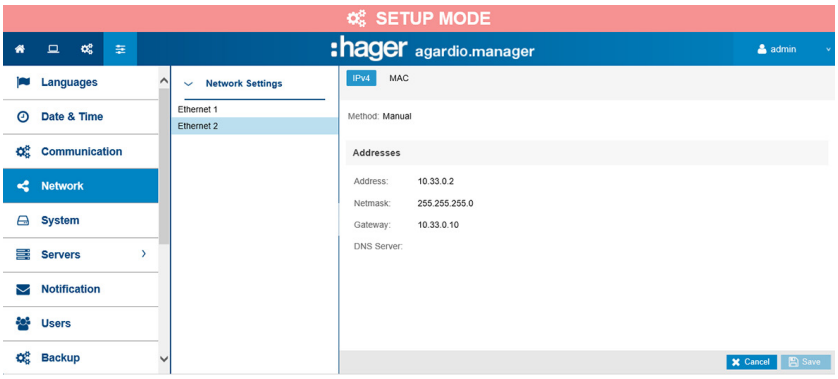


Step	Action
Commissioning in setup mode	
1	Set the **Setup switch** (a) of the energy monitoring server to position **ON**.
2	Turn off the power supply for more than 10 seconds and wait untill the **power LED** gets off.
3	Turn on the power supply and wait for the boot phase of the energy monitoring server. **Result**: The **Power LED** starts blinking and then is illuminated permanently. The setup mode is activated. **Note**: If the **Power LED** turns to red, then check if a SD card is inserted into the energy monitoring server and do a reboot (Go back to Step 2).
4	Connect an Ethernet cable to the energy monitoring server (b) and the computer. Hager recommends to use the **RJ45 Setup port Ethernet port 1** (see p. 24).

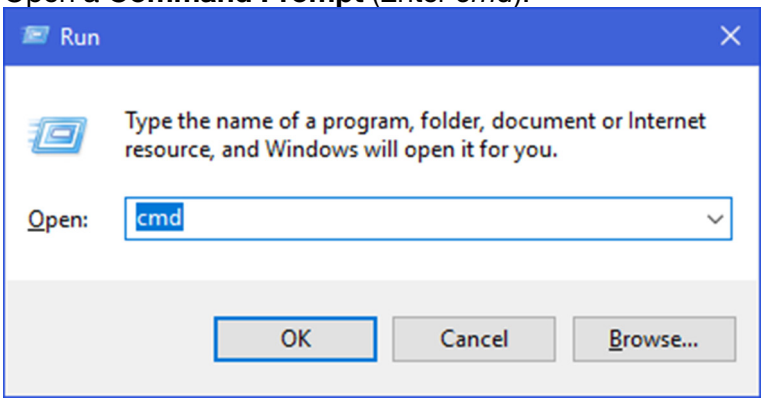
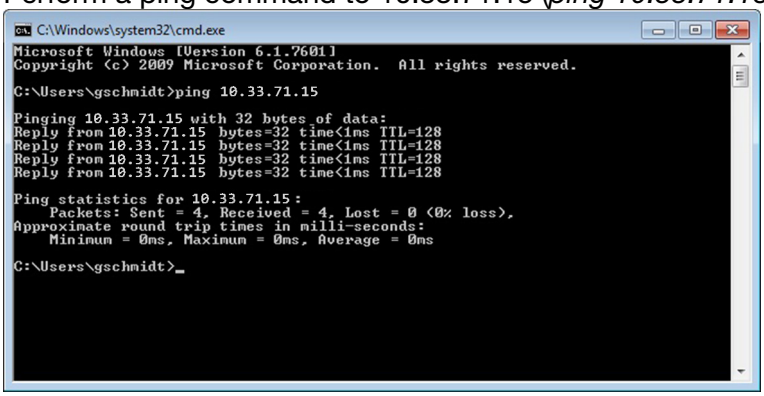
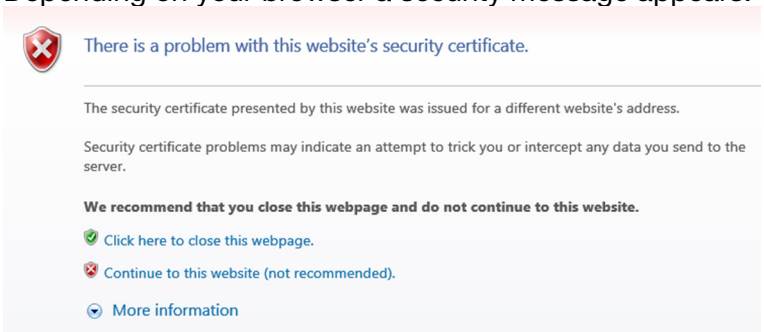
Step	Action
5	Configure the IP address of the computer (Exp. for Windows 7 / 10): ❶ Open the **Control panel**. ❷ Choose **Network and Sharing Center**. ❸ Click **Change Adapter Settings**. ❹ Right-click the activated Ethernet connection. ❺ Choose **Properties** from the context menu. ❻ Double-click **Internet Protocol Version 4 (TCP/IPv4)**. ❼ Configure DHCP = ON (**Obtain an IP address automatically and Obtain DNS server address automatically**).  **Note**: In this phase, the energy monitoring server acts as a DHCP server.
6	Open a web browser.

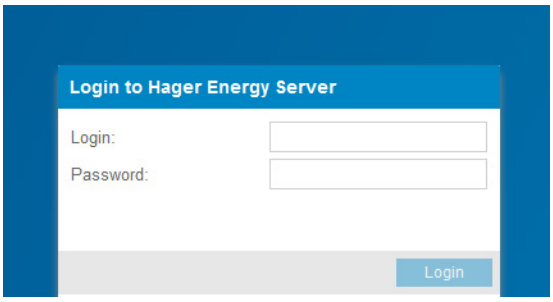
Step	Action
7	Enter the IP address of the energy monitoring server into the address bar of the browser (*https://192.168.0.1/* if you are using Ethernet port 1) and open the Web application delivered by the energy monitoring server. **Result**: The Login screen of the user interface is displayed: 

Step	Action
8	Enter the login name (default: *admin*) and password (default: *admin*). **Note**: Login name and password are case-sensitive, i. e. you have to differentiate between upper and lower case letters. Click **Login** to start the user interface of the energy monitoring server. **Result**: The license screen is displayed:  For the complete licence text (see p. 153).
9	Click **I agree** and **Continue** to accept the license agreement of the energy monitoring server. **Result**: The start screen of the user interface is displayed: 
10	Click the generic functions and choose **Personal settings.**
11	Click **Change password**.

Step	Action
12	Enter the **Old password** (*admin*), a new **Password** and **Retype new password** for the super *admin* user, e. g. *Hager2016.1*.  Afterwards click **Save**. Note: ❶ The new password has to contain at least one digit, one upper case letter, one lower case letter and one non-alphanumeric character (e. g. !, ?, . -, _, $, &). The password needs to consist of at least 8 characters and may not contain the login name. Exp. for a correct password: *Hager2016.1* or *_Hager2017* ❷ Make sure to remember the new password of the super *admin* user.
13	To configure the energy monitoring server for your LAN, click the **Preferences** menu.
14	Click **Network**. Afterwards choose **Ethernet 2**.
15	Enter the **IP address**, the **Netmask** and the **Gateway** of the energy monitoring server manually (**Method**: *Manual*) within the IP range of your LAN, e. g. *10.33.71.15*. Afterwards click **Save**.  **Note**: Make sure to remember the new IP address of the energy monitoring server.

Step	Action
16	Set the **Setup switch** (a) of the energy monitoring server to position **OFF**. **Result**: The following message is displayed: 
17	Turn off the power supply for more than 10 seconds.
18	Turn on the power supply and wait for the boot phase of the energy monitoring server. **Result**: The **Power LED** starts blinking and then is illuminated permanently. The setup mode is deactivated.
Migration into your LAN	
19	Disconnect the Ethernet cable from **Ethernet port 1** between computer and energy monitoring server. Connect the computer and the energy monitoring server via **Ethernet port 2** to your LAN.
20	Enter the IP address of the computer manually within the IP range of your LAN, e. g. 10.33.71.15*:* ❶ Open the Control panel. ❷ Choose **Network and Sharing Center**. ❸ Click **Change Adapter Settings**. ❹ Right-click the activated Ethernet connection. ❺ Choose **Properties** from the context menu. ❻ Double-click **Internet Protocol Version 4 (TCP/IPv4)**. ❼ Configure DHCP as follows: **Use the following IP address:** for example: 10.33.71.50 **Obtain DNS server address automatically**

Step	Action
21	Check the IP communication between the energy monitoring server and the computer within your LAN as follows (Exp. for Windows 7 / 10): ❶ Open a **Command Prompt** (Enter *cmd*).  ❷ Perform a ping command to 10.33.71.15 (*ping 10.33.71.15*).  **Note**: Contact your IT network administrator if the ping is not responding.
22	❶ Enter the new IP address of the energy monitoring server into the address bar of the browser (*https://10.33.71.15/*) and press **Enter**. ❷ Depending on your browser a security message appears:  ❸ Click "**Continue to this website (not recommended)**"

Step	Action
23	 Enter the login name *admin* and the new super *admin* password.
24	Click **Login** to start the user interface of the energy monitoring server. **Result**: The start screen of the user interface is displayed. The energy monitoring server is able to work in your personal surrounding with the new settings.
25	Configure the energy monitoring server. The easiest way is to let the Configuration wizard (see p. 44) guide you.

NOTICE

During the setup phase, never connect the energy monitoring server to the LAN but only to a local computer using Ethernet cable.

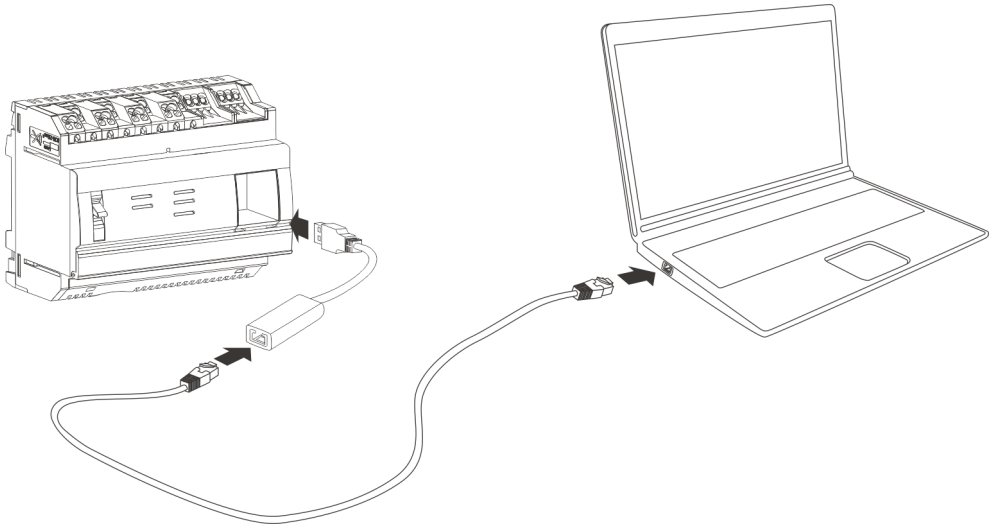
Store the new password of the super *admin* user in a secure location. If you lose the password of the super *admin* user, the only way to reconnect to the energy monitoring server is to

❶ switch the energy monitoring server to setup mode (see above: Step 1 - 3)

❷ reset the super *admin* password (see above: Step 7; Enter the **login** name (*admin*) and click **Reset super admin password** to set the password of the super *admin* user back to the default value *admin,* whatever it was before.)

❸ restart the energy monitoring server (see above: Step 16 - 18)

4. 5 Alternative setup connection using USB to RJ45 Ethernet interface



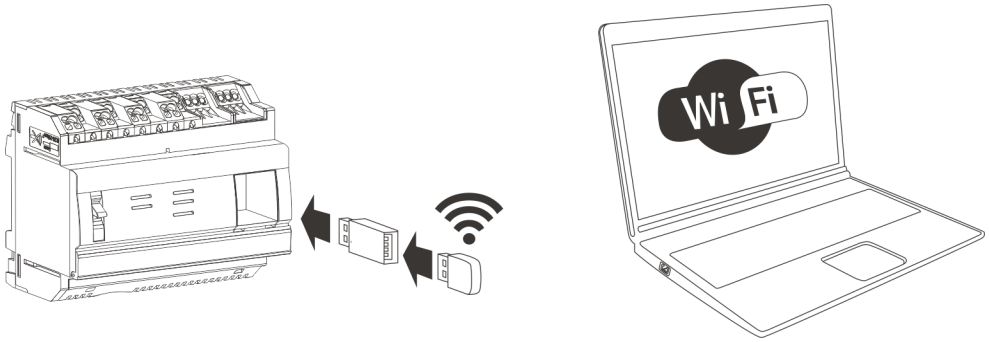
The HTG457H is a USB to RJ45 Ethernet interface, especially suitable for local connection with the energy monitoring server using a computer. The HTG457H allows direct connection on the front panel, avoiding any removing of a cover.

The USB port acts as an *Ethernet over USB*. This configuration is used when the access to the RJ45 Setup port - Ethernet port 1 is not possible.

Step	Action
1	Set the **Setup** switch of the energy monitoring server to position **ON**.
2	Reset the energy monitoring server by switching off /on the power supply.
3	Wait until the **Power** LED is fixed green.
4	Connect the USB port of the HTG457H to the front USB port of the energy monitoring server.
5	Connect the Ethernet port of the HTG457H to the Ethernet port of the computer with an Ethernet cable (twisted or not).
6	Configure the IP address of the computer so that the IP address is assigned automatically.
7	Open a web browser.
8	Enter *https://192.168.2.1/ i*nto the address bar of the browser and open the Web application delivered by the energy monitoring server.

For more detailed information (see p. 25).

4. 6 Alternative setup connection using USB to Wi-Fi interface



The HTG460H WLAN dongle is a USB to Wi-Fi interface, especially suitable for the connection without wire with the HTG411H/HTG411L. It allows direct connection on the front panel. This is the easiest mean to connect a computer or a tablet.

Step	Action
1	Set the **Setup switch** of the energy monitoring server to position **ON**.
2	Reset the energy monitoring server by switching off /on the power supply.
3	Wait until the **Power LED** is fixed green.
4	Connect the USB port of the HTG460H to the front USB port of the energy monitoring server.
5	Configure the IP address of the computer so that the IP address is assigned automatically (DHCP).
6	Use the following WIFI code to connect your computer with the energy monitoring server: *HagerHTG410H*
7	Open a web browser.
8	Enter *https://192.168.3.1/* into the address bar of the browser and open the Web application delivered by the energy monitoring server.

For more detailed information (see p. 25).

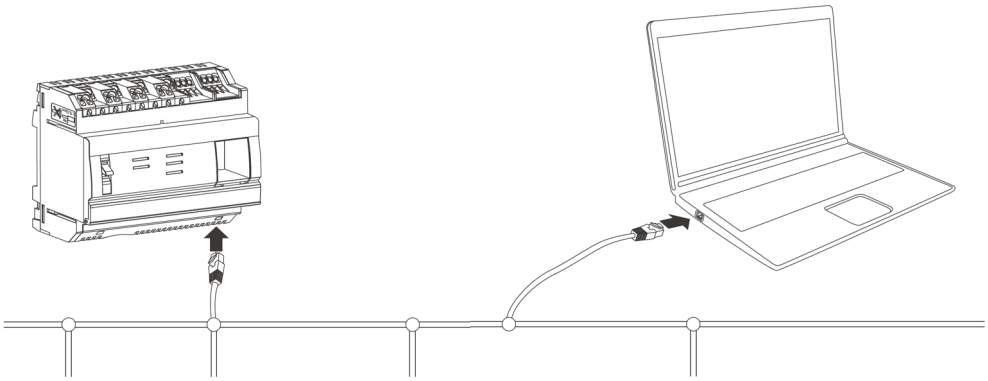
NOTICE

Ensure that the **RJ45 Setup port -Ethernet 1** (see p. 24) is not used simultaneously to one of the alternative setup connections. In setup mode the energy monitoring server activates its DHCP server on RJ45 Setup port - Ethernet 1.

4. 7 Connection with Ethernet backbone

The connection with Ethernet backbone is the appropriate installation as soon as the energy monitoring server is working properly. The energy monitoring server is then linked to the LAN of the site by Ethernet 2.

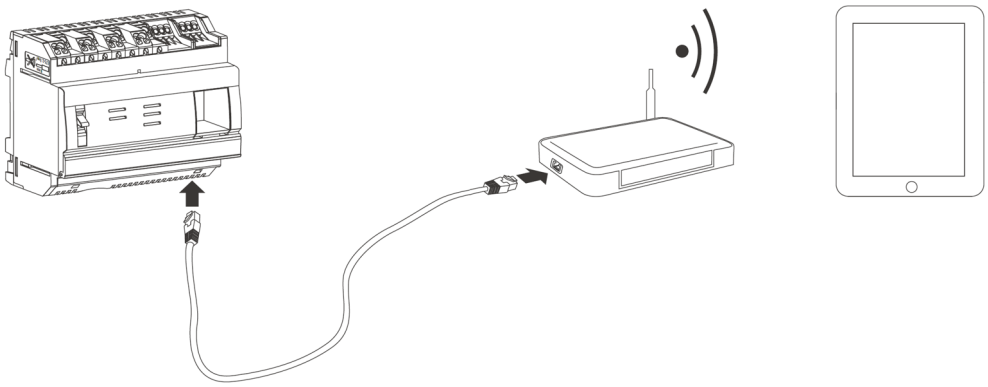
Configuration is still possible even during standard mode.



The setup mode is deactivated. DHCP service is delivered by the site infrastructure.

4. 8 Connection with Ethernet Wi-Fi access point

A Wi-Fi access point is installed near the energy monitoring server and an Ethernet cable is connected to the access point and the energy monitoring server. The Wi-Fi access point can be configured as a DHCP server.



The setup mode is deactivated. The energy monitoring server can be configured with static address or with dynamic address.

4. 9 Recycling

For protecting the environment, dispose of the energy monitoring server according to the legal requirements.

Disposal has to be carried out by qualified personnel.

5 General information about the user interface

Introduction

This chapter contains overall information regarding the user interface of the energy monitoring server. On the one hand, the screen elements, generic functions and symbols are explained. On the other hand, the chapter gives an overview of all menu items including a short explanation. In addition a brief instruction explains how to use the configuration wizard and how to perform typical tasks.

Chapter contents

5. 1 Structure

Start screen

If you log in into the user interface of the energy monitoring server, the start screen is displayed:

Depending on the rights the administrator has given to your user, one or several menus are displayed.

If your user profile is...	then the following menu(s) are displayed:
Viewer,	**Exploitation**.
Configurator,	**Exploitation** and **Configuration**.
Administrator,	**Exploitation**, **Configuration** and **Preferences**.

Select a menu by clicking the corresponding

- small icon in the status bar
  or
- big icon in the middle of the screen.

Screen elements

1 Status bar
2 Menu bar
3 Generic functions

If any alarm is active, a warning icon is displayed left to the generic functions.

Depending on your profile, the status bar shows the following icons:

Icon	Description
	Click to display the start screen.
	Click to display the menu bar of the **Exploitation** menu**.**
	Click to display the menu bar of the **Configuration** menu.
	Click to display the menu bar of the **Preferences** menu.
	Click the warning icon to display messages and alarms at the **Events** menu item (see p. 143).
	Information: No backup available.
	Information: A new version of software will be installed at the next start.

The menu bar contains the menu items of the corresponding menu. Click a menu item to open it.

The status bar enables you to use the following generic functions:

Function	Description
Personal settings	Modify the user account information: - Last name, - Choice of sending notifications, - The e-mail address, - Telephone number, - The user password.
Configuration wizard	Navigate through the menu items that need to be filled with data to use the energy monitoring server
About	Show the current software version of the energy monitoring server and legal declarations about used open source programming tools.
All available languages	Choose your working language
Logout	Log out of the user interface

NOTICE
For data security and data safety, log out of the user interface when you have finished working with the energy monitoring server. It is necessary to prevent other users from using your profile.

Information missing

If you try to save an action by entering invalid information or without providing the necessary information, a red exclamation point or red border indicates where to add the missing information.

Additional functions

Within the menu screens this icons may be displayed:

	**Reload data** Click this icon to reload the measurement values.
	**Download as image** Click this icon to download a graphic as *.png graphic.
 or 	**Save as spreadsheet** Click this icons to download a spreadsheet with the displayed data as a *.csv file.

5. 2 Overview of all menu items

Menu(s) for certain users

The user interface of the energy monitoring server is divided into three menus:

- **Exploitation**
- **Configuration**
- **Preferences**

- Use **Exploitation** if you are a facility manager or a member of the maintenance team.
- Use **Preferences** if you are a system integrator.
- Use **Configuration** if you are an electrician or system integrator.

Exploitation menu

The **Exploitation** menu includes the following menu items:

Menu item	Description
Energy management	Visualize indicators for energy management and efficiency graphically - **Dashboard**: Charts of energy distribution and energy trends by energy sources and consumption. Charts of non-electric energy distribution, total pricing, relative consumption and download function. - **Consumption**: Charts of the energy consumption and energy trend per usage / zone, download function - **Sources**: Charts of the energy sources (i.e. Solar panels) and energy trend per source type, download function - **Products**: Complete list of energy indexes and relative consumptions of all measuring devices. - **Pricing:** Graphical representation of estimated cost per energy source and cost trends per week and month. - **W.A.G.E.S*:** Functionality showing the varying measures related to different non energetic services used for measuring various consumptions *(**W**ater, **A**ir, **G**as, **E**lectricity, **S**team)

Menu item	Description
Power quality	Visualization of power quality indicators - **Regular**: Tables of Phase to Phase / Neutral Voltage, Current per Phase and Frequency - **Advanced**: Tables of Power factor and THD (V, U & I) in percentage of the nominal value. Charts of the different harmonics (V, U & I)
Protection	Visualization of information on protection products. - **Dashboard**: Overview of the protection products on the dashboard. - **Products**: Visualization of the settings for the selected protection products. - **Maintenance:** Overview of the maintenance information for protection products.
Measurements	Displays measurement data by product - **Trends History**: Graphical representation of saved measured values from the different measuring devices - **Real-time**: Table or figure of current measured values from a chosen measuring device. - **Real-time multi-product**: Table or figure of current measured values from several selected measuring devices. - **Compare**: Graphical comparison of a service for a measuring device between two different time periods - **Energy**: Graphical display of energy values measured and recorded from different measuring devices.
Events	View of active events or all events occurring on the system (alarms, tests, logins/logouts, creation of new users...)
EIEC	Visualize the electrical energy efficiency class EIEC (chart or grid view)

Configuration menu

The **Configuration** menu includes the following menu items:

Menu item	Description
Building (see p. 20)	Update the location of the installation. Create, update and delete entries for - **Zones**: Parts/areas of the building - **Usages**: Type of application for which electrical energy is used (lighting, heating, ...) - **Cabinets**: Switch cabinets in the building

Menu item	Description
Products	Create, update and delete entries for the measuring devices that are communicating with the energy monitoring server
Events	Create, update and delete definitions for alarms; occurring events are listed at the **Exploitation** menu.
EIEC	Set the EIEC parameters for the building
Data management	Update refresh frequencies for saving the current values of the measuring devices.
BACnet	Configure BACnet objects.
Publisher	Choosing the configurated products and their associated services to be published (sent to the server). This publication can be done periodically regardless of the mode or immediately in configuration mode only.
Pricing	Set tariffs for different services according to relative consumption during the day

Preferences menu

The **Preferences** menu includes the following menu items:

Menu item	Description
Languages	Set the language for: - the application - alarm notifications - publication exports
Date & Time	Change date and time of the energy monitoring server.
Communication	Set parameters of the fieldbuses (Baud rate, parity).
Network	Configure LAN settings.
System	Set the language for: - the application - alarm notifications - publication exports
Servers	Configure server settings.
Notification	Configure the way to inform users about certain events occurring on the system.
Users	Create, update and delete users; set passwords.
Backup	Configure the backup time and FTP settings; export the backup data using USB, FTP or HTTP.
Publisher	Configure server settings for data export.
Pricing	Activation / deactivation and setting currency for pricing. Configure the export settings for prices.

Menu item	Description
Catalogue	Upload or update product plugins for measuring devices or fieldbuses which need to be configured on the energy monitoring server.
I/O	Set the 0 - 10 V output and view the relay status.
Analyzer	View status: - **Diagnosis**: Status of the energy monitoring server. - **Fieldbus**: Status of the products connected to fieldbus. - **Network**: Status of IP connection. - **BACnet**: BACnet object status.
Maintenance*	**Software update**: Upload new software versions of the energy monitoring server.
Factory reset*	Return to factory settings **Note**: All your configuration settings and data are deleted irrevocably.
About	Show the current software version of the energy monitoring server and legal declarations about used open source programming tools.

*: This menu item is only available for the super *admin* user.

5. 3 Quick start access

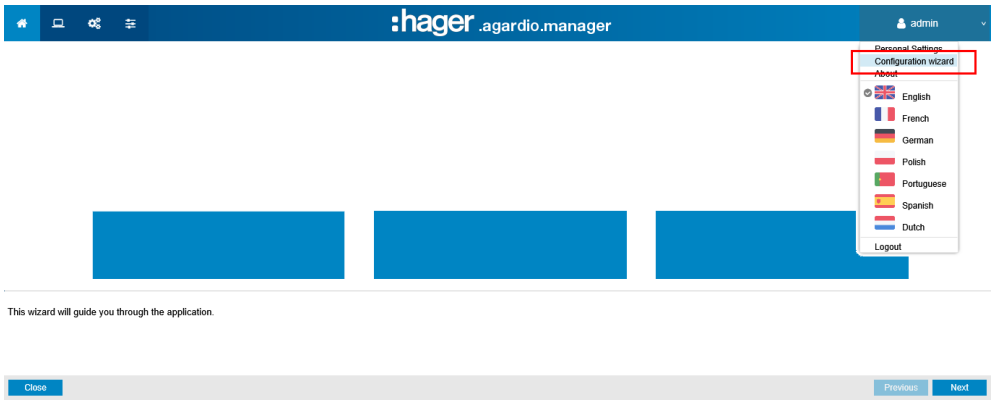
Typical tasks

You can use the quick start access to:

- configure the energy monitoring server
- define a new measuring device
- open a:
  - Dashboard,
  - Real-time view,
  - Historic view

Configure the energy monitoring server

Choose the generic function **Configuration wizard** and let it guide you through the menu items to be filled with data:

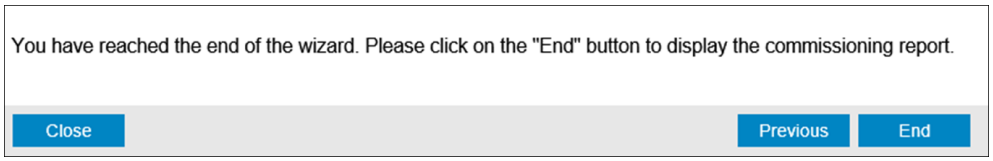


The following menu items will be displayed one after another:

Step	Menu item	Description
1	Building Link to Building (see p. 83)	Enter data regarding the location of the installation
2	Date & Time Link to Date and Time (see p. 51)	Set date and time of the energy monitoring server
3	Communication Link to Communication (see p. 52)	Set parameters of the fieldbuses (speed, parity) to fit with the parameters of the connected measuring devices
4	Network Link to Network (see p. 55)	Configure LAN settings
5	Notification Link to Notification (see p. 59)	Configure the way to inform users about events
6	Zones Link to Zones (see p. 85)	Define areas of the building

Step	Menu item	Description
7	Usages Link to Usages (see p. 87)	Define a special usage if needed
8	Cabinets Link to Cabinets (see p. 89)	Define the cabinets that are installed in the building
9	Products (see below: **Define a new measuring device**)	Define the measuring devices that are communicating with the energy monitoring server

At the end, remember to generate the commissioning report:



If you are ...	and want to ...
a system integrator	set the global system parameters (see p. 48)
an electrician or a system integrator	set / modify product or building parameters (see p. 84)
a facility manager or member of a maintenance team	visualize energy monitoring data (see p. 117)

Define a new measuring device

NOTICE
To define an new EC700 modular multifunction meter (see p. 89).

Step	Action
1	Click the **Configuration** menu .
2	Click **Products**.
3	Click to define a new measuring device that is communicating with the energy monitoring server.
4	Select the measuring device that you want to define.
5	Tick the corresponding check boxes **Storage** to select the services that you want to be logged and visualized in the menu items of the **Exploitation** menu. **Note**: The capacity of the database depends on the number of stored services. If the storage is full the oldest values will be overwritten.
6	Click **Next**.
7	Enter the name of the new measuring device.
8	Allocate the measuring device to a zone, usage and cabinet.
9	Set the connection parameters of the product according to its fieldbus.
10	If the product type allows it, click **Identification** to test the communication between the measuring device and the energy monitoring server. **Note**: If the identification is not successful, check the fieldbus connection and the fieldbus parameters.
11	Click **Save**. **Result**: After a short moment, the new measuring device is displayed in the list of all available products.

For more detailed information (see p. 89).

Open a dashboard

Step	Action
1	Click the **Exploitation** menu .
2	Click **Energy management**.
3	Click **Dashboard/Consumption/Sources**.

For more detailed information (see p. 120).

Open a real-time view

Step	Action
1	Click the **Exploitation** menu .
2	Click **Measurements**.
3	Click **Instantaneous**.
4	Click Product and choose a **Product**.
5	Choose the **Services** that you want to visualize.
6	Click **Apply**.

For more detailed information (see p. 139).

Open a historic view

Step	Action
1	Click the **Exploitation** menu .
2	Click **Measurements**.
3	Click **Trends/History**.
4	Click Product and choose a **Product**.
5	Click Services and choose a service (**Services**).
6	Click **Additional products** if you want the same service of another product to be added in the figure.
7	Click to choose a **Start** and **End date**. Note: Always set an end date greater than the start date.
8	Click **Apply**.

For more detailed information (see p. 134).

6 PREFERENCES menu

Introduction

This chapter provides detailed information regarding all menu items of the **Preferences** menu.

The **Preferences** menu allows managing global system settings of the energy monitoring server.

