HASEMAN ELECTRIC

PRM-10
USER MANUAL

Haseman PRM-10 is 10-channel, true RMS, DIN Rail Power/Energy meter, produced by using Z-Wave Plus, the latest version of Z-Wave.

WHAT IS Z-WAVE?

Z-Wave is international standard protocol for wireless communication in smart homes and buildings.

Z-Wave enables smart home products to talk to each other. This creates the backbone of your smart home and enables you to use your smartphone or tablet to create one-touch scenes that help with daily activities like: saving energy, keeping your home secure and being more comfortable.

Z-Wave technology is simple: each transmitted message is reconfirmed (2-way communication) and every mains powered device can act as a repeater for other devices (mesh network). The more Z-Wave products you have in your smart home, the stronger your smart home network is.

Z-Wave technology is the leading solution in smart home automation. There is a wide range of Z-Wave devices that are mutually compatible, independently of the manufacturer. It gives the system the ability to evolve and expand over time.

SAFETY INFORMATION

Read this manual before attempting to install the device! Failure to observe recommendations included in this manual may be dangerous or cause a violation of the law.

The manufacturer will not be held responsible for any loss or damage resulting from not following the instructions of operating manual.

DANGER OF ELECTROCUTION!

All works on the device may be performed only by a qualified and licensed electrician. Observe national regulations.

The device is designed to operate in electrical home installation. Faulty connection or use may result in fire or electric shock.

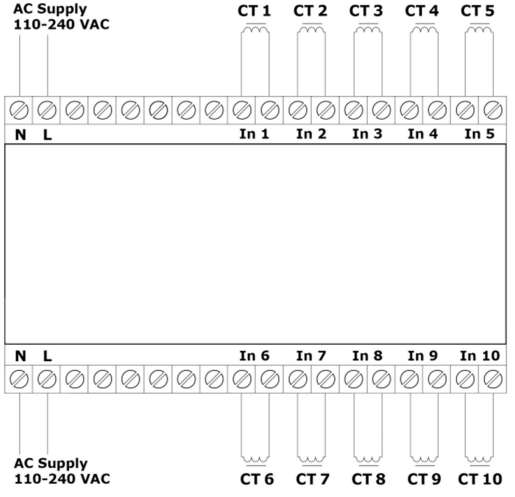
Even when the device is turned off, voltage may be present at its terminals.

Any maintenance introducing changes into the configuration of connections or the load must be always performed with disabled fuse.

CONNECTION DIAGRAM

When connecting the module, observe the proper Neutral (**N**) and Line (**L**) terminals.

Module supply can be connected to upper or lower power supply terminals.

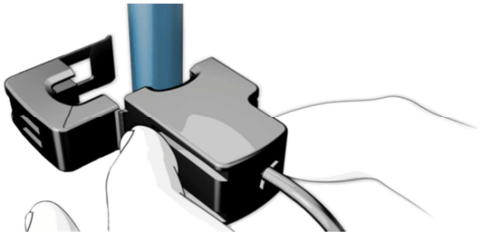


Only the provided current clamps must be connected to Input terminals **In1** to **In10**.

If some of the clamps are connected, but not in use, leave them in closed position (locked).

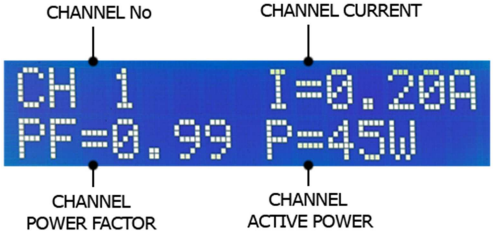
INSTALLATION

- Mount the module on standard DIN Rail.
- Connect Current clamps to inputs In1-In10 and fix them on the monitored power lines.

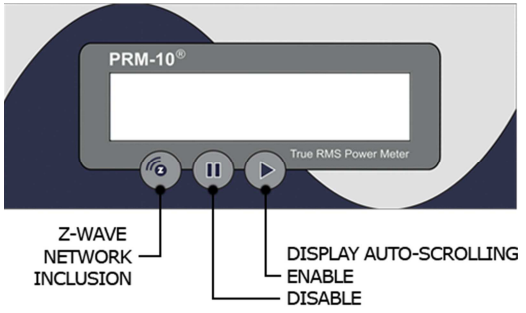


- Connect the supply to Neutral and Line terminals.
- Wait until the Initialization procedure is completed.

