Qubino

The **INNOVATIVE** and **SMALLEST**

Flush on/off thermostat

ORDERING CODE	Z-WAVE FREQUENCY
ZMNHIA2	868,4 MHz
ZMNHIA3	921,4 MHz
ZMNHIA4	908,4 MHz
ZMNHIA5	869,0 MHz
ZMNHIA6	916,0 MHz

This Z-Wave module is used to regulate temperature. The module can be controlled either through Z-wave network or through the wall switch.

The module is designed to be mounted inside a “flush mounting box” and is hidden behind a traditional wall switch. Module measures power consumption of connected device. It is designed to act as repeater in order to improve range and stability of Z-wave network.

Supported switches

Module supports **mono-stable** switches (push button) and **bi-stable** switches. The module is factory set to operate with bi-stable switches.

Installation

- Before the installation disconnect power supply.
- Connect the module according to electrical diagram.
- Locate the antenna far from metal elements (as far as possible).
- Do not shorten the antenna.

Danger of electrocution!

- Module installation requires a great degree of skill and may be performed only by a qualified and licensed electrician.
- Even when the module is turned off, voltage may be present on its terminals. Any works on configuration changes related to connection mode or load must be always performed by disconnected power supply (disable the fuse).

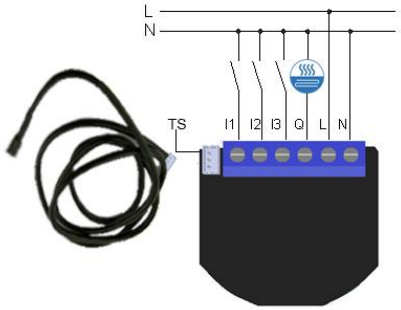
Note!

Do not connect the module to loads exceeding recommended values. Connect the module only in accordance to the below diagrams. Improper connections may be dangerous.

Package contents

- Flush on/off thermostat + Temperature sensor

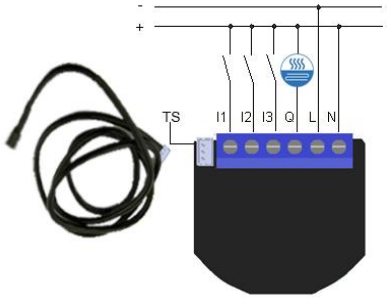
Electrical diagram 230VAC



Notes for the diagram:

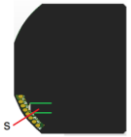
N	Neutral lead
L	Live lead
Q	Output
I3	Input for switch /push button or sensor
I2	Input for switch /push button or sensor
I1	Input for Auto/Off selection
TS	Terminal for digital temperature sensor (only for Flush on/off thermostat module compatible digital temperature sensor).

Electrical diagram 24VDC



Notes for the diagram:

N	+ 24VDC
L	- 24VDC
Q	Output
I3	Input for switch /push button or sensor
I2	Input for switch /push button or sensor
I1	Input for Auto/Off selection
TS	Terminal for digital temperature sensor (only for Flush on/off thermostat module compatible digital temperature sensor).



S Service button (used to add or remove module from the Z-Wave network).

Durability of the module relay depends on applied load. For resistive load (light bulbs, etc.) and 10A current consumption of each individual electrical device, the durability exceeds 100 000 switches of each individual electrical device.

Module Inclusion (Adding to Z-wave network)

- Connect module to power supply (with temperature sensor connected),
- bring module within max. 1 meter (3 feet) of the main controller
- enable add/remove mode on main controller
- auto-inclusion (30 minutes after connected to power supply) or
- press service button **S** for more than 2 second or
- press push button **I1** three times within 3s (3 times change switch state within 3 seconds)

Module Exclusion/Reset (Removing from Z-Wave network)

- Connect module to power supply,
- bring module within max. 1 meter (3 feet) of the main controller,
- enable add/remove mode on main controller
- press service button **S** for more than 6 second or
- press push button **I1** five times within 3s (5 times change switch state within 3 seconds) in the first 60 seconds after the module is connected to the power supply.

