RS-10PM2
USER MANUAL

Haseman **RS-10PM2** is a 10-channel, DIN Rail, Relay module with true RMS energy meter, produced by using Z-Wave Plus, the latest version of Z-Wave.

RS-10PM2 is optically isolated and protected against voltage surges, caused by switching of inductive and capacitive loads as power contactors, motors, EM valves and switching power supplies.

Zero-cross switching technology ensures high reliability and long relay life.

WHAT IS Z-WAVE?

Z-Wave is an international standard protocol for wireless communication in smart homes and building systems. It enables smart home products to talk to each other and creates the backbone of your smart home. Z-Wave based system allows you to use your smartphone or tablet to create one-touch scenes that help with your daily activities: 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 compatible, independently of the manufacturer which gives the system an 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.
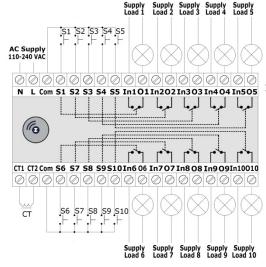
Even when the device is turned off, voltage may be present at its terminals.

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

CONNECTION DIAGRAMS

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

Only the provided current clamp can be connected to Input terminals **CT1** and **CT2**.
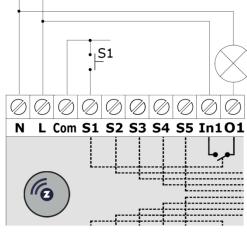
Each relay channel has its own Input (**In**) and Output (**O**), which allows controlling of devices, supplied by different voltages (12, 24, 48VDC / VAC, 110-240 VAC, etc.)
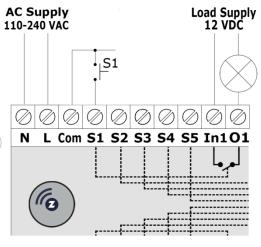
INSTALLATION

▸ Mount the module on standard DIN Rail.

▸ Connect the controlled lines. Depending on the load supply voltage, use one of the following connection diagrams:
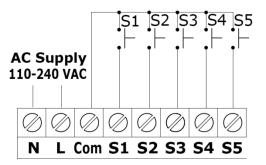
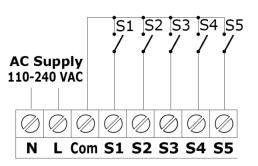**For 230 VAC Loads:**

For low voltage AC/DC Loads:

During operation, each channel status is indicated by panel indication LED.

▸ Connect the local control lines S1 to S10 (if local control is used). Depending on the BUTTON TYPE Parameter (separate for each Channel), Push Buttons or Toggle Switches can be connected:
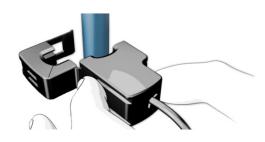

Only Voltage Free contacts must be connected between terminal **Com** and terminals **S1** to **S10**.
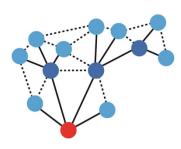
▸ Connect the Current clamp to inputs CT1-CT2 and fix it on the monitored power line.

▸ Connect the supply to Neutral and Line terminals and wait for 30 second until the module initialization process is completed.

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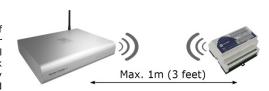
Z-Wave networks can be linked together for even larger deployments. Each Z-Wave network can support up to 232 Z-Wave devices allowing the flexibility to provide sufficient devices for a complete automated home.

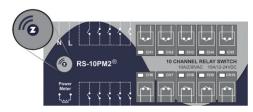## Z-WAVE NETWORK INCLUSION / EXCLUSION

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.

Max. 1m (3 feet)

‣ 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 relay channel as well as additional nodes for the network Voltage, and Frequency, Instant Current, Active Power, Power Factor and Energy Usage. You can hide unwanted Nodes 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, 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: **75**
- Data type: 1 byte
- Default value: 30 sec
- Range: 30 - 254 sec (255 - report disabled)

⚠ Decreasing the reporting time could flood your Z-Wave network, strongly impacting the network communication.

Power Up Memory

When Power Up memory is active, the module will save actual status of all outputs in case of power break. After restoring the supply, all outputs will be switched to their previously saved statuses.

- Parameter No: **64**
- Data type: 2 bytes
- Default value: 0 (inactive)
- Available Settings:

  1 – Active

  0 (or any other number) - Inactive

Button Type (separate for each channel)

- Parameters No: **65** to **74** (for Channel 1 to 10)
- Data type: 2 bytes
- Default value: 1
- Available Settings:

  1 – PUSH BUTTON (Each push is changing the output status from ON to OFF, or vice versa).

  2 – TOGGLE SWITCH (Each changing the switch position will change the Output between ON and OFF statuses).

  3 – FOLLOWER SWITCH (The output is following the status of the switch: open switch – inactive output, closed switch – active output).

  ANY OTHER number will disable the local control of this channel (remote control over the Z-Wave network will remain active).

⚠️ ASSOCIATIONS

Associations provide direct control of other devices within the Z-Wave network, using the switches, connected to the module inputs.
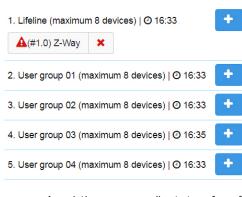
ASSOCIATION GROUPS:

Association Group 1 (**Lifeline)**
Reports state of the device.

The main Z-Wave+ network controller is added to this group by default. It is not recommended to modify this group.

Association Groups 2 to 11 (User Groups 1 to 10) are assigned to switches S1 to S10.
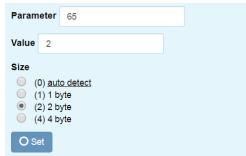
The module sends BASIC command class frame (On/Off), <u>following the state of the corresponding Output 1 to Output 10</u> (behavior depends on the value of the configuration parameter for the Button Input type (parameter 65 to 73, individual for each channel).

