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DomZWave

ZME_RAZ_EU

RaZberry - A Raspberry PI based Z-Wave Controller

Firmware Version : 1.0

Quick Start

C This device is a static Z-Wave Controller. All network management functions are locate on the UI in the tab "network management". Include other devices by hitting "(Re)-Include Devices". Exclude devices using the button "Exclude devices".

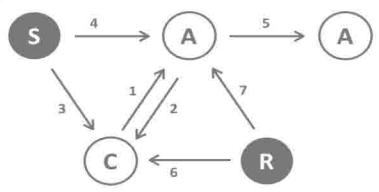
Please refer to the chapters below for detailed information about all aspects of the products usage.

What is Z-Wave?

This device is equipped with wireless communication complying to the Z-Wave standard. Z-Wave is the **international standard for wireless communication** in smart homes and buildings. It is using the **frequency of 868.42 MHz** to realize a very stable and secure communication. Each message is reconfirmed (**two-way communication**) and every mains powered node can act as a repeater for other nodes (**meshed network**) in case the receiver is not in direct wireless range of the transmitter.

Z-Wave differentiates between Controllers and Slaves. Slaves are either sensors **(S)** transmitting metered or measured data or actuators **(A)** capable to execute an action. Controllers are either static mains powered controllers **(C)** also referred to as gateways or mobile battery operated remote controls **(R)**. This results in a number of possible communication patterns within a Z-Wave network that are partly or completely supported by a specific device.

1. Controllers control actuators
2. Actuators report change of status back to controller
3. Sensors report change of status of measured values to controller
4. Sensors directly control actuators
5. Actuators control other actuators
6. Remote controls send signals to static controllers to trigger scenes or other actions
7. Remote controls control other actuators.



There are two different role a controller can have. There is always one single primary controller that is managing the network and including/excluding devices. The controller may have other functions - like control buttons - as well. All other controllers don't manage the network itself but can control other devices. They are called secondary controllers. The image also shows that its not possible to operate a sensor just from a remote control. Sensors only communicate with static controllers.

Product description

The RaZberry turns every Raspberry PI into a Z-Wave Home Automation Gateway. The bundle of hardware and precompiled Z-Wave wireless network management software waits to be completed by your own user interface running in a web browser or a mobile phone. The Z-Wave software offers an easy to understand and easy to use interface applying the well-known Java Script interface technology JSON on a built in web server. Writing your own home automation app was never easier and never more affordable. The RaZberry consists of four parts:

- Z-Wave transceiver pluggable to the GPIO interface of the Raspberry PI
- Optimized transceiver firmware running on the Z-Wave transceiver chip
- Certified Z-Wave communication stack Z-Way - running on the Raspberry PI and offering a web based interface
- Z-Way AJAX based demo User Interface for easy access to all Z-Wave functions of Z-Way and as a reference for own User Interface enhancements.

Before Device is installed

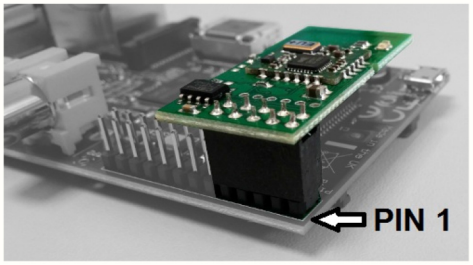
Please read carefully the enclosed user manual before installation of the radio-actuator, in order to ensure an error-free functioning.

ATTENTION: only authorized technicians under consideration of the country-specific installation guidelines/norms may do works with 230 Volt mains power. Prior to the assembly of the product, the voltage network has to be switched off and ensured against re-switching.

The product is permitted only for proper use as specified in the user manual. Any kind of guarantee claim has to be forfeited if changes, modifications or painting are undertaken. The product must be checked for damages immediately after unpacking. In the case of damages, the product must not be operated in any case. If a danger-free operation of the equipment cannot be assured, the voltage supply has to be interrupted immediately and the

equipment has to be protected from unintended operation.

Installation Guidelines



- Plug the RaZberry on your Raspberry as shown in figure above. Make sure the Raspberry Pi is not powered at this moment.
- There are two ways to get the RaZberry up and running:

  - Create a brand-new SD Card if you dont have a running Raspberry Pi
  - Install the RaZberry software Z-Way from the command line

Create a new SD Card

1. Create a SD card using the image from the link http://razberry.z-wave.me/z-way-server/razberry.img.zip
2. Go to find.zwave.me, find the IP address of your Pi, click on it
3. Setup your password and remember your RaZberry ID for future remote access
4. Choose http://YOURPI_IP:8083 or use find.zwave.me for remote access to your Smart Home Interface.

Using existing Raspberry Pi Operating System

1. Power up your Raspberry and log into the OS.
2. Execute the following command line: **wget -q -O - http://razberry.z-wave.me/install | sudo bash**
3. Go to **http://IP_OF_RASPBERRY:8083** to get access to the demo UI.

