# Functional description

# Mini EnMs

for UMG 604 / 605 / 508 / 509 / 511 and UMG 512

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# Content

# Introduction

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## Comments on the manual

We welcome your comments. In the event that anything in this manual seems unclear, please let us know and send an EMAIL to: info@janitza.de

Follow the instructions in the operating manual when installation and operating the device!

**Meaning of the symbols**

The following pictograms are used in the operating manual at hand:

**Dangerous voltage!**

Danger to life or risk of serious injury. Disconnect system and device from power supply before beginning work on them.

**Caution!**

Please follow the documentation. This symbol warns of possible dangers that can arise during installation, commissioning and use.

**Note**

## "Mini EnMs" app

### Short description

The "Mini EnMs" app, once installed on your Janitza meters, makes it possible to view real-time and historic measuring values data of master and slave meters in graphs right from your energy meter.

The app also lets you view the historic energy usage data. Because of the user friendly controls, anyone will be able to easily and effectively create simple graphs

The master device collects the data from the connected slave devices and displays them on its own home-page. The app has been designed for small applications without a GridVis-use!

### Most important characteristics:

- Completely web based, you only need a web browser.
- Ability to use the app on PC, Laptop, Tablet, etc.
- Access to the most important live and historical measuring values.
- Easily export graphs as an image.
- User friendly interface by using drag and drop.
- Up to 6 measuring values in one graph (2 y-axes).
- Connect and record values from up to sixteen slaves.

**Note!**

The auxiliary voltage of the device should be buffered to ensure that power failures can be reliably detected as events.

## Integrate Power Analyser into the GridVis

To integrate the Power Analyser into the GridVis evaluation and configuration software an Ethernet connection must be established to the device and the TCP/IP address defined.

- Establish a connection between the PC and the device (see connection example) via a direct connection or via a switch/router. It is recommended to use CAT5 cable.
- Determine or set the addressing mode ("fixed IP" or "DHCP"). If "fixed IP" mode is selected then set the TCP/IP address of the device.
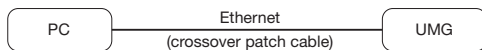


Fig. Example connection:
Direct connection between UMG and PC. Both devices require a fixed IP address.
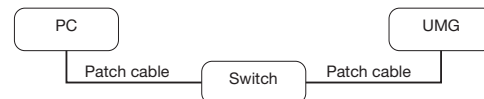


Fig. Example connection:
Configuration using a switch UMG and PC require a fixed IP address.
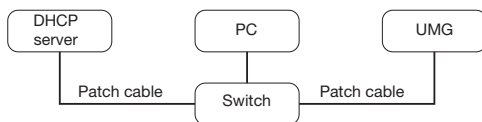


Fig. Example connection:
Integration into a network with DHCP server.
UMG and PC are assigned their IP addresses automatically from a DHCP server.

### Fixed IP address

In simple networks without a DHCP server, the network address has to be set directly in the device.

With a direct PC-UMG connection, note:

- Use a crossover patch cable.
- The first three segments of the IP addresses for the device and the computer should be identical. The last segments must be different! The subnet mask must match in all four blocks.

  Example:

  Computer's IP address:        192.168.000.020 with the subnet mask: 255.255.255.0

  UMG's IP address:              192.168.000.021 with the subnet mask: 255.255.255.0

### DHCP mode

DHCP allows for the fully automatic integration of a UMG into an existing network without additional configuration. When started, the UMG automatically obtains the IP address, the network mask and the gateway from the DHCP server.

⚠️ **Attention**

The connection of the UMG to an existing Ethernet network may only be carried out after discussion with the network administrator!

**Integrating the UMG 605**

- Change the device to programming mode. To do so press buttons 1 and 2 simultaneously for approx. 1 second. With the password query deactivated the programming mode is then started and identified with the text "PRG". The first digit of the address flashes.
- Set the address 205 for the selection "**DHCP-Modus**" (=2) or "**Fixed IP address**" (=0).
    - To do so, use button 2 to set the first digit to the value 2. Then switch to the second digit with button 1 and set it to a value of 0 with button 2. Set the third digit to a value of 5 in the same way.
    - Once the address is set, switch to the setting with button 1. Use button 2 to set the parameter to the corresponding value (cf. "Addressing mode" table).
    - For further settings use button 1 to go back and enter the next address.
    - If no button is actuated for ca. 60 seconds, or if buttons 1 and 2 are pressed simultaneously for ca. 1 seconds, then the device exits programming mode and changes back to display mode.

| Address | Description |
|---|---|
| 205 | DHCP mode |
|  | 0 = **Fixed IP**  1 = BootP  2 = **DHCP client**  3 = Zeroconf |

*Table: Addressing mode*

- With the selection of "Fixed IP address", other additional network parameters must be set:

    - Setting the device IP address
        - Change to programming mode. Set the address 300 as described and set the first three digit block of the device IP address (cf. IP addresses table).
        - Then set the address 301 and allocate the second block of the device IP address.
        - Complete the entries with the addresses 302 and 303.
    - Setting the subnet mask
        - Set the subnet mask, using the same method as for configuring the device IP address, with addresses 304 to 307 (cf. IP addresses table).
    - Setting the standard gateway
        - Set the standard gateway (if present), in the same way as the IP address, with addresses 310 to 313 (cf. IP addresses table).
        - Note: Gateway adjustment is normally not required for the configuration.

- Read out the device address with "DHCP mode" selection:

    - Change to the programming mode as described. Set the address to 300, using buttons 1 and 2 and note down the three digit block in the Contents area. Carry out the same step for addresses 301 to 303 (cf. table under step 10).

| Address | Description | Address | Description | Address | Description |
|---|---|---|---|---|---|
| 300 | IP address,  xxx --- --- --- | 304 | IP mask,  xxx --- --- --- | 310 | IP gateway,  xxx --- --- --- |
| 301 | IP address,  --- xxx --- --- | 305 | IP mask,  --- xxx --- --- | 311 | IP gateway,  --- xxx --- --- |
| 302 | IP address,  --- --- xxx --- | 306 | IP mask,  --- --- xxx --- | 312 | IP gateway,  --- --- xxx --- |
| 303 | IP address,  --- --- --- xxx | 307 | IP mask,  --- --- --- xxx | 313 | IP gateway,  --- --- --- xxx |

*Table: ID addresses*

**Integrating the UMG 511 / 512**

- Start the configuration menu from the home display with button 1 ("ESC"). Change to the "Communication" entry with button 3 and open this with button 6.
- Similarly to above, set the selection to "DHCP". To do so mark the "DHCP" entry and open this via button 6. Select the corresponding entry "DHCP" or "Off" with button 3 or 4 and confirm this with button 6. Deactivate the entry in the case of networks without DHCP servers ("Off").

