HASEMAN ELECTRIC

R4D4
USER MANUAL

Haseman R4D4 combines 4 relay outputs and 4 powerful universal dimmers (user selectable Leading / Trailing Edge), produced by using of 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 fully 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.

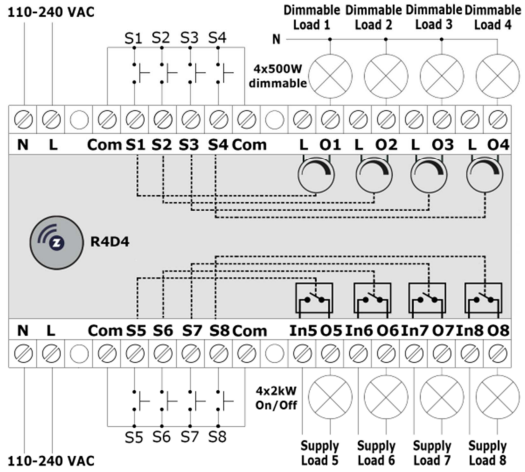
The device is designed to operate in electrical home installation. Faulty connection or use may result in fire or electric shock.

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 DIAGRAMS

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

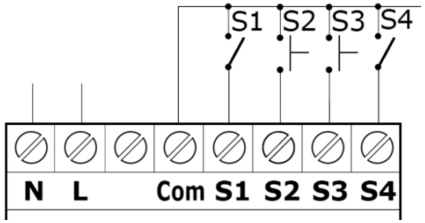


Each relay channel has its own Input (**In**) and Output (**O**), which allows controlling of devices, supplied by different voltages (12, 24, 48VDC / VAC, 110-240 VAC, etc.)

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

INSTALLATION

- Mount the module on standard DIN Rail.
- Connect the local control lines S1 to S8 (if local control is used). Depending on the BUTTON TYPE Parameter (separate for each Channel), Push Buttons or Toggle Switches can be connected:

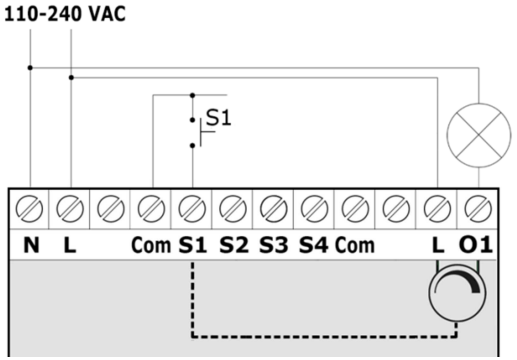


Only Voltage Free contacts must be connected between terminal **Com** and terminals **S1** to **S8**.

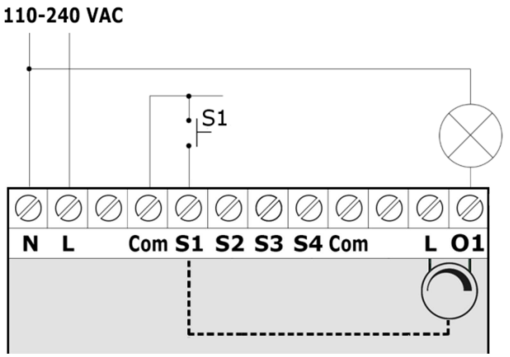
- Connect the controlled lines. Depending on the load type (Dimmable or On-Off), load power and supply voltage, use one of the following connection diagrams.

DIMMER OUTPUTS (CH. 1 – CH. 4):

For dimmable lights up to 500W per channel:

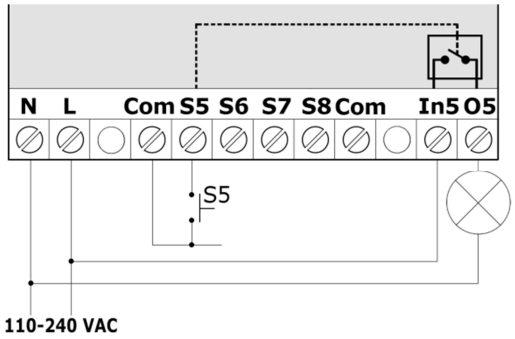


For dimmable lights up to 300W per channel:

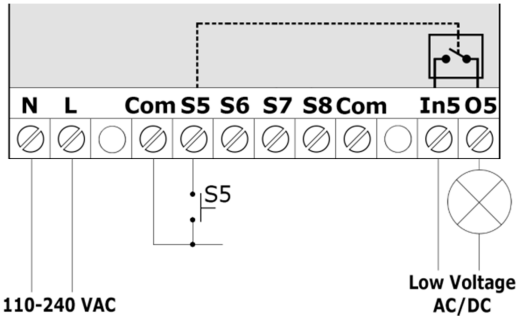


RELAY OUTPUTS (CH. 5 – CH. 8):