Behavior within the Z-Wave network

I On factory default the device does not belong to any Z-Wave network. The device needs to join an existing wireless network to communicate with the devices of this network. This process is called **Inclusion**. Devices can also leave a network. This process is called **Exclusion**. Both processes are initiated by the primary controller of the Z-Wave network. This controller will be turned into exclusion respective inclusion mode. Please refer to your primary controllers manual on how to turn your controller into inclusion or exclusion mode. Only if the primary controller is in inclusion or exclusion mode, this device can join or leave the network. Leaving the network - i.e. being excluded - sets the device back to factory default.

If the device already belongs to a network, follow the exclusion process before including it in your network. Otherwise inclusion of this device will fail. If the controller being included was a primary controller, it has to be reset first.

To include the static controller as secondary controller hit the button "Re-include myself in other network".

Operating the device

The Demo UI exposes all functions of the RaZberry software and you can control your Z-Wave network from just this interface. However it’s quite easy to make your own Home gateway application and user interface based on RaZberry. You only need to know HTML, CSS and JavaScript. To do this the website razberry.zwave. me gives you full documentation of the Demo UI and the JSON Application Programmers Interface (API), Demo Code to better understand the API. You also find information about the idea behind RaZberry, Discussion board so seek, find and provide help by the community and of course always the latest and greatest from the RaZberry community.

Node Information Frame

NI The Node Information Frame is the business card of a Z-Wave device. It contains information about the device type and the technical capabilities. The inclusion and exclusion of the device is confirmed by sending out a Node Information Frame. Beside this it may be needed for certain network operations to send out a Node Information Frame.

Use the button "Send controllers NIF" in the network tab to send out a Node Information Frame.

Special Functions as Z-Wave Controller

As long as this device is not included into a Z-Wave network of a different controller it is able to manage its own Z-Wave network as primary controller. As a primary controller the device can include and exclude other devices in its own network, manage associations, and reorganize the network in case of problems. The following controller functions are supported:

Include other device in own network

CI Communication between two Z-Wave devices only works if both belong to the same wireless network. Joining a network is called inclusion and

is initiated by a controller. The controller needs to be turned into the inclusion mode. Once in this inclusion mode the other device needs to confirm the inclusion - typically by pressing a button.

Use the button "Include device" in the network tab to start including other devices.

If current primary controller in your network is in special SIS mode this and any other secondary controller can also include and exclude devices.

To become primary a contoller have to be resetted and then include a device.

Exclude device from network

The primary controller can exclude devices from the Z-Wave network. During exclusion the relationship between the device and the network of this controller is terminated. No communication between the device and other devices still in the network can happen after a successful exclusion. The controller needs to be turned into the exclusion mode. Once in this exclusion mode the other device needs to confirm the exclusion - typically by pressing a button.

Attention: Removing a device from the network means that it is turned back into factory default status. This process can also exclude devices from it's previous network.

Use the button "Exclude device" in the network tab to start including other devices. In case the device is not responding anymore it can be forced out of the network using the button "Remove failed Node."

Shift Primary Role to a different Controller

The device can hand over its primary role to another controller and become secondary controller.

Use the button "Change Controller" in the network tab to include a new controller and make it primary.

Set association between two device in Z-Wave network

CA The controller is able to set association between two other devices in the network. The controller is turned into an association mode both devices are announced by pressing a button. After both association partners are known the controller will perform all necessary steps to set the association.

The Device Configuration Tab offers a dialog to configure devices. Choose a device from left side menu. If the device offers association groups they are listed below the device information section. Just drag 'n drop the target devices into these association groups. Saving the configuration (button "Apply configuration to this device") activates the association. Double click on the device icon within the association group turns them into gras. The next saving will remove this device from the group.

Reset the Controller

Use the button "Reset Controller" in the network tab to reset to factory default.

Command Classes

Supported Command Classes

- Basic (version 1)
- Clock (version 1)
- Version (version 1)
- Multilevel Switch (version 1)
- Multi Channel (version 2)
- Time (version 2)
- Scene Activation (version 1)
- Multi Command Encapsulated (version 1)
- Manufacturer Specific (version 1)
- Simple AV Control (version 1)
- Node Naming and Location (version 1)

Technical Data

IP Rating	IP 20
Explorer Frame Support	No
SDK	
Device Type	Static controller
Generic Device Class	Static Controller

Specific Device Class	PC Controller
Routing	Yes
FLiRS	No
Firmware Version	1.0

Explanation of Z-Wave specific terms

- **Controller** — is a Z-Wave device with capabilities to manage the network. Controllers are typically Gateways, Remote Controls or battery operated wall controllers.
- **Slave** — is a Z-Wave device without capabilities to manage the network. Slaves can be sensors, actuators and even remote controls.
- **Primary Controller** — is the central organizer of the network. It must be a controller. There can be only one primary controller in a Z-Wave network.
- **Inclusion** — is the process of bringing new Z-Wave devices into a network.
- **Exclusion** — is the process of removing Z-Wave devices from the network.
- **Association** — is a control relationship between a controlling device and a controlled device.
- **Wakeup Notification** — is a special wireless message issued by a Z-Wave device to annonces that is is able to communicate.
- **Node Information Frame** — is a special wireless message issued by a Z_Wave device to announce its capabilities and functions.

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. If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.

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