NOTICE

The **Preferences** menu may only be used by the system integrator or administrator.

Chapter contents

6. 1 Overview of the menu items

The **Preferences** menu includes the following menu items:

Menu item	Description
Languages	Set the language for: - the application - alarm notifications - publication exports
Date & Time	Change date and time of the energy monitoring server.
Communication	Set parameters of the fieldbuses (Baud rate, parity).
Network	Configure LAN settings.
System	Set the language for: - the application - alarm notifications - publication exports
Servers	Configure server settings.
Notification	Configure the way to inform users about certain events occurring on the system.
Users	Create, update and delete users; set passwords.
Backup	Configure the backup time and FTP settings; export the backup data using USB, FTP or HTTP.
Publisher	Configure server settings for data export.
Pricing	Activation / deactivation and setting currency for pricing. Configure the export settings for prices.
Catalogue	Upload or update product plugins for measuring devices or fieldbuses which need to be configured on the energy monitoring server.
I/O	Set the 0 - 10 V output and view the relay status.
Analyzer	View status: - **Diagnosis**: Status of the energy monitoring server. - **Fieldbus**: Status of the products connected to fieldbus. - **Network**: Status of IP connection. - **BACnet**: BACnet object status.
Maintenance*	**Software update**: Upload new software versions of the energy monitoring server.
Factory reset*	Return to factory settings **Note**: All your configuration settings and data are deleted irrevocably.
About	Show the current software version of the energy monitoring server and legal declarations about used open source programming tools.

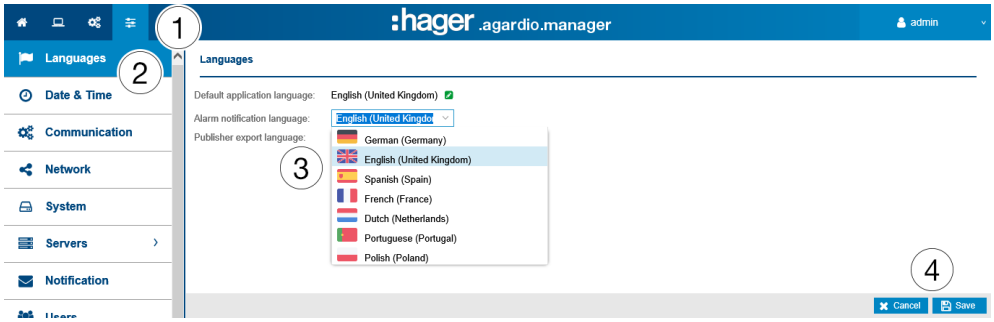
*: This menu item is only available for the super *admin* user.

6. 2 Languages

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click the **Languages** menu.
3	Select a default languages for: - The application - The alarm notifications - The Publisher export
4	Click **Save** to save the settings.

Screen to be displayed



Further information

At the next login the login screen will appear in the selected language.

To change the language of the user interface, please select the language in the **Generic Functions** menu.

SUPERVISED MODE

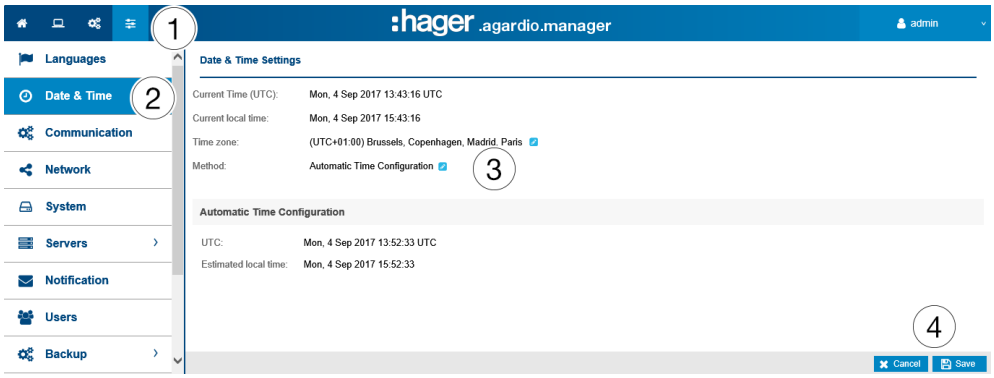
Function not available

6. 3 Date & Time

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **Date & Time.**
3	Choose a method to set date and time.
4	Click **Save** to save the changes.

Screen to be displayed



Further information

There are three ways to set the date and time of the energy monitoring server:

- **Automatic Time configuration**, i. e. time setting by synchronizing the energy monitoring server with time and date of the PC or tablet that hosts the Web browser.
- **NTP server configuration** enables the synchronizing with a NTP time server.
  In this case, please set the NTP server name (the server port is set to 123).
- **Manual configuration**, i. e. manual time setting (UTC and local).
  For a correct system time stamp, set the correct time zone in the menu.

NOTICE

The time synchronization is sent periodically by the energy server to all the slaves present on the bus.

SUPERVISED MODE

Function available

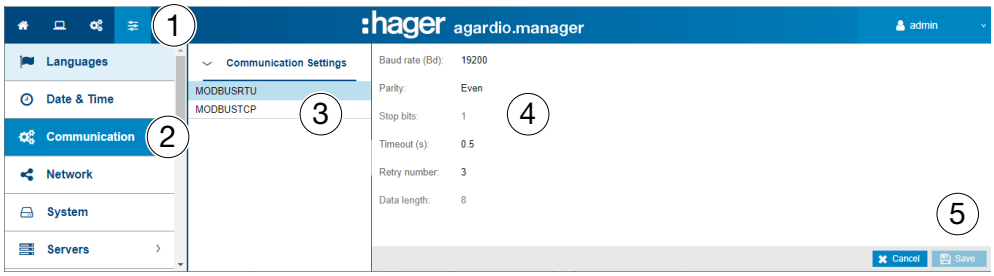
Exception : Date and time setting is not possible.

6. 4 Communication

- ModbusRTU:
Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **Communication**.
3	Click **MODBUSRTU** to display the corresponding settings.
4	Control, change or add communication settings.
5	Click **Save** to save changes.

Screen to be displayed



Further information

- **Baud rate** (default: *19200 Baud*) is the speed of the bus.
- **Parity** must be set (Even, odd or none). In case *none* is set, a second stop bit is added.
- **Number of stop** bits depends on the parity setting.
- **Time out** (default: *0,25 seconds*) refers to the maximum waiting time between the interrogation of the master (energy monitoring server) and the reply of the slaves (measuring devices connected to the bus / communicating with the energy monitoring server).
- **Retry number** is the maximum number of trials after the first attempt to obtain responses from the slaves.
- **Data length** is 8 for Modbus RTU.

NOTICE

All measuring devices (master and slaves) must have the same settings regarding baud rate and parity in order to ensure the communication. Refer to the installation guide for more detailed information.

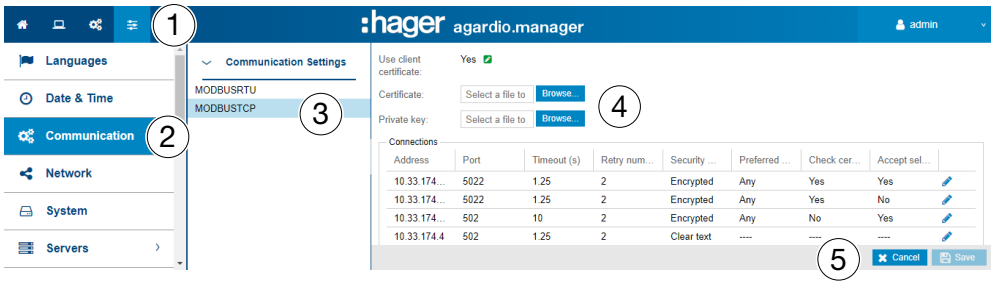
Hager recommends to use the following settings:

Baud rate:	19200 Baud
Parity:	Even
Stop bit:	1

- ModbusTCP:
Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **Communication**.
3	Click **MODBUSTCP** to display the corresponding settings.
4	Use client certificate and upload certificate and key if required.
5	Click **Save** to save changes.

Screen to be displayed



Further information

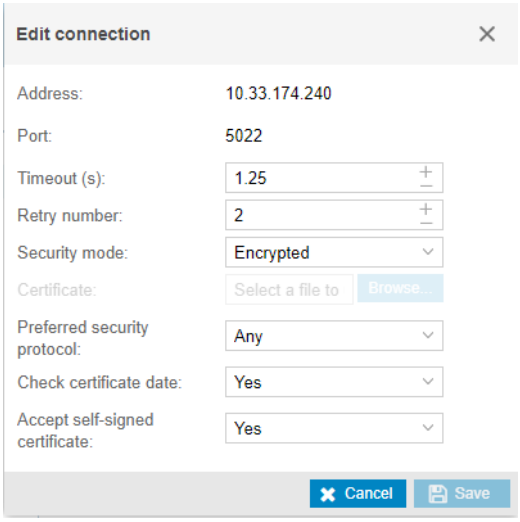
In this menu, a Certificate and Key can be uploaded, as long as the use of a client certificate has been activated (only for Authenticated connections).

- **Use client certificate** (Yes/No)
- **Certificate:** Click Select file and choose the file that contains the certificate
- **Product key:** Click Select file and choose the file that contains the product key

Configure the connection

Every MODBUSTCP connection (identified by its hostname and port) can be configured

Click to configure the connection.



Further information

- **Time out** (between 0.25 and 10 seconds) refers to the maximum waiting time between the interrogation of the master (energy monitoring server) and the reply of the slaves (measuring devices connected to the bus / communicating with the energy monitoring server).
- **Retry number** is the maximum number of trials after the first attempt to obtain responses from the slaves.
- **Security mode** (Clear text, Encrypted, or Authenticated).
- **Certificate**: the certificate used to authenticate the connection (for authenticated connections only)
- **Preferred security protocol** (Any, TLS1.1, or TLS1.2, and only for Encrypted and Authenticated connections)
- **Check Certificate date** (Yes or No, only for Encrypted connections)
- **Accept Self-signed certificate** (Yes or No, only for Encrypted connections)

SUPERVISED MODE
Function available

6. 5 Network

Steps to open the menu item

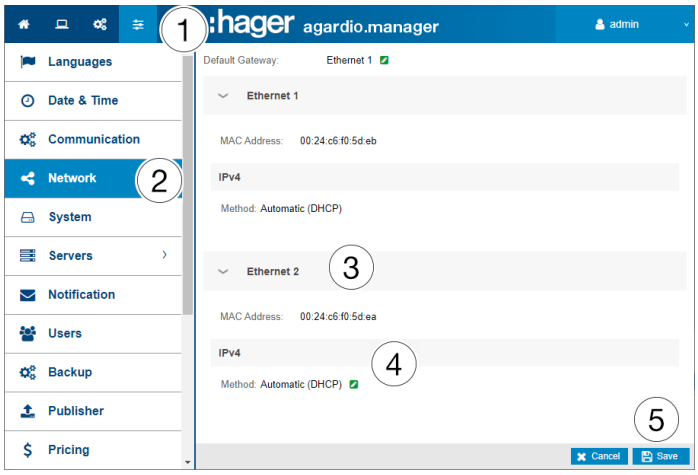
Step	Action
1	Click the **Preferences** menu .
2	Click **Network**.
3	Choose **Ethernet 1 or Ethernet 2** to control/change the corresponding network settings. Find the valid settings at - **Ethernet 1**, if the physical cable is connected to Ethernet port 1, - **Ethernet 2**, if the physical cable is connected to Ethernet port 2
4	Choose a **Method** to set the IP address.
5	Click **Save** to save changes.

NOTICE

The energy monitoring server has to be integrated into your LAN.
Contact the IT network administrator to

- organize the IT settings or
- authorize you to connect the energy monitoring server to the LAN.
  You need the following information:
  a) IP address
  b) Subnet mask
  c) Gateway adress
  d) DNS server adress

Screen to be displayed



Further information

To set the IP address (address, Subnet mask and gateway), there are two methods:

- *Automatic* means that the energy monitoring server gets the IP address automatically from a DHCP server.
- *Manual* means that address, Subnet mask, gateway and DNS server have to be set manually.

Hager recommends the manual method.

If you use the manual method, then the following parameters must be set:

Address is the IP-address of the energy monitoring server within the LAN.

Netmask represents the settings which part of the IP address

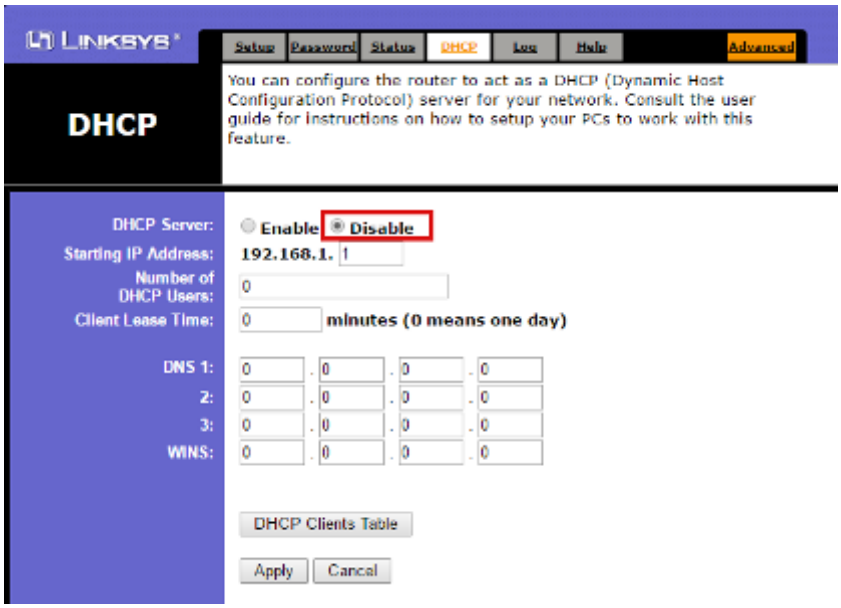
- is the same for every device in the network (network part).
- is used for addressing (device part).

In the netmask 255.255.255.0 the first 24 bits are set to 1 and represent the network part. The remaining 8 bits represent the device part and enable you to connect up to 254 devices to the network.

Gateway is the IP-address of the router of the LAN. If you do not assign an IP address to the gateway, then no communication outside the LAN is possible (neither e-mail, nor HTTP or FTP processes).

DNS Server is the IP address of the domain name server. A name is easier to remember than an IP address.

Example of a router configuration



Hager recommends to use a static configuration of the energy monitoring server (**Method**: *Manual*). In consequence the LAN gateway (router or firewall) must use the same configuration (i. e. DHCP Server has to be disabled).

Take care to assign different IP addresses for router and energy monitoring server.

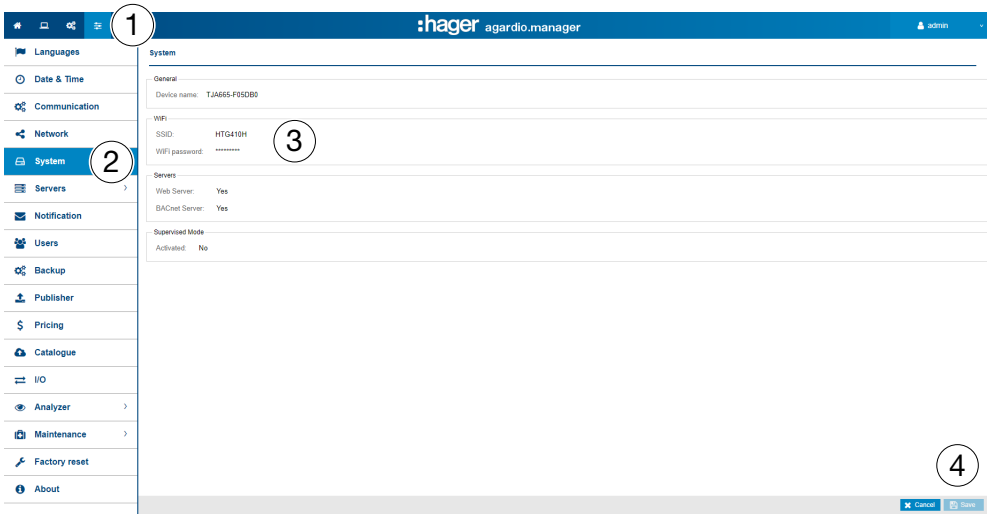
SUPERVISED MODE
Function available

6. 6 System

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **System**.
3	Change the WLAN SSID and/or the password.
4	Click **Save** to save changes.

Screen to be displayed



Fields to enter

Switching to **supervised mode** (Activated: Yes/No) enables you to set the link with the Energy Management Software stream.
For more detailed information (see p. 148).

Further information

Agardio manager is a multiprotocol server: these are not all enabled by default. In the "Preferences" application, the System page presents the activation status of the BACnet server. After activating the server and saving the changes, the integrator can see a new page: Preferences | Servers | BACnet Server.

By activating this status, the protocol becomes visible but is not yet running. More configuration is required (such as the Ethernet interface, UDP port, etc.) before having an executable configuration.

Note: the BACnet server is disabled in setup mode.

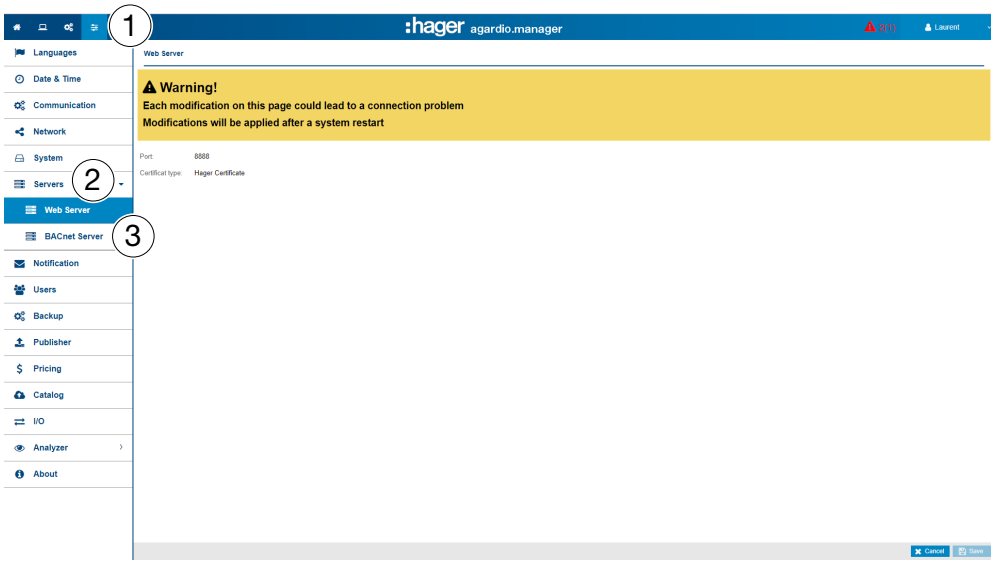
SUPERVISED MODE
Function available

6. 7 Server

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **Server**.
3	Click **Bacnet Server.**

Screen to be displayed

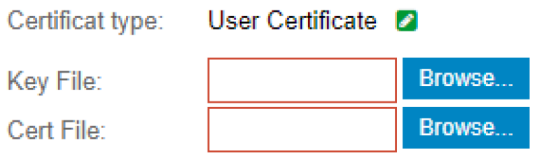


Further information

The **port** number is used by the WEB server for HTTPS connections.
By default, the HTTPS port number is 8888.

The certificate, always active, is used to secure data transfers and connection information. There are 2 possible choices:

- the native **Hager certificate** in the server
- the **user certificate** to load the **Key File** and the **Certificate File**.



Note: Do not load erroneous files, otherwise you will lose access to the server.

NOTICE

The administrator Super *admin* has access at this level to the setting of the **BACnet Server**. For configuration of BACnet parameters, please refer to the **hG-ES-Rxx-BACnet Configuration Guide F.pdf**

SUPERVISED MODE

Function available

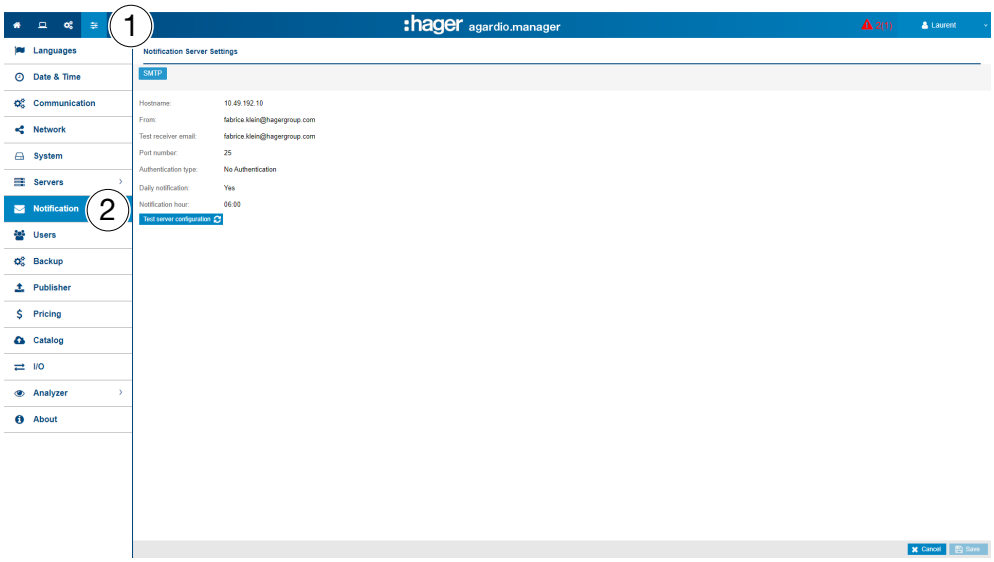
6. 8 Notification

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **Notification**.

NOTICE
Ask your IT network administrator to know the SMTP server address.

Screen to be displayed



Functions to choose

- Click **Test server configuration** to send an e-mail to the address entered as **Test receiver email**.

Further information

An SMTP client is configured in order to send Email notifications to users.

The SMTP **Hostname** can be an IP address or the name of the server such as *smtp.gmail.com*. The host name is necessary to send e-mails.

From is the e-mail address that is displayed as sender address.

Test receiver email is the e-mail address to which test e-mail will be sent using **Test connection's configuration** when receiving an alert e-mail.

Port number is set to 25 (TCP port for SMTP).

Authentication type is *No Authentication* or *Password* (if a password must be set for e-mail sending).

Daily notification means that the report is sent every day when events are present.

Hour is the time to send the daily report of active events by e-mail.

The energy monitoring server informs users for whom **Notification** is activated at the **Users** (see p. 61) menu item about occurring events and critical alarms.

Alarms are indicated through:

- the **Events** (see p. 143) menu item of the **Exploitation** menu or
- Email if **Notification** is activated and **Email** (address) is specified for the user.

Critical alarms are indicated as soon as they are detected. Other alarms with lower priority and messages are indicated only once daily.

SUPERVISED MODE

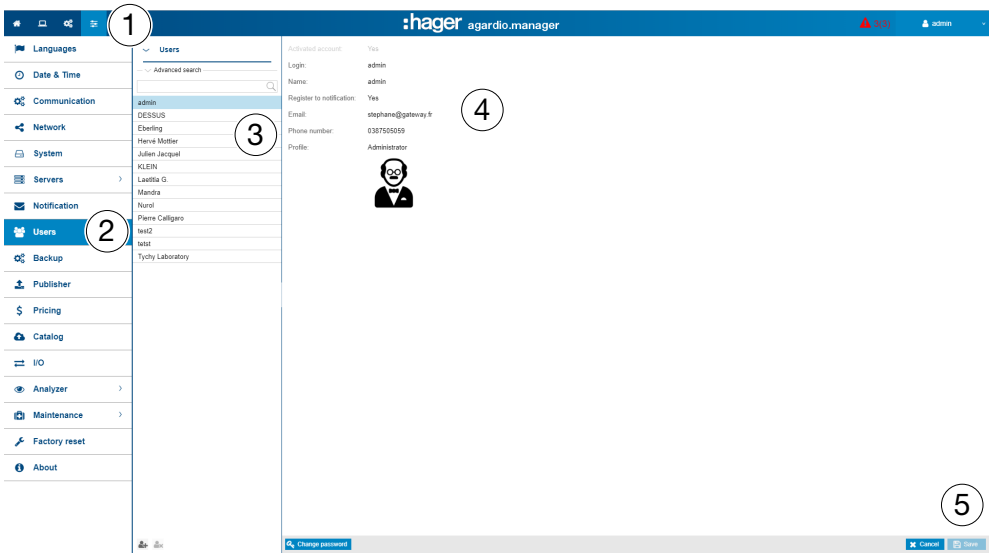
Function not available

6. 9 Users (User management)

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **Users**.
3	Choose the user whose data you want to control/change.
4	Control, change or add user settings.
5	Click **Save** to save the changes.

Screen to be displayed



Fields to enter

A user is characterized by its:

- Status: **Activated** (Yes/No); Disabling a user temporarily suspends access to the server.
- Login (necessary, see below: **Security requirements about login** ...),
- Name (necessary),
- Notification (not necessary),
- Email address (necessary),
- Phone number (text field, 15 digit maximum length, not necessary),
- Profile (necessary),
- Icon (figure depending on the profile, set automatically),
- Password (necessary, see below: **Security requirements about ... password**).

The **Login** must be unique and cannot be changed.

The energy monitoring server informs users for whom **Notification** is activated about occurring events and alarms. For users to be informed, **Email** (address) has to be specified.

Profiles

The following profiles are available:

Profile...	has access to the following menu(s):
Viewer,	**Exploitation**.
Configurator,	**Exploitation** and **Configuration**.
Administrator,	**Exploitation**, **Configuration** and **Preferences**.

Every user can only be assigned to one profile.

Only administrators are allowed to manage users and change passwords. Administrators are able to create new users with Viewer or Configurator profile.

Only the super *admin* user (see below) is able to create new administrators.

Functions to choose

- Click  to add a new user.
- Click  to delete a user that is not working with the energy monitoring server any more.
- Click **Change password** to change your password, if you are an administrator and know your old password.
  If you need to change your password without knowing the old password, the super *admin* user has to be involved. He might have to change the password without knowing the old one.

Admin user

A default user with Administrator profile is defined originally in factory settings as follows:

- Login: *admin*
- Password: *admin*

The *admin* login cannot be changed. Only the password of the super *admin* user can be changed.

The super *admin* user has full authorization within the user interface and is seen as a super administrator.

The super *admin* is the only user able to

- create new administrators,
- delete administrators,
- update data about any user,
- update passwords of other administrators,
- update the firmware of the energy monitoring server and
- restore the factory settings.

Hager recommends to

❶ change the password of the super *admin* user immediately at the first connection to the energy monitoring server (see p. 25).

❷ create a new administrator to do the main settings for the energy monitoring server.

NOTICE

Store the password of the super *admin* user in a secure location.

If you lose the password of the super *admin* user, the only way to reconnect to the energy monitoring server is to

❶ switch to setup mode,

❷ reset the administrator password and

❸ restart the energy monitoring server.

For more detailed information (see p. 25).

Security requirements about login and password

The following rules must be obeyed:

Login	Password
minimum length: 3 characters	minimum length: 8 characters
maximum length: 20 characters	Must not contain the login
Must not contain any space	needs to contain at least one - special character - upper case letter - lower case letter - digit

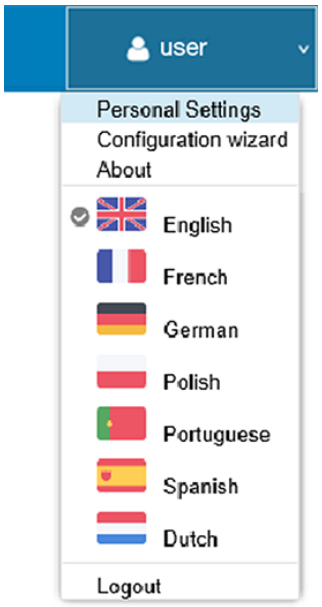
The following special characters might be used:

!, $, ', * ,- ,: ,= ,@ ,] ,` ,} ," ,% ,(,+ ,. ,; ,> ,[,^,{ ,~ ,# ,& ,) ,/ ,< ,? ,\ ,_ ,| and , (the comma as a character)

Exp. for a correct password: *Hager2016.1* or *_Hager2017*

Personal settings

If you need to change the e-mail address, phone number or password for your own user and you are not an administrator, then choose the generic function **Personal Settings**:



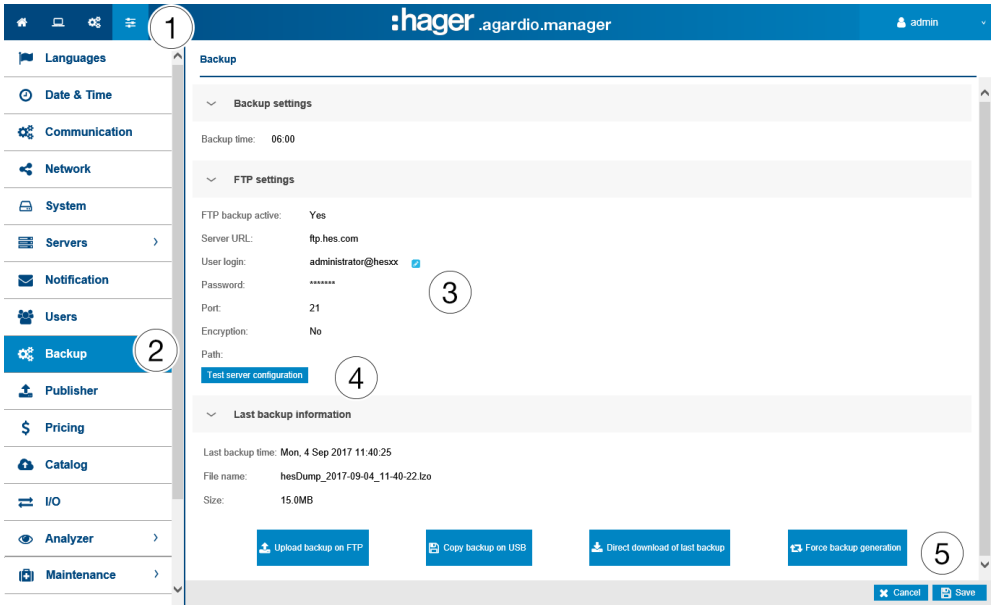
SUPERVISED MODE
Function available

6. 10 Backup

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **Backup**.
3	Modify settings if necessary.
4	Click **Test** to check the server configuration.
5	Click **Save** to save the changes.

