

# HWg-PWR 3/12/25

# MANUAL



## Package contents

A complete shipment contains the following items:

- HWg-PWR25 (HWg-PWR12) unit
- Printed manual + datasheet

## Safety information

The device complies with regulations and industrial standards in force in the Czech Republic and the European Union. The device has been tested and is supplied in working order. To keep the device in this condition, it is necessary to adhere to the following safety and maintenance instructions.

**HWg-PWR connects directly to a 230VAC supply; therefore, it should be installed by qualified personnel only!**

**Using the device in a manner other than prescribed by the manufacturer may cause its safeguards to fail!**

**The power supply outlet or disconnection point must be freely accessible.**

**The device must not be used under any of the following conditions:**

- The device is noticeably damaged
- The device does not function properly
- Unfastened parts can move inside the device
- The device has been exposed to moisture or rain
- The device has been serviced by unauthorized personnel
- The power adapter or power supply cable are noticeably damaged
- If the device is used in a manner other than designed for, the protection provided by the device may fail.
- The local electrical system must include a power switch or a circuit breaker and overcurrent protection.

If you have any problems with installing or operating the device, please contact technical support:

**HW group s.r.o.**

<http://www.hw-group.com>

Email: [support@HWg.cz](mailto:support@HWg.cz)

U Pily 3

143 00 Praha 4

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When contacting technical support, please keep at hand the exact type of your device (at the type plate) and, if possible, the firmware version (see later in this manual).

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## What is HWg-PWR 3 / 12 / 25

The HWg-PWR is an Ethernet-enabled device for remote monitoring and metering of electricity, heat, water or gas consumption using electricity, water, gas, heat, or other meters equipped with the M-Bus interface. In addition to metering, the device also supports alarming through e-mail or SNMP traps whenever allowed values are exceeded.

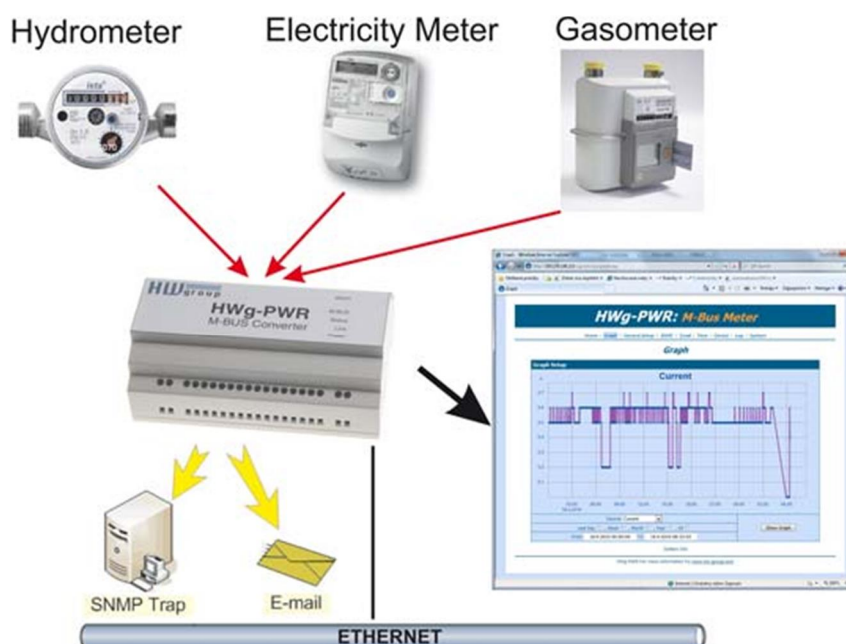
HWg-PWR is designed for remote reading of values from meters equipped with the M-Bus interface. Each meter can provide multiple variables, depending on the meter type and model. Typically, electricity meters provide the total electricity consumption and also the immediate value at the time of reading, line voltage and/or line current; water meters indicate total water consumption as well as immediate consumption or liquid flow rate; and so on.

**Note:** HWg-PWR is designed to be universal; hence, all discovered values are read out from every connected meter, until a specified limit is reached. To improve user comfort, it is possible to enable or disable each discovered value (disabled value is hidden from view), and to turn on or off the recording of measured readings for each enabled value (in order to increase the available recording time for the remaining values).

The M-Bus protocol also allows reading value names, units of measurement, or tariff information from the meters. The user can customize all of these data (e.g. change the unit of measurement or its exponent).

### Usage examples

- Remote monitoring of electricity meters in small server rooms and BTS
- Monitoring of energy consumption in rented premises
- Reading out energy consumption in remote or inaccessible areas
- Control over energy costs
- Checking for individual line overloads in three-phase wirings
- Checking for undervoltage in electric wirings
- Monitoring the flow of liquids

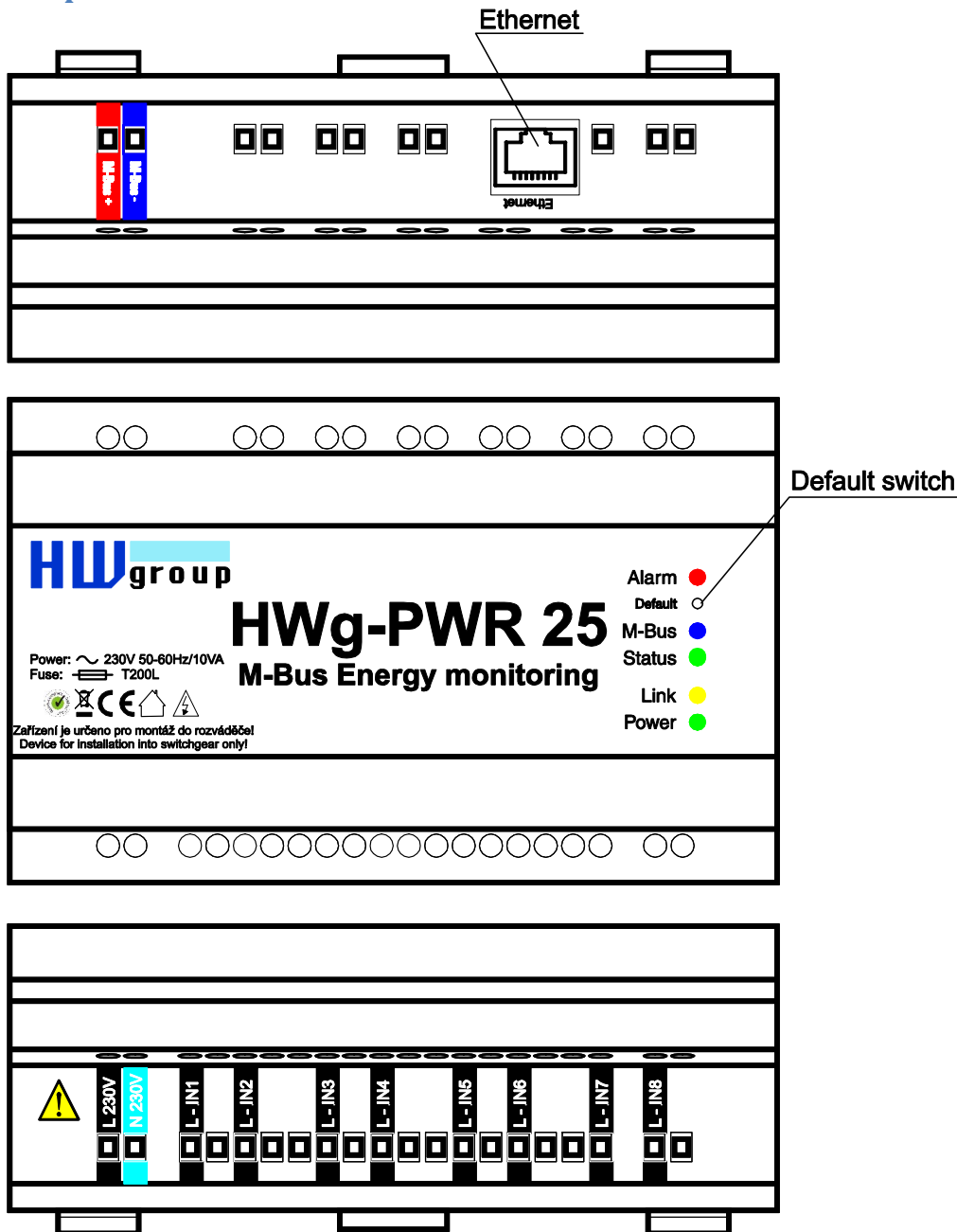


## Basic features of HWg-PWR12/25

- **Ethernet:** RJ45 (100BASE-TX)
- **WEB:** Embedded WEB server / GUI
- Works with up to 12 (25\*) M-BUS meters (electricity, gas, ...)
- Unlimited number of measured variables\*
- Works with up to 100 values (this limit is independent from the number of meters)
- Automatic detection of meters and supported values
- **8x 230V voltage inputs** (common PE) for any use
- **Logging of measured values** with the option to **plot charts**
  - Logs up to 170,000 values
- Configuration of allowed ranges for measured values
- Configuration of the unit of measurement and the exponent
- Conversion of measured values to currency
- Supports M-Bus primary and secondary addressing
- Configuration of remote primary M-Bus address
- **Periodic submission of measured values** over HTTP (HWg-PUSH)
- **Periodic submission of measured values** by e-mail
- **Periodic e-mailing of differences in measured values** (day, week, month, year)
- Periodic e-mailing of **differences** in measured values
- **DIN rail mount** with a power supply for M-BUS
- **M2M communication protocols:** SNMP, XML, Modbus/TCP
- **Support for sending alarm SMS through Poseidon SMS GW** (netGSM)
- **Response to thresholds:** SNMP trap, Email, netGSM
- **Support for programmers:** [HWg SDK](#)
- **Supported software**
  - **HWg-PD Trigger:** Control of other IP devices, alarm redirection to SMS
  - **HWg-PDMS:** Logging, export to MS Excel
  - [>> Third-party SNMP software](#)  
(HP OpenView, IBM Tivoli, Nagios, Zabbix, Monitor one, The Dude, Paessler IPCheck, Ipswitch WhatsUp, Axence nVision, CBR little:eye, LorientPro, GFi NSM, SNMPc 7, CA NSM, ActiveXperts NM, Intellipool NM, MSC Operations Manager 2007)