DISPLAY DATA



CONTROL BUTTONS



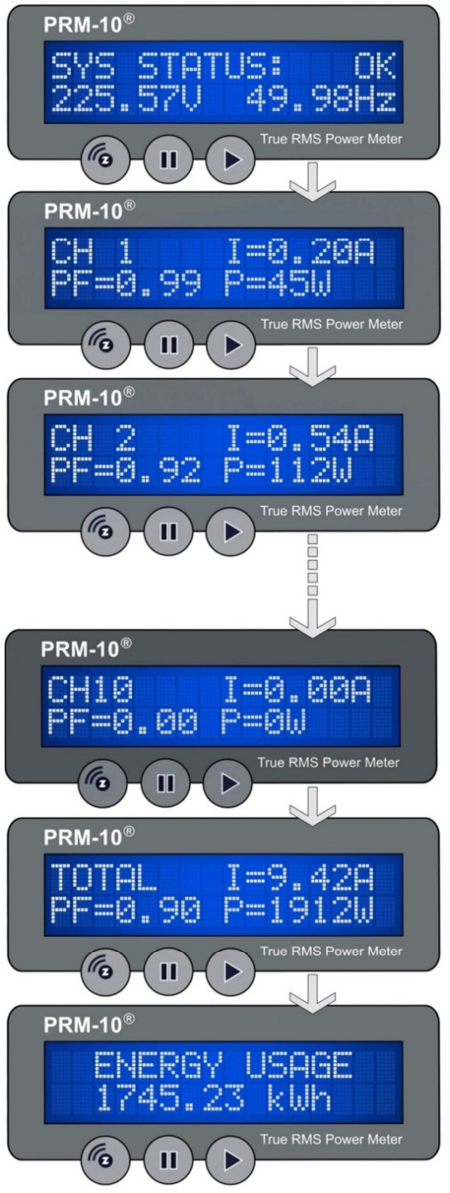
DISPLAY SEQUENCE

STATUS Screen is the first one in the display sequence. It indicates healthy status of the module, Voltage and Frequency of the power network.

Each **CHANNEL** Screen shows RMS Current, Active Power and Power Factor of the certain channel.

TOTAL Screen shows summary data of all 10 channels: Total RMS Current, Total Active Power and Total Power Factor.

ENERGY USAGE Screen shows the Total Energy (in kWh) used on all channels for a certain period of time. When necessary, Energy Usage Data can be reset to 0 from the Z-Wave Controller.



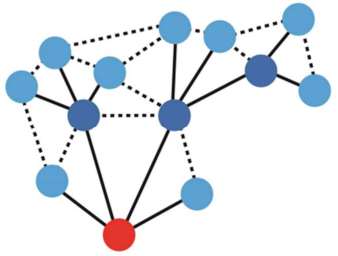
When necessary, auto-scrolling can be temporary disabled by means of Pause Button. The display will permanently monitor only the parameters on the chosen screen.

The module will continue to report all measured data to the Z-Wave Controller.

Auto-scrolling can be re-enabled at any time by means of Play Button.

Z-WAVE NETWORK

Z-Wave uses a mesh network topology where any non-battery powered device acts as a signal repeater, enabling reliable connections from one node to the other. Battery powered devices do not act as repeaters as this would result in high levels of battery drain.



The frequencies used for Z-Wave are below that of the normal Wi-Fi band and this enables better penetration of walls and other items found in all homes, but in addition to this, the mesh network means that the transferred data can intelligently routed by the network to get around obstacles and thereby obtaining robust whole-home coverage.
Z-Wave typically has a range of about 50 meters in open air. However walls and other items in the home will considerably reduce this and therefore it is recommended that the maximum device spacing Z-Wave network is around 10 meters. Anything closer will provide better communications.
In order to have a hierarchy within a wireless network, various types of Z-Wave device are specified:

Controller: As the name implies, these devices are those that control other Z-Wave devices. Controller devices are factory programmed with a Home ID which cannot be changed by the user.