Screen to be displayed



Fields to enter

Configuring the backup service consists in setting:

- The time at which the backup creation starts (**Backup time**).
- The indication if backup has to be transferred to an FTP server (**FTP backup active**).

If the backup has to be transferred by FTP the following settings are needed in addition:

- Address (**Server URL**) and **Port** (default: *21*) and **Path** of the FTP server.
- The FTP **User login** and **password** if the FTP server is configured to reject anonymous.
- The information if **Encryption** is used by the server (FTP over TLS).

If you change any FTP settings, then click **Save FTP settings** afterwards to save the changes.

NOTICE
You can validate your FTP server configuration by clicking the **Test server configuration** button.

Further information

The backup service stores process and configuration data of the energy monitoring server to the embedded µSD card. The backup is performed automatically every day at the preset **Backup time** (file format '*.lzo').

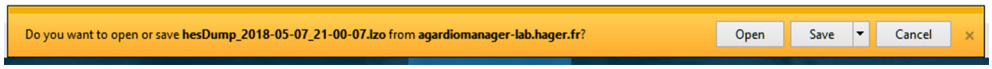
Backup data is automatically exported to FTP and manually to USB or DDL. The export does not create a new backup.

Functions to choose

There are three ways to export backup data:

Click...,	if you want to export the data...
Upload backup on FTP,	on an FTP server. You need to control or complete the FTP settings before you start the export.
Copy backup on USB,	to a USB stick. You need to plug in the USB stick to the front face USB connector of the energy monitoring server before you start the export.
Direct download of last backup,	to an HTTP client, e.g. your connected computer.

If you download a backup from HTTP, a similar message is displayed:



You can start a data backup by clicking on:

- **Force backup generation:** The energy server will generate a backup and store it in its memory.

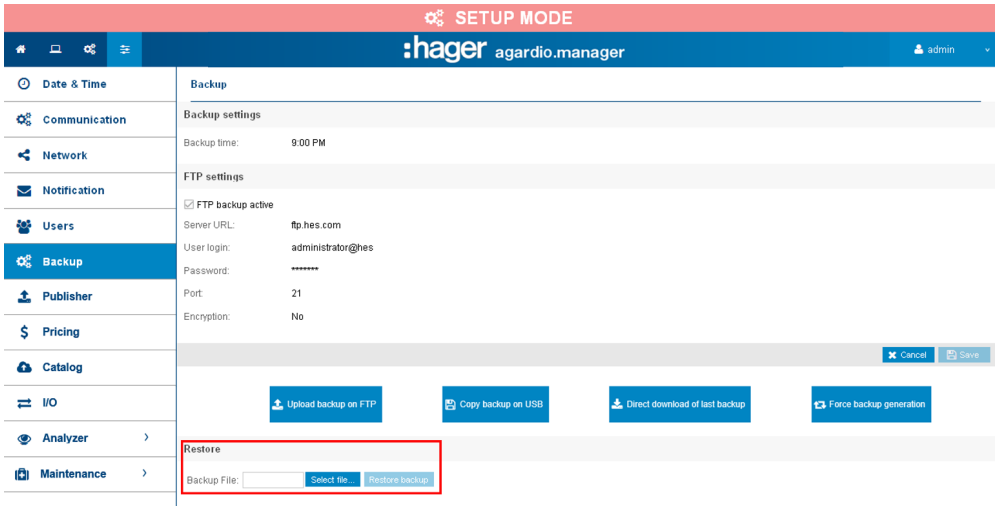
NOTICE
The backup data is needed - in case of problems or damaging of the energy monitoring server. - to integrate all settings and logged data into a new energy monitoring server.

Steps to restore a backup

Step	Action
1	Switch the energy monitoring server to setup mode (see p. 23).
2	Click the **Preferences** menu .
3	Click **Backup**.
4	Click **Select file** and choose the **'LZO'** file that contains the backup.
5	Click **Restore backup** to integrate all settings and logged data of the backup into the energy monitoring server.
6	Deactivate the setup mode. (Set the **Setup switch** to position **OFF** and restart the energy monitoring server.)

NOTICE

Restoring the backup may take several seconds. It is necessary to allow the energy server time to restart automatically.



SUPERVISED MODE

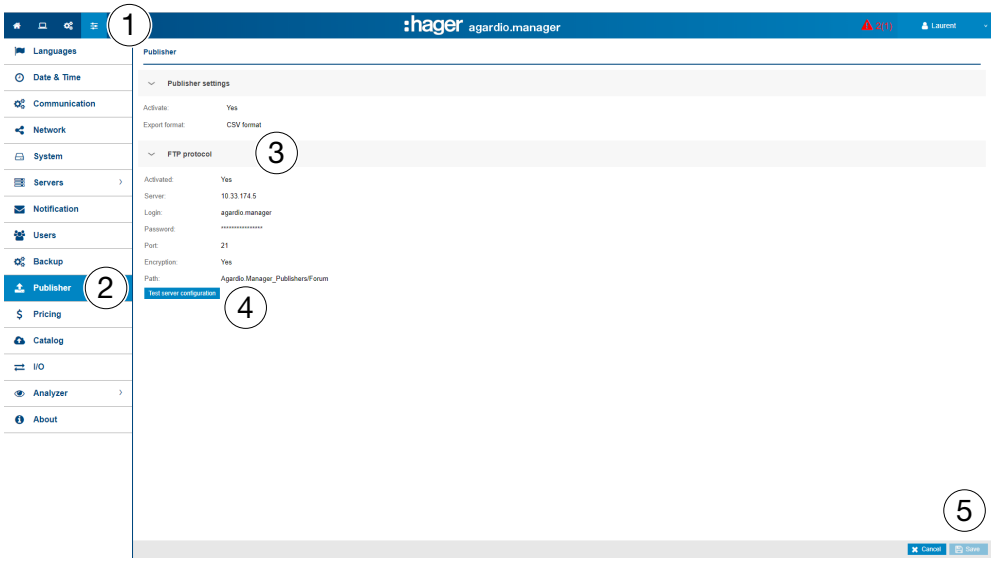
Function not available

6. 11 Publisher

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **Publisher**.
3	Modify settings.
4	Click **Test server configuration** to check the connection.
5	Click **Save** to save the changes.

Screen to be displayed



Fields to enter

Configuring the Publisher service consists in setting:

- Setting the Publisher service active (**Activate**).
- Choosing the **Export platform**

If Ftp protocol is defined above the following settings are needed in addition:

- **Server URL** and **Port** (default: *21*) of the FTP server
- The export **Path**
- The information if **Encryption** is used by the server
- The FTP **Login** and **Password** if the FTP server is configured to reject anonymous

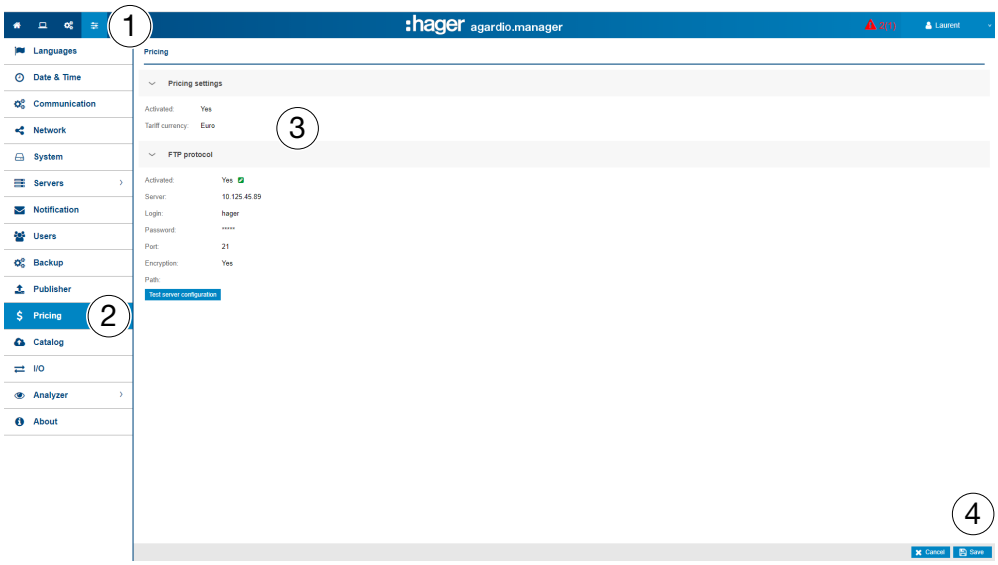
SUPERVISED MODE
Function not available

6. 12 Pricing

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **Pricing**.
3	Modify settings.
4	Click **Save** to save the changes.

Screen to be displayed



Fields to enter

Definition of pricing and units of the energy sources:

- Enable or disable the price settings.
- Choosing the **Tariff currency** (pull down menu).

If Ftp protocol is defined above the following settings are needed in addition:

- **Server** and **Port** (default: *21*) of the FTP server
- The export **Path**
- The information if **Encryption** is used by the server
- The FTP **Login** and **Password** if the FTP server is configured to reject anonymous

SUPERVISED MODE
Function not available

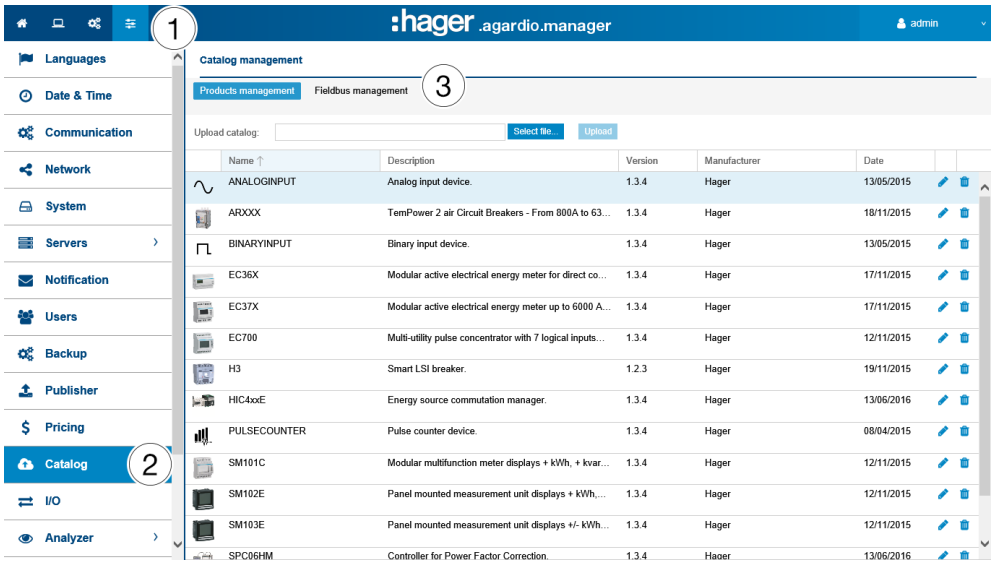
6. 13 Catalogue

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **Catalogue**.
3	Click **Products management** or **Fieldbus management.**

Screen to be displayed - Products management

The following list is displayed at the **Products management**:



Functions to choose

- Click to remove a measuring device (product) from the catalogue (Only if no instance of this product is being created).
- Click to modify a measuring device (product) in the catalogue.

NOTICE
Hager recommends to keep all measuring devices in the catalogue.

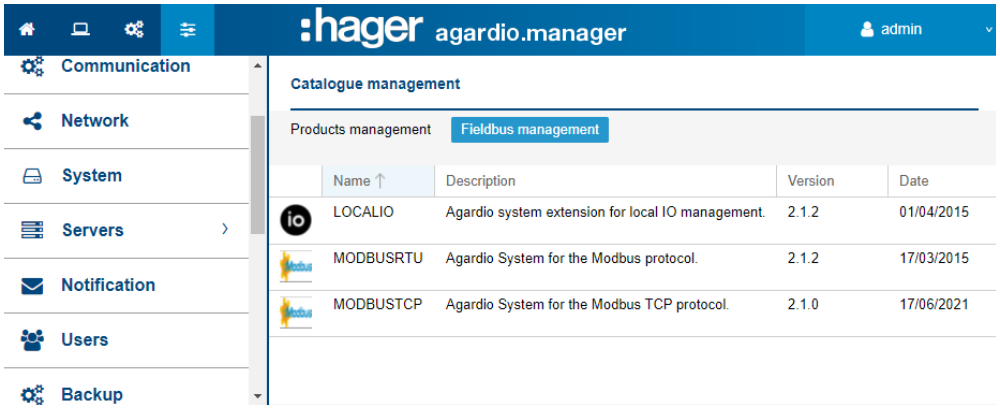
Adding a new measuring device

To add a new measuring device to the catalogue or update available services:

Step	Action
1	Click **Select file...** and choose the HES file that contains the new measuring device.
2	Click **Upload** to add the measuring devices to the catalogue.

Screen to be displayed - Fieldbus management

The following list is displayed at the **Fieldbus management**:



Further information

The energy monitoring server is delivered with a catalogue of measuring devices. This catalogue embeds a list of products with their signature (product identification), their available services, settings and alarms. A piece of the catalogue managing a smart product is called a *plugin*.

In case Hager adds a new product to the catalogue, a download of the corresponding plugin will be available on the Hager website of your country or on *https://hgr.io/r/htg411h*. The plugin has to be uploaded into the energy monitoring server (**Upload**).

Potential error messages

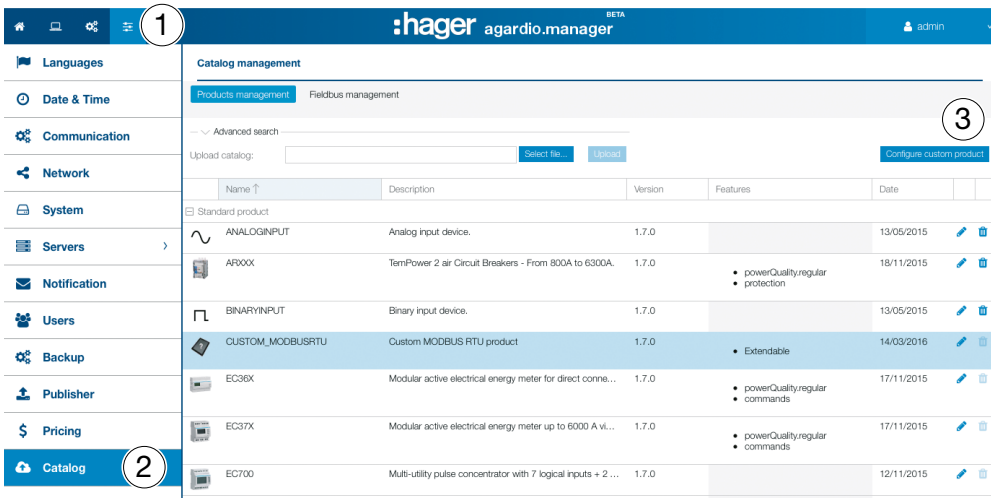
The following list explains the error messages that might be displayed at **Preferences/Catalogue**:

Error message	Explanation/solution
Product can´t be added to catalogue due to bad format.	You selected the wrong file type at the upload of new products. Use the correct HES file.
Unable to delete a used product.	It is only possible to delete products which are not in use. If you still want to remove a product you must ensure that it is not in use.

Steps for adding a non Hager product

Step	Action
1	Click the **Preferences** menu .
2	Click **Catalogue**.
3	Click **Configure custom product**.

Screen to be displayed



SUPERVISED MODE

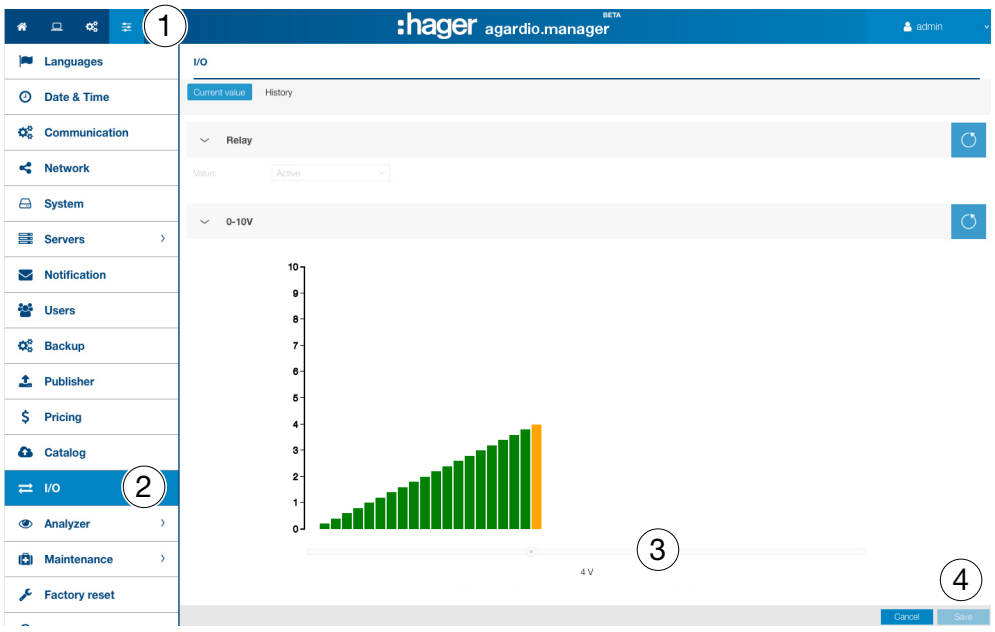
Function available

6. 14 I/O (Input Output)

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **I/O**.
3	Adjust the settings.
4	Click **Save** to save the settings.

Screen to be displayed



NOTICE

Only the Binary Output can be configured on HTG411L devices.

Further information

The I/O menu item is a test function to drive the 0 - 10 V output.

If you set the graph to a value (e.g. 8.8 V) and **Save** it, the output voltage at the 0 - 10 V output is 8.8 volts.

SUPERVISED MODE

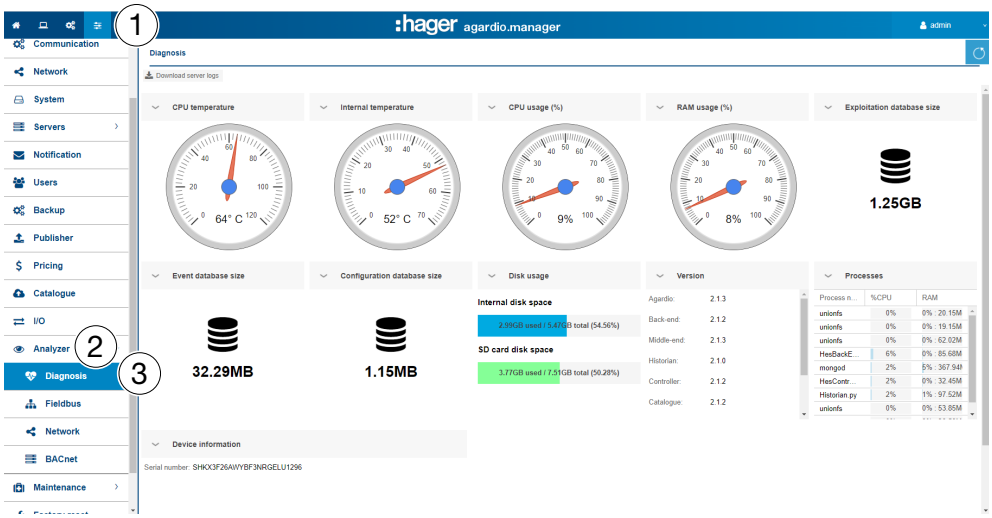
Function available

6. 15 Analyzer - Diagnosis

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **Analyzer**.
3	Click **Diagnosis.**

Screen to be displayed



NOTE:
To expand the views click , to collapse the views click .

The Diagnosis screen displays the following status:

- **CPU temperature** of the measuring device (round display)
- **Internal temperature** of the measuring device (round display)
- **CPU usage** of the measuring device (round display)
- **RAM usage** of the measuring device (round display)
- **Exploitation database size** (disk size symbol)
- **Event Database size** (disk size symbol)
- **Configuration Database size** (disk size symbol)
- **Disk usage** (bare graphs):
  - Percentage of use of **Internal disk space**
  - Percentage of use of the **SD card disk space**
- **Version** of the different programs of the measuring device (table)
- List of **processes** in progress (table)

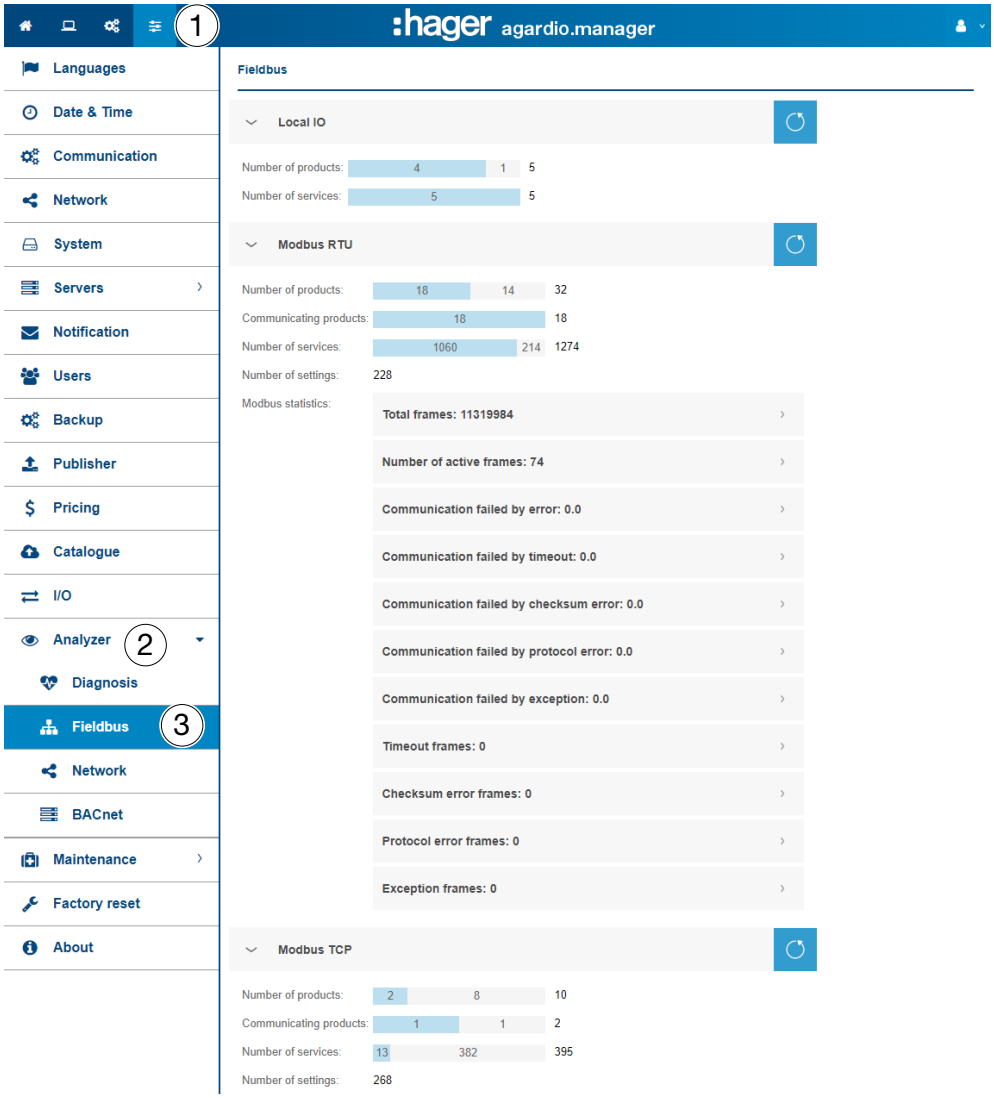
SUPERVISED MODE
Function available

6. 16 Analyzer - Fieldbus

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **Analyzer**.
3	Click **Fieldbus**.

Screen to be displayed



The Fieldbus screen displays the following information:

- **Local I/O**
  - Number of products connected to the energy monitoring server.
  - Number of external elements configured.
  - Number of Services (Measurements).

- **ModbusRTU**:
  - Number of products connected to the energy monitoring server via ModbusRTU.
  - Number of products communicating with the energy monitoring server via ModbusRTU.
  - Number of Services (Measurements) via ModbusRTU.
  - Number of settings: (configuration of products)
  - Modbus statistic (table view).
- **ModbusTCP:**
  - Number of products connected to the energy monitoring server via ModbusTCP.
  - Number of products communicating with the energy monitoring server via ModbusTCP.
  - Number of Services (Measurements) via ModbusTCP.
  - Number of settings: (configuration of products)
  - Modbus statistic (table view).

To refresh the information for a fieldbus click  (Refresh).

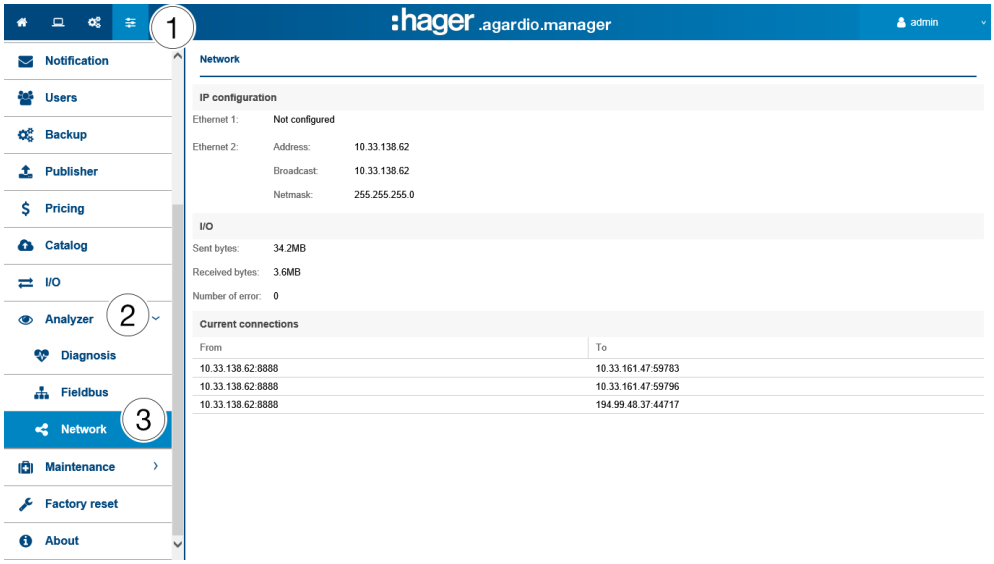
SUPERVISED MODE
Function available

6. 17 Analyzer - Network

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **Analyzer**.
3	Click **Network**.

Screen to be displayed



The Network screen displays the following information:

- **IP configuration** (Ethernet 1 & Ethernet 2)
  - Address
  - Broadcast
  - Netmask
- **I/O** (Inputs/outputs)
  - Sent bytes
  - Received bytes
  - Number of errors
- **Current connections**
  - Number of connected users
  - Number of sessions in progresss

NOTICE

The administrator Super *admin* has access at this level to the setting of the **BACnet Server.** For configuration of BACnet parameters, please refer to the **hG-ES-Rxx-BACnet Configuration Guide F.pdf**

SUPERVISED MODE

Function available

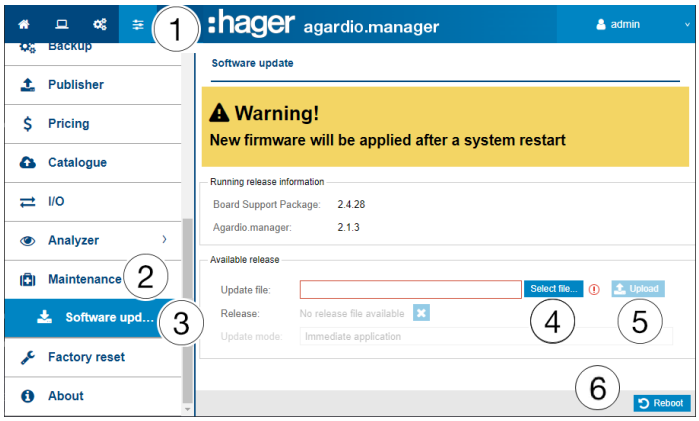
6. 18 Maintenance - Software update

NOTICE
The menu item **Software update** is only available for the super *admin* user. To save the energy monitoring server from loss of data and configuration, never switch off the 24 V/DC supply of the energy monitoring server during the update phase.

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **Maintenance**.
3	Click **Software update**.
4	Click **Select file** ... and choose the BZ2 file that contains the update.
5	Click **Upload** to activate the update.
6	Click **Reboot.** **Result**: - The energy monitoring server switches off and reboots.
7	Wait untill the energy monitoring server switches on again: **Result**: - The **Power LED** lights green.

Screen to be displayed



Further information

If Hager provides a new software version of the energy monitoring server, there are two methods to install it:

- With a remote connection to the user interface.
  You will find a download on the Hager website to upload into the energy monitoring server (see above: Step 1 - 5).
- Using a USB stick containing the update if you are in front of the energy monitoring server.

Software update via USB

Step	Action
1	Plug the USB stick containing the file *files HBoxFirmware-** into the front face USB connector. **Result**: The **Power LED** starts blinking with orange colour during a few minutes. **Note**: During this phase never - remove the USB key nor - switch off the 24 V/DC supply.
2	Wait until the **Power LED** is illuminated permanently with orange colour.
3	Remove the USB stick. **Result**: - The energy monitoring server will reboot automatically within a few seconds.

