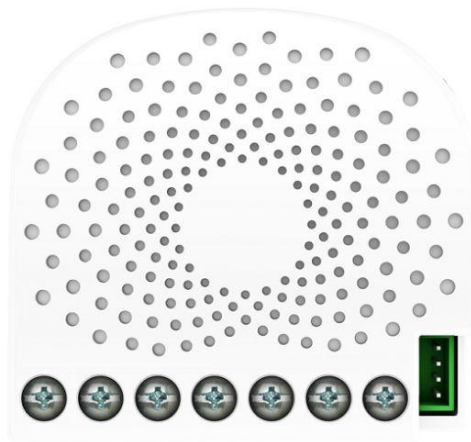




# Nano Shutter



Engineering Specification

Nano Shutter

Document No.	SPEC-ZW141
Description	<p>This Document mainly introduces AEOTEC new generation Nano Shutter, including its interface, accessories, features, specification, quick start and software function definition.</p> <p>Nano Shutter is a Z-Wave Plus device with many advantages.</p> <ul style="list-style-type: none"> <li>●Used to control the motor of Curtain, support Shutter Mode and Venetian Mode.</li> <li>●Can be calibrated according to different curtains</li> <li>●Used to control other Z-Wave device directly.</li> <li>●Support S2, more safe and more reliable</li> <li>●Support SmartStart,faster inclusion</li> </ul>
Written By	djh
Date	2020/4/7
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Date	020/4/7
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Date	020/4/7

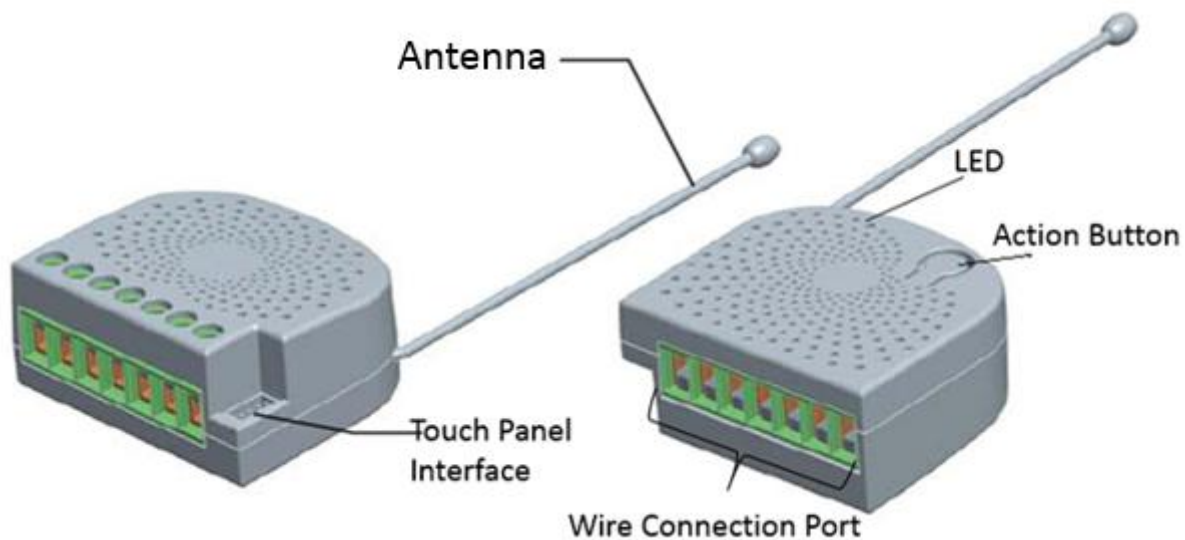
**REVISION RECORD**

Version	Date	Brief description of changes
1	2019.08.09	First revision
2	2019.08.22	Modify the Quick Start Description
3	2019.12.16	Modify calibration description.
4	2020.03.25	Modify the description which about Configuration Parameters 22/34/35/39/120/121/255
5	2020.04.07	Correct some spelling mistakes for some words.

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## 1 INTERFACE & ACCESSORIES



Interface	Description
Action Button	Used for networking, Motor Carbiration, External Switch identify and resetting.
LED	RGB, Used for indicating the current product state
Wire Connection Port	Used for connect the electric line of power input, load, external switch
Touch Panel Interface	Used for Wall Swipe or Touch Panel connection
Antenna	Used for Z-Wave communication
QR	Used for Smart Smart

## 2 FEATURES & SPECIFICATION

### 2.1 Structural Characteristics

Parameter	Value
Model	ZW141
Dimensions	44*40*20.5mm <sup>3</sup>
Weight	34g
Color	White
Shell Material	PC
Shell Surface Treatment	Light frosted
Waterproof and Dustproof	UL94 V-0
IP Level	IP00 (Based on IEC 60529)
environmental conditions	Indoor only, used in Switch box
Operating Temperature	0-40°C
Relative Humidity	8-80%

### 2.2 Hardware Characteristics

Parameter	Value
Z-Wave Module	ZM5101
Z-Wave Communication Distance	40m (indoor) /150m (Outdoor)
LED	RGB
User Interface	Action Button * 1
	Power Input: L (Live) , N (Neutral) , IN (Load Input)
	Power Output: OUT1, OUT2(Load Output)
	External Switch Port: S1 (External Switch 1) , S2 (External Switch 2)
Touch Panel Interface: Power, Gnd, Txd, Rxd	
Input Voltage	230VAC
Battery Inside	No
Load Output	Max 575W @230VAC Note: Actually only one output is working in one time for Motor
Max Ampere output	Max 2.5A@230VAC
Standby Current	<10mA
Standby Power	<0.8W
Inbuilt Sensor	NO
Local Certification	US: FCC、ETL EU: CE AU: RCM

### 2.3 Software Characteristics

Parameter	Value
Wireless Protocol	Z-Wave
Certification Type	Z-Wave Plus Certification
Z-Wave SDK Version	6.81.03
Z-Wave Library Type	Enhanced 232 Slave
Z-Wave Role Type	ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_ON (0x05)
Generic Device Type	GENERIC_TYPE_SWITCH_MULTILEVEL (0x11)

Specific Device Type	SPECIFIC_TYPE_CLASS_C_MOTOR_CONTROL (0x07)
Security Class	Non-Security, S0, S2 Unauthenticated, S2 Authenticated
SmartStart	Support
Over The Air (OTA)	Support
Multichannel Device	NO
Tap-and-Touch	NO
Association	Support
Factory Reset	Support
Power-down Memory	Support. All command settings will stay unchanged even power down.
Control other device	Support. When Magnet is away or near, control other Z-Wave device directly via Group 2.

