Qubino

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

DIN dimmer

ORDERING CODE	Z-WAVE FREQUENCY
ZMNHSD1	868,4 MHz
ZMNHSD2	921,4 MHz
ZMNHSD3	908,4 MHz
ZMNHSD4	869,0 MHz
ZMNHSD5	916,0 MHz

This Z-Wave module is used for dimming the bulb or to manage the speed of a fan. The module can be controlled either through a Z-Wave network or through the wall switch.

The module is designed to be mounted inside an electrical cabinet onto DIN rail.

Module measures power consumption of bulb or fan 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 and bi-stable switches (input I).

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!

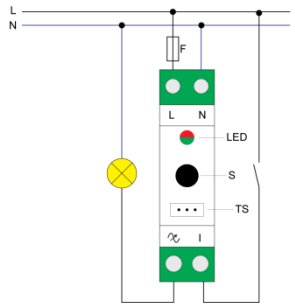
Do not connect the module to loads exceeding recommended values. Connect the module only in accordance to the below diagrams. Improper connections may be dangerous.

Electrical installation must be protected by over current protection fuse 1A, Tag lag T, rated breaking capacity 1500V (ESKA 522.7..) according to wiring diagram.

Package contents:

- DIN dimmer

Electrical diagram 230VAC



Notes for the diagram:

N Neutral lead

L Live lead

Output for electrical device

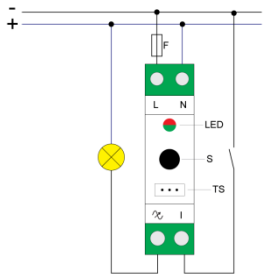
I Input for push button/switch

LED Red – overload, Green - Power on (solid) / no ID (blinking slow 1s)

TS Terminal for digital temperature sensor (only for DIN dimmer module compatible digital temperature sensor, which must be ordered separately).

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

Electrical diagram 24VDC



Notes for the diagram:

N +VDC

L -VDC

Output for electrical device

I Input for push button/switch

LED Red – overload, Green - Power on (solid) / no ID (blinking slow 1s)

TS Terminal for digital temperature sensor (only for DIN dimmer module compatible digital temperature sensor, which must be ordered separately).

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

NOTE:

When overload is detected, module automatically switches off the output. At the same time red led become solid on. In this case check if the load is according to specifications and if connections are according diagram. To recover module in normal state, you need to power cycle the module.

Module Inclusion (Adding to Z-Wave network)

- Connect module to power supply (with temperature sensor connected - if purchased),
- auto-inclusion (works for about 5 seconds after connected to power supply) or
- press service button **S** for more than 2 second or
- press push button I three times within 3s (3 times change switch state within 3 seconds).

NOTE1: For auto-inclusion procedure, first set main controller into inclusion mode and then connect module to power supply.

NOTE2: 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 service button **S** for more than 6 seconds or-
- press push button **I** 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 seconds (or if push button I is pressed three times within 3s) module is excluded, but configuration parameters are not set to default values.

Association

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

Associated Groups:

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

Group 2: basic on/off (triggered at change of the input I1 state and reflecting its state) up to 16 nodes

Group 3: start level change/stop level change (triggered at change of the input I1 state and reflecting its state) up to 16 nodes

Group 4: multilevel set (triggered at changes of state/value of the DIN dimmer) up to 16 nodes

Group 5: 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 input I1 state and reflecting its state) up to 16 nodes

Group 3: multilevel set (triggered at changes of state / value of the DIN dimmer) up to 16 nodes

Group 4: start level change / stop level change (triggered at change of the input I1 state and reflecting its state) up to 16 nodes

End point 2:

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 switch type

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

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

Parameter no. 5 – Working mode

With this parameter is possible to change the module presentation on the user interface (data type is 1 Byte DEC):

- default value 0
- 0 - dimmer mode
- 1 - switch mode

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

Available configuration 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

DIN dimmer 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

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

- default value 0
- 0 - Auto OFF disabled
- 1 - 32536 = 1second - 32536 seconds Auto OFF enabled with define time, step is 1 second.

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

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

- default value 0
- 0 - Auto ON disabled
- 1 - 32535 = 1second - 32535 seconds Auto ON enabled with define time, step is 1 second.

Parameter no. 21 – Enable/Disable Double click function

If Double click function is enabled, a fast double click on the push button will set dimming power at maximum dimming value. Available configuration parameters (data type is 1 Byte DEC):

- default value 0
- 0 - double click disabled
- 1 - double click enabled

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

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

- default value 0
- 0 - DIN dimmer module saves its state before power failure (it returns to the last position saved before a power failure).
- 1 - DIN dimmer 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 5
- 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 – 32767) in seconds, when power report is send. Available configuration parameters (data type is 2 Byte DEC):

- default value 0
- 0 - reporting disabled
- 1 - 32767 = 1 second - 32767 seconds. Reporting enabled. Power report is send with time interval set by entered value. Please note, that too fast reporting can cause too much Z-Wave traffic resulting in Z-Wave poor response.

Parameter no. 60 – Minimum dimming value

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

- default value 1 = 1% (minimum dimming value)
- 1 - 98 = 1% - 98%, step is 1%. Minimum dimming values is set by entered value.

NOTE: The minimum level may not be higher than the maximum level! 1% min. dimming value is defined by Z-Wave multilevel device class.