Slave: Slave devices are those that are controlled by controllers. Slave devices do not have a pre-programmed Home ID, but instead they take the Home ID assigned to them by the Z-Wave network controller.

Routing slave: This form of Z-Wave slave is one that knows its neighbors and has partial knowledge of routing table. It can reply to the node from which it has received the message. It can also send unsolicited messages to a number of predefined nodes to which it has routes.

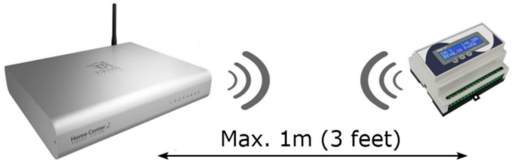
Z-Wave networks can be linked together for even larger deployments. Each Z-Wave network can support up to 232 Z-Wave devices allowing the flexibility to provide sufficient devices for a complete automated home.

Z-WAVE NETWORK INCLUSION / EXCLUSION

On factory default the device does not belong to any Z-Wave network. The device needs to be added to an existing wireless network to communicate with the devices of this network. This process is called Inclusion.
Devices can also be removed from the network. This process is called Exclusion. Both processes are initiated by the primary controller of the Z-Wave network. This controller is turned into exclusion respective inclusion mode. Inclusion and Exclusion is then performed doing a special manual action right on the device.

INCLUSION

- Bring the module at max. 1 meter distance from the main controller.

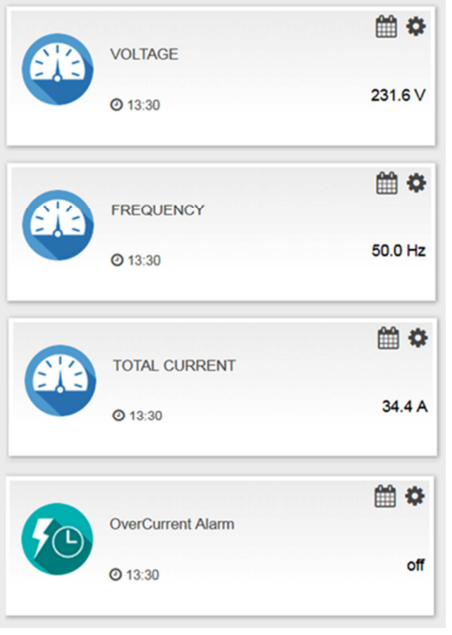


- Connect the module to power supply.
- Set the Z-Wave controller into INCLUSION mode (adding new device to the Network).
- Triple click the Z-Button on the front panel.

⚠ Be patient until the inclusion process is completely finished. Multichannel devices usually need a bit more time for complete configuration.

After the inclusion, it will appear a separate instance (Node) for each channel Power as well as nodes for the network Voltage, Frequency and all Total parameters (Total Current, Total Power, Total Power Factor and Total Energy Usage). Separate binary Sensor Node will also appear for Over Current Alarm Notification.

You can hide unwanted Nodes in your UI and rename those which you need. Depending on the model of your main controller, you can also edit Node icons in order to suit your current project needs.



EXCLUSION

- Bring the module at max. 1 meter distance from the main controller.
- Connect the module to power supply.
- Set the Z-Wave controller into EXCLUSION mode (remove device from Z-Wave Network).
- Triple click the Z-Button on the front panel.

⚠ After the EXCLUSION procedure, all user configuration parameters of the module will be automatically set to their default values.

CONFIGURATION PARAMETERS

This Z-Wave product is designed to work out of the box after inclusion. However certain configuration can customize its functionality and fit it to your specific project needs.

Configuration parameters are accessible from the main controller User Interface (UI). You should find detailed instruction on configuration procedure into your main controller User Manual.

When proceeding with parameter modification, please refer to the parameter Range and Data Type, as they are specified below:

Reporting time

Minimum time interval between power meter data reports.

