



Fibaro

Smart Implant

SKU: FIBEFGBS-222



Quickstart

This is a **secure Alarm Sensor** for Europe. To run this device please connect it to your mains power supply.

1. Set the main controller in Security S2 Authenticated add mode (see the controllers manual).
2. Scan the DSK QR code or input the 5-digit PIN code (label on the bottom of the box).
3. Power the device.
4. LED will start blinking yellow, wait for the adding process to end.
5. Successful adding will be confirmed by the Z-Wave controllers message.

Important safety information

Please read this manual carefully. Failure to follow the recommendations in this manual may be dangerous or may violate the law. The manufacturer, importer, distributor and seller shall not be liable for any loss or damage resulting from failure to comply with the instructions in this manual or any other material. Use this equipment only for its intended purpose. Follow the disposal instructions. Do not dispose of electronic equipment or batteries in a fire or near open heat sources.

What is Z-Wave?

Z-Wave is the international wireless protocol for communication in the Smart Home. This device is suited for use in the region mentioned in the Quickstart section.

Z-Wave ensures a reliable communication by reconfirming every message (**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.

This device and every other certified Z-Wave device can be **used together with any other certified Z-Wave device regardless of brand and origin** as long as both are suited for the same frequency range.

If a device supports **secure communication** it will communicate with other devices secure as long as this device provides the same or a higher level of security. Otherwise it will automatically turn into a lower level of security to maintain backward compatibility.

For more information about Z-Wave technology, devices, white papers etc. please refer to www.z-wave.info.



Product Description

FIBARO Smart Implant allows to enhance the functionality of wired sensors and other devices by adding Z-Wave network communication. You can connect binary sensors, analog sensors, DS18B20 temperature sensors or DHT22 humidity and temperature sensor to report their readings to the Z-Wave controller. It can also control devices by opening/closing output contacts independently of the inputs. Main features of FIBARO Smart Implant: - Compatible with any Z-Wave or Z-Wave+ Controller, - Supports Z-Wave network Security Modes: S0 with AES-128 encryption and S2 with PRNG-based encryption, - Allows for connecting sensors: o6 DS18B20 sensors, o1 DHT sensor, o2 2-wire analog sensor, o2 3-wire analog sensor, o2 binary sensors. - Works as a Z-Wave signal repeater, - Built-in temperature sensor.

Prepare for Installation / Reset

Please read the user manual before installing the product.

In order to include (add) a Z-Wave device to a network it **must be in factory default state**. Please make sure to reset the device into factory default. You can do this by performing an Exclusion operation as described below in the manual. Every Z-Wave controller is able to perform this operation however it is recommended to use the primary controller of the previous network to make sure the very device is excluded properly from this network.

Reset to factory default

This device also allows to be reset without any involvement of a Z-Wave controller. This procedure should only be used when the primary controller is inoperable.

1. Press and hold the button to enter the menu.
2. Release button when the device glows yellow.
3. Quickly click the button to confirm.
4. After few seconds the device will be restarted, which is signalled with the red colour.

Safety Warning for Mains Powered Devices

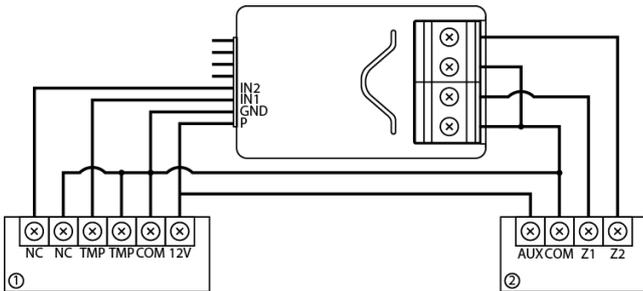
ATTENTION: only authorized technicians under consideration of the country-specific installation guidelines/norms may do works with mains power. Prior to the assembly of the product, the voltage network has to be switched off and ensured against re-switching.

