



Z-WAVE PUCK INSTALLATION INSTRUCTIONS

ENGLISH

General information

Z-Wave Puck is a wireless smart home device, based on the Z-Wave protocol. This product can be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers. All non-battery operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

Z-Wave Puck support SmartStart inclusion, enabled products to be added into a Z-Wave network by scanning the Z-Wave QR Code present on the product with a controller providing SmartStart inclusion. No further action is required and the SmartStart product will be added automatically within 10 minutes of being switched on in the network vicinity.

Note: A "Security Enable Z-Wave Controller" must be used in order to fully utilize this function.

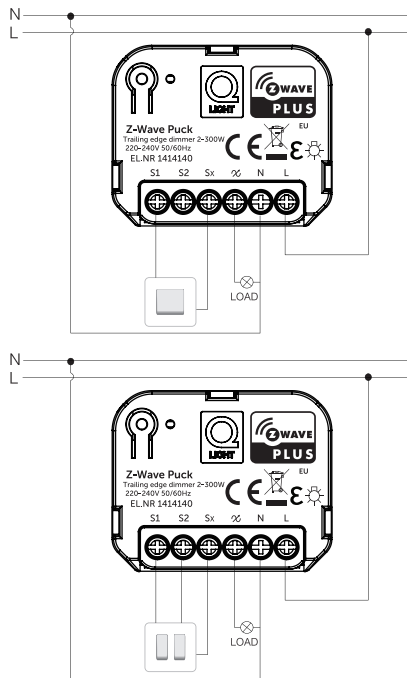
Features

- Compatible with any Z-Wave or Z-Wave+ Controller
- Controlled by FIBARO Home Center or any other Z-Wave controller
- There is memorized function at power off
- OverLoad protection
- Soft start function
- SmartStart
- Works with various types of switches – on/off, momentary, roller-blind, and etc.
- This device is a security enable Z-Wave Plus product that is able to use encrypted Z-Wave Plus messages to communicate to other security enable Z-Wave Plus products.

Technical data

Model: Z-Wave Puck
Rated supply voltage: 220-240V~ 50/60Hz
Max. output current: 1.3A
Incandescent lamp load: 2-300W
LED load: 2-180W
Dimming method: Trailing edge phase control
Dimming range: 0%-100%
Wireless mode: Z-Wave plus
Operating frequencies: 868.42MHz(EU)
Operating temperature: -20~40°C
Dimensions: 42.5x35x17.3mm

Wiring diagram



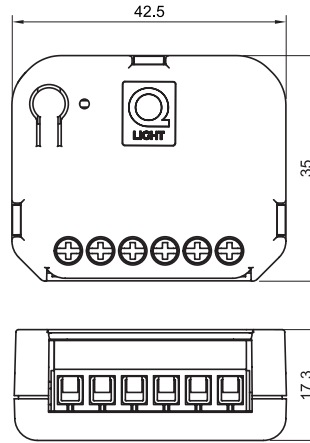
Wire info:

- Solid/stranded: 0.5-2.5mm²
- Strip length: 6-7mm

Tips for arranging the antenna:

- Locate the antenna as far from metal elements as possible (connecting wires, bracket rings, etc.) in order to prevent interferences.
- Metal surfaces in the direct vicinity of the antenna (e.g. flush mounted metal boxes, metal door frames) may impair signal reception!
- Do not cut or shorten the antenna - its length is perfectly matched to the band in which the system operates.

Dimensions (mm)



The application is based on

- Role Type: Always On Slave (AOS)
- Root Device Type: generic type Switch Multilevel, specific type Power Switch Multilevel
- Supported security keys: S0 and S2_UNAUTHENTICATION
- Library: Enhanced 232 slave
- Endpoint 1 device type: generic type Switch Multilevel, specific type Power Switch Multilevel
- Endpoint 2 device type: generic type Switch Multilevel, specific type Power Switch Multilevel

Announced Command Classes in NIF

Besides the common mandatory command classes and functionality, this Light Dimmer Switch application implements additional command classes. The table below show announced command classes in NIF depending on state of device.