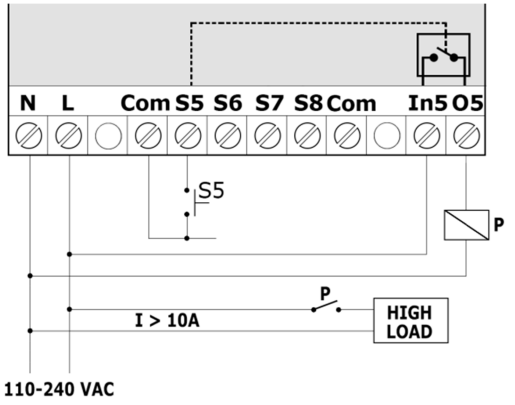
For 230V On/Off controllable loads:



For low voltage AC/DC loads:



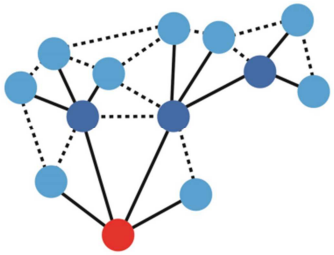
For On/Off controllable loads with current consumption more than 10 Amps:



When necessary, the dimmer channels (CH.1 to 4) can also be used to control not dimmable loads in On/Off Mode, by configuring the channel as a TRUE SINE (see configuration parameters below).

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.

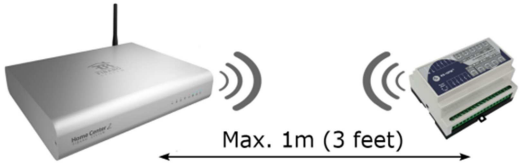
Z-Wave networks can be linked together for even larger deployments. Each Z-Wave network can support up to 232 Z-Wave devices allowing the flexibility to provide sufficient devices for a complete automated home.

Z-WAVE NETWORK INCLUSION / EXCLUSION

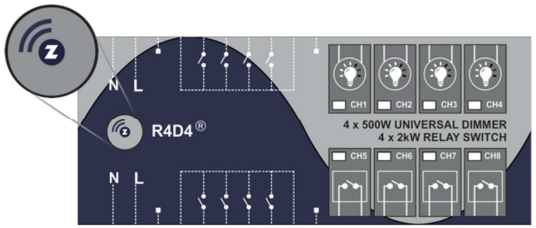
On factory default the device does not belong to any Z-Wave network. The device needs to be added to an existing wireless network to communicate with the devices of this network. This process is called Inclusion. Devices can also be removed from the network. This process is called Exclusion. Both processes 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.

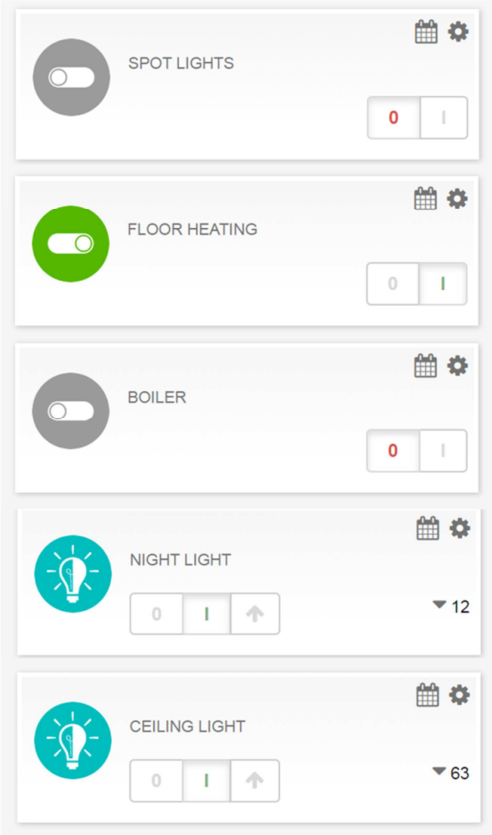


Be patient until the inclusion process is completely finished. Multichannel devices usually need a bit more time for complete configuration.

R4D4 also supports Auto Inclusion (by switching On its power supply, while the Z-Wave Controller is in Inclusion Mode).

After the inclusion, it will appear a separate instance (Node) for each relay and dimmer channel. All module parameters are set to their default values (see the configuration parameters below).

