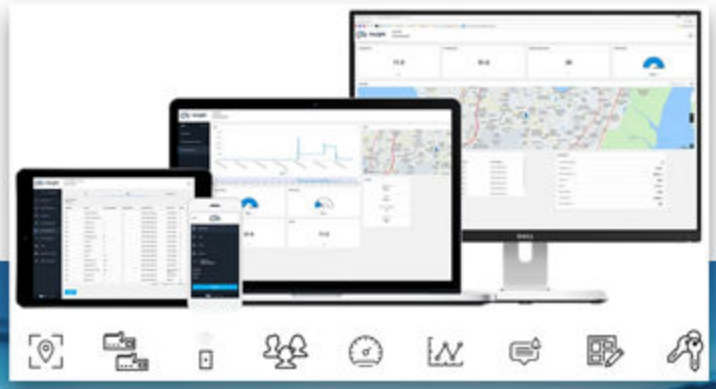
Insight

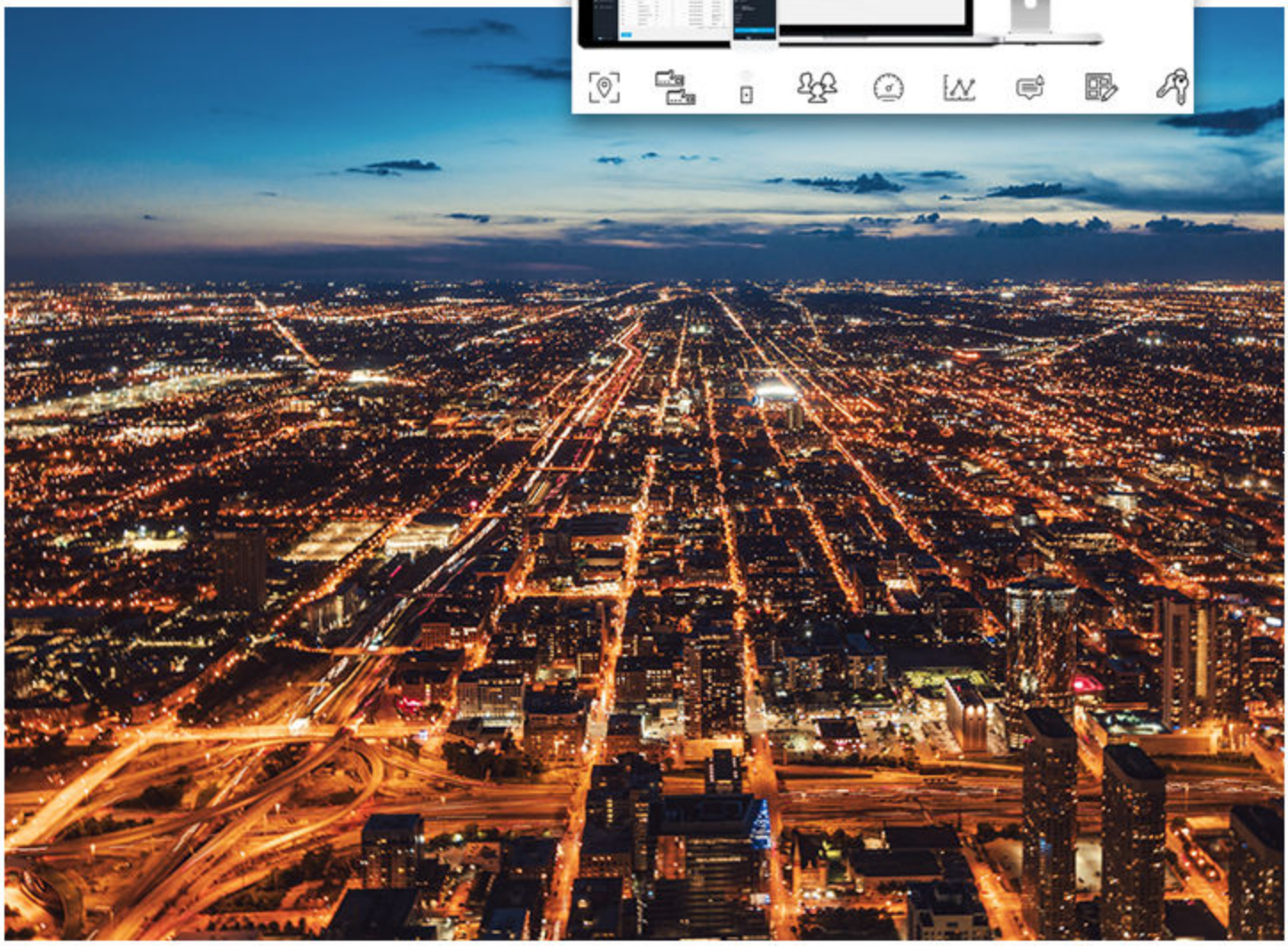
Remote monitoring service

Quick start guide

4189330025D

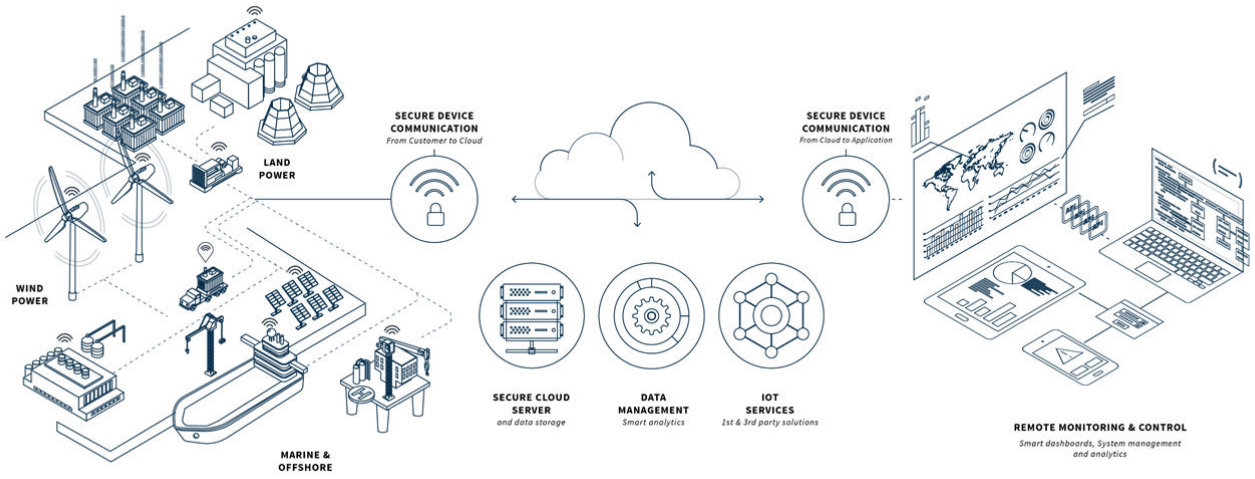
DEIF Improve Tomorrow





1. About Insight

1.1 Overview



DEIF Insight is a remote monitoring service using advanced and secure cloud data management that provides you with instant access to data from all your equipment, no matter where it is - or where you are.

With its highly customisable interface, Insight offers an easy and intuitive experience to its users, independent of their technical skills.

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1.3 Copyright

1.4 Disclaimer

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The English version of this document always contains the most recent and up-to-date information about the product. DEIF does not take responsibility for the accuracy of translations, and translations might not be updated at the same time as the English document. If there is a discrepancy, the English version prevails.

2. Installing the hardware

2.1 About the FX30

Insight's 3G data acquisition unit is a small, energy-efficient and rugged communication device, based on the acclaimed FX30 from Sierra Wireless. DEIF's application software allows the accurate monitoring of equipment in the field whilst keeping the costs of data transmission to a minimum.

The FX30 provides online connectivity for the data streams. It does not require IT expertise or programming knowledge.

Kit content

- Sierra Wireless FX30 module
- Power supply cable
- FX30 Mounts
- DIN rail adapter (2)
- Cellular + GNSS antenna
- Leaflet

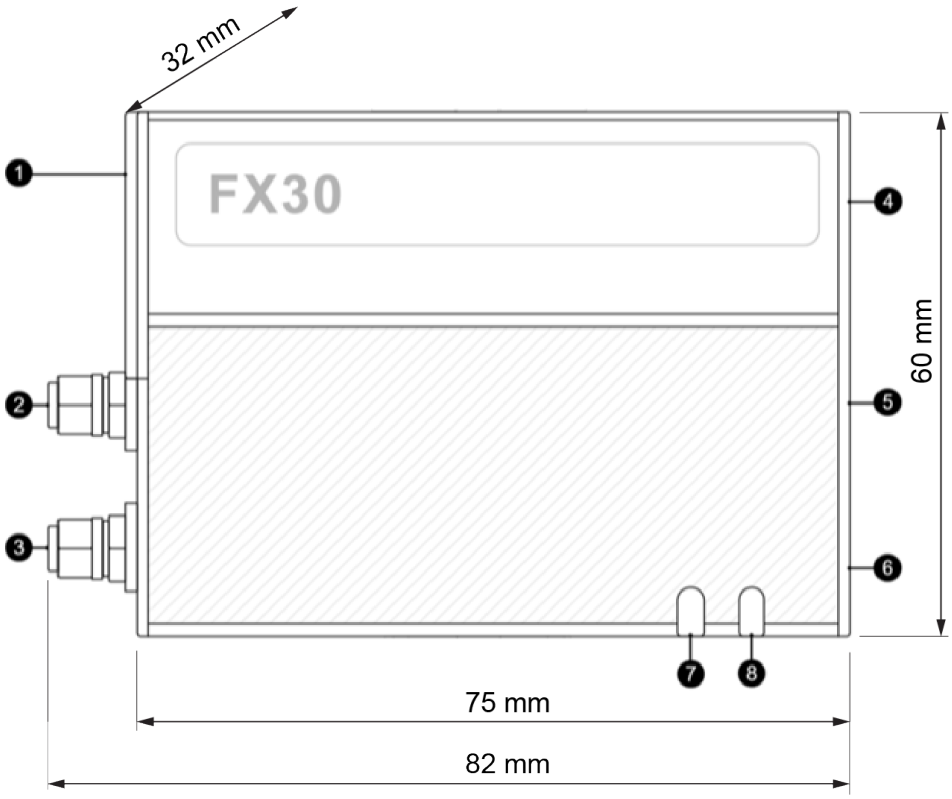
Main features

- Fast and easy connection to your equipment
- Event-based data logging
- Modbus TCP/IP communication
- GNSS (GPS/Galileo/GLONASS) location
- Over-The-Air (OTA) updates
- LTE telecommunication
- Mini-SIM card slot
- Internet-of-Things (IoT) expansion slot

Overview

FX30 Modbus TCP gateway

1. Slot for SIM card
2. GNSS antenna connection
3. Cellular antenna connection
4. Power connection
5. RJ-45 port for network connection
6. Micro USB port for PC connection
7. Modbus Status LED
8. 3G Status LED



2.1.1 FX30 installation

Required tools and materials

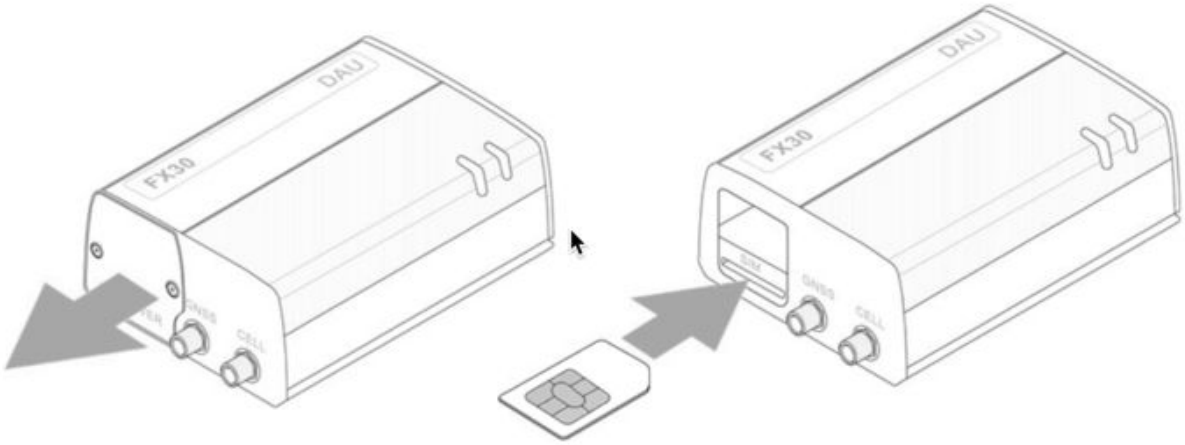
The following tools and materials are necessary to finish the installation and setup.

- PH1 (Phillips #1) screwdriver
- Mini-SIM (2FF) card, provided by your mobile network operator
- Computer (Laptop is recommended for portability)
- Micro-USB cable (max. 3 m)
- Screws to secure the FX30 mounts (optional)

Insert SIM card

1. Use a screwdriver (specify type) to remove the SIM cover.
2. Insert the SIM card with the gold contacts facing upwards.
3. Mount cover.

If you need to remove the SIM card, press to release the card and gently pull it out.



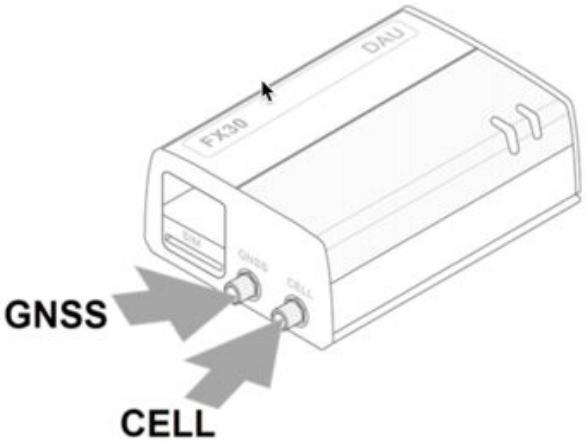
Connect antennas

Connect the antennas to the SMA connectors:

- Cellular antenna to CELL.
- GNSS antenna for geo-location.

The antenna supplied with the FX30 kits has both cellular and GNSS functions.

For optimal results, mount the GNSS antenna in a place with good sky exposure.



Fusing

The supplied power cable has a 3A fuse installed in it. If it is used, no additional fusing is required.

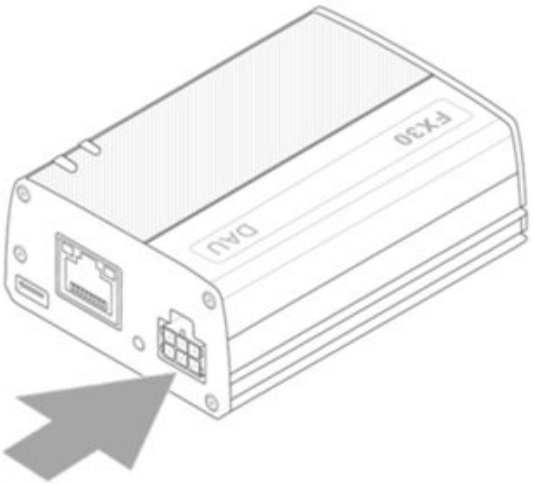
Fuse specification: Slow-blow 3 A 250 V (5 x 20)

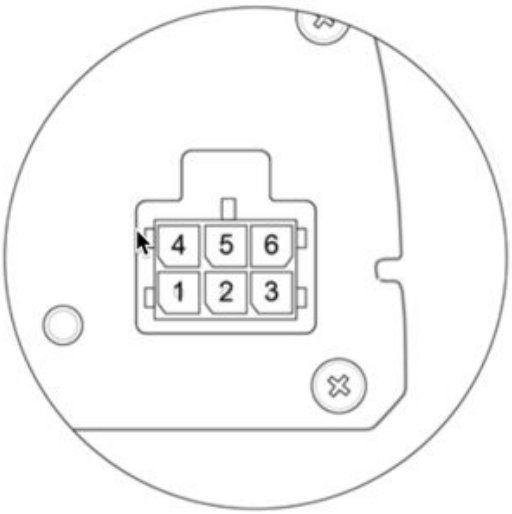
Connect the power

Connect the FX30 to power using the supplied power cable. The FX30 supports an operating voltage from 4.75 to 32 V. The power connector has 6 pins and its functions are described in the table below.

Quick Start: Connect the **RED** and **YELLOW** wires to **+**. Connect the black wire to **-** of the power supply.

Power cable and connector





Pin	Function	Wire Colour	Description
1	Power	Red	Power supply (+)
2	Ground	Black	Power supply (-)
3	On/Off	Yellow	Control line Must be connected to (+) directly or through a switch
4	IO1	Brown	Digital input
5	IO2	Green	Digital or Analogue input
6	IO3	Orange	Digital input

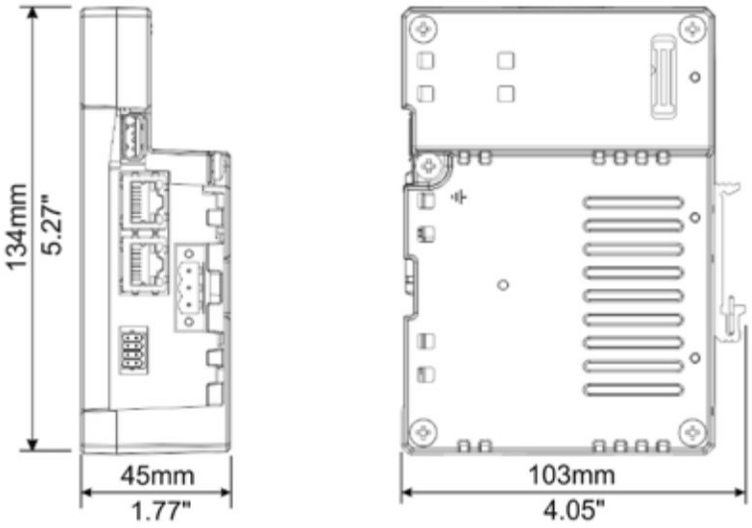
2.2 About the eXware 703

The eXware 703 gateway comes pre-programmed from DEIF and no software tools are required other than an internet browser. A VNC client can be optionally used.