By this function all parameters of the module are set to default values and own ID is deleted. If service button S is pressed more than 2 and less than 6 second module is excluded, but configuration parameters are not set to default values.

Association

Association enables Flush on/off thermostat module to transfer commands inside Z-Wave network directly (without main controller) to other Z-Wave modules.

Associated Groups:

Group 1: basic on/off (triggered at change of the output Q state and reflecting its state) up to 16 nodes.

Group 2: basic on/off (triggered at change of the input I2 state and reflecting its state) up to 16 nodes.

Group 3: basic on/off (triggered at change of the input I3 state and reflecting its state) up to 16 nodes.

Group 4: basic on/off (triggered by Too high temperature limit, it send FF) up to 16 nodes.

Group 5: basic on/off (triggered by Too low temperature limit, it send FF) up to 16 nodes.

Group 6: default reporting group (reserved for the main controller).

Configuration parameters

Parameter no. 1 – Input 1 switch type

Available configuration parameters (data type is 1 Byte DEC):

- default value 1
- 0 mono-stable switch type (push button)
- 1 bi-stable switch type

Parameter no. 2 – Input 2 switch type

Available configuration parameters (data type is 1 Byte DEC):

- default value 1
- 0 mono-stable switch type (push button)
- 1 bi-stable switch type

Parameter no. 3 – Input 3 switch type

Available configuration parameters (data type is 1 Byte DEC):

- default value 1
- 0 mono-stable switch type (push button)
- 1 bi-stable switch type

Parameter no. 4 – Input 2 contact type

Available configuration parameters (data type is 1 Byte DEC):

- default value 0
- 0 NO (normally open) input type
- 1 NC (normally close) input type

Parameter no. 5 – Input 3 contact type

Available configuration parameters (data type is 1 Byte DEC):

- default value 0
- 0 NO (normally open) input type
- 1 NC (normally close) input type

Parameter no. 10 - Activate / deactivate functions ALL ON/ALL OFF

Available configuration parameters (data type is 1 Byte DEC):

- default value 255
- 255 - ALL ON active, ALL OFF active.
- 0 - ALL ON is not active ALL OFF is not active
- 1 - ALL ON is not active ALL OFF active
- 2 - ALL ON active ALL OFF is not active

Flush on/off thermostat module responds to commands ALL ON / ALL OFF that may be sent by the main controller or by other controller belonging to the system.

Parameter no. 11- Set point set by I2

When I2 is pressed set point will be set according to the value of this parameter. Available config. parameters (data type is 2 Byte DEC):

- default value 65535
- 65535 – input I2 does not influence on the set point
- From 0 to 990 – set point from 0.0 °C to 99.0 °C
- From 1001 to 1150 – set point from -0.1 °C to -15.0 °C

Parameter no. 12 - Set point set by I3

When I3 is pressed set point will be set according to the value of this parameter. Available config. parameters (data type is 2 Byte DEC):

- default value 65535
- 65535 – input I3 does not influence on the set point
- From 0 to 990 – set point from 0.0 °C to 99.0 °C
- From 1001 to 1150 – set point from -0.1 °C to -15.0 °C

Parameter no. 30 - Saving the state of the relay after a power failure

Available configuration parameters (data type is 1 Byte DEC):

- default value 0
- 0 –module saves its state before power failure (it returns to the last position saved before a power failure)
- 1 - module does not save the state after a power failure, it returns to "off" position.

Parameter no. 40 – Power reporting in Watts on power change

Set value means percentage, set value from 0 - 100=0% - 100%.

Available configuration parameters (data type is 1 Byte DEC):

- default value 3
- 0 – Reporting Disabled
- 1–100 = 1%-100% Reporting enabled. Power report is send (push) only when actual power in Watts in real time changes for more than set percentage comparing to previous actual power in Watts, step is 1%.

NOTE: If power changed is less than 1W, the report is not send (pushed), independent of percentage set.