- With the DHCP mode deactivated ("Off") further network parameters must be set:

  - Setting the device IP address
    - Select the entry "Address" with button 3 or 4 and open this with button 6. Change the first digit of the address via button 3 or 4. Then switch to the second digit with button 5 and set this in a similar manner to above. Complete the IP address and confirm the entries with button 6.
  - Setting the subnet mask
    - Select the entry "Netmask" with button 3 or 4 and open this with button 6. Set the subnet mask in a similar manner to the setting of the IP address for the device.
  - Setting the standard gateway
    - Select the entry "Address" with button 3 or 4 and open this with button 6. Set the IP address for the Standard Gateway (if present) in a similar manner.
    - Note: Gateway adjustment is normally not required for the configuration.

- Reading out the device address:

  - Start the configuration menu from the home display with button 1 ("ESC"). Change to the "Communication" entry with button 3 and open this with button 6.
  - Note the addresses under "Address" and "Netmask".

**Setting the IP address of the computer for a direct connection**

PCs on company networks normally use DHCP. If you would like to assign a fixed IP address for the PC (e.g. for a direct PC to UMG connection), proceed as follows:

> **Attention**
>
> Settings in a company network can vary.

> **Attention**
>
> The connection of the UMG to an existing Ethernet network may only be carried out after discussion with the network administrator!

- Open the Network and Sharing Center in the Windows Control Panel.
- Open the status window via the LAN connection (fig. Network and Sharing Center).
- By selecting "Properties", it is possible to assign a fixed IP address to the PC
  (see fig. Process for defining a fixed IP address under Windows 7).
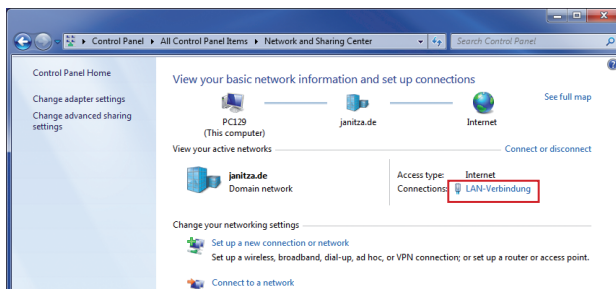


Fig.: Network and Sharing Center
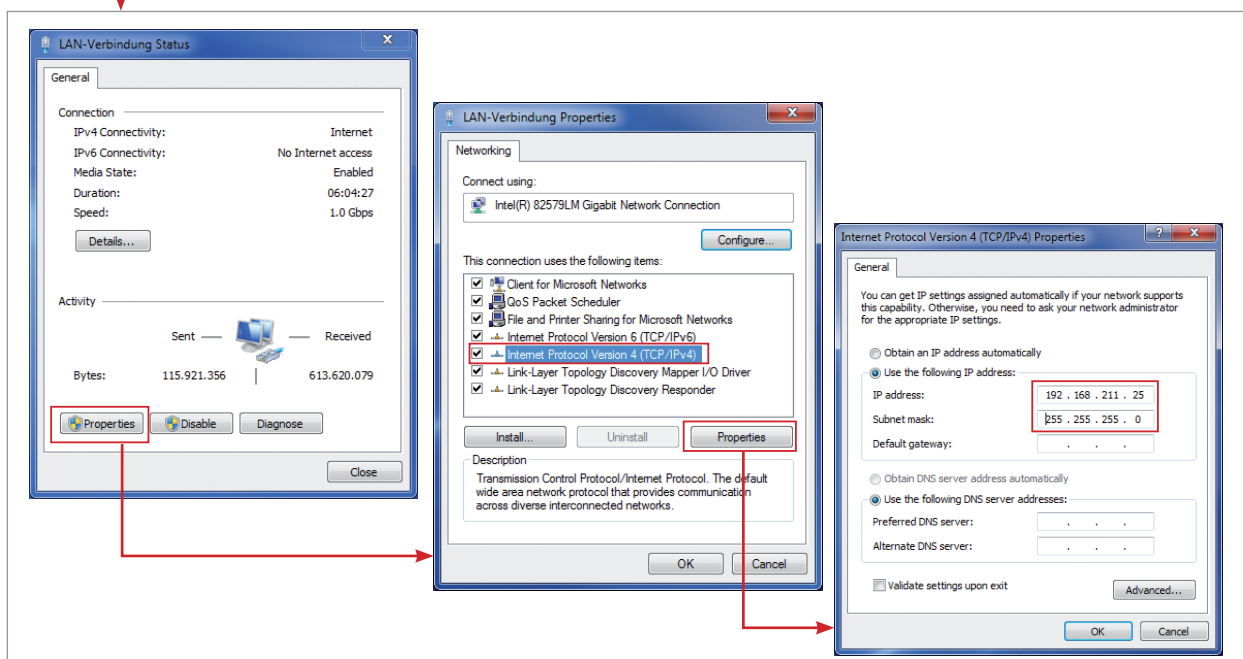


Fig.: Process for defining a fixed IP address under Windows 7.

**Insert the device in the GridVis software**

- Open the GridVis software and load or create a project.
- Open the "Device" node in the project window and activate the context menu for the "Device" node with a right click of the mouse.
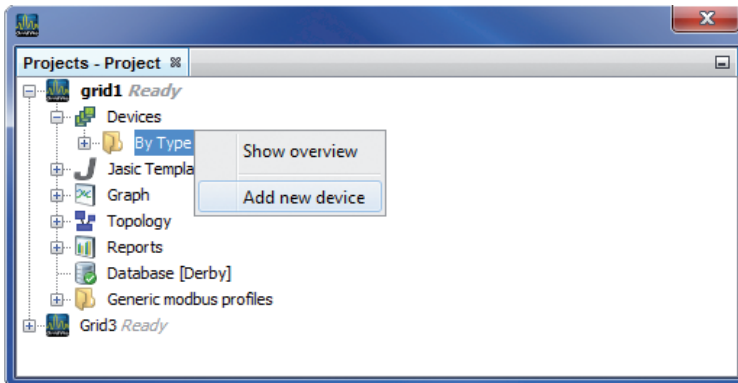- Select the "Add new device" context menu item (cf. fig. Add new device).