For more information and documentation about the eXware hardware, see www.exorint.com/en/product/exware703#documentation

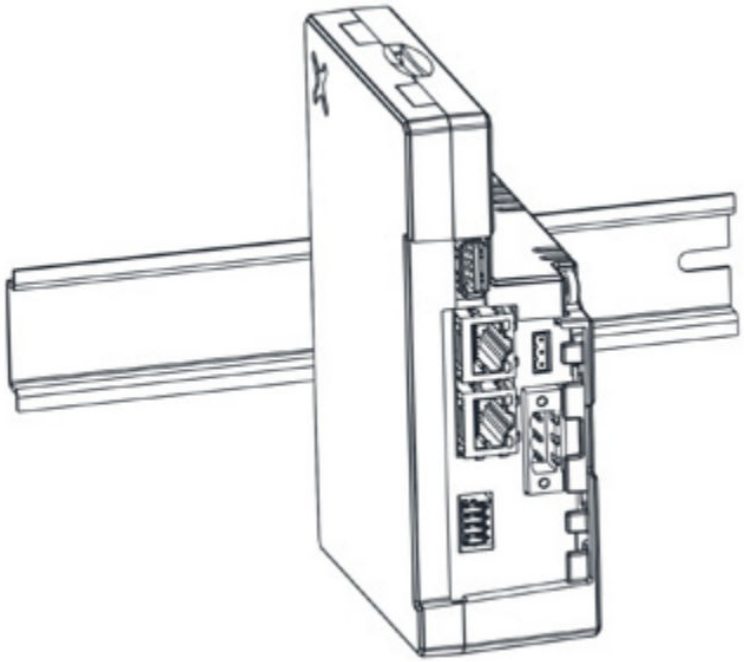
2.2.1 eXware 703 installation

Dimensions



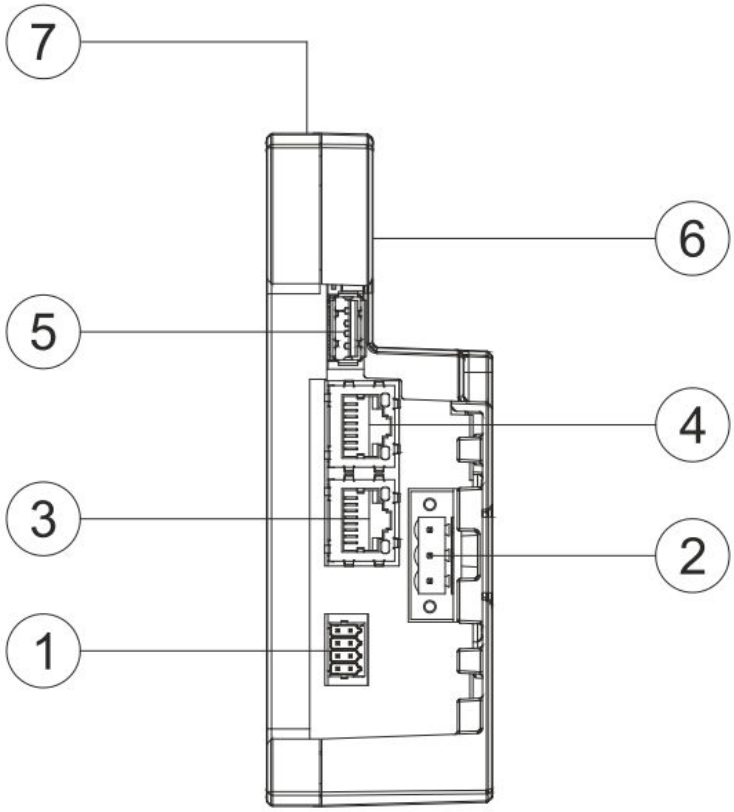
CSD = 350 mm (13.77 ”) = Minimum Compass Safe Distance of standard compass

Installation



The eXware is suitable for mounting on a DIN rail.

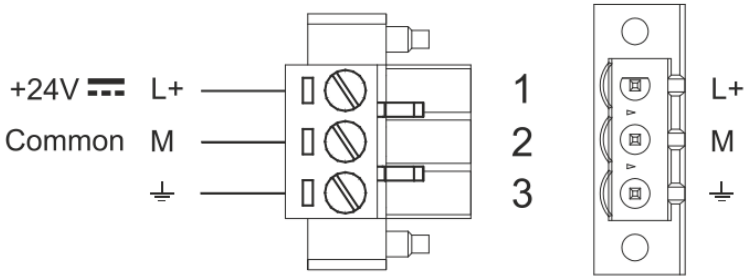
Connectors view



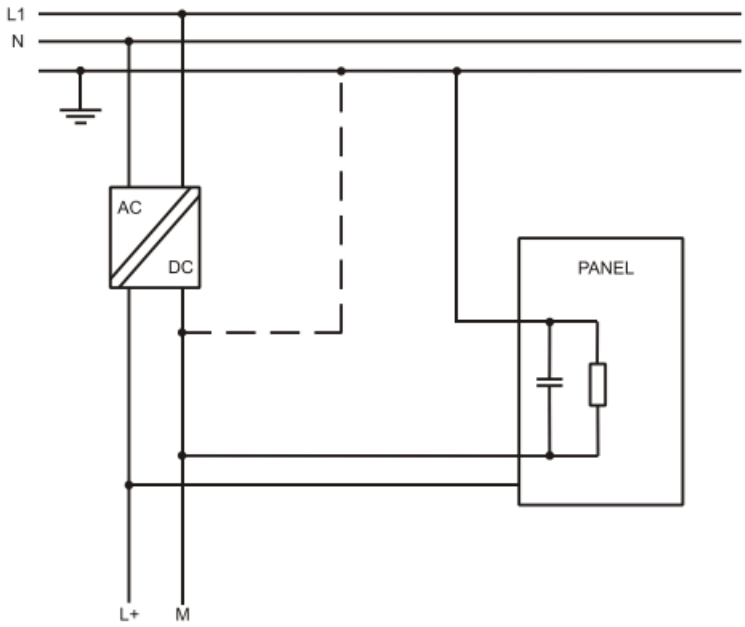
1. Serial port
2. Power
3. Ethernet Port 1 (10/100 Mb)
4. Ethernet Port 0 (10/100 Mb)
5. USB Port V2.0, max 500 mA
6. Expansion slot for plug-in modules
7. SD card slot for maintenance only

ETH0 should be used for connection to the Internet. It is predefined with DHCP enabled for a plug-and-play experience.

Power supply



DC Power Connector, Female - R/C Terminal Blocks (XCFR2), manufactured by Weidmuller Inc., Cat. No. BLZ 5.08, torque 4.5 lb-in



The unit must always be grounded to the earth. Earth connection will have to be done using either the screw or the faston terminal located near the power supply terminal block. Also, connect to ground terminal 3 on the power supply terminal block.

More information
See the printed documentation delivered with the eXware 703 gateway.

2.3 Connect to the Modbus device

FX30 Modbus TCP

Connect an Ethernet network cable (shielded Cat6 or better) between the FX30 gateway and the controller.

FX30S Modbus RTU (Serial RS-485)

FX30S is used for Modbus RTU (RS-485) communication.

RS-485 Serial Interface

Serial port configured for RS-485:

- Half-duplex (2-wire) interface
- Software-configurable termination resistor
- Maximum baud rate: 115.2 k
- Maximum cable length: 25 meters at maximum baud rate

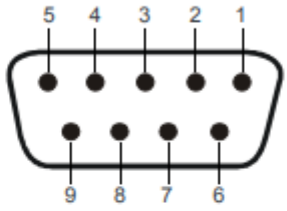


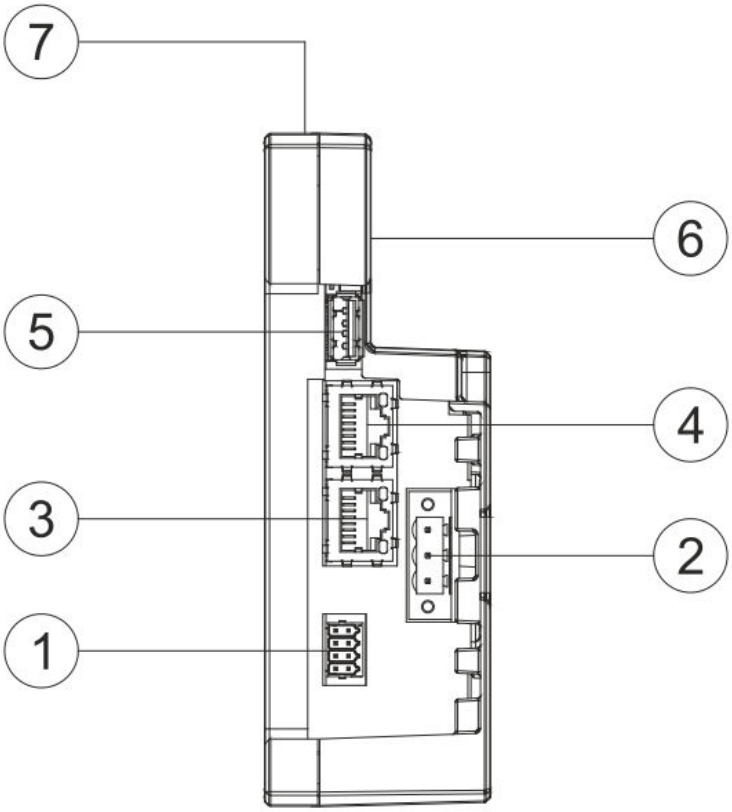
Figure 3-2: DB-9 Female Serial Connector

Table 3-3: RS-485 Serial Connector Pin-out

Name	Pin	Description	Type
RS-485_B	1	RS-485 Negative Signal	Bidirectional
RS-485_A	2	RS-485 Positive Signal	Bidirectional
N/A	3		—
N/A	4		—
GND	5	Ground	GND
N/A	6		—
N/A	7		—
N/A	8		—
N/A	9		—

RS-485 Serial Interface pin-out

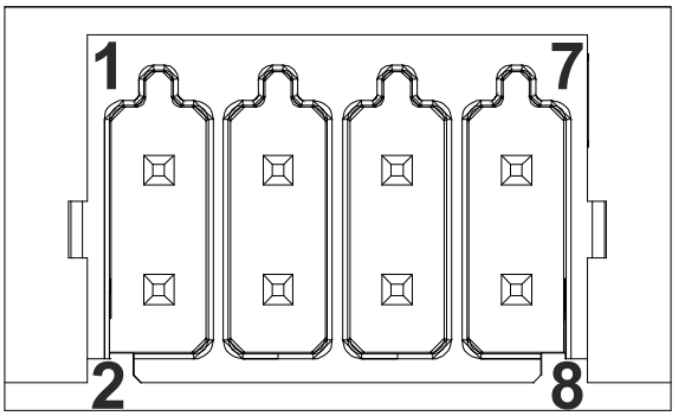
eXware 703 network interfaces



Connect a network cable (shielded Cat6 or better) between the eXware 703 and the controller.

Use the ETH1 port (3) to connect to the same network as the Modbus devices.

eXware 703 serial port



1. RX/CHB
2. TX/CHA
3. CTS/CHB+
4. RTS/CHA+
5. +5 V output
6. GND
7.
8. SHIELD

To operate in RS-485, pins 1-2 and 4-3 must be connected externally.

3. PC requirements

3.1 Windows

Computers with Windows operating systems require a driver to be able to connect to the FX30. The driver must be installed before connecting the PC to the FX30's Micro USB port.

The FX30 driver is available for download at www.deif.com/software/fx30_driver_package.

It is strongly recommended to disable the Sierra Wireless Mobile Broadband Network Adapter to avoid that the computer takes over the data session.

3.2 macOS

Mac computers running macOS do not require any installation of drivers.

3.3 Linux

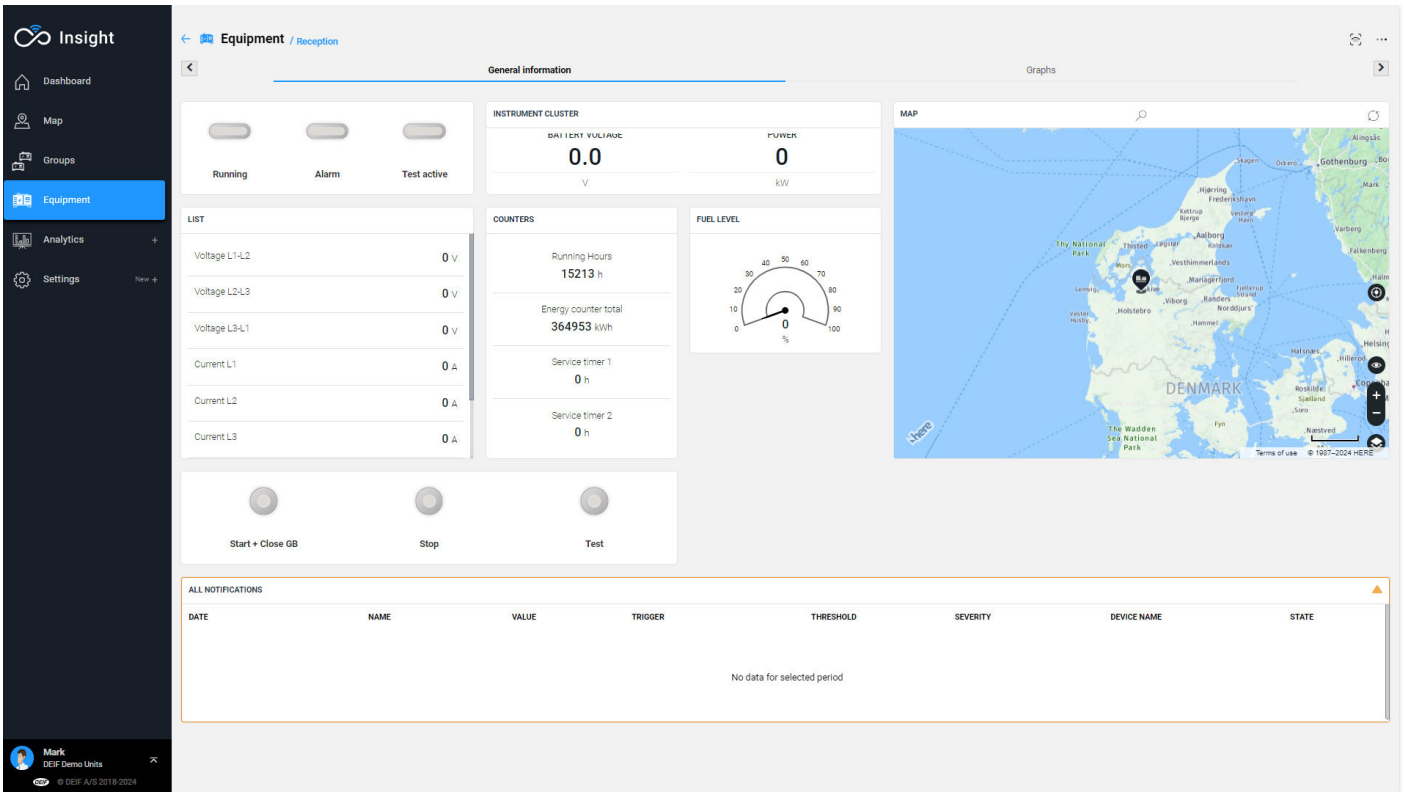
Computers with a Linux-based OS do not require any installation of drivers.

It is strongly recommended to uninstall the *modemmanager* to avoid that the computer takes over the data session when connected to the FX30.

4. Setting up your first equipment

4.1 Overview

This chapter explains how to set up equipment. It uses an example of a generator with AGC-4 Mk II. This is connected using an FX30 Modbus TCP gateway, or alternatively an eXware 703 gateway.



4.2 Gateway setup

The first step towards getting your equipment up and running is to configure the gateway.

