Aeotec

AEOTEC - Nano Shutter

SKU: AEOEZW141

Quickstart

This is a **secure Roller Shutter** for **Europe**. To run this device please connect it to your mains power supply.

1. Install your Nano Shutter.
2. Scan the QR code on Nano Shutter using your Z-Wave gateway/controllers app.
3. Power On your Nano Shutter
4. Your Nano Shutter will automatically pair to your Z-Wave network.

Important safety information

Please read this manual carefully. Failure to follow the recommendations in this manual may be dangerous or may violate the law. The manufacturer, impor distributor and seller shall not be liable for any loss or damage resulting from failure to comply with the instructions in this manual or any other material. Use equipment only for its intended purpose. Follow the disposal instructions. Do not dispose of electronic equipment or batteries in a fire or near open heat sou

What is Z-Wave?

Z-Wave is the international wireless protocol for communication in the Smart Home. This device is suited for use in the region mentioned in the Quickstart s

Z-Wave ensures a reliable communication by reconfirming every message (**two-way communication**) and every mains powered node can act as a repeater for other nodes (**meshed network**) in case the receiver is not in direct wireless range of the transmitter.

This device and every other certified Z-Wave device can be **used together with any other certified Z-Wave device regardless of brand and origin** as long as both are suited for the same frequency range.

If a device supports **secure communication** it will communicate with other devices secure as long as this device provides the same or a higher level of security. Otherwise it will automatically turn into a lower level of security to maintain backward compatibility.

For more information about Z-Wave technology, devices, white papers etc. please refer to www.z-wave.info.

Product Description

Aeon Labs Nano Shutter is a Z-Wave power binary switch device based on Z-Wave enhanced 232 slave library V6.71.01. Its surface has a pin socket, whic used for connecting to the touch panel, so you can also use the touch panel to control the Nano Shutter. It can also be included and operated in any Z-Wav with other Z-Wave certified devices from other manufacturers and/or other applications. All non-battery operated nodes within the network will act as repeat regardless of the vendor to increase the reliability of the network. It is a security Z-Wave plus device, so a security-enabled controller is needed to take full a of all functionally for the Nano Shutter. It also supports the Over The Air (OTA) feature for the product?s firmware upgrade. As soon as Nano Shutter is rem Z-Wave network it will be restored into default factory setting.
NEW: This device supports Smart Start and Positioning as well as Venetian -Mode

Prepare for Installation / Reset

Please read the user manual before installing the product.

In order to include (add) a Z-Wave device to a network it **must be in factory default state.** Please make sure to reset the device into factory default. You c by performing an Exclusion operation as described below in the manual. Every Z-Wave controller is able to perform this operation however it is recommenc the primary controller of the previous network to make sure the very device is excluded properly from this network.

Reset to factory default

This device also allows to be reset without any involvement of a Z-Wave controller. This procedure should only be used when the primary controller is inope

Press the Action Button for 20 secounds

Safety Warning for Mains Powered Devices

ATTENTION: only authorized technicians under consideration of the country-specific installation guidelines/norms may do works with mains power. Prior to assembly of the product, the voltage network has to be switched off and ensured against re-switching.