Fig.: "Add new device"

- Select the type of device, listed under the device category, and confirm the selection with "Next".
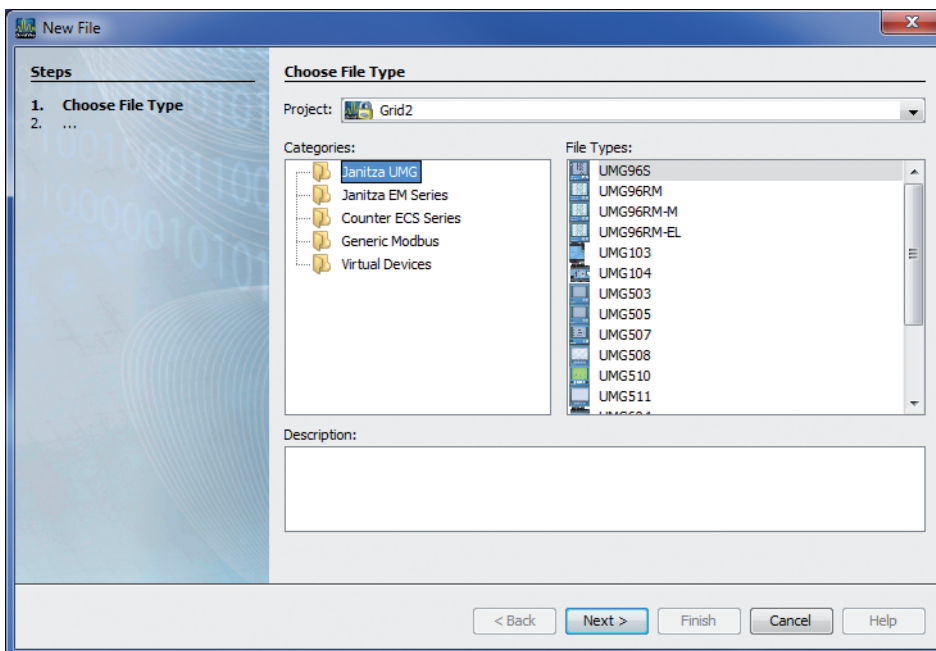


Fig.: "Add new device" - Device selection

- Set the connection type to "TCP/IP" and enter the corresponding device IP address (cf. chapter "Integrate UMG 605" or "Integrate UMG 511 / 512")
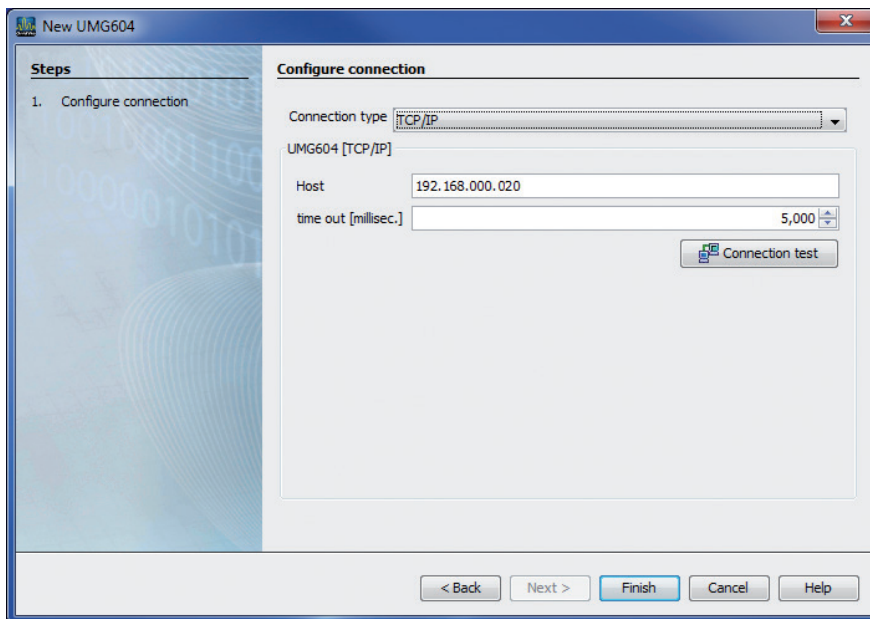


*Fig.: Configure device integration*

- Carry out a connection test after entering the device IP address. If the connection with the UMG has been established then device information - such as the serial number for example - will be displayed. The device can now be used and configured within the software.
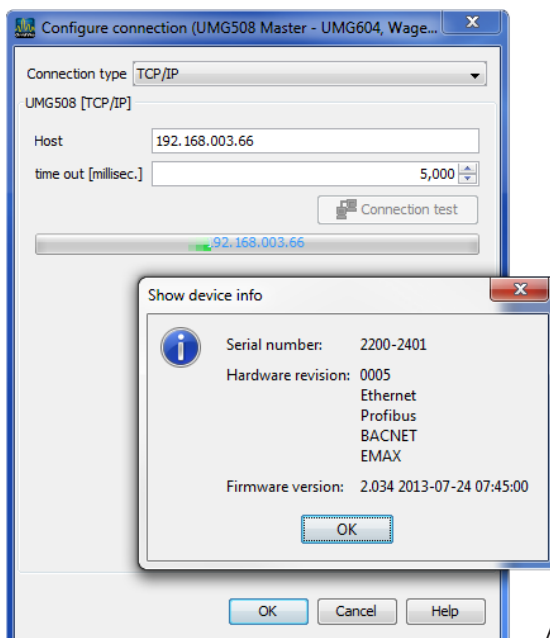


*Fig: Successful connection test for device*

Further information on using the GridVis software can be found in the internet at:

https://wiki.janitza.de/display/GRIDVIS60/GridVis-Dokumentation+6.0

## Installing the app

- To install the app, start the GridVis software. Click "Extras / Install app" and select the app via the button "... ". Then select the device for installation and choose a program location.
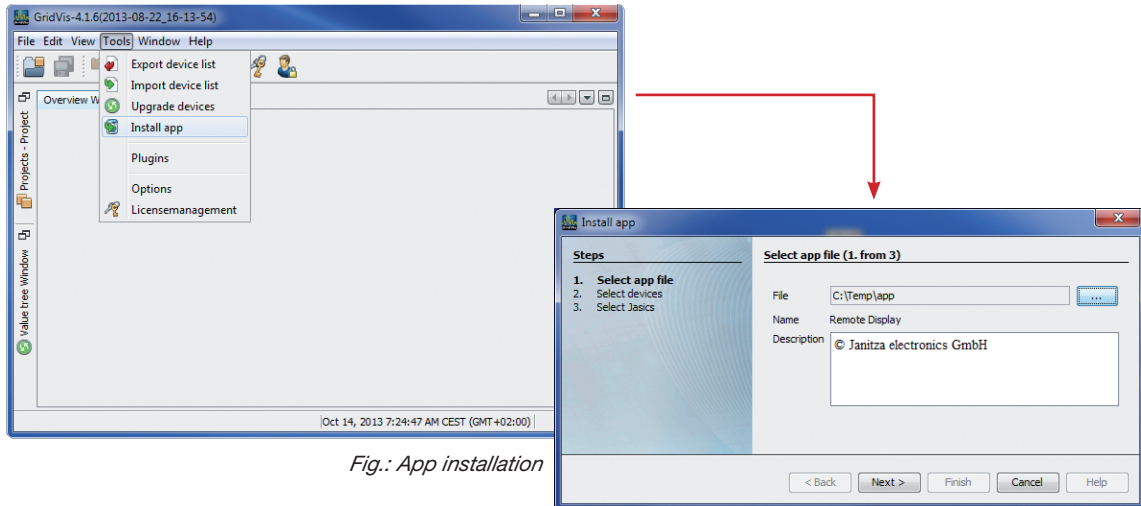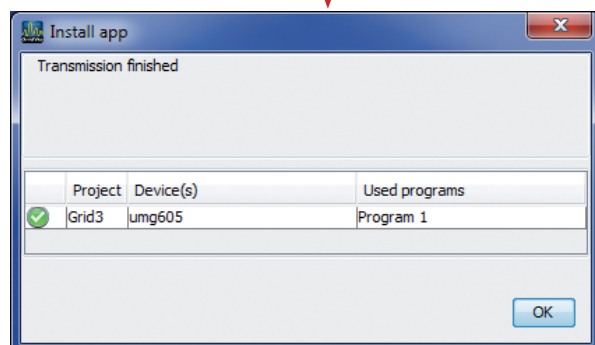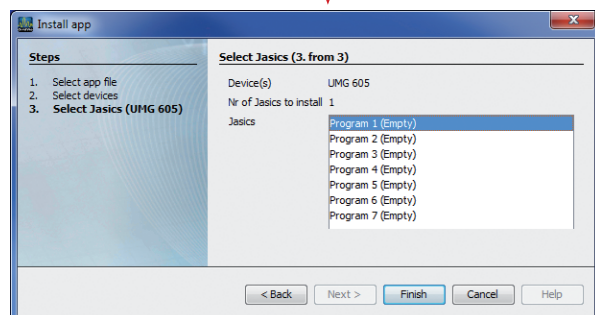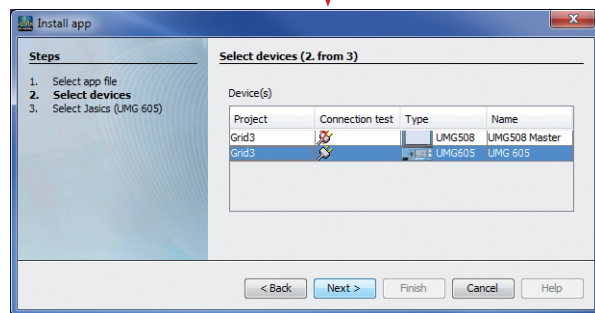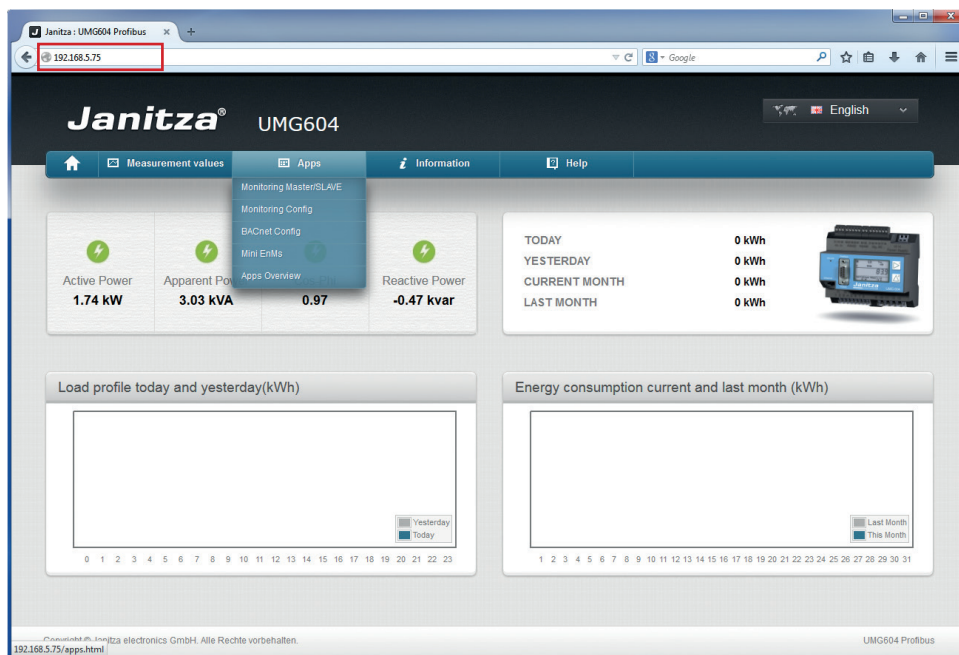


Fig.: App installation

## Getting to the app

- The app can be approached via the website of the meter, this website can be reached by typing the IP-address of the meter in your web browser.

- For example: the IP-address of the meter is 192.168.5.75, you type 192.168.5.75 in the address bar of your browser.