\* *Displayed variables depend on the actual meter*

## Description of connectors and connections



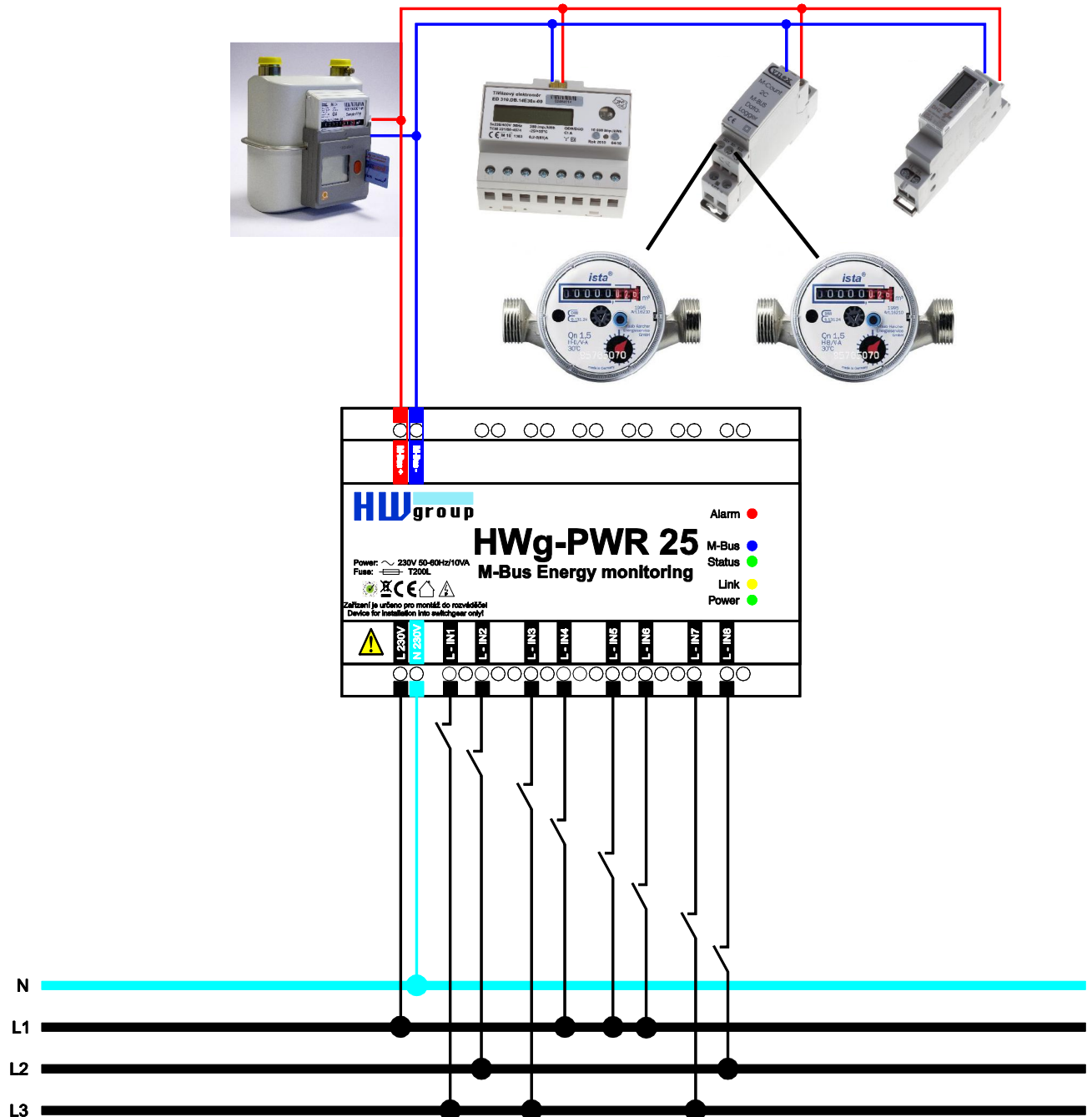
### LED indicators

- Power (green) – lights up when the device is powered.
- Alarm (red) – lights up whenever a monitored variable is in alarm.
- M-Bus (blue) – flashes whenever M-Bus communication takes place.
- Status (green) – HWg-PWR status.
  - Solid on – HWg-PWR is in regular operation.
  - Slowly flashing – HWg-PWR is starting up.
  - Rapid flashing – firmware is being uploaded.
- Link (amber) – flashes whenever communication takes place over the Ethernet interface.

### Restoring factory defaults

Press and hold the Default switch, connect power, and hold the switch pressed for 10 more seconds. HWg-PWR resets itself to factory defaults. Be careful when working with HWg-PWR in a distribution box.

### HWg-PWR wiring



## Technical specifications

| Ethernet port                        |   |
|--------------------------------------|---|
| + Interface                          | RJ45 (10BASE-T / 100BASE-Tx)  |
| + Compatibility                      | Ethernet: Version 2.0/IEEE 802.3  |
| + Supported protocols                | IP: ARP, TCP/IP (HTTP, SMTP, ModBus/TCP), UDP/IP (SNMP, SNMP Traps, DHCP, SNTP)   |
| + SNMP                               | Ver:1.00 compatible, partial ver. 2.0 implementation  |
| M-Bus                                |   |
| + Bus load                           | Max. 25 connected meters  |
| Environment                          |   |
| + Operating / storage temperature    | -5 to +50 °C (+23 to +122 °F) / -5 to +75 °C (+23 to +167 °F)   |
| + Relative humidity (non-condensing) | 5 to 95 %   |
| LED indicators                       |   |
| + POWER (green)                      | lights up when the device is powered  |
| + LINK (red)                         | flashes whenever communication takes place over the Ethernet interface  |
| + Status (red)                       | HWg-PWR status: <ul style="list-style-type: none"> <li>- Solid on – HWg-PWR is in regular operation</li> <li>- Slowly flashing – HWg-PWR is starting up</li> <li>- Rapidly flashing – firmware is being uploaded</li> </ul> |
| + Alarm (red)                        | lights up whenever a monitored variable is in alarm   |
| + M-Bus (amber)                      | flashes whenever communication takes place over M-Bus   |
| Buttons                              |   |
| + Default switch                     | When depressed at power up, resets the device to factory defaults   |
| Inputs                               |   |
| + Ports                              | L IN1 – L IN8   |
| + Type                               | 230VAC voltage input for the line wire  |
| + Impedance                          | 120kOhm   |
| Miscellaneous                        |   |
| + Supply voltage                     | 230 V/ 10VA; terminal block   |
| + Dimensions                         | 143 x 90 x 57 [mm]  |
| + Fixing                             | DIN rail; device is intended for installation into a distribution box   |
| + Mass                               | 390 g   |
| + Protection                         | 200mA fuse – T200L  |



## First steps

### 1) Connecting the cables

**HWg-PWR connects directly to a 230VAC supply; therefore, it should be installed by qualified personnel only!**

- Connect the unit to the Ethernet (a patch cable to a switch, or a cross-over cable to a PC).
- Connect the M-Bus with meters. Pay attention to the polarity!
- Connect HWg-PWR to the electrical network.
- The green Power LED lights up.
- If the Ethernet connection works properly, the LINK (amber) LED lights up after a short while, and then flashes whenever data transfer takes place (activity indication).
- After power up, the amber LINK LED flashes rapidly to indicate IP address negotiation over DHCP.
- The blue M-Bus LED indicates communication over the M-Bus.

### 2) Configuring the IP address - UDP Config

**UDP Config** utility – root directory of the supplied CD (Windows and Linux versions).

Available for download at [www.HW-group.com](http://www.HW-group.com)

Software > UDP Config.

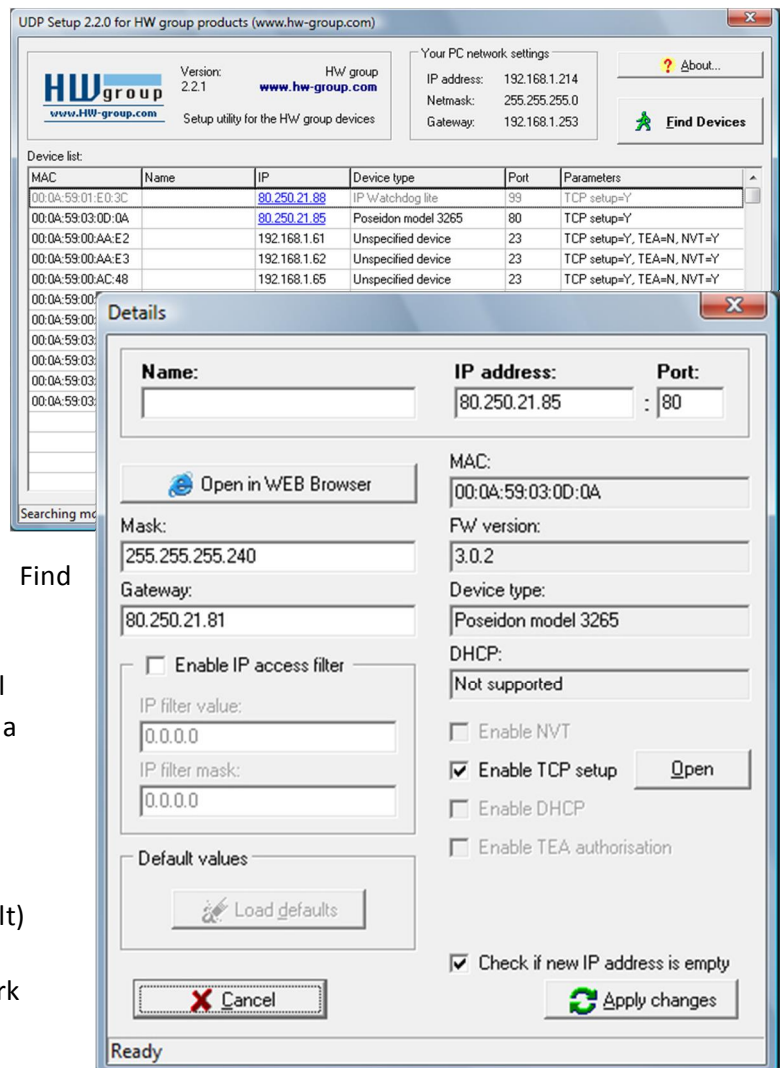
- Click the icon to launch UDP Config. The program automatically looks for connected devices.
- To search for devices, click the Find Devices icon.

The program searches for devices in your local network. Double-click a MAC address to open a basic device configuration dialog.

#### Configure the network parameters

- IP address / HTTP port (80 by default)
- Network mask
- Gateway IP address for your network
- Device name (optional)

Click the **Apply Changes** button to save the settings.



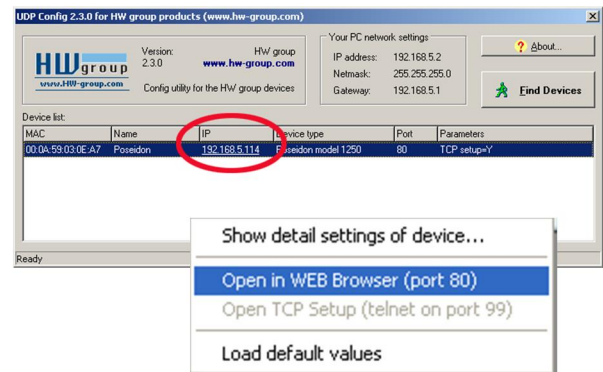
### Restoring factory defaults

- Right-click a device MAC address. Within 60 seconds after powering up the unit, factory defaults can be restored using UDP Config.
- Disconnect power, press the Default switch, power up the device and wait for 10 seconds. Release the switch. The device is ready in the factory default configuration.