Installation
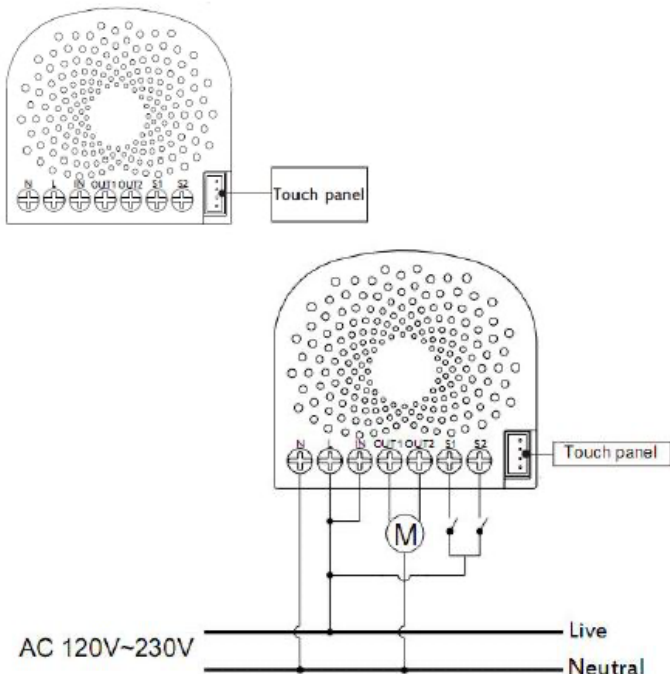
Notes for the wire connection ports:
N - Power input for neutral
L - Power input for life
IN - Input for load power supply
OUT1 - Output for Motor direction 1 (Down)
OUT2 - Output for Motor direction 2 (UP)
S1 - External switch 1 control for Motor (UP)
S2 - External switch 2 control for Motor (DOWN)

Inclusion/Exclusion

On factory default the device does not belong to any Z-Wave network. The device needs to be **added to an existing wireless network** to communicate wi devices of this network. This process is called **Inclusion**.

Devices can also be removed from a network. This process is called **Exclusion**. Both processes are initiated by the primary controller of the Z-Wave netwo controller is turned into exclusion respective inclusion mode. Inclusion and Exclusion is then performed doing a special manual action right on the device.

Inclusion
1. Install the device according to the instructions.
2. Press the button on the Nano Shutter once.

Exclusion
1. Press the button on the Nano Shutter 6 times.

Product Usage

Calibration of Nano Shutter (V 3.0 and later)

Calibration for Shutter has 2 modes: Shutter Mode and Venetian Mode.

In Shutter mode, only the Current Trip Time (Parameter 35) is used for up/down control.

In Venetian Mode, the Curtain Trip Time (Parameter 35) and Blade Turn Time (Parameter 34) are used for up/down control and angle of rotation of t

1. Shutter Mode
Used for standard roller blinds that move up and down only.

he calibration process is as follows:

a) Enter calibration mode

- By short pressing 3 times (Z-Wave button or external switch)
- Or by sending a CONFIGURATION SET Parameter 36 [1 byte] to value 1.

b) The curtain will begin to move to the end in one direction (full open or fully closed); reference point A.

- Press the Action Button/S1/S2 once the curtain is at max open or close to tell Nano Shutter to perform the next step.

c) The motor/curtain will reverse to other direction; reference point B.

- Press the Action Button/S1/S2 once the curent is at the max open or close to finalize the calibration.

d) Calibration is completed.

- Nano Shutter records the run time from the reference point A to B, which is the time between max open and the max close of the curtain can be read and modified through the Configuration 0x23 (35) if additional readjustments are needed).

2. Venetian Mode

Nano Shutter in Venetian Mode can be set to open the blinds up/down, as well as the angle of rotation of the leaf separately. There is a switch on Venetian to change the Controlling Channel for blind lifting and leaf rotation, the switch needs manual operation by the user.
The calibration process is as follows:

a) Before calibration, set the Venetian to blind lifting channel; [Paramter 38 to value 1]
b) Enter Venetian calibration mode by:

- By short pressing 5 times (Z-Wave button or external switch)
- Or by sending a CONFIGURATION SET Parameter 36 [1 byte] to value 2.

c) The motor connected to Nano Shutter should move toward the direction in which the blinds are curled upwards (Reference C).

- Once the blinds are fully opened and curled upwards completely (Reference A and C):
    - Press the Action Button/S1/S2 once to calibrate Reference A.