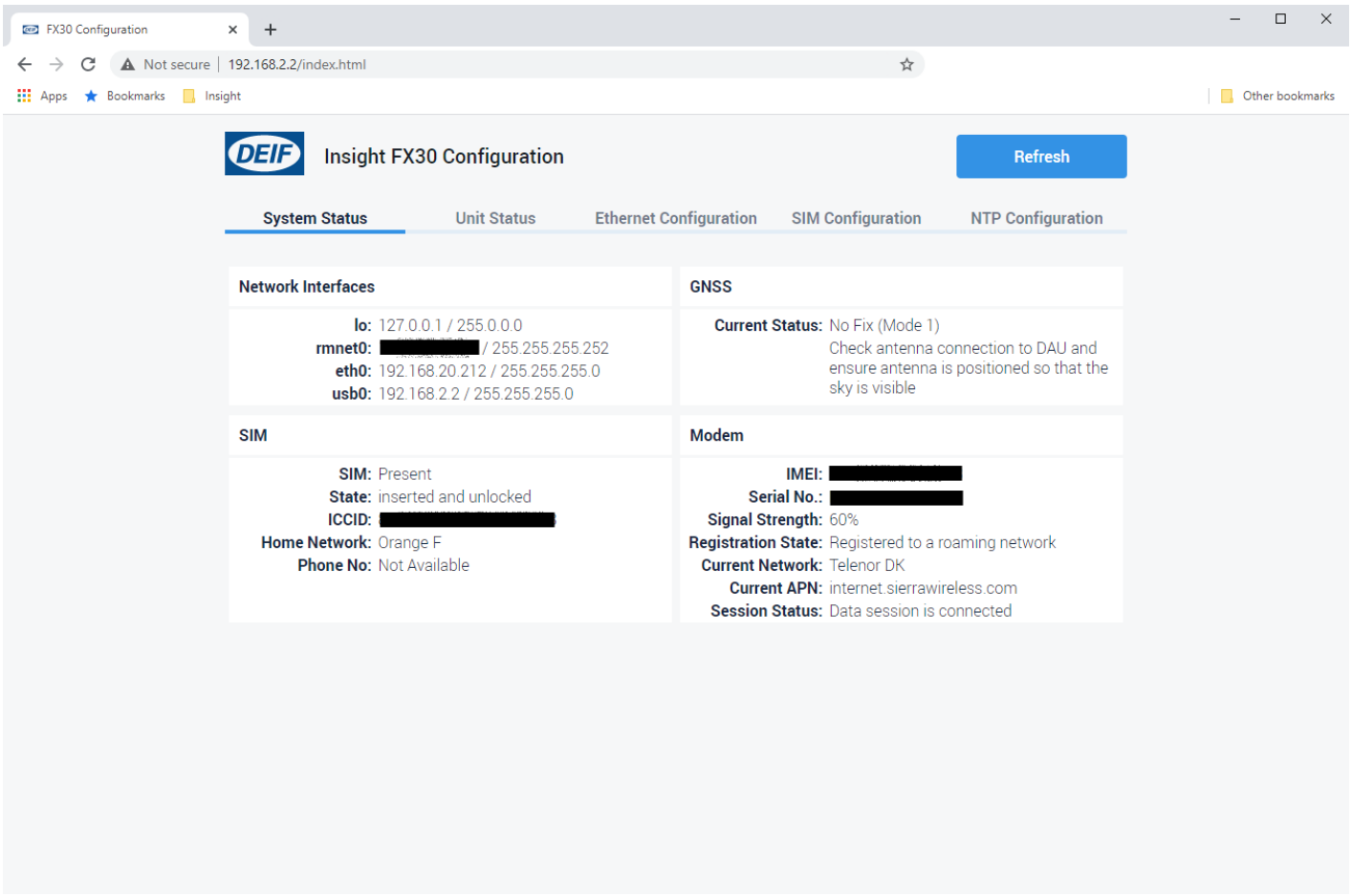
4.2.1 FX30 setup

Connect FX30 to a PC

1. Turn on the FX30 and allow the LEDs to turn on.
2. Connect the micro-USB cable to the FX30 and the computer.
3. Wait a few seconds until the network connection is established.
4. Open your browser and navigate to address http://192.168.2.2

Configure the FX30

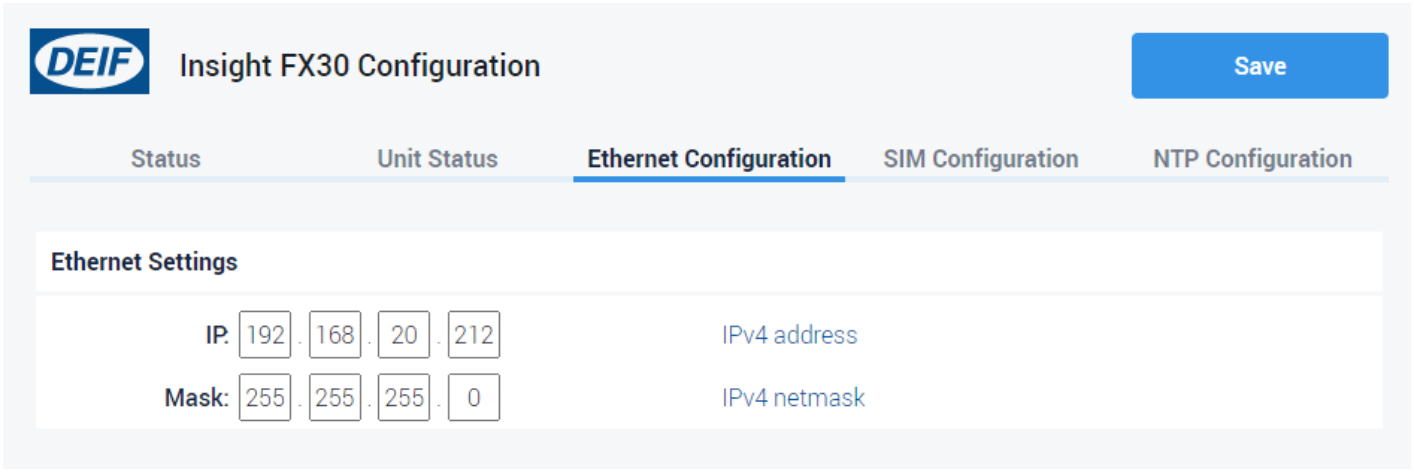
Configuring the FX30 is easy. You only need to define network settings (on Modbus TCP) and operator's APN configuration.



The web interface for the FX30 configuration.

Configure network settings

When using the FX30 Modbus TCP variant, it will be necessary to configure the network settings. This is necessary so that the FX30 is in the same network as the device that will be connected to Insight.



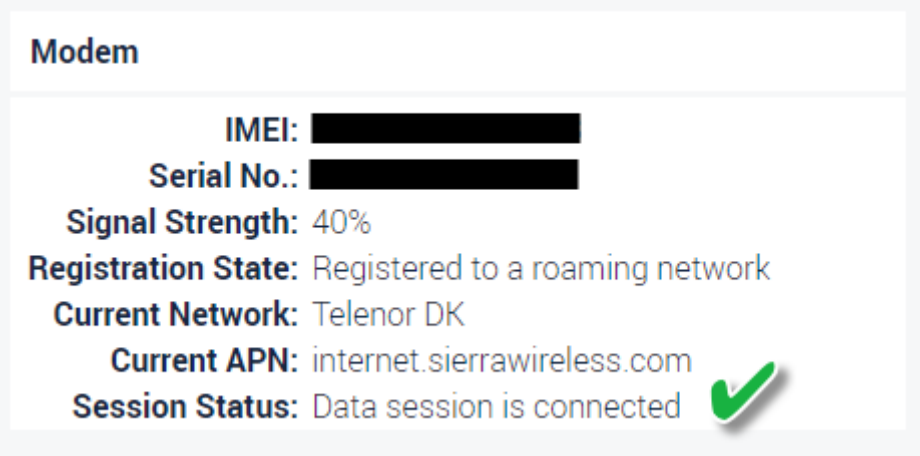
Remember to save your changes. You will be prompted to switch OFF the FX30 and turn it ON again to restart with the new network settings. We recommended that you do this now.

Configure APN settings

The APN configuration is an important step without which no data sessions can be started.

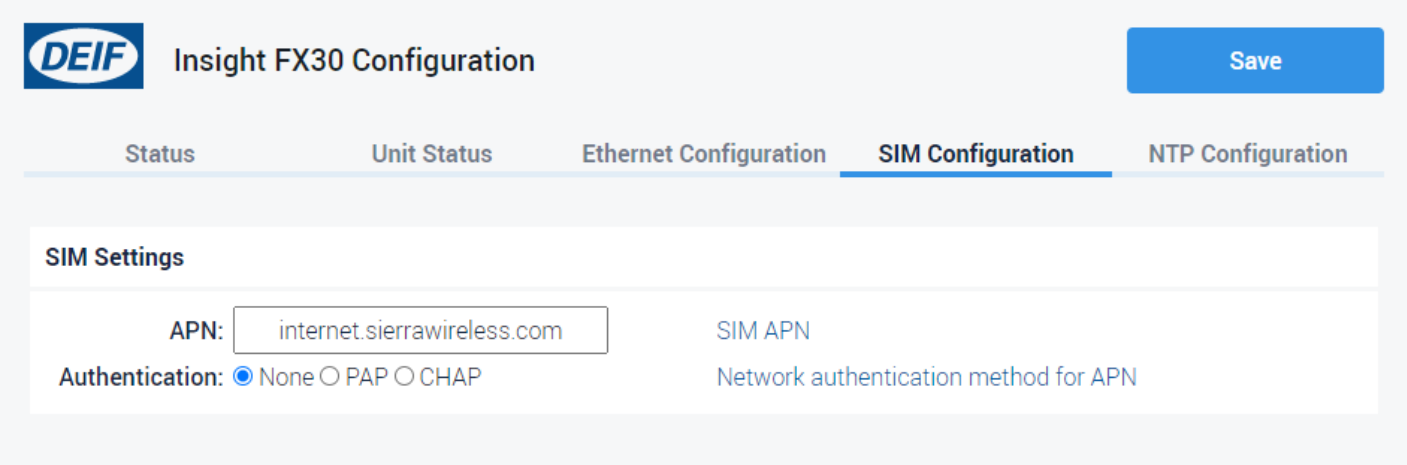
Check the APN settings with your operator before proceeding.

In some instances, the FX30 may automatically detect the APN, based on the operator.



If the data session is already connected, skip the rest of this section.

Click on the **SIM Configuration** tab and enter the APN settings.



Don't forget to **Save** before leaving the page.

If you know that the APN is correct but you cannot establish the connection, check the PC requirements (especially the network interfaces). If necessary, contact your operator.

Finishing up

Hint: Keep the Insight FX30 Configuration page open in your browser as it will be handy during the next part.

The FX30 is now configured.

See **Insight setup** for the next step.

4.2.2 eXware 703 setup

Connect the eXware 703 to PC

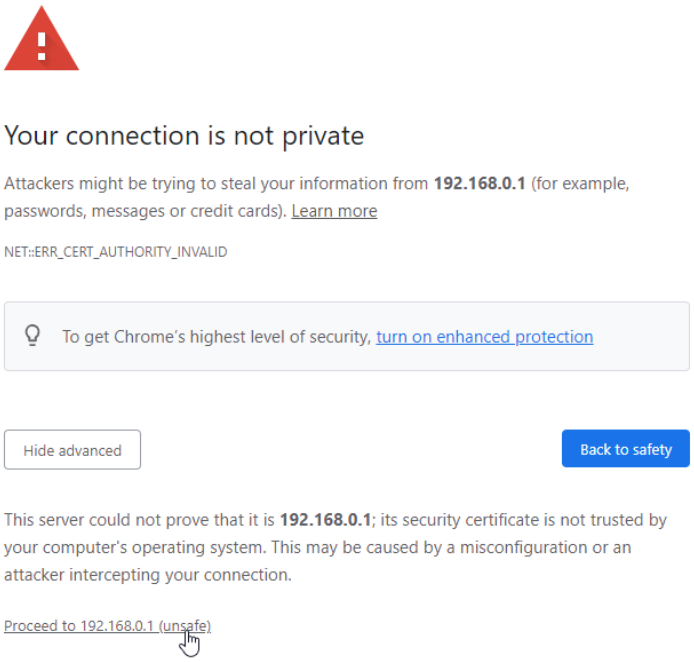
Connect an Ethernet network cable between the PC and ETH1 port on the eXware gateway.

You will have to set up your PC network interface to access IP address 192.168.0.1

Access the page https://192.168.0.1/machine_config with a browser to access the system settings of the eXware gateway.

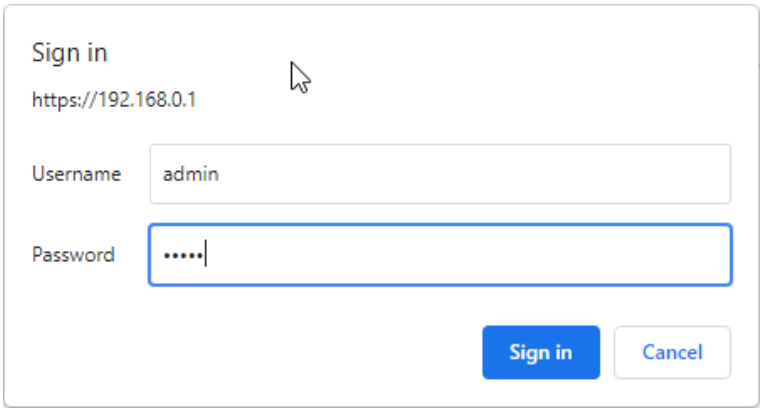
You will get a warning that the connection is not private. This is because certificates are not present to guarantee an HTTPS connection. It is safe to proceed despite the warnings from the browser.

Click on the **Advanced** button to expand and follow the link provided.



You can safely proceed to the address by clicking the link.

Enter the user name and password.



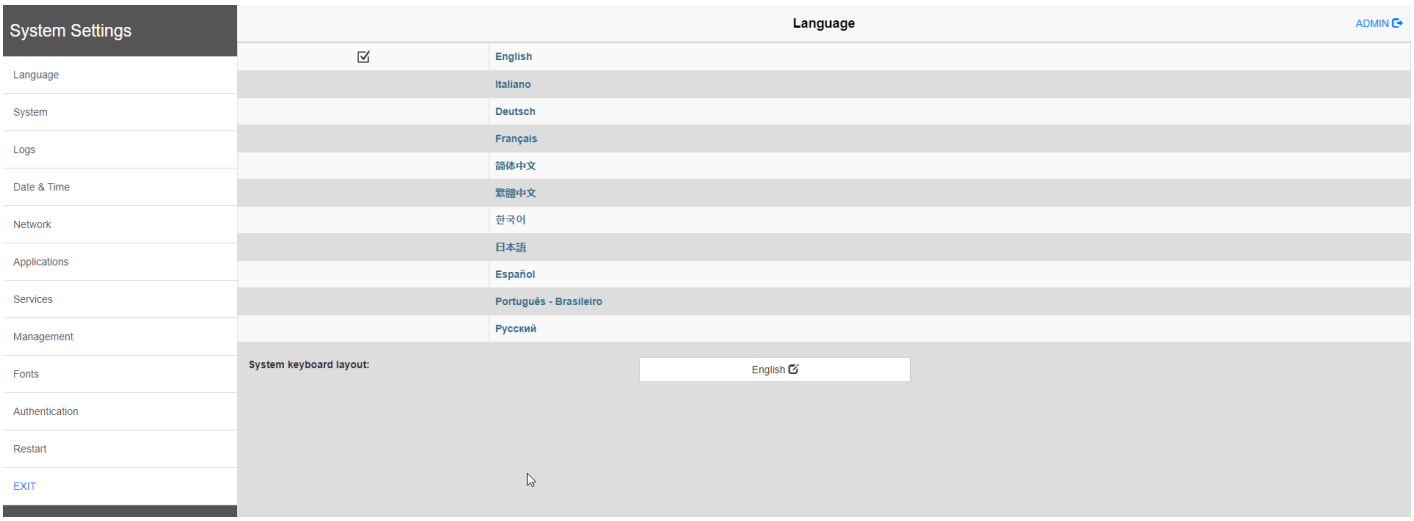
Default user settings

- Username: admin
- Password: admin

Since the gateway will be permanently connected to the internet, it is important to change the password.

Configure the eXware 703

When the System Settings page opens, the landing page allows you to change the language.



Use language change with care (especially if you are not fluent in the selected language).

Configure network settings

Navigate to the **Network** page and press the **Edit** button to change the network interfaces configuration.

Default network configuration

ETH0 / WAN: DHCP
ETH1 / LAN: IP Address 192.168.0.1 Subnet mask: 255.255.255.0

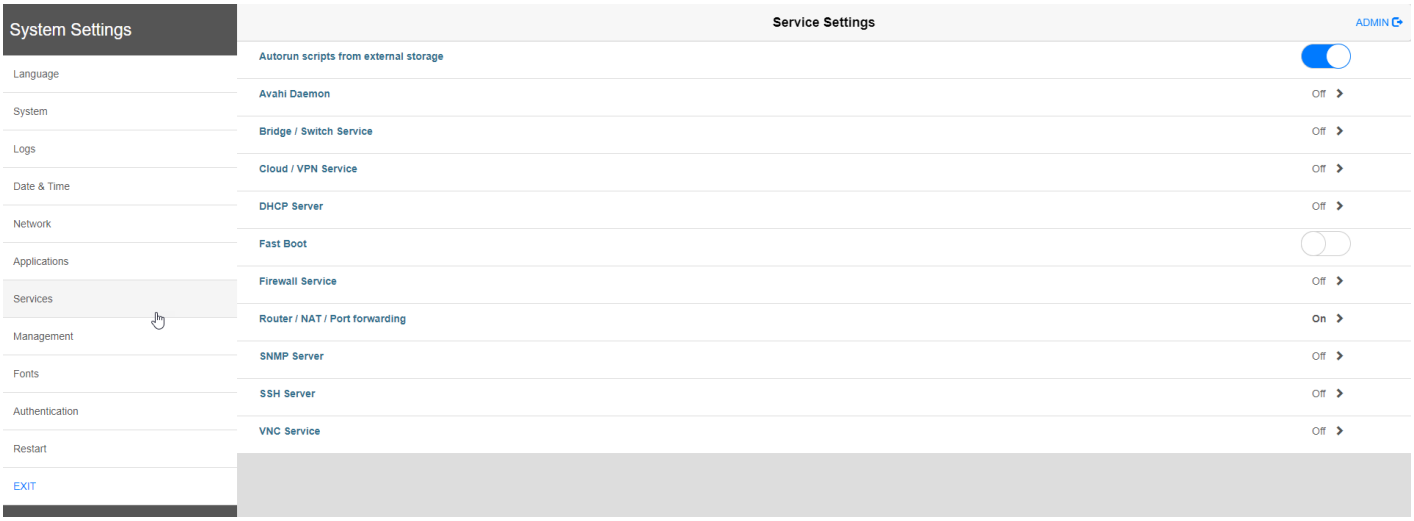
After changing the network configuration, you will need to use the new IP address to access the System Settings page again. You may also need to change the PC's network settings.

Enabling/disabling services on the eXware 703

During commissioning, it may be useful to enable some of the services that eXware provides.