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.
- Triple click the Z-Button on the front panel.

After the EXCLUSION, all configuration parameters of the module will be reset 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

POWER UP MEMORY (separate for each channel)

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** to **71** (for Channel 1 to 8)
- 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: **72** to **79** (for Channel 1 to 8)
- Data type: 2 bytes
- Default value: **1**
- Available Settings:

1 – PUSH BUTTON
On dimmer channels:
- Short press is switching On/Off.
- Long press is Dimming / Brightening.
- Double press is directly switching to MAX LEVEL

On Relay channels - each press is changing the output status from ON to OFF, or vice versa).

2 – TOGGLE SWITCH. Each changing of 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.

4 – PULSE. This value is available for the relay channels only. When the button is pressed (or toggle switch position is changed) the output is switching On for 3 sec, and then, it's switching Off.

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

DIMMING MODE (separate for each channel)

- Parameters No: **80** to **83** (for Channel 1 to 4)
- Data type: 2 bytes
- Default value: **0** (Trailing Edge)
- Available Settings:

0 – TRAILING EDGE

1 – LEADING EDGE

Leading Edge mode is suitable for resistive and inductive loads (conventional incandescent and halogen light bulbs, ferromagnetic transformers).

Trailing Edge control is suitable for capacitive loads (dimmable FL Tube lights, CFL with electronic ballast, electronic transformers, dimmable LED light (check the maker recommendations).

SOFT START (separate for each channel)

- Parameters No: **84** to **87** (for Channel 1 to 4)
- Data type: 2 bytes
- Default value: **1**
- Available Settings:

0 – DISABLED

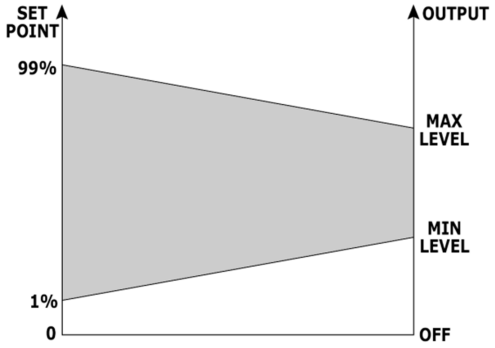
1 - ENABLED

MIN LEVEL (separate for each channel)

- Parameters No: **88** to **91** (for Channel 1 to 4)
- Data type: 2 bytes
- Default value: **1**
- Available Settings: **1** to **98**

MAX LEVEL (separate for each channel)

- Parameters No: **92** to **95** (for Channel 1 to 4)
- Data type: 2 bytes
- Default value: **99**
- Available Settings: **2** to **99**, or **555**

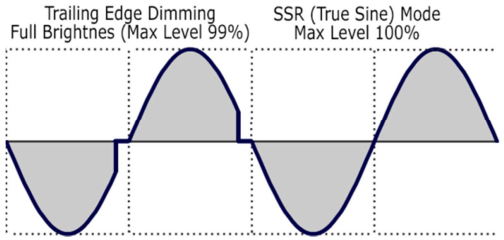


MAX Level must be > MIN Level. In case a wrong value is configured by the user, the parameter will be reset to its default value.

TRUE SINE MODE (555)

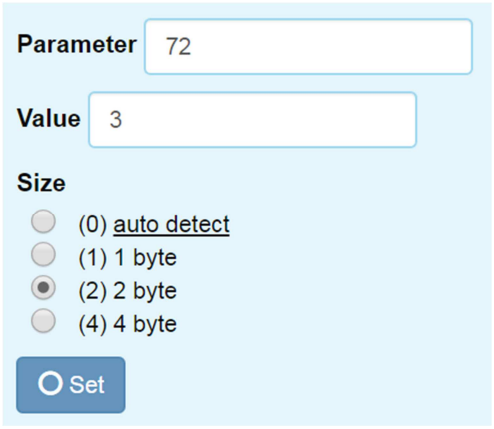
If the MAX LEVEL (parameter 92 to 95) of a dimmer (CH 1 to 4) is set to value **555**, such a channel will operate in ON/OFF Mode with a real 100% sine on the output, when the channel is ON (TRUE SINE), instead of 99%.

This option allows the usage of a dimmer channel as a SSR (solid state relay) in order to control not dimmable loads in On/Off mode.