## 3 PRODUCT QUICK START

### 3.1 Important safety information

Please read this Engineering Specification carefully for correct and effective use.

Failure to follow the recommendations set forth by AEOTEC Limited may be dangerous or cause a violation of the law.

The manufacturer, importer, distributor, and/or reseller will not be held responsible for any loss or damage resulting from not following any instruction in this guide or in other materials.

This product is intended for indoor use in dry locations only. Do not use in damp, moist, and /or wet locations. Contains small parts; keep away from children.

### 3.2 Optimally placing the product

Indoor Only for inside the Switch Box

### 3.3 How to Install the product

The following will step you through installing Nano Shutter and connecting it to your Z-Wave Network.

1. Turn off electricity to switch at circuit breaker.
1. **Note:** For safety, your home's main circuit breaker must support overload protection.
2. Remove and unwire existing wall switch that Nano Shutter will install behind.
  - a) Ensure the wires are not short-circuited during the installation as to avoid causing damage to Nano Shutter
  - b) Ensure the size of gang box Nano Switch will be installed in is at least 3\*2\*2.75 inches/75\*50\*70mm or larger, the minimum volume is 14 in<sup>3</sup>/230 cm<sup>3</sup>.
3. Prepare connection wires.
  - a) 14 AWG power wires for Input/Output (L/N/IN/OUT1/OUT2)
  - b) 18 AWG power wires for external manual switch.
  - c) Use the wire stripper cut the metallic part of the connection wire and make sure the length of the metallic part is about 5mm.



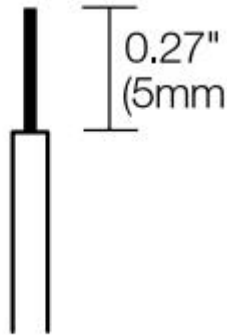


Diagram 1; expose 5mm / 0.27" of wire.



Diagram 2; trim any wire in excess of 5mm / 0.27".

1. Notes for the wire connection ports as the diagram below:

N – Power input for neutral

L – Power input for live

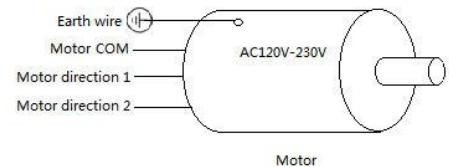
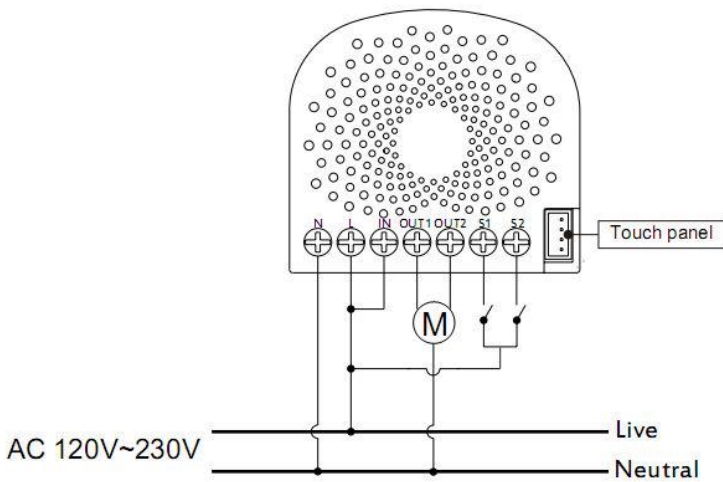
IN – Input for load power supply

OUT1 – Output for Motor direction 1

OUT2 – Output for Motor direction 2

S1 – External Switch/button 1 control for Motor

S2 – External Switch/button 2 control for Motor



2. Wire Nano Shutter into its gang box. Nano Shutter will be wired as diagram above when wired with external switch.

a) Live/Hot wire connection: Connect the Live/Hot wire to the Live/Hot wire to the “L” terminal on Nano Shutter.

b) Neutral wire connection: Connect the Neutral wire to the “N” terminal on Nano Shutter.

c) Load wire connection: Connect the 2 Load wires (Motor direction 1 and Motor direction 2) to the “OUT1” and “OUT2” on Nano Shutter.

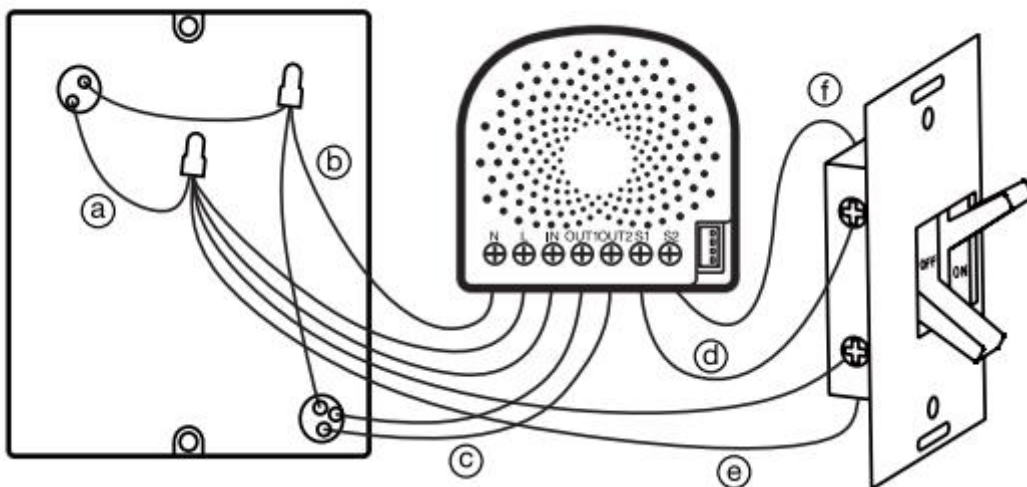
d) Load wire connection: Connect the Neutral wire to the “Neutral” terminal on Motor.

e) External/manual Switch connection: Connect 2\*18AWG wires to the “S1” and “S2” on Nano Shutter.

f) External/manual Switch connection: Connect 2\*18AWG wires from the 2 terminals on the External/manual Switch

to the Live wire.