Z-Wave Puck command classes announced in NIF depending on state

Command Class	Securely added	
	Non-secure added	Secure CC
ZWAVEPLUS_INFO	•	•
TRANSPORT_SERVICE	•	•
MANUFACTURER_SPECIFIC	•	•
DEVICE_RESET_LOCALLY	•	•
SECURITY	•	•
SECURITY_2	•	•
POWERLEVEL	•	•
VERSION	•	•
ASSOCIATION	•	•
MULTI_CHANNEL_ASSOCIATION	•	•
ASSOCIATION_GRP_INFO	•	•
MULTI_CHANNEL	•	•
SUPERVISION	•	•
FIRMWARE_UPDATE_MD	•	•
SWITCH_MULTILEVEL	•	•
CONFIGURATION	•	•

NOTIFICATION	•	•
SCENE_ACTIVATION	•	•
SCENE_ACTUATOR_CONF	•	•

• = Support

The endpoint implements the following command classes.
 • Endpoints 1-2

Command Class	Securely added	
	Non-secure added	Secure CC
ZWAVEPLUS_INFO	•	•
SECURITY	•	•
SECURITY_2	•	•
ASSOCIATION	•	•
MULTI_CHANNEL_ASSOCIATION	•	•
ASSOCIATION_GRP_INFO	•	•
SUPERVISION	•	•
SWITCH_MULTILEVEL	•	•
BASIC	•	•

• = Support

Basic Command Considerations

- Basic Set = 255 maps to Multilevel Switch Set = 255
- Basic Set = 0 maps to Multilevel Switch Set = 0
- Basic Set = 1-99 maps to Multilevel Switch Set = 1-99
- Basic Get/Report maps to Multilevel Switch Get/Report

Operation instruction

Adding the device (Inclusion):

Z-Wave device learning mode. Allowing to add the device to existing Z-Wave network.

Classic Learn Mode:

1. Place the Z-Wave Puck within the direct range of your Z-Wave controller.
2. Identify switch S1/S2 (turns the light on) or the Internal button (located on the device's housing).
3. Set the main controller in (security/non-security) add mode (see the controller's manual).
4. Quickly, three times press switch S1 / S2 or Internal button.
5. Wait for the adding process to end.
6. Successful adding will be confirmed by the Z-Wave controller's message.

SmartStart Learn Mode:

1. Scanning the Z-Wave QR Code present on the product with a controller providing SmartStart inclusion.
2. No further action is required and the SmartStart product will be added automatically within 10 minutes of being switched on in the network vicinity.
3. The QR Code and DSK are attached to the back of the product case, as shown below:



4. QR Code example:

Field name	Decimal	Dec digit block size	Comment
Lead-in	90	2	ASCII character "Z"
Version	01	2	Version 1: Smart-Start device
Checksum	12619	5	First 16 bits of SHA-1: covering all following bytes. 16 bit decimal representation.
Requested Keys	129	3	Requesting [S2 Unauthenticated]+ [S0] keys. 8 bit decimal representation.
DSK	50808 49291 12982 38042 00124 46742 41909 41174	5 (8 blocks)	S2 DSK. 16 bit decimal block representation.
TypeCritical	00	2	ProductType, 16 bit decimal representation.
Len	10	2	Number of digits in ProductType
ProductType	04353 01536	5 (2 blocks)	QRProductType: Z-Wave Device Type = [Light Dimmer Switch] 0x11.0x01 = 04353 Z-Wave Installer Icon Type = LIGHT_DIMMER_SWITCH = 0x0600 = 01536 16 bit decimal block representation.
TypeCritical	02	2	ProductID, 16 bit decimal representation.
Len	20	2	Number of digits in ProductID
ProductID	01075 00003 00003 01027	5 (4 blocks)	QRProductID: Z-Wave Manufacturer ID = AcTEC(FUZHOU) = 0x0453 = 01075 Z-Wave Plus Product Type = 00003 (0x0003) Z-Wave Product ID = 00005 Z-Wave Application Version = 0x04.0x03 = 01027 16 bit decimal block representation.