### 3) WWW interface of the device

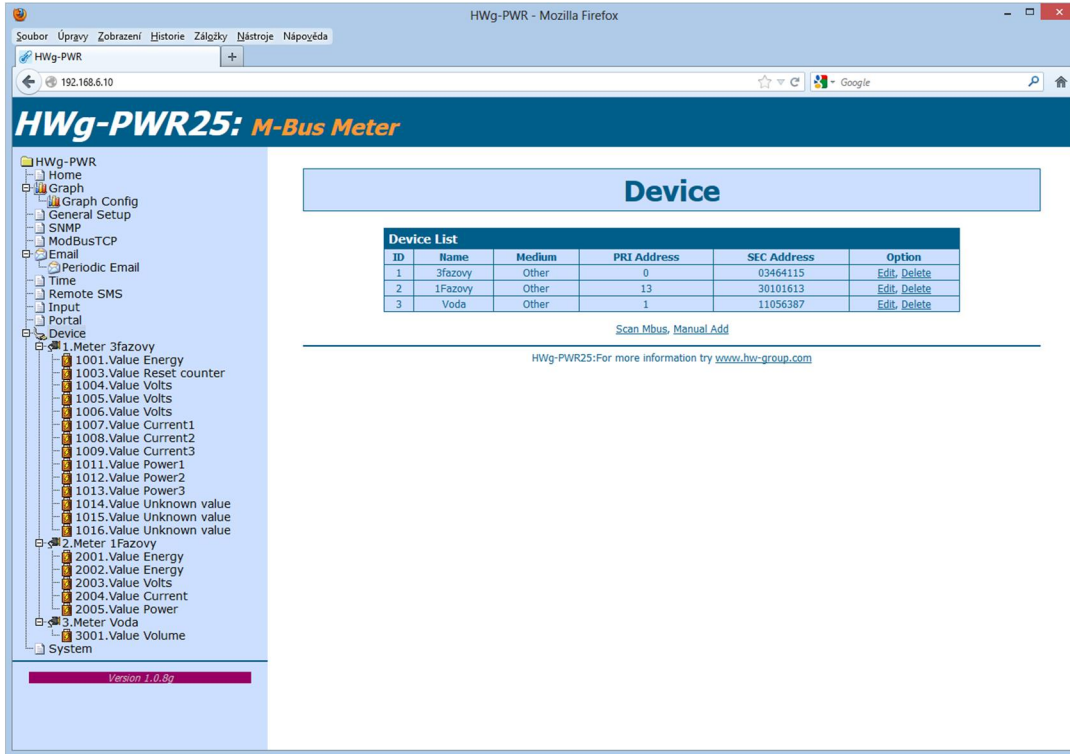
To open the WWW interface of the device:

- Enter the IP address into a web browser
- Click the IP address in UDP Config
- Click the underlined IP address in UDP SETUP

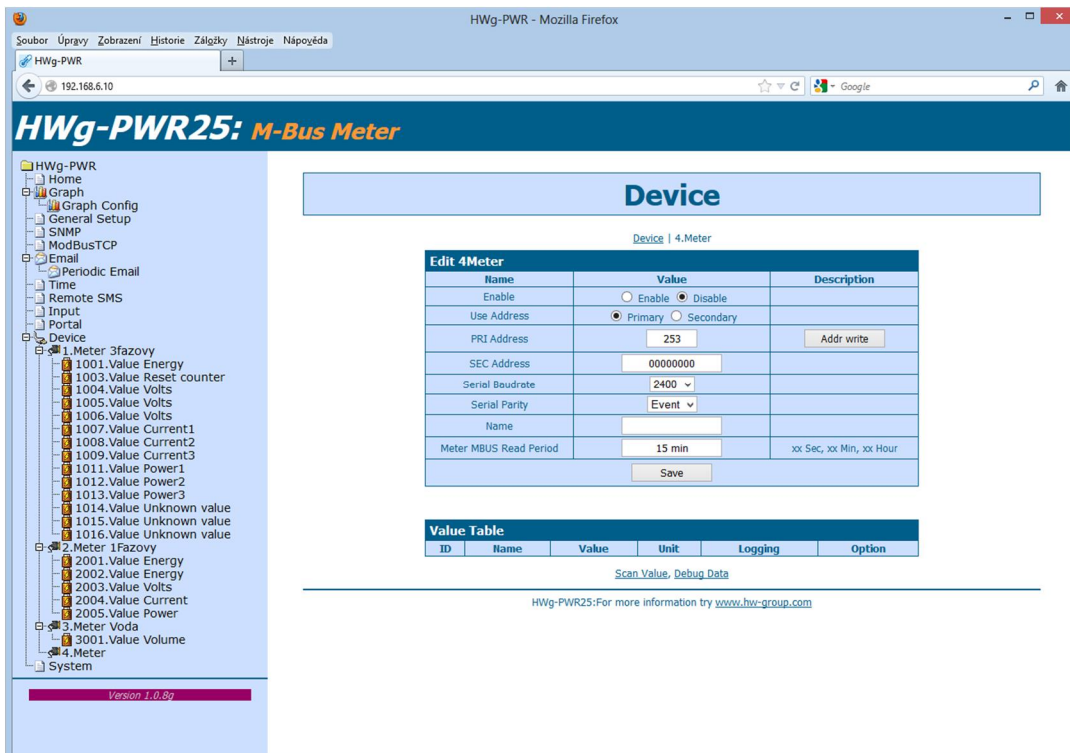


## Adding connected meters and measured values

Start the WWW interface of HWg-PWR and go to the *Device* menu. The list of detected meters **is empty**. Individual meters are always added to HWg-PWR manually. A tool for automatic discovery of meter addresses (only finds meter addresses, does not add them to the system) is also available in the *Mbus Scan* submenu:



**Note:** If you know your meter parameters, add the meters directly using Manual Add.



## Automatic discovery of meters:

1. At the *Device Base Parameters* page, fill in the *M-Bus Scan* section:

The screenshot shows the HWg-PWR25: M-Bus Meter web interface. The main content area is titled "Device Base Parameters" and contains three sections:

**Base Information**

| Device Name | Vitek Doma |
|-------------|------------|
| Time        |            |
| Date        |            |

**M-Bus Scan**

| Name            | Value                  |
|-----------------|------------------------|
| Scan Mode       | Secondary Address Mode |
| Primary Address | From 0 - To 252        |
| Serial Baudrate | 2400                   |
| Serial Parity   | Event                  |

Scan

**M-Bus Scan Status**

| Name              | Value  |          |          |          |        |  |  |  |  |
|-------------------|--|----------|----------|----------|--------|--|--|--|--|
| Actual scan state | Stoped   |          |          |          |        |  |  |  |  |
| Found device(s)   | <table border="1"> <thead> <tr> <th>Meter</th> <th>Pri Addr</th> <th>Sec Addr</th> <th>Action</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | Meter    | Pri Addr | Sec Addr | Action |  |  |  |  |
| Meter             | Pri Addr   | Sec Addr | Action   |          |        |  |  |  |  |
|                   |  |          |          |          |        |  |  |  |  |

Stop Scan

HWg-PWR25: For more information try [www.hw-group.com](http://www.hw-group.com)

Version 1.0.8p

- *Serial Baudrate* – Communication speed. The default is 2400 but this can differ for various meters – see the meter documentation.
  - *Serial Parity* – Communication parity. The default is Even but this can differ for various meters – see the meter documentation.
2. Click **Scan**.
  3. The *M-Bus Device Scan Status* section displays the discovery progress (*Actual scan state*) and discovered meters (*Found Device*).
  4. After the scan is complete, *Actual scan state* changes to *Stoped*.
  5. Discovered meters can be immediately activated and further configured using the *Edit* or *Add* button in the *Action* column.
  6. Repeat the action to add more meters.

**Device Base Parameters**

| Base Information |            |
|------------------|------------|
| Device Name      | Vitek Doma |
| Time             |            |
| Date             |            |

| M-Bus Scan      |                        |
|-----------------|------------------------|
| Name            | Value                  |
| Scan Mode       | Secondary Address Mode |
| Primary Address | From 0 - To 252        |
| Serial Baudrate | 2400                   |
| Serial Parity   | Event                  |
| Scan            |                        |

| M-Bus Scan Status |   |           |          |           |        |                 |   |          |      |              |   |          |      |                 |    |          |      |
|-------------------|---|-----------|----------|-----------|--------|-----------------|---|----------|------|--------------|---|----------|------|-----------------|----|----------|------|
| Name              | Value   |           |          |           |        |                 |   |          |      |              |   |          |      |                 |    |          |      |
| Actual scan state | Stopped   |           |          |           |        |                 |   |          |      |              |   |          |      |                 |    |          |      |
| Found device(s)   | <table border="1"> <thead> <tr> <th>Meter</th> <th>Pri Addr</th> <th>Sec. Addr</th> <th>Action</th> </tr> </thead> <tbody> <tr> <td>1.Meter 3fazovy</td> <td>0</td> <td>03464115</td> <td>Edit</td> </tr> <tr> <td>3.Meter Voda</td> <td>1</td> <td>11056387</td> <td>Edit</td> </tr> <tr> <td>2.Meter 1Fazovy</td> <td>13</td> <td>30101613</td> <td>Edit</td> </tr> </tbody> </table> | Meter     | Pri Addr | Sec. Addr | Action | 1.Meter 3fazovy | 0 | 03464115 | Edit | 3.Meter Voda | 1 | 11056387 | Edit | 2.Meter 1Fazovy | 13 | 30101613 | Edit |
| Meter             | Pri Addr  | Sec. Addr | Action   |           |        |                 |   |          |      |              |   |          |      |                 |    |          |      |
| 1.Meter 3fazovy   | 0   | 03464115  | Edit     |           |        |                 |   |          |      |              |   |          |      |                 |    |          |      |
| 3.Meter Voda      | 1   | 11056387  | Edit     |           |        |                 |   |          |      |              |   |          |      |                 |    |          |      |
| 2.Meter 1Fazovy   | 13  | 30101613  | Edit     |           |        |                 |   |          |      |              |   |          |      |                 |    |          |      |
| Stop Scan         |   |           |          |           |        |                 |   |          |      |              |   |          |      |                 |    |          |      |

Version 1.0.6g

HWg-PWR25: For more information try [www.hw-group.com](http://www.hw-group.com)

**Note:** If HWg-PWR does not find any connected meters, re-check the M-Bus connection (in particular its polarity) and the baudrate and parity configuration, or try to look up these values in the documentation of your meter. Repeat the search until you find all meters.

When only some of the meters are found but not all, the problem may be in different communication parameters. Repeat the search with other Serial Baudrate and Serial Parity settings.

## Activating and adding discovered meters to HWg-PWR

1. In the Device menu, select the desired meter. The *Edit xMeter* section displays.

The screenshot shows the HWg-PWR25: M-Bus Meter web interface. The main content area is titled "Device" and "Device | 1.Meter". It features an "Edit 1Meter" form with the following fields:

| Name                   | Value  | Description |
|------------------------|--|-------------|
| Enable                 | <input checked="" type="radio"/> Enable <input type="radio"/> Disable      |             |
| Use Address            | <input checked="" type="radio"/> Primary <input type="radio"/> Secondary   |             |
| PRI Address            | <input type="text" value="0"/> <input type="button" value="Addr write"/>   |             |
| SEC Address            | <input type="text" value="03464115"/>                                      |             |
| Serial Baudrate        | <input type="text" value="2400"/>  |             |
| Serial Parity          | <input type="text" value="Event"/>   |             |
| Name                   | <input type="text" value="3fazovy"/>                                       |             |
| Meter MBUS Read Period | <input type="text" value="30 sec"/> <small>xx Sec, xx Min, xx Hour</small> |             |

Below the form is a "Value Table" with the following data:

| ID   | Name          | Value     | Unit | Logging                             | Option  |
|------|---------------|-----------|------|-------------------------------------|---|
| 1001 | Energy        | 18063,800 | kWh  | <input checked="" type="checkbox"/> | <a href="#">Edit</a> , <a href="#">Delete</a> |
| 1003 | Reset counter | 25        |      | <input checked="" type="checkbox"/> | <a href="#">Edit</a> , <a href="#">Delete</a> |
| 1004 | Volts         | 239       | V    | <input checked="" type="checkbox"/> | <a href="#">Edit</a> , <a href="#">Delete</a> |
| 1005 | Volts         | 240       | V    | <input checked="" type="checkbox"/> | <a href="#">Edit</a> , <a href="#">Delete</a> |
| 1006 | Volts         | 240       | V    | <input checked="" type="checkbox"/> | <a href="#">Edit</a> , <a href="#">Delete</a> |
| 1007 | Current1      | 0,348     | A    | <input checked="" type="checkbox"/> | <a href="#">Edit</a> , <a href="#">Delete</a> |
| 1008 | Current2      | 0,354     | A    | <input checked="" type="checkbox"/> | <a href="#">Edit</a> , <a href="#">Delete</a> |
| 1009 | Current3      | 3,103     | A    | <input checked="" type="checkbox"/> | <a href="#">Edit</a> , <a href="#">Delete</a> |
| 1011 | Power1        | 0,005     | kW   | <input checked="" type="checkbox"/> | <a href="#">Edit</a> , <a href="#">Delete</a> |
| 1012 | Power2        | 0,607     | kW   | <input checked="" type="checkbox"/> | <a href="#">Edit</a> , <a href="#">Delete</a> |
| 1013 | Power3        | 684       | W    | <input checked="" type="checkbox"/> | <a href="#">Edit</a> , <a href="#">Delete</a> |