- Once you are the website of your meter, you can find your app by clicking on the menu apps.
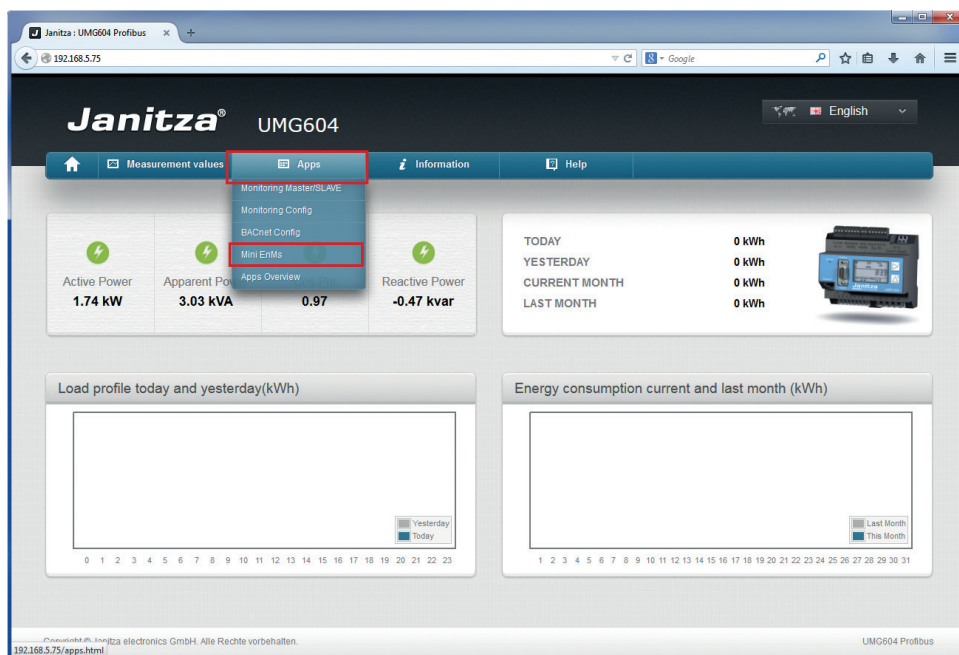


- When you click on the Mini EnMs app, the app will load automatically.

## Basic operation of the app

- In the following chapter we will be looking at the basic operation of the Mini EnMs app.

**Opening the app**

- When opening the app, you arrive at the following screen.



- This screen gives a quick overview of the master meter and its connected slave meters.
- The Green round buttons show the status of the connection.
  If the color is red, there is no connection with the device.

## Structure of the screen

When you click on Measuring values, the following screen opens:
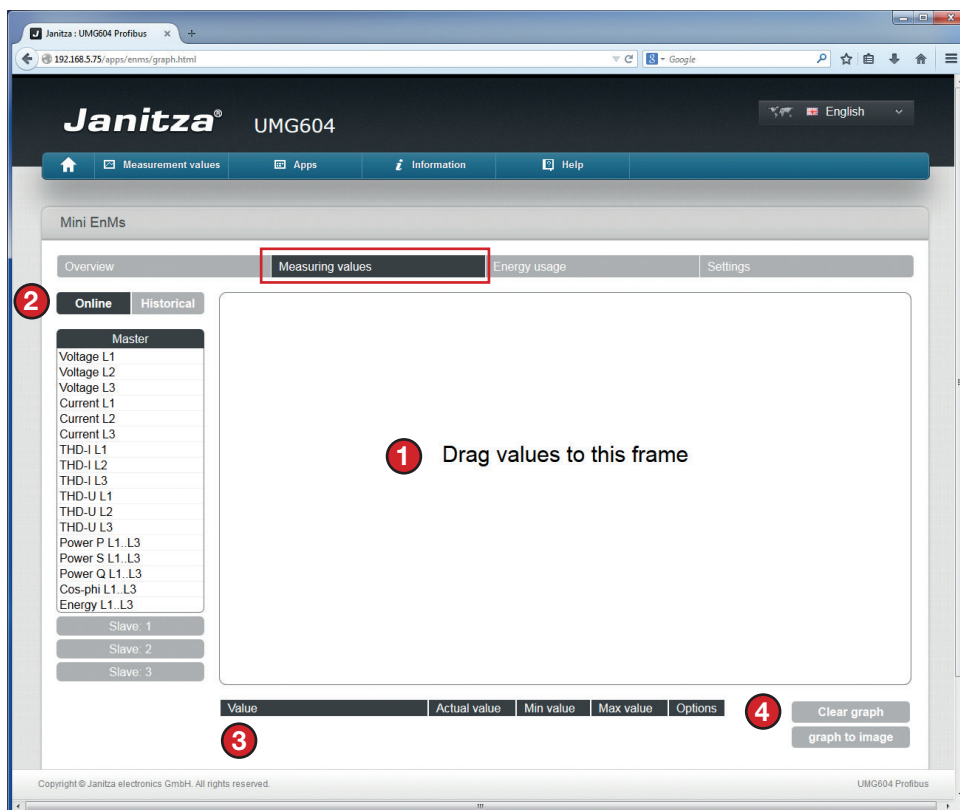


- The screen is divided in 4 parts:
  1. *Graph window:* You can drag measuring values onto the graph window. These measuring values will be shown in a graph in this window.
  2. *Menu bar:* In the menu bar you can choose between real-time and historical measuring values which you want to show in a graph.
  3. *Measuring values table:* In the measuring values table you will get a quick overview of the measuring values you added to the graph. You can also change the color of the graph line and remove a value from the graph.
  4. *Additional options:* Here you can reset the graph and export the graph to an image.

**Select mode**

- By selecting a mode, you can switch between real-time and historical measuring values. When you switch between modes, the current selection of measuring values will be deleted.

| Online | Historical |

- *Online:* Real-time measuring values from the meter.
- *Historical:* Historical measuring values which have been saved in the memory of the meter.

**Showing measuring values in a graph (Online mode)**

- To show an online measuring value in a graph you select a measuring value from the list. You can choose to select measuring values from the master meter for total values or click on one of the slave meters to view the measuring values per group.

**To select measurement value:**

You can choose on which level you want to select measurement values from by clicking on a category. When clicking on a category, the menu will expand as shown in the example:

| Master |
| --- |
| Voltage L1 |
| Voltage L2 |
| Voltage L3 |
| Current L1 |
| Current L2 |
| Current L3 |
| THD-I L1 |
| THD-I L2 |
| THD-I L3 |
| THD-U L1 |
| THD-U L2 |
| THD-U L3 |
| Power P L1..L3 |
| Power S L1..L3 |
| Power Q L1..L3 |
| Cos-phi L1..L3 |
| Energy L1..L3 |

| Slave: 1 |
| Slave: 2 |
| Slave: 3 |

Start view of live measuring values

| Master |
| Slave: 1 |

| Slave: 2 |
| --- |
| Current L1 |
| Current L2 |
| Current L3 |
| Power P L1..L3 |
| Power S L1..L3 |
| Energy L1..L3 |

| Slave: 3 |

When clicking on a group, the group expands

**To show measurement value in a graph:**

To show a measurement value in a graph, you click on a measurement value and drag this to the graph window. After doing this, the measurement value will be shown in the graph.

