Qubino

Z-WAVE PLUS

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

Flush 1 Relay

ORDERING CODE	Z-WAVE FREQUENCY
ZMNHAD1	868,4 MHz
ZMNHAD2	921,4 MHz
ZMNHAD3	908,4 MHz
ZMNHAD4	869,0 MHz
ZMNHAD5	916,0 MHz
ZMNHAD8	865,2 MHz

This Z-Wave module is used for switching on or off the electrical device (e.g. light or fan). 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", hidden behind a traditional wall switch. Module measures power consumption of electrical device and supports connection of digital temperature sensor. 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

- To prevent electrical shock and/or equipment damage, disconnect electrical power at the main fuse or circuit breaker before installation or any servicing.
- Make sure, that no voltage is present in the installation.
- Prevent the disconnecting device from being switched on accidentally.
- 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.
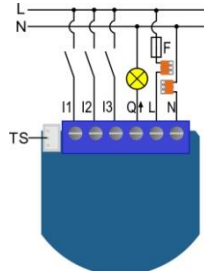
Note!

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.

Electrical installation must be protected by directly associated over current protection fuse 10A, gG or Time lag T, rated breaking capacity 1500A (ESKA 522.727) must be used according to wiring diagram to achieve appropriate overload protection of the module.
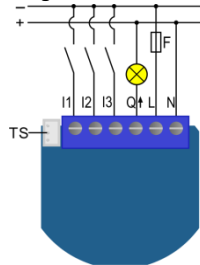
Electrical diagram 230VAC

Notes for the diagram:

N Neutral lead
L Live lead
Q↑ Output for electrical device
I3 Input for switch /push button or sensor
I2 Input for switch /push button or sensor
I1 Input for switch /push button
TS Terminal for digital temperature sensor (only for Flush 1 relay module compatible digital temperature sensor, which must be ordered separately).

Wago 221-413 splicing connectors for L and N connection must be used.

Electrical diagram 24VDC

Notes for the diagram:

N + VDC
L - VDC
Q↑ Output for electrical device
I3 Input for switch /push button or sensor
I2 Input for switch /push button or sensor
I1 Input for switch /push button
TS Terminal for digital temperature sensor (only for Flush 1 relay module compatible digital temperature sensor, which must be ordered separately).

S Service button (used to add or remove module from the Z-Wave network in case of 24 V SELV power supply).

WARNING: Service button S **must NOT be used** when module is connected to 110-230V power supply.

Durability of the module depends on applied load. For resistive load (light bulbs,..) and 10A current consumption of each individual electrical device, the durability exceeds 100.000 switches of each individual electrical device.

Package contents

- Flush 1 relay

Module Inclusion (Adding to Z-wave network)

- Connect module to power supply (with temperature sensor connected - if purchased*),
- enable add/remove mode on main controller
- auto-inclusion (works for about 5 seconds after connected to power supply) or
- press push button I1 three times within 3s (3 times change switch state within 3 seconds) or
- press service button **S** (only applicable for 24 V SELV supply voltage) for more than 2 second.

NOTE 1: For auto-inclusion procedure, first set main controller into inclusion mode and then connect module to power supply.

NOTE 2: When connecting temperature sensor to module that has already been included, you have to exclude module first. Switch off power supply, connect the sensor and re-include the module.

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

- Connect module to power supply
- bring module within maximum 1 meter (3 feet) of the main controller,
- enable add/remove mode on main controller
- 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 or
- press service button **S** (only applicable for 24 V SELV supply voltage) for more than 6 second.

By this function all parameters of the module are set to default values and own ID is deleted.

If push button I1 is pressed three times within 3s (or service button S is pressed more than 2 and less than 6 seconds) module is excluded, but configuration parameters are not set to default values.

NOTE: If the module is included with parameters 100 or 101 with values different to default and module reset is done, wait at least 30s before next inclusion.

Associations

Association enables Flush 1 relay module to transfer commands inside Z-Wave network directly (without main controller) to other Z-Wave modules.

Associated Groups:

Root device:

Group 1: Lifeline group (reserved for communication with the main controller), 1 node allowed.

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

Group 3: basic on/off (triggered at change of the input I2 state and reflecting its state) up to 16 nodes.

Group 4: Notification report (triggered at change of the input I2 state and reflecting its state) up to 16 nodes.