- Parameter No: **11**
- Data type: 1 byte
- Default value: 30 sec
- Range: 1 – 255 sec

⚠ Decreasing the reporting time to less than 5 seconds could flood your Z-Wave network, strongly impacting the network communication.

Over Current Limit

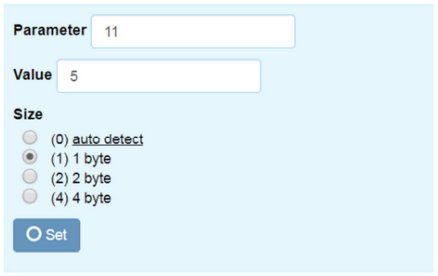
- Parameter No: **64**
- Data type: 2 bytes
- Default value: 60
- Range: 0 – 200 Amp

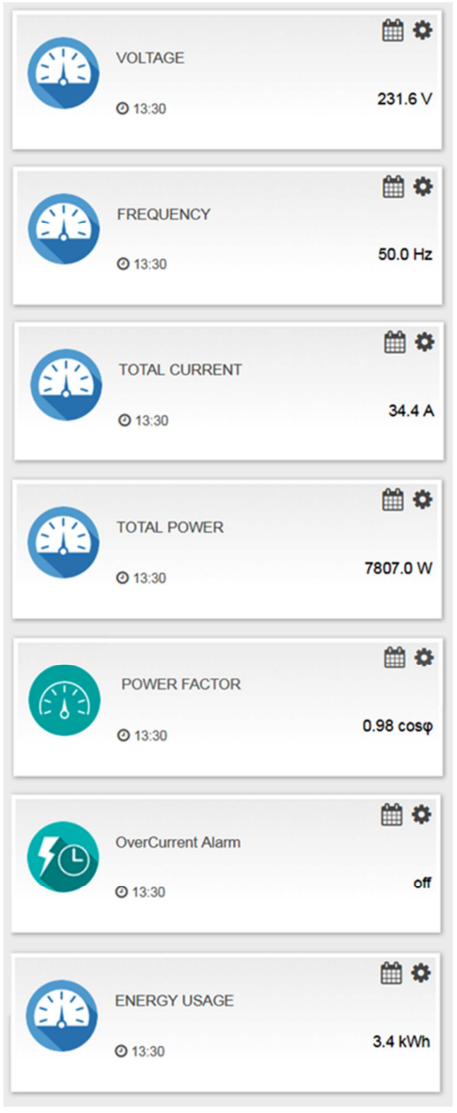
⚠ The Overcurrent Alarm will trigger in case the Total Current (sum of all channel currents) exceed the configured Over Current Limit.

Overcurrent status is associated to a Binary Sensor Node and it's reported to Z-Wave controller without delay (not at Reporting Time Interval, configured by parameter 11).

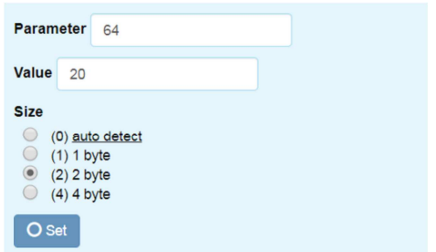
Different kind of additional User Notifications can be also arranged depending on the model of your main controller (E-mail, SMS, etc.)