2. Turn on the meter in the system (change *Enable* to *Enable*).
3. Click *Save* to save your changes.
4. The *PRI Address*, *SEC Address*, *Medium* and *Manufacturer* fields are retrieved automatically and displayed when the page is refreshed.
5. The *Use Address* option configures the addressing mode (*Primary* – shorter primary M-Bus address; *Secondary* – unique secondary address). For battery-powered meters, we recommend to use the primary address.
6. Meters of the same type and by the same manufacturer are often supplied with the same Primary address, which therefore cannot be used for addressing. The *PRI address* field allows changing the primary address – useful for battery-powered meters.
7. The *Name* field allows assigning a custom name to the meter (Home, Office, RACK1, etc.)
8. *Meter M-Bus Read period* sets the interval for reading out the values from the meter. The default is 30s. For battery-powered meters, it might be advisable to set a longer period. For details, see *Meter types*.
9. Now select the *Scan Value* submenu of the corresponding meter (from the menu).
10. A list of values provided by the meter is displayed. Individual values can be turned on (*Enable*) and off (*Disable*):



The screenshot shows the HWg-PWR25: M-Bus Meter web interface. The browser window title is 'HWg-PWR - Mozilla Firefox'. The address bar shows '192.168.6.10'. The page title is 'HWg-PWR25: M-Bus Meter'. The left sidebar contains a navigation menu with categories like Home, Graph, General Setup, SNMP, ModBusTCP, Email, Time, Remote SMS, Input, Portal, Device, and System. The 'Device' category is expanded, showing three meters: '1. Meter 3fazovy', '2. Meter 1Fazovy', and '3. Meter Voda'. The 'Scan Values' section displays a 'Value Table' with the following data:

| ID   | Name          | Value       | Enable  |
|------|---------------|-------------|---|
| 1001 | Energy        | 18063800 Wh | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| 1002 | Energy        | 1000 Wh     | <input type="radio"/> Enable <input checked="" type="radio"/> Disable |
| 1003 | Reset counter | 25          | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| 1004 | Volts         | 239 V       | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| 1005 | Volts         | 239 V       | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| 1006 | Volts         | 239 V       | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| 1007 | Current       | 0.347 A     | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| 1008 | Current       | 0.354 A     | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| 1009 | Current       | 2.985 A     | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| 1010 | Power         | 72 W        | <input type="radio"/> Enable <input checked="" type="radio"/> Disable |
| 1011 | Power         | 5 W         | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| 1012 | Power         | 588 W       | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| 1013 | Power         | 666 W       | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| 1014 | Unknown value | 87          | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| 1015 | Unknown value | 6           | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| 1016 | Unknown value | 82          | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| 1017 | Current       | 12.343 A    | <input type="radio"/> Enable <input checked="" type="radio"/> Disable |
| 1018 | Current       | 20.054 A    | <input type="radio"/> Enable <input checked="" type="radio"/> Disable |
| 1019 | Current       | 24.015 A    | <input type="radio"/> Enable <input checked="" type="radio"/> Disable |
| 1020 | Power         | 2894 W      | <input type="radio"/> Enable <input checked="" type="radio"/> Disable |
| 1021 | Power         | 4798 W      | <input type="radio"/> Enable <input checked="" type="radio"/> Disable |
| 1022 | Power         | 5705 W      | <input type="radio"/> Enable <input checked="" type="radio"/> Disable |
| 1023 | Unknown value | 250         | <input type="radio"/> Enable <input checked="" type="radio"/> Disable |

A 'Save' button is located at the bottom of the table. The footer of the page reads 'HWg-PWR25-For more information try www.hw-group.com'.

11. Click Save to save your changes.

**Important:** In order to find meter variables, the meter must be enabled and saved. It is not possible to scan values without saving the meter configuration first!

Repeat steps 1 to 3 to add all required meters.

## WWW interface

### Home tab

The Home tab displays current readouts of all enabled values of a meter, together with status symbols.

The screenshot shows the web interface for the HWg-PWR25: M-Bus Meter. The browser window title is 'HWg-PWR - Mozilla Firefox' and the address bar shows '192.168.6.10'. The page title is 'HWg-PWR25: M-Bus Meter'. On the left is a navigation tree with categories like Home, Graph, General Setup, and Device. The main content area is titled 'General' and displays a table of meter readings for a 3-phase meter. Each row includes a value and a status symbol (green checkmark for 'within range', yellow warning triangle for 'out of range', and red X for 'communication error').

| Meter: 3fazovy       |   |
|----------------------|---|
| Energy: 99350.90 Kč  | ✓ |
| <b>18063.800 kWh</b> | ✓ |
| Reset counter:       | ✓ |
| <b>25</b>            | ✓ |
| Volts:               | ✓ |
| <b>239 V</b>         | ✓ |
| Volts:               | ✓ |
| <b>239 V</b>         | ✓ |
| Volts:               | ✓ |
| <b>239 V</b>         | ✓ |
| Current1:            | ✓ |
| <b>0.347 A</b>       | ✓ |
| Current2:            | ✓ |
| <b>0.354 A</b>       | ✓ |
| Current3:            | ✓ |
| <b>2.985 A</b>       | ✓ |
| Power1: 0.02 EU      | ✓ |
| <b>0.005 kW</b>      | ✓ |
| Power2: 3.23 EU      | ✓ |
| <b>0.588 kW</b>      | ✓ |



The value is within its allowed range (Saferange)



The value is out of its allowed range (Saferange)



M-Bus communication error – meter stopped responding

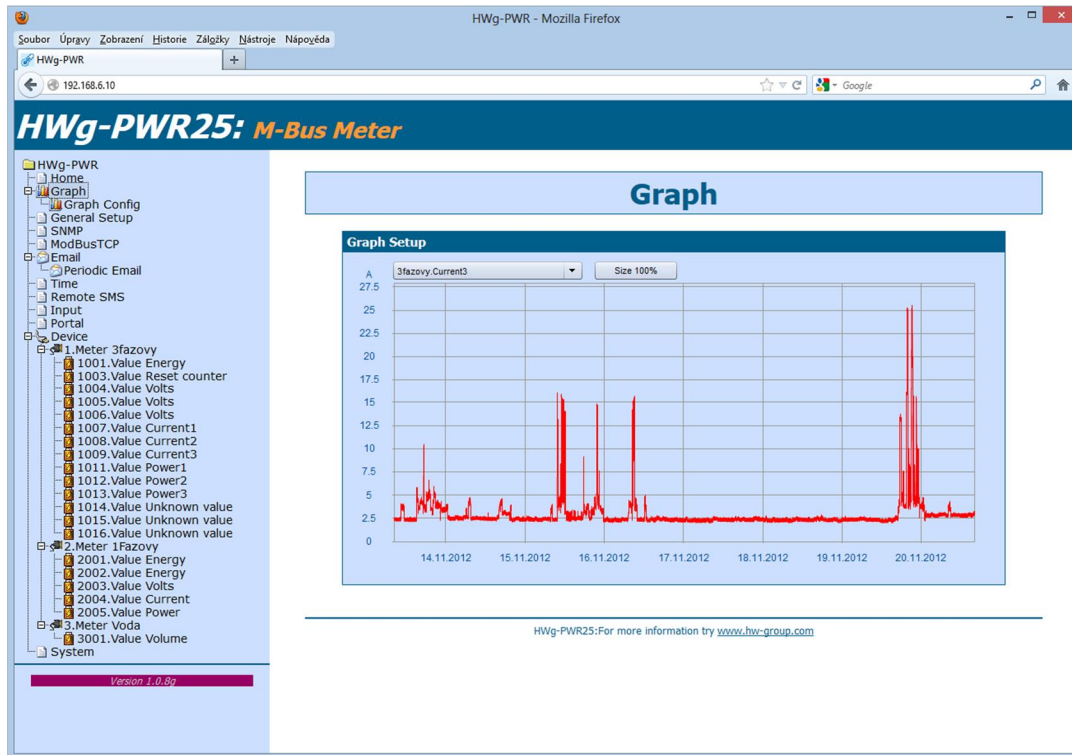


## Graph tab

The *Graph* tab lets you plot a graph of the measured values.

When this function is selected, all stored data from the device are read into the web browser. This operation can take some time.

Click and drag inside the graph to see a selected portion. To restore, use the 100% button or the mouse wheel.



## Graph Config tab

Configures the logging parameters common for all measured values.

- *Period* – Period for storing to the memory. If the *Period* is shorter than the *Meter M-Bus Read period*, the most recently retrieved data are stored multiple times.
- *Number Of Values* – Number of currently logged values. The more values, the shorter log capacity.
- *Logging time* – Shows the log capacity (as time) according to current settings. Useful for log configuration or downloading.
- *Erase datalog* – Erases all measured data. All logged history is lost.

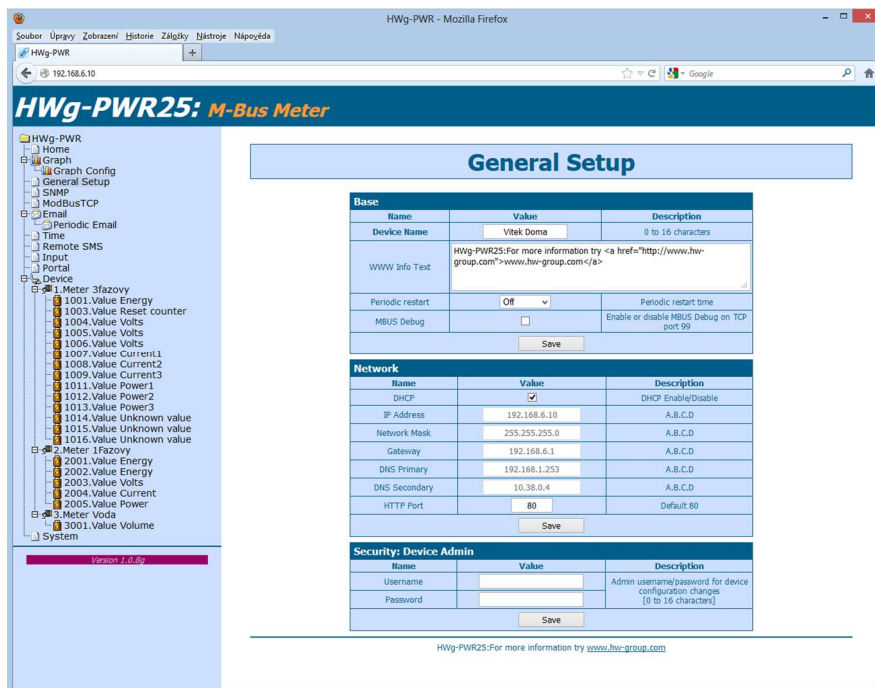
The screenshot shows the 'Graph Config' tab in the HWg-PWR25: M-Bus Meter web interface. The interface is displayed in a Mozilla Firefox browser window. The main content area features a 'Graph Config' section with a 'Logging Setup' table. The table has three columns: Name, Value, and Description. The rows are as follows:

| Name             | Value              | Description                        |
|------------------|--------------------|------------------------------------|
| Period           | 30 sec             | Graph Logging Period, 0 = Disabled |
| Number of values | 10                 | Number of logged values            |
| Logging time     | 7 days, 6:45 hours | Logging time left until overflow   |
| Erase DataLog    | Erase DataLog      | Clear the DataLog file             |

Below the table is a 'Save' button. At the bottom of the page, there is a footer that reads: 'HWg-PWR25: For more information try [www.hw-group.com](http://www.hw-group.com)'. The sidebar on the left shows a tree view of the device configuration, including sections for '1. Meter 3fazovy', '2. Meter 1Fazovy', and '3. Meter Voda', with various sub-items like 'Value Energy', 'Value Reset counter', 'Value Volts', 'Value Current', and 'Value Power'.