- If the blinds are unfolded, the motor movement direction needs to be reset by setting Parameter 22 to value 2; after setting the correct di follow step a to re-enter the calibration mode (step a);

d) Nano Shutter should now reverse the direction the motor blind movement downwards (Towards reference B). Once blinds close up completel (Reference point B):

- Press the Action Button/S1/S2 once to calibrate Reference B.

e) Nano Shutter will stop working and require that the Venetian blinds must be set to leaf rotation channel;

- Press the Action Button/S1/S2 once to start leaf rotation calibration.

f) The Venetian blinds should begin leaf rotation, the window leaf turn to 0° (reference point C).

- Press the Action Button/S1/S2 once the leaf is rotated completely.

g) The Venetian blinds will rotate to 180° (Reference point D).

- Press the Action Button/S1/S2 once the leaf is rotated completely to finalize calibration.

h) The Nano Shutter records the run time between points A and B, and turn time between reference points C and D which are curtain trip time a turn time (the recorded time can be read and modified from the Configuration 0x22 (34) and 0x23 (35)).
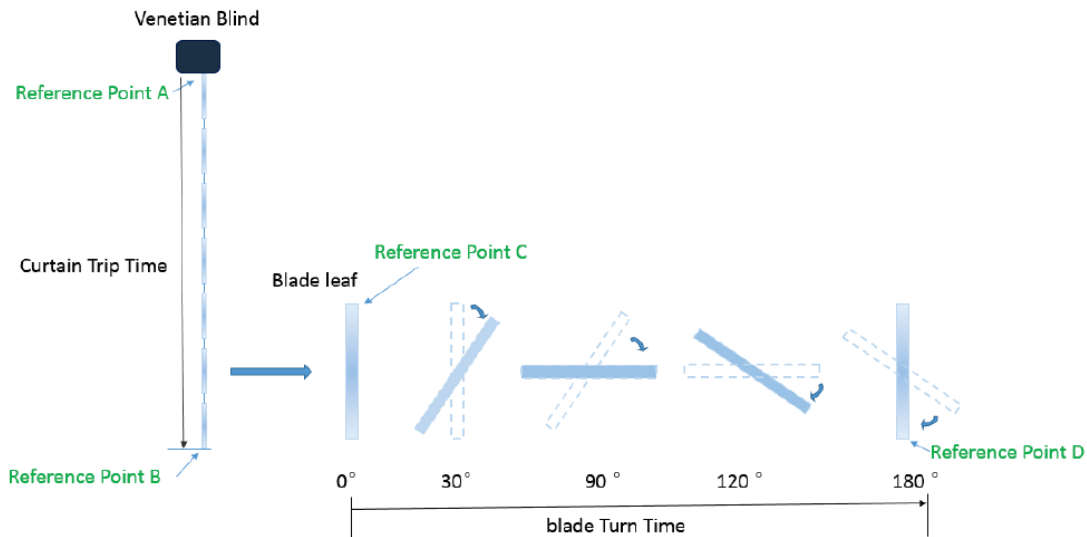
Operation Mode 1. - Split reaction between S1 and S2 controls.

	External Switch 1 (S1)			External Switch 2 (S2)		
Current State.	Stop	Moving to 100%	Moving to 0%	Stop	Moving to 0%	Moving to 100%
Button pressed once.	Move to 100%	Stop	NC	Move to 0%	Stop	NC

Operation Mode 2. - Same controls over S1 and S2.

External Switch 1 + 2 (S1 and S2					
Current State	At 0%	Moving to 0%	Moving to 100%	At 100%	Stop
Button pressed once	Move to 100%	Stop	Stop	Move to 0%	Toggle

The function of Action Button

Click one time

1. Send out a Node info.
2. Add Nano Shutter into a Z-Wave network:
    1. Power on your Nano Shutter, the RGB LED will be colorful gradient status.
    2. Let the primary controller into inclusion mode (If you don?t know how to do this, refer to its manual).
    3. Press the Action button.
    4. If the inclusion is successful, the LED will be solid. Otherwise, the LED will remain colorful gradient status, in which you need to repeat the process