Installation

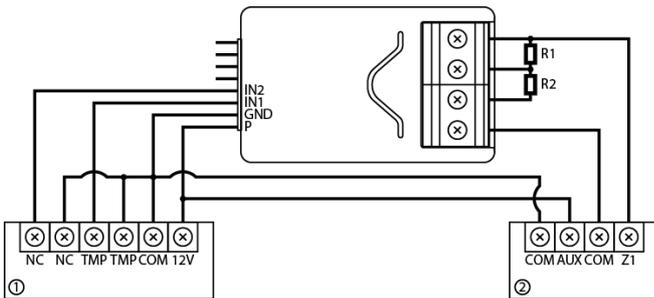
- Connect only in accordance with one of the diagrams,
- The device is powered with secure voltage; nevertheless, the user should be extra careful or should commission the installation to a qualified person,
- Do not connect devices which are not compliant with the specification,
- Do not connect other sensors than DS18B20 or DHT22 to SP and SD terminals,
- Do not connect sensors to SP and SD terminals with wires longer than 3 meters,
- Do not load the device outputs with a current exceeding 150mA,
- Every connected device should be compliant with the relevant safety standards,
- Unused lines should be left insulated.

Connection with alarm line

1. Turn off the alarm system.
2. Connect with one of the diagrams below:



Example connection with regular alarm line (1 □ alarm sensor, 2 □ alarm system hub).



Example connection with parametric alarm line (1 □ alarm sensor, 2 □ alarm system hub).

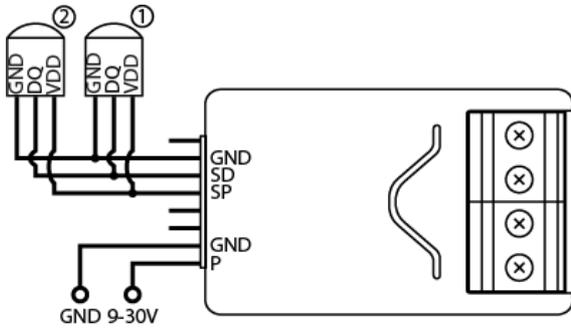
3. Verify correctness of connection.
4. Arrange the device and its antenna in the housing.
5. Power the device.
6. Add the device to the Z-Wave network.
7. Change values of parameters:

- Connected to IN1:
 - Normally close: change parameter 20 to 0
 - Normally open: change parameter 20 to 1
- Connected to IN2:
 - Normally close: change parameter 21 to 0
 - Normally open: change parameter 21 to 1

Connection with DS18B20

The DS18B20 sensor may easily be installed wherever very precise temperature measurements are required. If proper protective measures are undertaken, the sensor may be used in humid environments or under water, it may be embedded in concrete or placed under the floor. You can connect up to 6 DS18B20 sensors in parallel to SP-SD terminals.

1. Disconnect Power
2. Connect with the diagram below

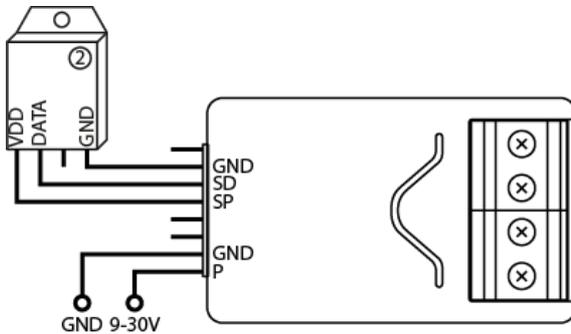


3. Verify correctness of connection.
4. Power the device.
5. Add the device to the Z-Wave network.

Connection with DHT22

The DHT22 sensor may easily be installed wherever humidity and temperature measurements are required. You can connect only 1 DHT22 sensor to TP-TD terminals.

1. Disconnect Power
2. Connect with the diagram below



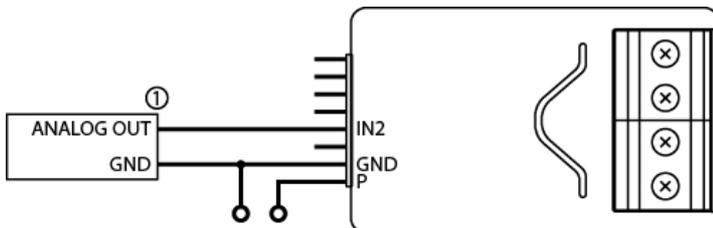
3. Verify correctness of connection.
4. Power the device.
5. Add the device to the Z-Wave network.
6. Change values of parameters:

- Connected to IN1: change parameter 20 to 4
- Connected to IN2: change parameter 21 to 4

Connection with 2-wire 0-10V Sensor

The 2-wire analog sensor requires pull-up resistor. You can connect up to 2 analog sensors to IN1/IN2 terminals. The 12V supply is required for these type of sensors.