It is possible to add up to 6 measurement values or 2 units to the graph.

**Showing measuring values in a graph (Historical mode)**

- To show a historical measuring value, you first select a start and end date
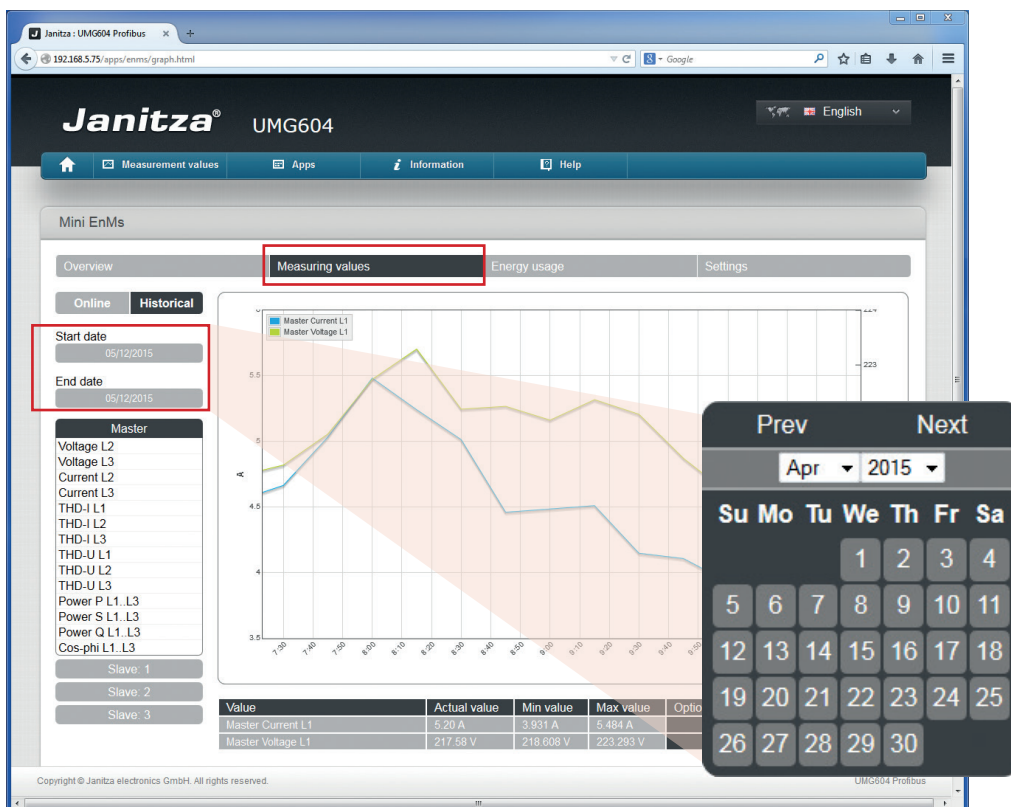


- Once this has been done, you can select the measurement value(s) of your choice.

**To select start date and end date:**

You can select a start date by clicking on the Start date button. The calendar will now show and you can select a date. To close the calendar, click next to the calendar.



Once this has been done, please repeat the same steps for the End date.

**To select measurement value:**

You can choose on which level you want to select measurement values from by clicking on a category. When clicking on a category, the menu will expand as shown in the example below.

| Master |
|---|
| Voltage L1 |
| Voltage L2 |
| Voltage L3 |
| Current L1 |
| Current L2 |
| Current L3 |
| THD-I L1 |
| THD-I L2 |
| THD-I L3 |
| THD-U L1 |
| THD-U L2 |
| THD-U L3 |
| Power P L1..L3 |
| Power S L1..L3 |
| Power Q L1..L3 |
| Cos-phi L1..L3 |
| Energy L1..L3 |

| Slave: 1 |
|---|
| Slave: 2 |
| Slave: 3 |

Start view of historical measuring values

| Master |
|---|
| Slave: 1 |

| Slave: 2 |
|---|
| Current L1 |
| Current L2 |
| Current L3 |
| Power P L1..L3 |
| Power S L1..L3 |
| Energy L1..L3 |

| Slave: 3 |
|---|

When clicking on a group, the group expands

**To show measurement value in a graph:**

To show a measurement value in a graph, you click on a measurement value and drag this to the graph window. After doing this, the measurement value will be shown in the graph.

It is possible to add up to 6 measurement values or 2 units to the graph.
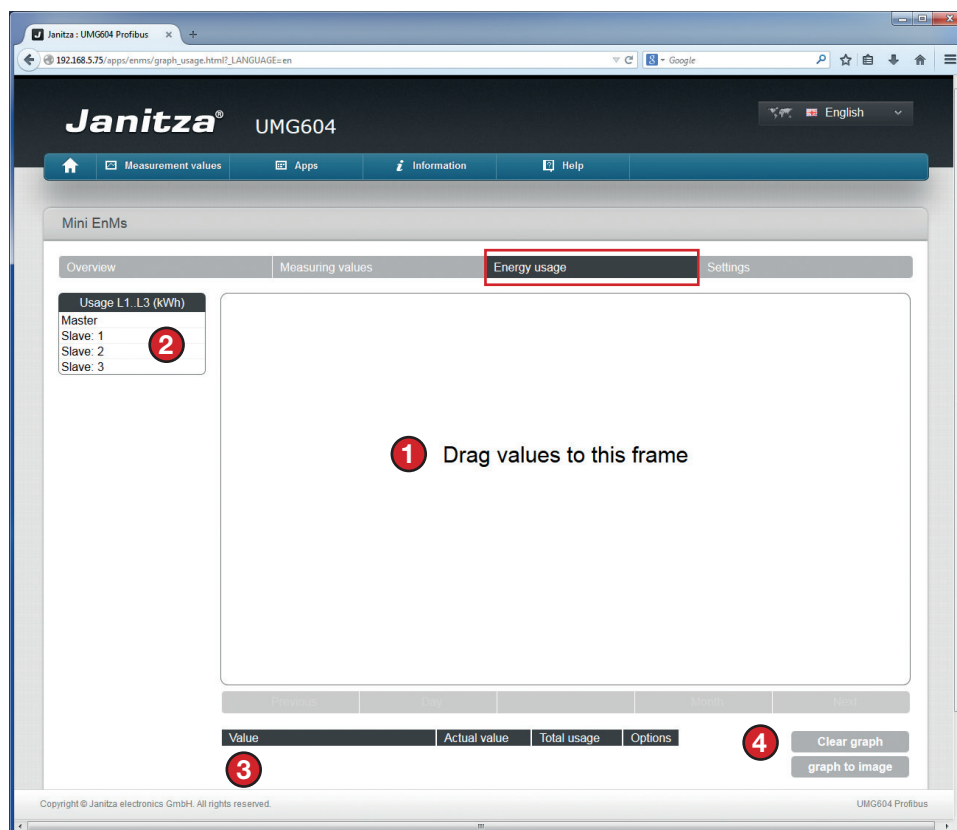
**To clear a graph**