Parameter no. 42 – Power reporting in Watts by time interval

Set value means time interval (0 – 65535) in seconds, when power report is send. Available config. parameters (data type is 2 Byte DEC):

- default value 300 (power report in Watts is send each 300s)
- 0 – Reporting Disabled
- 1 – 65535 = 1second – 65535 seconds. Reporting enabled. Power report is send with time interval set by entered value.

Parameter no. 43 – Hysteresis On

This parameter defines temperature min difference between real measured temperature and set-point temperature to turn device on. Parameter can be set from 0 to 255 where 0 to 127 means from 0.0 °C to 12.7 °C and from 128 to 255 means from - 0.1 °C to -12.7 °C.

Available configuration parameters (data type is 1 Byte DEC):

- default value 132 (-0.5 °C)

Parameter no. 44 – Hysteresis Off

This parameter defines temperature min difference between real measured temperature and set-point temperature to turn device off. Parameter can be set from 0 to 255 where 0 to 127 means from 0.0 °C to 12.7 °C and from 128 to 255 means from - 0.1 °C to -12.7 °C.

Available configuration parameters (data type is 1 Byte DEC):

- default value 5 (+0.5 °C)

Parameter no. 45 – Antifreeze

Set value means at which temperature the device will be turned on even if the thermostat was manually set to off. Parameter can be set from 0 to 255 where 0 to 127 means from 0.0 °C to 12.7 °C and from 128 to 254 means from - 0.1 °C to -12.6 °C. Available configuration parameters (data type is 1 Byte DEC):

- default value 50 (5,0 °C)
- 255 – Antifreeze functionality disabled

Parameter no. 60 – Too low temperature limit

Available configuration parameters (data type is 2 Byte DEC):

- Default value 50 (Too low temperature limit is 5.0°C)
- 1 - 1000 = 0.1°C – 100.0°C, step is 0.1°C. Too low temperature limit is set by entered value. In case is set value out of this range, module is changing set value automatically to default value.

Parameter no. 61 – Too high temperature limit

Available configuration parameters (data type is 2 Byte DEC):

- Default value 700 (too high temperature limit is 70.0°C)
- 1 - 1000 = 0.1°C – 100.0°C, step is 0.1°C. Too high temperature limit is set by entered value. In case is set value out of this range, module is changing automatically set value to default value.

Parameter no. 63 – Switch selection

Set value means the type of the device that is connected to the relay output. The device type can be normally open (NO) or normally close (NC).

Available configuration parameters (data type is 1 Byte DEC):

- default value 0
- 0 - When system is turned off the output is 0 V.
- 1 - When system is turned off the output is 230 V.

Technical Specifications

Power supply	110-230VAC ±10% 50/60Hz, 24-30VDC
Rated load current of AC output (resistive load)	1 X 10A / 230VAC
Rated load current of DC output (resistive load)	1 X 10A / 30VDC
Output circuit power of AC output (resistive load)	2300W (230VAC)
Output circuit power of DC output (resistive load)	240W (24VDC)
Power monitoring accuracy	P=5-50W, +/-3W; P>50W, +/-3%
Frequency Range	868.4 MHz, 921.4 MHz, 908.4 MHz, 869.0 MHz, Z-Wave
Operation temperature	-10 ~ 40°C
Distance	up to 30 meters indoors (depending on building materials)
Dimensions (W x H x D)	41,8 x 36,8 x 15,4mm
Weight	48g
Electricity consumption	0,4W
For installation in boxes	Ø ≥ 60mm or 2M
Switching	relay
Digital temperature sensor range	-50.0 ~ 125.0°C, resolution 0.1°C
Digital temperature sensor cable length	1000mm

* In case of load other than resistive, pay attention to the value of cos φ and if necessary apply load lower than the rated load. Max current for cos φ=0,4 is 3A at 250VAC, 3A at 24VDC L/R=7ms.