SUPERVISED MODE
Function available

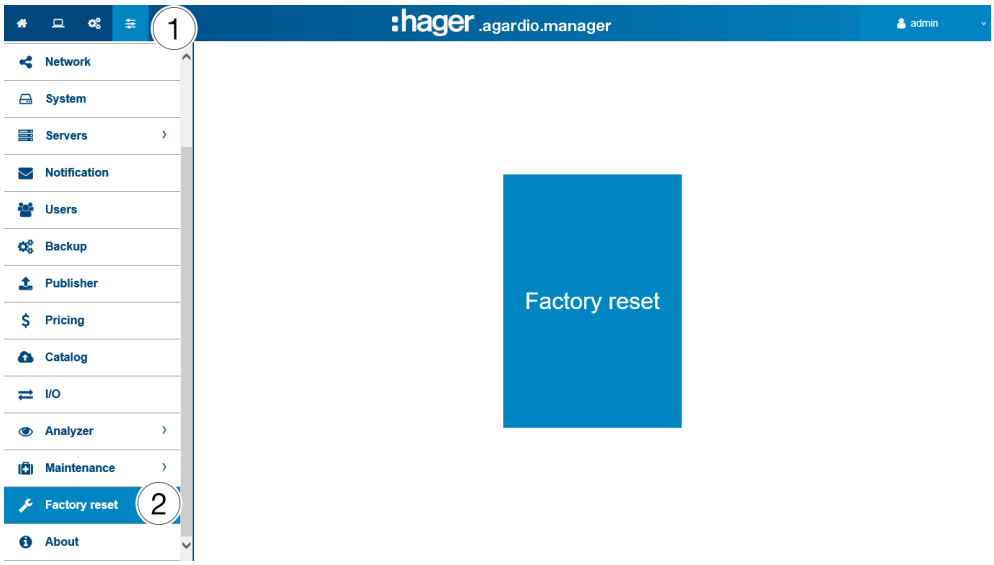
6. 19 Factory reset

NOTICE
The menu item **Factory reset** is only available for the super *admin* user. All your configuration settings and data are deleted irrevocably.

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **Factory reset**.

Screen to be displayed



Further information

The Factory reset enables you to return to factory settings.
All configuration and data will be definitely lost after a confirmation.

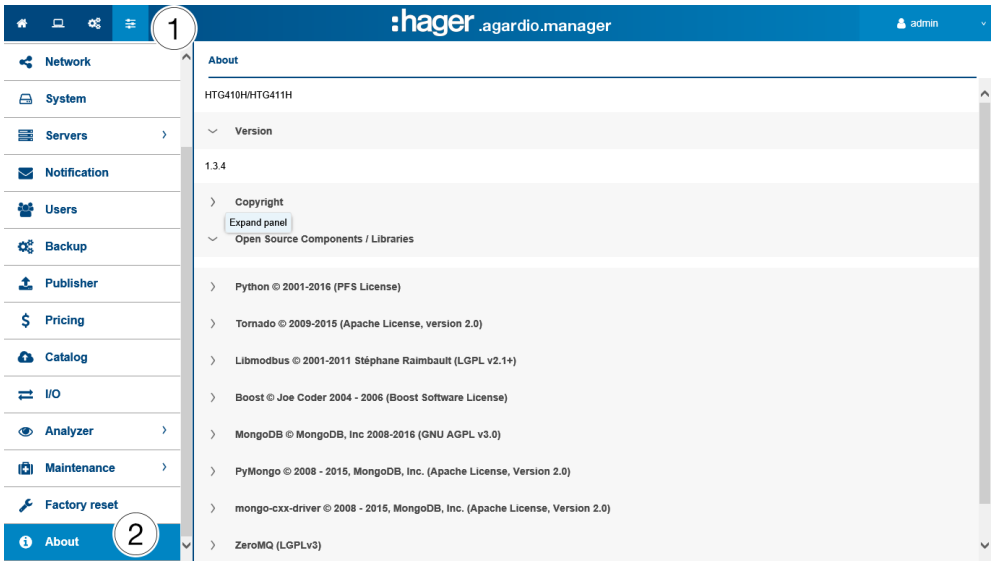
SUPERVISED MODE
Function available

6. 20 About (Software version and legal declarations)

Steps to open the menu item

Step	Action
1	Click the **Preferences** menu .
2	Click **About**.

Screen to be displayed



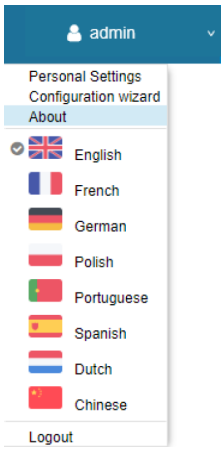
The current software version of the energy monitoring server and further information about included programming tools are displayed.

Click > to show detailed information about a programming tool.

Click ⌄ to close detailed information.

NOTICE

This part is also accessible by the **About** icon on the home screen.



SUPERVISED MODE

Function available

7 CONFIGURATION menu

Introduction

This chapter provides detailed information regarding all menu items of the **Configuration** menu.

The **Configuration** menu allows managing settings about the installation and the commissioning of the energy monitoring server.

NOTICE

The **Configuration menu** may only be used by the electrician or system integrator.

Chapter contents

7. 1 Overview of the menu items

The **Configuration** menu includes the following menu items:

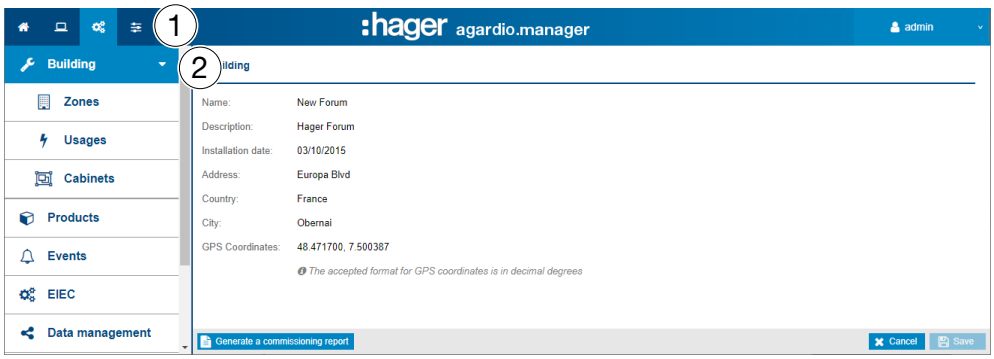
Menu item	Description
Building (see p. 20)	Update the location of the installation Create, update and delete entries for - **Zones**: Parts/areas of the building - **Usages**: Type of application for which electrical energy is used (lighting, heating, ...) - **Cabinets**: Switch cabinets in the building.
Products	Create, update and delete entries for the measuring devices that are communicating with the energy monitoring server.
Events	Create, update and delete definitions for alarms; occurring events are listed at the **Exploitation** menu.
EIEC	Set the EIEC parameters for the building.
Data management	Update refresh frequencies for saving the current values of the measuring devices.
BACnet	Configure BACnet objects.
Publisher	Choosing the configurated products and their associated services to be published (sent to the server). This publication can be done periodically regardless of the mode or immediately in configuration mode only.
Pricing	Set tariffs for different services according to relative consumption during the day.

7. 2 Building

Steps to open the menu item

Step	Action
1	Click the **Configuration** menu .
2	Click **Building**.

Screen to be displayed



Fields to enter

A building is characterized by its:

- Name
- Description
- Installation date
- Address
- Country
- City
- GPS position coordinates

The building is initially defined at the installation.

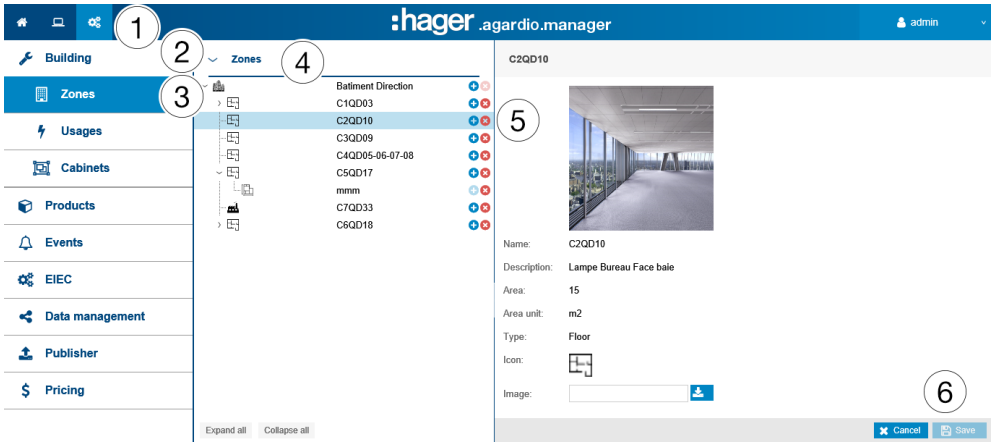
SUPERVISED MODE
Function not available

7. 3 Building - Zones

Steps to open the menu item

Step	Action
1	Click the **Configuration** menu .
2	Click **Building**.
3	Click **Zones**.
4	Double-click an existing zone/floor.
5	- Click to define a new (sub-)zone within the zone. - Click to delete the zone from the building.
6	Click **Save** to save the settings.

Screen to be displayed



Fields to enter

A building is characterized by its:
- Name (necessary)
- Description (not necessary)
- Area (value, necessary)
- Area unit (in m^2 or square ft)
- Type
- Building type (Commercial, Industrial or Infrastructure)
- Icon (necessary)
- Image (download)

A floor or room within a building is characterized by its:
- Name
- Description
- Area (value)
- Area unit (in m^2 or square ft)
- Type (Floor or Room)
- Icon
- Image (download)

Further information

Zones must be defined within the building in order to calculate the energy consumption and to achieve effective energy management by modelling a clear building and zone structure.

Configuration of zones follows a tree structure

- starting by buildings for first level,
- continuing with floors for second level and
- rooms for third level.

It is possible to update name, description, icon and image of any zone, floor or room without any consequence.

NOTICE

As measuring devices (Products) need to be allocated to a zone, define

❶ zones (and cabinets (see p. 90)) first,

❷ measuring devices (Products) thereafter.

It is impossible to delete a zone that any measuring device is allocated to.

Depending on the selected **Building type** the right EIEC criterions (see p. 107) will be selected automatically.

SUPERVISED MODE

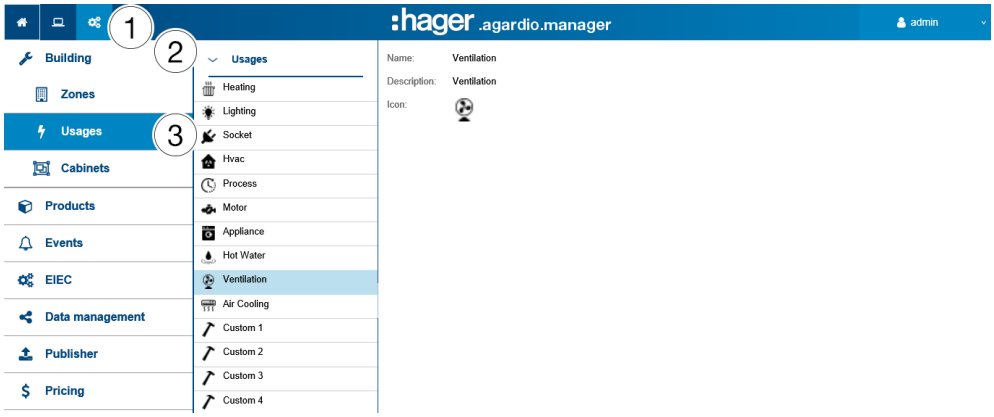
Function not available

7. 4 Building - Usages

Steps to open the menu item

Step	Action
1	Click the **Configuration** menu .
2	Click **Building**.
3	Click **Usages**.

Screen to be displayed



Fields to enter

A usage is characterized by its:

- Name (necessary)
- Description
- Icon

Further Information

The following usages are initially delivered by the energy monitoring server:

- Heating
- Lighting
- Socket
- Hvac (**H**eating, **v**entilation and **a**ir **c**ooling)
- Process
- Motor
- Appliance
- Hot water
- Ventilation
- Air cooling
- customizable 1 to 5 (you have up to 5 free uses)

For every measuring device that is communicating with the energy monitoring server, a usage should be allocated if possible.

It is possible to set and update name, description and icon of the modifiable-usage.

NOTICE

You can not:

- modify the usages that are provided originally by the energy server.
- delete a usage.

SUPERVISED MODE

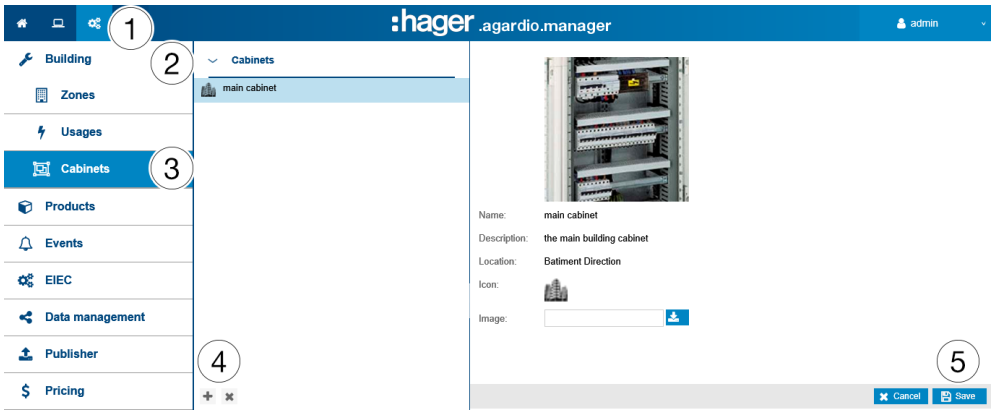
Function not available

7. 5 Building - Cabinets

Steps to open the menu item

Step	Action
1	Click the **Configuration** menu .
2	Click **Building**.
3	Click **Cabinets**.
4	- Click to define a new cabinet. - Click to delete a cabinet that is not allocated to any measuring device within the energy monitoring server any more.
5	Click **Save** to save the settings.

Screen to be displayed



Fields to enter

A cabinet is characterized by its:
- Name (text field, necessary)
- Description (text field, not necessary)
- Location (selection field, necessary)
- Icon (selection field, necessary)
- Image (upload function for files, not necessary)

Further information

A cabinet has to be defined in the energy monitoring server, if the cabinet hosts at least one measuring device.

It is possible to update name, description, location, icon or image of any cabinet without any consequence.

NOTICE

It is impossible to delete a cabinet that any measuring device is allocated to.

SUPERVISED MODE

Function not available

7. 6 Products

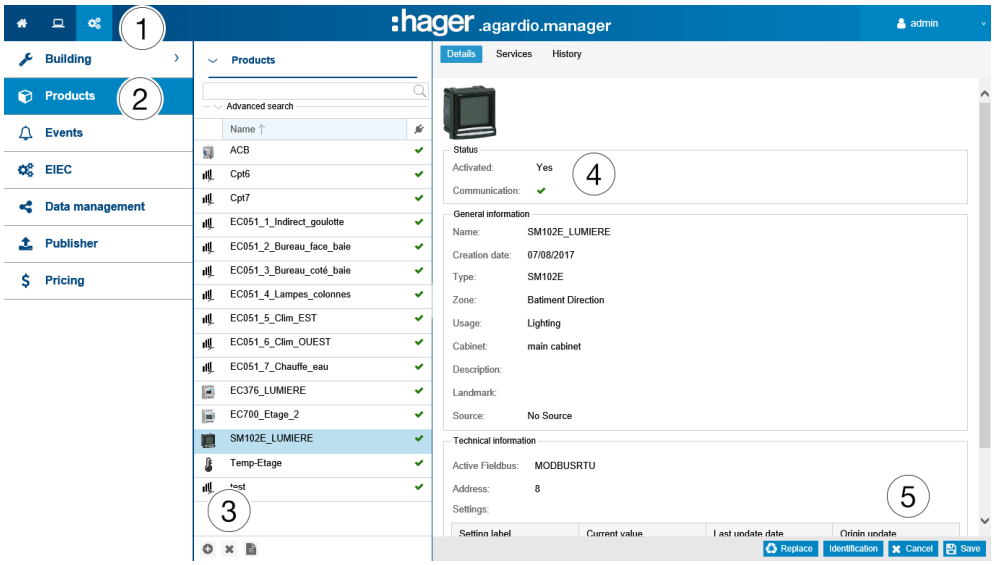
Steps to open the menu item

Step	Action
1	Click the **Configuration** menu .
2	Click **Products**. **NOTE**: The **Details** window will be displayed.
3	- Click to declare a new measuring device (see below) you wish the energy monitoring server to collect data from. - Click to delete a measuring device (see below) whose collected data is no longer relevant to you. - Click to generate a commissioning report (see below).
4	Set the status of the measuring device (Activated: Yes or No)
5	Click Save to save the settings.

Screen to be displayed

NOTE:
The displayed windows are depending on the selected product.

The following list is displayed for all products in the Details window:



Fields to enter

A measuring device (**Product**) is characterized by its:

- Unique name (text field, necessary)
- Creation date
- Type
- Zone (selection field, necessary)
- Usage (selection field, necessary)

- Cabinet (selection field, not necessary)
- Description (text field, not necessary)
- Landmark (text field, not necessary)
- Source (selection field, necessary)
- Active Fieldbus (selection field, necessary)
- Connection settings (necessary)
- Settings (depending on product: Table of settings)

More about Bus address

- **ModbusRTU :**

Address is the Modbus address on the fieldbus between 1 and 247, that has to be set uniquely for each Modbus product (i. e. only for one measuring device within the energy monitoring server).

A smart scrolling function displays the Modbus addresses that are already used and proposes the first available address.

- **ModbusTCP :**

The connection settings are defined by :

- address is an IP or hostname
- port is between 1 and 65535
- bus address is between 0 and 255

LOCALIO :
If you define a new measuring device of the following type, the energy monitoring server checks the suitable inputs and suggests one of the following addresses:

Type	Address
Analogueinput	*Analogue Input 1* or *Analogue Input 2*
Binaryinput	*Binary Input 1* or *Binary Input 2*
Temperaturesensor	*External Temperature*
Pulsecounter	*Pulse Input 1* or *Pulse Input 2*

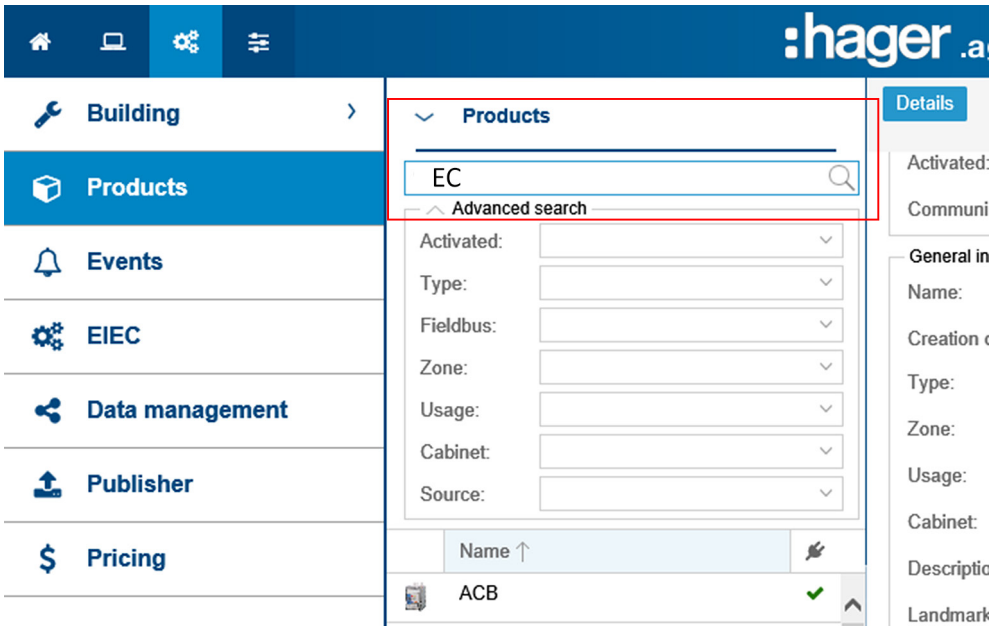
Utilities

Identification

Click **Identification** (for product which have this functionality) to test the communication between the device and the energy monitoring server. It is possible to test device communication at any time during configuration. Testing communication detects that the device is on the line and that it is really the device that is declared. A message indicates a measuring device that does not match the declared one.

Search

To search for certain measuring devices, type a characterizing part of their name, e. g.:



An **advanced search** allows you to find a product using filters according to the following criteria:

- Actived (yes / no): product active or not
- Type: type of product
- Field bus: on which bus the product is connected
- Zone: Area of use of the product
- Usage: Product usage
- Cabinet : Product location
- Source: Energy source of the product

Further information

The measuring devices communicating with the energy monitoring server are listed with the symbol ✓.

The measuring devices not communicating with the energy monitoring server are listed with the symbol ⊗. Check the Modbus connection between the energy monitoring server and the measuring device. Refer to the installation guide for more detailed explanation.

NOTICE

Products need to be allocated to a zone, usage and cabinet in order to follow-up the energy consumption by usage and zone over the time.

Therefore you need to define

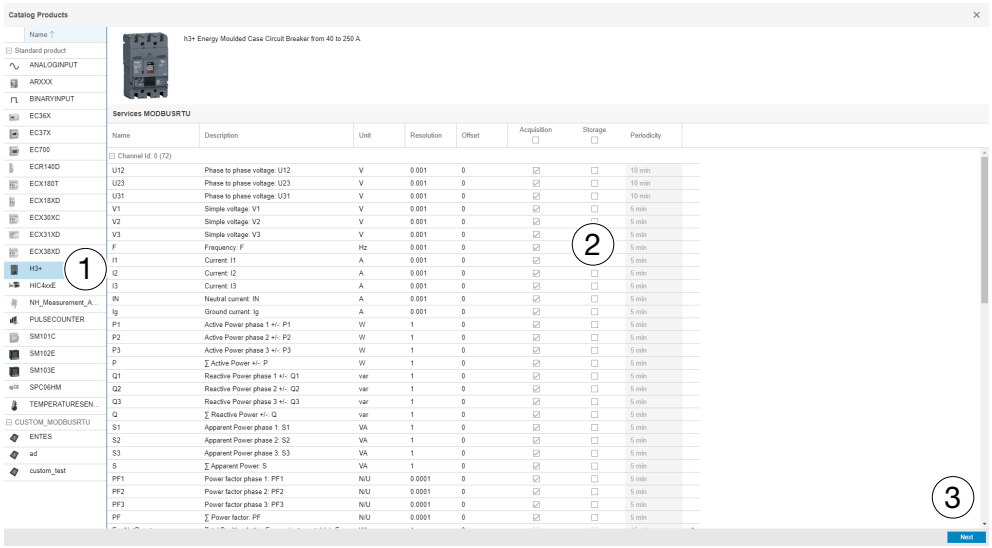
❶ zone,
❷ usage and
❸ cabinet first,
❹ measuring devices (Products) thereafter.

Add a new measuring device (Product)

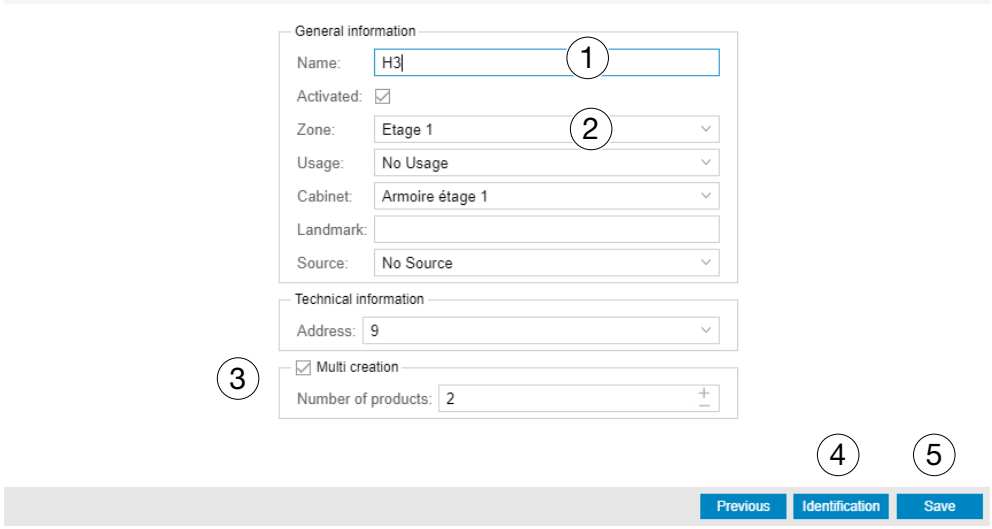
Only measuring devices listed in the catalogue (see p. 70) are able to communicate with the energy monitoring server. The catalogue includes information about the measuring devices. Defining a measuring device creates automatically a list of services that are read from fieldbus.

Before you define a new measuring device at the energy monitoring server

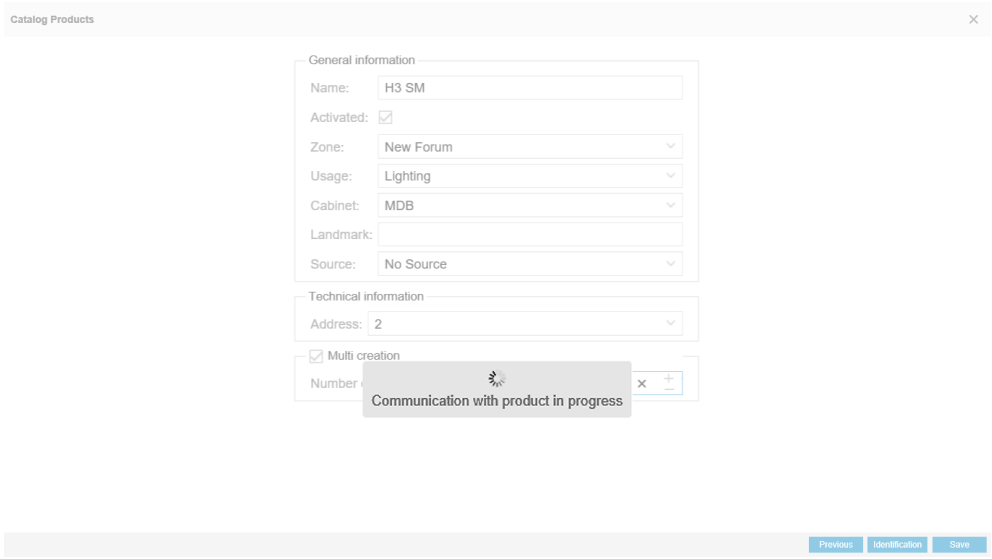
- search for it in the list of all communicating measuring devices.



Step	Action
1	Select the measuring device that you want to add.
2	Tick the corresponding check boxes **Storage** to select the services that you want to be logged and visualized in the menu items of the **Exploitation** menu. **Note**: The capacity of the database depends on the number of stored services. If the storage is full the oldest values will be overwritten.
3	Click **Next**.

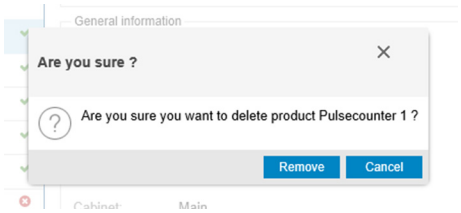


Step	Action
1	Enter the name of the new measuring device.
2	Allocate the measuring device to a zone, usage and cabinet. Set the connection parameters of the product according to its fieldbus.
3	When MODBUSRTU is selected, you may tick the check box Multi creation and select the number of identical products to connect with the measuring device.
4	If the product type allows it, click **Identification** to test the communication between the measuring device and the energy monitoring server. **Note**: If the identification is not successful, check the fieldbus connection and the fieldbus parameters.
5	Click **Save**.



After a short moment the new measuring device is displayed in the list of all available products.

Delete a measuring device (Product)



Click **Remove** to delete the measuring device (Product).

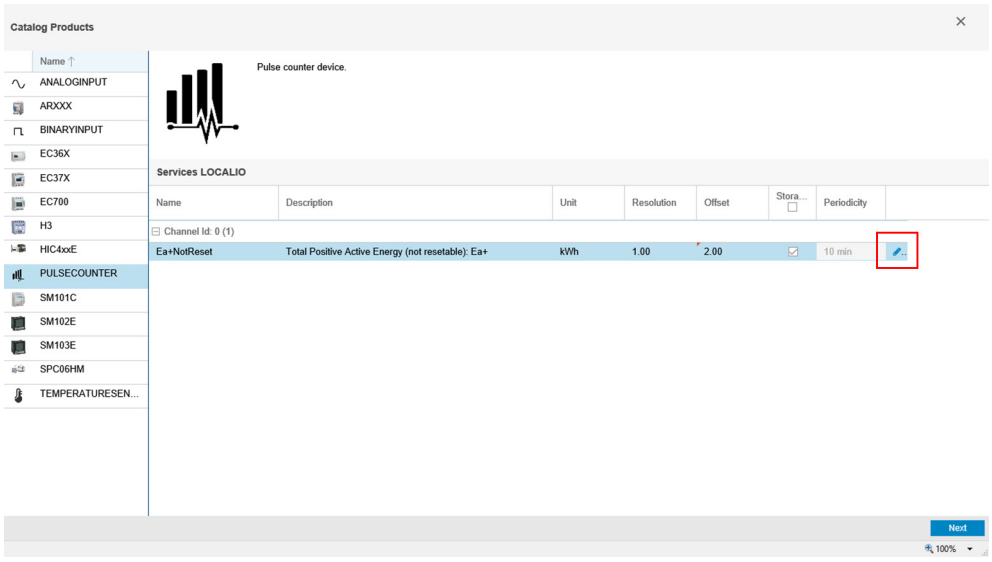
Click **Cancel** to abort the deletion.

NOTICE
- Remove measuring devices only if they are not needed any more.

Define a new energy sub-meter*

Energy sub-meters (e. g. water pulse sub-meters) can communicate with the energy monitoring server.

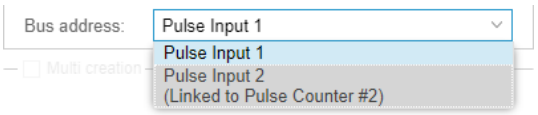
They are connected to the digital input 1 or 2 of the energy monitoring server.



*Not available on HTG411L

Step	Action
1	Select the PULSECOUNTER measuring device and click **Configure a service** to choose a Service, Resolution (e.g. 10 means that one pulse is equivalent to 10 units) and if necessary an Offset.
2	Click **Update** to save the settings.
3	Click **Storage** if you want the service to be logged and visualized in the menu items of the **Exploitation** menu. **Note**: The capacity of the database depends on the number of stored services. If the storage is full the oldest values will be overwritten.
4	Click **Next**.
5	Enter the name of the new energy sub-meter and allocate it to a zone, usage and cabinet.

