



The INNOVATIVE and SMALLEST

Flush Dimmer

ORDERING CODE	Z-WAVE FREQUENCY
ZMNHDD1	868,4 MHz
ZMNHDD2	921,4 MHz
ZMNHDD3	908,4 MHz
ZMNHDD4	869,0 MHz
ZMNHDD5	916,0 MHz
ZMNHDD8	865,2 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 a "flush mounting box", hidden behind a traditional wall switch. Electrical diagram 24VDC 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 and bi-stable switches (input I1). 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
- Prevent the disconnecting device from being switched on accidentally.
- Connect the module according to electrical diagram.
- 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 TS electrician
- Even when the module is turned off, voltage may be present on its terminals.

Notel

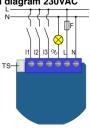
Do not connect the module to loads exceeding recommended values. Connect the module only in accordance to the below diagrams. Improper connections may be dangerous.

Electrical installation must be protected by directly associated over current protection fuse 1A, gG or Time lag T, rated breaking capacity 1500A (ESKA 522.717) must be used according to wiring diagram to achieve appropriate overload protection of the module. The fuse must be installed in fuse holder type: Adels contact 503 Si/ 1 DS.

Package contents:

Flush Dimmer

Electrical diagram 230VAC



Notes for the diagram:

Neutral lead

Live lead

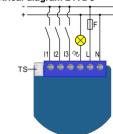
Output for electrical device

13 Input for switch/push button or sensor

Input for switch/push button or sensor

Input for push button/switch

Terminal for digital temperature sensor (only for Flush Dimmer module compatible digital temperature sensor, which must be ordered separately)



Notes for the diagram:

+ VDC

- VDC

Output for electrical device

Input for switch/push button or sensor

Input for switch/push button or sensor

Input for push button/switch

Terminal for digital temperature sensor (only for Flush Dimmer module compatible digital temperature sensor, which must be ordered separately)



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. NOTE: When overload is detected, module automatically

switches off the output. 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),

- enable add/remove mode on main controller
- auto-inclusion (works for about 2 minutes after connected to power supply) or
- press push button I1 three times within 3s (3 times change switch state within 3 seconds) or
- supply voltage) for more than 2 second. 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 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
- 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. Please use reset procedure only when the network primary controller is missing or otherwise inoperable."

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.

Association

Association enables Flush 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 and reflecting state of the output Q) 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

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

Group 5: basic on/off (triggered at change of the input I2 Available config. parameters (data type is 1 Byte DEC): state and reflecting its state) up to 16 nodes.

Group 6: Notification report (triggered at change of the input 12 state and reflecting its state) up to 16 nodes.

state and reflecting its state) up to 16 nodes.

state and reflecting its state) up to 16 nodes. Group 9: notification report (triggered at change of the input •

13 state and reflecting its state) up to 16 nodes.

Group 10: binary sensor report (triggered at change of the • input I3 state and reflecting its state) up to 16 nodes.

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) 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 Parameter no. 12 - Automatic turning on output after

press service button S (only applicable for 24 V SELV 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 0
- 0 mono-stable switch type (push button) button quick press turns between previous set Dimmer value
- 1 bi-stable switch type

NOTE: Switch connected to S1 terminal is a master switch. It activates the basic functionality of the Dimmer

Parameter no. 2 - Input 2 switch type

Available config. 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
- 1 bi-stable switch type

NOTE: to enable this function, Parameter 20 or Parameter 100 has to be set.

Parameter no. 3 - 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. 4 - Input 3 contact type

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

Group 7: Binary sensor (triggered at change of the input I2 Parameter no. 10 - Activate / deactivate functions ALL ON/ALL OFF

Group 8: basic on/off (triggered at change of the input I3 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

Group 11: multilevel sensor report (triggered at change of Flush 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

Available config. 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.