Removing (Exclusion):

Allowing to remove the Z-Wave device from existing Z-Wave network.

1. Place the Z-Wave Puck within the direct range of your Z-Wave controller.
2. Identify switch S1/S2 (turns the light on) or the Internal button (located on the device's housing).
3. Set the main controller in (security/non-security) add mode (see the controller's manual).
4. Quickly, three times press switch S1 / S2 or Internal button.
5. Wait for the removing process to end.

6. Successful removing will be confirmed by the Z-Wave controller's message.

Resetting the Z-Wave Puck:

1. Quickly, nine times press switch S1 / S2 or Internal button.
2. Wait for the resetting process to end, which is signaled with the LED indicator blinks 20 times. Device reset status: Turn on the light at maximum brightness.
3. Please use this procedure only when the network primary controller is missing or otherwise inoperable.

Controlling the Z-Wave Puck using an external switch:

Toggle switch (operates as a two-position switch, it has no spring that would set one position of the switch):

1. When switch on, the light(load) would be ON at the lighting level when previously switched off.
2. When switch off, the light(load) would be OFF.

Momentary switch (after releasing the switch a spring automatically pushes back and disconnects the switch):

1. When the light(load) is at "OFF" status
 - 1.1. Tab on the pushbutton, the light(load) would be ON at the lighting level when previously switched off.
 - 1.2. Long press on the pushbutton, the light would be turned brighter from its minimum and stays there when the press is released.
2. When the light(load) is at "ON" status
 - 2.1. Tab on the pushbutton, the light would be off.
 - 2.2. Long press on the pushbutton, the light would be turned brighter or dimmer and stays there when the press is released. Long press again, the dimming would be changed into the reverse direction.
3. Tab on the pushbutton twice quickly to turn on the light at maximum brightness.
4. Tab on the pushbutton three times quickly to add/remove to existing Z-Wave network.
5. Tab on the pushbutton five times quickly to activate scene function.
6. Tab on the pushbutton nine times quickly to restore the factory default settings.

Roller blind switches (S1 & S2):

1. Tab on S1 and release, the light(load) would be switched ON/OFF.
2. Tab on S2 and release, the light(load) would be switched ON/OFF.
3. Long press S1, the light(load) would be dimming up till the press is released.
4. Long press S2, the light(load) would be dimming down till the press is released.
5. Tab two times quickly on S1 and release, the light(load) would be ON to the brightest.
6. Tab two times quickly on S2 and release, the light(load) would be ON to the brightest.

Controlling the Z-Wave Puck using the internal button:

Z-Wave Puck is equipped with an internal button, which allows to perform the following actions:

1. Tab on the internal button once to turn on or turn off the light.
2. Long press on the internal button to dim up or down.
3. Tab on the internal button twice quickly to turn on the light at maximum brightness.
4. Tab on the internal button three times quickly to add/ remove to existing Z-Wave network.
5. Tab on the internal button five times quickly to activate scene function.
6. Tab on the internal button nine times quickly to restore the factory default settings.

Controlling the Z-Wave Puck using gateway:

Here is taking FIBARO Home Center controller for example: After adding the Z-Wave Puck to the network, it will be represented in the FIBARO Home Center controller by the following icon:



1. Dimming/brightening is performed by moving the slider. The current status of the Z-Wave Puck is shown on the bar indicator.
2. Turning the device ON/OFF – ON and OFF icons are used for setting the last saved state or turning off the Z-Wave Puck.

Association groups

Backwards compatibility for non-Multi Channel devices forces the root device AGI table to contain all the association groups listed in each of the endpoint's AGI table except from group 1, the Lifeline group.