3. The actual wire connection will be completed as below:



4. Mount in gang box.

- a) Organize all wires to provide room for Nano Shutter
- b) Place Nano Shutter inside of the gang box with the antenna towards the back of the box and away from all other wires.
- c) Don't close the gang box's cover for the moment before configuration completed.

5. Turn on electricity to switch at circuit breaker or fuse.

### 3.4 External Switch Identification

1. Press Action Button twice to enter S1(external switch 1) Identify Mode, LED will flash blue light in identification. Press external switch 1 once to complete identification. LED become solid blue light for 2s when identify succeeds. LED become solid red light for 2s when identify fails.
2. Press Action Button quartic to enter S2(external switch 2) Identify Mode, LED will flash green light in identification. Press external switch 2 once to complete identification. LED become solid green light for 2s when identify succeeds. LED become solid red light for 2s when identify fails.
3. Inclusion/Exclusion will not change the switch type after identification. And this can also be set by gateway after inclusion ,see section 4.11 configuration parameter 120/121

### 3.5 How to add the product into Z-Wave network

This product supports Security 2 Command Class. While a Security 2 enabled Controller is needed in order to fully use the security feature. This product can be included and operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers and/or other applications. All non-battery operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

### 3.5.1 Smart Learn Mode

SmartStart enabled products can 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.

Indicator Light will become flash white light for 1s indicating the product has been powered, and then become flash blue light indicating SmartStart Learn Mode starts. It will become constantly bright yellow light after being assigned a NodeID.

If Adding succeeds, it will bright blue light for 2s and become Load Indicator Mode.

If Adding fails, it will bright red light for 2s and turn back to breathing blue light and then start SmartStart Learn Mode again.

#### **Note:**

The label of QR Code on the product and package are used for SmartStart Inclusion. The Z-Wave DSK Code is at surface of the package. Please do not remove or damage them.

### 3.5.2 Classic inclusion Learn Mode

1. Set your Z-Wave Controller into its 'Add Device' mode in order to add the product into your Z-Wave system. Refer to the Controller's manual if you are unsure of how to perform this step.
2. Make sure the product is powered. If not, plug it into a wall socket and power on; its LED will be breathing blue light all the time.
3. Click Action Button once, it will quickly flash blue light for 30 seconds until it is added into the network. It will become constantly bright yellow light after being assigned a NodeID.
4. If your Z-Wave Controller supports S2 encryption, enter the first 5 digits of DSK into your Controller's interface if /when requested. The DSK is printed on its housing.
5. If Adding fails, it will bright red light for 2s and then become breathing blue light; repeat steps 1 to 4. Contact us for further support if needed.
6. If Adding succeeds, it will bright blue light for 2s and then turn to Load Indicator Mode. Now, this product is a part of your Z-Wave home control system. You can configure it and its automations via your Z-Wave system; please refer to your software's user guide for precise instructions.

#### **Note:**

If Action Button is clicked again during the Classic Inclusion Learn Mode, the Classic Inclusion Learn Mode will exit. At the same time, Indicator Light will bright red light for 2s, and then become breathing blue light.

### 3.6 How to Remove the device from Z-Wave network

1. Set your Z-Wave Controller into its 'Remove Device' mode in order to remove the product from your Z-Wave system.

Refer to the Controller's manual if you are unsure of how to perform this step.

2. Click Action Button/S1/S2(external switch need to be identified first) 6 times will enter exclusion mode.
3. If Removing fails, it will bright red light for 2s then turn back to Regular Light Mode, repeat steps 1-2. Contact us for further support if needed.
4. If Removing succeeds, it will become breathing blue light. Now, it is removed from Z-Wave network successfully.

### **3.7 How to Factory Reset**

Manually, press and hold the Action Button for at least 20s and then release. The LED indicator will become breathing blue light, which indicates the reset operation is successful. Otherwise, please try again. Contact us for further support if needed.

Note:

1. This procedure should only be used when the primary controller is missing or inoperable.
2. Factory Reset will:
  - a) Remove the product from Z-Wave network;
  - b) Delete the Association setting;

## 4 SOFTWARE FUNCTION DEFINITION

### 4.1 User Behavior Interaction

1. S1 means External Switch 1, S2 means External Switch 2.
2. User behavior with S1/S2 works only after External Switch Identification complete.
3. Long Press with S1/S2 works only when S1/S2 is in Button mode.
4. Regular light mode is the LED operation mode inside the network.