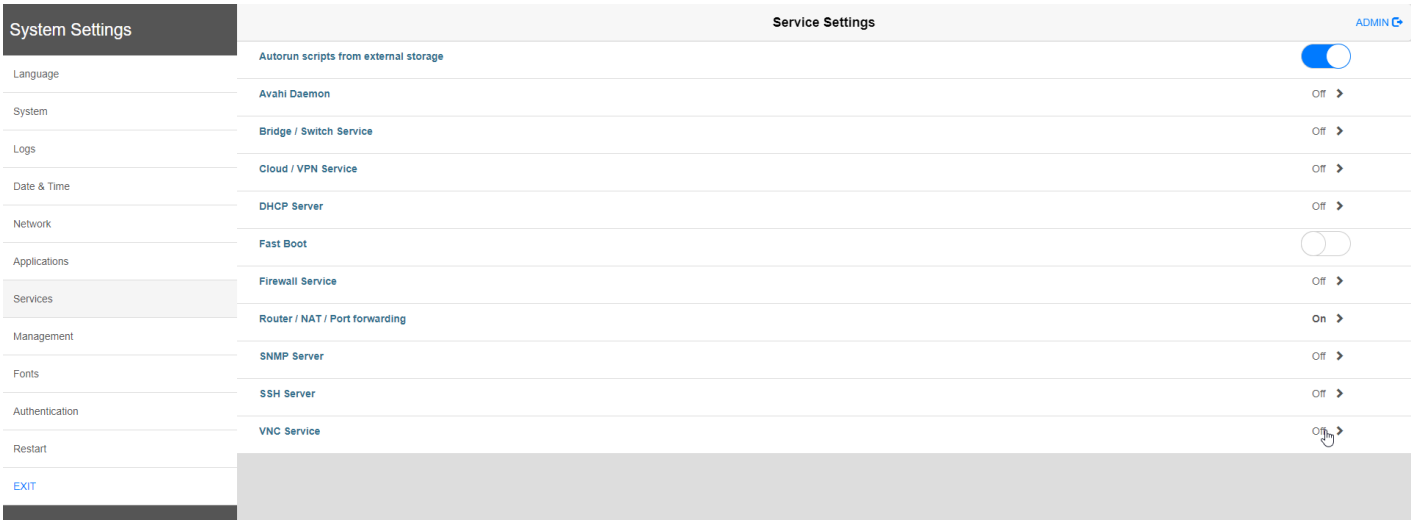
For example, the SSH service can be used for troubleshooting and VNC can be used as an alternative to the web browser.

Navigate to the **Services** page.

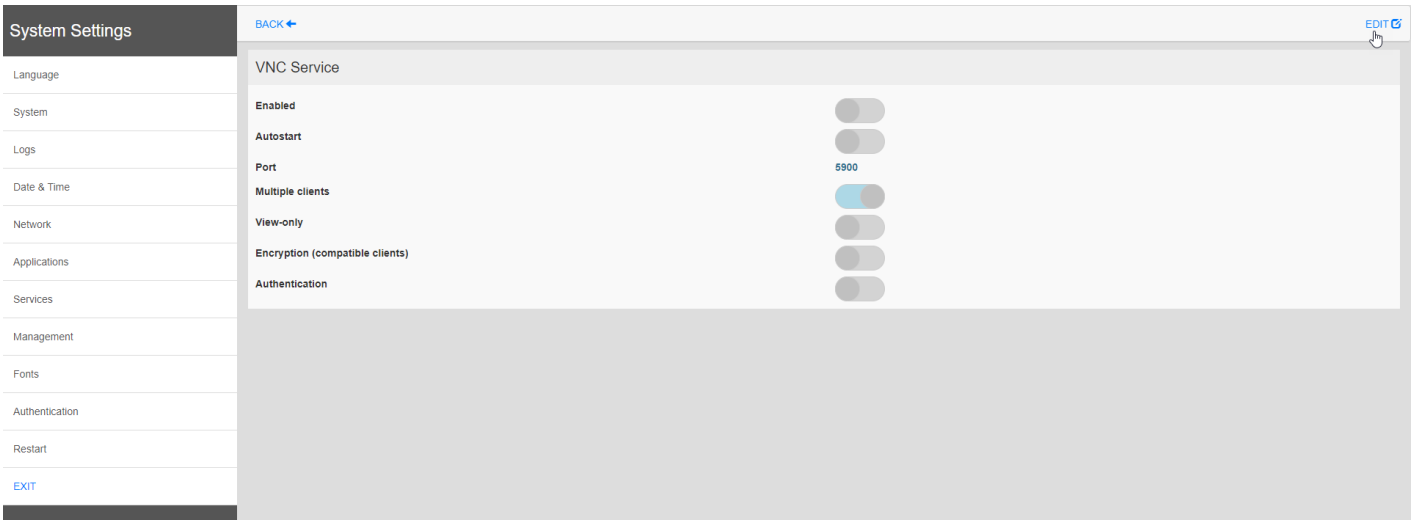


To enable or disable services, follow the steps:

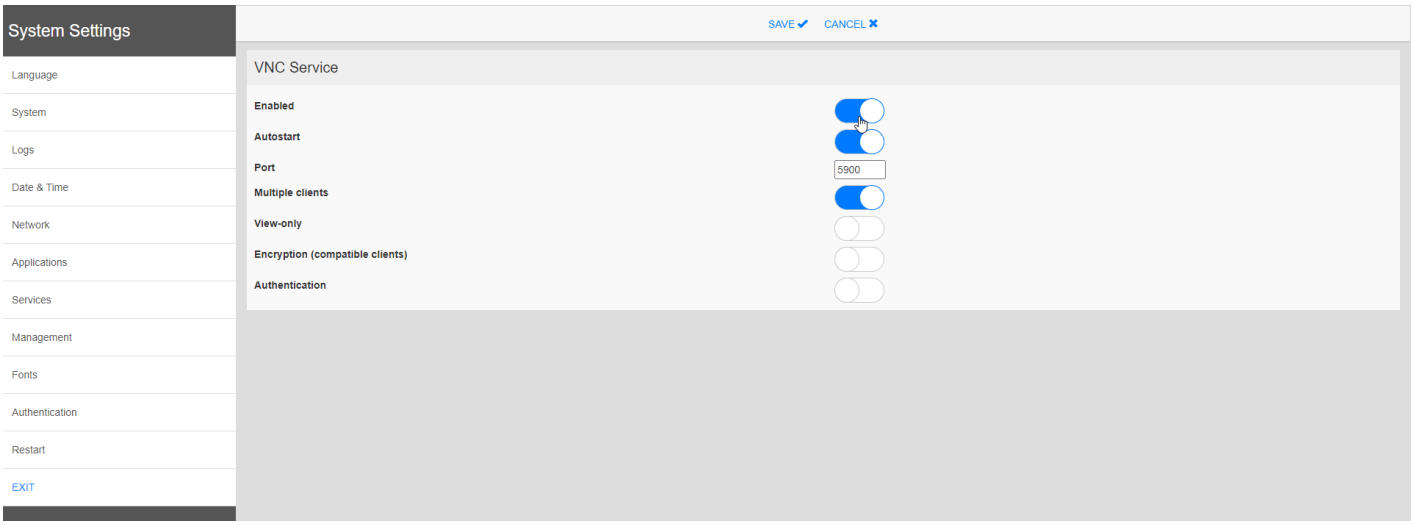
- Select the service.



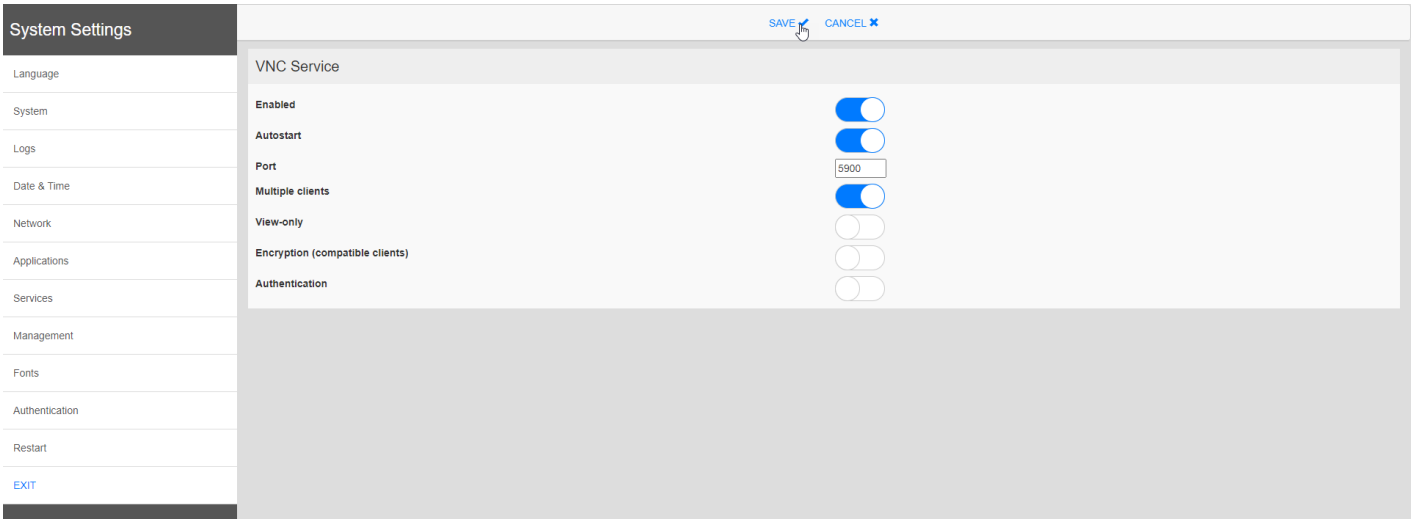
- Press **Edit** on the top-right corner.



- Change the settings, including the **Enabled** switch.



- Finish by saving.



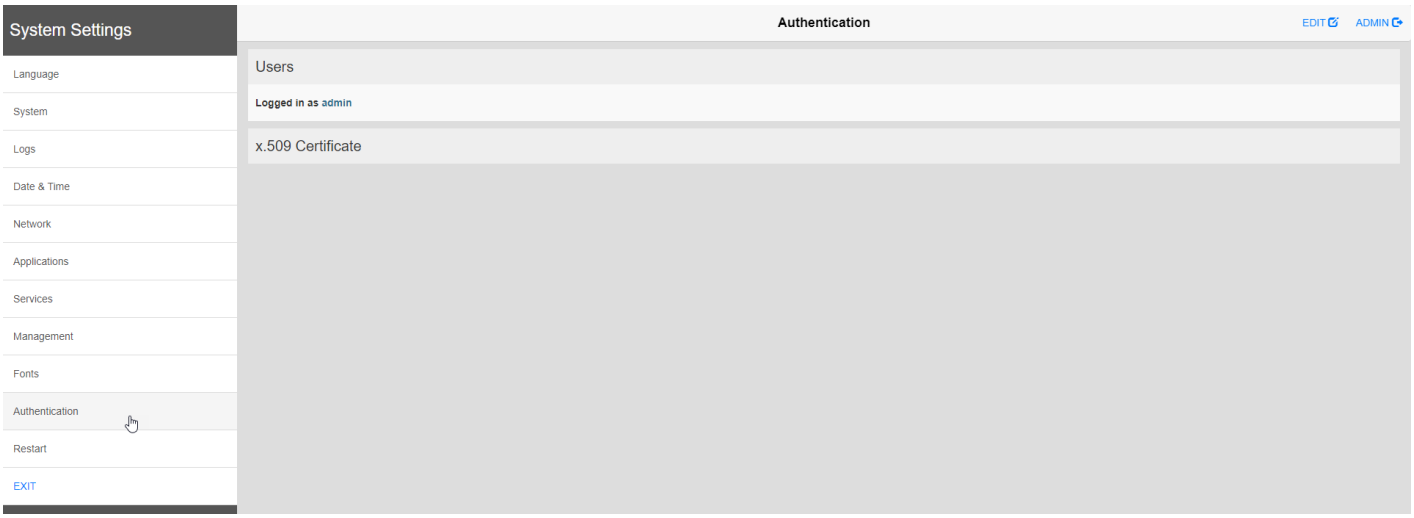
Once the gateway is ready for deployment, we strongly recommend that you to disable the SSH and VNC services.

Change the password

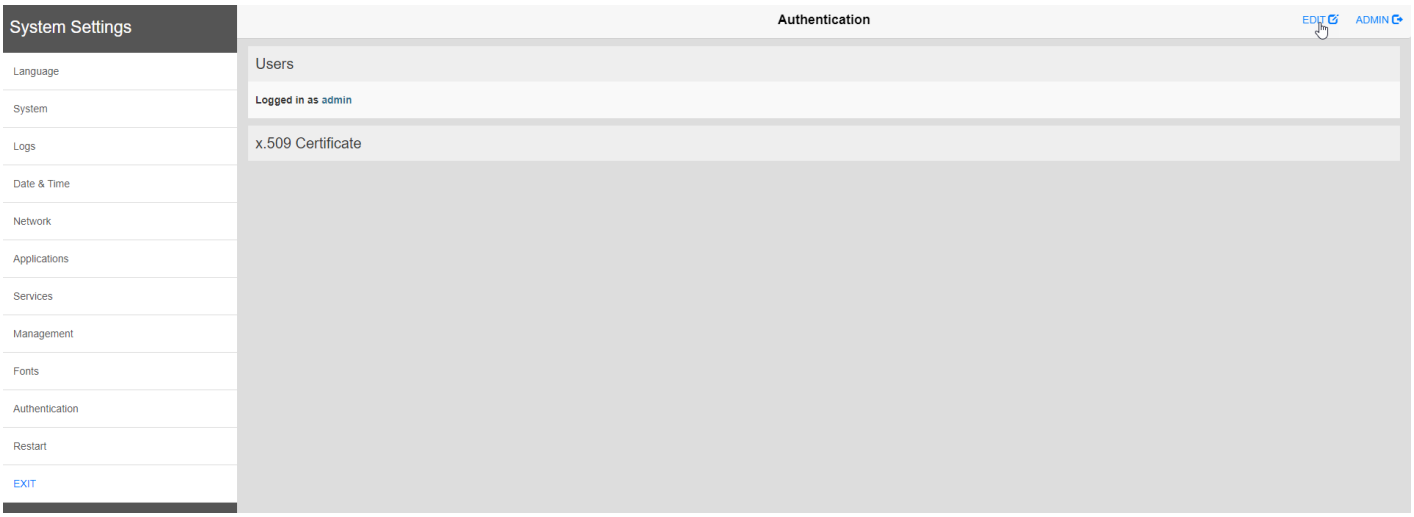
NOTICE

Keep the password safe

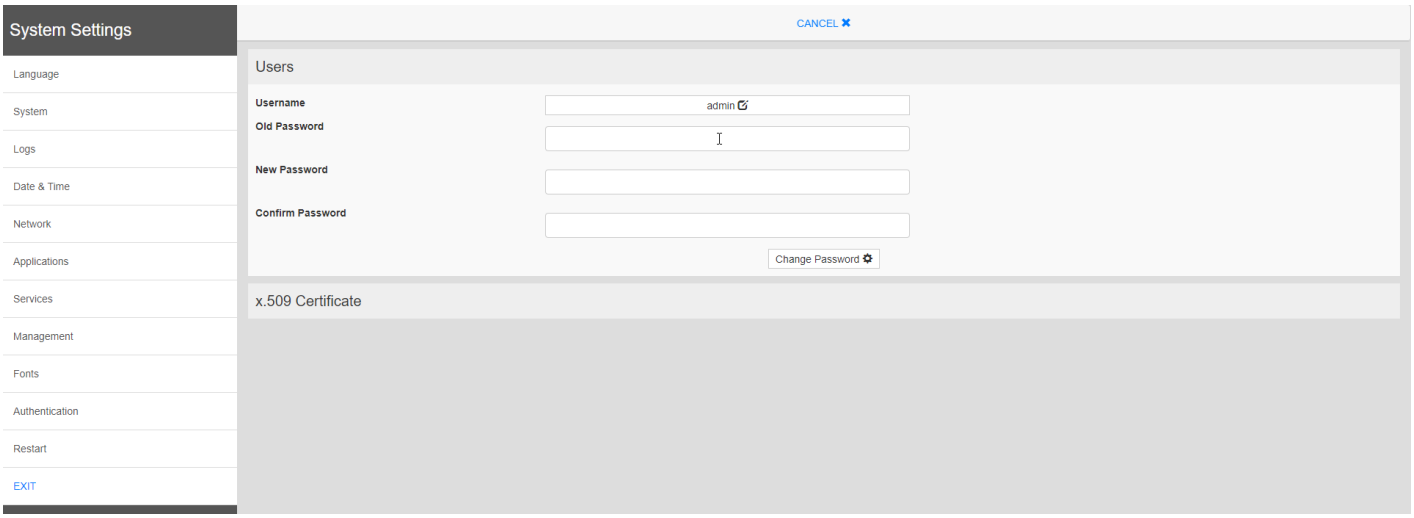
You cannot access the settings if you lose your password. You may also be unable to recover the device.



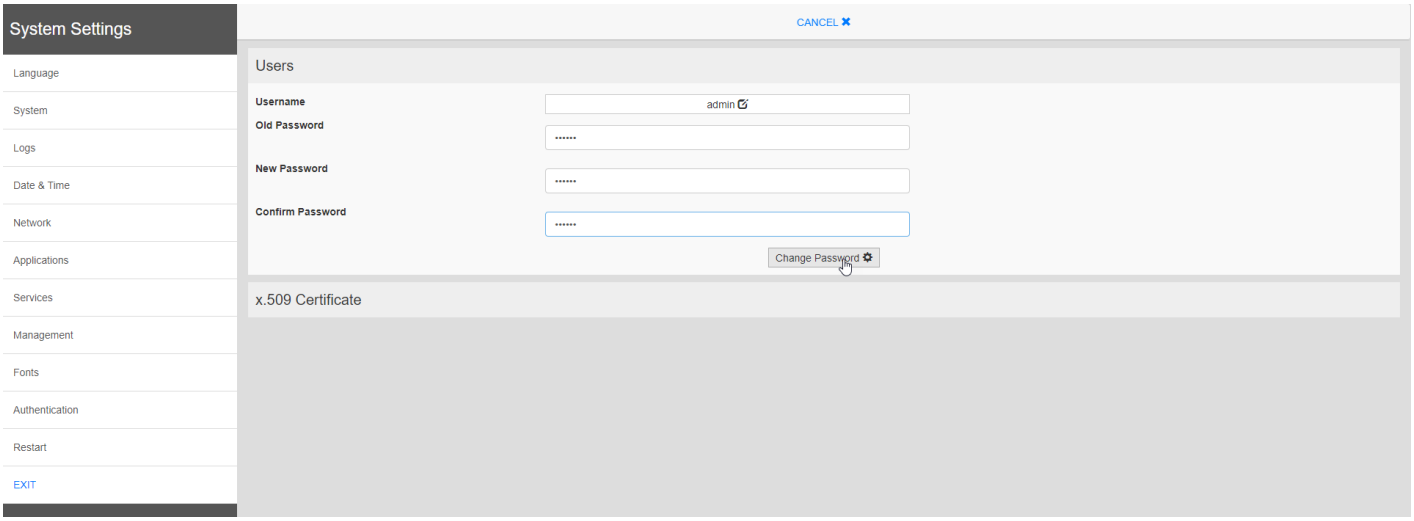
Open **Authentication**.