## General Setup tab

The General Setup tab is used to configure basic operating parameters of HWg-PWR.



### Base section

- **Device Name** – Custom name for the HWg-PWR unit. Allows distinguishing individual units in a network. Maximum device name length is 16 characters.
- **WWW Info Text** – Custom text in the WWW interface footer. Useful for contact information about the operator of that particular HWg-PWR, if the device is accessible on a public IP.
- **Periodic restart** – Enables periodic restart of HWg-PWR to prevent problems in noisy Ethernet networks or to limit the consequences of hacker attacks.

### Network section

- **DHCP** – Enables IP address assignment by a DHCP server, if available. Ask your network administrator if unsure about the correct setting.
- **IP Address** – IP address of HWg-PWR. Assigned by your network administrator.
- **Network Mask** – Network mask. Assigned by your network administrator.
- **Gateway** – IP address of the default gateway. Assigned by your network administrator.
- **DNS Primary / DNS Secondary** – IP address of your DNS server. Assigned by your network administrator.
- **HTTP Port** – Port number where the built-in WWW server listens. Changing the port number is useful in situations where multiple HWg-PWR units need to be accessible from an external network through a router. Ask your network administrator if you need to change this value. The default port is 80.

### Security: Device Admin section

- **Username / Password** – User name and password for securing access to HWg-PWR.

## SNMP tab

The SNMP tab is used to configure SNMP communication parameters and target destinations for SNMP Trap alarms.

The screenshot shows the 'SNMP' configuration page in the HWg-PWR25 web interface. The page is divided into three main sections:

- General SNMP Settings:** A table with columns 'Name', 'Value', and 'Description'. It contains fields for System Name (HWg-PWR25), System Location, System Contact (HWg-PWR25:For more information try http://www.hw-group.com), and SNMP port (161).
- SNMP Access:** A table with columns 'Community', 'Read', 'Write', and 'Enable'. It shows two communities: 'public' and 'private', both with Read and Write permissions enabled.
- SNMP Trap Destination:** A table with columns 'Destination', 'Community', 'IP Address', 'Port', and 'Enable'. It shows one destination with ID 1, Community 'Test1', IP Address '192.168.1.3', and Port '162'.

At the bottom of the page, there is a 'Save' button and a link to 'Download MIR file, Show OJD keys table'. The footer of the page reads 'HWg-PWR25:For more information try www.hw-group.com'.

### General SNMP Settings section

- *System Name* – Name of HWg-PWR within SNMP.
- *System Location* – Location of HWg-PWR within SNMP.
- *System Contact* – Contact info of the HWg-PWR administrator within SNMP.
- *SNMP port* – Port number for SNMP communication. The default is 161.

### SNMP Access section

- *Community* – Name of the SNMP community for accessing HWg-PWR over SNMP. Two communities can be defined. Each *Community* can have the following permissions defined:
  - Read
  - Write

### SNMP Trap Destination section

- *Destination* – Index of the target destination for SNMP traps. Only A can be set, other indexes are reserved for future use.
- *Community* – Name of the Community where the SNMP trap is sent.
- *IP Address* – Target IP address for SNMP Traps.
- *Port* – Target port for SNMP Traps. Default is 162.
- *Enable* – Activation of the target destination. Useful for disabling all SNMP traps without regard to the settings for individual values.

### Show OID keys table

This function prints the entire tree of variables with their full SNMP OID and type explanation. The MIB file for connecting the HWg-PWR to third-party monitoring systems is available under the *Download MIB file* link.

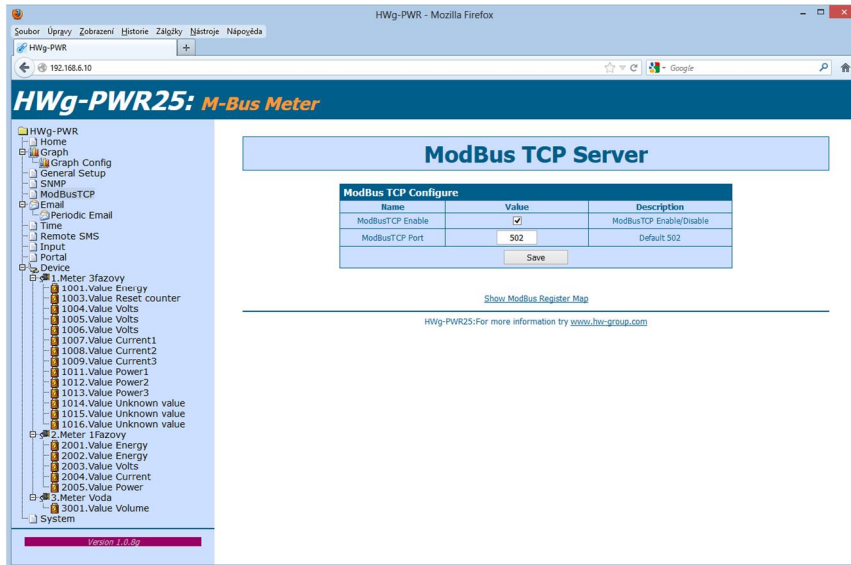
The screenshot shows the HWg-PWR25: M-Bus Meter web interface. On the left is a tree view of the device's configuration and monitoring options. The main content area is titled "SNMP OID" and contains a table with the following data:

| Old Key                              | Value   | Description            | Data Type | Access |
|--------------------------------------|---|------------------------|-----------|--------|
| 1.3.6.1.2.1.1.1.0                    | HWg-PWR   | System Description     | string    | RO     |
| 1.3.6.1.2.1.1.2.0                    | 1.3.6.1.4.1.21796.4.6.  | System ObjectID        | objid     | RO     |
| 1.3.6.1.2.1.1.3.0                    | 11286700  | System UpTime          | timeticks | RO     |
| 1.3.6.1.2.1.1.4.0                    | HWg-PWR25:For more information by <a href="http://www.hw-group.com">http://www.hw-group.com</a> | System Contact         | string    | RO     |
| 1.3.6.1.2.1.1.5.0                    | HWg-PWR25   | System Name            | string    | RO     |
| 1.3.6.1.2.1.1.6.0                    |   | System Location        | string    | RO     |
| 1.3.6.1.2.1.1.7.0                    | 72  | System Services        | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.1.0          | 3   | Meters Number          | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.2.1.1.1      | 1   | 1. Meter Index         | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.2.1.1.2      | 2   | 2. Meter Index         | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.2.1.1.3      | 3   | 3. Meter Index         | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.2.1.2.1      | 3fazovy   | 1. Meter Name          | string    | R/W    |
| 1.3.6.1.4.1.21796.4.6.1.2.1.2.2      | 1fazovy   | 2. Meter Name          | string    | R/W    |
| 1.3.6.1.4.1.21796.4.6.1.2.1.2.3      | Voda  | 3. Meter Name          | string    | R/W    |
| 1.3.6.1.4.1.21796.4.6.1.2.1.3.1      | 0   | 1. Meter Address       | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.2.1.3.2      | 13  | 2. Meter Address       | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.2.1.3.3      | 1   | 3. Meter Address       | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.2.1.4.1      | 3464115   | 1. Meter Sec Address   | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.2.1.4.2      | 30101613  | 2. Meter Sec Address   | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.2.1.4.3      | 11056387  | 3. Meter Sec Address   | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.2.1.5.1      | 14  | 1. Meter Values number | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.2.1.5.2      | 5   | 2. Meter Values number | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.2.1.5.3      | 1   | 3. Meter Values number | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.1.1001 | 1001  | 1001. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.1.1003 | 1003  | 1003. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.1.1004 | 1004  | 1004. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.1.1005 | 1005  | 1005. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.1.1006 | 1006  | 1006. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.1.1007 | 1007  | 1007. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.1.1008 | 1008  | 1008. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.1.1009 | 1009  | 1009. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.1.1011 | 1011  | 1011. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.1.1012 | 1012  | 1012. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.1.1013 | 1013  | 1013. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.1.1014 | 1014  | 1014. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.1.1015 | 1015  | 1015. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.1.1016 | 1016  | 1016. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.2.2001 | 2001  | 2001. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.2.2002 | 2002  | 2002. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.2.2003 | 2003  | 2003. Value Valid      | integer   | RO     |
| 1.3.6.1.4.1.21796.4.6.1.3.1.1.2.2004 | 2004  | 2004. Value Valid      | integer   | RO     |

## ModBus TCP Server

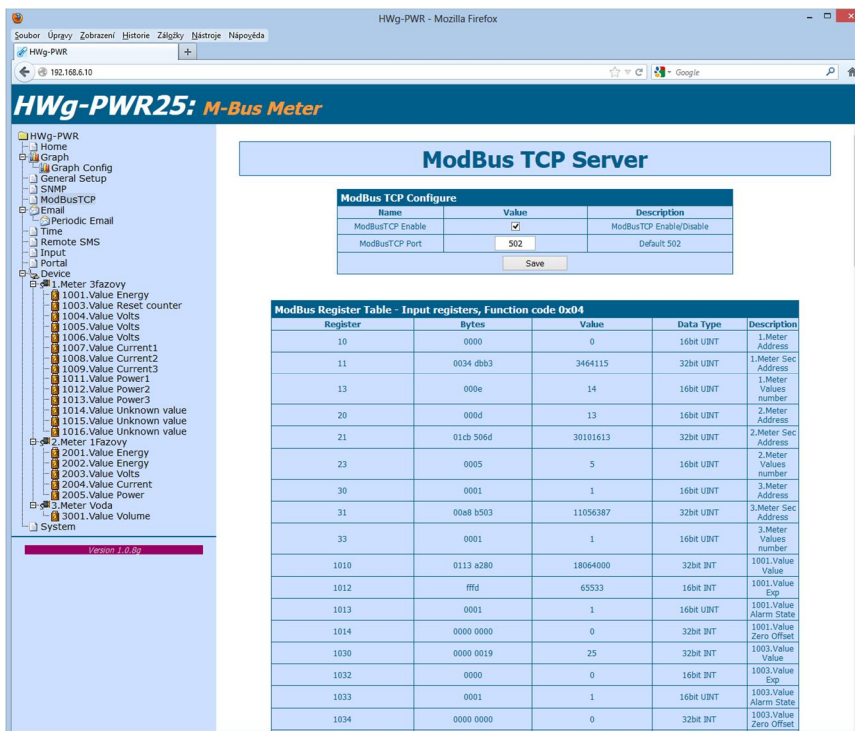
HWg-PWR can supply data to SCADA systems using the ModBus/TCP protocol.

- **ModBusTCP Enable** – Enables the ModBus/TCP protocol.
- **ModBusTCP Port** – Port for the Modbus/TCP protocol (default is 502).