If you use a digital input of the energy monitoring server, then go on as follows:

Step	Action
6	Select the Pulse Input address of the energy sub-meter that is connected to the energy monitoring server (*Pulse input 1* or *2*). 
7	Click **Save**. **Result**: After a short moment the new energy sub-meter is displayed in the list of all available products.

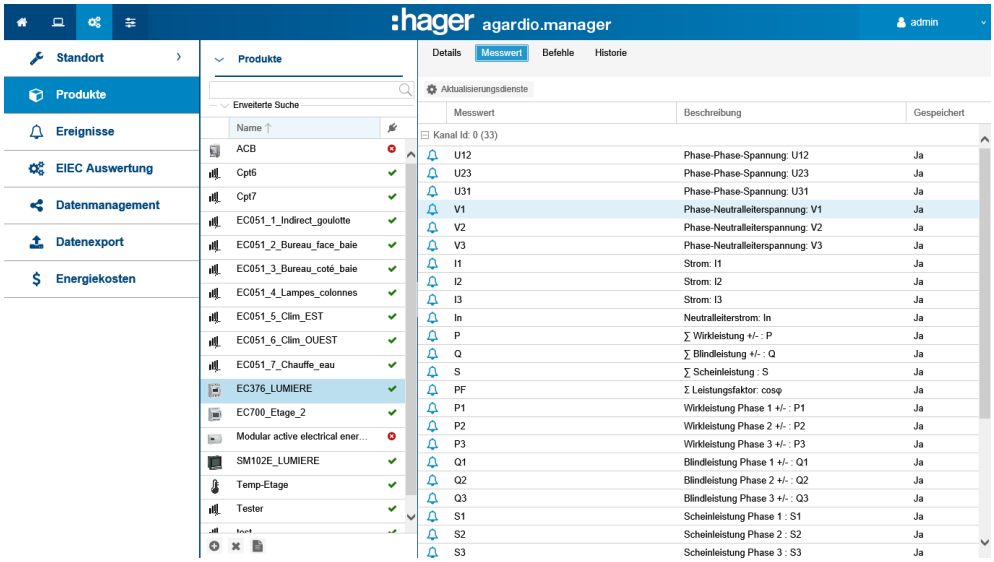
EC700 Installation

If you use the multifunction meter EC700 for connecting the energy sub-meter with the product, do the following:

Step	Action
1	Select the EC700 measuring device and "for each channel" click on , in order to choose a service, resolution and if necessary an offset. Click **Storage** if you want the service to be logged and visualized in the menu items of the EXPLOITATION menu.
2	Click **Next**.
3	Enter the name of the new EC700 and allocate each of its channels to a defined zone and usage. Click **Save**.
4	Click **identification** and then on **Save**. **Result**: After a short moment, the new energy sub-meter is displayed in the list of all available products.

Services

The following list is displayed for all products in the Services window:

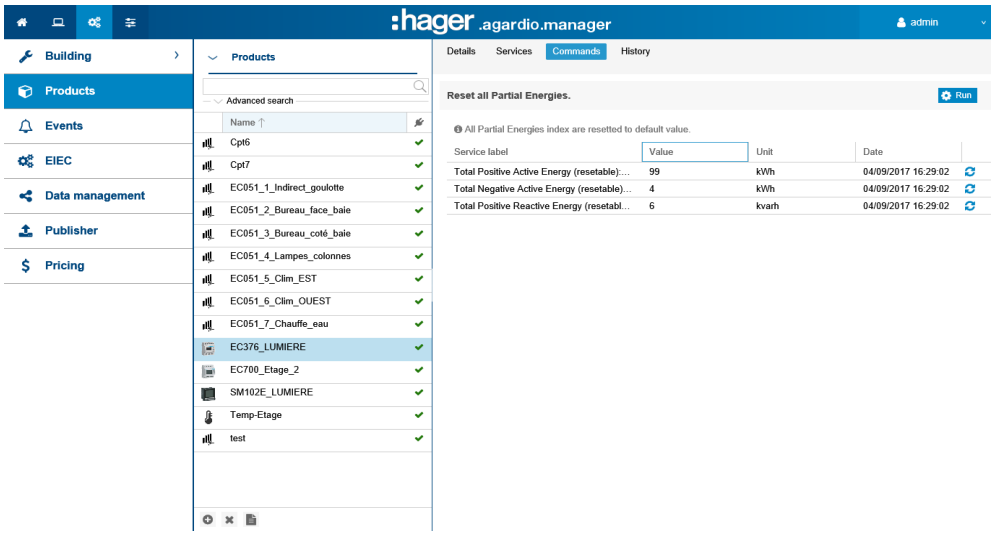


Click to add a new alarm for the corresponding service of the selected measuring device. The alarm will be listed at the **Events** menu item of the **Configuration** menu.

SUPERVISED MODE
Adding alarms is **not available**

Commands

The **Commands** button and associated screen are only displayed for modular active electrical energy meters with the control function:

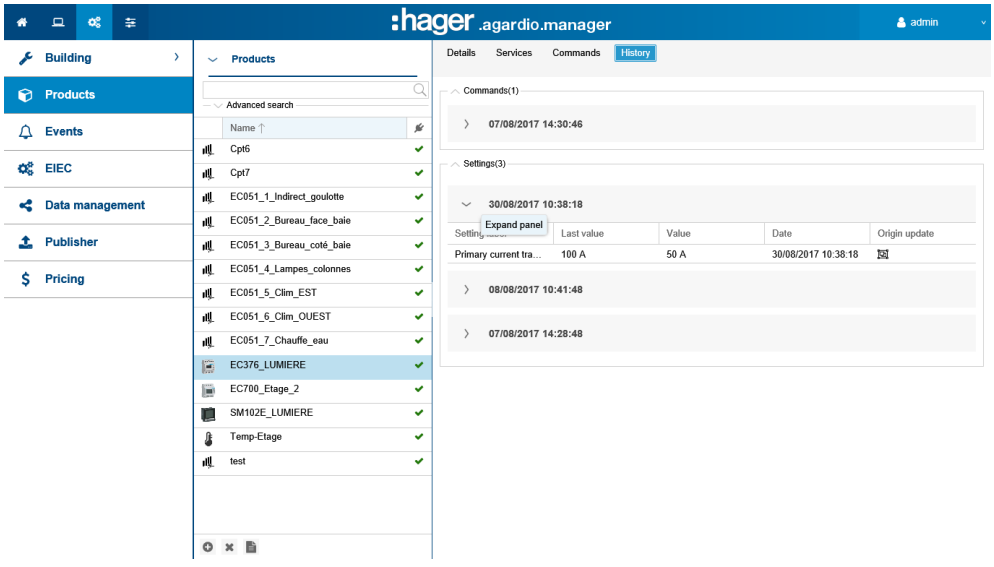


Click on  to reload the current measure.

Click on  to execute the order.

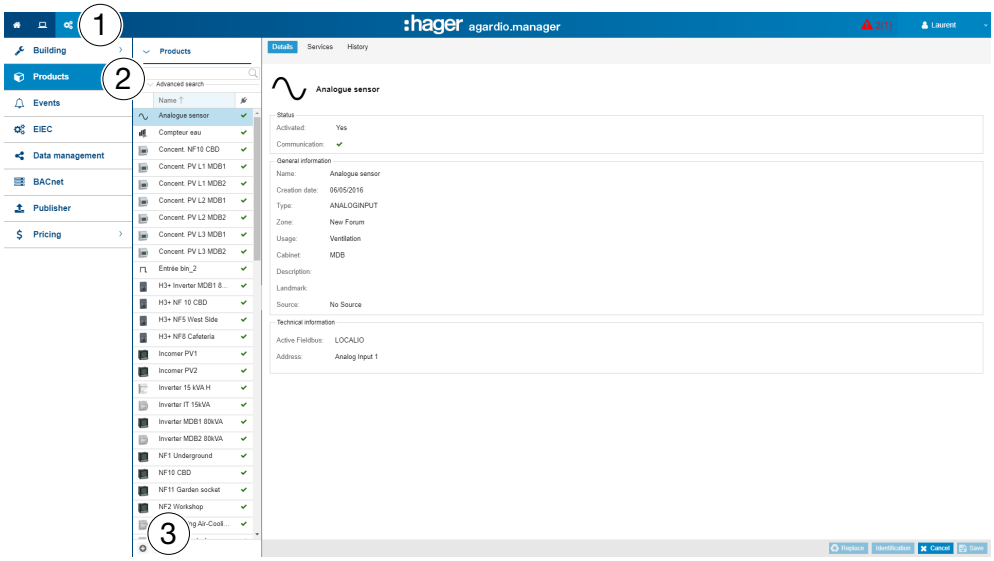
History

The History window is displayed for all the products:



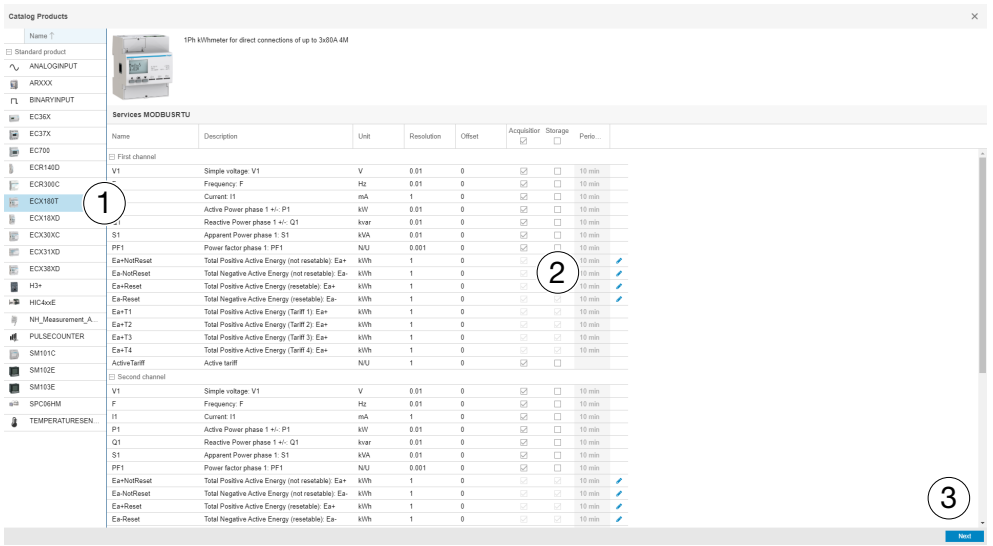
To expand the views click  , to collaps the views click  .

ECX180T Installation

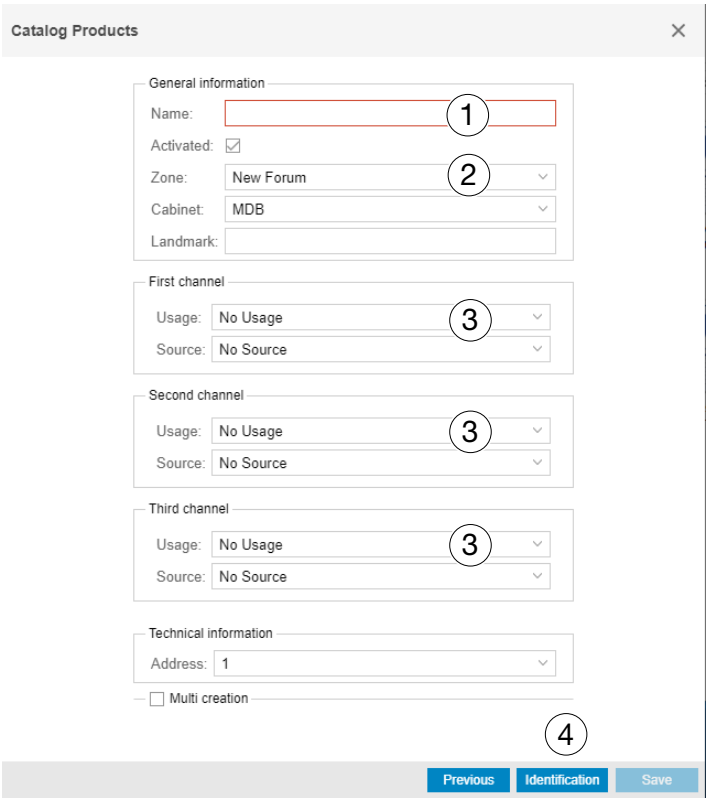


If you use the ECX180T, do the following:

Step	Action
1	Click the **Configuration** menu
2	Click **Products.**
3	Click to define a new measuring device (see below) that is communicating with the energy monitoring server.

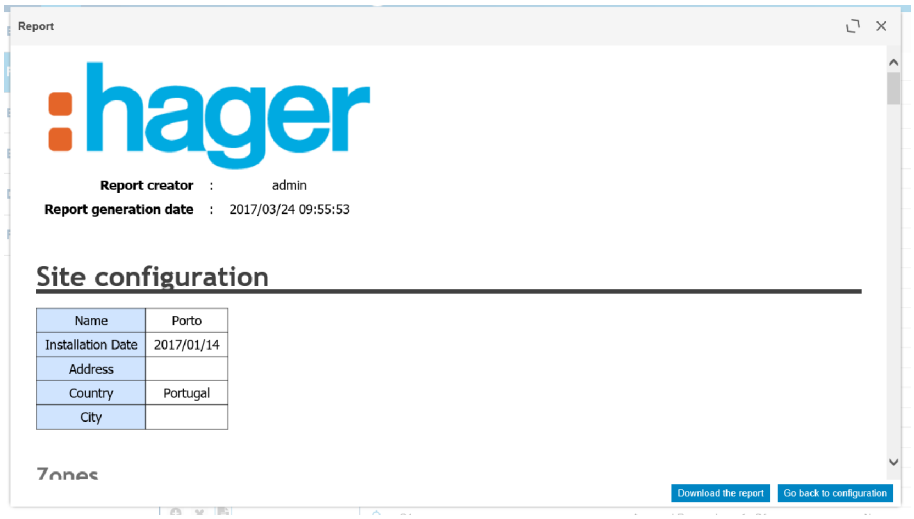


Step	Action
1	Select the **measuring device**.
2	Click **Storage** if you want the service to be logged and visualized in the menu items of the **Exploitation** menu. **Note:** The capacity of the database depends on the number of stored services. If the storage is full the oldest values will be overwritten.
3	Click **Next**.



Step	Action
1	Enter the name of the new measuring device.
2	Allocate the measuring device to a zone, usage and cabinet. Select the address that has been set in the measuring device itself.
3	Allocate the measuring device usage and energy source **Note:** If you want to use a tariff management with an ECX180T product, it is important to use the same energy source for each channel of the product.
4	Click **Identification** to test the communication between the measuring device and the energy monitoring server. **Note:** If the identification is not successful, check the fieldbus connection and the fieldbus parameters.

Create a commissioning report: Click to start generating the report.



The commissioning report is the list of all defined measuring devices, used to

- prove the configuration and functionality of the measuring device,
- check addresses that are already used,
- investigate causes for measuring devices not communicating with the energy monitoring server ( ).

Click **Download the report** to save the commissioning report for printing or archiving.

Click **Go back to Configuration** to close the report-window.

Potential error messages

The following list explains the error messages that might be displayed at **Configuration/Products**:

Error message	Explanation/solution
Impossible to create the product, no more available address.	All appropriate in-/outputs are in use. If you still want to use an appropriate in-/output, then you have to delete an existing product.
Identification failed, a ['Timeout'] replied.	Connection or communication error with the connected measuring device. Check the Modbus connection and the appropriate communication settings (if necessary refer to the settings in the installation manual).

SUPERVISED MODE
Function available

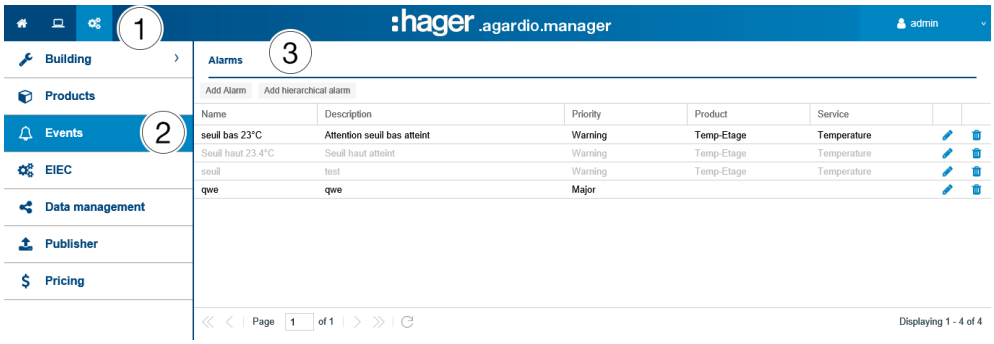
7. 7 Events

Steps to open the menu item

Step	Action
1	Click the **Configuration** menu .
2	Click **Events**.
3	- Click **Add Alarm** to add a new alarm for a measuring device that is communicating with the energy monitoring server. - Click **Add hierarchical alarm** to add a new alarm at an superordinate level of other alarms. - Click to control or change a certain alarm. - Click to delete an alarm that is not needed any more.

To add new alarms, there is an alternative way described at the Products menu item (see p. 90).

Screen to be displayed



Fields to enter

An alarm is characterized by its:

- Product (selection field, necessary)
- Service (selection field, necessary)
- Activated
- Type (selection field, necessary)
- Text (column **Name**, text field, necessary)
- Description (text field, not necessary)
- Priority (selection field, necessary)
- Trip threshold, Warning threshold and Hysteresis (selection fields, necessary for all types except Binary)
- Delay (selection field, necessary)

A **hierarchical alarm** is characterized by its:

- Text (column **Name**, text field, necessary)
- Description
- Priority (selection field, necessary)
- subordinated alarms that are assigned to it

Further information

Priority (critical, major, minor or warning) indicates the importance of alarms.

Warnings, major and minor alarms are mentioned in the daily report of Users (User management) (see p. 61).

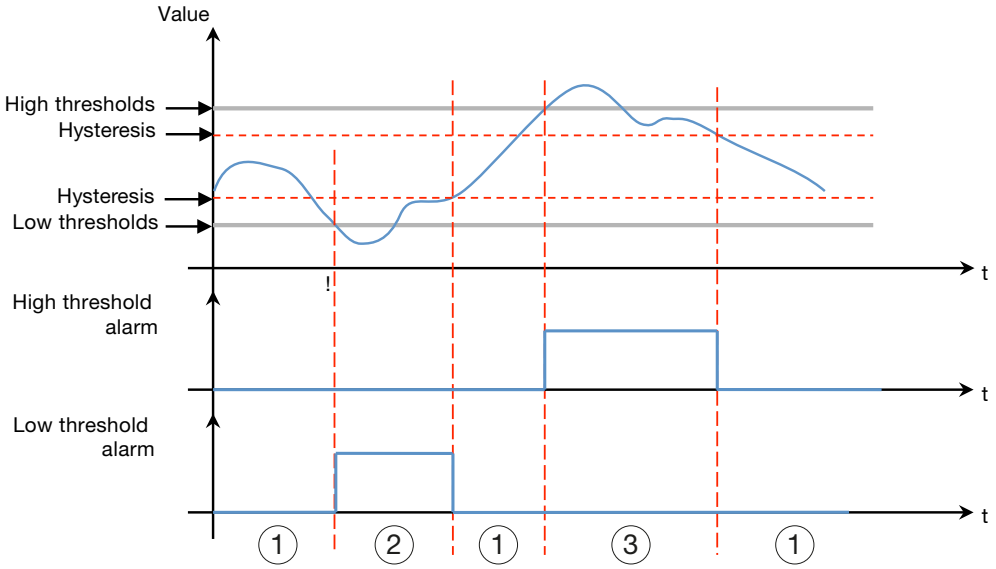
If critical alarms are triggered, then

- an e-mail (see p. 61) is sent to the End user (User management)
- the Normally open relay (see p. 15) output is activated.

Low/High Threshold is the value below/above which the alarm is triggered.

The low / high thresholds have a **hysteresis** to avoid repeated appearances and disappearances of alarms.

Here is an example:



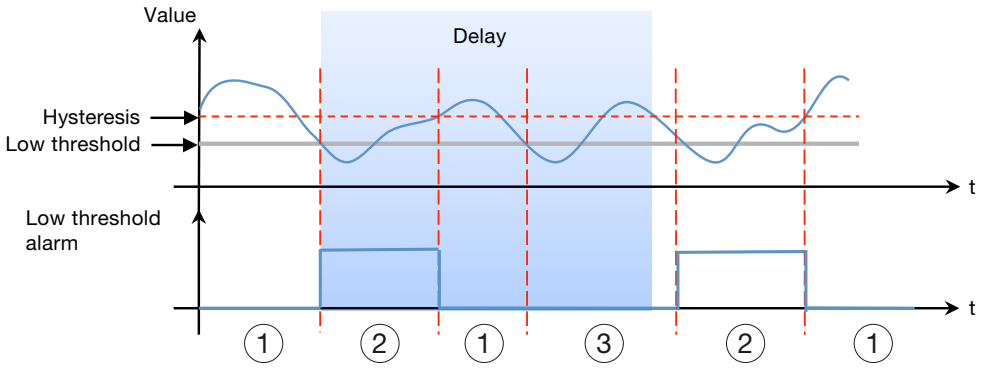
① No Alarm

② The low threshold alarm is active only if the level goes below the low threshold. It becomes inactive when the level goes back above the low threshold plus hysteresis.

③ The high threshold alarm is active only if the level goes above the high threshold. It becomes inactive when the level goes below the high threshold minus the hysteresis.

The low / high thresholds also have a **delay** corresponding to the time interval (in minutes) between two alarm triggers (if the values oscillate).

Here is an example:



① No Alarm

② The low threshold alarm is active only if the level goes below the low threshold. It becomes inactive when the level goes back above the low threshold plus hysteresis.

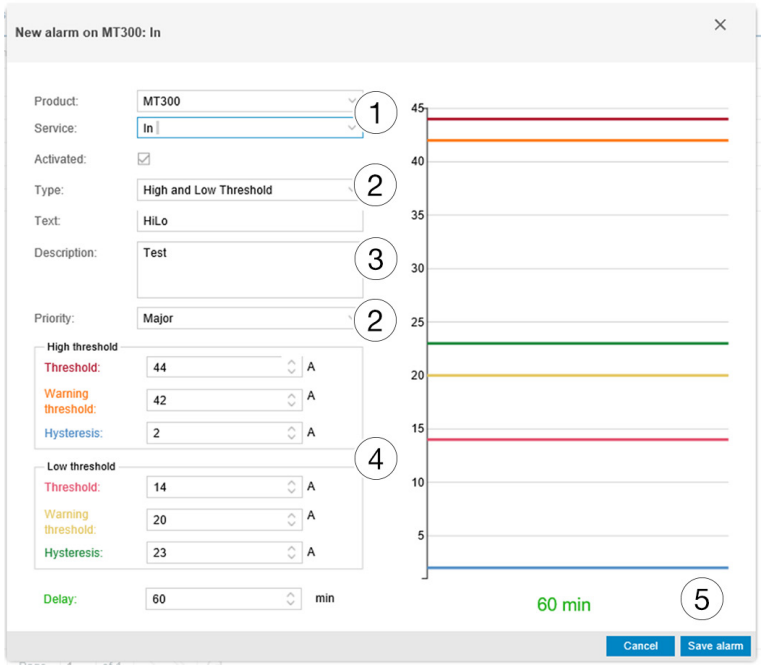
③ Although the value goes below the low threshold, the alarm is not activated because the delay has not elapsed.

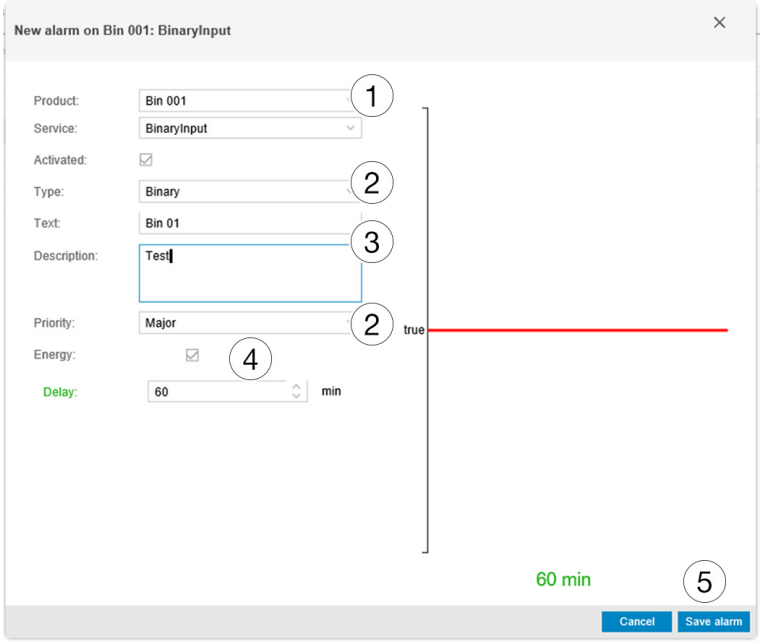
Alarms are structured following a hierarchy. Upper/hierarchical alarms generalize and summarize lower ones. A low level specialized alarm is generated when a problem appears. If the specialized alarm is subordinated to a hierarchical alarm, the hierarchical alarm is displayed first and user can drill down to see the causing subordinated alarm(s).

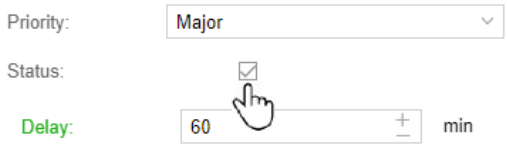
Add a new alarm for a measuring device

Alarms can be added only for services of measuring devices that are listed in the catalogue (see p. 70).

Depending on the product and the service you choose different types of alarms and further characterizations are available and needed: **Configuration-Products-Services** or **Events-Add Alarm:**

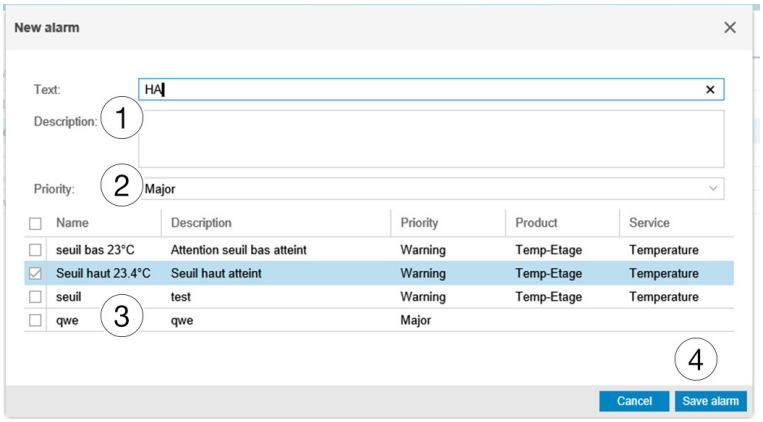




Step	Action
1	Choose measuring device (**Product**) and service to be monitored by the new alarm.
2	Choose type and priority of the new alarm.
3	Enter the name (**Text**) and description of the new alarm.
4	Enter or choose values for threshold, warning threshold, hysteresis and delay. **For binary alarms only**:  Clear the **Energy** check box ☐ if you want the alarm to be triggered at the value *false*. Otherwise the alarm will be triggered at the value *true*.
5	Click **Save alarm.**

The new alarm is active at once. Click **Activated** before saving the alarm, if you want to activate the alarm later.

Add a new hierarchical alarm



Step	Action
1	Enter the name (Text) and description of the new hierarchical alarm.
2	Choose the priority of the new hierarchical alarm.
3	Check the box ☐ at the top of the table to select all alarms or Check the boxes ☐ in each row of the table to select the alarms one by one to subordinate them to the new hierarchical alarm.
4	Click **Save alarm**.

Potential error messages

The following list explains the error messages that might be displayed at **Configuration/Events**:

Error message	Explanation/solution
Event involved in a hierarchical link, cannot be deleted.	Events which are part of an hierarchical alarm cannot be deleted. If you still want to delete the event, you first have to remove it from the hierarchical alarm.
Event has already parent, only one is allowed.	You tried to link an alarm that is already part of an existing hierarchical alarm to another new hierarchical alarm.

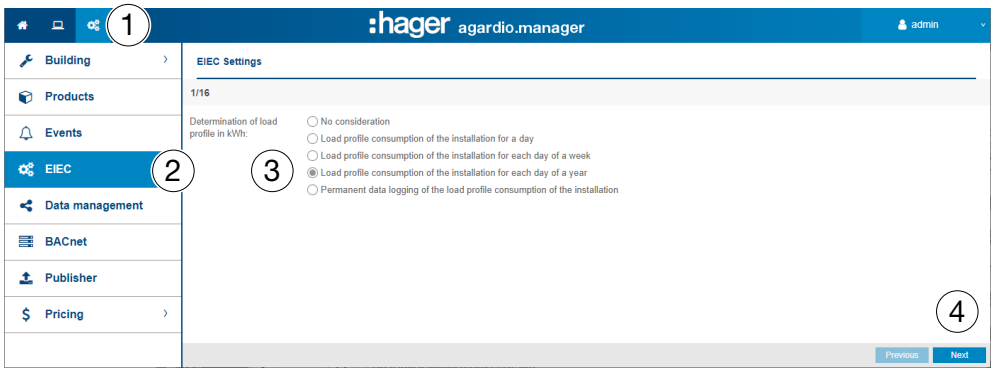
SUPERVISED MODE
Function not available

7. 8 EIEC

Steps to open the menu item

Step	Action
1	Click the **Configuration** menu .
2	Click **EIEC**.
3	Choose one of several alternatives for the efficiency measure or efficiency performance level.
4	Click **Next**.

Screens to be displayed



There are fifteen more screens displayed asking for the different efficiency measures or efficiency performance levels to be entered in the same way.

The default value is *Load profile consumption of the installation for each day of a year*.

About the EIEC classification

The DIN VDE 0100-801 (international standard IEC 60364-8-1) entered into force in Germany in October 2015.