Quick press 2 times

Activate the automatic identification mode for external switch S1.
The blue LED will fast blink to indicate the Nano Shutter is in this mode.
Note: When the Nano Shutter enters this mode, toggle the external switch S1 once and wait 2 seconds for the Nano Shutter to detect the external switch ty

Quick press 3 times

 Enter Shutter Calibration Mode
Orange light flashing when calibrating.
    1. Press the Button/S1/S2 once when blinds arrive at max close.
    2. Press the Button/S1/S2 again when blinds arrive at max open.

3. LED will stop when calibration is done.

Quick press 4 times

The green LED will fast blink to indicate the Nano Shutter is in this mode.
Note: When the Nano Shutter enters this mode, toggle the external switch S2 once and wait 2 seconds for the Nano Shutter to detect the external switch ty

Quick press 5 times
Enter Venetian Calibration Mode
White light flashing when calibrating.

Quick press 6 times

1. Send out a Node info.
2. Remove Nano Shutter from a Z-Wave network:
    1. Power on your Nano Shutter, the LED will be solid.
    2. Let the primary controller into remove mode (If you dont know how to do this, refer to its manual).
    3. Quick press the Action button 6 times.
    4. If the remove is successful, the LED will be colorful gradient status. If the LED is still solid, please repeat the process from step 2.

Press and hold 20 seconds

Reset Nano Shutter to factory default:
1. Make sure the Nano Shutter has been powered on.
2. Press and hold the Action Button for 20 seconds.
3. The green LED will be on for 2 seconds and then remain colorful gradient status, which indicates the reset is successful, otherwise please repeat from st

Note:
1. This procedure should only be used when the primary controller is missing or inoperable.
2. Reset the Nano Shutter to factory default will exclude the Nano Shutter from Z-Wave network, clear the Association settings, Scene configuration setting
restore the Configuration settings to the default.

Central Scene Notification (V3.0 and higher)
Switch 1

Key Pressed 1 time
Key Pressed 2 times
Key held Down (Push Button Supported Only)
Key Released (Push Button Supported Only)

Switch 2

Key Pressed 1 time
Key Pressed 2 times
Key held Down (Push Button Supported Only)
Key Released (Push Button Supported Only)
Note: Only Push Button mode switch support Attribut Key Held Down/Key Released

Node Information Frame

The Node Information Frame (NIF) is the business card of a Z-Wave device. It contains information about the device type and the technical capabilities. The
and exclusion of the device is confirmed by sending out a Node Information Frame. Beside this it may be needed for certain network operations to send out
Information Frame. To issue a NIF execute the following action: Press the Action Button one time

Quick trouble shooting

Here are a few hints for network installation if things dont work as expected.

1. Make sure a device is in factory reset state before including. In doubt exclude before include.
2. If inclusion still fails, check if both devices use the same frequency.
3. Remove all dead devices from associations. Otherwise you will see severe delays.
4. Never use sleeping battery devices without a central controller.
5. Dont poll FLIRS devices.
6. Make sure to have enough mains powered device to benefit from the meshing

Association - one device controls an other device

Z-Wave devices control other Z-Wave devices. The relationship between one device controlling another device is called association. In order to control a di
device, the controlling device needs to maintain a list of devices that will receive controlling commands. These lists are called association groups and they a
related to certain events (e.g. button pressed, sensor triggers, ...). In case the event happens all devices stored in the respective association group will rece
same wireless command wireless command, typically a 'Basic Set' Command.

Association Groups:

Group Number	Maximum Nodes	Description
1	5	Lifeline
2	5	Forward the Basic Set, Binary set, Scene Activation Set to associated nodes in Group 2 whe Nano Shutter receives the Basic Set, Binary set, Scene Activation Set commands.