1. Disconnect Power
2. Connect with the diagram below



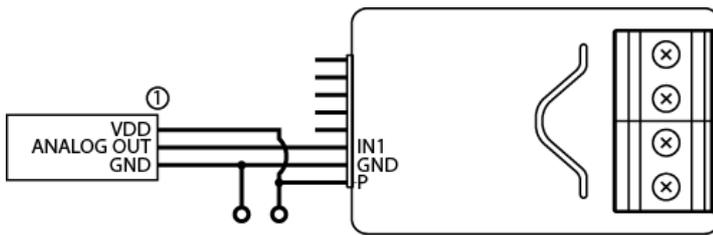
3. Verify the correctness of connection.
4. Power the device.
5. Add the device to the Z-Wave network.
6. Change values of parameters:

- Connected to IN1: change parameter 20 to 5
- Connected to IN2: change parameter 21 to 5

Connection with 3-wire 0-10V Sensor

You can connect up to 2 analog sensors IN1/IN2 terminals.

1. Disconnect Power
2. Connect with the diagram below



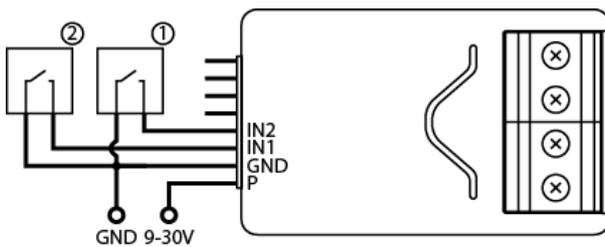
3. Verify the correctness of connection.
4. Power the device.
5. Add the device to the Z-Wave network.
6. Change values of parameters:

- Connected to IN1: change parameter 20 to 4
- Connected to IN2: change parameter 21 to 4

Connection with binary sensor or button

You connect normally opened or normally binary sensors to IN1/IN2 terminals.

1. Disconnect Power
2. Connect with the diagram below



3. Verify the correctness of connection.
4. Power the device.
5. Add the device to the Z-Wave network.
6. Change values of parameters
- 6.1 Binary sensor

- Connected to IN1:
 - Normally close: change parameter 20 to 0
 - Normally open: change parameter 20 to 1
- Connected to IN2:
 - Normally close: change parameter 21 to 0
 - Normally open: change parameter 21 to 1

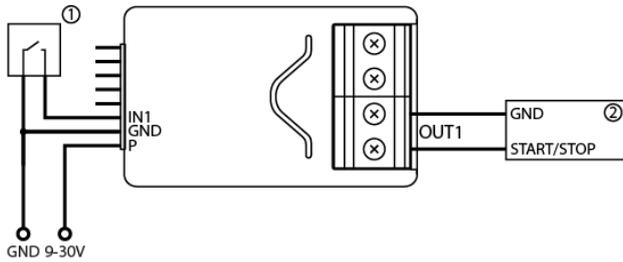
6.2 Button

- Connected to IN1:
 - Monostable: change parameter 20 to 2
 - Bistable: change parameter 20 to 3
- Connected to IN2:
 - Monostable: change parameter 21 to 2
 - Bistable: change parameter 21 to 3

Connection with gate opener

Smart Implant can be connected to different devices to control them. In this example it is connected to gate opener with impulse input (every impulse will start and stop the gate motor, alternately opening/closing).

