



FIB_FGBS-001

Universal Binary Sensor

Firmware Version : 3.49



Quick Start

A This device is a Z-Wave Actor. Triple Click the 'B' Button on the device confirms the inclusion and exclusion.

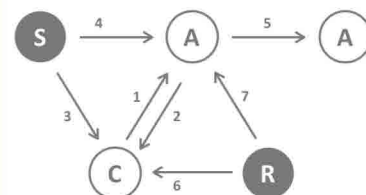
Please refer to the chapters below for detailed information about all aspects of the products usage.

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

This universal Z-Wave sensor is designed to improve electronic devices with on/off switches or analog outputs by connecting them to a wireless Z-Wave network. The device can service **two binary inputs** and up to **4 DS18B20 temperature probes**. The device can also **control up to two external digital** inputs (up to 150 mA). The sensor is designed to be included into the housing of another device and to be powered by this device with an input power between 9 and 30 V DC.

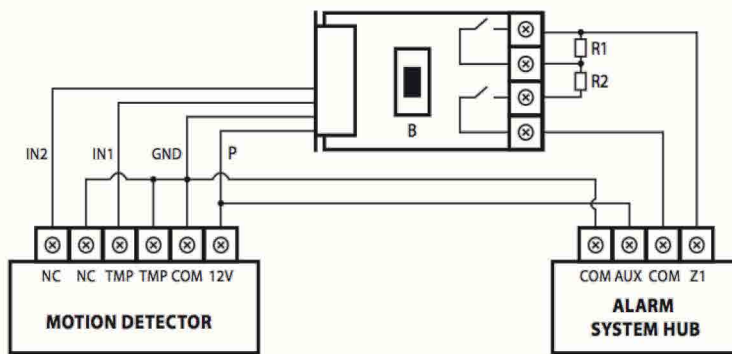
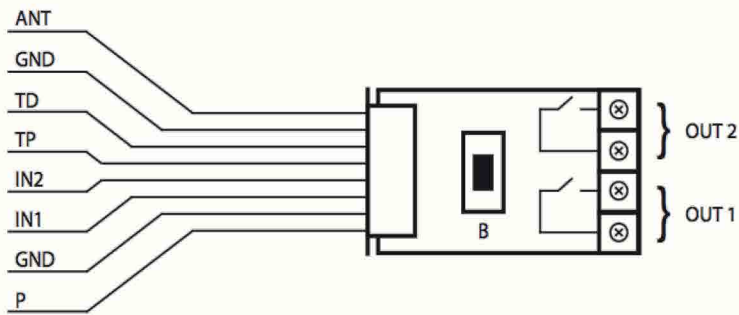
Before Device is installed

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.

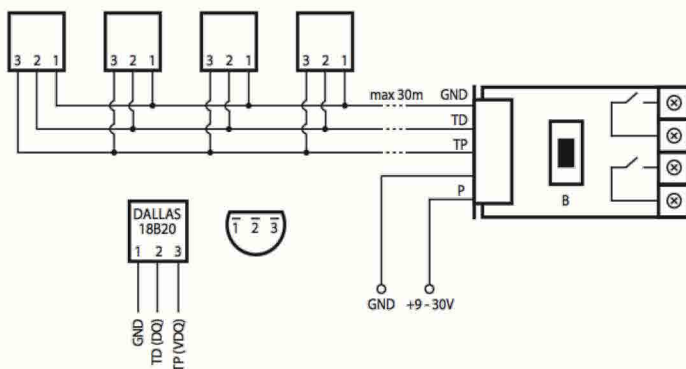
The product is permitted only for proper use as specified in the user manual. Any kind of guarantee claim has to be forfeited if changes, modifications or painting are undertaken. The product must be checked for damages immediately after unpacking. In the case of damages, the product must not be operated 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