The standard prescribes that every electrical installation (new electrical installations and modification of existing electrical installations) has to be classified into a so called Electrical Installation Efficiency Classes (EIEC).

The aim is to provide the best possible energy supply with the lowest energy consumption.

The classification depends on 16 defined criteria (13 Efficiency measures EM and 3 Performance Levels PL). Within each criterion 0-4 Points could be reached (EM0-EM4 or PL0-PL4). No consideration of the respective criterion means 0 points.

Depending on the total point score, the system will then be classified as follows:

No. of points	Class
< 58 points	EIEC4
< 48 points	EIEC3
< 36 points	EIEC2
< 26 points	EIEC1
< 16 points	EIEC0

NOTICE

The 16 criteria of the EIEC depend on the type of building that is entered at the Zone (see p. 85) menu item.

SUPERVISED MODE

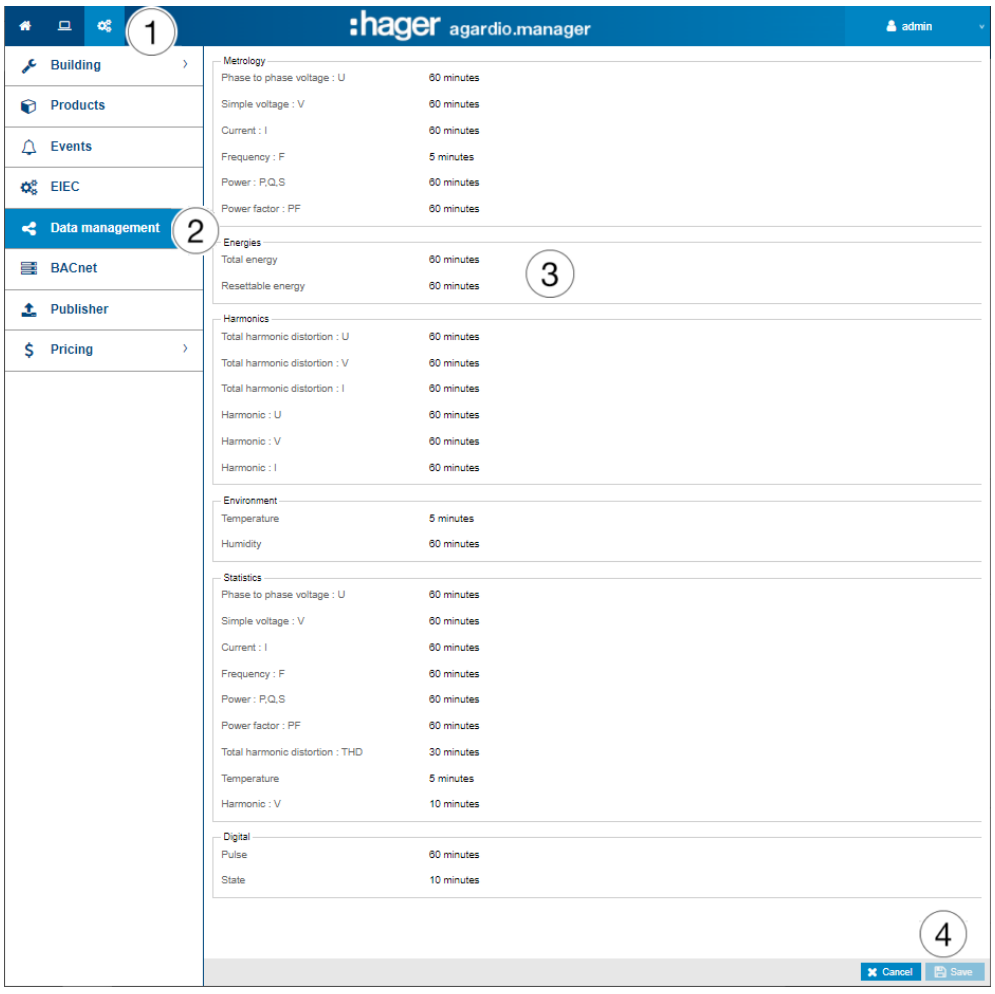
Function not available

7. 9 Data management

Steps to open the menu item

Step	Action
1	Click the **Configuration** menu .
2	Click **Data management**.
3	Control or change frequencies for logging a type of service.
4	Click **Save** to save changes.

Screen to be displayed



Further information

For each type of service a list box allows selecting among frequencies (50 min, 30 min, 20 min, 15 min, 10 min and 5 min).

According to the selected frequencies, the energy monitoring server stores the current values of all measuring devices that are communicating with the energy monitoring server.

Note:

The capacity of the database depends on the number of stored services. If the storage is full the oldest values will be overwritten.

NOTICE

The administrator Super admin has access at this level to the setting of the **BACnet Server**. For configuration of BACnet parameters, please refer to the **hG-ES-Rxx-BACnet Configuration Guide F.pdf**

SUPERVISED MODE

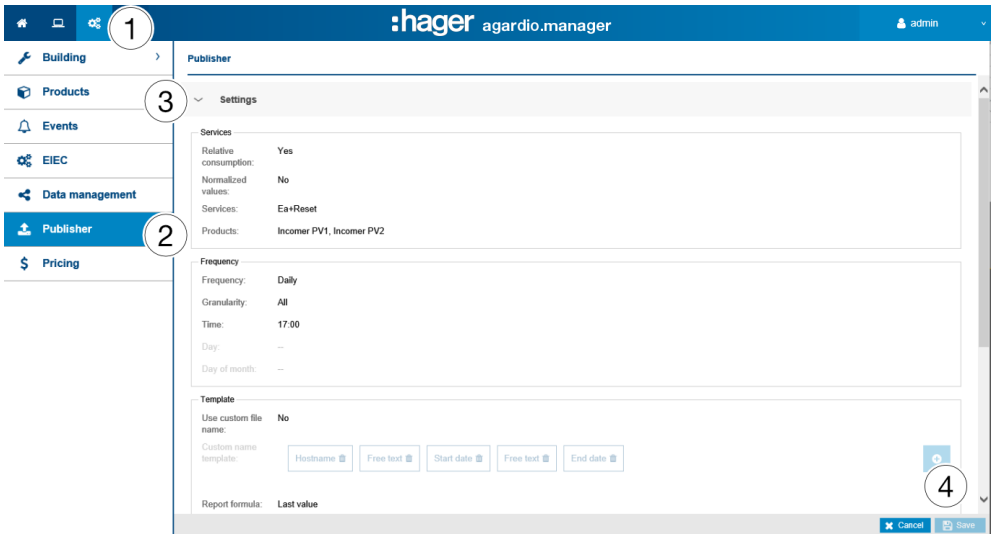
Function available
Exception : Frequency adjustment is not possible.

7. 10 Publisher

Steps to open the menu item

Step	Action
1	Click the **Configuration** menu .
2	Click **Publisher**.
3	Click (expand) **Settings** and modify Parameters.
4	**Save** changes.

Screen to be displayed



Settings menu

Fields to enter

The publisher file is characterized by:

Services

- **Relative consumption** for the selected period (Yes/No)
  NOTE:
  If the relative consumption is selected, you have only energy services available.
- **Services** (Multiple selection possible)
- **Products** (Multiple selection possible)

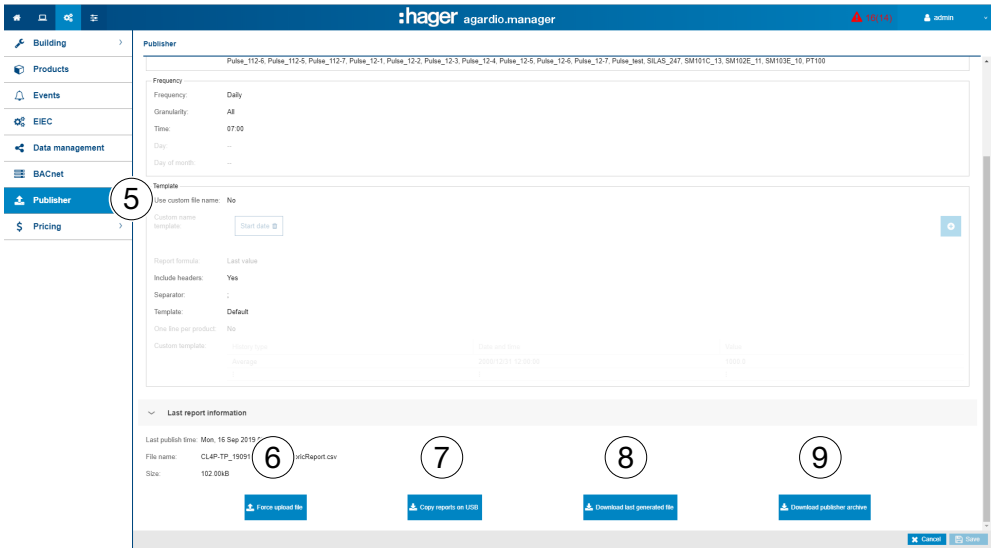
Frequency

- **Frequency:** Daily, weekly or monthly transmission of the publisher file
- **Granularity:** Interval of measured value recording
- **Time:** Date of transmission of the publisher file (if **Frequency** / **Daily** is selected)
- **Day:** Weekday of transmission of the publisher file (if **Frequency** / **Weekly** is selected)
- **Day of the month:** Monthday of transmission of the publisher file (if Frequency / Monthly is selected)

Template

- **Use custom file name** (yes / no): Customizing the file name for the publication
- **Custom name template:** option to set the file name
- **Custom name example:** Example showing the result of the custom name template
- **Template description** (fixed value)
- **Include headers:** (Yes/No)
- **Separator**: Separator to delimit the fields of the table
- **Template:** Template of the generated file.
  - **Default:** basic model
  - **One product per line:** (yes / no).
  - **Customizable 1:** Custom template used
- **One line per product** (Yes/No)
- **Custom template**: Used custom template of the publisher file
  NOTE: If the custom template is selected, you can select and arrange the columns of the table by drag and drop the individual lines to define the *.csv file.

Last report information menu



Upload/Download publisher file

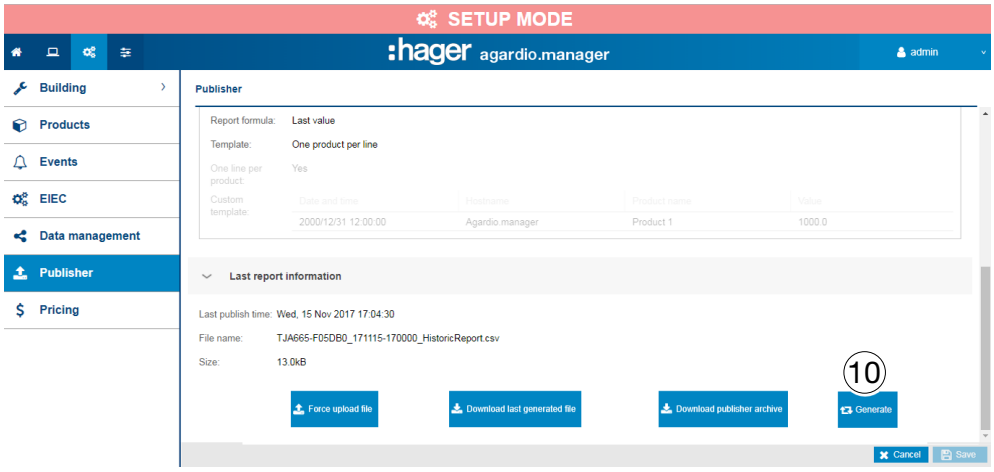
Step	Action
5	Click on (expand) **Last report information**: The following information is displayed: - **Last publish time**: Time the last publisher file was sent to the server. - **File name**: Name of the publisher *.csv-file. - **Size**: Size of publisher *.csv-file
6	Click on **Force upload file**: - The publisher file is immediately sent to the server.

7	Click **Copy reports on USB:** - The last generated file is copied to the USB stick connected to the server. - If the publication has failed, a warning message will appear on the screen.
8	Click on **Download last generated file**: - The last, generated publisher file is downloaded from the server.
9	- Click on **Download last publisher archive**: - The `Publisher.zip` archive is downloaded from the server. This file contains the last 7 reports.

NOTICE
If the publication has failed, a warning message will appear on the screen.

Generate publisher file in Setup Mode

Notice:
The button **Generate** (to generate the publisher file immediately) is only shown in Setup-Mode.



Step	Action
10	Click on **Generate** to produce (generate) the current publisher file.

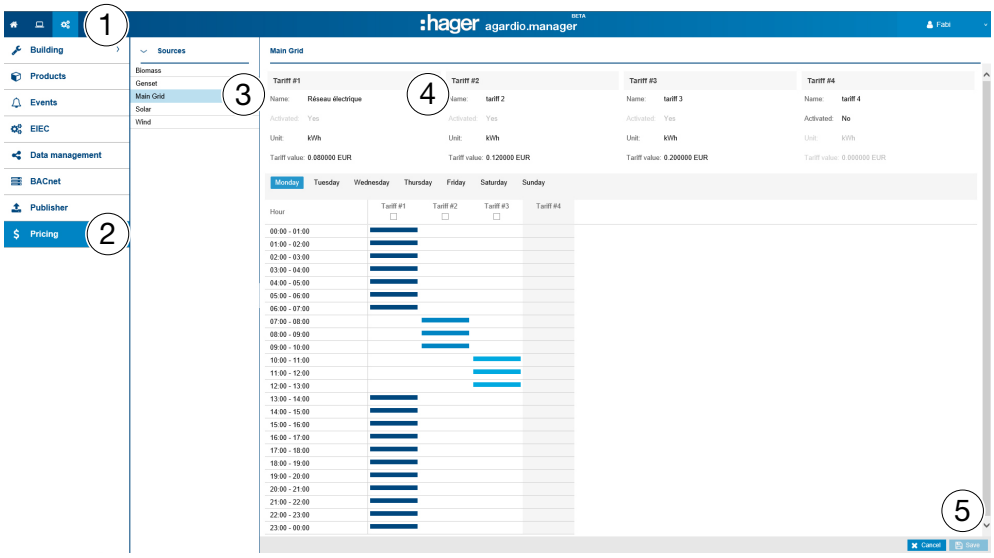
SUPERVISED MODE
Function not available

7. 11 Pricing

Steps to open the menu item

Step	Action
1	Click the **Configuration** menu .
2	Click **Pricing**.
3	Select a **Source.**
4	Modify Parameters.
5	**Save** changes.

Screen to be displayed



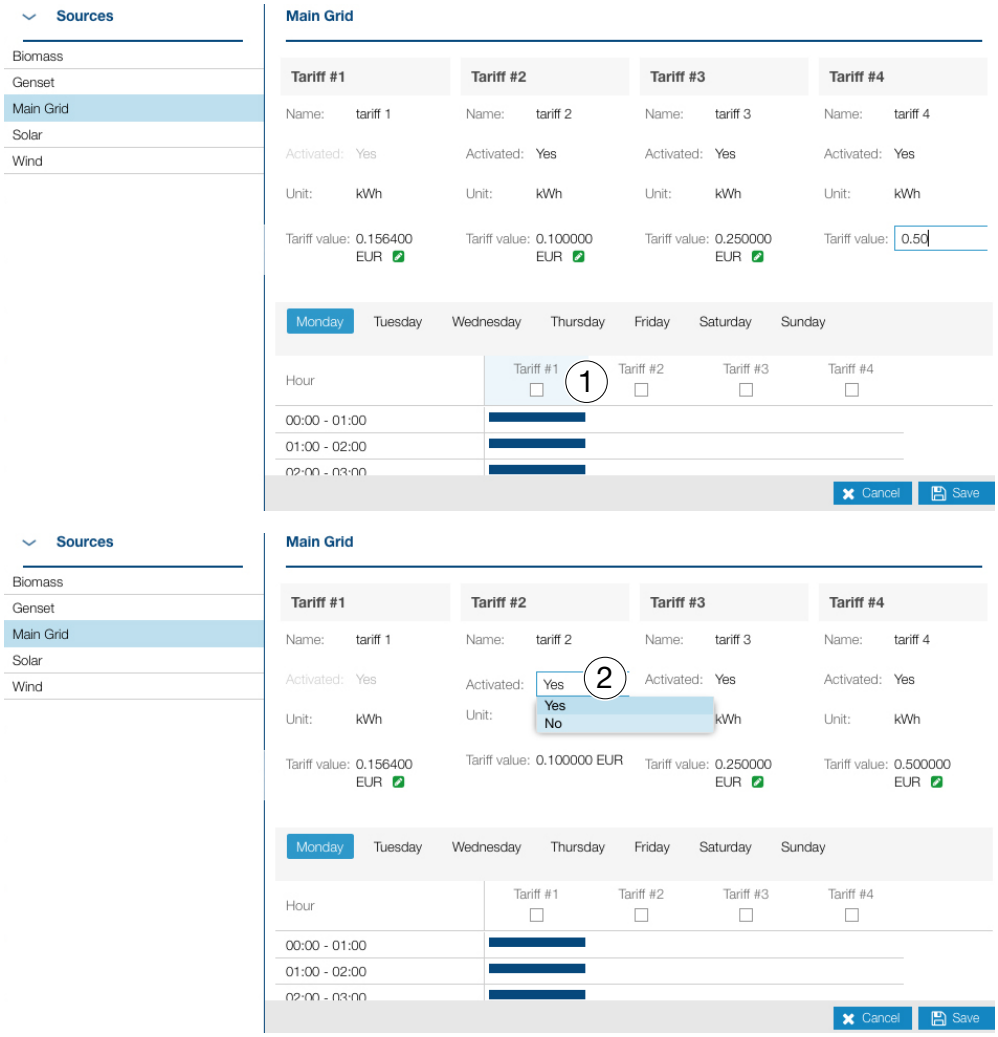
For every energy source 4 electricity tariffs can be set.

Fields to enter

- **Name**
- **Activated** (Yes/No)
- **Unit:** Unit of the value of the energy source (kW/h, MW/h)
- **Tariff value:** Tariff of the energy unit

Setting a tariff active or inactive

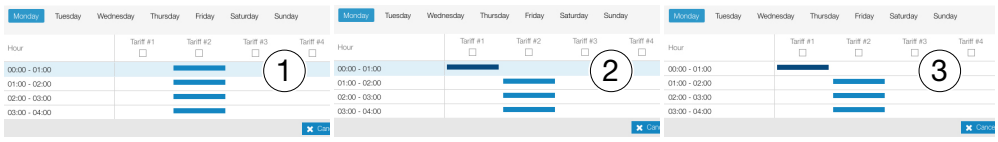
Step	Action
1	Doubleclick on a **Tariff #** field at the time table.
2	The unselected tariffs can be set **active** or **inactive.** They stay **shaded** if inactive.



Assign a tariff to a daily period

A tariff can be assigned per hour. The tariff stays shaded if inactive.

Step	Action
1	Click on the (hour-) bar of a tariff in the time table.
2	Click at the position for the new assigned tariff for the period.
3	- The (hour-) bar will move and change its colour. - The tariff is assigned to the new period.



NOTICE

If the tariff is not activated, the column of it will appear in gray in the table.

SUPERVISED MODE

Function available

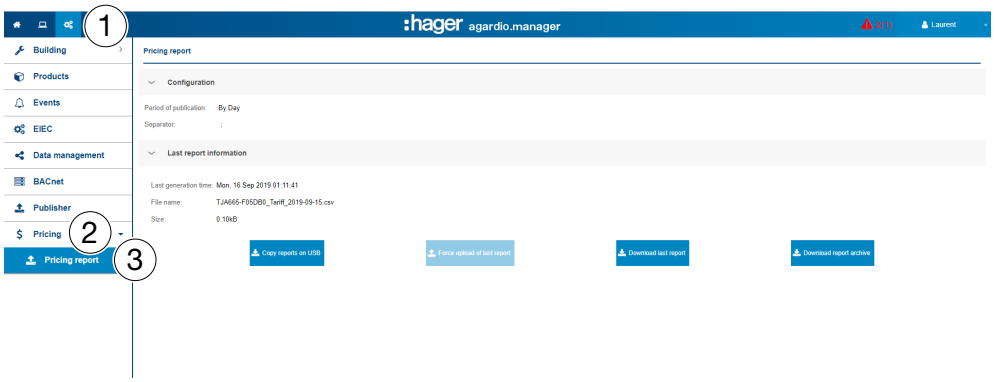
Exception : The configuration of the pricing programs is not possible.

7. 12 Pricing report

Steps to open the menu item

Step	Action
1	Click the **Configuration** menu .
2	Click **Pricing**.
3	Click **Pricing report**.

Screen to be displayed



Configuration

The file to be generated is defined by the following parameters:

- **Period of publication:** Daily, weekly or monthly publication of the output file.
- **Separator**: Separator to delimit the fields of the table.

Latest report information

Step	Action
4	Click **Copy Reports on USB**: The last generated report is copied to the USB stick connected to the server.
5	Click **Force upload of the last report**: The report is generated again and copied to the server.
6	Click **Download Last Report**: The last generated report is downloaded from the server.
7	Click **Download Report Archive**: The Tariff.zip output file is downloaded from the server. This file contains the last 7 reports.

SUPERVISED MODE
Function not available

8 EXPLOITATION menu

Introduction

This chapter provides detailed information regarding all menu items of the **Exploitation** menu.

The **Exploitation** menu allows data visualizations and event control of the measuring devices that are communicating with the energy monitoring server.

NOTICE

The **Exploitation** menu is useful for the facility manager or technical maintenance team.

Chapter contents

8. 1 Overview of the menu items

The **Exploitation** menu includes the following menu items:

Menu item	Description
Energy management	Visualize indicators for energy management and efficiency graphically - **Dashboard**: Charts of energy distribution and energy trends by energy sources and consumption. Charts of non-electric energy distribution, total pricing, relative consumption and download function. - **Consumption**: Charts of the energy consumption and energy trend per usage / zone, download function - **Sources**: Charts of the energy sources (i.e. Solar panels) and energy trend per source type, download function - **Products**: Complete list of energy indexes and relative consumptions of all measuring devices. - **Pricing:** Graphical representation of estimated cost per energy source and cost trends per week and month. - **W.A.G.E.S*:** Functionality showing the varying measures related to different non energetic services used for measuring various consumptions *(**W**ater, **A**ir, **G**as, **E**lectricity, **S**team)
Power quality	Visualization of power quality indicators - **Regular**: Tables of Phase to Phase / Neutral Voltage, Current per Phase and Frequency - **Advanced**: Tables of Power factor and THD (V, U & I) in percentage of the nominal value. Charts of the different harmonics (V, U & I)
Protection	Visualization of information on protection products. - **Dashboard**: Overview of the protection products on the dashboard. - **Products**: Visualization of the settings for the selected protection products. - **Maintenance**: Overview of the maintenance information for protection products.

Menu item	Description
Measurements	Displays measurement data by product - **Trends History**: Graphical representation of saved measured values from the different measuring devices - **Real-time**: Table or figure of current measured values from a chosen measuring device. - **Real-time multi-product**: Table or figure of current measured values from several selected measuring devices. - **Compare**: Graphical comparison of a service for a measuring device between two different time periods - **Energy**: Graphical display of energy values measured and recorded from different measuring devices.
Events	View of active events or all events occurring on the system (alarms, tests, logins/logouts, creation of new users...)
EIEC	Visualize the electrical energy efficiency class EIEC (chart or grid view)

8. 2 Energy management - Dashboard

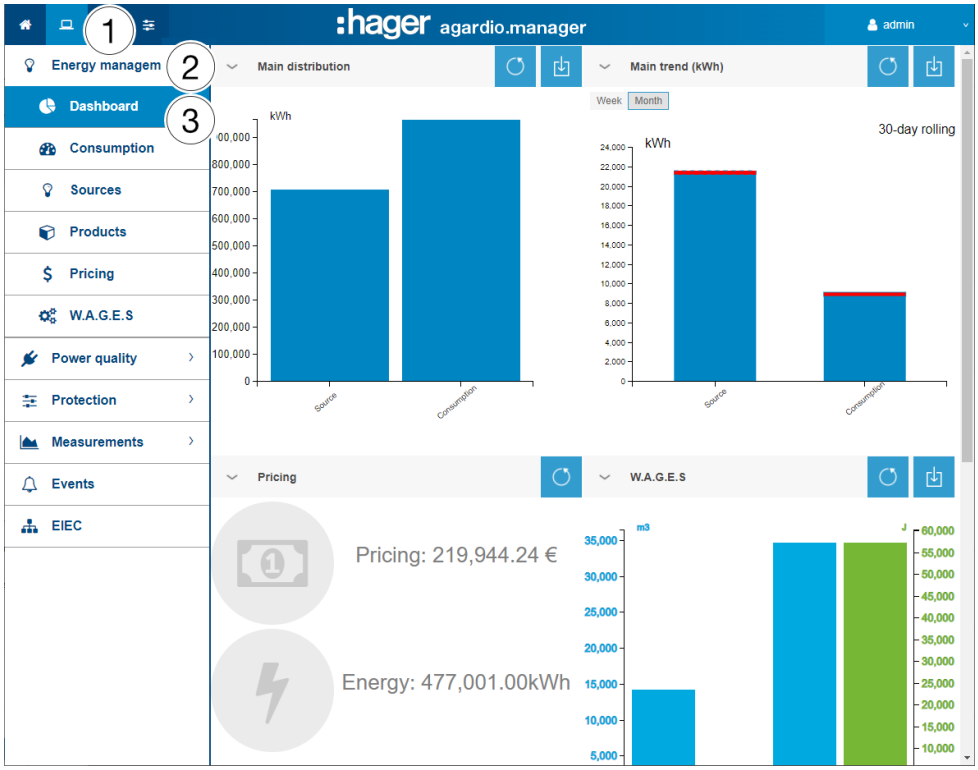
Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **Energy management**.
3	Click **Dashboard**.

Screen to be displayed

The following dynamic figures are displayed:

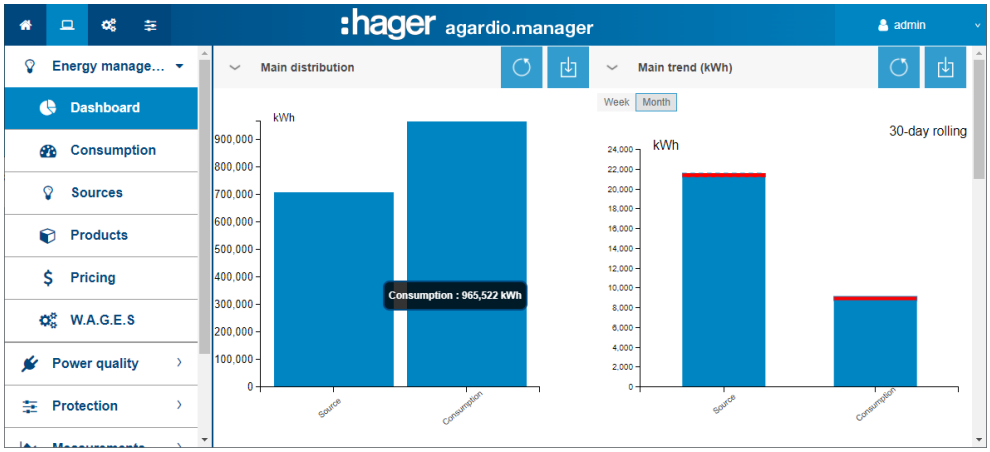
- Main distribution (pie chart)
- Main trend (bar chart)
- Pricing (bar graph)
- W.A.G.E.S (bar graph)
- Relative energy (table)



Further information for all bar charts

The whole kWh-values of the charts are updated depending on the capabilities of the measuring devices to refresh data.

If you move the mouse over any piece (Consumption and sources) of the chart, the corresponding kWh-value will be displayed:



A download-function is available for every chart to generate a PNG file.

The dashboard (energy distribution for consumption and for sources) is updated every day.

The energy consumption and production trends are calculated over 7 rolling days. So, for example, on Thursday 26th, the calculation is done using the information 7 days before Wednesday 25th compared to that of the 7 days before Wednesday 18th.

The blue part of the bar corresponds to the minimum energy measured between the 2 periods.

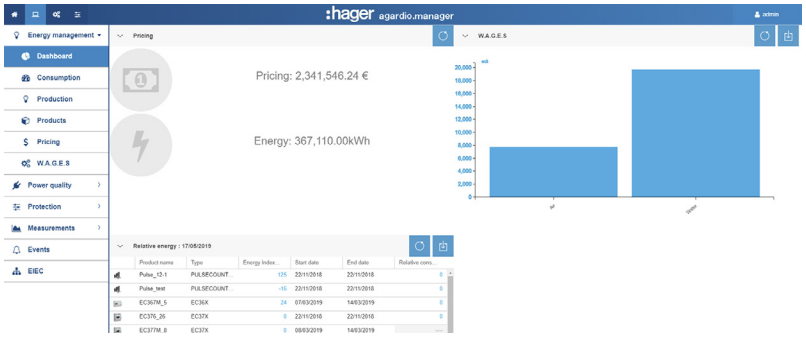
The other part (green or red) zone is the difference of energy measured between the 2 periods:

- 7 current days (Wednesday 18th to (Wednesday 25th)
- 7 previous days (Wednesday 11th to Wednesday 18th)

In case the bar top of a usage or zone is ...,	the energy mesured between the two periods has...
green	decreased.
red	increased.

In case the bar top of a source is ...,	the energy mesured between the two periods has...
red	decreased.
green	increased.

The dashboard also displays the following information:



- Energy and the price of energy consumed since commissioning.
- Non-electric energies such as the consumption of water, gas, steam and air (W.A.G.E.S.).
- Relative energy, shown in tabular form, for each product.