Click **Edit**.



Enter your old password and your new password.



Click **Change Password**.

Finishing up

Hint: Navigate to **System** and keep this page open in your browser as it will be handy during the next part. The eXware 703 is now configured.

See **Insight setup** for the next step.

4.3 Insight setup

Pre-requisites

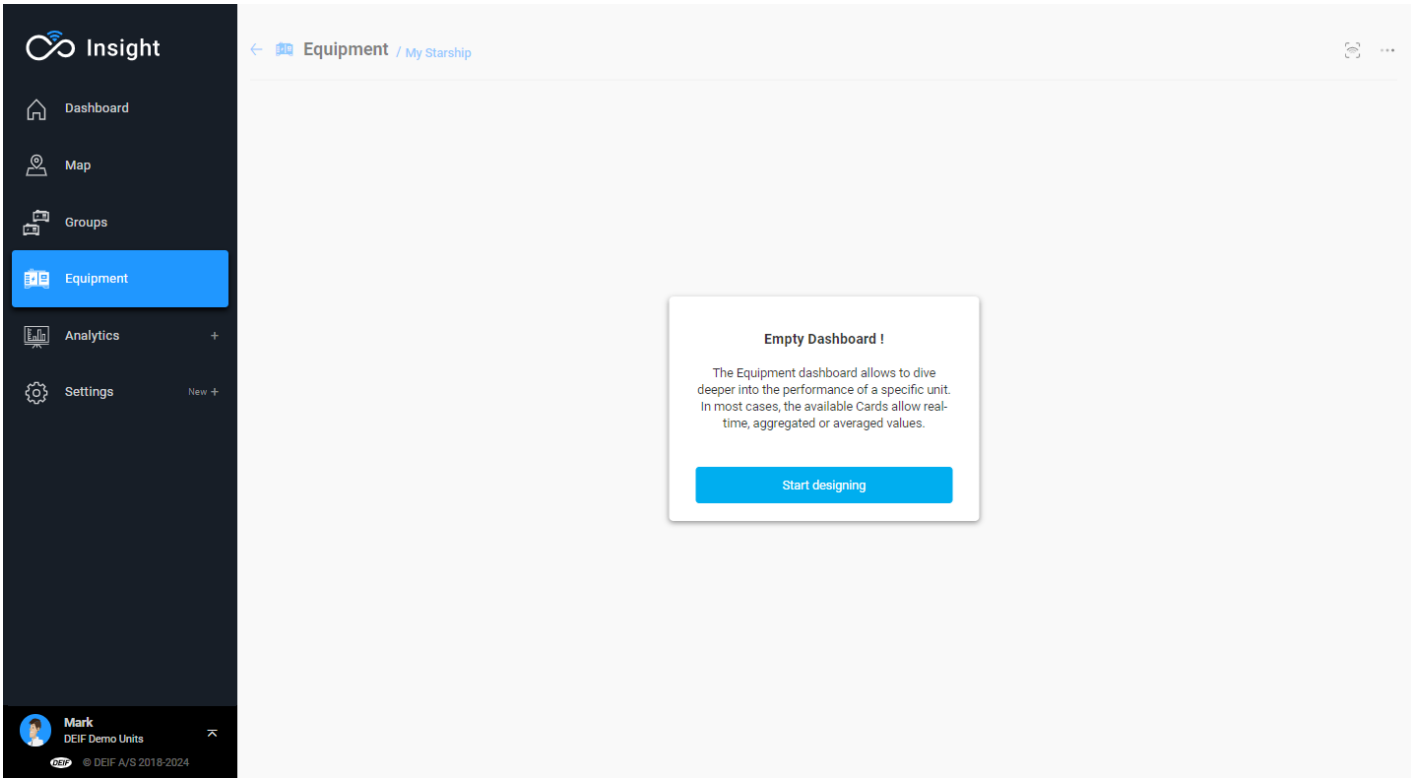
You have received an invitation to join your company's Insight account and have already defined your password.

If you didn't receive an invitation, please contact the Insight admin of your company.

If you are the administrator and did not receive an invitation to join Insight, please contact DEIF Support https://deifsupport.freshdesk.com/support/home

Set up the equipment

Navigate with your browser to the Insight portal at https://insight.deif.com. Use your credentials to log in.



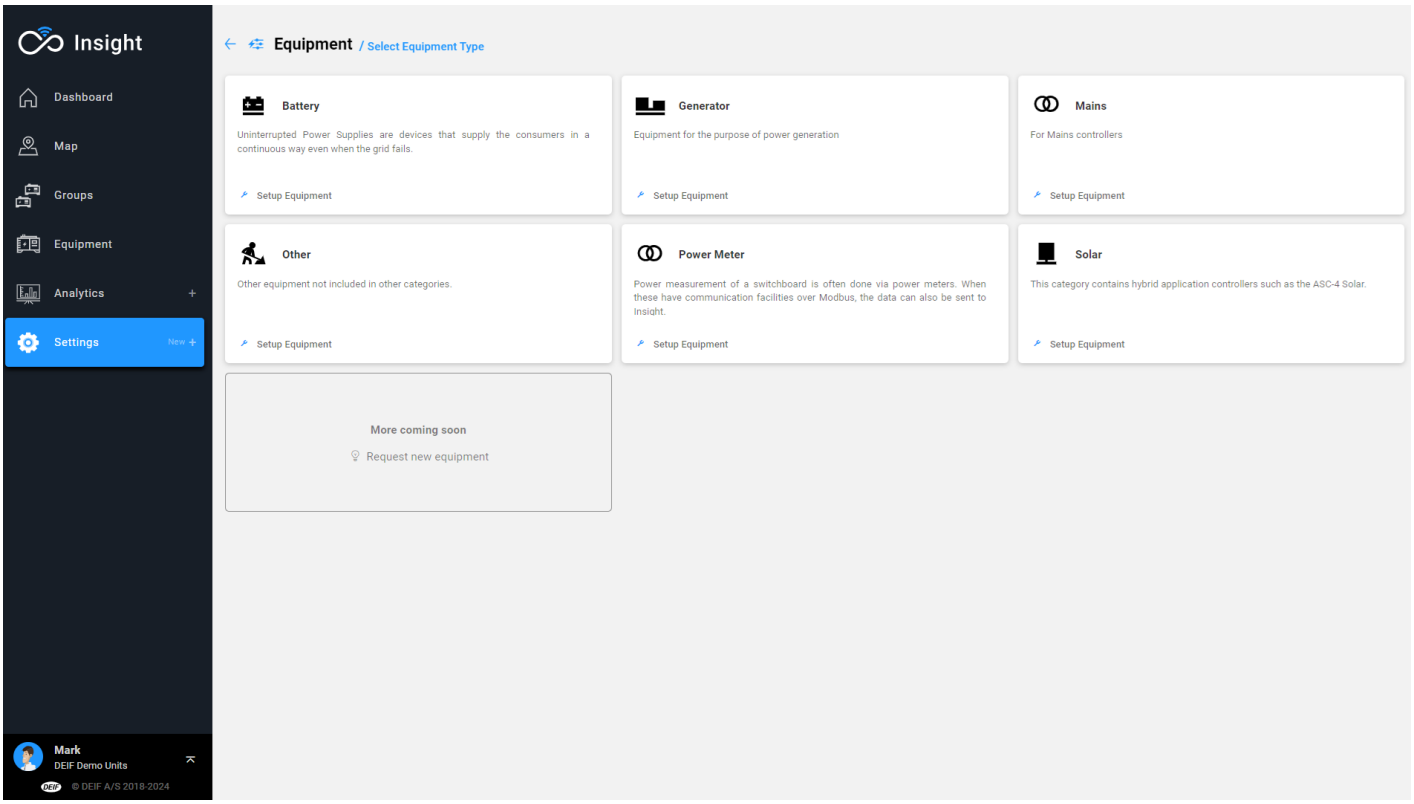
When first logging in, Insight will feel very empty. Don't worry, we'll change that!

From the navigation menu, follow **Settings ⇒ Equipment.**

Press the More (...) button and select **Add Equipment**.

Equipment and Groups (of Equipment) are managed in this page.

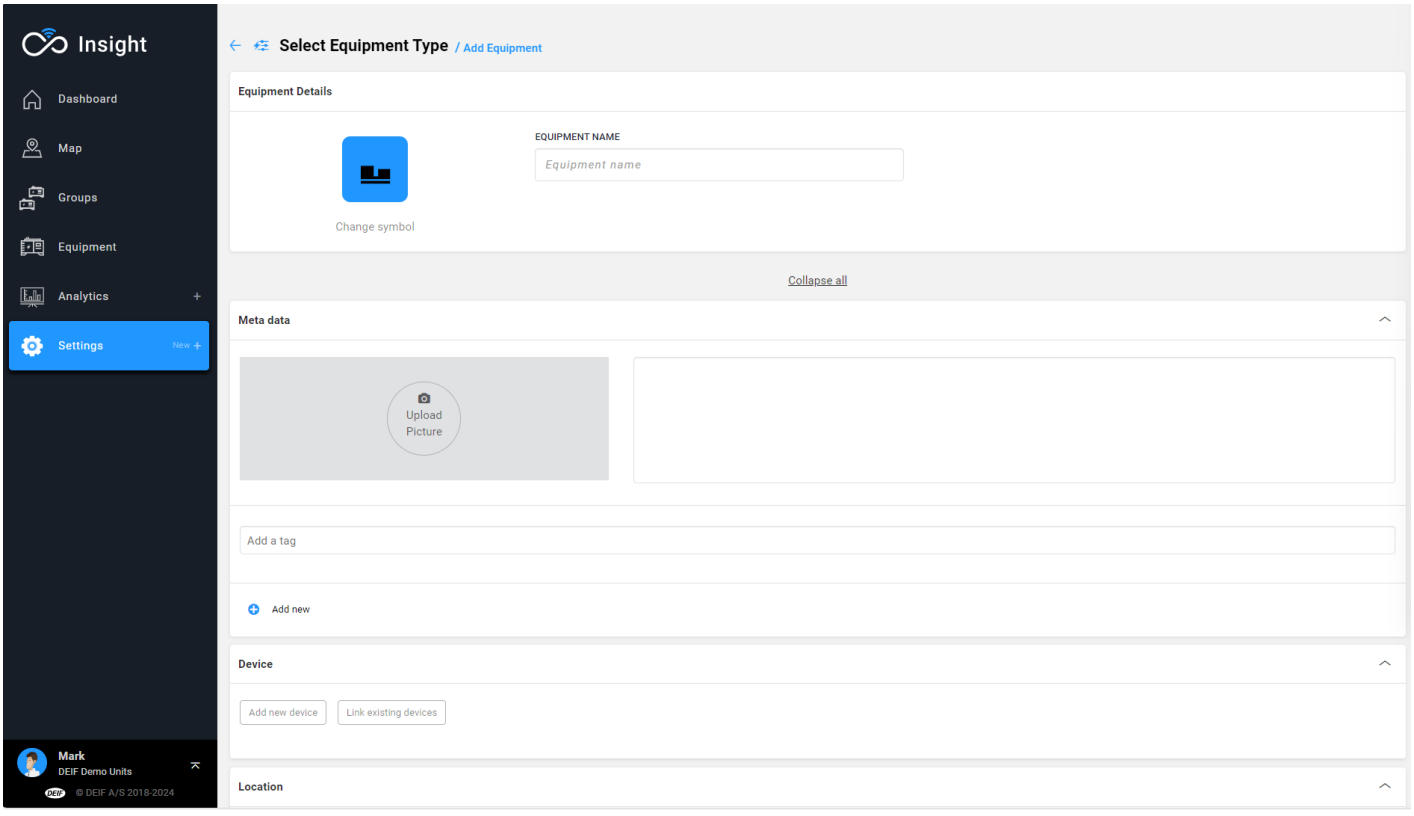
Choose the appropriate Equipment Type. For this example, we will choose **Generator**.



There are a variety of Equipment Types available for selection.

Enter equipment details

Once selected, the Equipment settings page opens.



Creating new equipment.

This page is always the same for any of the Equipment Types. The Equipment Types selection determines the default icon and the devices templates available when adding new devices.

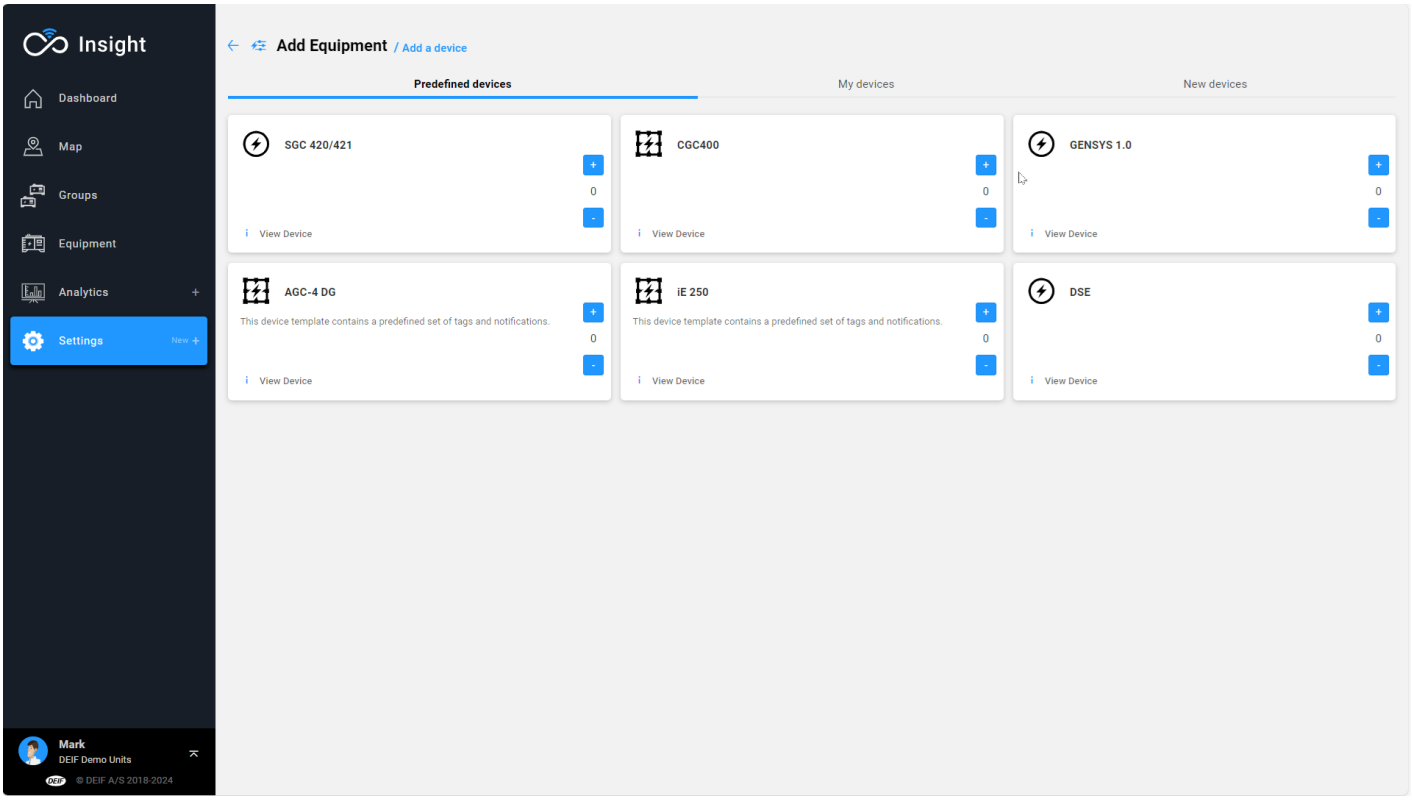
Fill in the **Equipment Name**. All the remaining fields are optional.

Adding devices

Use the **Add new device** button to add a device to this equipment. In this example, we will be adding two devices: The AGC-4 Mk II and a gateway. We will also set the equipment's location settings.