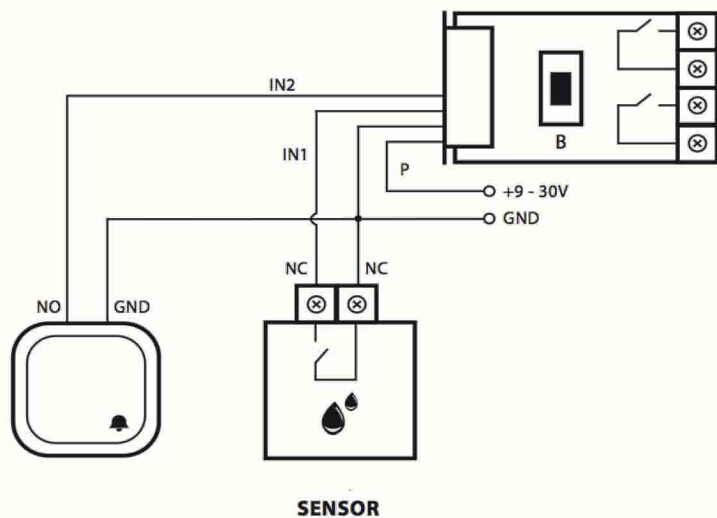


Explanation of the cable markings

- P (POWER), power supply cable, red
- GND (Ground), ground cable, blue
- OUT1, output No 1, assigned to input IN1
- OUT2, output No 2, assigned to input IN2
- TP (TEMP_POWER), power supply cable to the DS18B20 temperature sensor, brown
- TD (TEMP_DATA), signal cable to the DS18B20 temperature sensors, white
- ANT, antenna, black
- OUT1, output no 1 - assigned to input IN1
- OUT2, output no 2 - assigned to input IN2
- B, maintenance button



The external temperature sensors DS18B20 are connected to the device as shown on this picture. The subsequent image shows how to connect such an external switch or an external sensor to the terminals.



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.

Tripple Click the 'B' Button on the device confirms inclusion and exclusion.

Operating the device

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.

Tripple Click the 'B' Button on the device sends out a Node Information Frame.

Associations

A Z-Wave devices control other Z-Wave devices. The relationship between one device controlling another device is called *association*. In order to control a different device, the controlling device needs to maintain a list of devices that will receive controlling commands. These lists are called **association groups** and they are always related to certain events (e.g. button pressed, sensor triggers, ...). In case the event happens all devices stored in the respective association group will receive a common wireless command.

Association Groups:

1	Input IN1 (max. nodes in group: 1)
2	Input IN2 (max. nodes in group: 5)
3	reports device status (max. nodes in group: 5)

Configuration Parameters

Z-Wave products are supposed to work out of the box after inclusion, however certain configuration can adapt the function better to user needs or unlock further enhanced features.

IMPORTANT: Controllers may only allow to configure signed values. In order to set values in the range 128 ... 255 the value sent in the application shall be the desired value minus 256. For example: to set a parameter to 200 it may be needed to set a value of 200 minus 256 = minus 56. In case of two byte value the same logic applies: Values greater than 32768 may needed to be given as negative values too.

Input 1 Alarm Delay (Parameter Number 1, Parameter Size 2)

defines the delay from triggering Input 1 to sending an alarm. Removing Alarm condition will cancel alarm

Value	Description
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0 — 32000

seconds (Default 0)

Input 2 Alarm Delay (Parameter Number 2, Parameter Size 2)

defines the delay from triggering Input 2 to sending an alarm. Removing Alarm condition will cancel alarm

Value	Description
0 — 32000	seconds (Default 0)

Type of Input 1 (Parameter Number 3, Parameter Size 1)

Value	Description
0	INPUT_NO (Normal Open) (Default)
1	INPUT_NC (Normal Close)
2	INPUT_MONOSTABLE (Monostabil)
3	INPUT_BISTABLE (bistabil)

Type of Input 2 (Parameter Number 4, Parameter Size 1)

Value	Description
0	INPUT_NO (Normal Open) (Default)
1	INPUT_NC (Normal Close)
2	INPUT_MONOSTABLE (Monostabil)
3	INPUT_BISTABLE (bistabil)

Type of control frame activated via IN input 1 (Parameter Number 5, Parameter Size 1)

The parameter allows you to specify the type of an alarm frame for Input 1

Value	Description
0	ALARM GENERIC frame
1	ALARM SMOKE frame
2	ALARM CO frame
3	ALARM CO2 frame
4	ALARM HEAT frame
5	ALARM WATER frame
255	Control frame BASIC_SET (Default)