Root device:

ID	Name	Node count	Description
1	Lifeline	1	Supports the following command classes: <ul style="list-style-type: none"> • Device Reset Locally: triggered upon reset. • Switch Multilevel Report: triggered by local light level change. • Notification Report: triggered by Notification.
2	On/Off(S1)	5	Mirror of endpoint 1, group 2.
3	Dimmer(S1)	5	Mirror of endpoint 1, group 3.
4	On/Off(S2)	5	Mirror of endpoint 2, group 2.
5	Dimmer(S2)	5	Mirror of endpoint 2, group 3.

Endpoint 1:

ID	Name	Node count	Description
1	Lifeline	0	Mirror of root device, but without node count.
2	On/Off(S1)	5	Transmits a Basic Set(value: 0x00/0xFF) upon pressing S1.
3	Dimmer(S1)	5	Transmits a Multilevel Start Change when pressing and holding S1 and a Multilevel Stop Change when releasing.

Endpoint 2:

ID	Name	Node count	Description
1	Lifeline	0	Mirror of root device, but without node count.
2	On/Off(S2)	5	Transmits a Basic Set(value: 0x00/0xFF) upon pressing S2.
3	Dimmer(S2)	5	Transmits a Multilevel Start Change when pressing and holding S2 and a Multilevel Stop Change when releasing.

Association (linking devices) - direct control of other devices within the Z-Wave system network using the wall switch connected to the Z-Wave Puck. The association enables the Z-Wave Puck to control directly a device included in Z-Wave network e.g. other Dimmer, Relay Switch, Roller Shutter or scene (may be controlled only through a Z-Wave controller).

The Z-Wave Puck provides the association of five groups: **1st Association Group "Lifeline"** reports state of the device. Main Z-Wave+ network controller should be added to this group. The "Lifeline" group can handle only one device. It is not recommended to modify this group.

2nd Association Group "On/Off (S1)" is assigned to S1 Sends BASIC command class frame according to the state of the device.

3rd Association Group "Dimmer (S1)" is assigned to S1 Sends MULTILEVEL SWITCH command class frame. Allows sending dim/brighten command to associated devices.

4th Association Group "On/Off (S2)" is assigned to S2 Sends BASIC command class frame according to the state of the device.

5th Association Group "Dimmer (S2)" is assigned to S2 Sends MULTILEVEL SWITCH command class frame. Allows sending dim/brighten command to associated devices.

Z-Wave Puck in 2nd to 5th group allows to control 5 regular or multichannel devices per an association group, with the exception of "Lifeline" that is reserved solely for the Z-Wave controller and hence only 1 node can be assigned. It is not recommended to associate more than 5 devices in general, as the response time to control commands depends on the number of associated devices. In extreme cases, system response may be delayed.

To add an association (using the Home Center controller):

1. Go to device options by clicking the icon:
2. Select the "Advanced" tab.
3. Specify to which group and what devices are to be associated.

Wait for the configuration process to end. Sending relevant information to devices added to associated groups may take even a few minutes.

Notification Types and Events

Notification Types	Events	Triggers
Power Management Notification(0x08)	OVERLOAD (0x08)	Load >325W
Heat Alarm Notification(0x04)	OVERHEAT (0x02)	Device>110°C

OVERLOAD ERROR

Appearing of an error is a result of connecting receivers with too much power consumption. In this case Z-Wave Puck will automatically turn the light brightness level to 20%, the light will blink 3 times and the gateway receives an information about exceeding maximum temperature of the module., when the load power over 325W. It is required to reduce power consumption of connected load (e.g. by reducing the number of receivers) and turn on the light source again by the wall switch or a Z-Wave command.

Power Management Notification Type

Appearing of an OVERLOAD ERROR Event, Z-Wave Puck will send power management notification report to gateway.

OVERHEAT ERROR

The Z-Wave Puck features self-temperature measurement function. In case of reaching critical temperature (Internal temperature of device exceeds 110°), Z-Wave Puck will automatically turn the light brightness level to 20%, the light will blink 4 times and the gateway receives an information about exceeding maximum temperature of the module.

Heat Alarm Notification Type

Appearing of an OVERHEAT ERROR Event, Z-Wave Puck will send heat alarm notification report to gateway.