### Show ModBus Register Map

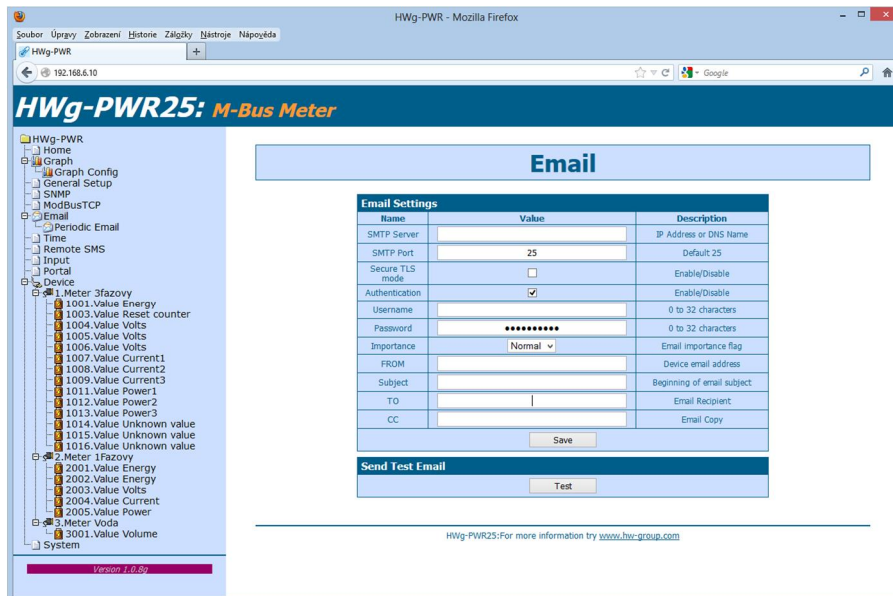
This function prints the entire tree of variables with all individual ModBus registers and data types.





## E-mail tab

The *E-mail* tab is used to define the e-mail server and the parameters for sending alarm e-mails (beginning or end of an alarm). HWg-PWR only supports unencrypted SMTP connections.



### Email Settings section

- *SMTP Server* – IP address or domain name of your SMTP server.
- *SMTP port* – Port number where the SMTP server listens. The default is 25.
- *Authentication* – Enables authentication. Check this box if your SMTP server requires authentication.
- *Username* – Username for authentication to the SMTP server. If the Authentication box is not checked, this field is irrelevant.
- *Password* – Password for authentication to the SMTP server. If the Authentication box is not checked, this field is irrelevant.
- *Importance* – Sets the e-mail message priority. This is important for filtering and further processing of alarm messages.
- *FROM* – E-mail address of the sender, that is, the HWg-PWR unit. The address may be necessary for the SMTP server and can be used to identify the HWg-PWR unit, or for filtering and further processing of alarm messages.
- *Subject* – E-mail subject. Contents of this field can be used to identify the HWg-PWR unit, or for filtering and further processing of alarm messages.
- *TO* – E-mail address of the recipient of alarm messages. Only one e-mail address can be entered.
- *CC* – E-mail address of the recipient of a copy of the alarm message. Only one e-mail address can be entered.

The *To* and *CC* fields cannot accept distribution lists or multiple e-mail addresses. If you need to send alarm messages to more recipients, ask your SMTP server administrator to create a distribution list accessible through a single e-mail address.

### Send Test Email section

After configuring *Email Settings*, use this button to send a test e-mail.

## Periodic Email

Configures the period for sending non-alarm messages.

- *Periodic Data mail* – Periodically e-mails the log of measured values. The log only contains values which have logging enabled!
  - *Datalog file type* – Select datalogs type – CSV or BIN (Binary – see chapter Datalog format )
- *Periodic Diferencial Mail* – Periodically e-mails the differences of the measured values for the given interval, that is, daily, weekly or monthly consumption. Warning – only values with enabled periodic e-mailing are sent.

The screenshot shows the web interface for HWg-PWR25: M-Bus Meter. The left sidebar contains a tree view of the device configuration, including sections for Home, Graph, General Setup, SNMP, ModBusTCP, Email, Time, Remote SMS, Input, Portal, Device, and System. The main content area is titled "Periodic Email" and contains two tables for configuration.

**Periodic Data mail**

| Name  | Value |
|---|-------|
| This periodic email contains attached configuration files, status and a data log. The log only lists parameters with logging enabled. |       |
| Periodic time   | 24h   |
| Datalog file type   | CSV   |
| Save  |       |

**Periodic Diferencial Mail**

| Name  | Value |
|---|-------|
| This periodic email contains a table with the actual status and the last saved status. It also shows the difference and the difference in money. The log only lists values with "periodic email" function enabled. For money conversion you need to enable billing and set the conversion values. |       |
| Periodic time   | 24h   |
| Save  |       |

At the bottom of the main content area, there is a link: HWg-PWR25: For more information try [www.hw-group.com](http://www.hw-group.com)



## Time tab

The *Time* tab is used to configure system time and automatic synchronization with a timeserver.

The screenshot shows the 'Time' configuration page in the HWg-PWR25 web interface. The page is titled 'Time' and contains three main sections:

- SNTP Setup**: A table with columns 'Name', 'Value', and 'Description'.
 

| Name        | Value                               | Description                           |
|-------------|-------------------------------------|---------------------------------------|
| SNTP Server | europe.pool.ntp.org                 | IP Address or DNS Name                |
| Time Zone   | +1                                  | Number -12 ... +13                    |
| Summertime  | <input checked="" type="checkbox"/> | last Sun Mar 2:00 - last Sun Oct 2:00 |
| Interval    | 1h                                  | Sync period: Off/1h/24h               |
- SNTP synchronize**: A section with a 'Sync' button.
- Time Setup**: A table with columns 'Name', 'Value', and 'Description'.
 

| Name | Value          | Description |
|------|----------------|-------------|
| Time | 16 : 29 : 19   | hh:mm       |
| Date | 20 . 11 . 2012 | DD.MM.YYYY  |

At the bottom of the page, there is a link: [www.hw-group.com](http://www.hw-group.com). The version number 'Version 1.0.8p' is visible at the bottom left of the interface.

### SNTP Setup section

- **SNTP Server** – IP address or host name of the time synchronization server. Default is *time.nist.gov*.
- **Time Zone** – Timezone where HWg-PWR is located. Used to set correct system time. Necessary for correct logging of measured values.
- **Summertime** – Enables daylight savings time. Used to set correct system time. Necessary for correct logging of measured values.
- **Interval** – The period for synchronizing time with the server.

### SNTP Synchronize section

The *Sync* button immediately synchronizes time with the time server. Can be used to test the settings.

### Time Setup section

The *Time Setup* section lets you enter current date and time manually, when synchronization with a time server is unavailable.

## Remote SMS tab

This tab is used to setup the alarm SMS parameters. The SMS messages are sent through a remote SMS gateway with the netGSM protocol support.

The screenshot shows the 'Remote SMS' configuration page in the HWg-PWR25 web interface. The page is titled 'Remote SMS' and contains a table for configuration and a section for testing messages.

| Remote SMS setup   |   |  |
|--------------------|---|--|
| Name               | Value   | Description  |
| Remote SMS Gateway | Disable                                       | Target device with GSM modem for sending SMS                                     |
| IP Address         |   | A.B.C.D  |
| Port               | 80  | Default 80   |
| Target Number      |   | Target Phone Number  |
| Username           |   | Remote Device Username   |
| Password           |   | Remote Device Password   |
| SMS Normal Text    | %DEV_NAME% Normal: %SRC_NAME% = %SRC_VALUE% % | %DEV_NAME% = Device Name<br>%SRC_NAME% = Meter Name<br>%SRC_VALUE% = Meter Value |
| SMS Alarm Text     | %DEV_NAME% Alarm: %SRC_NAME% = %SRC_VALUE% %  | %SRC_UNIT% = Meter Unit  |

Below the table is a 'Save' button. Underneath is a section titled 'Send Remote SMS testing messages' with two buttons: 'Test Normal' and 'Test Alarm'.

## Remote SMS setup section

- **Remote SMS Gateway** – Enables / disables this function
- **IP Address** – Remote gateway IP address
- **Port** – TCP port that the gateway listens to
- **Target number** – SMS phone number
- **Username** – Username for the remote gateway, can be skipped
- **Password** – Password for the remote gateway, can be skipped
- **SMS Normal Text** – Macro to create the SMS that announces an end of alarm
- **SMS Alarm text** – Macro to create the SMS that announces an alarm

## Send Remote SMS testing messages section

- **Test Normal** – Sends a test SMS announcing the end of alarm
- **Test Alarm** – Sends a test SMS announcing an alarm

## Input tab

This tab is used to configure the parameters of dry contact inputs.

The screenshot shows the 'Inputs' configuration page in the HWg-PWR25 web interface. The page title is 'Inputs'. Below the title is a table titled 'Input Dry Contact' with the following columns: ID, Name, State Name (Log 0 - Open, Log 1 - Close), Alarm Alert, Email, SNMP Trap, and Remote SMS. The table contains 8 rows of input configurations. A 'Save' button is located below the table.

| ID | Name    | State Name   |               | Alarm Alert        | Email                    | SNMP Trap                | Remote SMS               |
|----|---------|--------------|---------------|--------------------|--------------------------|--------------------------|--------------------------|
|    |         | Log 0 - Open | Log 1 - Close |                    |                          |                          |                          |
| 1  | Input 1 | Open         | Close         | Disabled           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2  | Input 2 | Open         | Close         | Disabled           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3  | Input 3 | Open         | Close         | Disabled           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4  | Input 4 | Open         | Close         | 0 (Active if Log0) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5  | Input 5 | Open         | Close         | 1 (Active if Log1) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6  | Input 6 | Open         | Close         | Disabled           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7  | Input 7 | Open         | Close         | Disabled           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8  | Input 8 | Open         | Close         | Disabled           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## Input Dry Contacts section

For each input, you can define:

- **Name** – Name of the input, shown at the homepage and in alarm messages.
- **State Name** – Name of the respective dry contact state at the homepage and in alarm messages.
  - **Log. 0 – Open** – Name of the logic low (contact open, idle) state.
  - **Log. 1 – Close** – Name of the logic high (contact closed) state.
- **Alarm Alert** – Defines the alarm state.
  - **Disabled** – Alarm function is disabled.
  - **0 (Active if Log.0)** – Alarm when the contact is open.
  - **1 (Active if Log.1)** – Alarm when the contact is closed.
- **E-mail** – Determines if an e-mail is sent when the Alarm state is activated or deactivated for the respective input.
- **SNMP Trap** – Determines if a SNMP Trap is sent when the Alarm state is activated or deactivated for the respective input.

## Portal

This tab is used to setup parameters to send the data to a remote portal using HWg-PUSH.

You can find out more about the protocol and portal solution support here:

<http://www.hw-group.com>

The screenshot shows the HWg-PWR25: M-Bus Meter web interface in a Mozilla Firefox browser. The interface is titled "HWg-PWR25: M-Bus Meter" and features a navigation menu on the left with categories like Home, Graph, General Setup, SNMP, ModBusTCP, Email, Time, Remote SMS, Input, Portal, and Device. The main content area is titled "Portal" and contains a "Portal config" table and a "Portal Message" section.

| Name           | Value                               | Description  |
|----------------|-------------------------------------|--|
| Portal         | <input checked="" type="checkbox"/> | Portal Enable/Disable                                |
| Push Period    | 900 [s]                             | Time in Sec, 0 = Disable                             |
| Server Address | <input type="text"/>                | IP Address or DNS Name                               |
| IP Port        | 8082                                | Default 80   |
| Username       | <input type="text"/>                | Portal username and password<br>[0 to 16 characters] |
| Password       | <input type="text"/>                |  |

Below the table are "Save" and "Manual Push" buttons. Under the "Portal Message" section, there is a "See" link. At the bottom of the interface, it says "HWg-PWR25: For more information try [www.hw-group.com](http://www.hw-group.com)".