Type of control frame activated via IN input 2 (Parameter Number 6, Parameter Size 1)

The parameter allows you to specify the type of an alarm frame for Input 2

Value	Description
0	ALARM GENERIC frame
1	ALARM SMOKE frame
2	ALARM CO frame
3	ALARM CO2 frame
4	ALARM HEAT frame
5	ALARM WATER frame
255	Control frame BASIC_SET (Default)

Value of the parameter specifying the forced level of dimming/opening roller blinds from Input 1 (Parameter Number 7, Parameter Size 1)

In case of alarm frames an alarm priority is specified. Value of 255 makes it possible to activate a device. In case of the Dimmer module it means activating the device and setting it to the previously stored condition, e.g. when Dimmer is set to 30%, deactivated and then reactivated using 255 command, it will be automatically set to the previous condition i.e. 30%.

Value	Description
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1 — 99	Dimming level
255	Turn On (Default)

Value of the parameter specifying the forced level of dimming/opening roller blinds from Input 2 (Parameter Number 8, Parameter Size 1)

In case of alarm frames an alarm priority is specified. Value of 255 makes it possible to activate a device. In case of the Dimmer module it means activating the device and setting it to the previously stored condition, e.g. when Dimmer is set to 30%, deactivated and then reactivated using 255 command, it will be automatically set to the previous condition i.e. 30%.

Value	Description
1 — 99	Dimming level
255	Turn On (Default)

Deactivating transmission of the alarm cancelling frame or the control frame deactivating the device (Basic) (Parameter Number 9, Parameter Size 1)

It allows for disabling the function of deactivating the device and cancelling alarms for devices associated with IN input.

Value	Description
0	information is sent to group 1 and 2 (Default)
1	information is not sent for group 2 but sent for group 1
2	information is not sent for group 1 but sent for group 2
3	information is not sent

Interval between Readings of all temperature sensors (Parameter Number 10, Parameter Size 1)

Value	Description
0 — 255	seconds (Default 20)

Trigger level to send out temperature report (Parameter Number 12, Parameter Size 1)

defines the maximum deviation of the actual temperature compared to the last wirelessly reported temperature to create a new wireless report to the device in association group 3. If set to zero a report will be generated at every regular wakeup of the device but as a minimum every 4 minutes.

Value	Description
0 — 255	1/16 Kelvin (Default 8)

Sending an alarm or control frame (for IN input, depending on parameter no.5 value), and TMP button alarm frame (Parameter Number 13, Parameter Size 1)

The frame is sent in "broadcast" mode, i.e. to all devices within range - information sent in this mode is not repeated by the mesh network.

Value	Description
0	IN1 and IN2 Broadcast mode inactive (Default)
1	IN1 broadcast mode active, IN2 broadcast mode inactive
2	IN1 broadcast mode inactive, IN2 broadcast mode active
3	IN1 and IN2 broadcast mode active

Scene activation functionality (Parameter Number 14, Parameter Size 1)

IN input: Switch from "off" to "on" ID10; Switch from "on" to "off" ID11; Remaining IDs are recognized correctly if the value of parameter no.3 was set to 2 Holding down ID12; Releasing ID13; Double click ID14; Triple click ID 15; Scene activation functionality may shorten the battery life, even by 25%.

Value	Description
0	functionality deactivated (Default)
1	functionality activated

Command Classes

Supported Command Classes

- Multi Channel (version 2)
- Basic (version 1)
- Binary Switch (version 1)

- Version (version 1)
- Multi Channel Association (version 2)
- Binary Sensor (version 1)
- Multilevel Sensor (version 1)
- Manufacturer Specific (version 1)
- Association (version 2)

Technical Data

IP Rating	20
Explorer Frame Support	Yes
SDK	4.53.00
Device Type	Slave with routing capabilities
Generic Device Class	Binary Sensor
Specific Device Class	Routing Binary Sensor
Routing	Yes
FLiRS	No
Firmware Version	3.49

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.
- **Wake up Notification** — is a special wireless message issued by a Z-Wave device to announces 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.