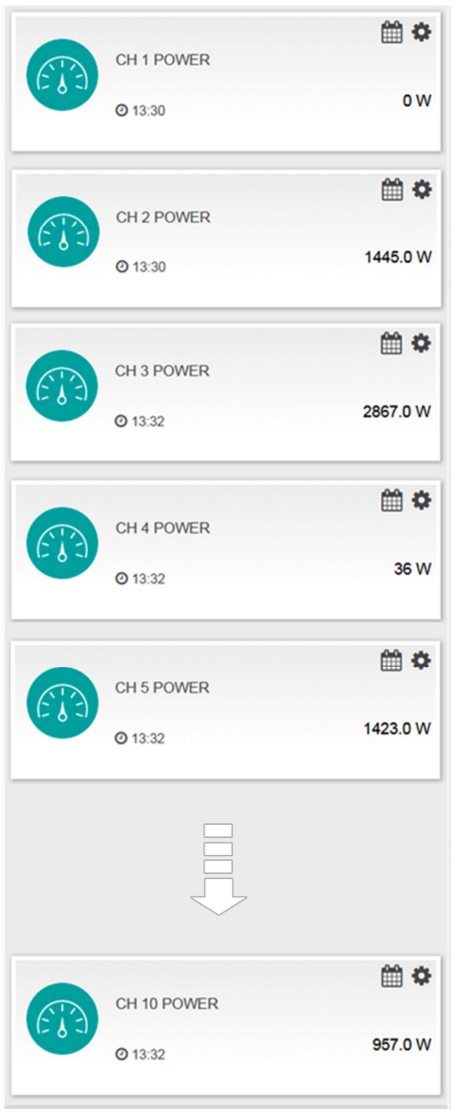
Sample configuration screens and module views in Z-Way UI. Configuration of Z-Wave reporting time:



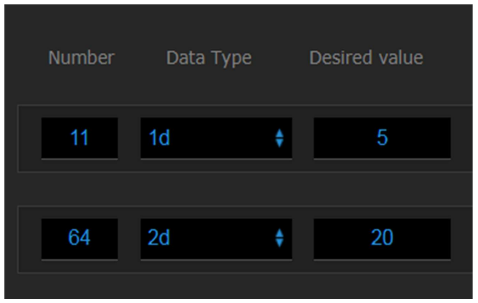


Configuring Over Current Alarm Limit (in Amps, default value 60):





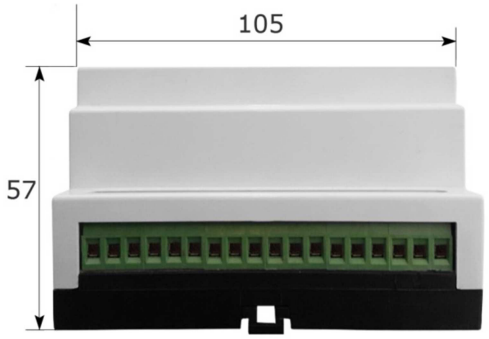
Sample configuration screens and module views in Fibaro Home Center UI:



Configuring of polling time interval :

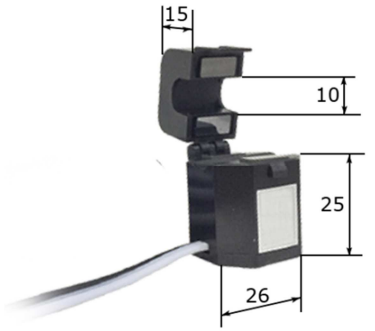
Sample views of PRM-10 channels in Fibaro Home Center Energy Panels - Current Energy, Historical Data, Energy Use Wheel Chart and Top 5 Energy consuming channels:

ENCLOSURE DIMENSIONS (mm)



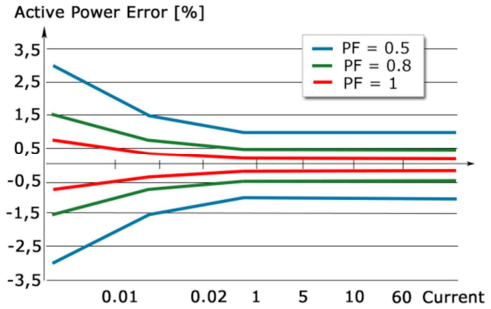
DIN RAIL MOUNTING

CLAMP DIMENSIONS (mm)



ACCURACY

Power network parameters are measured out by the most advanced True RMS measuring technology assuring maximum accuracy and precision (±1% for loads greater than 4.8W).



Power measurement takes into account all actual fluctuations of the Mains voltage.

Energy Usage data is saved into nonvolatile memory of the module at any 1 kWh and will be automatically restored in case of power breaks. After excluding the module from the Z-Wave network, Energy Usage record will reset to 0.