1. Disconnect Power
2. Connect with the diagram below



3. Verify the correctness of connection.
4. Power the device.
5. Add the device to the Z-Wave network.
6. Change values of parameters:

- Connected to IN1 and OUT1:
 - Change parameter 20 to 2 (monostable button)
 - Change parameter 156 to 1 (0.1s)
- Connected to IN2 and OUT2:
 - Change parameter 21 to 2 (monostable button)
 - Change parameter 157 to 1 (0.1s)

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 a 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

1. Power the device.
2. Set the main controller in (Security/non-Security Mode) add mode (see the controllers manual).
3. Quickly, triple click button on the device housing or switch connected to IN1 or IN2.
4. If you are adding in Security S2 Authenticated, scan the DSK QR code or input the 5-digit PIN code (label on the bottom of the box).
5. LED will start blinking yellow, wait for the adding process to end.
6. Successful adding will be confirmed by the Z-Wave controllers message. To add the device to the Z-Wave network using

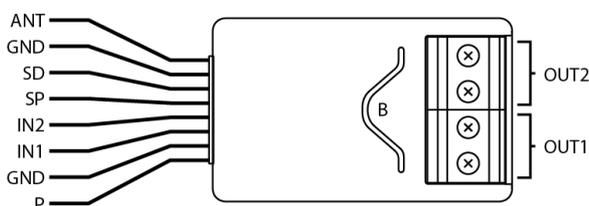
Exclusion

1. Power the device.
2. Set the main controller into remove mode (see the controllers manual).
3. Quickly, triple click button on the device housing or switch connected to IN1 or IN2.
4. LED will start blinking yellow, wait for the removing process to end.
5. Successful removing will be confirmed by the Z-Wave controllers message.

Product Usage

Tips for arranging the antenna:

- Locate the antenna as far from metal elements as possible (connecting wires, bracket rings, etc.) in order to prevent interferences,
- Metal surfaces in the direct vicinity of the antenna (e.g. flush mounted metal boxes, metal door frames) may impair signal reception!
- **Do not** cut or shorten the antenna - its length is perfectly matched to the band in which the system operates.
- Make sure no part of the antenna sticks out of the wall switch box.



ANT (black) - antenna
GND (blue) - ground conductor
SD (white) - signal conductor for DS18B20 or DHT22 sensor
SP (brown) - power supply conductor for DS18B20 or DHT22 sensor (3.3V)
IN2 (green) - input no. 2
IN1 (yellow) - input no. 1
GND (blue) - ground conductor
P (red) - power supply conductor
OUT1 - output no. 1 assigned to input IN1
OUT2 - output no. 2 assigned to input IN2
B - service button (used to add/remove the device)

Range Tester

The device has a built in Z-Wave network main controller's range tester.

Note: To make Z-Wave range test possible, the device must be added to the Z-Wave controller. Testing may stress the network, so it is recommended to perform the test only in special cases.

To test the main controller's range:

1. Press and hold the button to enter the menu.
2. Release button when the device glows magenta.
3. Quickly click the button to confirm.
4. Visual indicator will indicate the Z-Wave network's range (range signaling modes described below).
5. To exit Z-Wave range test, press the button briefly.

Z-Wave range tester signalling modes:

- Visual indicator pulsing green - the device attempts to establish a direct communication with the main controller. If a direct communication attempt fails, the device will try to establish a routed communication, through other modules, which will be signalled by visual indicator pulsing yellow.
- Visual indicator glowing green - the device communicates with the main controller directly.
- Visual indicator pulsing yellow - the device tries to establish a routed communication with the main controller through other modules (repeaters).
- Visual indicator glowing yellow - the device communicates with the main controller through the other modules. After 2 seconds the device will retry to establish a direct communication with the main controller, which will be signalled with visual indicator pulsing green.
- Visual indicator pulsing violet - the device does communicate at the maximum distance of the Z-Wave network. If connection proves successful it will be confirmed with a yellow glow. It's not recommended to use the device at the range limit.
- Visual indicator glowing red - the device is not able to connect to the main controller directly or through another Z-Wave network device (repeater).

Note: The communication mode of the device may switch between direct and one using routing, especially if the device is on the limit of the direct range.

Visual indications

The built-in LED light shows current device status.