User Behavior	Outside the network	Inside the network
Power OFF	Cut the Power and light off.	Cut the Power and light off.
Power ON	<p>SmartStart Learn Mode: LED cycle on rainbow lights, which means outside the network. LED will become flash blue color if gateway is adding the device into the network through SmartStart。 LED become solid blue after Node ID assigned. If Adding succeeds, LED will become twinkle blue light 3 times and then go to light status inside the network. If Adding fails, LED will go back to rainbow lights cycle. Device will auto-reset and then active SmartStart Learn Mode again.</p>	<p>LED regular light mode inside the network: LED become green when motor is moving, LED become off when motor stops.</p>
Click Action Button/S1/S2 once	<p>1.Send Node Info for Adding: LED will become flash blue color for no long than 30s or before adding succeeds. LED become solid blue after Node ID assigned. If Adding succeeds, LED will become twinkle blue light 3 times and then go to light status inside the network. If Adding fails, LED will go back to rainbow lights cycle. Device will auto-reset and then active SmartStart Learn Mode again.</p> <p>2.activate and stop the motor The motor moves in a forward - stop - reverse - stop - forward order, turning on the green light when moving and turn off when stopping.</p> <p>3.calibration assistance When in Shutter or Venetian calibration mode, press once to assist finish calibration, at the same time function 1 and function 2 will not work.</p>	<p>1.active and stop the motor The motor moves in a forward - stop - reverse - stop - forward order, turning on the green light when moving and turn off when stopping.</p> <p>2.calibration assistance When in Shutter or Venetian calibration mode, press once to assist finish calibration, at the same time function 1 and function 2 will not work.</p>
Click Action Button/S1/S2 twice	<p>S1(External switch 1) Identify Mode LED will flash blue light when it is in Identify Mode, LED become solid blue light for 2s when identify succeeds. LED become solid red light for 2s when identify fails.</p>	<p>S1(External switch 1) Identify Mode LED will flash blue light when it is in Identify Mode, LED become solid blue light for 2s when identify succeeds. LED become solid red light for 2s when identify fails.</p>
Click Action Button/S1/S2 3 times	<p>1.Enter Shutter Calibration Mode Orange light flashing when calibrating. 2.Exit Calibration Mode Calibration incomplete, go back to rainbow light cycle.</p>	<p>1.Enter Shutter Calibration Mode Orange light flashing when calibrating. 2.Exit Calibration Mode Calibration incomplete, go back to light mode inside the network.</p>
Click Action	S2(External switch 1) Identify Mode	S2(External switch 1) Identify Mode

Button/S1/S2 4 times	LED will flash green light when it is in S2 Identify Mode, LED become solid green light for 2s when S2 identify succeeds. LED become solid red light for 2s when S2 identify fails.	LED will flash green light when it is in S2 Identify Mode, LED become solid green light for 2s when S2 identify succeeds. LED become solid red light for 2s when S2 identify fails.
Click Action Button/S1/S2 5 times	1.Enter Venetian Calibration Mode White light flashing when calibrating. 2.Exit Calibration Mode Calibration incomplete, go back to rainbow light cycle.	1.Enter Venetian Calibration Mode White light flashing when calibrating. 2.Exit Calibration Mode Calibration incomplete, go back to light mode inside the network.
Click Action Button/S1/S2 6 times	Reserved:	Send Node Info for Removing: If Removing succeeds, it will become rainbow light cycle. If Removing fails, it will go back to light mode inside the network.
Press and hold Action Button/S1/S2 ( button ) for [0.4, 2s)	Reserved:	Reserved: LED will become off when press, and go back to light mode inside the network when release.
Press and hold Action Button/S1/S2 ( button ) for [2, 5s)	Reserved:	Reserved: LED will become orange when press, and go back to light mode inside the network when release.
Press and hold Action Button/S1/S2 ( button ) for [5, 10s)	Reserved:	Reserved: LED will become purple when press, and go back to light mode inside the network when release.
Press and hold Action Button/S1/S2 ( button ) for [10, 20s)	Reserved:	Reserved: LED will speed up flashing red light when press, and go back to light mode inside the network when release.
Press and hold Action Button/S1/S2 ( button ) for [20, ∞)	Reserved:	Factory Reset: LED will become solid green for 2s when press, <i>Factory Reset will be performed</i> then. The device will issue a Device Reset Locally Command via its Lifeline to notify the Lifeline destination that the device has been reset to its factory default state. And it will perform the reset operation regardless of whether or not the delivery of the Device Reset Locally Notification is successful. LED will become rainbow cycle, device will auto-reset and then active SmartStart Learn Mode again.

## 4.2 Calibration

Calibration for Shutter have 2 modes: **Shutter Mode** for Standard roller blind, and Venetian Mode for Venetian Blind. Shutter will record the **Curtain Trip Time** for **Shutter mode** and **Curtain Trip Time + Blade Turn Time** for **Venetain Mode**.

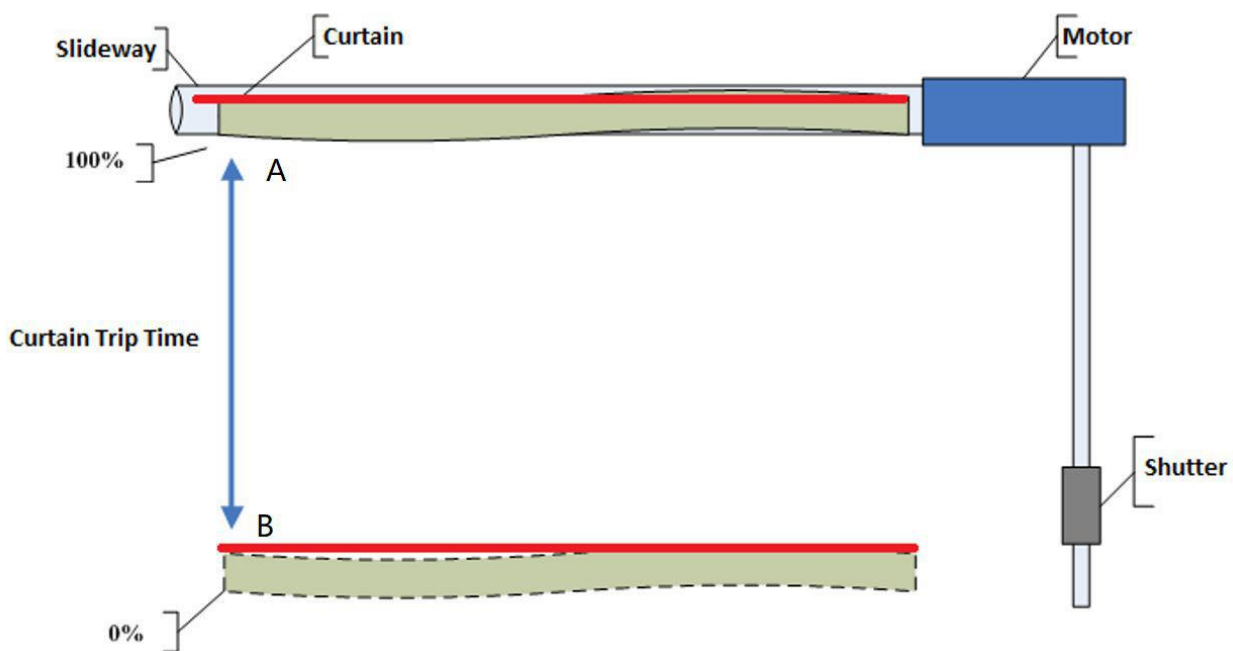
### 1. Shutter Mode

a) Entering the calibration mode by short pressing Action Button or external switch 3 times or by sending a Configuration Set Command (see the Configuration Parameter 0x24 for details). The yellow LED will fast blink to indicate it starts the calibration, while the shutter starts moving.

