Qubino

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

Flush Dimmer 0-10V

ORDERING CODE	Z-WAVE FREQUENCY
ZMNHVD1	868,4 MHz
ZMNHVD2	921,4 MHz
ZMNHVD3	908,4 MHz
ZMNHVD4	869,0 MHz
ZMNHVD5	916,0 MHz
ZMNHVD8	865,2 MHz

Universal dimmer module with a standard 0-10V output and a multi-function input, which may be a push button / switch, a potentiometer or 0-10V signal

Supported control types

- Push button (mono stable switch)
- Bi stable switch
- Potentiometer
- 0-10V input (requires external source)

Installation

- Before the installation disconnect power supply (12-24VDC)
- 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).

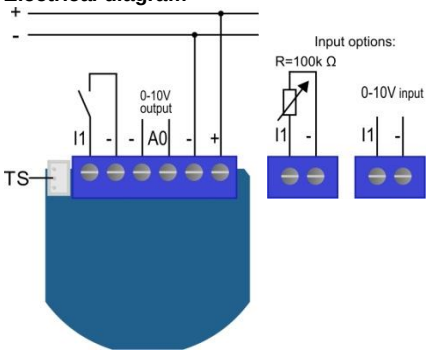
Note!

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 Dimmer 0-10V

Electrical diagram



Notes for the diagram:

+ 12 - 24VDC

- GND

AO 0 - 10VDC

I1 Input for push button/switch/potentiometer or 0-10V

TS Terminal for digital temperature sensor (only for Flush Dimmer 0-10V module compatible digital temperature sensor, which must be ordered separately).

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

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 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).

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 (3feet) 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 6second module is excluded, but configuration parameters are not set to default values.

NOTE: If the module is included with parameter 1 value 3, 4 or 5 and module reset is done, wait at least 30s before next inclusion.

Association

Association enables Flush Dimmer 0-10V 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. Working only when the Parameter no. 1 is set to mono stable switch type.

Group 4: multilevel set (triggered at changes of state/value of the Flush Dimmer 0-10V) up to 16 nodes. Working only when the Parameter no. 1 is set to mono stable switch type.

Group 5: multilevel sensor report (triggered at change of analogue sensor) up to 16 nodes.

Group 6: 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 Flush Dimmer 0-10V) 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 analogue sensor) up to 16 nodes.

End point 3:

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 type

By this parameter the user can set input based on device type (switch, potentiometer, 0-10V sensor,..). Available configuration parameters (data type is 1 Byte DEC):

- default value 0
- 0 - mono-stable switch type (push button) – button quick press turns between previous set dimmer value and zero)
- 1 - Bi-stable switch type
- 2 - Potentiometer (Flush Dimmer 0-10V is using set value the last received from potentiometer or from z-wave controller)
- 3 - 0-10V Temperature sensor (regulated output)
- 4 - 0-10V Illumination sensor (regulated output)
- 5 - 0-10V General purpose sensor (regulated output)

NOTE: After parameter change to value 3, 4 or 5 first exclude module (without setting parameters to default value) then wait at least 30s and then re include the module!

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

Flush Dimmer 0-10V 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

Valid only if input is set as mono-stable (push button).

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 - Flush Dimmer 0-10V module saves its state before power failure (it returns to the last position saved before a power failure).
- 1 - Flush Dimmer 0-10V module does not save the state after a power failure, it returns to "off" position.

Parameter no. 52 – Auto or manual selection

This parameter is influencing on the software only when the value of parameter number 1 is set to value 3, 4 or 5. Available configuration parameters (data type is 1 Byte DEC):

- default value 0
- 0 - Manual
- 1 - Auto

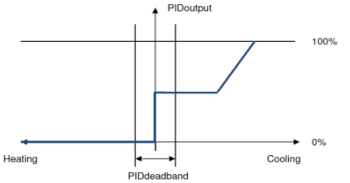
In manual mode regulation (how the input influence on output) is disabled

Parameter no. 53 - PID value inside deadband

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

- default value 0 (PID value equal ZERO)
- 1 - PID value set to LAST VALUE

NOTE: When ZERO PID inside deadband is forced to zero. LASTVALUE means that PID remains on same level as was before entering into deadband



Parameter no. 54 - PID deadband

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

- default value 1 (1%)
- 0 - 100 0 - 100%, step is 1%

NOTE: This parameter defines the zone where PID is not active. If the temperature difference between actual and setpoint is bigger than PID deadband, then the PID will start to regulate the system, otherwise the PID is zero or fixed.