After powering the device:

- Green - device added to a Z-Wave network (without Security S2 Authenticated)
- Magenta - device added to a Z-Wave network (with Security S2 Authenticated)
- Red - device not added to a Z-Wave network

Update:

- Blinking cyan - update in progress
- Green - update successful (added without Security S2 Authenticated)
- Magenta - update successful (added with Security S2 Authenticated)
- Red - update not successful

Menu:

- 3 green blinks - entering the menu (added without Security S2 Authenticated)
- 3 magenta blinks - entering the menu (added with Security S2 Authenticated)
- 3 red blinks - entering the menu (not added to a Z-Wave network)
- Magenta - range test
- Yellow - reset

Menu

Menu allows to perform Z-Wave network actions. In order to use the menu:

1. Press and hold the button to enter the menu, device blinks to signal adding status (see 7.1: Visual indications).
2. Release the button when device signals desired position with colour:

- MAGENTA - start range test
- YELLOW - reset the device

3. Quickly click the button to confirm.

Activating scenes

The device can activate scenes in the Z-Wave controller by sending scene ID and attribute of a specific action using Central Scene Command Class.

In order for this functionality to work connect the monostable or bistable switch to the IN1 or IN2 input and set parameter 20 (IN1) or 21 (IN2) to 2 or 3.

By default scenes are not activated, set parameters 40 and 41 to enable scene activation for selected actions.

Switch connected to IN1 terminal:

Action	Scene ID	Attribute
Switch clicked once	1	Key Pressed 1 time
Switch clicked twice	1	Key Pressed 2 times
Switch clicked thrice *	1	Key Pressed 3 times
Switch held**	1	Key Held Down
Switch released**	1	Key Released

Switch connected to IN2 terminal:

Action	Scene ID	Attribute
Switch clicked once	2	Key Pressed 1 time
Switch clicked twice	2	Key Pressed 2 times
Switch clicked thrice *	2	Key Pressed 3 times
Switch held**	2	Key Held Down
Switch released**	2	Key Released

* Activating triple clicks will disallow removing using input terminal.

** Not available for toggle switches.

Communication to a Sleeping device (Wakeup)

This device is battery operated and turned into deep sleep state most of the time to save battery life time. Communication with the device is limited. In order to communicate with the device, a static controller **C** is needed in the network. This controller will maintain a mailbox for the battery operated devices and store commands that can not be received during deep sleep state. Without such a controller, communication may become impossible and/or the battery life time is significantly decreased.

This device will wakeup regularly and announce the wakeup state by sending out a so called Wakeup Notification. The controller can then empty the mailbox. Therefore, the device needs to be configured with the desired wakeup interval and the node ID of the controller. If the device was included by a static controller this controller will usually perform all necessary configurations. The wakeup interval is a tradeoff between maximal battery life time and the desired responses of the device. To wakeup the device please perform the following action: FIBARO Smart Implant is powered using DC power supply unit so it is always awake.

Quick trouble shooting

Here are a few hints for network installation if things dont work as expected.

1. Make sure a device is in factory reset state before including. In doubt exclude before include.
2. If inclusion still fails, check if both devices use the same frequency.
3. Remove all dead devices from associations. Otherwise you will see severe delays.
4. Never use sleeping battery devices without a central controller.
5. Dont poll FLIRS devices.
6. Make sure to have enough mains powered device to benefit from the meshing

Association - one device controls another device

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 the same wireless command wireless command, typically a 'Basic Set' Command.

Association Groups:

Group Number	Maximum Nodes	Description
1	1	Lifeline reports the device status and allows for assigning single device only (main controller by default).
2	5	On/Off (IN1) is assigned to IN1 input terminal (uses Basic command class).
3	5	On/Off (IN2) is assigned to IN2 input terminal (uses Basic command class).

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 configuring 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 a two byte value the same logic applies: Values greater than 32768 may needed to be given as negative values too.

Parameter 20: Input 1 - operating mode

This parameter allows to choose mode of 1st input (IN1). Change it depending on connected device.

Size: 1 Byte, Default Value: 2

Setting	Description
0	Normally closed alarm input (Notification)
1	Normally open alarm input (Notification)
2	Monostable button (Central Scene)
3	Bistable button (Central Scene)
4	Analog input without internal pull-up (Sensor Multilevel)
5	Analog input with internal pullup (Sensor Multilevel)

Parameter 21: Input 2 - operating mode

This parameter allows to choose mode of 2nd input

Size: 1 Byte, Default Value: 2

Setting	Description
0	Normally closed alarm input (Notification CC)
1	Normally open alarm input (Notification CC)
2	Monostable button (Central Scene CC)
3	Bistable button (Central Scene CC)
4	Analog input without internal pull-up (Sensor Multilevel CC)
5	Analog input with internal pullup (Sensor Multilevel CC)

Parameter 24: Inputs orientation

This parameter allows reversing operation of IN1 and IN2 inputs without changing the wiring. Use in case of incorrect wiring.