b) The shutter should move in the full open direction (reference point A), if not, the motor movement direction needs to be re-set via Configuration Set Command (see the Configuration Parameter 0x16 for details), after setting the correct direction, following above steps to re-enter the calibration mode.

c) Once the shutter moves to the fully open position (reference point A), quick press the Action Button/S1/S2 once, the shutter will move in the opposite direction (or to reference point B) .

d) When the shutter moves to reference point B (or fully closed position) from A, short pressing the Action Button/S1/S2 again, the shutter stops moving and the product records the running time from the reference point A to B (or the running time from fully open to fully closed position), this running time is the Curtain Trip Time and also can be read or modified via the Configuration Command (see the parameter 0x23 for details). The Shutter calibration is complete now.



## 2. Venetian Mode

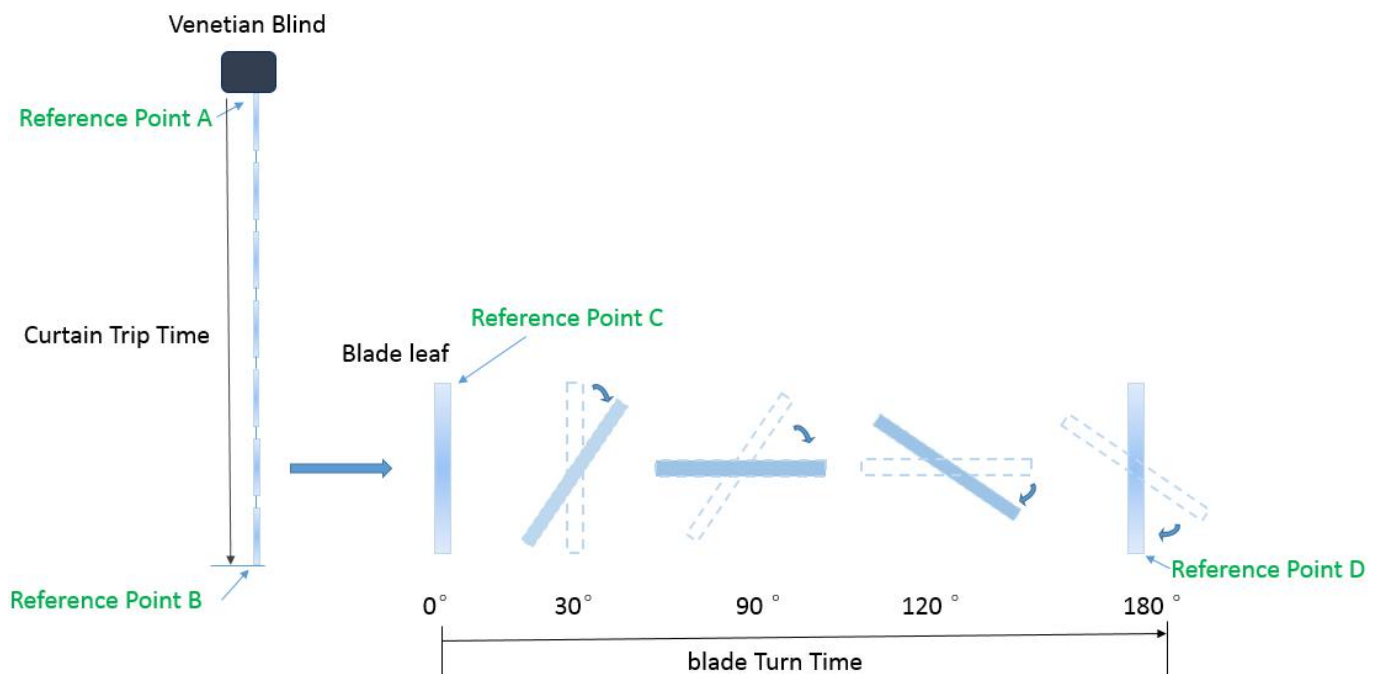
If you use the Nano Shutter to control a venetian blind, you will also need to calibrate it first, the venetian blind contains 2 parts of calibration: a) the shutter or blind up/down calibration. b) the angle of blade rotation calibration, there may have a mechanical switch on venetian to change the controlling channel for blind up/down moving and blade angle rotation, the mechanical switch needs manually be operated by users.

- Blind up/down calibration

- Before this calibration, user needs to manually set/switch the venetian to blind up/down moving control channel.
- Entering the calibration mode by short pressing the Action Button 5 times or by sending a Configuration Command via the gateway (see the Configuration Parameter 0x24 for details), the white LED will fast blink to indicate it starts the calibration, while the shutter starts moving.
- The blind should move to Up/ fully open direction. If not, the motor movement direction needs to be re-set via Configuration Set Command (see the Configuration Parameter 0x16 for details), after setting the correct direction, following above steps to re-enter the calibration mode.

- c) Once the blind moves to the fully open position (the reference point A), quick press the Action Button once, the shutter will move in the opposite direction/ Down direction.
- d) When the shutter moves to reference point B (or fully closed position) from A, short pressing the Action Button again, the blind will stop moving, which indicates the blind for up/down calibration is complete, the next step is blind blade rotation calibration.
- Blind blade rotation calibration
- e) At this time, user needs to manually set/switch the venetian to blade rotation control channel.
- f) Then short pressing the Action Button once to start the blade rotation calibration.
- g) The blind blades start turning from 0° to 180° (or turning from reference point C to reference point D).
- h) When the blind blades turns to 180° position (or the reference point D position), short pressing the Action Button (or external switch) again, the blind blades start to rotate in the opposite direction or turning from 180° to 0°.
- i) When the blind blades turn to 0° position (or the reference point C position), short pressing the Action Button (or external switch) again, the blind blades will stop rotation now, which indicates the blade rotation calibration is complete.