• By clicking the button "Clear graph" all measurement values are deleted from the graph. After doing this, you can start a new graph.

| Clear graph |
|---|

• By clicking the button "graph to image" an image of your graph will be created. This image can then be printed or saved on disk.

| graph to image |
|---|

**Structure of the "Energy usage" screen**



- The screen is divided in 4 parts:

   1. *Graph window:* You can drag measuring values onto the graph window. These measuring values will be shown in a graph in this window.

   2. *Menu bar:* In the menu bar you can choose of which meter you want to see the energy usage

   3. *Measuring values table:* In the measuring values table you will get a quick overview of the measuring values you added to the graph. You can also change the color of the graph line and remove a value from the graph.

   4. *Additional options:* Here you can reset the graph and export the graph to an image.

**Showing energy usage in a graph**

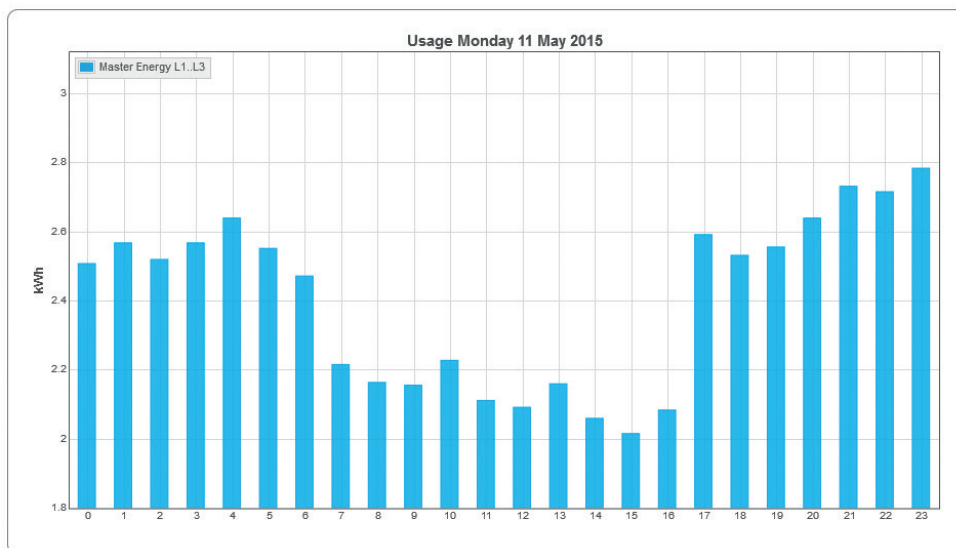**To select energy usage value:**

You can choose from which meter you want to select energy usage values from by clicking on the meter name. Go to the menu bar and select the meter of which you want to know the usage of.

**To show energy usage value in a graph:**

To show an energy usage value in a graph, click on an energy usage value and drag this to the graph window. After doing this, the energy usage will be shown in the graph and you will instantly get the energy usage of the day before today's date.

It is possible to add up to 6 energy usage values.



**To clear a graph**

- By clicking the button "Clear graph" all energy usage values are deleted from the graph. After doing this, you can start a new graph.
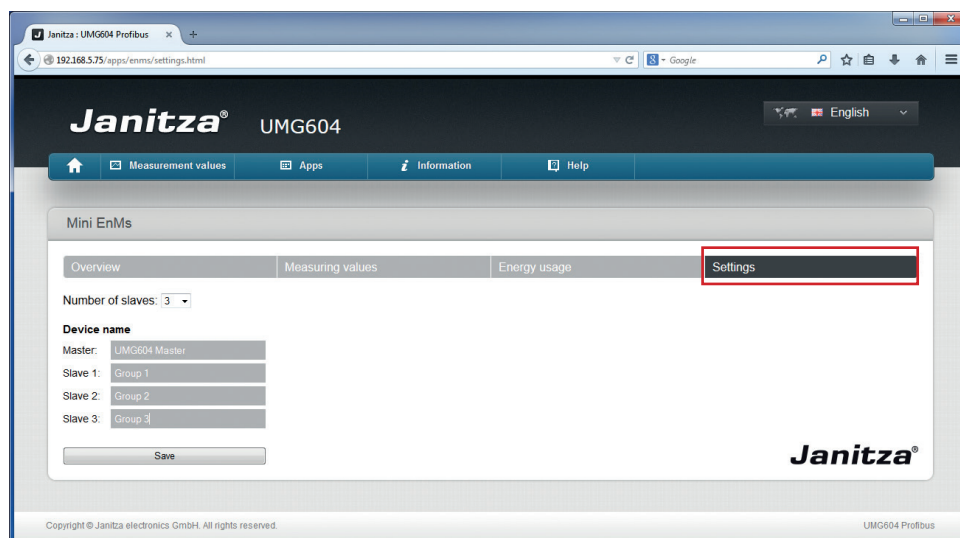


- By clicking the button "graph to image" an image of your graph will be created. This image can then be printed or saved on disk.

**Settings page**

- When you click on the Settings tab, you arrive at the settings page.



- Here you can define the number of slaves and give names to the devices.
- You can connect up to sixteen slaves.
- Click on the Save button to save the settings.

# Comprehensive user guide

In the following chapter, we will view the extended usage of the app.

**Deleting measurement value(s) from a graph**

- To delete a measurement value from a graph, select the measurement value from the measurement value table and click the options button of the respective measurement value.



- Then click "Remove value from graph"

- The measurement value has now been deleted from the graph.