Group 5: Binary sensor (triggered at change of the input I2 state and reflecting its state) up to 16 nodes.

Group 6: basic on/off (triggered at change of the input I3 state and reflecting its state) up to 16 nodes.

Group 7: notification report (triggered at change of the input I3 state and reflecting its state) up to 16 nodes.

Group 8: binary sensor report (triggered at change of the input I3 state and reflecting its state) up to 16 nodes.

Group 9: multilevel sensor report (triggered at change of temperature sensor) up to 16 nodes.

Endpoint 1:

Group 1: Lifeline group, 0 nodes allowed.

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

Endpoint 2:

Group 1: Lifeline group, 0 nodes allowed.

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

Group 3: Notification Report (triggered at change of the input I2 state and reflecting its state) up to 16 nodes.

Group 4: Binary Sensor Report (triggered at change of the input I2 state and reflecting its state) up to 16 nodes.

Endpoint 3:

Group 1: Lifeline group, 0 nodes allowed.

Group 2: basic on/off (triggered at change of the input I3, state and reflecting its state) up to 16 nodes.

Group 3: Notification Report (triggered at change of the input I3 state and reflecting its state) up to 16 nodes.

Group 4: Binary Sensor Report (triggered at change of the input I3 state and reflecting its state) up to 16 nodes.

End point 4:

Group 1: Lifeline group, 0 nodes allowed.

Group 2: multilevel sensor report (triggered at change of temperature sensor) up to 16 nodes.

Configuration parameters

Parameter no. 1 – Input 1 switch type

Available config. 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 contact type

Available config.parameters (data type is 1 Byte DEC):

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

Parameter no. 3 – Input 3 contact type

Available config.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 config.parameters (data type is 2 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 1 relay 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 - Automatic turning off output after set time

When relay is ON it goes automatically OFF after time defined by this parameter. Timer is reset to zero each time the module receive ON command regardless from where it comes (push button, associated module, controller,..). Available configuration parameters (data type is 2 Byte DEC):

- default value 0
- 0 - Auto OFF disabled
- 1 - 32535 = 1second (0,01s) - 32535 seconds (325,35s) Auto OFF enabled with define time, step is 1s or 10ms according to parameter nr.15.

Parameter no. 12 - Automatic turning on output after set time

When relay is OFF it goes automatically ON after time defined by this parameter. Timer is reset to zero each time the module receive OFF command regardless from where it comes (push button, associated module, controller,..). Available configuration parameters (data type is 2 Byte DEC):

- default value 0
- 0 - Auto ON disabled
- 1 - 32535 = 1second (0,01s) - 32536 seconds (325,35s) Auto ON enabled with define time, step is 1s or 10ms according to parameter nr.15.

Parameter no. 15 - Automatic turning off / on seconds or milliseconds selection

Available config.parameters (data type is 1 Byte DEC):

- default value 0
- 0 - seconds selected
- 1 - milliseconds selected

NOTE: Parameter is the same for turning OFF or ON.

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

Available config.parameters (data type is 1 Byte DEC):

- default value 0
- 0 - Flush 1 relay module saves its state before power failure (it returns to the last position saved before a power failure)
- 1 - Flush 1 relay 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 10 = 10%
- 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 – 32535) in seconds, when power report is send. Available configuration parameters (data type is 2 Byte DEC):

- default value 300 = 300s
- 0 - reporting disabled
- 1 - 32535 = 1second - 32535 seconds. Reporting enabled. Power report is send with time interval set by entered value.

Parameter no. 63 – Output Switch selection

Set value means the type of the device that is connected to the 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 0V (NC).
- 1 - When system is turned off the output is 230V or 24V (NO).

Parameter no. 100 – Enable / Disable Endpoints I2 or select Notification Type and Event

Enabling I2 means that Endpoint (I2) will be present on UI. Disabling it will result in hiding the endpoint according to the parameter set value. Additionally, a Notification Type and Event can be selected for the endpoint. Available configuration parameters (data type is 1 Byte DEC):

Endpoint device type selection:

- notification sensor (1 - 6):
GENERIC_TYPE_SENSOR_NOTIFICATION, SPECIFIC_TYPE_NOTIFICATION_SENSOR

- default value 0
- 1 - Home Security; Motion Detection, unknown loc.
- 2 - Carbon Monoxide; Carbon Monoxide detected, unknown location.
- 3 – Carbon Dioxide; Carbon Dioxide detected, unknown location.
- 4 - Water Alarm; Water Leak detected, unknown lo.
- 5 - Heat Alarm; Overheat detected, unknown loc.
- 6 - Smoke Alarm; Smoke detected, unknown loc.
- 0 - Endpoint, I2 disabled

- sensor binary (9):
GENERIC_TYPE_SENSOR_BINARY, SPECIFIC_TYPE_NOT_USED

- 9 - Sensor binary

NOTE1: After parameter change, first exclude module (without setting parameters to default value) then wait at least 30s and then re include the module!