SUPERVISED MODE

Function not available

8. 3 Energy management - Consumption

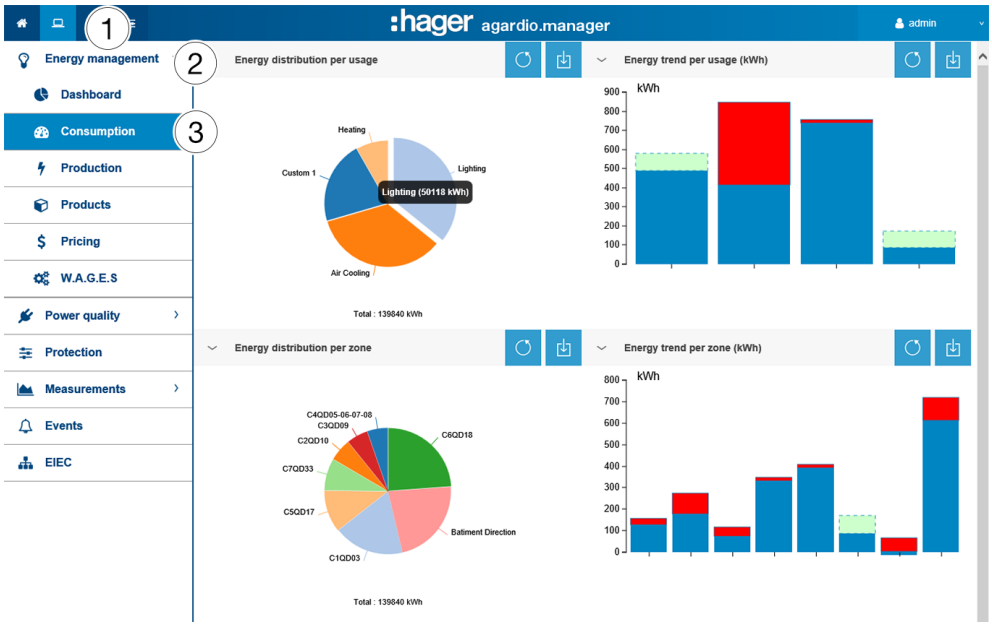
Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **Energy management**.
3	Click **Consumption**.

Screen to be displayed

The following dynamic figures are displayed:

- Energy consumption per usage (pie chart)
- Energy consumption per zone (pie chart)
- Energy consumption trend per usage (bar chart)
- Energy consumption trend per zone (bar chart)



Additional information for all pie charts and bar charts

- For the graphs representing the distributions by usage or by zone, it is possible to consult the details of a distribution by clicking on the graphic part concerned. The displayed graph then represents the distribution by product associated with this usage or the distribution by usage of this zone. To return to the original chart, click **Reload Data** .

- For the bars representing trends by usage or by zone, it is possible to consult the details of a trend by clicking on the graphic part concerned. The displayed graph then represents the product trend by product of this usage, or by usage of this zone. To return to the original chart, click **Reload Data** .

SUPERVISED MODE
Function not available

8. 4 Energy management - Sources

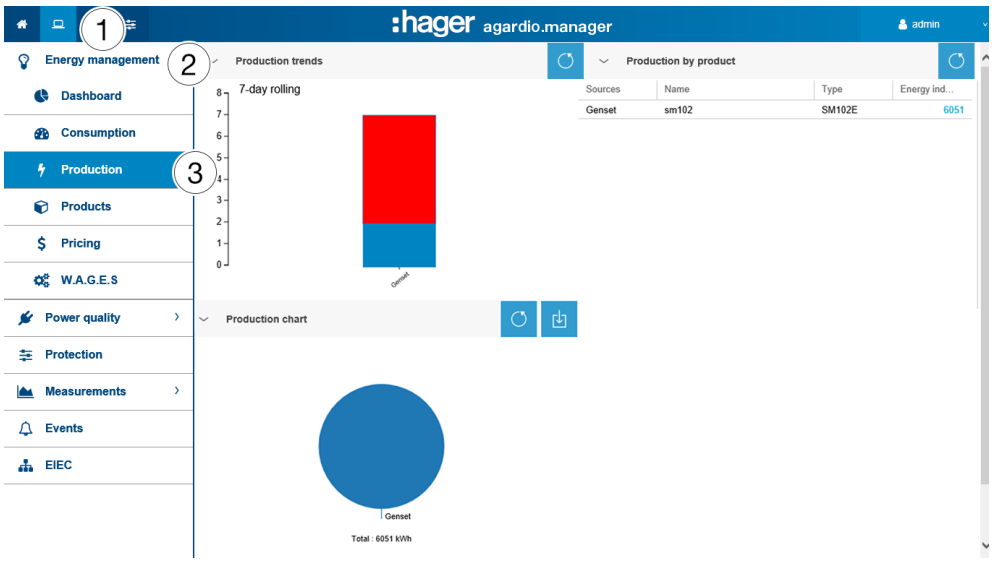
Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **Energy management**.
3	Click **Sources.**

Screen to be displayed

The following dynamic figures are displayed:

- Energy trends by source, the second level is a breakdown by product (bar chart)
- Energy per product (Table)
- Energy per source (pie chart)



Additional information for all pie charts and bar charts

- For bars representing the trends, it is possible to consult the details of a trend by clicking on the graphical part concerned. The displayed graph then represents the product-specific trend of the selected energy source. To return to the original chart, click **Reload Data**

- For the graphs representing the distribution of source energy, it is possible to consult the details of a distribution by clicking on the graphic part concerned. The displayed graph then represents the product breakdown of the energy source. To return to the original chart, click **Reload Data**

SUPERVISED MODE
Function not available

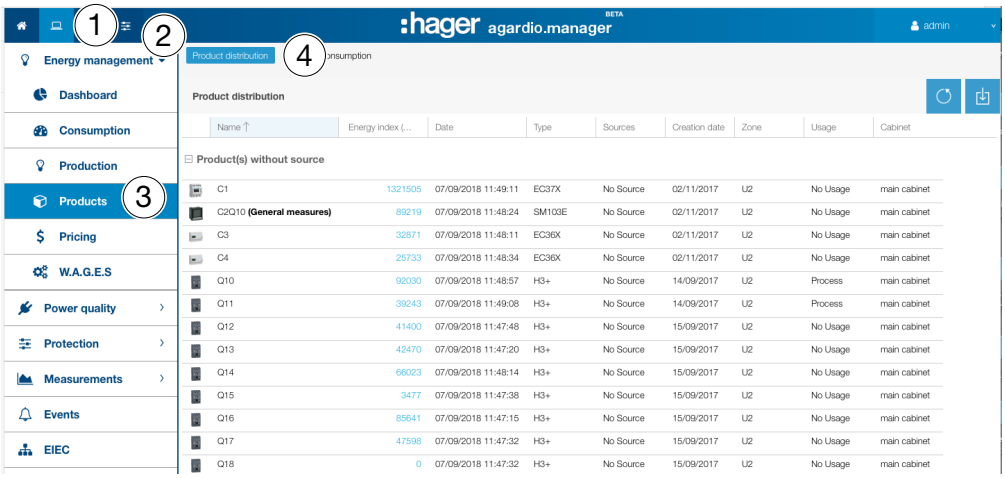
8. 5 Energy management - Products

Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **Energy management**.
3	Click **Products**.
4	Click **Product distribution**.

Screen to be displayed

The following dynamic figure is displayed:



Further information

The **Product distribution** gives information about all products communicating with the energy monitoring server. It is useful for a facility manager to get the energy indices (Total Positive Active Energy Ea+) of all measuring devices in one click.

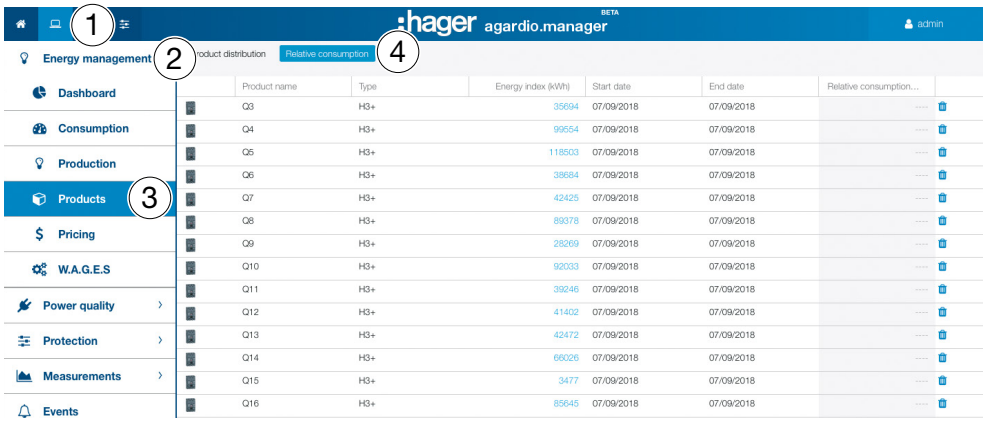
The **Product distribution** is updated at the storage frequency configured for energies in Configuration - Data management. Therefore the value is the last stored value for **Total Positive Active Energy: Ea+** that you can find in the **Measurements - History** menu item.

Steps to open the menu Relative consumption

Step	Action
1	Click the **Exploitation** menu .
2	Click **Energy management**.
3	Click **Products**.
4	Click **Relative consumption**

Screen to be displayed

The following dynamic figure is displayed:



Further information

In this menu, you can choose **the periods of consumption by products**, which you will validate and register, and which will display during the disconnection as the welcome screen.

SUPERVISED MODE

Function not available

8. 6 Energy management - Pricing

Steps to open the menu item

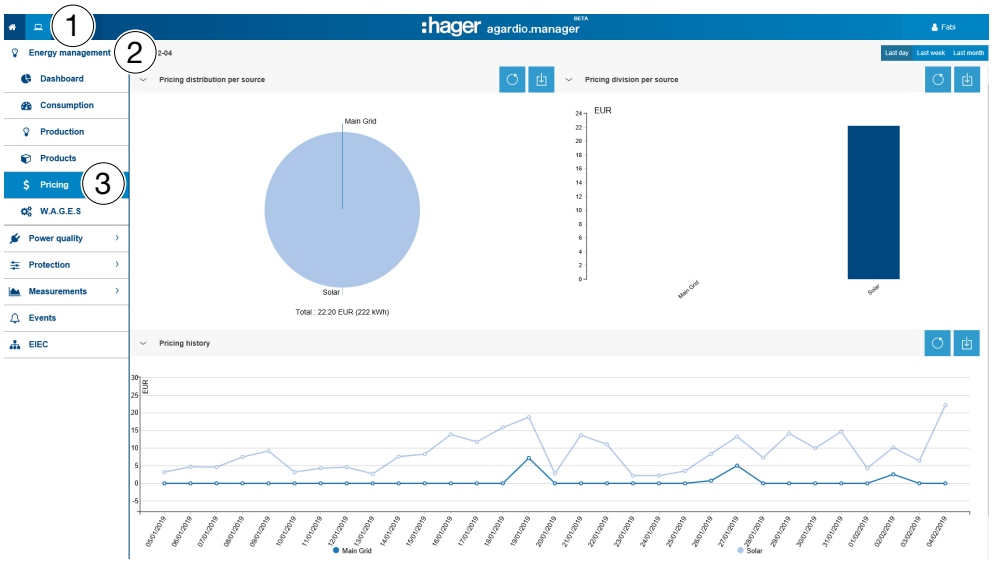
Step	Action
1	Click the **Exploitation** menu .
2	Click **Energy management**.
3	Click **Pricing**.

Screen to be displayed

This screen displays the graphical representation of the distribution and the history regarding the cost related to different positive active energy services.

The following dynamic figures are displayed:

- Pricing distribution per source (pie chart)
- Pricing division per source (bar chart)
- Pricing history (line diagram)



Functions to choose

- Click **Last day** to see the representation for the last day.
- Click **Last week** to see the representation for the last week.
- Click **Last month** to see the representation for the last month.

Additional information for all pie charts and bar charts

- For the graphs representing the tariff distribution by source, it is possible to consult the details of a distribution by clicking on the graphic part concerned. The displayed graph then represents the tariff breakdown by product, for the selected energy source. To return to the original chart, click **Reload Data** .

- For the bars representing the division of prices by source, it is possible to consult the details of a division by clicking on the graphic part concerned. The displayed graph then represents the price division for the source by product. To return to the original chart, click **Reload Data** .

SUPERVISED MODE
Function not available

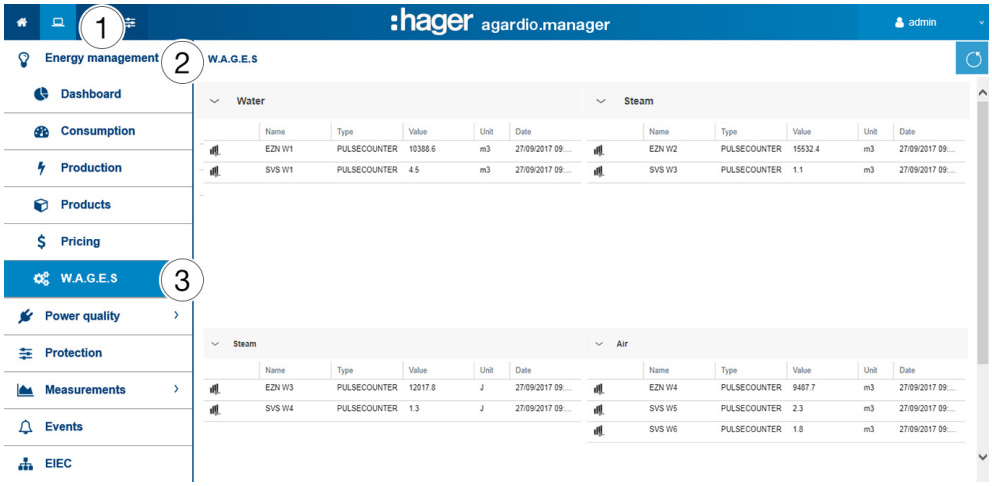
8. 7 Energy management - W.A.G.E.S

Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **Energy management**.
3	Click **W.A.G.E.S.**

Screen to be displayed

This screen shows representations of the non-electric energies detected by the connected measuring devices.



Further information

In this menu, the values of the following non-electrical energies are displayed:

- Water (in m3)
- Gas (in m3)
- Steam (in Joules)
- Air (in m3)

SUPERVISED MODE
Function not available

8. 8 Power quality - Regular

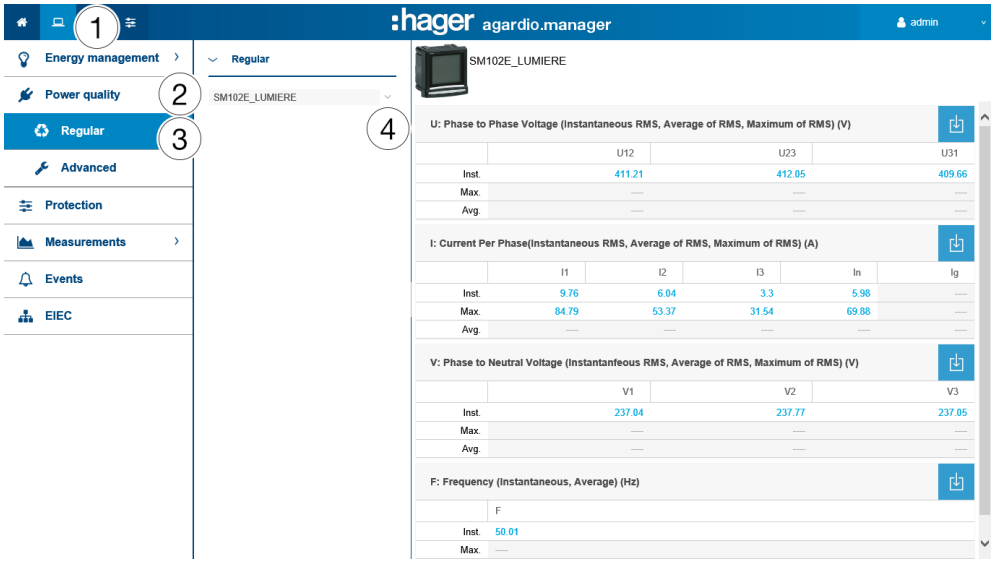
Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **Power quality**.
3	Click **Regular**.
4	Select a measuring device (**Product**).

Screen to be displayed

The following dynamic tables are displayed:

- Phase to Phase Voltage
- Current Per Phase
- Phase to Neutral Voltage
- Frequency



The tables contain the instantaneous, the maximum and the average values for all displayed services of the measuring device.

Further information

The whole values of the tables are updated depending on the capabilities of the measuring devices to refresh data.

The display of the maximum and average values depends on the selected device. They are calculated by the device itself from the recorded values.

SUPERVISED MODE

Function not available

8. 9 Power quality - Advanced

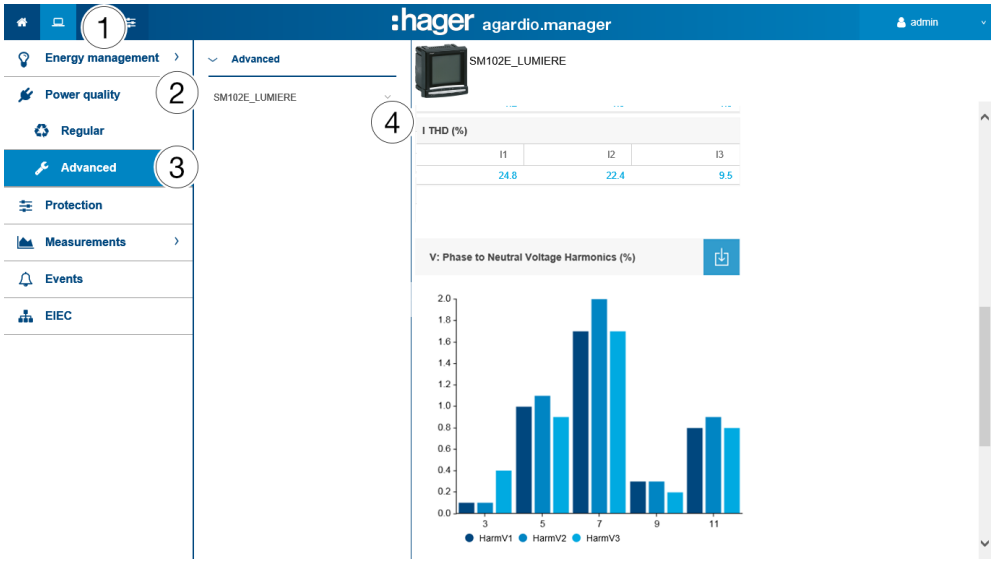
Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **Power quality**.
3	Click **Advanced**.
4	Select a measuring device **(Product)**.

Screen to be displayed

The following dynamic tables and bar charts are displayed:

- Power factor (table)
- Total Harmonic Distortion (THD) of Voltage (V and U) as well as current (I) (table)
- Single Voltage Harmonics (%, bar chart)
- Harmonic Tensions Composed (%, bar chart)
- Phase Harmonic (%, bar chart)



All bar charts are displayed with harmonic ranks 3, 5, 7, 9 and 11.

Further information

The whole values displayed in the tables and bar charts are updated depending on the capabilities of the measuring devices to refresh data.

Power factor is the ratio between kW (active power) and kVA (apparent power).

THD is the summation of all harmonic components to the power of voltage or the current compared against the fundamental component of the voltage or current wave. A high THD means distortions due to nonlinear loads (electronics ballast, computer power supplies for examples).

Harmonic Ranks

For analysis of the power quality it is important to monitor the odd-numbered harmonic ranks 3, 5, 7, 9 and 11. Harmonic ranks lead to distortion of voltage and current. This can impair the proper functioning or destroy the equipment.

Harmonic ranks are caused by equipment with non-linear characteristics and generate additional frequencies which are integer multiples of the fundamental frequency (e.g. 50 Hz). Number 3 represents 3 times the fundamental frequency 50 Hz, i. e. 150 Hz.

The diagrams show the harmonics of the voltages/currents in percentage of the nominal voltages/currents.

NOTICE

Harmonic Ranks

This function is only available in the list for Advanced Power Quality features.

SUPERVISED MODE

Function not available

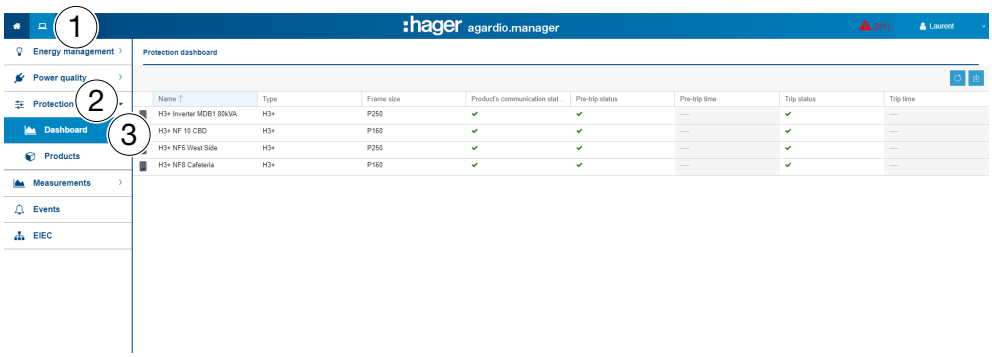
8. 10 Protection - Dashboard

Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **Protection**.
3	Click **Dashboard**.

Screen to be displayed

This screen displays the existing protection devices on the dashboard and their status.



SUPERVISED MODE

Function not available

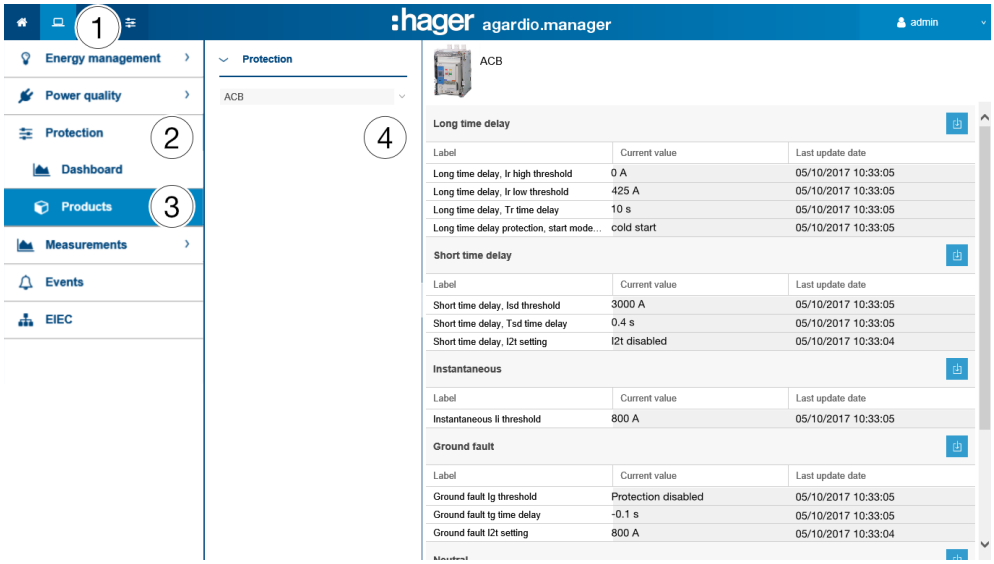
8. 11 Protection - Products

Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **Protection**.
3	Click **Products**.
4	Select a **protection device**.

Screen to be displayed

This screen displays only the related parameters to selected protection products.



SUPERVISED MODE

Function not available

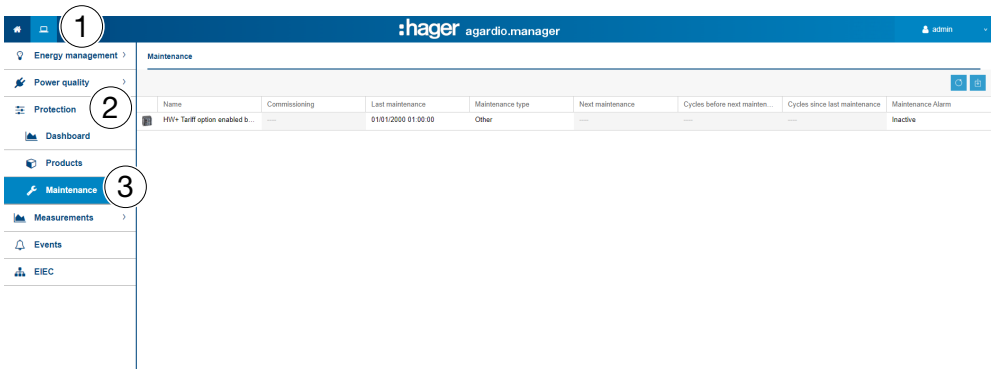
8. 12 Protection - Maintenance

Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **Protection**.
3	Click **Maintenance**.

Screen to be displayed

This screen displays the maintenance status of existing protection devices.



SUPERVISED MODE

Function not available

8. 13 Measurements - Trends / History

Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **Measurements**.
3	Click **History**.
4	Choose a measuring device (**Product**).
5	Choose a **Service**.
6	Click **Additional products** if you want the same Service of another product to be added in the figure and select the products (optional).
7	Choose a **Start** and **End date**. **Note**: Always set an end date greater than the start date. The maximum duration of the history is 1 month.
8	Select the **Average** or **last value**
9	Select **Show temperature** to display the measures along with corresponding temperatures.
10	Click **Events** if you want to show all events to the selected product.
11	Click **Apply**.

Screen to be displayed

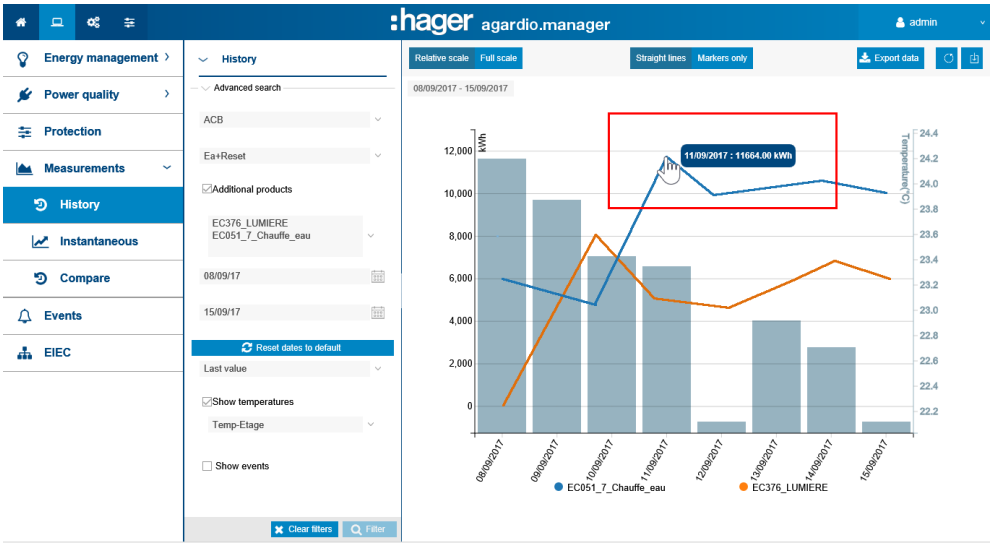
The following chart is displayed:

The figure shows values within the selected time period.

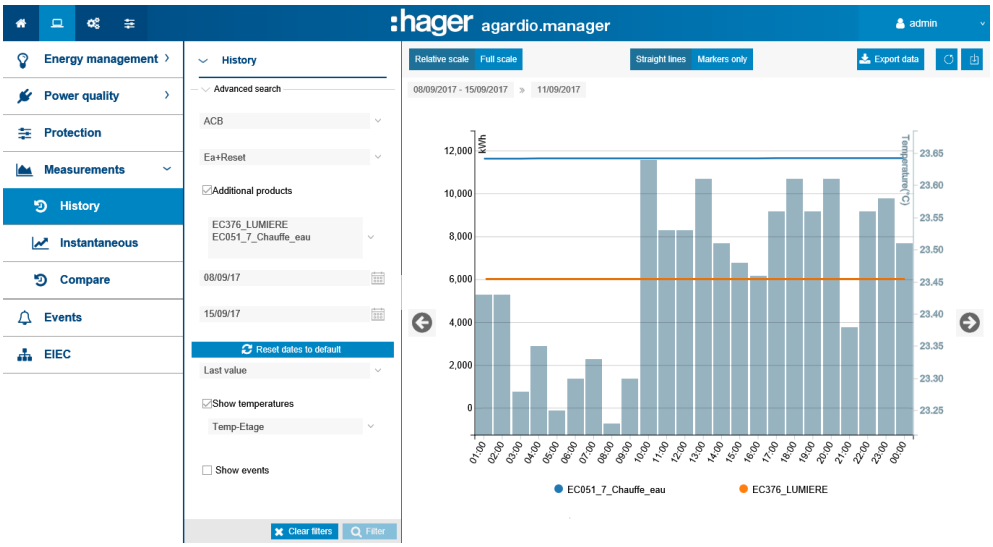
Further information

Optionally, it is possible to display the temperature measurement and the events related to the product and the period by checking the **Show Temperatures** and / or **Show Events** checkboxes.

Click the marker to display the average values per hour and minute in the course of the corresponding day:



Daily average value:



Functions to choose

- Click **Reset dates to default**, to reset the observation period to the last 7 days.
- Select **Average** (default selection) or **Last Value** in the drop down list below the date selection to display the corresponding values**.**
- Click **Relative scale** (default selection) to display the service values in a dynamic scale of the vertical coordinate axis.
- Click **Full scale** to display the service values in the coordinate system with fix initial value 0 of the vertical coordinate axis.
- Click **Straight lines** if you want the values to be connected by a straight line.

- Click **Markers only** if you want the values to be displayed without a connecting straight line. Clicking on the dot changes from daily value to hourly value. Clicking again will change from hourly to minute (depending on the setting in service management).
- Click **Download as image** to download the figure as PNG file.
- Click **Export data** to download the values as *.csv file.

Further information

The whole values of the figure are updated depending on the capabilities of the measuring devices to refresh data.