Advanced parameters

Z-Wave Puck allows to customize its operation to user's needs. The settings are available in the Z-Wave PC Controller interface as simple options that may be chosen by selecting the appropriate box.

In order to configure Z-Wave Puck (using the Z-Wave PC Controller):

1. Go to the device options by double clicking the "0x70-CONFIGURATION":
2. Select the "0x04-CONFIGURATION_SET" tab.
3. Set parameter number, size and configuration value, as following picture shows.
4. Select "send" tab.

PARAMETER NO.1(0X01): Minimum brightness level

The parameter can be changed manually after the calibration.

Available settings: 1-98(% But not exceed the Maximum brightness level)

Default settings: 15. **Parameter size:** 1[byte]

PARAMETER NO.2(0X02): Maximum brightness level

The parameter can be changed manually after the calibration.

Available settings: 2-99 - dimming step percentage value

Default settings: 99. **Parameter size:** 1[byte]

PARAMETER NO.3(0X03): Automatic control - dimming step size

This parameter defines the percentage value of dimming step during the automatic control.

Available settings: 1-99 – dimming step percentage value

Default settings: 1. **Parameter size:** 1[byte]

PARAMETER NO.4(0X04): Automatic control - time of a dimming step

This parameter defines the time of single dimming step set in parameter 3 during the automatic control.

Available settings: 1-255 (1-2.55s, in 10ms steps)

Default settings: 1(10ms). **Parameter size:** 2[byte]

PARAMETER NO.5(0X05): Manual control - dimming step size

This parameter defines the percentage value of dimming step during the manual control.

Available settings: 1-99 - dimming step percentage value

Default settings: 1. **Parameter size:** 1[byte]

PARAMETER NO.6(0X06): Manual control - time of a dimming step

This parameter defines the time of single dimming step set in parameter 5 during the manual control.

Available settings: 1-255 (1-2.55s, in 10ms steps)

Default settings: 5(50ms). **Parameter size:** 2[byte]

PARAMETER NO.7(0X07): Memory function after power failure

Memory function is selectable

Available settings: 0 - the Device does not save the state before a power failure, it returns to "off" position

1 - the Device restores its state before power failure

Default settings: 1. **Parameter size:** 1[byte]

PARAMETER NO.8(0X08): Switch type

Choose between momentary, ON/OFF and roller blind switch.

Available settings: 0 – momentary (Push) switch.

1 – ON/OFF switch. 2– roller blind switch-two switches

operate the device(S1 to brighter, S2 to dim

Default settings: 0. **Parameter size:** 1[byte]

PARAMETER NO.9(0X09): Switch functionality of S1 and S2

This parameter allows for switching the role of keys connected to S1 and S2 without changes in connection.

Available settings: 0 – standard mode. 1 – S1 operates as S2, S2 operates as S1

Default settings: 0. **Parameter size:** 1[byte]

PARAMETER NO.10(0X0A): S1 Scene ID set

S1 Scene ID is set by this configuration.

Available settings: 1 – 255.

Default settings: 1. **Parameter size:** 2[byte]

Note: The actual action of each SCENE ID are set by SCE-NE_ACTUATOR_CONF(0x26) command.

Parameter No.11(0x0B): S2 Scene ID set

S1 Scene ID is set by this configuration.

Available settings: 1 – 255

Default settings: 2. **Parameter size:** 2[byte]

PARAMETER NO.12(0X0C): Timer functionality (auto - off)

This parameter allows to automatically switch off the device after specified time from switching on the light source. It may be useful when the Z-Wave Puck is installed in the stairway.

Available settings: 0 - Function disabled. 1-32767 - time to turn off measured in seconds (1s-9.1h)

Default settings: 0. **Parameter size:** 2[byte]

Warning

- Cut off the main power supply before installation.
- Do not install device behind metal objects, such as refrigerators, air Conditioners ,etc., which will affect wireless signal transmission.
- Using the controller in a heat sensitive environment may limit the maximum output power.
- The max LED load would be different due to the variety of LED load and technology inside.