1. Lifeline (maximum 8 devices) | ⏱ 16:33   **+**
   ⚠️ (#1.0) Z-Way   ✖

2. User group 01 (maximum 8 devices) | ⏱ 16:33   **+**

3. User group 02 (maximum 8 devices) | ⏱ 16:33   **+**

4. User group 03 (maximum 8 devices) | ⏱ 16:35   **+**

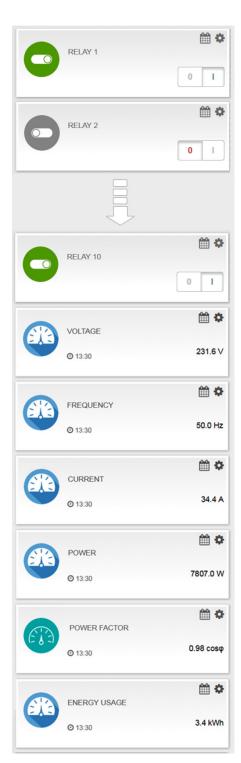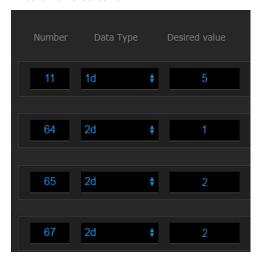5. User group 04 (maximum 8 devices) | ⏱ 16:33   **+**

⚠️ Association ensures direct transfer of control commands between devices, i.e. it is performed without participation of the main controller and requires associated device to be in a direct range.

Sample configuration screens and module views in Z-Way UI.

Parameter 65

Value 2

Size
- ○ (0) <u>auto detect</u>
- ○ (1) 1 byte
- ◉ (2) 2 byte
- ○ (4) 4 byte

○ Set

RELAY 1 📅 ⚙ | 0 | I |

RELAY 2 📅 ⚙ | 0 | I |

RELAY 10 📅 ⚙ | 0 | I |

VOLTAGE 📅 ⚙ ⏱ 13:30 — 231.6 V

FREQUENCY 📅 ⚙ ⏱ 13:30 — 50.0 Hz

CURRENT 📅 ⚙ ⏱ 13:30 — 34.4 A

POWER 📅 ⚙ ⏱ 13:30 — 7807.0 W

POWER FACTOR 📅 ⚙ ⏱ 13:30 — 0.98 cosφ

ENERGY USAGE 📅 ⚙ ⏱ 13:30 — 3.4 kWh

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

Number	Data Type	Desired value
11	1d	5
64	2d	1
65	2d	2
67	2d	2

Configuring of polling time interval :

Polling time interval: Device uses global po

Poll this device
- Device excluded from polling
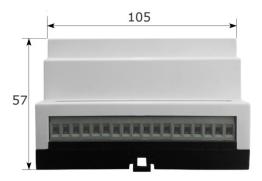- Device uses global polling queue
- Device will be polled at periodic intervals

Sample views of RS10-PM power data in Fibaro Home Center Energy Panels – (Current Energy and Historical Data):

Current Energy Use : 7.81 [KW]   8 March 2019

Since the beginning of:
Hour 1.86 kWh
Day 36.53 kWh
Week 138.59 kWh
Month 138.59 kWh

9.67 kWh

RELAY 1 — OFF / ON / OFF
RELAY 2 — ON / ON / OFF
RELAY 3 — OFF / ON / OFF
RELAY 4 — ON / ON / OFF
RELAY 5 — ON / ON / OFF
RELAY 6 — OFF / ON / OFF
RELAY 7 — OFF / ON / OFF
RELAY 8 — OFF / ON / OFF
RELAY 9 — OFF / ON / OFF
RELAY 10 — OFF / ON / OFF

VOLTAGE — 228.99V
FREQUENCY — 50.01Hz
CURRENT — 4.16A
ACTIVE POWER — 0.00W 943.00W
POWER FACTOR — 0.99cosφ
ENERGY USAGE — 0.00kWh 0.38kWh

ENCLOSURE DIMENSIONS (mm)

105

57

86

10
30

DIN RAIL MOUNTING

RS-10PM2®

10 CHANNEL RELAY SWITCH
10A/230VAC   15A/12-24VDC

Power
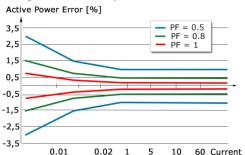Meter

CLAMP DIMENSIONS (mm)

15
10
25
26

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).

Active Power Error [%]

— PF = 0.5
— PF = 0.8
— PF = 1

3,5
2,5
1,5
0,5
-0,5
-1,5
-2,5
-3,5

0.01   0.02   1   5   10   60 Current

⚠ 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 • Switch Binary • Sensor Multilevel
• Meter • Association Group Information
• Device Reset Locally • Z-Wave Plus Info
• Multi Channel • Configuration
• 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 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 Independent Relay Outputs

• Optically-isolated, surge protected

• Zero Cross relay switching

• Capable to control AC and/or DC loads

• Wide Power Supply range: 110-240VAC, 50/60Hz

• Max. AC output: 10A / 110-230V (resistive load)

• Max. DC output: 12A / 12-30VDC

• Durable relays with long life contact system

• 16A rated PCB power tracks and terminals

• Front panel LED indication of active outputs

• User configurable Power Up Memory function

• User configurable parameters for button type – push button, toggle switch or follower switch (individual setting for each channel)

• True RMS Power meter with 60A current clamp (included), reporting all power data to the Z-Wave controller (True RMS Voltage, Frequency, Current, Instant Active Power, Power Factor and Energy Usage)

• 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.