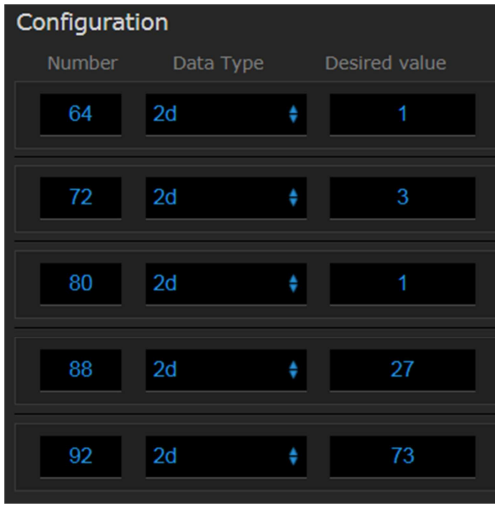
The major advantages of this mode are the arc prevention switching and suppression of the high inrush currents. The option can be used for frequently switching loads with a total consumption, less than the dimmer maximum rated power.

Sample configuration screen in Z-Way UI.



CONFIGURATION PARAMETER No	DIMMER CHANNELS				RELAY CHANNELS			
	CH. 1	CH. 2	CH. 3	CH. 4	CH. 5	CH. 6	CH. 7	CH. 8
Power Up Memory	64	65	66	67	68	69	70	71
Button Type	72	73	74	75	76	77	78	79
Dimming Mode	80	81	82	83	*	*	*	*
Soft Start	84	85	86	87	*	*	*	*
MIN Level	88	89	90	91	*	*	*	*
MAX Level	92	93	94	95	*	*	*	*

Sample configuration screen in Fibaro HC UI:



ASSOCIATIONS

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

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.

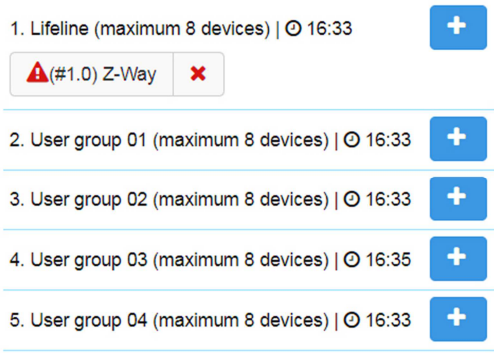
ASSOCIATION GROUPS:

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 9 (User Groups 1 to 8) are assigned to switches S1 to S8 respectively.

The module sends BASIC command class frame (On/Off/Last Dimming Value), following the state of the corresponding Output 1 to Output 8 (behavior depends on the value of the configuration parameter for the Button Input type (parameter 72 to 79).

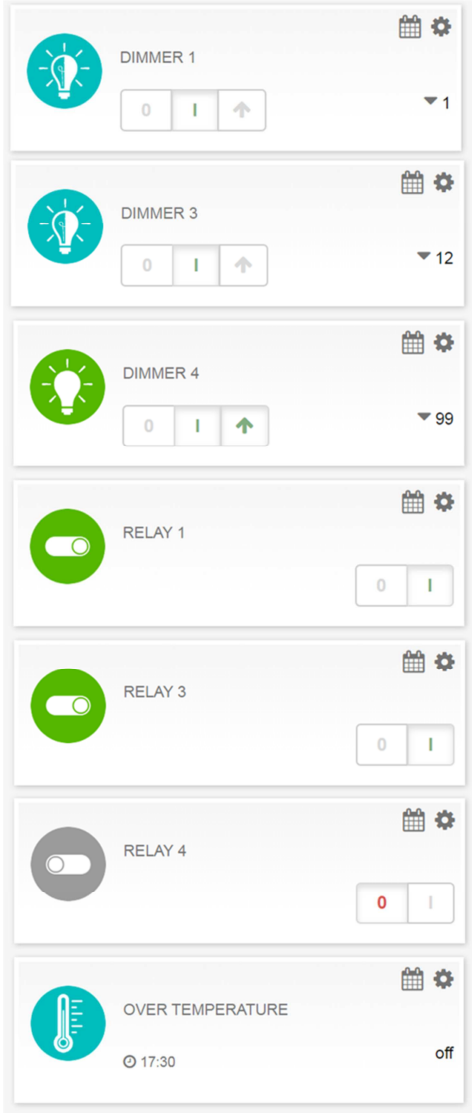


OVER TEMPERATURE PROTECTION

If the max load of the dimmer channels exceeds the module rated power, or the ambient temperature in the panel is too high, the module over temperature protection will automatically disable the dimmers operation at 95°C temperature of the heatsink. Over temperature will be reported to the Z-Wave controller. Dimmer operation will be enabled only when the heatsink temperature decreases to less than 85°C (the outputs will remain Off until On command is sent by the user).