After completed above steps, the calibrations for Venetian mode are completed, the product records the running time from reference point A to B, and the blade rotation time from reference reference points C to D, which are the **Curtain Trip Time** and **Blade Turn Time** , the recorded time also can be read and modified via the Configuration command, see the Configuration Parameter 0x22 and 0x23 for details.



### 3. Calibration termination

If you find the motor movement direction is incorrect during calibration, you can the calibration can be terminated by short pressing the Action Button 3 times again to terminate Shutter calibration or short pressing the Action Button 5



times again to terminate Venetian calibration or sending the Configuration Set Command (see the Configuration Parameter 0x24 for details).

#### 4. Re-position

Nano Shutter may experience positional deviation after long-term operation or external force. Errors can be eliminated by re-position.

a) The user can send a Configuration Set Command to enter re-position, see the Configuration Parameter 0x28 for details.

b) The percentage position at which the product motor starts is recorded and motor moves to reference point A for a duration of Shutter Trip Time + Venetian Turn Time;

c) The motor reverses and returns to the starting percentage position and the re-position is complete.

### 4.3 Supported Command Classes

**Note:** For old gateway compatibility, Manufacturer Specific CC will be list in Node Info when product is in S0 network, and product will response the Manufacturer Specific Get Command.

Command Class	Version	Not added	Non-secure added	S0 Securely added		S2 Securely added	
				Non-secure CC	Secure CC	Non-secure CC	Secure CC
ZWAVEPLUS_INFO	2	Support	Support	Support		Support	
ASSOCIATION	2	Support	Support		Support		Support
ASSOCIATION_GRP_INFO	1	Support	Support		Support		Support
TRANSPORT_SERVICE	2	Support	Support	Support		Support	
SCENE_ACTUATOR_CONF	1	Support	Support		Support		Support
SCENE_ACTIVATION	1	Support	Support		Support		Support
CONFIGURATION	1	Support	Support		Support		Support
SWITCH_MULTILEVEL	4	Support	Support		Support		Support
VERSION	2	Support	Support		Support		Support
MANUFACTURER_SPECIFIC	2	Support	Support	Support			Support
DEVICE_RESET_LOCALLY	1	Support	Support		Support		Support
POWERLEVEL	1	Support	Support		Support		Support
SECURITY	1	Support	Support	Support		Support	
SECURITY_2	1	Support	Support	Support		Support	
SUPERVISION	1	Support	Support	Support		Support	
FIRMWARE_UPDATE_MD	4	Support	Support		Support		Support
CENTRAL_SCENE	3	Support	Support		Support		Support

#### 4.4 Basic Command Class mapping

Command	Mapping
Basic Set	Multilevel Switch Set
Basic Get	Multilevel Switch Get
Basic Report	Multilevel Switch Report

#### 4.5 MultiLevel Switch

##### 1. Multilevel Switch Set

Parameter	Valid Value	Default Value
Value	0x00..0x63	Moves to the specific position
	0xFF	Moves to the last non-zero position
	other	Invalid Value
Duration	0x00..0xFF	Not available for Shutter

##### 2. Multilevel Switch Report

Parameter	Valid Value	Default Value
Current Value	0x00..0x63	Current Position
Target Value	0x00..0x63	Target Position, to become Current Value after movement
Duration	0x00..0xFF	Left time of movement, equal to 0 when reach the Target Position.

##### 3. Multilevel Switch Start Level Change

Parameter	Valid Value	Default Value
Up /Down	0 or 1	0 = move to 99% 1 = move to 1%
Ignore Start Level	0 or 1	Not available for Shutter
Inc Dec	0..3	Not available for Shutter
Start Level	0x00...0xFF	Not available for Shutter
Dimming Duration	0x00...0xFF	Not available for Shutter
Step Size	0x00...0xFF	Not available for Shutter

##### 4. Multilevel Switch Stop Level Change

Shutter stops immediately when receiving this command.

##### 5. Multilevel Switch Supported Report

Parameter	Valid Value	Default Value
Primary Switch Type	-	0x01: ON/OFF
Secondary Switch Type	-	0x00: Not supported

#### 4.6 Z-Wave Plus Info

Parameter	Value
Z-Wave Plus Version	2
Role Type	5 (ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_ON)
Node Type	0 (ZWAVEPLUS_INFO_REPORT_NODE_TYPE_ZWAVEPLUS_NODE)
Installer Icon Type	0x1A00 (ICON_TYPE_GENERIC_WINDOW_COVERING_POSITION_ENDPOINT_AWARE)
User Icon Type	0x1A00 (ICON_TYPE_GENERIC_WINDOW_COVERING_POSITION_ENDPOINT_AWARE)

#### 4.7 Manufacturer Specific

Parameter	Value
Manufacturer ID 1	0x03

Manufacturer ID 2	0x71
Product Type ID 1	0x00(EU), 0x01(US), 0x02(AU)
Product Type ID 2	0x03(PRODUCT_TYPE_ID_SWITCH)
Product ID 1	0x00
Product ID 2	0x8D(141)

#### 4.8 Version

Parameter	Value
Z-Wave Protocol Library Type	0x03
Z-Wave Protocol Version	0x06
Z-Wave Protocol Sub Version	0x04
Firmware 0 Version	Z-Wave Chip Firmware Version Major
Firmware 0 Sub Version	Z-Wave Chip Firmware Version Minor
Hardware Version	0x8D(141)
Number of firmware targets	0x01
Firmware 1 Version	Wallswipe Firmware Version Major
Firmware 1 Sub Version	Wallswipe Firmware Version Minor