NOTE 2: When the parameter is set to value 9 the notifications are send for Home Security.

Parameter no. 101 – Enable / Disable Endpoints I3 or select Notification Type and Event

Enabling I3 means that Endpoint (I3) will be present on UI. Disabling it will result in hiding the endpoint according to the parameter set value. Additionally, a Notification Type and Event can be selected for the endpoint. Available configuration parameters (data type is 1 Byte DEC):

Endpoint device type selection:

- notification sensor (1 - 6):
GENERIC_TYPE_SENSOR_NOTIFICATION, SPECIFIC_TYPE_NOTIFICATION_SENSOR

- default value 0
- 1 - Home Security; Motion Detection, unknown loc.
- 2 - Carbon Monoxide; Carbon Monoxide detected, unknown location.
- 3 - Carbon Dioxide; Carbon Dioxide detected, unknown location.
- 4 - Water Alarm; Water Leak detected, unknown lo.
- 5 - Heat Alarm; Overheat detected, unknown loc.
- 6 - Smoke Alarm; Smoke detected, unknown loc.
- 0 - Endpoint, I3 disabled

- sensor binary (9): GENERIC_TYPE_SENSOR_BINARY, SPECIFIC_TYPE_NOT_USED

- 9 – Sensor binary

NOTE1: After parameter change, first exclude module (without setting parameters to default value) then wait at least 30s and then re include the module!

NOTE 2: When the parameter is set to value 9 the notifications are send for Home Security.

Parameter no. 110 – Temperature sensor offset settings

Set value is added or subtracted to actual measured value by sensor. Available configuration parameters (data type is 2 Byte DEC):

- default value 32536
- 32536 - offset is 0.0C
- From 1 to 100 - value from 0.1°C to 10.0°C is added to actual measured temperature.
- From 1001 to 1100 - value from -0.1 °C to -10.0 °C is subtracted to actual measured temperature.

Parameter no. 120 –Temperature sensor reporting

If digital temperature sensor is connected, module reports measured temperature on temperature change defined by this parameter. Available configuration parameters (data type is 1 Byte DEC):

- default value 5 = 0,5°C
- 0 - Reporting disabled
- 1- 127 = 0,1°C – 12,7°C, step is 0,1°C

Technical Specifications

Power supply	110 - 230 VAC ±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 measurement accuracy	P=5-50W, +/-3W P>50W, +/-3%
Digital temp. sensor range (must be ordered separately)	-50 ~ +125°C
Operation temperature	-10 ~ +40°C
Distance	up to 30 m indoors
Dimensions (WxHxD) (package)	41,8x36,8x15,4mm (79x52x22mm)
Weight (Brutto with package)	28g (34g)
Electricity consumption	0,4W
For installation in boxes	Ø ≥ 60mm or 2M, depth≥ 60mm
Switching	Relay

* 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.

Supported loads:

(M) Electric motor

☼ Conventional incandescent and halogen lights

LED bulb, compact fluorescent bulb (CFL), low voltage halogen bulbs with electronic transformer

Low voltage halogen bulbs with conventional transformer

Z-Wave Device Class:

ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_0N
GENERIC_TYPE_SWITCH_BINARY
SPECIFIC_TYPE_POWER_SWITCH_BINARY

Z-Wave Supported Command Classes:

COMMAND_CLASS_ZWAVEPLUS_INFO_V2,
COMMAND_CLASS_VERSION_V2,
COMMAND_CLASS_MANUFACTURER_SPECIFIC_2,
COMMAND_CLASS_DEVICE_RESET_LOCALLY_1,
COMMAND_CLASS_POWERLEVEL_V1,
COMMAND_CLASS_BASIC_V1,
COMMAND_CLASS_SWITCH_ALL_V1,
COMMAND_CLASS_SWITCH_BINARY_V1,
COMMAND_CLASS_SENSOR_BINARY_V1,
COMMAND_CLASS_METER_V4,
COMMAND_CLASS_SENSOR_MULTILEVEL_V7,
COMMAND_CLASS_MULTI_CHANNEL_V4,
COMMAND_CLASS_ASSOCIATION_V2,
COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V3,
 COMMAND_CLASS_ASSOCIATION_GRP_INFO_V2,
COMMAND_CLASS_CONFIGURATION_V1,
COMMAND_CLASS_MARK,
COMMAND_CLASS_BASIC_V1

Endpoint 1

Device Class:

ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_0N
GENERIC_TYPE_SWITCH_BINARY
SPECIFIC_TYPE_POWER_SWITCH_BINARY

Command Classes:

COMMAND_CLASS_ZWAVEPLUS_INFO_V2
COMMAND_CLASS_VERSION_V2
COMMAND_CLASS_BASIC_V1
COMMAND_CLASS_SWITCH_ALL_V1
COMMAND_CLASS_SWITCH_BINARY_V1
COMMAND_CLASS_METER_V4
COMMAND_CLASS_ASSOCIATION_V2
COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V3
COMMAND_CLASS_ASSOCIATION_GRP_INFO_V2
COMMAND_CLASS_MARK
COMMAND_CLASS_BASIC_V1

Endpoint 2 (I2):

Device Class:

ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_0N
GENERIC_TYPE_SENSOR_NOTIFICATION
SPECIFIC_TYPE_NOTIFICATION_SENSOR

Command Classes:

COMMAND_CLASS_ZWAVEPLUS_INFO
COMMAND_CLASS_VERSION_V2
COMMAND_CLASS_SENSOR_BINARY
COMMAND_CLASS_BASIC
COMMAND_CLASS_NOTIFICATION_V5
COMMAND_CLASS_ASSOCIATION_V2
COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V3
COMMAND_CLASS_ASSOCIATION_GRP_INFO_V2
COMMAND_CLASS_MARK
COMMAND_CLASS_BASIC

Endpoint 3 (I3):

Device Class:

ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_0N
GENERIC_TYPE_SENSOR_NOTIFICATION
SPECIFIC_TYPE_NOTIFICATION_SENSOR

Command Classes:

COMMAND_CLASS_ZWAVEPLUS_INFO_V2
COMMAND_CLASS_VERSION_V2
COMMAND_CLASS_SENSOR_BINARY_V1
COMMAND_CLASS_BASIC_V1
COMMAND_CLASS_NOTIFICATION_V5
COMMAND_CLASS_ASSOCIATION_V2
COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V3
COMMAND_CLASS_ASSOCIATION_GRP_INFO_V2
COMMAND_CLASS_MARK
COMMAND_CLASS_BASIC_V1

Endpoint 4:

Device Class:

ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_0N
GENERIC_TYPE_SENSOR_MULTILEVEL
SPECIFIC_TYPE_ROUTING_SENSOR_MULTILEVEL

Command Classes:

COMMAND_CLASS_ZWAVEPLUS_INFO_V2
COMMAND_CLASS_VERSION_V2
COMMAND_CLASS_ASSOCIATION_V2
COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V3
COMMAND_CLASS_ASSOCIATION_GRP_INFO_V2

COMMAND_CLASS_SENSOR_MULTILEVEL_V7

NOTE: The above list is valid for the product with a temperature sensor connected to TS terminal. In case the sensor is not connected then following command class isn't supported:

COMMAND_CLASS_SENSOR_MULTILEVEL_V7

NOTE: The product supports the following COMMAND_CLASS_NOTIFICATION_V5 events:

- Smoke Alarm v2 – Smoke detected, unknown location (0x02)
- CO Alarm v2 – Carbon Monoxide detected, unknown location (0x02)
- CO_2 Alarm – Carbon Dioxide detected, unknown location (0x02)
- Heat Alarm v2 – Overheat detected, unknown location (0x02)
- Water Alarm v2 – Water Leak detected, unknown location (0x02)
- Home Security – Motion Detection, unknown location (0x08)

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.

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.

NOTE: User manual is valid for module with SW version S5 (SW version is part of P/N)! Example:P/N: ZMNHADx Hx**S5**Px

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Date: 12.04.2016
Document: Qubino_Flush 1 relay PLUS user manual_V1.4_eng