4.3.1 Example: Add an AGC-4 controller

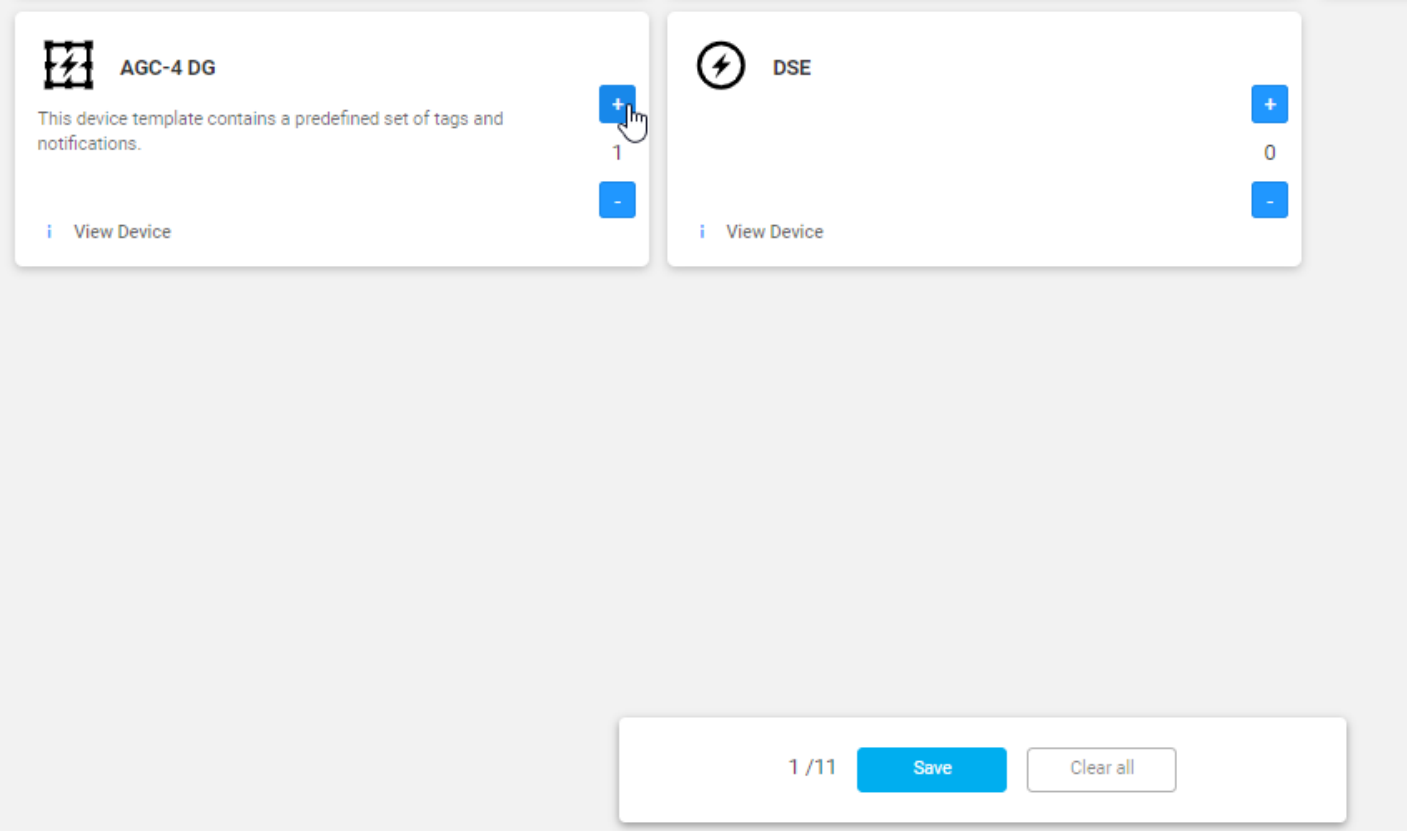
After pressing the button to **Add new device** again, Insight shows tabs for different options.



The different templates available for the Generator equipment type.

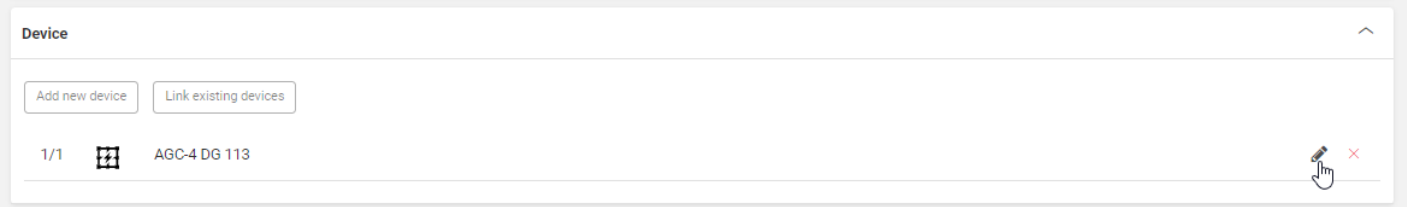
Tab	Function
Predefined devices	Allows to create devices based on templates created by DEIF for the Equipment Type chosen earlier.
My devices	Allows to create devices based on templates created within the current account.
New devices	Allows to create devices based on empty or platform related templates.

Click on the **+** button on the AGC-4 DG box to add a new AGC-4 to the Equipment, and then press **Save.**



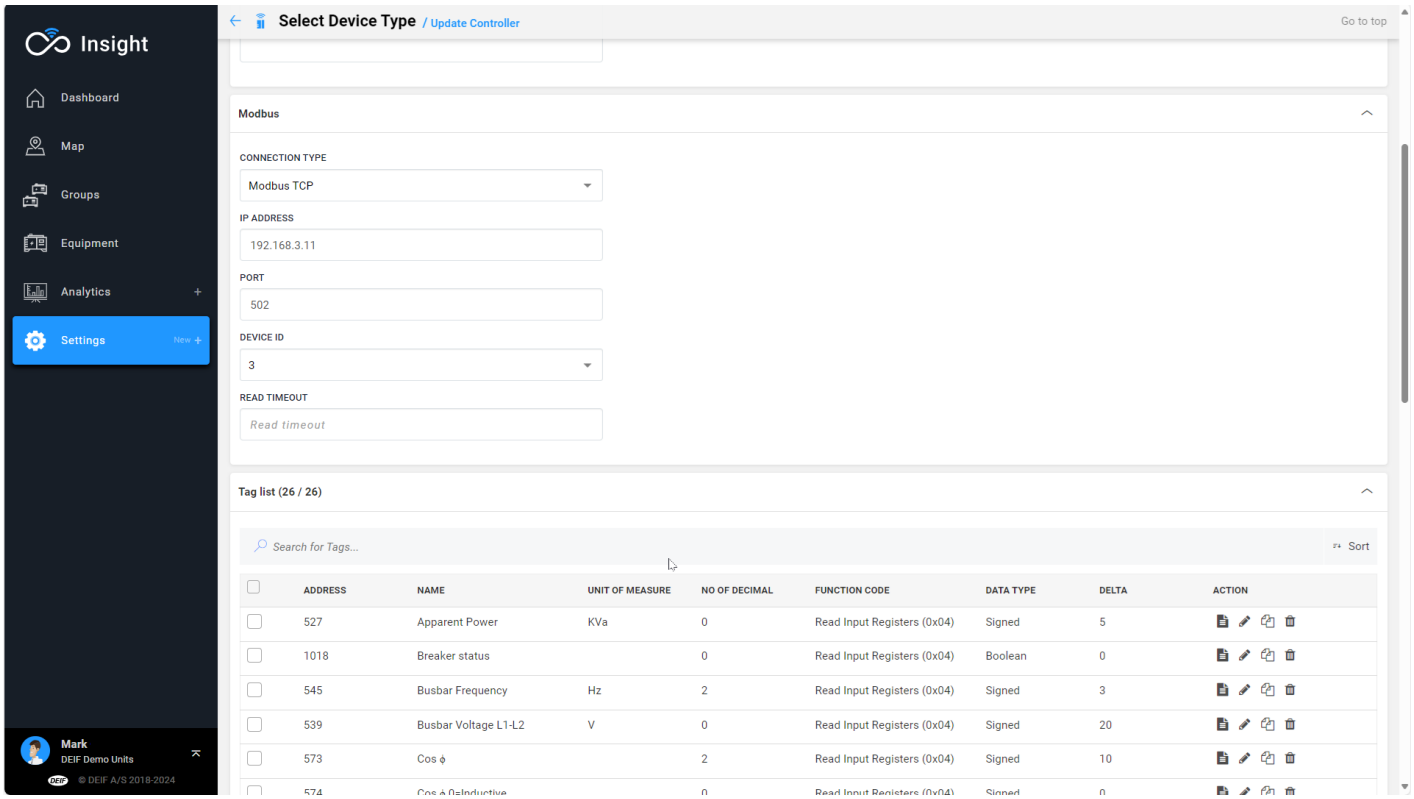
The number of devices allowed on a single gateway depends on the current subscription and service level of the account.

We can now see that an AGC-4 controller has been created and linked to the device.



You can change its settings by clicking on the pencil (edit) button. Name the new device and proceed.

You now can see more of the content of the new device. The next step is to give it the correct network setting.



As we have seen in FX30 Setup, we need to set the controller and the FX30 in the same network area. We will set up the controller with IP **192.168.20.210**. The remaining settings do not need changes but may be adjusted as desired.

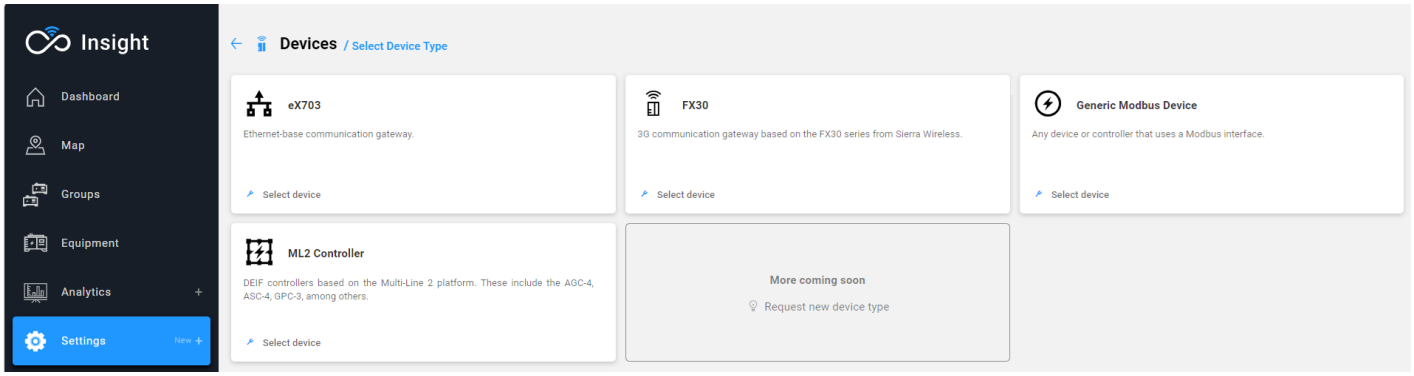
The AGC-4 template offers a selection of values and notifications suitable for the basic needs. Additional tags and notifications can be added.*

Press **Save** to continue.

NOTE * The FX30 can have a maximum number of 100 tags. The number of tags may also depend on the service level of the account.

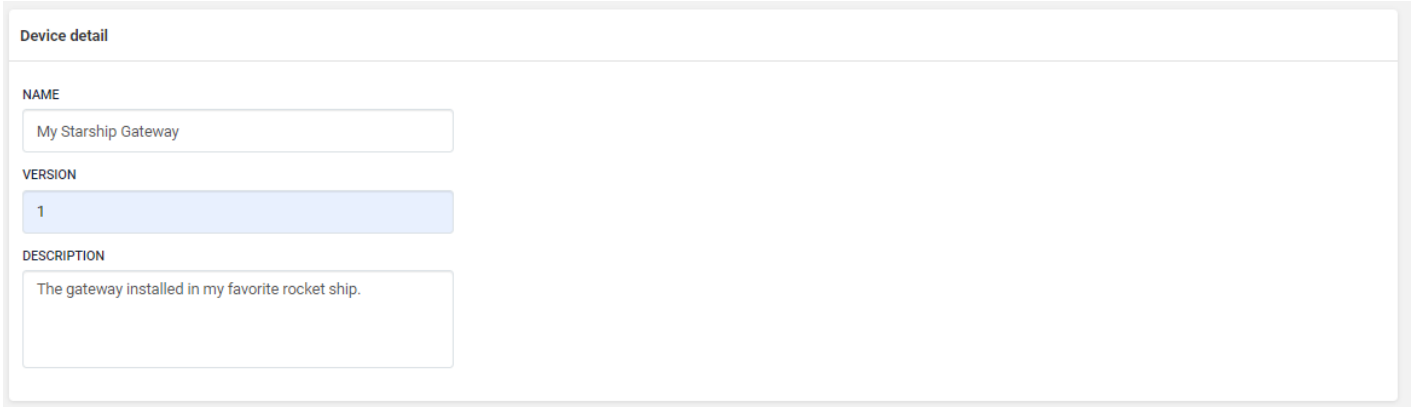
4.3.2 Example: Add an FX30 gateway

After you press the button to **Add new device** again, go to the **New devices** tab and select **FX30**.



Once in the FX30 device page, fill in the **Device detail** section give it a recognisable name. You can give it the same name as the Equipment or a variation of it, for example.

A version is mandatory, but this is not a critical field. You can just set it to **1** for now.



In the **Data Acquisition Unit Configuration** section, we are going to select the type of **FX30**. The FX30S is used for Modbus RTU (RS-485). Enter the **IMEI** and **Serial Number** of the FX30. These can be found in the Insight FX30 Configuration page, the FX30 kit box and the label on the device.

Pro Tip: If you kept the Insight FX30 Configuration page open on your browser, simply copy and paste the **IMEI** and **Serial Number** from one page to the other.

Since we want to use the GNSS facilities of the FX30 to keep track of our Equipment, we will enable geo-location. When enabling the geo-location, a time interval for location reporting must be set.

The interval is set in minutes using a dropdown. If the interval is zero (0), the location is sent only one time (just after the FX30 powers up).

NOTE For LTE communication, select Type *FX30_4G*.

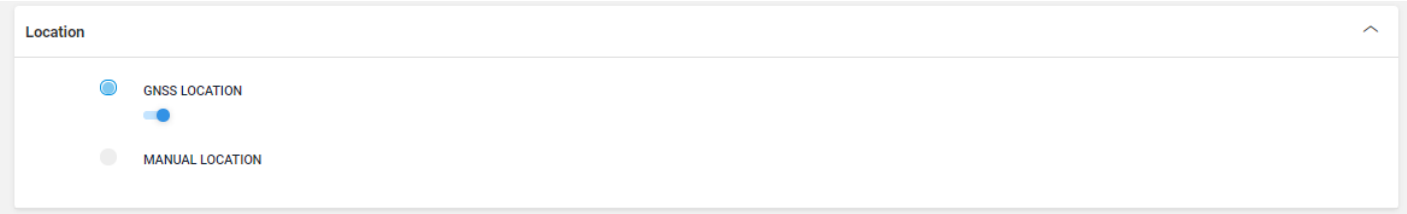
Both IMEI and Serial Number must be entered correctly or the system will not work. Please note that only the IMEI has a validation algorithm for the input provided.

Press **Save and Send Configuration** and then continue the configuration.

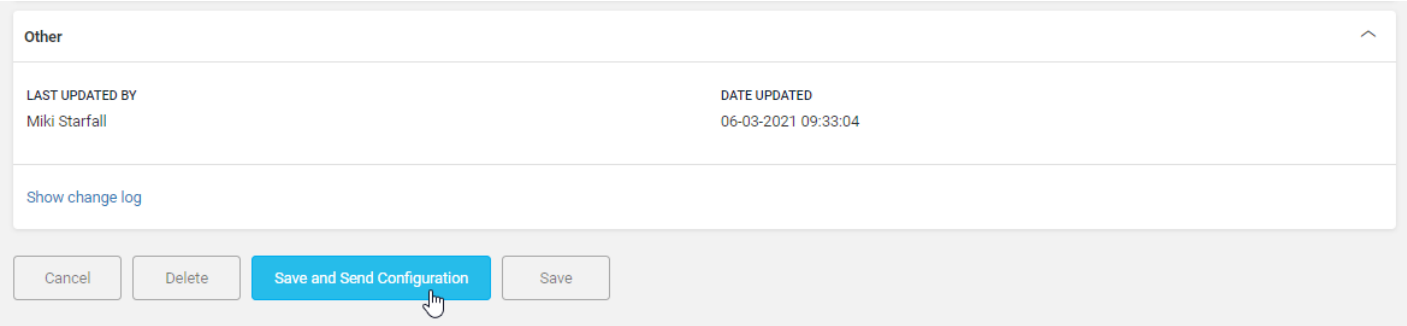
Equipment location options

If you have configured the FX30 to send its location, configure the equipment to be using it.

Choose **GNSS LOCATION** and activate the small switch under it.



Press **Save and Send Configuration** to send the configuration to the gateway.



The Insight FX30 Configuration page should now show the gateway and the controller under the tab **Unit Status**.

System Status | Unit Status | Ethernet Configuration | SIM Configuration | NTP Configuration

My Starship Gateway | My Starship Controller

Modbus Configuration

Unit settings

Connection: TCP/IP
Device: 192.168.20.210
Port: 502
Unit Id: 3
Read Timeout: 0 secs

Read Holding Registers (Function 03)

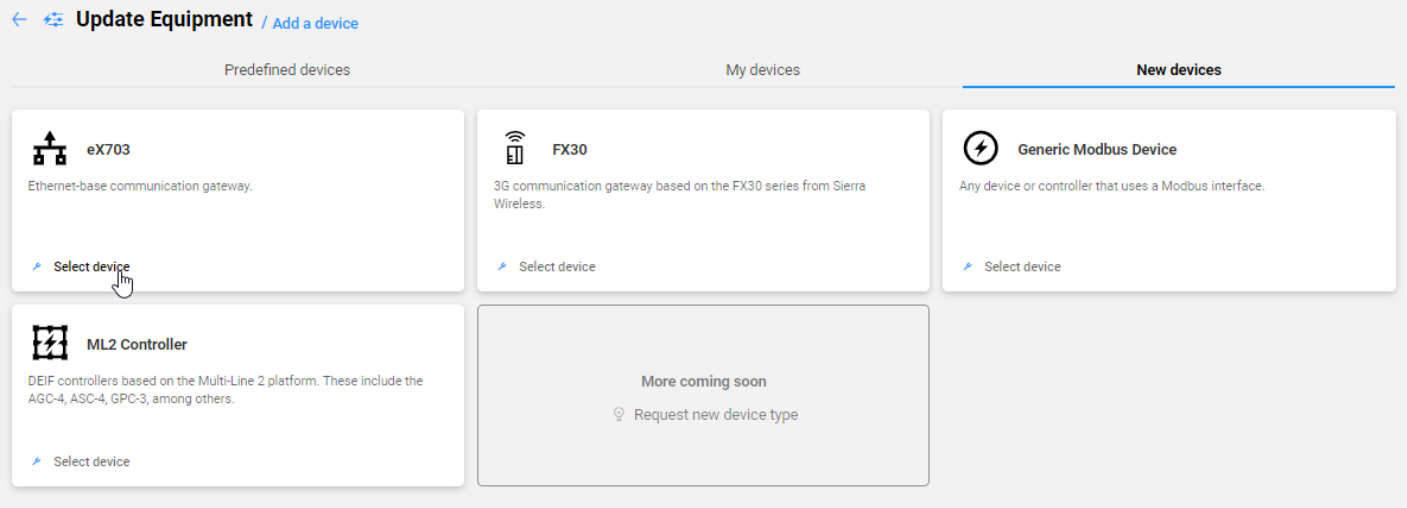
Register	Read Width	Read Order	Delta	Notification Rules
58005	1	-	20	

Read Input Registers (Function 04)

Register	Read Width	Read Order	Delta	Notification Rules
501	1	-	5	
502	1	-	5	
503	1	-	5	
507	1	-	10	
513	1	-	5	
514	1	-	5	
515	1	-	5	
519	1	-	10	
523	1	-	2	
527	1	-	5	

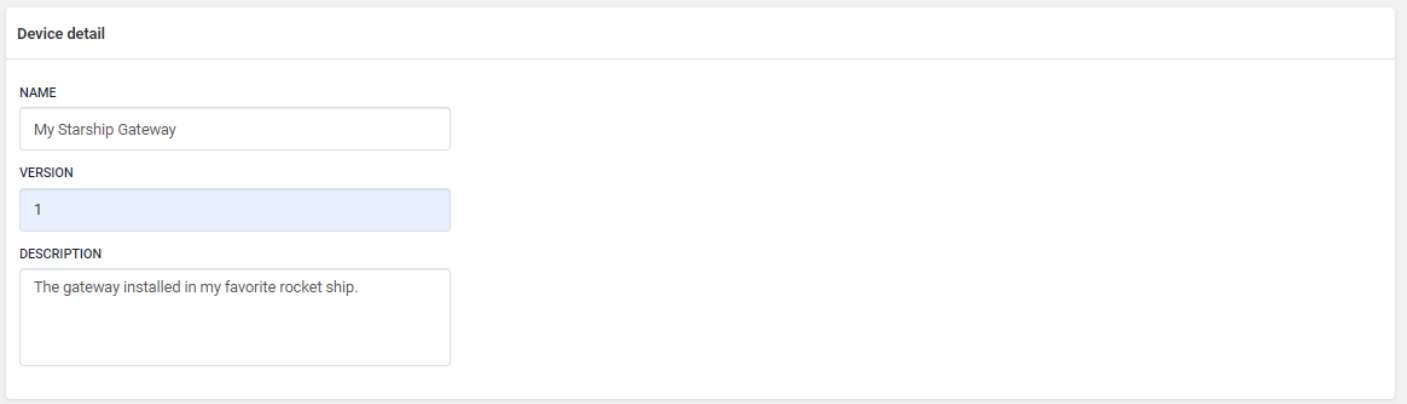
4.3.3 Example: Add an eXware 703 gateway

After you press the button to **Add new device** again, go to the **New devices** tab and select **eX703**.