#### 4.9 Association Group Info

ID	Name	Node Count	Profile	Function
1	Lifeline	5	General:Lifeline (0x0001)	<b>1. Device Reset Locally Notification(0x5A01):</b> Send after device reset. <b>2. Switch Multilevel Report(0x2603):</b> Send after shutter stop moving. <b>3. Basic Report(0x2003):</b> Send after shutter stop moving.(need to set configuration CC) <b>4. Central Scene Notification(0x5B03):</b> Send when press S1/S2 <b>5. Configuration Report(0x7006):</b> Send the status of calibration and re-position
2	Retransmit	5	General:NA	Re-transmit when receiving the follow commands: <b>BASIC_SET</b> <b>SWITCH_MULTILEVEL_SET</b> <b>SWITCH_MULTILEVEL_START_LEVEL_CHANGE</b> <b>SWITCH_MULTILEVEL_STOP_LEVEL_CHANGE</b> <b>SCENE_ACTIVATION_SET</b>

#### 4.10 Central Scene Notification

Switch	Scene ID	Attribute Supported
External Switch 1	1	Key Pressed 1 time
		Key Pressed 2 times
		Key held Down (Push Button Supported Only)
		Key Released (Push Button Supported Only)
External Switch 2	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 Attribute Key Held Down/Key Released

4.11 Configuration

No.	Description	W/R	default	length
0x14 (20)	Motor behavior after Power ON:	WR	0	1
	<b>Value</b> <b>Function</b>			
	0            Stay the same position before power off last time.			
	1            Moves to 99%			
2            Moves to 0%				
0x16 (22)	Determine motor run direction for Shutter mode and Venetian Mode:	WR	0	1
	<b>Value</b> <b>Function</b>			
	0            Shutter mode / Venetian mode :Out 1= Up moving/ Multilevel switch = 99%, Out 2= Down moving/ Multilevel switch = 0%			
	1            Shutter mode : Out 1= Down moving/ Multilevel switch = 0%, Out 2= Up moving/ Multilevel switch = 99%. Venetian mode :Out 1= Up moving/ Multilevel switch = 99%, Out 2= Down moving/ Multilevel switch = 0%			
	2            Shutter mode : Out 1= Up moving/ Multilevel switch = 99%, Out 2= Down moving/ Multilevel switch = 0% Venetian mode: Out 1= Down moving/ Multilevel switch = 0%, Out 2= Up moving/ Multilevel switch = 99%.			
3            Shutter mode / Venetian mode : Out 1= Down moving/ Multilevel switch = 0%, Out 2= Up moving/ Multilevel switch = 99%.				
Note: 1.Motor will stop when receiving this command in moving; 2.This configuration will not change after network exclusion.				
0x22 (34)	Blade Turn Time (Unit = 0.01 seconds)	WR	150 (1.5s)	2
	<b>Value</b> <b>Function</b>			
	150 (1.5 seconds)                      Default Value			
10 – 32767 (0.1 – 327.675 seconds)                      Configurable Range				
Note: 1.For Venetian, if this value is set too large for blade turning, curtain may move upwards or downwards; 2.Calibration need to work correctly.Or this setting will force the curtain to move up or down; 3.This configuration will not change after network exclusion;				
0x23 (35)	Curtain Trip Time (Unit = 0.01 seconds)	WR	15000	2
	• default value 15000 = 150 seconds			
	• 500 - 32767 = 5 seconds – 327.675 seconds			
<b>Value</b> <b>Function</b>				
15000 (150 seconds)                      Default Value				
500 – 32767 (5 – 327.675 seconds)                      Configurable Range				
Note: 1.For Venetian, if this value is set too large for curtain trip, blade turn positioning may cause errors; 2.This configuration will not change after network exclusion;				
0x24 (36)	Enter/Exit Calibration	WR	0	1
	<b>Value</b> <b>Function</b>			
	0            Set:Exit Calibration Report: Not in Calibration			
	1            Set:Enter Shutter Mode Calibration Report: In Shutter Mode Calibration			
	2            Set:Enter Venetian Mode Calibration Report: In Venetian Mode Calibration			
others      Invalid				
Note: Product will enter the right Curtain Mode after calibration, see Configuration 0x27.				

0x25 (37)	User confirmation for calibration :		WR	1	1
	<b>Value</b>	<b>Function</b>			
	1	Go to next step of calibration			
	others	Invalid			
0x26 (38)	Return Calibration Status(Get or Report):		RO	-	1
	<b>Value</b>	<b>Function</b>			
	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 Calibration(Only for Venetian Mode)			
	4	Going to Reference Point C(Only for Venetian Mode)			
5	Calibration terminated				
0x27 (39)	Set the Curtain Mode		WR	0	1
	<b>Value</b>	<b>Function</b>			
	0	Shutter Mode			
	1	Venetian Mode			
	others	Invalid			
Note: 1.This Operation will enter re-position mode automatically; 2.This configuration will not change after network exclusion;					
0x28 (40)	Set repositioning begins:		WR	1	1
	<b>Value</b>	<b>Function</b>			
	1	Re-position begins			
	others	Invalid			
0x29 (41)	Get re-position Status		RO	0	1
	<b>Value</b>	<b>Function</b>			
	0	Re-position complete			
	1	In re-position			
	others	Invalid			
0x2A (42)	Calibration Lock.Used to enable/disable calibration lock		WR	1	1
	<b>Value</b>	<b>Function</b>			
	0	Disable calibration			
	1	Enable Action Button/ Command Calibration			
	2	Enable Action Button/ Command/S1/S2 Calibration			
	others	Invalid			
0x50 (80)	Choose which report to send when switch status change:		WR	2	1
	<b>Value1</b>	<b>function</b>			
	0	No Report			
	1	Basic Report			
	2	Switch Multilevel Report			
	others	Invalid			
0x55 (85)	Set Extern Button Operation Mode		WR	0	1
	<b>Value1</b>	<b>function</b>			
	0	S1/S2 map to Z-Wave Button			
	1	S1 = Open or Stop, S2 = Close or Stop Note:Operation will not change the curtain mode, including press and hold ,short press.			
2	1) When configuration 0x78/79 = 03: Press and hold S1 :blade folds to 180° Press and hold S2: Blade folds to 0° Short press S1: Blinds go downwards Short press S2: Blinds go upwards Note: The device will change its curtain mode if it does not match the current mode. 2) When Configuration 0x78/79 = others: S1 = Open or Stop,S2 = Close or Stop ,operation will not change the curtain mode.				
Note: when setting value to 2, we advice not to set only one external switch to push button, do remember to change the controller channel before operating push button, or the curtain level will be wrong.					
0x78	Set Switch Type of External Switch 1		WR	0	1