Z-Wave Device Class:

BASIC_TYPE_ROUTING_SLAVE
GENERIC_TYPE_THERMOSTAT
SPECIFIC_TYPE_SETPOINT_THERMOSTAT

Z-Wave Supported Command Classes:

COMMAND_CLASS_ASSOCIATION,
COMMAND_CLASS_BASIC,
COMMAND_CLASS_CRC_16_ENCAP,
COMMAND_CLASS_CONFIGURATION,
COMMAND_CLASS_SENSOR_MULTILEVEL,
COMMAND_CLASS_SENSOR_BINARY
COMMAND_CLASS_VERSION,
COMMAND_CLASS_MANUFACTURER_SPECIFIC,
COMMAND_CLASS_METER,
COMMAND_CLASS_THERMOSTAT_MODE,
COMMAND_CLASS_THERMOSTAT_SETPOINT
COMMAND_CLASS_MARK
COMMAND_CLASS_BASIC
OMMAND_CLASS_THERMOSTAT_MODE,
COMMAND_CLASS_THERMOSTAT_SETPOINT

Endpoint 1 (I2):

Device Class:
GENERIC_TYPE_SENSOR_BINARY
SPECIFIC_TYPE_NOT_USED
Command Classes:
COMMAND_CLASS_SENSOR_BINARY
COMMAND_CLASS_BASIC

Endpoint 2 (I3):

Device Class:
GENERIC_TYPE_SENSOR_BINARY
SPECIFIC_TYPE_NOT_USED
Command Classes:
COMMAND_CLASS_SENSOR_BINARY
COMMAND_CLASS_BASIC

COMMAND_CLASS_BASIC

The basic command class supports the functions BASIC SET and BASIC GET. Through the function basic SET is possible to set the mode of the module. Basic SET can send the values 0xff which means Auto and 0x00 which mean Off. Through the function basic GET is possible to read the mode of the module. The module returns 0xff which means Auto or 0x00 which means Off.

COMMAND_CLASS_SENSOR_MULTILEVEL

The Flush on/off thermostat supports reading of actual temperature which is 2 bytes long, scale is °C and its precision is 1(it means 0,1°C).

COMMAND_CLASS_THERMOSTAT_MODE

The Flush on/off thermostat supports the following modes:

- Mode Off
- Mode Auto

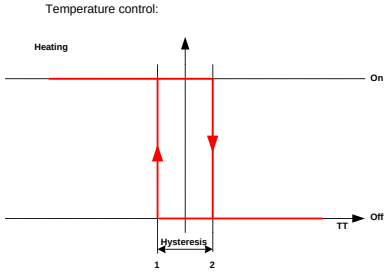
COMMAND_CLASS_THERMOSTAT_SETPOINT

The Flush on/off thermostat supports temperature set point, which is 2 bytes long, scale is °C and its precision is 1(it means 0,1°C).

This product can be included and operated in any Z-Wave network with other Z-Wave certified devices from any other manufacturers. All constantly powered nodes in the same network will act as repeaters regardless of the vendor in order to increase reliability of the network.

Functionality

To turn the module on or off the user can simply press once on the binary switch I1or by pressing on the button Auto in the GUI. When the module is turned on it automatically regulated the temperate based on Hysteresis on and Hysteresis off.



When the temperature is decreasing and reaches point 1 (defined by parameter 43), heating device is turned on and remains active until the temperature in the room is not increased to reach point 2 (defined by parameter 44). In this moment heating device is turned off.

When heating device is turned off, then it is working in antifreeze regime. The antifreeze regime turns on heating device when the temperature is lower of equal to the temperature set by parameter 45.

Temperature limits

- Temperature too low is send when the actual temperature is equal or smaller to the value set by parameter 60 (Check Associated Groups)
- Temperature too high is send when the actual temperature is equal or higher to the value set by parameter 61. (Check Associated Groups)

Important disclaimer

Z-Wave wireless communication is inherently not always 100% reliable, and as such, this product should not be used in situations in which life and/or valuables are solely dependent on its function.

Warning!

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. When replacing old appliances with new once, the retailer is legally obligated to take back your old appliance for disposal at least for free of charge.

This user manual is subject to change and improvement without notice.

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