Parameter no. 61 – Maximum dimming value

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

- default value 99 = 99% (Maximum dimming value)
- 2 - 99 = 2% - 99%, step is 1%. Maximum dimming values is set by entered value.

NOTE: The maximum level may not be lower than the minimum level! 99% max. dimming value is defined by Z-Wave multilevel device class.

Parameter no. 65 – Dimming time (soft on/off)

Set value means time of moving the Dimmer between min. and max. dimming values by short press of push button I or controlled through UI (BasicSet). Available configuration parameters (data type is 2 Byte DEC):

- default value 100 = 1s
- 50 - 255 = 500 mseconds - 2550 mseconds (2,55s), step is 10 mseconds

Parameter no. 66 – Dimming time when key pressed

Time of moving the Dimmer between min. and max dimming values by continues hold of push button I or associated device. Available configuration parameters (data type is 2 Byte DEC):

- default value 3 = 3s
- 1- 255 = 1 second - 255 seconds

Parameter no. 67 – Ignore start level

This parameter is used with association group 3.

A receiving device SHOULD respect the start level if the Ignore Start Level bit is 0. A receiving device MUST ignore the start level if the Ignore Start Level bit is 1. Available configuration parameters (data type is 1 Byte DEC):

- default value 0
- 0 - respect start level
- 1 - ignore start level

Parameter no. 68 – Dimming duration

This parameter is used with association group 3.

The Duration field MUST specify the time that the transition should take from the current value to the new target value. A supporting device SHOULD respect the specified Duration value. Available configuration parameters (data type is 1 Byte DEC):

- default value 0 = dimming duration according to parameter 66
- 1 - 127 = from 1 to 127 seconds

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
- 1 - 100 = value from 0.1 °C to 10.0 °C is added to actual measured temperature.
- 1001 - 1100 = value from -0.1 °C to -10.0 °C is subtracted to actual measured temperature.

Parameter no. 120 – Digital 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 change
- 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 or 60Hz**, 24-30VDC
Rated load current of AC output	0,85A/ 230VAC
Rated load current of DC output	0,85A / 30VDC
Output circuit power of AC output (resistive load)*	230W (230VAC)
Output circuit power of DC output (resistive load)	24W (24VDC)
Power measurement accuracy	+/-2W
Digital temperature sensor range (sensor must be ordered separately)	-50 ~ +125°C
Operation temperature	-10 ~ +40°C
Distance	up to 30 m indoors (depending on building materials)
Dimensions (WxHxD) (package)	18x93x58mm (21x95x64mm)
Weight (Brutto with package)	50g (56g)
Electricity consumption	0,7W
Mounting	DIN rail
Switching	MOSFET (Trailing edge)

*max 100W mono-phase asynchronous fan motor can be connected to dimmer output.

** depend on ordering code

Description of switch function:

Switch toggles (parameter 1 set to 1) the state of the light bulb between the last dimming value and 0. If last dimming value is 0 then the light is turned 100% when switch changes its state.

Bulb types which support dimming function:

- The classical incandescent bulbs.
- Halogen bulbs operated by 230 V AC (High Voltage Halogen).
- Low voltage halogen bulbs with electronic or conventional transformer.
- Dimmable compact fluorescent bulb (CFL). If the bulb at low intensities flushes, it is recommended to set parameter 60 (minimum dimming value) to 30 or more.
- Dimmable LED bulbs.

Wave Device Class:

ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_0N
GENERIC_TYPE_SWITCH_MULTILEVEL
SPECIFIC_TYPE_POWER_SWITCH_MULTILEVEL

Z-Wave Supported Command Classes:

COMMAND_CLASS_ZWAVEPLUS_INFO_V2,
COMMAND_CLASS_VERSION_V2
COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2
COMMAND_CLASS_DEVICE_RESET_LOCALLY_V1
COMMAND_CLASS_POWERLEVEL_V1
COMMAND_CLASS_BASIC_V1
COMMAND_CLASS_SWITCH_ALL_V1
COMMAND_CLASS_SWITCH_BINARY_V1
COMMAND_CLASS_SWITCH_MULTILEVEL_V3
COMMAND_CLASS_METER_V4
COMMAND_CLASS_SENSOR_MULTILEVEI_V7
COMMAND_CLASS_MULTI_CHANNEL_V4
COMMAND_CLASS_ASSOCIATION_2
COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V3
COMMAND_CLASS_ASSOCIATION_GRP_INFO_V2
COMMAND_CLASS_CONFIGURATION_V1
COMMAND_CLASS_MARK
COMMAND_CLASS_BASIC_V1
COMMAND_CLASS_SWITCH_MULTILEVEL_V3

Endpoint 1

Device Class:

ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_0N
GENERIC_TYPE_SWITCH_MULTILEVEL
SPE SPECIFIC_TYPE_POWER_SWITCH_MULTILEVEL

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_SWITCH_MULTILEVEL_V3
COMMAND_CLASS_METER_V4
COMMAND_CLASS_ASSOCIATION_2
COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V3
COMMAND_CLASS_ASSOCIATION_GRP_INFO_V2
COMMAND_CLASS_MARK
COMMAND_CLASS_BASIC_V1
COMMAND_CLASS_SWITCH_MULTILEVEL_V3

Endpoint 2:

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

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 S1 (SW version is part of P/N)!

Example: P/N: ZMNHSDx H1**S1**P1

NOTE:

Module will support connection of digital temperature sensor from Q3 2016!

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