Size: 1 Byte, Default Value: 0

Setting	Description
0	default (IN1 - 1st input, IN2 - 2nd input)
1	reversed (IN1 - 2nd input, IN2 - 1st input)

Parameter 25: Outputs orientation

This parameter allows reversing operation of OUT1 and OUT2 inputs without changing the wiring. Use in case of incorrect wiring.

Size: 1 Byte, Default Value: 0

Setting	Description
0	default (OUT1 - 1st output, OUT2 - 2nd output)
1	reversed (OUT1 - 2nd output, OUT2 - 1st output)

Parameter 40: Input 1 - sent scenes

This parameter defines which actions result in sending scene ID and attribute assigned to them (see 9: Activating scenes). Parameter is relevant only if parameter 20 is set to 2 or 3.

Size: 1 Byte, Default Value: 0

Setting	Description
1	Key pressed 1 time
2	Key pressed 2 times
4	Key pressed 3 times
8	Key hold down and key released

Parameter 41: Input 2 - sent scenes

This parameter defines which actions result in sending scene ID and attribute assigned to them (see 9: Activating scenes). Parameter is relevant only if parameter 20 is set to 2 or 3.

Size: 1 Byte, Default Value: 0

Setting	Description
1	Key pressed 1 time
2	Key pressed 2 time
4	Key pressed 3 time
8	Key hold down and key released

Parameter 47: Input 1 - value sent to 2nd association group when activated

This parameter defines value sent to devices in 2nd associationgroup when IN1 input is triggered (using Basic Command Class).

Size: 2 Byte, Default Value: 255

Setting	Description
0 - 255	Value send to devices

Parameter 49: Input 1 - value sent to 2nd association group when deactivated

This parameter defines value sent to devices in 2nd association group when IN1 input is deactivated (using Basic Command Class).

Size: 2 Byte, Default Value: 0

Setting	Description
0 - 255	value send to devices

Parameter 52: Input 2 - value sent to 3rd association group when activated

This parameter defines value sent to devices in 3rd association group when IN2 input is triggered (using Basic Command Class).

Size: 2 Byte, Default Value: 255

Setting	Description
0 - 255	value send to devices

Parameter 54: Input 2 - value sent to 3rd association group when deactivated

This parameter defines value sent to devices in 2nd association group when IN2 input is deactivated (using Basic Command Class).

Size: 2 Byte, Default Value: 0

Setting	Description
0 - 255	value send to devices

Parameter 63: Analog inputs - minimal change to report

This parameter defines minimal change (from the last reported) of analog input value that results in sending new report. Parameter is relevant only for analog inputs (parameter 20 or 21 set to 4 or 5).

Size: 1 Byte, Default Value: 5

Setting	Description
0	reporting on change disabled
1 - 100	(0.1-10V, 0.1V step)

Parameter 64: Analog inputs - periodical reports

This parameter defines reporting period of analog inputs value. Periodical reports are independent from changes in value (parameter 63). Parameter is relevant only for analog inputs (parameter 20 or 21 set to 4 or 5).

Size: 2 Byte, Default Value: 0

Setting	Description
0	periodical reports disabled
60 - 32400	(60s-9h)

Parameter 65: Internal temperature sensor - minimal change to report

This parameter defines minimal change (from the last reported) of internal temperature sensor value that results in sending new report.

Size: 2 Byte, Default Value: 5

Setting	Description
0	reporting on change disabled
1 - 255	(0.1-25.5C)

Parameter 66: Internal temperature sensor - periodical reports

This parameter defines reporting period of internal temperature sensor value. Periodical reports are independent from changes in value (parameter 65).

Size: 2 Byte, Default Value: 0

Setting	Description
0	periodical reports disabled
60 - 32400	(60s-9h)

Parameter 67: External sensors - minimal change to report

This parameter defines minimal change (from the last reported) of external sensors values (DS18B20 or DHT22) that results in sending new report. Parameter is relevant only for connected DS18B20 or DHT22 sensors.