Parameter no. 55 - Integral sampling time

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

- default value 5 (5s)
- 0 - 127 - 0s to 127s, step is 1s

Parameter defines the time between samples. On each sample the controller capture difference between SP-act.

Parameter no. 56 - P parameter

Available config. parameters (data type is 2 Byte DEC):

- default value 100
- 0 -1000 - P value, step is 1

Parameter no. 57 - I parameter

Available config. parameters (data type is 2 Byte DEC):

- default value 1

- 0 - 1000 - I value, step is 1

Parameter no. 58 - D parameter

Available config. parameters (data type is2 Byte DEC):

- default value 1
- 0 - 1000 - D value, step is 1

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. When the switch type is selected as Bi-stable, it is not possible to dim the value between min and max. If Switch_multilevel_set is set to the value "0", the output is turned OFF. If Switch_multilevel_set is set to the value "1", the output is set to the minimum diming value.

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. When the switch type is selected as Bi-stable, it is not possible to dim the value between min and max.

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

Set value means time of moving the Flush Dimmer 0-10V between min. and max. dimming values by short press of push button I1 or controlled through UI (BasicSet). Available config. parameters (data type is 2 Byte DEC):

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

Parameter no. 66 – Dimming time when key pressed

Time of moving the Flush Dimmer 0-10V between min. and max dimming values by continues hold of push button I1 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 (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
- 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 – 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

Parameter no. 140 – Input I1 Sensor reporting

If analogue sensor is connected, module reports measured value on change defined by this parameter. Available configuration parameters (data type is 2 Byte DEC):

- default value 5 = 0,5 change
- 0 - Reporting disabled
- 1 - 10000 = 0,1 - 1000 step is 0,1

NOTE: This value has influence only when the Parameter no. 1 is set to 3, 4 or 5.

Parameter no. 141 Input I1 0-10V reporting threshold

Parameter is associated with Association group No. 2. Below this value, the Association No. 2 will report Basic Set 0xFF and above this value will report Basic Set 0xFF. Basic Set is reported only, when the input value changes for more than 10% (1V). Available configuration parameters (data type is 1 Byte DEC):

- Default setting: 5 (0,5V)
- 1 - 100 - (0,1 - 10V)

Parameter no. 143 – Minimum sensor range value

Value that must correspond to minimum sensor range value. Valid only if parameter 1 is set to values 3, 4 or 5). Available configuration parameters (data type is 2 Byte DEC):

- default value 0 = 0.0°C / 0Lux / 0.0%rh
- 0 - 10000 – value from 0 to 1000 (resolution 0,1)
- 10001 – 20000 – value from -0,1 to -1000 (resolution 0,1)

NOTE: Minimum value must not be higher than maximum value!

Parameter no. 144 – Maximum sensor range value

Value that must correspond to maximum sensor range value. Valid only if parameter 1 is set to values 3, 4 or 5). Available configuration parameters (data type is 2 Byte DEC):

- default value 1000 = 100.0°C / 100Lux / 100%rh
- 0 - 10000 – value from 0 to 1000 (resolution 0,1)
- 10001 – 20000 – value from -0,1 to -1000 (resolution 0,1)

NOTE: Maximum value must not be lower than minimum value!

Technical Specifications

Power supply	12-24VDC
Max. sinking control voltage	-20 / +20VDC
Max. sourcing control voltage	0-11VDC
Max. sinking current	2mA
Max. sourcing current	7mA
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)	41,8x36,8x15,4mm (79x52x22)
Weight (Brutto with package)	28g (34g)
Electricity consumption	0,5W

Z-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_SENSOR_MULTILEVE_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
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_SENSOR_BINARY_V1
COMMAND_CLASS_SWITCH_MULTILEVEL_V3
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

Endpoint 3:

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 S1 (SW version is part of P/N)! Example: P/N: ZMNHVDx Hx**S1**Px

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