Configuration Parameters

Z-Wave products are supposed to work out of the box after inclusion, however certain configuration can adapt the function better to user needs or unlock fu enhanced features.

IMPORTANT: Controllers may only allow configuring signed values. In order to set values in the range 128 ... 255 the value sent in the application shall be value minus 256. For example: To set a parameter to 200 it may be needed to set a value of 200 minus 256 = minus 56. In case of a two byte value the sar applies: Values greater than 32768 may needed to be given as negative values too.

Parameter 20: Motor behavior after Power ON (V3.0 and later)

Size: 1 Byte, Default Value: 0

Setting	Description
0	Stay the same position before power off last time.
1	Moves to 99%
2	Moves to 0%

Parameter 22: Determine motor run direction (V3.0 and later)
Change the mapping of output and motor running direction between the 2 directions below:na. Out1 maps forward and Out2 maps reversenb. Out1 maps r Out2 maps forward
Size: 1 Byte, Default Value: 2

Setting	Description
2	Change direction

Parameter 34: Blade Turn Time (V3.0 and later)
Note: For Venetian, if this value is set too large for blade turning, curtain may move upwards or downwards. Calibration need to work correctly.Or this settin the curtain to move up or down.nThis configuration will not change after network exclusion or Configuration Reset.
Size: 2 Byte, Default Value: 150

Setting	Description
10 - 32767	Configurable Range (0,1 - 327675 seconds)

Parameter 35: Curtain Trip Time (V3.00 and later)
Note: For Venetian, if this value is set too large for curtain trip, blade turn positioning may cause errors. This configuration will not change after network exc Configuration Reset.
Size: 2 Byte, Default Value: 15000

Setting	Description
500 - 32767	Configurable Range (5 - 327675 seconds)

Parameter 35: Moving time (up to version 2.2)
Set the moving time from up (left) to down (right) for curtain.
Size: 1 Byte, Default Value: 30

Setting	Description
1 - 255	Moving time

Parameter 36: Enter/Exit Calibration (V3.0 and later)
Note: Product will enter the right Curtain Mode after calibration, see Configuration 0x27
Size: 1 Byte, Default Value: 0

Setting	Description
0	Set:Exit Calibration Report: Not in Calibration
1	Set:Enter Shutter Mode Calibration Report: In Shutter Mode Calibration
2	Set:Enter Venetian Mode Cal ibration Report: In Venetian Mode Calibration

Parameter 37: User confirmation for calibration (V3.0 and later)

Size: 1 Byte, Default Value: 1

Setting	Description
1	Go to next step of calibration

Parameter 38: Return Calibration Status (Get or Report) (V3.0 and later)

Size: 1 Byte, Default Value: 0

Setting	Description
0	Calibration Complete
1	Calibration starts, going to Reference Point A
2	Reach Reference Point A, going to Reference Point B
3	Reach Reference Point B, waiting for Blade turn Calibraion(Only for Venetian Mode)
4	Going to Reference Point C(Only for Venetian Mode)
5	Calibration terminated

Parameter 39: Set the Curtain Mode (V3.0 and later)
Note: 1. This Operation will enter repositioning automatically;n2. This configuration will not change after network exclusion or Configuration Reset.
Size: 1 Byte, Default Value: 0

Setting	Description
0	Shutter Mode
1	Venetian Mode

Parameter 40: Set repositioning begins (V3.0 and later)

Size: 1 Byte, Default Value: 1

Setting	Description
1	Repositioning begins

Parameter 41: Get repositioning Status (V3.0 and later)

Size: 1 Byte, Default Value: 0

Setting	Description
0	Repositioning complete
1	In repositioning

Parameter 42: Calibration Lock.Used to enable/disable calibration lock (V3.0 and later)

Size: 1 Byte, Default Value: 1

Setting	Description
0	Disable calibration
1	Enable Action Button/ Command Calibration
2	Enable Action Button/ Command/S1/S2 Calibration