COMMAND CLASSES

- Basic • Sensor Binary • Sensor Multilevel
- Meter • Association Group Information
- Device Reset Locally • Z-Wave Plus Info
- Multi Channel • Configuration • Alarm
- Manufacturer Specific • Power Level
- Firmware Update • Association • Version
- Multi Channel Association

WARRANTY

We warrant that the device is free from defects in parts and workmanship under normal use for 24 months from date of purchase. The original purchase invoice or sales receipt is the proof of date of purchase by the Customer.

If the Device has manufacturing defects or in any case of alleged lack of conformity, the Customer shall send a claim. Once we receive the Warranty Claim, we must inform the Customer if the Warranty is applicable and the address where the Device shall be sent in order to verify the defects (if any). The Device shall be sent by the Customer at its own costs and expenses, and with the original packaging, the supplied accessories and documents proving date of purchase. We must then inform the Customer about the defects and on its repair or replacement (where applicable). The Warranty Period of the replaced or repaired Device shall not be extended. We will ship the repaired or a replaced Device to Customer freight prepaid. We will not be liable for damages to property caused by faulty device. We will not be liable for indirect, incidental, special, consequential or punitive damages, or for any damage, including, inter alia, loss of profits, savings, data, loss of benefits, claims by third parties and any property damage or personal injuries arising from or related to the use of the Device. If the Device cannot be replaced with another of the same type (e.g. the Device is no longer in production or no longer available for selling in the Customer's country), it may be replaced with a different one having similar technical specifications to the faulty one. Such replacement shall be considered as a total fulfillment of our obligations.

Warranty exclusion:

- Defects caused by normal wear of parts or especially subject to wear, such as parts that require periodic replacement during the normal operation of the system;

- Splits, cracks, scratches, dents, scratched or discolored surfaces and parts, breakage of plastic parts and in general of any other cosmetic damage;

- Damages resulting from use of the system other than that provided, including but not limited to the failure to follow instructions contained in the operating manual;

- Damages caused by accident, abuse, misuse, dirt, viruses, liquid contact, fire, earthquake, improper or inadequate maintenance or calibration, negligence or other external causes;

- Environmental damage and / or defects caused by smoke, dust, dirt, soot, or other external influences;

- Damages caused by modifications and alterations in the functionality or features;

- Damages resulting from transportation or inadequate packaging when returning the product to an authorize service center;

- Damages resulting from surges in the power and/or telecommunication network, improper connection to the grid in a manner inconsistent with the operating manual, or from connecting other devices not recommended by the maker;

- Damages caused by operating or storing the device in extremely adverse conditions, i.e. high humidity, dust, too low (freezing) or too high ambient temperature;

- Products whose warranty sticker has been removed, damaged or rendered illegible;

- Expiration of the Warranty Period.

If a defect is not covered by the Warranty, we will inform the Customer about the extra expenses for the repair or replacement.

TECHNICAL SPECIFICATIONS

- 10 Power meter channels
- True RMS Metering
- 10 x 60A self-locking current clamps (included)
- Power supply: 110-240VAC, 50/60Hz
- Power consumption: 0.02A
- Z-Wave reported data:
  - Network Voltage and Frequency;
  - Channel Active Power (1 to 10);
  - Total Current;
  - Total Active Power;
  - Total Power Factor;
  - Total Energy Usage;
  - Notification on increasing the Total current over User configurable limit (parameter 64).
- Display indicated data:
  - Network Voltage and Frequency;
  - Channel Instant Current (1 to 10);
  - Channel Active Power (1 to 10);
  - Channel Power Factor (1 to 10);
  - Total Current;
  - Total Active Power;
  - Total Power Factor;
  - Total Energy Usage.
- Display Auto-scrolling function with option to monitor each channel individually, or scrolling between data, measured by all channels
- ABS enclosure for standard DIN Rail mounting
- Dimensions: 105 x 86 x 57mm
- Durable tactile buttons on the front panel
- Conforms to EU regulations: EN55022 EN610006
- Radio protocol: Z-Wave Plus, GEN 5, 868.42MHz
- Antenna range: up to 50m outdoor / 30m indoor

DISPOSAL GUIDELINES

The product does not contain hazardous chemicals.

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities. Contact your local government for information regarding the collection systems available.