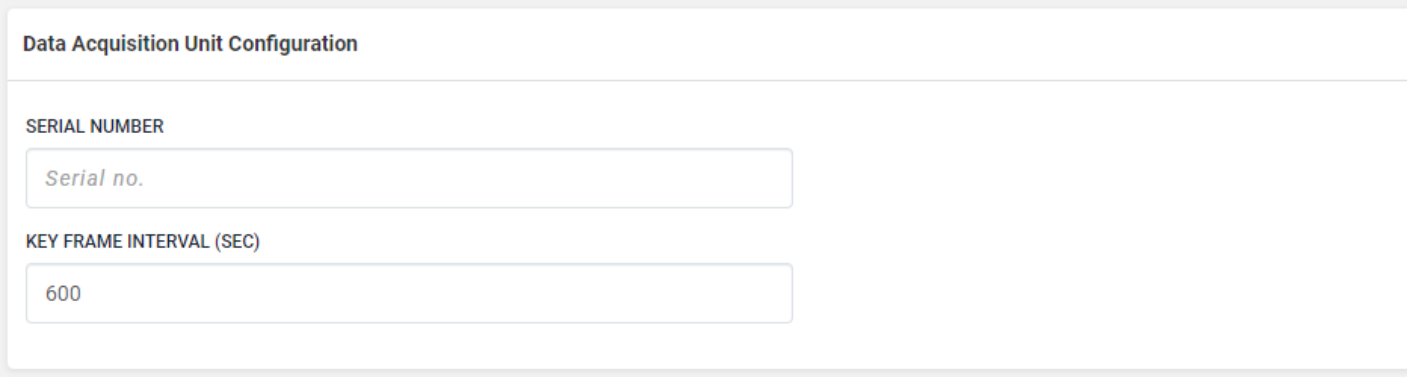


Once on the eXware device page, fill in the **Device detail** section and give the device a recognisable, and preferably unique name. You can give it the same name as the Equipment or a variation of it, for example.

A version is mandatory, but this is not a critical field. Just set it to **1**, for now.



In the **Data Acquisition Unit Configuration** section, introduce the **Serial Number** of the eXware 703.



This can be found in the **System Settings / System** page, the eXware kit box and the label on the device.

Pro Tip: If you kept the System Settings page open on your browser, simply copy and paste the **Serial Number** from one page to the other.

Leave the **Key Frame Interval** and **Device Status Notifications** setting with their default settings, for now.

Press **Save and Send Configuration** and we will finish the setup in the next section.

4.3.4 Finishing

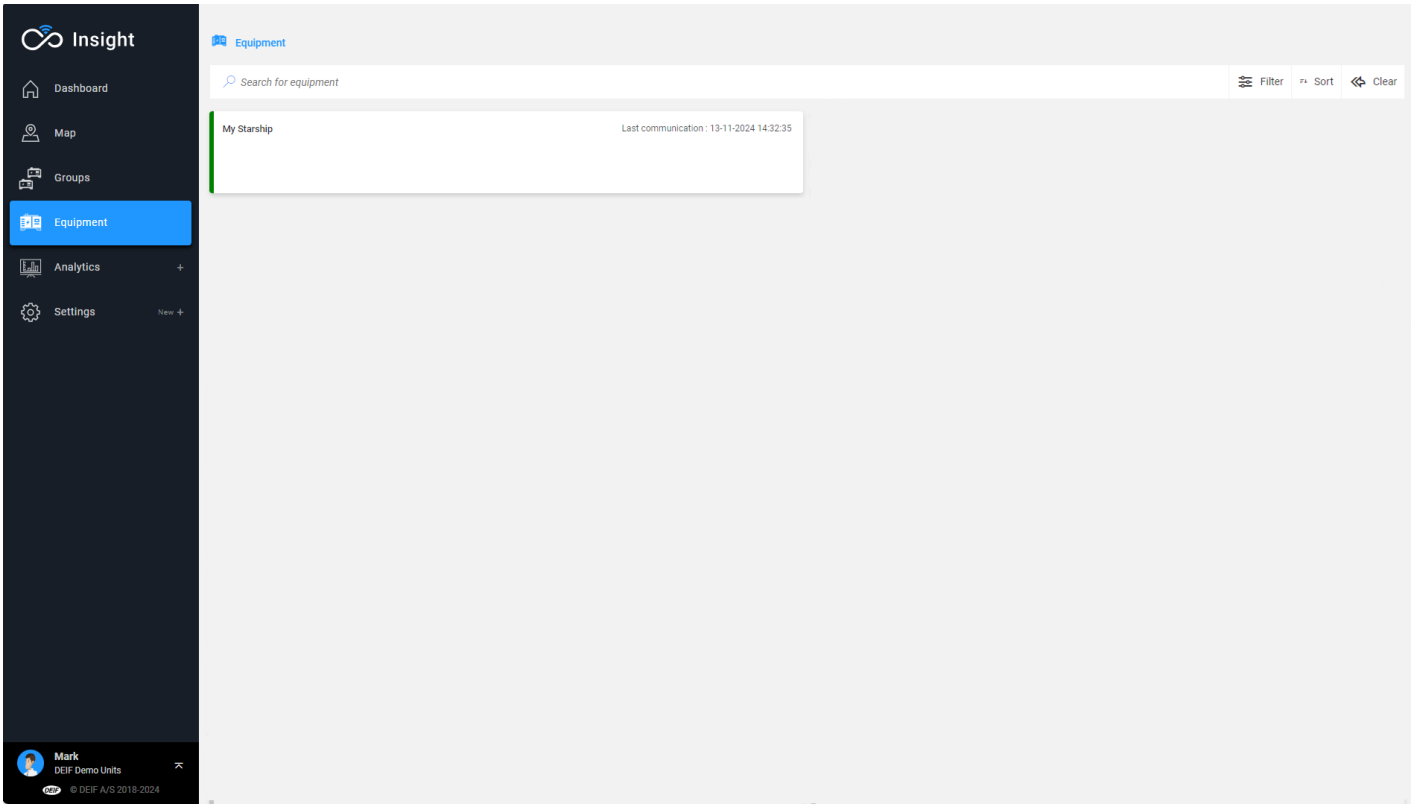
When both the device and gateway are configured, press **Save and Send Configuration** from the Equipment configuration page. The equipment is saved and the configuration is sent to the gateway.

The equipment is now ready and its data will soon be received on Insight.

5. Creating a dashboard

5.1 Create a dashboard

Click on **Equipment** on the main menu.



Status bar

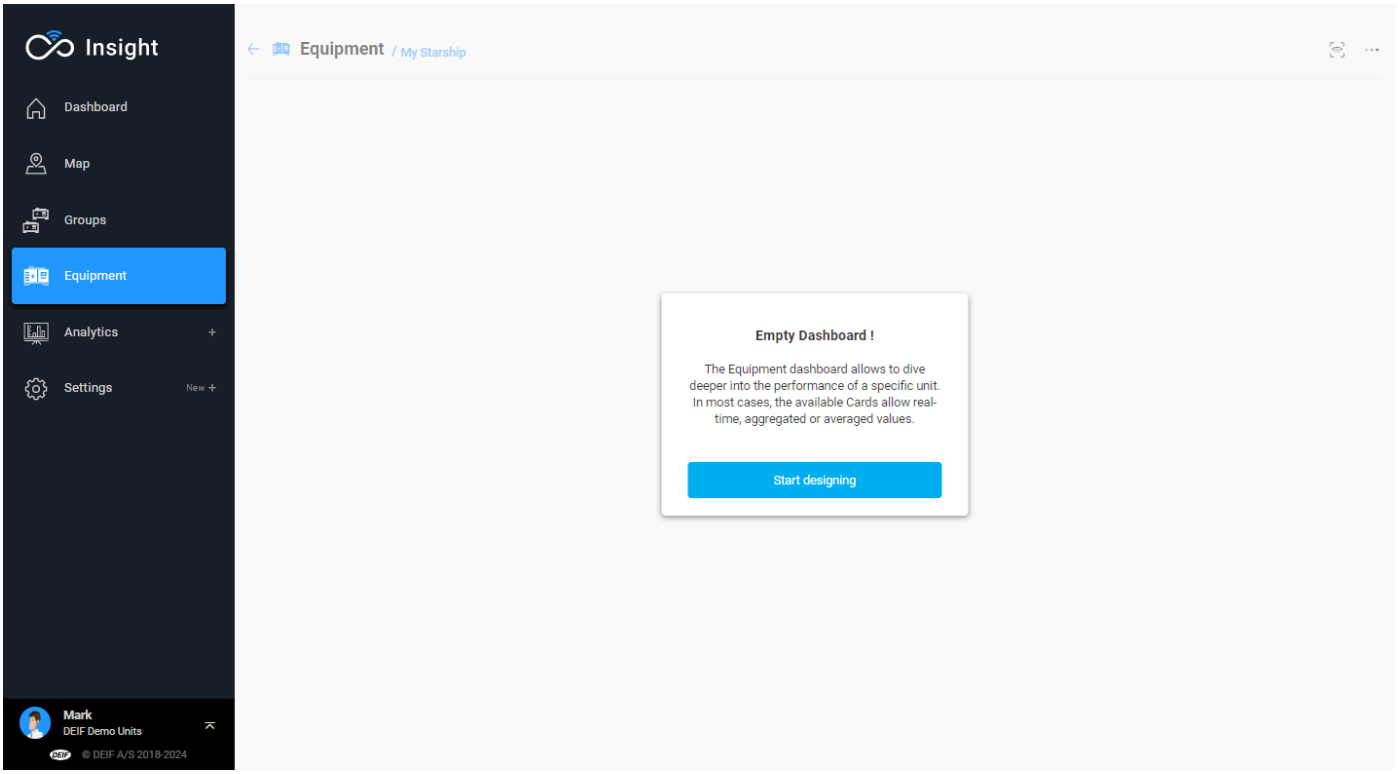
The equipment status depends on three factors: the controller device, the communication device, and the reception of the Insight payload.

Status bar colour	Notes
Green	• Controller device is online. • FX30 is reporting.

Status bar colour	Notes
	• Payload is received in Insight.
Orange*	• Controller device is online. • FX30 is not reporting. • Payload is received in Insight. Message displayed: *No Communication FX30 host*.
	• Controller device is online. • FX30 is reporting. • Payload is not received in Insight. Message displayed: *No Connection to cloud*.
Grey**	Message displayed: *Controller device is offline*.

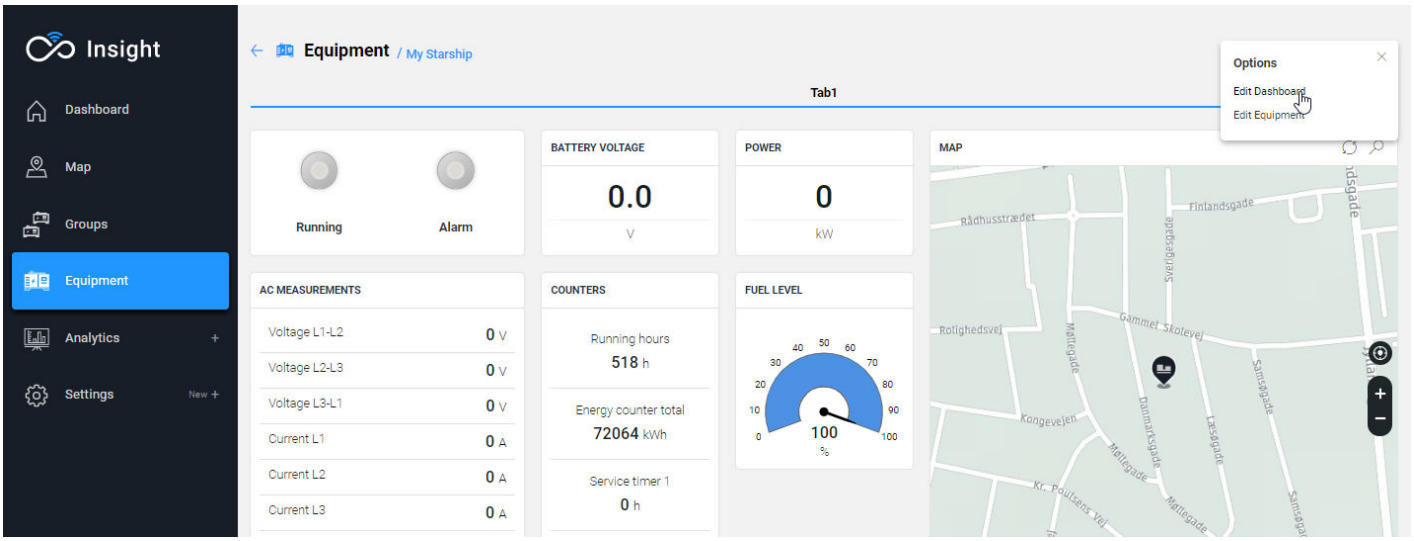
NOTE * No data received in the last 10 minutes.
** No data received from either device in the last 30 minutes.

Clicking on Equipment opens its Dashboard. When landing on an empty dashboard, a pop-up is shown to allow immediate editing.



Empty equipment dashboard

After saving the dashboard, to make changes, you can press the More (...) button on the top right corner and select **Edit Dashboard**.

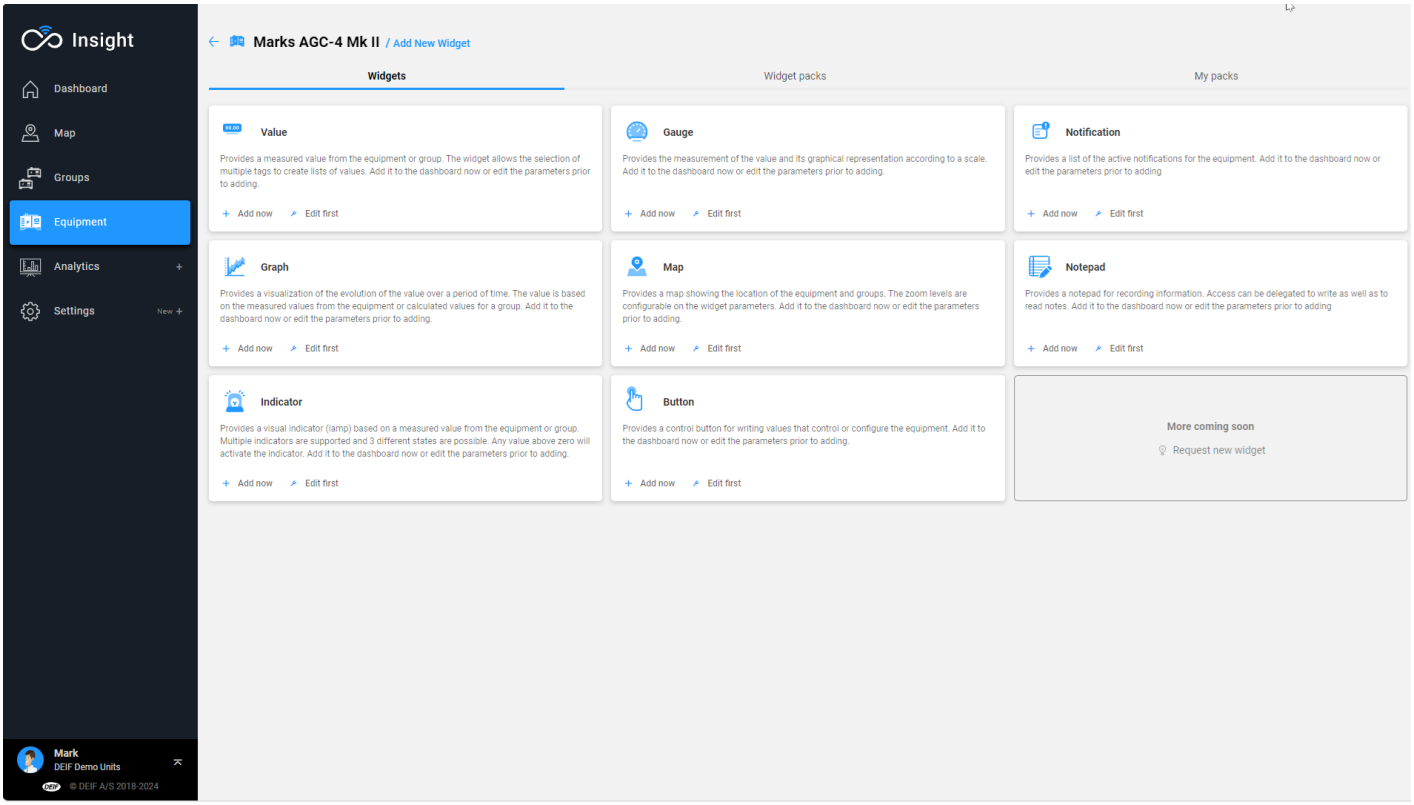


You can edit the dashboard or the equipment settings from the dashboard.