Size: 2 Byte, Default Value: 5

Setting	Description
0	reporting on change disabled
1 - 255	(0.1-25.5 units, 0.1)

Parameter 68: External sensors - periodical reports

This parameter defines reporting period of analog inputs value. Periodical reports are independent from changes in value (parameter 67). Parameter is relevant only for connected DS18B20 or DHT22 sensors.

Size: 2 Byte, Default Value: 0

Setting	Description
0	periodical reports disabled
60 - 32400	(60s-9h)

Parameter 150: Input 1 - sensitivity

This parameter defines the inertia time of IN1 input in alarm modes. Adjust this parameter to prevent bouncing or signal disruptions. Parameter is relevant only if parameter 20 is set to 0 or 1 (alarm mode).

Size: 1 Byte, Default Value: 10

Setting	Description
1 - 100	(10ms-1000ms, 10ms step)

Parameter 151: Input 2 - sensitivity

This parameter defines the inertia time of IN2 input in alarm modes. Adjust this parameter to prevent bouncing or signal disruptions. Parameter is relevant only if parameter 21 is set to 0 or 1 (alarm mode).

Size: 1 Byte, Default Value: 10

Setting	Description
1 - 100	(10ms-1000ms, 10ms step)

Parameter 152: Input 1 - delay of alarm cancellation

This parameter defines additional delay of cancelling the alarm on IN1 input. Parameter is relevant only if parameter 20 is set to 0 or 1 (alarm mode).

Size: 2 Byte, Default Value: 0

Setting	Description
0	no delay
1 - 3600	(in seconds)

Parameter 153: Input 2 - delay of alarm cancellation

This parameter defines additional delay of cancelling the alarm on IN2 input. Parameter is relevant only if parameter 21 is set to 0 or 1 (alarm mode).

Size: 2 Byte, Default Value: 0

Setting	Description
0	no delay
1 - 3600	(in seconds)

Parameter 154: Output 1 - logic of operation*This parameter defines logic of OUT1 output operation.*

Size: 1 Byte, Default Value: 0

Setting	Description
0	contacts normally open / closed when active
1	contacts normally closed / open when active

Parameter 155: Output 2 - logic of operation*This parameter defines logic of OUT2 output operation.*

Size: 1 Byte, Default Value: 0

Setting	Description
0	contacts normally open / closed when active
1	contacts normally closed / open when active

Parameter 156: Output 1 - auto off*This parameter defines time after which OUT1 will be automatically deactivated.*

Size: 2 Byte, Default Value: 0

Setting	Description
0	auto off disabled
1 - 27000	(0.1s-45min, 0.1s step)

Parameter 157: Output 2 - auto off*This parameter defines time after which OUT2 will be automatically deactivated.*

Size: 2 Byte, Default Value: 0

Setting	Description
0	auto off disabled
1 - 27000	(0.1s-45min, 0.1s step)

Technical Data

Dimensions	17,5 x 29 x 13 mm
Hardware Platform	ZM5101
EAN	5902701701475
IP Class	IP 20
Voltage	9-30 V
Load	150mA
Device Type	Notification Sensor
Network Operation	Always On Slave
Z-Wave Version	6.81.01
Certification ID	ZC10-19046414
Z-Wave Product Id	0x010F.0x0502.0x1000
Color	White
Supported Notification Types	Home SecuritySystem
Sensors	Open/Closed (Binary)
Frequency	Europe - 868,4 Mhz
Maximum transmission power	5 mW

Supported Command Classes

- Application Status
- Association Grp Info V2

- Association V2
- Basic
- Central Scene V3
- Configuration
- Crc 16 Encap
- Device Reset Locally
- Firmware Update Md V4
- Manufacturer Specific V2
- Multi Channel Association V3
- Multi Channel V4
- Notification V8
- Powerlevel
- Protection V2
- Security
- Security 2
- Sensor Multilevel V11
- Supervision
- Switch Binary
- Transport Service V2
- Version V2
- Zwaveplus Info V2

Controlled Command Classes

- Basic

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 adding 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 announces that is able to communicate.
- **Node Information Frame** — is a special wireless message issued by a Z-Wave device to announce its capabilities and functions.

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