### Portal Config section

- **Portal** – Enables / disables this function
- **Push Period** – Period in which the data is pushed to the remote server. This is received from the portal.
- **Server address** – Complete URL of the remote server
- **IP Port** – Port that the portal listens to
- **Username** – Username to assign the HWg-PWR to a user. You will get this from the portal administrator.
- **Password** – Password to assign the HWg-PWR to a user. You will get this from the portal administrator.

### Portal Message section

Information from the portal such as links to graphs etc... This depends on the type of portal you are using.

## Device tab

This tab is used to discover connected meters (Device), set their parameters, and to subsequently find and configure the values provided by individual meters.

The screenshot shows the HWg-PWR25: M-Bus Meter web interface. The left sidebar contains a navigation menu with categories like Home, Graph, General Setup, SNMP, ModBusTCP, Email, Time, Remote SMS, Input, Portal, and Device. The 'Device' category is expanded, showing a list of meters and their parameters. The main content area is titled 'Device' and contains a 'Device List' table.

| ID | Name    | Medium | PRI Address | SEC Address | Option  |
|----|---------|--------|-------------|-------------|---|
| 1  | 3fazovy | Other  | 0           | 03464115    | <a href="#">Edit</a> , <a href="#">Delete</a> |
| 2  | 1Fazovy | Other  | 13          | 30101613    | <a href="#">Edit</a> , <a href="#">Delete</a> |
| 3  | Voda    | Other  | 1           | 11056387    | <a href="#">Edit</a> , <a href="#">Delete</a> |

Below the table, there are links for 'Scan Mbus' and 'Manual Add'. At the bottom of the main content area, there is a note: 'HWg-PWR25: For more information try [www.hw-group.com](http://www.hw-group.com)'.

### Device List section

The Device List section lists all connected meters together with their type (*Medium*) and M-Bus address (*Address*). To edit a meter, click “*Edit*” on the corresponding line. Each meter is assigned a unique *ID* within HWg-PWR for use in XML and SNMP communication.

## Edit xMeter section

The screenshot shows the HWg-PWR25: M-Bus Meter web interface. The main content area is titled 'Device' and shows the configuration for '1.Meter'. The configuration form includes the following fields:

- Enable:** Radio buttons for 'Enable' (selected) and 'Disable'.
- Use Address:** Radio buttons for 'Primary' (selected) and 'Secondary'.
- PRI Address:** Text input field with value '0' and an 'Addr write' button.
- SEC Address:** Text input field with value '03464115'.
- Serial Baudrate:** Dropdown menu with value '2400'.
- Serial Parity:** Dropdown menu with value 'Event'.
- Name:** Text input field with value '3fazovy'.
- Meter MBUS Read Period:** Text input field with value '30 sec' and a unit selector 'xx Sec, xx Min, xx Hour'.
- Save:** Button.

Below the configuration form is a 'Value Table' with the following data:

| ID   | Name          | Value     | Unit | Logging | Option       |
|------|---------------|-----------|------|---------|--------------|
| 1001 | Energy        | 18064.300 | kWh  | ✓       | Edit, Delete |
| 1003 | Reset counter | 25        |      | ✗       | Edit, Delete |
| 1004 | Volts         | 238       | V    | ✗       | Edit, Delete |
| 1005 | Volts         | 239       | V    | ✗       | Edit, Delete |
| 1006 | Volts         | 239       | V    | ✗       | Edit, Delete |
| 1007 | Current1      | 0.345     | A    | ✓       | Edit, Delete |
| 1008 | Current2      | 0.352     | A    | ✓       | Edit, Delete |
| 1009 | Current3      | 3.038     | A    | ✓       | Edit, Delete |
| 1011 | Power1        | 0.005     | kW   | ✓       | Edit, Delete |

- **Enable** – Enables or disables the meter within HWg-PWR. When a meter is disabled, values are not detected or read but the configured parameters remain stored. This can be used to temporarily turn off the reading and recording for a particular meter (during maintenance etc.)
- The **Use Address** option configures the addressing mode (*Primary* – shorter primary M-Bus address; *Secondary* – unique secondary address). For battery-powered meters, we recommend to use the primary address.
- **PRI Address** – Primary address on the M-Bus. The address is entered as one byte (0-255). Meters of the same type and by the same manufacturer are often supplied with the same Primary address, which therefore cannot be used for addressing. The field allows changing the primary address as a convenience for battery-powered meters.
- **Secondary Address** – Secondary address on the M-Bus. This address is used to identify a meter if there are more meters with the same primary address (*Address* field) on the bus. Secondary address is not user-changeable.
- **Serial Baudrate** – M-Bus communication speed for the particular meter. By default, 2400 Baud is configured. Meters with different communication speeds can coexist on a single bus; this parameter sets the speed for the particular meter.
- **Serial Parity** – M-Bus communication parity. As with the baudrate, parity can be specified individually for each meter.
- **Meter M-Bus Read period** sets the interval for reading out the values from the meter. The default is 30s. For battery-powered meters, it might be advisable to set a longer period. For details, see *Meter types*.
- **Name** – Meter name. Identifies the meter within HWg-PWR – in graphs, XML and SNMP – using a custom name (Home, Office, RACK1, etc.).

- *Scan Value* – Reads the values and their parameters from the meter. See *First Steps*.

### ***Value Table section***

The *Value Table* section displays information about discovered values from a particular meter – their names (*Name*), units of measurement (*Unit*), current readings (*Value*), and whether logging is enabled. Each value is assigned a unique ID within HWG-PWR for use in XML and SNMP communication. To edit a variable, its parameters and properties, click “*Edit*” on the corresponding line.



## Edit y.Value on x.Meter tab

The screenshot shows the configuration page for '1.Meter 3fazovy' in the HWg-PWR25: M-Bus Meter interface. The 'Device' section is expanded, showing the following configuration options:

| State   |   |
|---|---|
| Name  | Value   |
| Enable  | <input checked="" type="radio"/> Enable <input type="radio"/> Disable ✓ |
| It means that currently is allowed 20 values from 30            |   |
| Logging   |   |
| Logging Enable  | <input checked="" type="radio"/> Enable <input type="radio"/> Disable ✓ |
| If this function is allowed, the total logging time is reduced. |   |
| Value   |   |
| Name  | Energy  |
| Unit  | kWh   |
| Exponent  | -3  |
| Tarif   | 0   |
| Zero Offset   | 0.000   |
| Value from MBUS   |   |
| Final Value   | 18064.300 kWh   |
| Billing   |   |
| Billing   | <input checked="" type="radio"/> Enable <input type="radio"/> Disable ✓ |
| Monney Conversion   | 1.000 kWh = 5.50000 Kč  |
| Periodic mail   | <input checked="" type="radio"/> Enable <input type="radio"/> Disable ✓ |
| Alarming  |   |
| Enable SaveRange  | <input type="radio"/> Enable <input checked="" type="radio"/> Disable ✗ |
| SaveRange Hi  | 0.000   |
| SaveRange Lo  | 0.000   |
| SaveRange Hyst  | 5.000   |
| Email if change state   | <input type="radio"/> Enable <input checked="" type="radio"/> Disable ✗ |
| SNMP Trap if change state                                       | <input type="radio"/> Enable <input checked="" type="radio"/> Disable ✗ |
| Remote SMS if change state                                      | <input type="radio"/> Enable <input checked="" type="radio"/> Disable ✗ |

At the bottom of the configuration panel, there is a 'Save' button and a footer note: 'HWg-PWR25:For more information try [www.hw-group.com](http://www.hw-group.com)'.

### State section

- **State** – Turns on/off the respective variable.

### Logging section

- **Logging** - Enables logging of values into the internal memory, at intervals specified at the Log tab. When logging is enabled for fewer variables, more records can be stored.

### Value section

- **Name** – Value name. Identifies the value (variable).
- **Unit** – Physical unit of measurement. Identifies the unit of the value being measured. Together with its exponent, it can be used to convert the value to a custom format and unit (W/kW, kWh/MWh, dm<sup>3</sup>/l and so on).
- **Exponent** – Allows you to change the order of the displayed unit of measurement.
- **Tarif** – Identifies the tariff in multi-tariff meters.
- **Zero Offset** – Bias. Allows a modification of the displayed value by adding (subtracting) a fixed number. Typically used to monitor differences for a given time period.
- **Value From MBUS** – RAW data received over M-BUS.
- **Final Value** – Resulting value after processing the received data, exponent and unit of measurement.



### *Billing section*

- *Billing* – Enables conversion of the measured value to currency (creating a virtual value tied to the actual value). Further on, this variable will be reported in terms of the measured quantity as well as its monetary equivalent. This conversion will be included in alarm and periodic messages as well as in XML files and the device homepage.
- *Money Conversion* – Sets the conversion factor and currency for conversion of values to money.
- *Periodic Diferencial Mail* – Enables inclusion of the value to the periodic e-mail with differences.

### *Alarming section*

- *Enable SaveRange* – Enables the monitoring function for the current value and its allowed range. This can be used to monitor if a value (line current, flow rate, etc.) exceeds the allowed range, and alert to excessive (or suspiciously low) energy consumption in order to avoid more serious problems.
- *SafeRange Hi* – Upper limit. Alarm occurs if the measured value exceeds the value specified here.
- *SafeRange Lo* – Lower limit. Alarm occurs if the measured value falls below the value specified here.
- *Saferange Hyst* – Allowed hysteresis. Suppresses false alarms if the measured value oscillates near the threshold. The hysteresis only applies in the direction into the *SafeRange*. That is, alarm always starts when *SafeRange Hi* or *SafeRange Lo* is crossed but only ends when the threshold plus (or minus) *Saferange Hyst* is reached.
- *E-Mail if Change State* – Specifies whether an e-mail should be sent whenever an Alarm begins or ends.
- *SNMP Trap if change state* – Specifies whether a SNMP Trap should be send whenever an Alarm begins or ends.

## System tab

The *System* tab is used to access the most important system information, such as uptime or firmware version, and to perform operations such as HWg-PWR restart or firmware update.

The screenshot shows the HWg-PWR25: M-Bus Meter web interface. The main content area is titled 'System' and contains three sections:

- Download:** A table listing files for download.
 

| Description                  | File               |
|------------------------------|--------------------|
| Backup configuration         | HWg-PWR_Config.bin |
| Online values in XML         | values.xml         |
| SNMP MIB Table               | HWg-PWR.mib        |
| TXT list of common SNMP OIDs | HWg-PWR_OID.txt    |
| Data Log CSV Format          | dstalog.csv        |
- System:** A table showing system information.
 

| Name         | Value                 |
|--------------|-----------------------|
| Version      | 1.0.8p                |
| Compile time | Nov 14 2012, 14:40:56 |
| Build        | 3228                  |
| UpTime       | 1 day, 7:43 hours     |
| Demo Mode    | Demo Mode Enable      |

 Below the table are buttons for 'Upload' and 'Firmware or Configuration' (Procházet, Upload).
- Factory Default:** A section with a 'Default' button.
- System Restart:** A section with a 'Restart' button.

At the bottom of the page, it says: HWg-PWR25: For more information try [www.hw-group.com](http://www.hw-group.com)

### Download section

- *Backup configuration* – Click to save the current HWg-PWR configuration. Saved configuration can be later restored. ([http://hwg-pwr.hwg.cz/HWg-PWR\\_Config.bin](http://hwg-pwr.hwg.cz/HWg-PWR_Config.bin))
- *Online values in XML* – Address of a XML file with current readouts. Intended for automated processing at remote servers. (<http://hwg-pwr.hwg.cz/values.xml>)
- *SNMP MIB Table* – Address of the MIB file that contains the definitions of SNMP variables. (<http://hwg-pwr.hwg.cz/HWg-PWR.mib>)
- *TXT list of common SNMP OIDs* – Overview of the most important OIDs from the MIB table. ([http://hwg-pwr.hwg.cz/HWg-PWR\\_OID.txt](http://hwg-pwr.hwg.cz/HWg-PWR_OID.txt))
- *Data Log CSV Format* – Address of a CSV file with a logged history of readouts. Intended for automated processing at remote servers. (<http://hwg-pwr.hwg.cz/log.csv>)

### Factory Default section

Restores factory default settings. The default IP address is 192.168.1.99 and no user name or password is defined.