5.2 Add content to the dashboard

Adding content to the dashboard is very easy. Simply press the **Add new widget** button and choose from a variety of Widgets and Widget Packs.

Add a widget



There is a great variety of widgets to choose from.

Each widget has its own requirements in terms of configuration. Please note that Home and Group dashboards may introduce additional parameters to each widget.

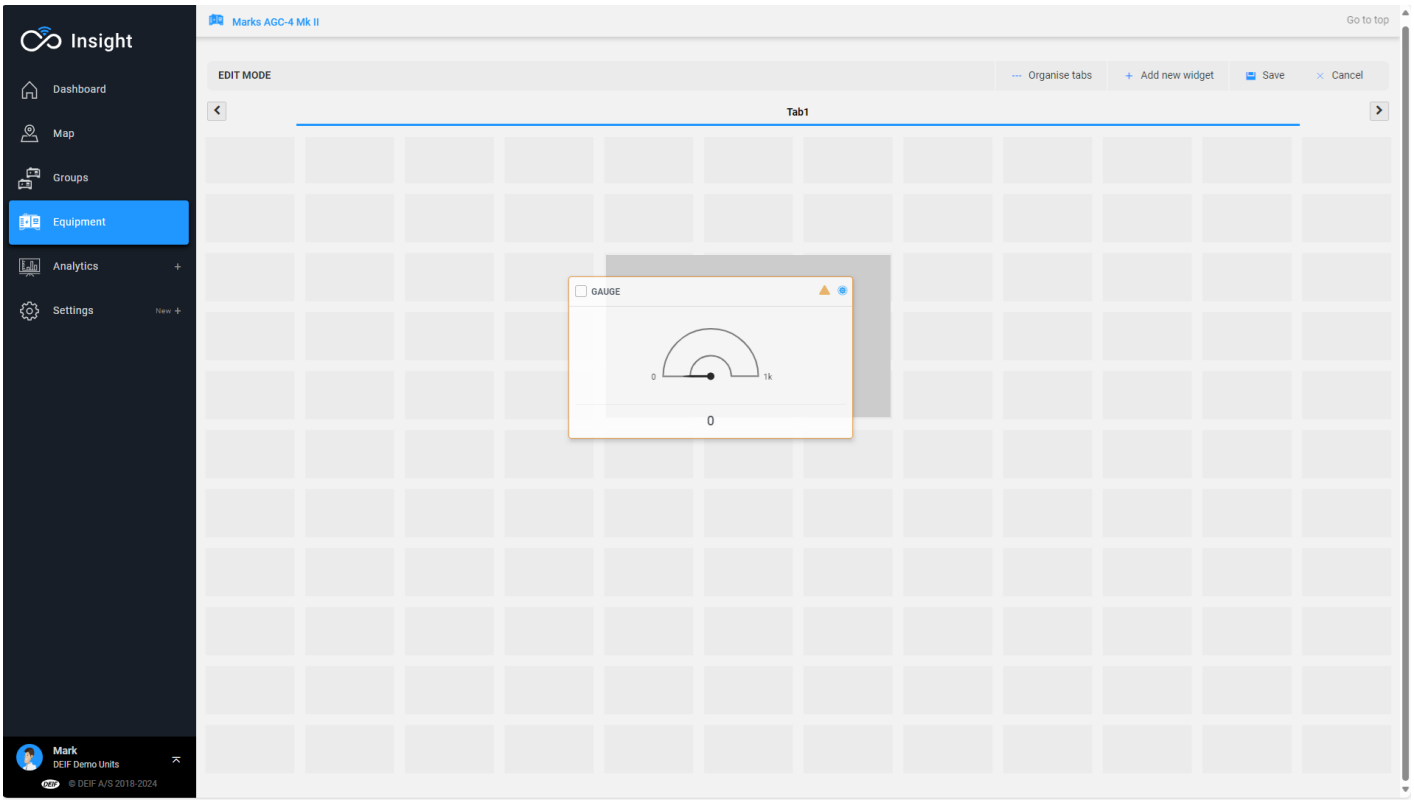
The **Add now** option creates a widget with its default configuration.

The **Edit first** option opens the widget configuration page. Note that most widgets require some configuration.

Use **Add now** to add a *Value* widget to the dashboard.

Move things around

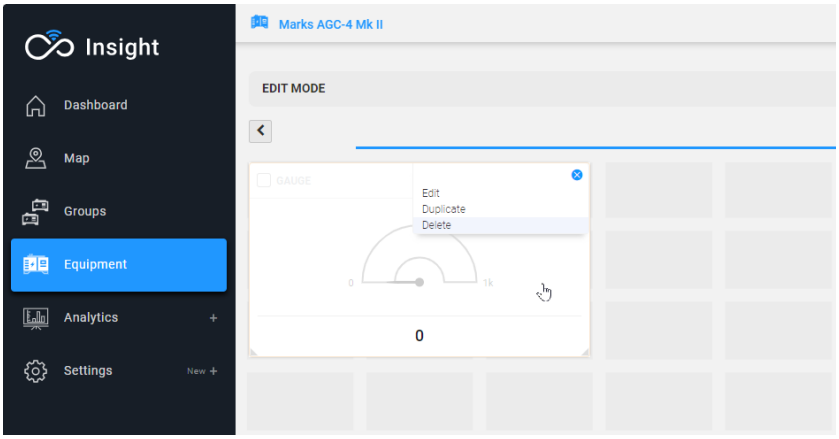
In dashboard editor mode, the widgets may be dragged and dropped freely around the dashboard. Most widgets also allow resizing.



Dragging a value widget.

Delete a widget

To delete a widget, click on the widget's settings button situated on the top-right corner and select *Delete*.

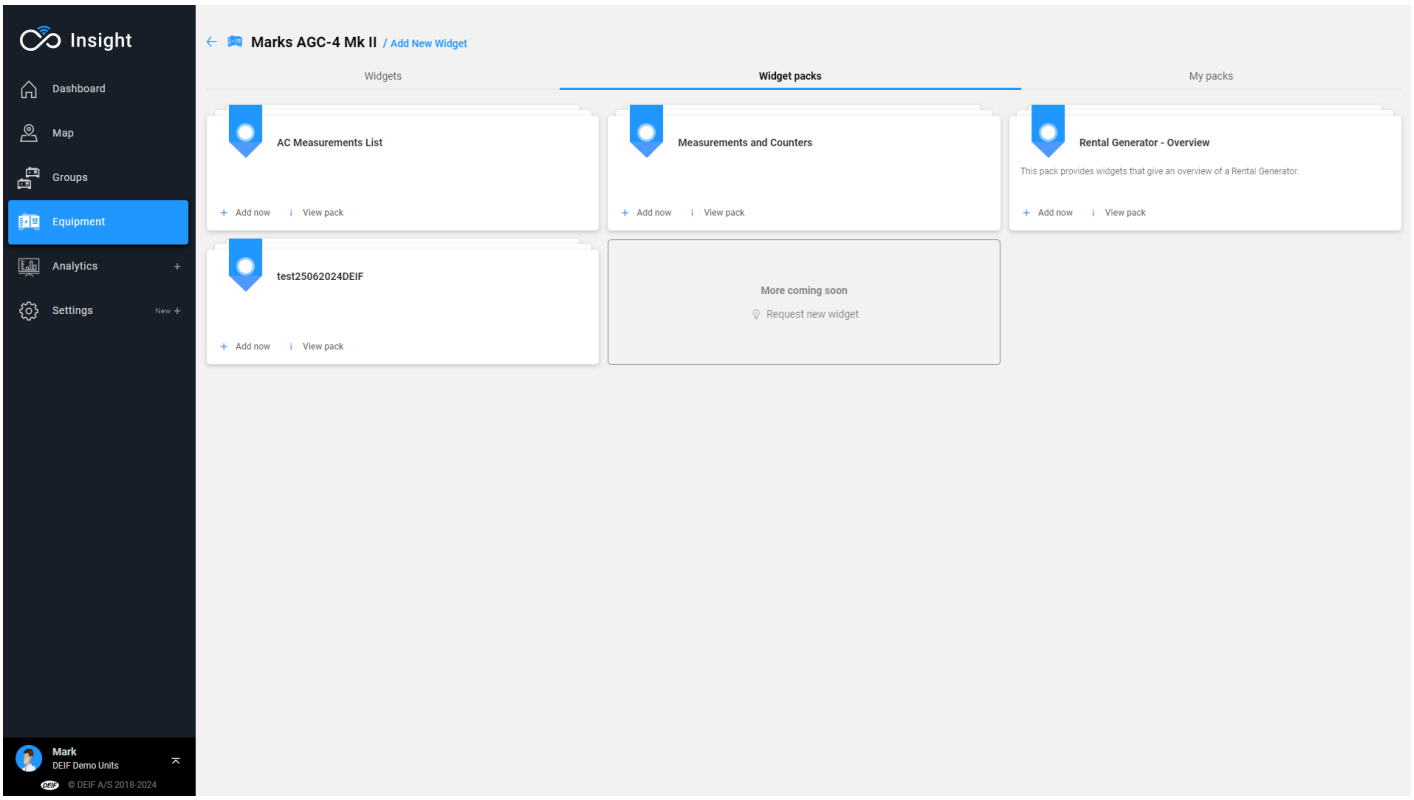


NOTE Deleting a widget is instantaneous. There is no confirmation dialogue.

Add a widget pack

Adding widgets to a dashboard is fun, but we made it easy to add multiple widgets in one simple action. Widget packs are sets of pre-configured widgets which can be added to a dashboard to provide almost instant value.

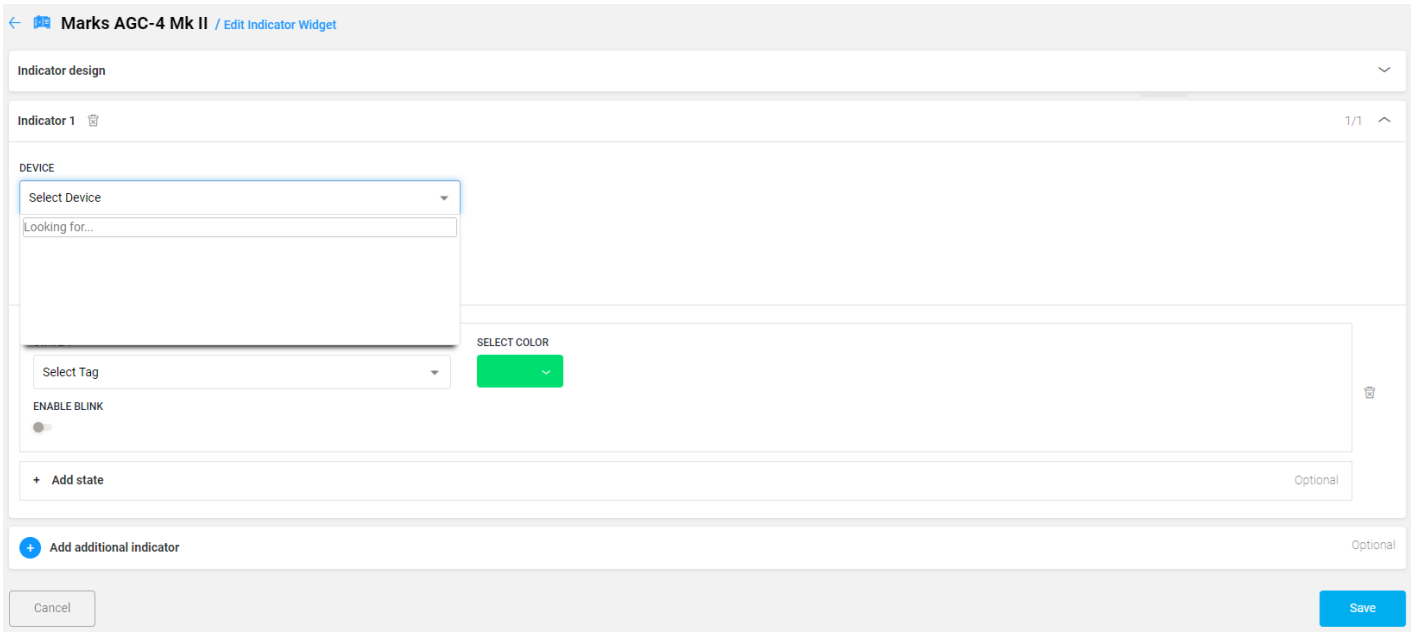
You can also create your own widget packs by selecting multiple widgets and selecting **Save to pack**.



Choosing a pre-defined widget pack for the dashboard.

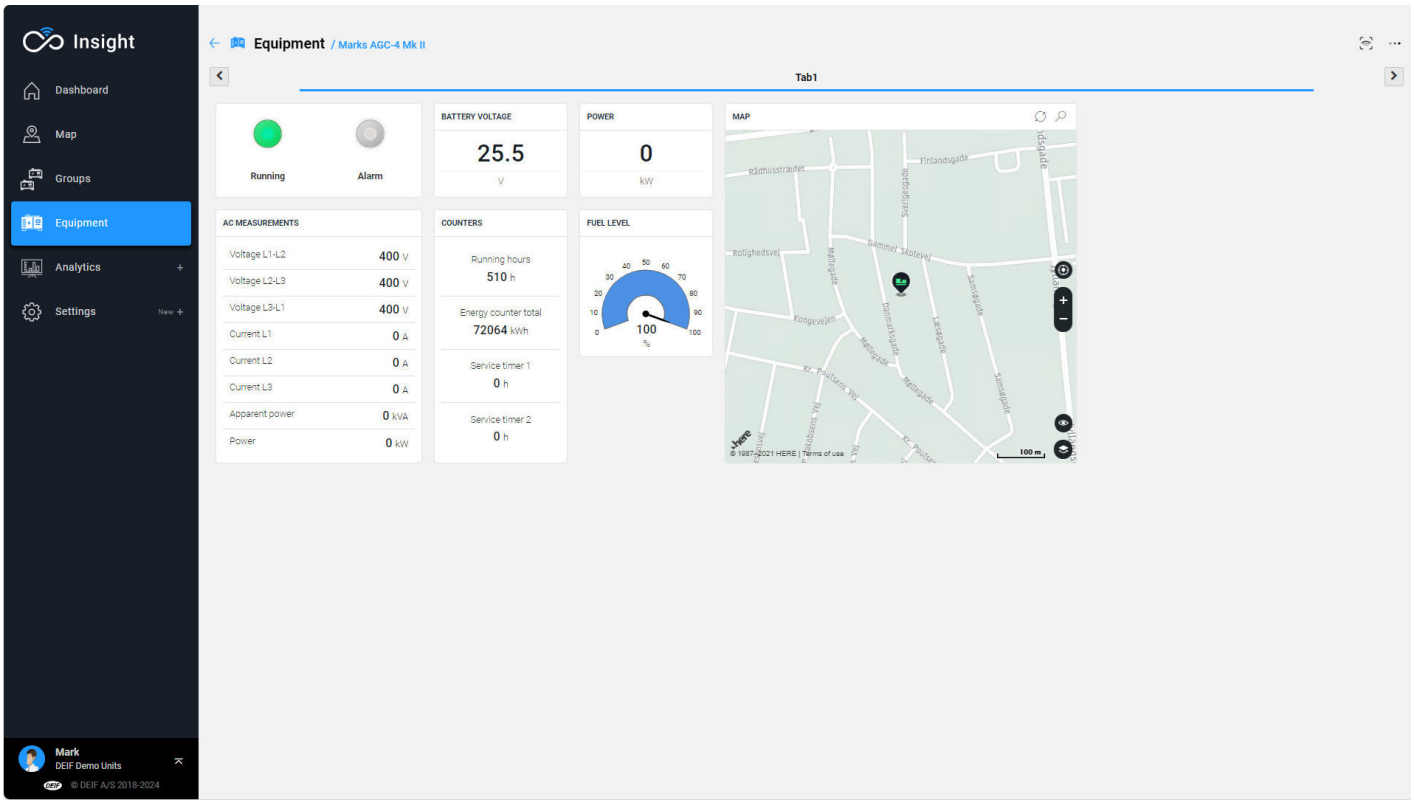
Each type of dashboard has its own listing of available Widget Packs.

After inserting a widget pack, the device must be selected on the widgets. If the tags defined in the pack are available for the particular device, then the tag is automatically inserted after the device is selected.



Finishing your work

To finish and apply the changes, press the **Save** button. Alternatively, you can **Cancel** which will revert back to the last saved dashboard configuration.



Dashboard created with the "Rental Generator - Overview" widget pack

Your dashboard will now display the data received from the device.

6. Adding Insight to a mobile device

6.1 Why add Insight to a mobile device?

Insight is designed to work on phones, tablets and computers. To improve the experience, we recommend adding it to the Home Screen of your mobile device. This gives Insight a near-native application look and feel. This gives quick access to Insight, as well as a full page with no navigation bars or browser buttons.

Use the QR code below and add the Insight web application to the Home Page of your device.

QR link to Insight