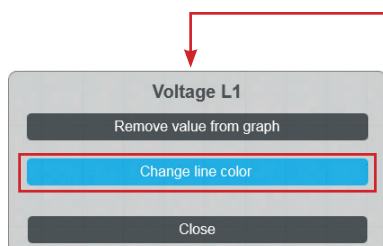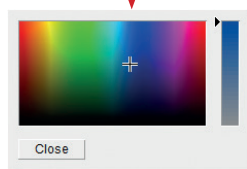**To change the color of a measurement value line in a graph**

- It is possible to change the color of a certain measurement value line in the graph. To do this, first select a measurement value from the measurement value table and click the options button of the respective measurement value.
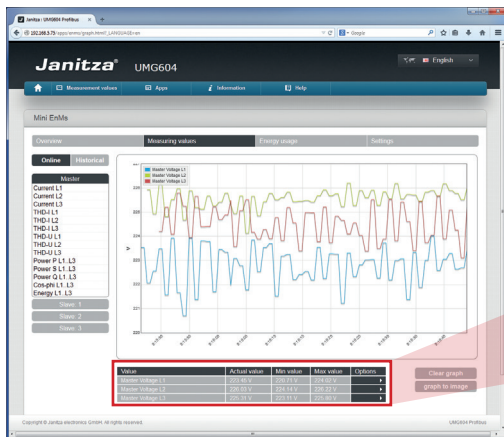
| Value | Actual value | Min value | Max value | Options |
|---|---|---|---|---|
| Master Voltage L1 | 223.45 V | 220.71 V | 224.02 V | ▶ |
| Master Voltage L2 | 226.03 V | 224.14 V | 226.22 V | ▶ |
| Master Voltage L3 | 225.31 V | 223.11 V | 225.80 V | ▶ |

**Voltage L1**

Remove value from graph

Change line color

Close

Then click Change line color.

Close

In the next screen you will be able to select and change the color of the measurement value.

**To zoom in within a graph (Measuring values / Historical)**

- In the historical graph it is possible to zoom in by using the mouse.

   *Zoom in:*

   You can select part of a graph with the mouse. Hold the left mouse button and drag the mouse to the right to select the period you want to zoom in to.  You can repeat this step to zoom in even further.
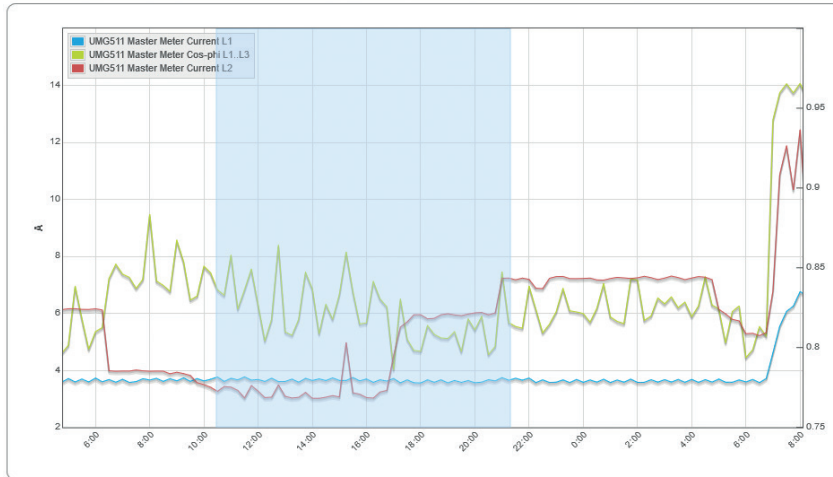


   *Zoom out:*

   By clicking in your graph once, the graph will zoom out to the original size.

**To zoom in within a graph (Energy usage)**

- When you create an energy usage graph your start view will automatically be the previous day of the day you are creating the graph on. You can click on "Previous" to go back a day or "Next" to go to the next day. By clicking on "Month", you zoom out to the month view

| Previous | Day | | Month | Next |
|---|---|---|---|---|

When you click on the graph containing usage data for a day, you get to the usage of the active month. You can click on "Previous" to go back a month or "Next" to go to the next month. By clicking on "Day", you zoom in to the first day of the month. When clicking on a date in the graph, the graph will zoom in to the selected date.

| Previous | Day | | Month | Next |
|---|---|---|---|---|

**View by day**
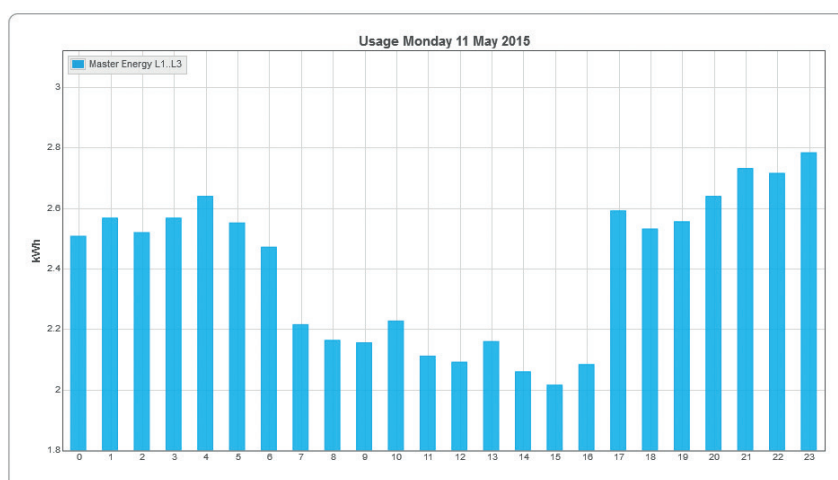


**Exporting a graph**

- Through the app, it is possible to export the graph you are viewing at that point.
  The image can be exported as an image. This way you can print or save the image.

graph to image

- By clicking the button "graph to image" an image of your graph will be created. The image will be opened in a new window. This image can then be printed or saved on disk. To save the image on disk, right click on the image and select "Save image as…" You can choose a location to save the graph on your PC.

## Trouble shooting

Below you find some questions that might arise after the Mini EnMs app has been installed.

Question:     I cannot find the app under the menu "apps".
- The app is not installed.
- The homepage is not refreshed.
- The device doesn't contain homepage version 2 or newer.

Question:     There are no slaves visible at the "overview" window.
- Select the number of slaves at the settings page.

Question:     My slave has a connection error "red icon".
- Check the connection to the slave using GridVis.
- Make sure the slaves Modbus addresses are numbered in order 1,2,3,…

Question:     I have no historical data at a specific time.
- The app was not installed at that date.
- The data is erased using GridVis.
- The time of the device is faulty.
- The device was offline.

Question:     I have no historical data from a slave at a specific time.
- The slave was offline at that time.
- The master was offline at that time.
- There was a failure in the Modbus communication.
- The slave was not part of "number of slaves" at that moment.

Question:     The energy usage is missing bars.
- The device went offline (even for a short time).