Available config. 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. 20 - Enable/Disable 3way switch/ additional switch

Dimming is done by push button or switch connected to I1 (by default). Enabling 3way switch, dimming can be controlled by push button or switch connected to I1 and I2. Available config. parameters (data type is 1 Byte DEC):

- default value 0
- 0 single push button (connected to I1)
- 1 3 way switch (connected to I1 and I2)
- 2 Additional switch (connected to I2)

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

- default value 0
- 0 Flush Dimmer module saves its state before power failure (it returns to the last position saved before a power failure).
- 1 Flush 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

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

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

Parameter no. 60 - Minimum dimming value

Available config. 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 config. 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- configuration parameters (data type is 1 Byte DEC): 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 I1 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 I1 or - sensor binary (9): GENERIC_TYPE_SENSOR_BINARY, associated device. Available configuration parameters (data SPECIFIC TYPE_NOT_USED 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 Parameter no. 110 - Temperature sensor offset settings 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 Parameter no. 120 -Temperature sensor reporting Duration value. Available configuration parameters (data type is 1 Byte DEC):

- parameter 66)
- 1 127 (from 1 to 127 seconds)

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 CO: Carbon Monoxide detected, unknown, loc. 3 - CO2: Carbon Dioxide detected, unknown loc.
- 4 Water Alarm: Water Leak detected, unknown loc.
- 5 Heat Alarm: Overheat detected, unknown loc.
- 6 Smoke Alarm: Smoke detected, unknown loc.
- 0 Endpoint 12 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

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 CO: Carbon Monoxide detected, unknown, loc.,
- 3 CO2; Carbon Dioxide detected, unknown loc.
- 4 Water Alarm; Water Leak detected, unknown loc.
- 5 Heat Alarm: Overheat detected, unknown loc.
- 6 Smoke Alarm: Smoke detected, unknown loc. 0 - Endpoint, I3 disabled
- 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.

Set value is added or subtracted to actual measured value by sensor. Available configuration parameters (data type is the gateway 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
- subtracted to actual measured temperature

If digital temperature sensor is connected, module reports measured temperature on temperature change defined by • default value 0 (dimming duration according to 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. 249 - Enable/Disable Reporting on Set

Available configuration parameter (data type is 1 Byte Dec):

- default Value 1
- 0 Disable reporting
- 1 Enable reporting

Parameter No. 250 - Unsecure / Secure Inclusion

Available configuration parameter (data type is 1 Byte Dec); **Z-Wave Supported Command Classes:**

- default Value 0
- 0 Unsecure Inclusion
- 1 Secure Inclusion

A Flush dimmer supports secure and unsecure inclusion. Even if the controller does not support security command classes, a dimmer could be included as unsecure and keep all the functionality.

Technical Specifications

110 - 230 VAC ±10%
50 or 60Hz**,(24-30VDC)
0,6A / 230VAC
0,85A / 30VDC

Output circuit power of AC	140W (230VAC)
output (resistive load)*	
Output circuit power of DC	21W (24VDC)
output (resistive load)	
Power measurement accuracy	+/-2W
Digital temperature sensor	-50 ~ +125°C
range (sensor must be	
ordered separately)	
Operation temperature	-10 ~ +40°C
Distance	up to 30 m indoors
	(depending on building
	materials)
Dimensions (WxHxD)	41,8x36,8x15,4mm
(package)	(79x52x22mm)
Weight (Brutto with package)	28g (34g)
Electricity consumption	0,7W
For installation in boxes	Ø ≥ 60mm or 2M,
	depth≥ 60mm
Switching	MOSFET (Trailing edge)
*max 100W mono-phase asyn	chronous fan motor can b

connected to Dimmer output.

Max Power Limit is automatically set by a software. If max power is exceeded for more than 5 seconds, the output is COMMAND_CLASS_NOTIFICATION_V5 turned off up to the next power cycle of the module.When COMMAND_CLASS_MARK overload occurred, Event "Over-load detected" is send to COMMAND_CLASS_BASIC_V1

Consumption in kWh is reported on every change for

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 From 1001 to 1100 - value from -0.1 °C to -10.0 °C is 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
- Dimmable LED bulbs.

Wave Device Class:

ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_0N GENERIC TYPE SWITCH MULTILEVEL SPECIFIC TYPE POWER SWITCH MULTILEVEL

COMMAND CLASS ZWAVEPLUS INFO V2.