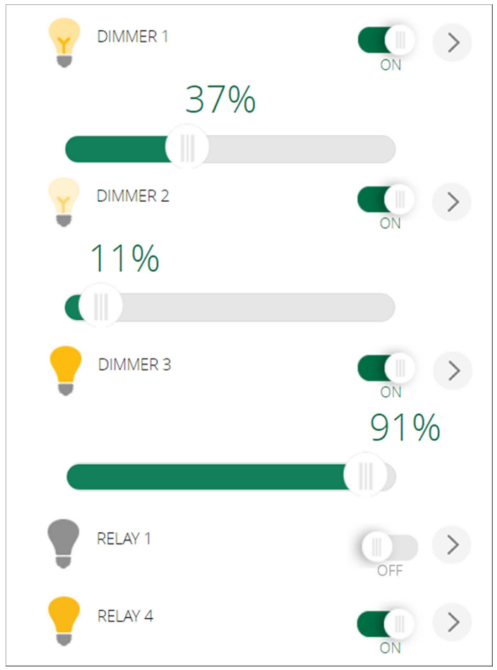
Active over temperature protection will be also indicated by a flashing LED indicators of the dimmer channels (running light).

Sample view in Z-Way UI:

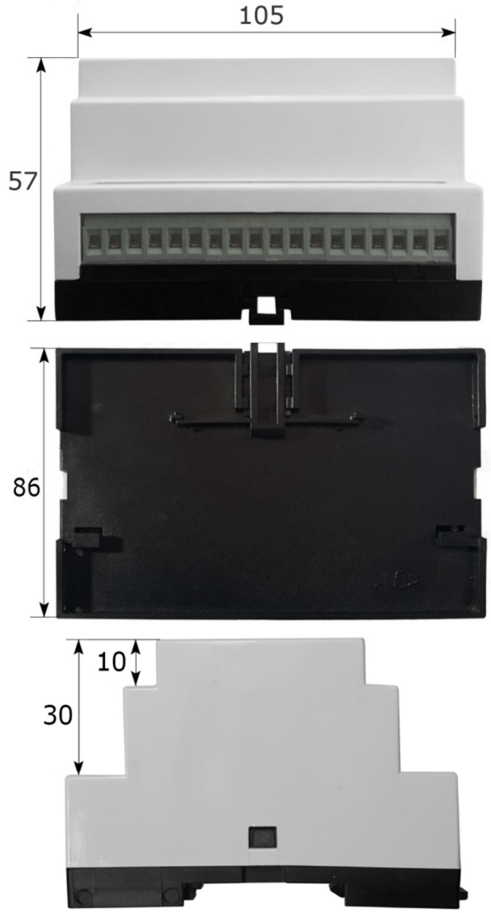


Sample view in Fibaro Home Center:

Sample view in Vera controller:



ENCLOSURE DIMENSIONS (mm)



DIN RAIL MOUNTING

COMMAND CLASSES

• Basic • SwitchBinary • SwitchMultilevel • Version
• SensorBinary • ZWavePlusInfo • Association
• AssociationGroupInformation • MultiChannel
• Configuration • PowerLevel • FirmwareUpdate
• ManufacturerSpecific • MultiChannelAssociation

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, 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 network or improper connection to the grid in a manner inconsistent with the operating manual.
- Damages caused by operating or storing the device in extremely adverse conditions, such as 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

- 4 dimmable outputs with user configurable dimming mode – Leading or Trailing Edge (individual setting for each dimmer channel).
- 4 Relay Outputs, capable to control AC or DC loads.
- High quality, low R_{DS} MOSFET power transistors.
- Durable relays with long life contact system.
- Zero Cross switching provides long relay life and suppressing of any high inrush currents.
- Over temperature protection.
- User configurable Power Up Memory function.
- User configurable button type - push button, toggle switch or follower switch (individual setting for each channel).
- User configurable Soft Start (individual for each dimmer channel).
- User configurable MIN and MAX dimming levels (individual for each dimmer channel).
- Power Supply range: 110-240VAC, 50Hz.
- Maximum power ratings:
  Dimmer channels (CH. 1 to 4):
  - 500W/channel (at 25°C ambient temperature).
  - 400W/channel (at 35°C ambient temperature).
  Relay channels (CH. 5 to 8):
  - Max. AC output: 10A / 110-230V (resistive load).
  - Max. DC output: 12A / 12-30VDC.
- 16A rated PCB power tracks and terminals.
- Front panel LED indication of active outputs.
- ABS enclosure for standard DIN Rail mounting.
- Durable tactile button on the front panel.
- Dimensions: 105x86x57mm.
- 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.