SUPERVISED MODE
Function not available

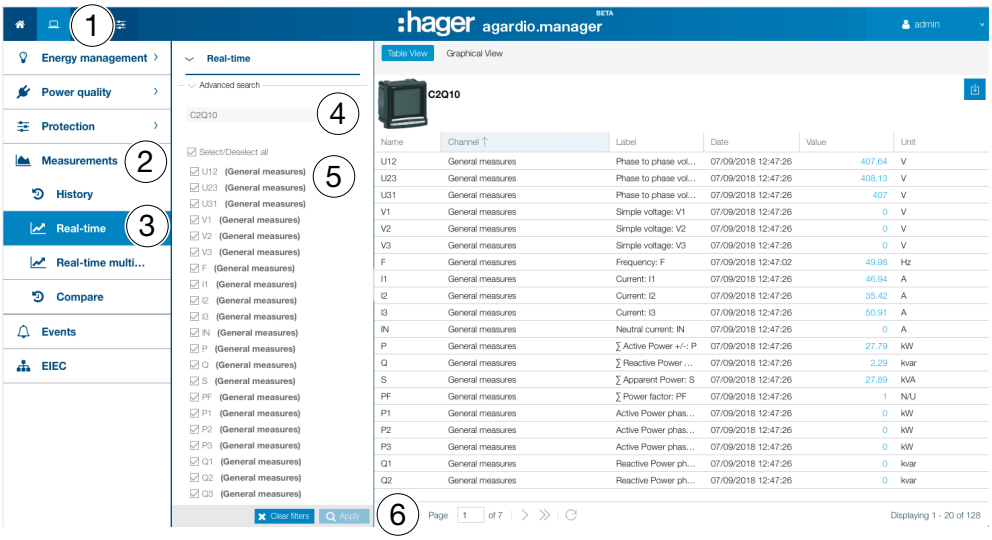
8. 14 Measurements - Instantaneous

Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **Measurements**.
3	Click **Real-time**.
4	Choose a measuring device (**Product**).
5	Choose the **Services** that you want to visualize.
6	Click **Apply**.

Screens to be displayed

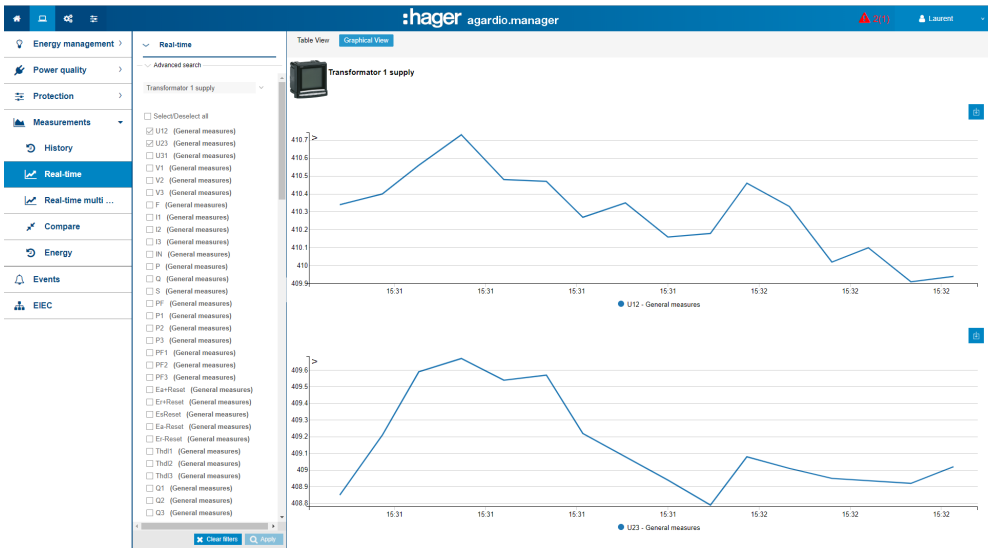
The following dynamic figure is displayed at the **Table View**:



NOTICE

It is possible to export the result in a spreadsheet file in CSV format by clicking on .

The following dynamic figure is displayed at the **Graphical View**:



NOTICE

It is possible to export the result to an image file in PNG format by clicking on

Functions to choose

- Click **Select/deselect all** (if needed) to check/uncheck the boxes of all services of the selected measuring device.
- Click **Clear filters** to delete all display settings regarding product and services.

Further information

The whole values of the table view and the graphical view are updated depending on the capabilities of the measuring devices to refresh data.

SUPERVISED MODE

Function available

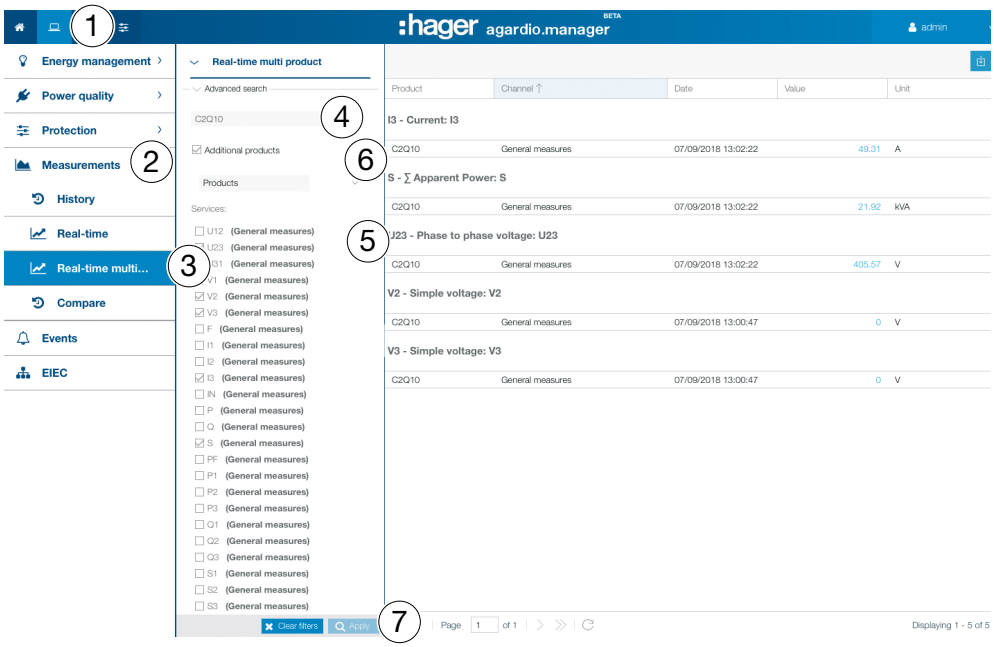
8. 15 Real-time multi product measurements

Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **Measurements**.
3	Click **Real-time multi product**.
4	Choose the measuring devices (**Products**).
5	Choose the **Services** that you want to visualize.
6	Click **Additionnal products** to add measuring devices (only products with selected services will be proposed).
7	Click **Apply**.

Screen to be displayed

The following figure is displayed:



Further information

We can visualize the most 5 measuring devices and 10 services.

SUPERVISED MODE

Function not available

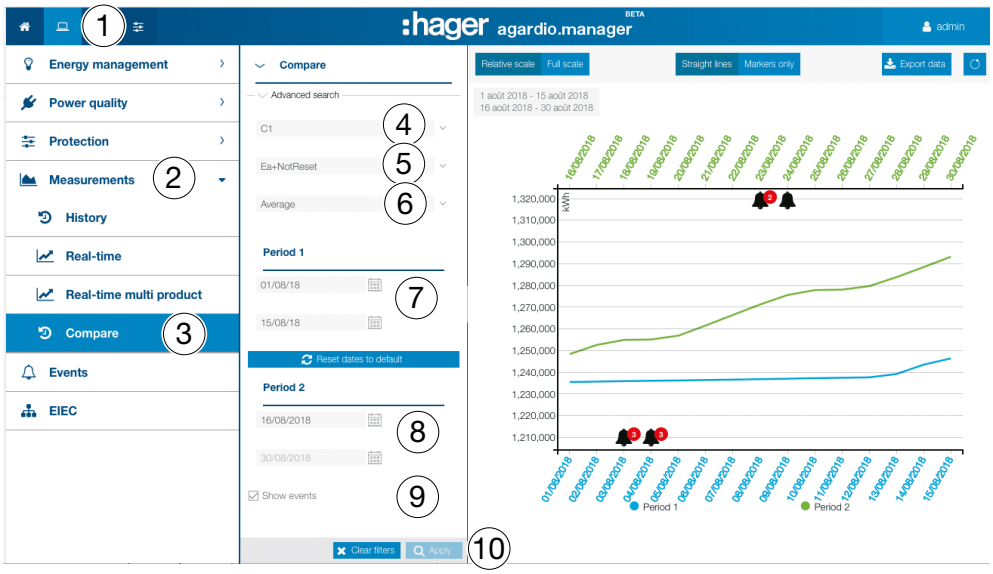
8. 16 Measurements - Compare

Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **Measurements**.
3	Click **Compare**.
4	Choose a measuring device (**Product**).
5	Choose a **Service**.
6	Choose **Last value** or **Average value.**
7	Set **Period 1**.
8	Set **Period 2.** This period will have the same duration as the first period.
9	Click **Events** if you want to show all events to the selected product.
10	Click **Apply**.

Screen to be displayed

The following chart is displayed:



Functions to choose

- Click **Reset dates to default**, to reset the period setting to default values.
- Select **Average** (default selection) or **Last Value** in the drop down list below the date selection to display the corresponding values**.**
- Click **Relative scale** (default selection) to display the service values in a dynamic scale of the vertical coordinate axis.
- Click **Full scale** to display the service values in the coordinate system with fix initial value 0 of the vertical coordinate axis.

- Click **Straight lines** if you want the values to be connected by a straight line.
- Click **Markers only** if you want the values to be displayed without a connecting straight line.
- Click **Download as image** to download the figure as PNG file.
- Click **Export data** to download the values as CSV file.

Further information

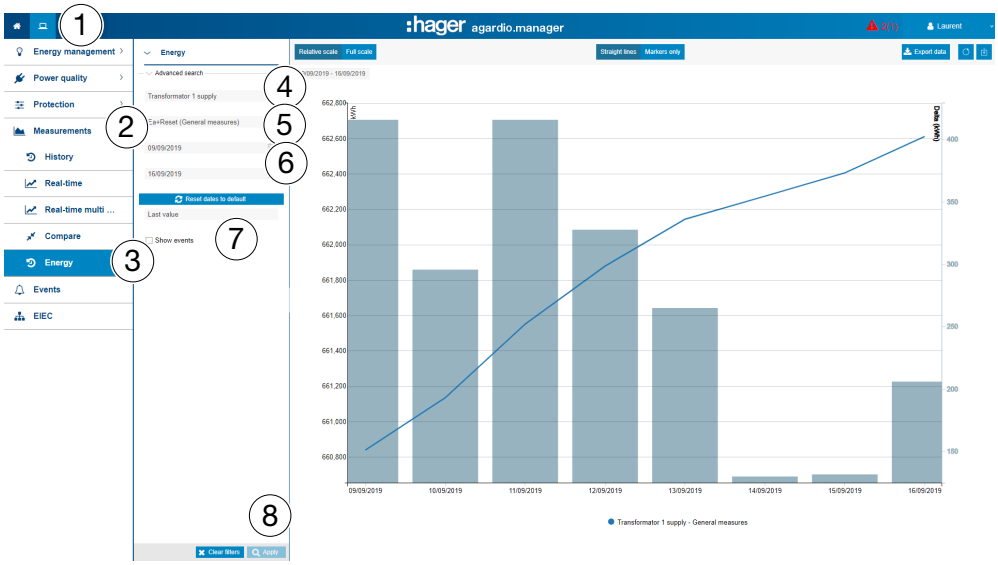
The whole values of the figure are updated depending on the capabilities of the measuring devices to refresh data.

SUPERVISED MODE
Function not available

8. 17 Measurements - Energy

Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **Measurements**.
3	Click **Energy**.
4	Choose a measuring device **(Product)**.
5	Choose a **Service**.
6	Choose a **Start** and **End date**. **Note:** Always set an end date greater than the start date. The maximum duration of the history is 1 month.
7	Click **Events** if you want to show all events to the selected product.
8	Click **Apply**.



Functions to choose

- Click **Reset dates to default**, to reset the observation period to the last 7 days.
- Click **Relative scale** (default selection) to display the service values in a dynamic scale of the vertical coordinate axis.

NOTICE

You can export the result to a CSV (HistoricReport.csv) spread sheet file by clicking **Export Data**.

SUPERVISED MODE

Function not available

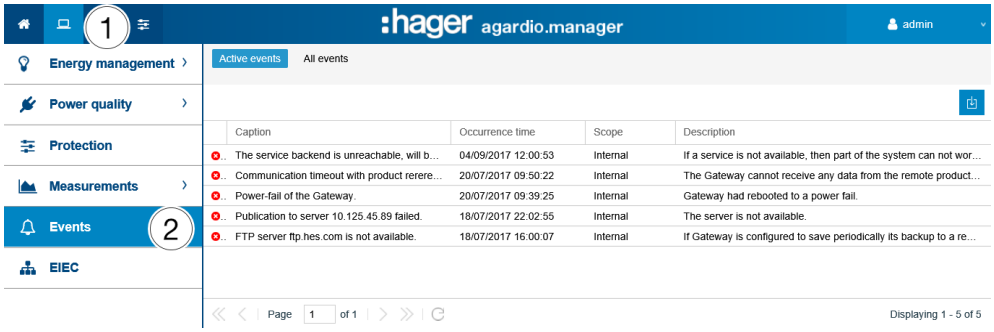
8. 18 Events

Steps to open the menu item

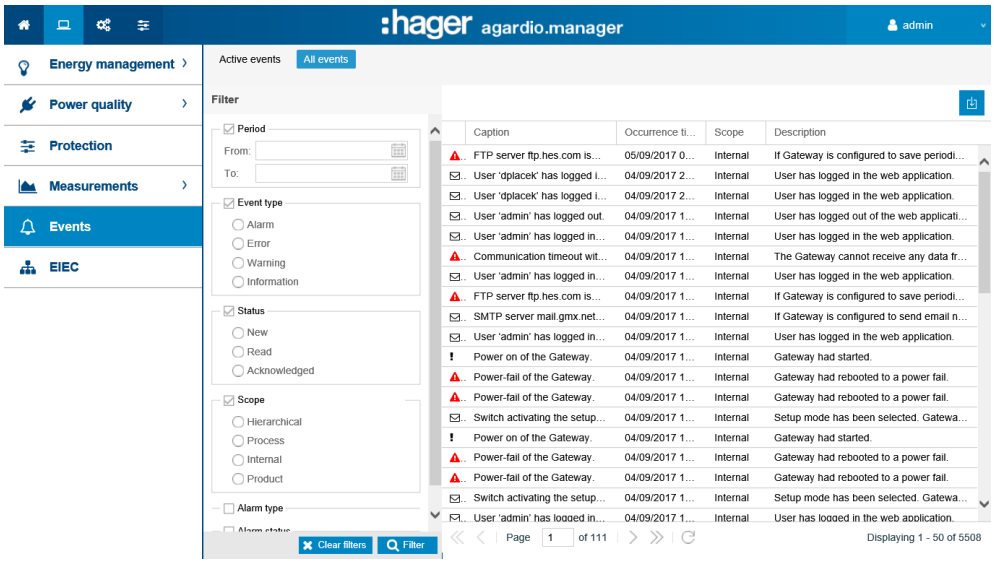
Step	Action
1	Click the **Exploitation** menu .
2	Click **Events**.

Screens to be displayed

The following dynamic table is displayed at **Active Events**:



The following dynamic table is displayed at **All Events**:



Click an event to display more detailed information about the event.

Further information

Click **All Events,** if you want to

- have a look at the list of all events or
- filter for a certain
  - (time) period,
  - event type (alarm, error, warning or information),
  - status (new, read or acknowledged),
  - scope (hierarchical, process, internal or product) and/or
  - alarm type (binary, high threshold, low threshold, high and low threshold)
  - alarm status (on, warning, down)

Event symbols and their meaning

Symbol	Meaning
	Information message
	Active alarm (that needs to be acknowledged)
	Alarm that has been acknowledged
	Event disappeared
	Warning
	Error requiring no acknowledgment
	Message requiring no acknowledgment

Alarms and messages

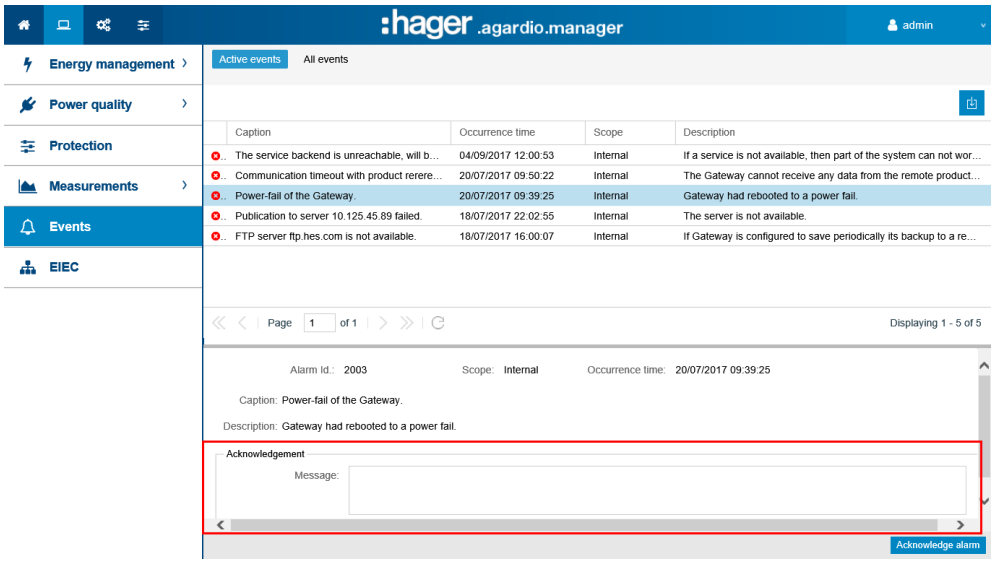
There are two major sorts of events: Alarms and messages.

Alarms...	Messages...
report an abnormal status of a measuring device	report a status with no effect
have to be acknowledged	do not need to be acknowledged
require a corrective action	do not require any action
Typical example: `Communication timeout with product ...`	Typical example: `User 'it1' has logged in as viewer.`

Acknowledgment of alarms

Active alarms have to be acknowledged manually by entering a comment as follows:

Step	Action
1	Click the alarm that you want to acknowledge.
2	Enter a comment (**Message**).
3	Click **Acknowledge Alarm**. **Result**: The acknowledged alarm is displayed at **All events**. Acknowledging user and acknowledgment time have been saved.



At the **Occurrence time** the alarm was first triggered.

List of main alarms

Type	Text
Critical Alarm	Free available memory is too low (*{n}*%).
	Free available space on µSD is too low (*{n}*%).
	Free available space on eMMC is too low (*{n}*%).
	Impossible to get µSD card.
	CPU temperature is too high (*{n}*°C).
	The service *{0}* is unreachable, will be restarted.
	Communication error with product *{0}*, Modbus address *{1}*.
	Communication timeout with product *{0}*, Modbus address *{1}*.
	Communication timeout with product *{0}*, IP *{1}*.
	FTP server *{0}* is not available.
	FTP server doesn't know login *{0}*.
	FTP server doesn't allow writing file in the specified directory.
Major Alarm	CPU too high (*{n}*%).
	Administrator password has been restored to default value.
	Energy server has been restored in factory configuration.
Minor Error	NTP server *{0}* is not available.
Minor Info	User ... has logged in as *{1}*.
	User ... has logged out.
	A new user *{0}* is added with *{1}* right.
	The user *{0}* is deleted.
	The user *{0}* is updated with *{1}* right.
	Switch activating the setup mode has been turned on.
	SMTP server *{0}* is not available.
	SMTP server *{0}* reject the authentication '*{1}*'.
	SMTP server reject the message to send.

The following dummy variables are used:

	... is corresponding to a ...
{n}	numerical value that will be filled in by the energy monitoring server.
{0}, *{1}*	name or designation that will be filled in by the energy monitoring server.

Potential error messages

The following list explains the error messages that might be displayed at **Exploitation/Events**:

Error message	Explanation/solution
Hierarchical event cannot be acknowledged before child issue.	Before the hierarchical alarm can be acknowledged, you have to acknowledge the alarm which led to the activation.

SUPERVISED MODE
Function available Exception : Hierarchical alarms are no longer used.

8. 19 EIEC

About the EIEC classification

The DIN VDE 0100-801 (international standard IEC 60364-8-1) entered into force in Germany in October 2015.

The standard prescribes that every electrical installation (new electrical installations and modification of existing electrical installations) has to be classified into a so called Electrical Installation Efficiency Classes (EIEC).

The aim is to provide the best possible energy supply with the lowest energy consumption.

The classification depends on 16 defined criteria (13 Efficiency measures EM and 3 Performance Levels PL). Within each criterion 0-4 Points could be reached (EM0-EM4 or PL0-PL4). No consideration of the respective criterion means 0 points.

Depending on the total point score, the system will then be classified as follows:

No. of points	Class
< 58 points	EIEC4
< 48 points	EIEC3
< 36 points	EIEC2
< 26 points	EIEC1
< 16 points	EIEC0

For detailed information about the IEC 60364-8-1 (DIN VDE 0100-801) refer to the Hager-Tipp **16DE0118_01**.

Preparations to do

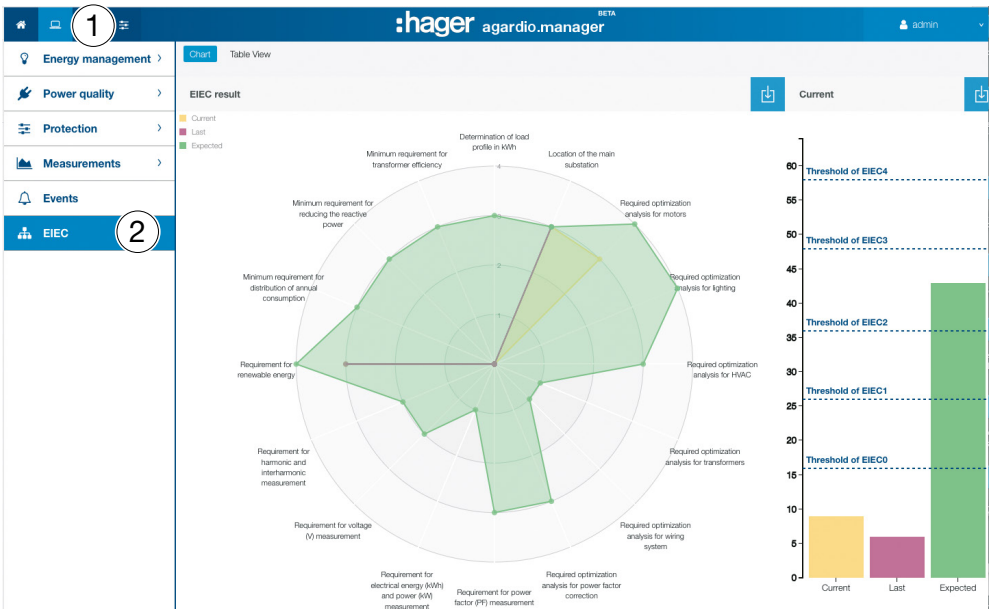
Before you start the EIEC chart, you need to give information regarding the energy efficiency at the **EIEC** menu (see p. 107) item of the **Configuration** menu.

Steps to open the menu item

Step	Action
1	Click the **Exploitation** menu .
2	Click **EIEC**.

Screens to be displayed

The following figure is displayed at the **Chart:**



On bars graphs appear:
The expected level, that is at first (Depending on the type of building defined in the zone configuration),
The last level (precedent) before modification,
And finally the current level.

The following figure is displayed in the **Table view:**

agardio.manager — admin

Energy management | Power quality | Protection | Measurements | Events | EIEC

Chart | Table View

Parameter	0	1	2	3	4
Determination of load profile in kWh	No consideration	Load profile consumption of the installation for a day	Load profile consumption of the installation for each day of a week	Load profile consumption of the installation for each day of a year	Permanent data logging of the load profile consumption of the installation
Location of the main substation	No consideration	Position of the main substation is within 60 % of the distance from the optimum position to the most distant load	Position of the main substation is within 40 % of the distance from the optimum position to the most distant load	Position of the main substation is within 25 % of the distance from the optimum position to the most distant load	Position of the main substation is within 10 % of the distance from the optimum position to the most distant load
Required optimization analysis for motors	No consideration	To analyse and optimize motors efficiency class or drives for less than 50 % of installed power	To analyse and optimize motors efficiency class or drives for 50 % of installed power	To analyse and optimize motors efficiency class or drives for 70 % of installed power	To analyse and optimize motors efficiency class or drives for 90 % of installed power
Required optimization analysis for lighting	No consideration	To consider lamp type and position	To consider lamp type and position with natural lighting	Control according to natural lighting source or building use or lamp type	Control according to natural lighting source and building use and to consider lamp type
Required optimization analysis for HVAC	No consideration	Temperature control	Temperature control at zone level	Time and temperature control at zone	Time and full sensor control per zone
Required optimization analysis for transformers	No consideration	No consideration	Selection of all transformers	Selection of all transformers	Selection of all transformers

The EIEC **Table** shows the 5 EIEC levels and the corresponding criteria.
The blue values have been entered at the **EIEC** menu item of the **Configuration** menu (see p. 107).

Further information

The EIEC **Chart** and **Table**

- are used as a checklist for the 16 criteria of the IEC 60364-8-1.
- help the building owner and facility manager to improve the energy efficiency of the building.

SUPERVISED MODE

Function not available

9 Operation in supervised mode

9. 1 Introduction

The energy monitoring server can be monitored by the stream energy management software.
The stream EMS monitors a group of energy monitoring servers to:

- Structure an installation comprising several geographic sites
- Centralize the configuration of the whole installation
- Collect and store data for periods longer than the energy monitoring server is capable of.

In supervised mode, the energy monitoring server acts as a gateway

The energy monitoring server configuration interface is limited to the configuration of IT (administration) and functionality-related parameters for the configuration of metering and protection devices connected to the fieldbus. Once all cables are in place, the installation is configured at the high level via the stream EMS software.

To switch to supervised mode, go to server settings in the Preferences menu (see section 9.2)

A "supervised mode" ribbon appears on the web application to inform users that this mode is active.
The user is also informed why certain configurations are not available or cannot be changed.

The available functions are listed in the table below:

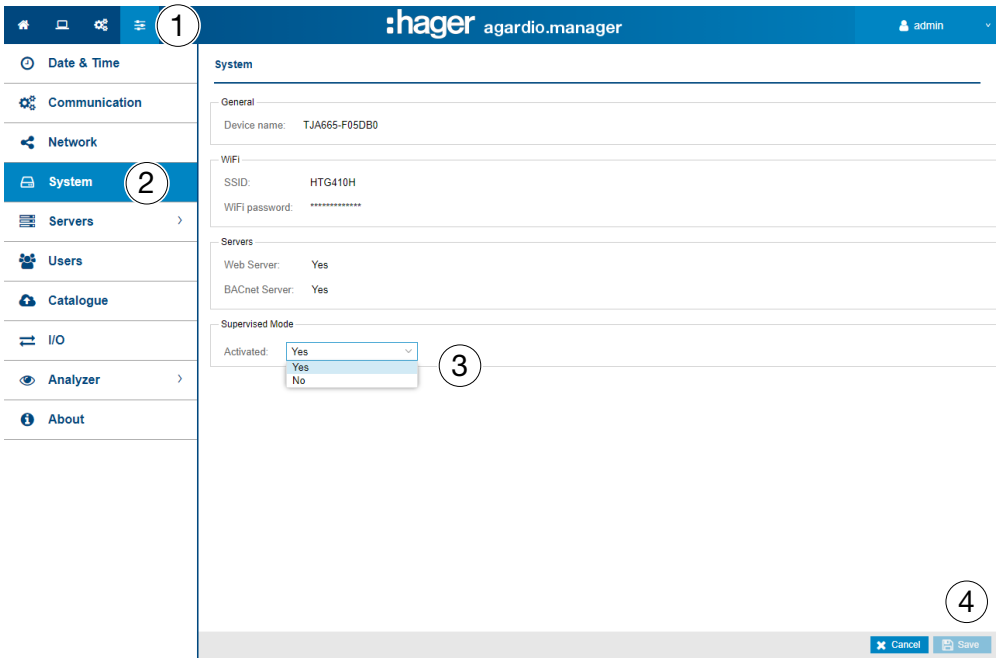
Exploitation menu	Configuration menu	Preferences menu
Measurements Real-time (see p. 139)	Products (see p. 89)	Date & Time (see p. 51)
Events (see p. 143)	Data management (see p. 109)	Communication (see p. 52)
	Pricing (see p. 114)	Network (see p. 55)
		System (see p. 57)
		Server (see p. 58)
		Users (User management) (see p. 61)
		Catalogue (see p. 70)
		I/O (Input Output) (see p. 73)
		Analyzer/Diagnosis (see p. 74)
		Analyzer / Fieldbus (see p. 75)
		Analyzer / Network (see p. 77)
		Maintenance / Software update (see p. 78)
		Factory reset (see p. 80)
		About (see p. 81)

9. 2 Switching to supervised mode

To switch to supervised mode, go to server settings in the Preferences menu

Steps to open the menu item

Step	Action
1	Click on the **Preferences** menu .
2	Click on **System**.
3	Select "**Yes**" in the "**supervised mode**" option to enable supervised mode..
4	Click **Save** to save your changes.



Functions to choose

- Enable supervised mode: Activated (yes/no)

You must re-start the energy monitoring server for the change to take effect.

When enabling supervised mode, the user is warned that this mode cannot be disabled while the server is monitored by the stream energy management software.

10 Error messages

The following list explains the error messages displayed by the energy monitoring server:

Error message	Explanation/solution
Transaction aborted.	You switched too fast between different functionalities.
at **Preferences/Catalogue**:	
Product can´t be added to catalogue due to bad format.	You selected the wrong file type at the upload of new products. Use the correct HES file.
Unable to delete a used product.	It is only possible to delete products which are not in use. If you still want to remove a product you must guarantee that it is not in use.
at **Configuration/Products**:	
Impossible to create the product, no more available address.	All appropriate in-/outputs are in use. If you still want to use an appropriate in-/output you have to delete an existing product.
Communication timeout with the product {0}, Modbus address {1}	Connection or communication error with the connected measuring device. Check the Modbus connection and the appropriate communication settings (if necessary refer to the settings in the installation manual).
at **Exploitation/Events**:	
Hierarchical event cannot be acknowledged before child issue.	Before the hierarchical alarm can be acknowledged, you have to acknowledge the alarm which led to the activation.
at **Configuration/Events**:	
Event involved in a hierarchical link, cannot be deleted.	Events which are part of an hierarchical alarm cannot be deleted. If you still want to delete the event you first have to remove it from the hierarchical alarm.
Event has already parent, only one is allowed.	You tried to link an alarm that is already part of an existing hierarchical alarm to another new hierarchical alarm.

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