## Meter types

With respect to the mode of operation, meters can be classified as:

- Mains-powered (electricity meters)
- Battery-powered (heat meters, water meters, gas meters etc.)

Manufacturers of battery-powered meters may restrict the number of read operations within a certain time interval in order to maintain battery life. Typically, one can encounter meters that allow, for instance, only up to 15 reads/day, 2 reads/hour, etc. These limits differ by meter type and by manufacturer, and should be specified in the meter documentation.

With the default reading period in HWg-PWR (30s), it is easy to exceed these limits. Then, the meter stops responding in order to maintain its declared battery life. Exceeding these limits cannot be considered a defect of HWg-PWR.

## Internal memory size

HWg-PWR equipped with 2MB internal memory for storing measured values. The available recording time depends on the number of values being stored. One value occupies 12 bytes of memory.

Therefore,  $2048\text{KB} \cdot 1024 = 2,097,152\text{B} / 12\text{B} =$  approximately 170,000 records (due to the internal memory organization, the actual number is slightly smaller).

### *Examples:*

*8 values*

*Recorded once in 5 minutes*

$170,000/8 = 21,250$  records = 1770 hours = 73 days

*5 values*

*Recorded once per 60 s*

$170,000/5 = 34,000$  records = 566 hours = 23 days

*25 values*

*Recorded once per 60 min.*

$170,000/25 = 6,800$  records = 283 days

## Datalog format of devices HWg-PWR and HWg-Ares

The data is stored in a simple binary format:

<record1>< record2>< record3><record4><record5>...<recordN>

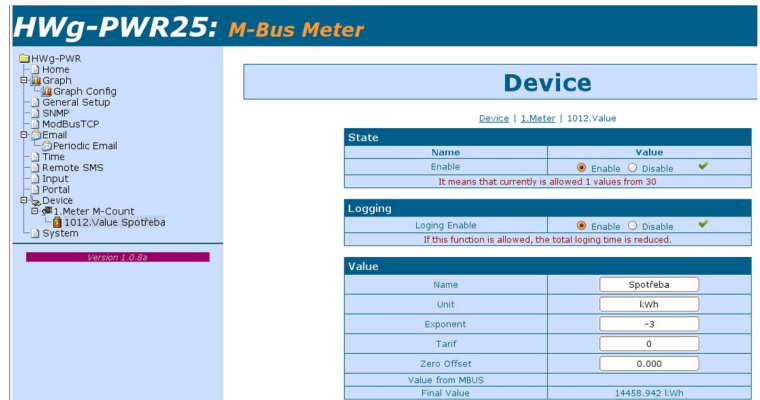
The record format is following:

- Sensor ID (2 bytes)
- TimeStamp (4 bytes)
- Value (4 bytes)

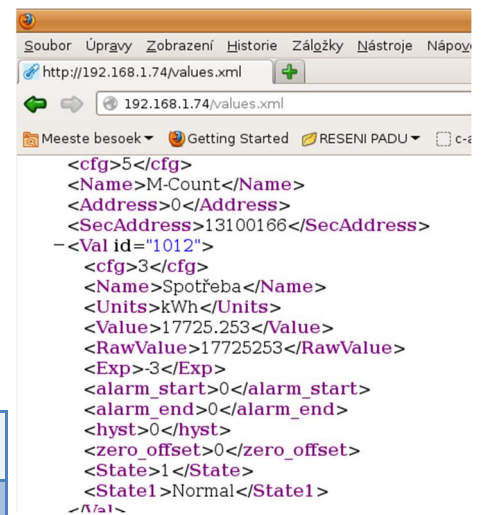
The TimeStamp is stored in Unix time format (time\_t). More information about the format you can find for example here

[http://en.wikipedia.org/wiki/Unix\\_time](http://en.wikipedia.org/wiki/Unix_time). The

Value is stored without decimal point. An exponent tells you where you have to move decimal point to get real value (mathematical expression:  $right\_value = value * 10^{EXP}$ ). On screen shot you can see an example of sensor with ID = 1012 and exponent -3.



The exponent you can get from values.xml too. On following screen shot there is the same information about the the same sensor you can see in values.xml file.



But there is a few little differences between these devices. Some of them store data in little endian format and others in big endian. More information about endianness you can see for example here <http://en.wikipedia.org/wiki/Endianness>. And some of them store timestamp in local and others in universal time.

|            | Endiannes | TimeStamp            |
|------------|-----------|----------------------|
| HWg-PWR    | big       | devices's local time |
| HWg-PWR 25 | little    | devices's local time |
| HWg-Ares   | little    | universal time (UTC) |

```

/* hwg_pwr_datalog.c
 *
 * Default is datalog written on standard output.
 * Command "hwg_pwr_datalog.exe > out.txt" writes the records into file.
 */

#include <stdio.h>
#include <time.h>
#include <winsock.h>

/* For device HWg-PWR 25 and HWg-Ares uncomment next line */
/* #define ARES */

#ifdef ARES
#define _HTONS_(VAL) ( VAL )
#define _HTONL_(VAL) ( VAL )
#else
#define _HTONS_(VAL) ( htons(VAL) )
#define _HTONL_(VAL) ( htonl(VAL) )
#endif
    
```

```
/* Special pragma for Borland C++ Builder - other compilers probably use a different
way
 * how to say to compiler an information about structures packing
 */
#pragma pack(push)
#pragma pack(1)
typedef struct {
    unsigned __int16 val_id; /* Value ID */
    unsigned __int32 time; /* Unix time format time t */
    __int32 value; /* Value = value * 10^EXP, where EXP is exponent */
} HWG_PWR_LOG_ENTRY;
#pragma pack(pop)

int main(int argc, char* argv[])
{
    FILE *InFile;
    HWG_PWR_LOG_ENTRY Entry;
    time_t t;

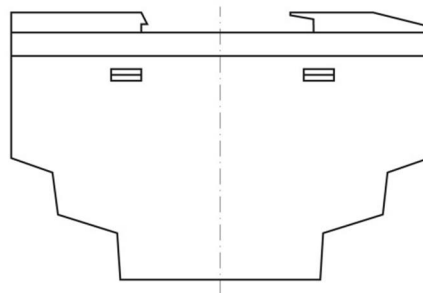
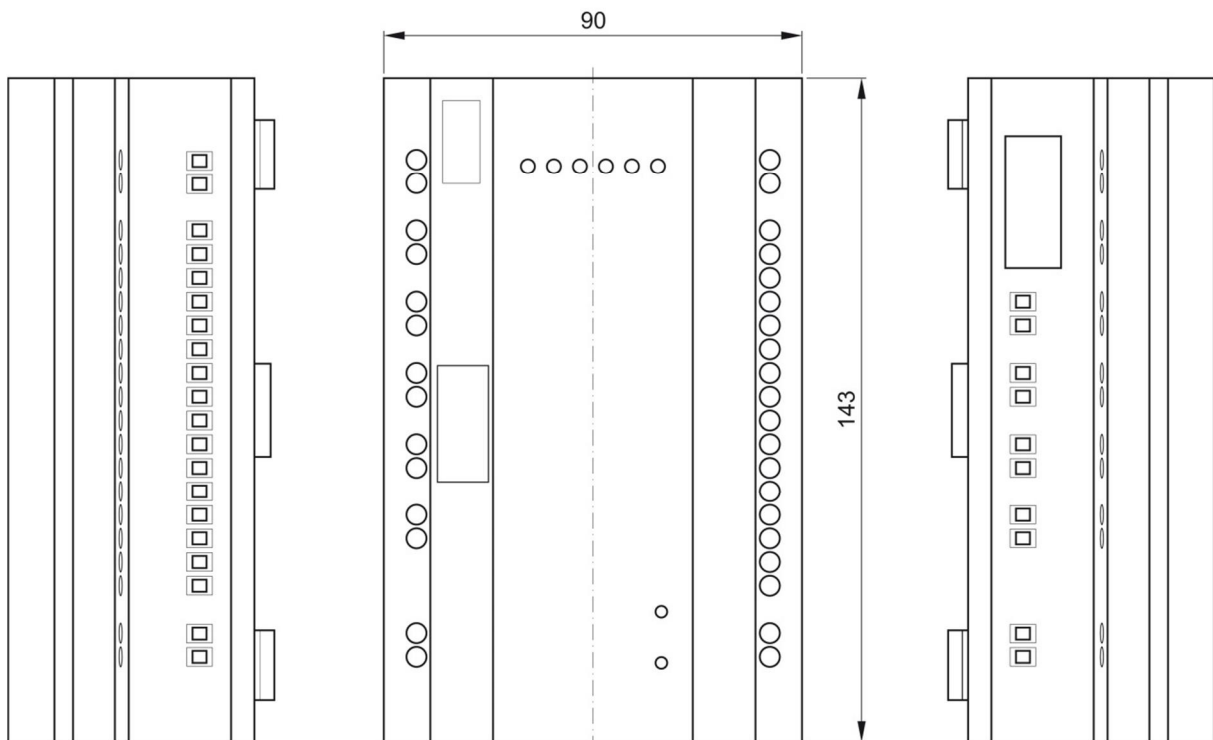
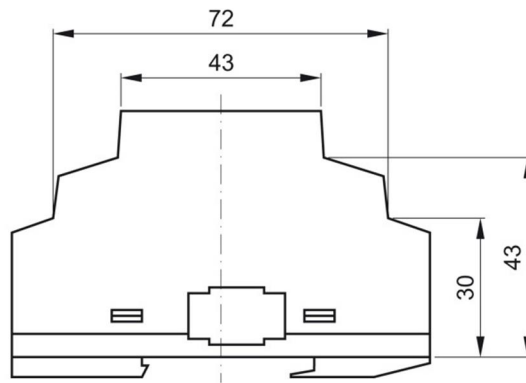
    InFile = fopen("datalog.bin", "rb");
    if (!InFile) {
        fprintf(stderr, "File 'datalog.bin' could not open!");
        return 1;
    }

    printf("-----\n");
    printf(" ID | VALUE | TIME\n");
    printf("-----\n");
    while (fread(&Entry, sizeof(HWG_PWR_LOG_ENTRY), 1, InFile)) {
        t = _HTONL_(Entry.time);
        printf(" %5d | %10d | %s",
            _HTONS_(Entry.val_id),
            _HTONL_(Entry.value),
            asctime(gmtime(&t))
        );
    }
    printf("-----\n");
    printf(" ID | VALUE | TIME\n");
    printf("-----\n");

    fclose(InFile);

    return 0;
}
```

Mechanical





## Accessories

|                       |  |
|-----------------------|--|
| <b>DHZ 5/63-M-BUS</b> | Single-phase 63A electricity meter with M-Bus                    |
| <b>ED 310.DB HWG</b>  | Three-phase, two-tariff, 63A electricity meter with M-Bus and S0 |
| <b>M-Count 2C</b>     | Converter and datalogger, 2x pulse output (S0) / M-Bus           |



DHZ 5/63-M-BUS



ED 310.DB HWG



M-Count 2C



## Manufacturer

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The logo for HW group, featuring the letters 'HW' in a large, bold, blue font, followed by the word 'group' in a smaller, black font.