COMMAND CLASS VERSION V2

COMMAND_CLASS_DEVICE_RESET_LOCALLY_V1

COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2

COMMAND_CLASS_POWERLEVEL_V1 COMMAND CLASS SECURITY

Securely Supported Command Classes:

COMMAND_CLASS_SWITCH_ALL_V1 COMMAND CLASS SWITCH BINARY V1 COMMAND_CLASS_SENSOR_BINARY_V1 COMMAND CLASS SWITCH MULTILEVEL V3 COMMAND_CLASS_METER_V4 COMMAND CLASS SENSOR MULTILEVEL V7 COMMAND CLASS NOTIFICATION V5

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 ON GENERIC TYPE SWITCH MULTILEVEL

SPE SPECIFIC TYPE POWER SWITCH MULTILEVEL

Command Classes

COMMAND CLASS ZWAVEPLUS INFO V2

COMMAND_CLASS_SECURITY

COMMAND CLASS ASSOCIATION 2

COMMAND CLASS MULTI CHANNEL ASSOCIATION V3 COMMAND CLASS ASSOCIATION GRP INFO V2

COMMAND CLASS SWITCH ALL V1 COMMAND_CLASS_SWITCH_BINARY_V1

COMMAND CLASS SWITCH MULTILEVEL V3

COMMAND CLASS METER V4

COMMAND CLASS SWITCH MULTILEVEL V3

Endpoint 2 (I2):

Device Class:

ZWAVEPLUS INFO REPORT ROLE TYPE SLAVE ALWAYS ON GENERIC_TYPE_SENSOR_NOTIFICATION SPECIFIC TYPE NOTIFICATION SENSOR

Securely Supported Command Classes:

COMMAND CLASS ZWAVEPLUS INFO V2

COMMAND CLASS SECURITY

COMMAND CLASS ASSOCIATION V2

COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V3 COMMAND CLASS ASSOCIATION GRP INFO V2

COMMAND_CLASS_SENSOR_BINARY_V1 COMMAND_CLASS_NOTIFICATION_V5

COMMAND_CLASS_MARK

COMMAND CLASS BASIC V1

Endpoint 3 (I3):

Device Class:

ZWAVEPLUS INFO REPORT ROLE TYPE SLAVE ALWAYS ON GENERIC_TYPE_SENSOR_NOTIFICATION SPECIFIC TYPE NOTIFICATION SENSOR

Command Classes:

COMMAND CLASS ZWAVEPLUS INFO V2

COMMAND_CLASS_SECURITY COMMAND_CLASS_ASSOCIATION_V2

COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V3 COMMAND_CLASS_ASSOCIATION_GRP_INFO_V2

COMMAND CLASS SENSOR BINARY V1

COMMAND_CLASS_NOTIFICATION_V5 COMMAND CLASS MARK

COMMAND_CLASS_BASIC_V1

Endpoint 4: **Device Class:**

ZWAVEPLUS INFO REPORT ROLE TYPE SLAVE ALWAYS ON GENERIC_TYPE_SENSOR_MULTILEVEL SPECIFIC TYPE ROUTING SENSOR MULTILEVEL

Command Classes:

COMMAND_CLASS_ZWAVEPLUS_INFO_V2 COMMAND CLASS SECURITY

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 loc. (0x02)
- CO Alarm v2 CO detected, unknown location (0x02)
- CO2 Alarm CO2 detected, unknown loc (0x02)
- Heat Alarm v2 Overheat detected, unknown location
- Water Alarm v2 Water Leak detected, unknown
- Home Security Motion Detection, unknown location (0x08)

COMMAND CLASS BASIC:

- The module will be turned ON or OFF after receiving the BASIC SET command. To be turned ON: [Command Class Basic . Basic Set. Basic Value = 0x01~0x63 in percentage: FF set to last value1
- To be turned OFF:[Command Class Basic, Basic Set, Basic Value = 0x001

This Security Enabled Z-Wave Plus 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 S3 (SW version is part of P/N)! Example: P/N: ZMNHDDx HxS3Px



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^{**} depend on ordering code