Parameter 80: Report to group 1
To set which report would be sent to the associated nodes in association group 1 when the state of the output load is changed.
Size: 1 Byte, Default Value: 0

Setting	Description
0	Nothing
1	Basic Report CC
2	Switch Multilevel Report (V3.0 and later)

Parameter 85: Operation mode of external switch
Set the operation mode of external switch. Operation Mode 1: Used S1 for close and S2 for opening the blind Operation Mode 2: Used both button for the s
Size: 1 Byte, Default Value: 0

Setting	Description
0	Operation Mode 1
1	Operation Mode 2

Parameter 120: Type of S1
Set the external switch mode of S1
Size: 1 Byte, Default Value: 0

Setting	Description
0	Unidentified mode.
2	3 way switch mode
3	Push button mode
4	Enter automatic identification mode (The blue Led will fast blink).

Parameter 121: Type of S2
Set the external switch mode of S2
Size: 1 Byte, Default Value: 0

Setting	Description
0	Unidentified mode
2	3 way switch mode
3	push button mode
4	enter automatic identification mode (The green Led will fast blink).

Parameter 248: Enable/Disable function of External Switch S1&S2 (V3.0 and later)
Note: This value can be combine, e.g. set to 3(1+2=3),means networking function and Reset function are both enable.
Size: 1 Byte, Default Value: 1

Setting	Description
1	Enable network function, inclusion/exclusion
2	Enable reset to factory default function

Parameter 251: Enable/Disable function of External Touch Panel (V3.0 and later)
Enable/disable reset to factory default and exclusion function by long press on touch panel and press 6 times on wall swipe
Size: 1 Byte, Default Value: 1

Setting	Description
0	Disable

Parameter 252: Enable/disable the configuration parameters to be locked. (up to version 2.2)

Size: 1 Byte, Default Value: 0

Setting	Description
0	disabel
1	enable

Parameter 255: Factory reset

Size: 4 Byte, Default Value:

Setting	Description
1431655765	Factory Reset
0	Reset all configuration parameters to factory default settings

Technical Data

Dimensions	0.0425000x0.0400000x0.0200000 mm
Weight	34.24 gr
Hardware Platform	ZM5101
EAN	1220000016033
IP Class	IP 20
Voltage	230V
Load	10A
Device Type	Roller Shutter
Generic Device Class	Multilevel Switch
Specific Device Class	Motor Control Device (A)
Firmware Version	03
Z-Wave Version	6.81
Certification ID	ZC10-18066132
Z-Wave Product Id	0x0371.0x0003.0x008d
Frequency	Europe - 868,4 Mhz
Maximum transmission power	5 mW

Supported Command Classes

- Basic
- Switch Binary
- Switch Multilevel
- Scene Activation
- Scene Actuator Conf
- Association Grp Info

- Device Reset Locally
- Zwaveplus Info
- Supervision
- Configuration
- Manufacturer Specific
- Powerlevel
- Firmware Update Md
- Association
- Version
- Security
- Transport Service
- Security 2

Controlled Command Classes

- Transport Service
- Security 2

Explanation of Z-Wave specific terms

- **Controller** — is a Z-Wave device with capabilities to manage the network. Controllers are typically Gateways,Remote Controls or battery operated wall controllers.
- **Slave** — is a Z-Wave device without capabilities to manage the network. Slaves can be sensors, actuators and even remote controls.
- **Primary Controller** — is the central organizer of the network. It must be a controller. There can be only one primary controller in a Z-Wave network.
- **Inclusion** — is the process of adding new Z-Wave devices into a network.
- **Exclusion** — is the process of removing Z-Wave devices from the network.
- **Association** — is a control relationship between a controlling device and a controlled device.
- **Wakeup Notification** — is a special wireless message issued by a Z-Wave device to announces that is able to communicate.
- **Node Information Frame** — is a special wireless message issued by a Z-Wave device to announce its capabilities and functions.