(120)	<table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 20%;">Value1</th> <th style="width: 80%;">function</th> </tr> </thead> <tbody> <tr><td>0</td><td>Unidentified mode</td></tr> <tr><td>1</td><td>2-state switch mode</td></tr> <tr><td>2</td><td>3 way switch mode</td></tr> <tr><td>3</td><td>Push Button mode</td></tr> <tr><td>4</td><td>Enter automatic identification mode(The blue led will fast blink)</td></tr> </tbody> </table> <p>Report automatically during Identify:</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 20%;">Value</th> <th style="width: 80%;">Description</th> </tr> </thead> <tbody> <tr><td>0x55</td><td>In Identify</td></tr> <tr><td>2/3/4</td><td>Identify succeeds, return the Switch Type</td></tr> <tr><td>0x00</td><td>Identify fails</td></tr> </tbody> </table> <p>Note: 1.This configuration will not change after network exclusion.</p>	Value1	function	0	Unidentified mode	1	2-state switch mode	2	3 way switch mode	3	Push Button mode	4	Enter automatic identification mode(The blue led will fast blink)	Value	Description	0x55	In Identify	2/3/4	Identify succeeds, return the Switch Type	0x00	Identify fails			
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0x00	Identify fails																							
0x79 (121)	<p>Set Switch Type of External Switch 2</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 20%;">Value1</th> <th style="width: 80%;">function</th> </tr> </thead> <tbody> <tr><td>0</td><td>Unidentified mode</td></tr> <tr><td>1</td><td>2-state switch mode</td></tr> <tr><td>2</td><td>3 way switch mode</td></tr> <tr><td>3</td><td>Push Button mode</td></tr> <tr><td>4</td><td>Enter automatic identification mode(The blue led will fast blink)</td></tr> </tbody> </table> <p>Report automatically during Identify:</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 20%;">Value</th> <th style="width: 80%;">Description</th> </tr> </thead> <tbody> <tr><td>0x55</td><td>In Identify</td></tr> <tr><td>2/3/4</td><td>Identify succeeds, return the Switch Type</td></tr> <tr><td>0x00</td><td>Identify fails</td></tr> </tbody> </table> <p>Note: 1.This configuration will not change after network exclusion.</p>	Value1	function	0	Unidentified mode	1	2-state switch mode	2	3 way switch mode	3	Push Button mode	4	Enter automatic identification mode(The blue led will fast blink)	Value	Description	0x55	In Identify	2/3/4	Identify succeeds, return the Switch Type	0x00	Identify fails	WR	0	1
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0x00	Identify fails																							
0xF3 (243)	To Get the DSK from product	RO	--	16																				
0xF8 (248)	<p>Enable/Disable function of External Switch S1&amp;S2</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 20%;">Value</th> <th style="width: 80%;">Function</th> </tr> </thead> <tbody> <tr><td>1</td><td>Enable network function, inclusion/exclusion</td></tr> <tr><td>2</td><td>Enable reset to factory default function</td></tr> </tbody> </table> <p>Note : This value can be combine, e.g. set to 3(1+2=3),means networking function and Reset function are both enable.</p>	Value	Function	1	Enable network function, inclusion/exclusion	2	Enable reset to factory default function	WR	1	1														
Value	Function																							
1	Enable network function, inclusion/exclusion																							
2	Enable reset to factory default function																							
0xFB (251)	<p>Enable/disable reset to factory default and exclusion function by long press on touch panel and press 6 times on wall swipe</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 20%;">Value</th> <th style="width: 80%;">Function</th> </tr> </thead> <tbody> <tr><td>0</td><td>Disable</td></tr> <tr><td>1</td><td>enable</td></tr> </tbody> </table>	Value	Function	0	Disable	1	enable	WR	1	1														
Value	Function																							
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0xFF (255)	<p>Reset function (Write Only)</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 15%;">default</th> <th style="width: 25%;">Value</th> <th style="width: 60%;">Function</th> </tr> </thead> <tbody> <tr><td>1</td><td>1431655765 (0x55555555)</td><td>Reset to factory default settings and removed from the z-wave network</td></tr> <tr><td>0</td><td>0</td><td>Reset all configuration parameters to default settings</td></tr> <tr><td>Other</td><td></td><td>Invalid.</td></tr> </tbody> </table> <p>When the command be valid: 1.The Re-Calibration task and Calibration task will be abort If they are running. 2.The Motor will stop If it's working.</p>	default	Value	Function	1	1431655765 (0x55555555)	Reset to factory default settings and removed from the z-wave network	0	0	Reset all configuration parameters to default settings	Other		Invalid.	WR	0	4								
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Other		Invalid.																						

Note: Configuration Parameters 22/34/35/39/120/121 will be effected by some special events as the following table, in addition to the corresponding Configuration Set Command, 'Yes' described the parameters will be effected by the special event, but 'No' described the parameters won't be effected by the special events.

Parameters	Attribute	Attribute Supported	Special events			
			Exclusion from Z-WAVE	Press and hold Z-WAVE button for 20 seconds	Configuration Parameter Set 255: -Size=4 -default=0 -Value=0x00000000	Configuration Parameter Set 255: -Size=4 -default=1 -Value=0x55555555
22	R/W	Determine motor run direction for Shutter mode and Venetian Mode.	NO	NO	YES	YES
34	R/W	Configure the Blade Turn Time	NO	NO	YES	YES
35	R/W	Configure the Curtain Trip Time	NO	NO	YES	YES
39	R/W	Set the Curtain Mode.	NO	NO	YES	YES
120	R/W	Configure the external switch mode for S1.	NO	NO	YES	YES
121	R/W	Configure the external switch mode for S1.	NO	NO	YES	YES