Smart Contact Sensor

(NVN-900S)



REVISION RECORD		
Version	Date	Brief description of changes
0.1	2026.10.26	First revision.

Table of Content

1 OVERVIEW 1

2 SPECIFICATIONS 2

2.1 Structural 2

2.2 Hardware 2

2.3 Software 2

3 QUICK START 4

3.1 Important safety information 4

3.2 How to install the product 4

3.3 How to add the product 4

3.4 How to remove the product 4

3.5 About SmartStart 5

3.6 About Product 5

3.7 How to factory reset 5

3.8 Safety Warning for Batteries 6

3.9 Product Usage 6

3.10 Long Range 6

3.11 About Z-Wave® Role Type 6

4 SOFTWARE FUNCTION DEFINITION 7

4.1 User Behavior Interaction 7

4.2 Supported Command Classes 8

4.3 Basic Command Class mapping 9

4.4 Z-Wave Plus® Info 9

4.5 Manufacturer Specific 9

4.6 Version 9

4.7 Association Group Info 9

4.8 Notification 10

4.9 Binary Sensor 10

4.10 Wake Up 10

4.11 Battery 10

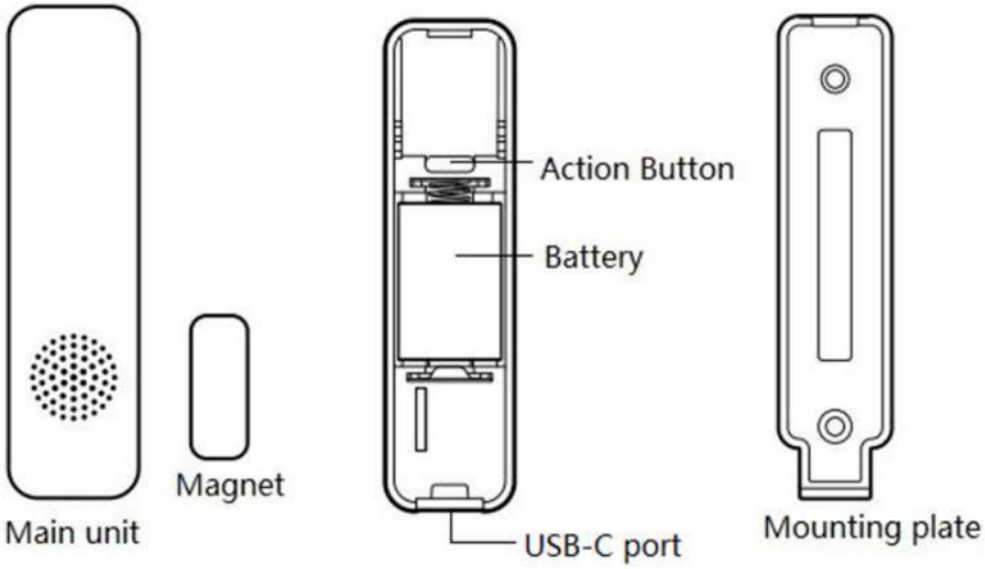
4.12 Indicator 10

4.13 Configuration 11

1 OVERVIEW

Smart Contact Sensor is a sensor designed to detect whether a window/ or door is open or closed. This sensor is easy to install. Thanks to its slim design, the Smart Contact Sensor can be discreetly installed on any window. Simply mount the sensor on the window frame and place a slim magnet on the frame near the sensor. Twice clicking the action button includes (adds) and excludes (removes) the device. A single click on the button will wake up the device.

This product supports Security 2 Command Class. While a Security S2 enabled Controller is needed in order to fully use the security feature. This product can be operated in any Z-Wave® network with other Z-Wave/ Z-Wave Plus® certified devices from other manufacturers. All mains operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network. This product also supports SmartStart



Terminology	Description
Action button	Used for networking ,resetting and protect the device.
Led (Green, Red)	Used for indicating the current state of the product.
Battery	Power supply
USB	Power supply
tamper switch	Trigger tampering report
Magnet	Change the sensor state via making the Magnet away or near from Main Sensor.

2 SPECIFICATIONS

2.1 Structural

Parameter	Value
Product Identifier	NVN-900S
Dimensions	70x18x19mm
Color	White
Usage	For indoor use.
Operating Temperature	32~104°F (0~40°C)
Relative Humidity	8%~80%

2.2 Hardware

Parameter	Value
Z-Wave Module	EFR32ZG23
Z-Wave TX Power	Max: 14dBm
Z-Wave Classic Antenna Distance	40m (Indoor) /150m (Outdoor)
Buttons	Action Button x1
Indicator Light Color	Green, Red
Connectors	Magnet x1
Built-in Sensors	hall switch
Power Type	USB or 1*CR14250

USB Power Supply:

Parameter	Value
Work Current	12mA
Standby Current	6mA

Battery Supply:

Parameter	Value
Work Current	12mA
Standby Current	10uA

2.3 Software

Parameter	Value
Wireless Technology	Z-Wave
Certification Type	Z-Wave Plus v2 Certification
Z-Wave SDK Version	7.23.2
Z-Wave Library Type	Enhanced 232 Slave
Z-Wave Role Type	Always On Slave(USB Power Supply), Reporting Sleeping Slave(Battery Supply).
Generic Product Type	GENERIC_TYPE_SENSOR_NOTIFICATION [0x07]
Specific Product Type	SPECIFIC_TYPE_NOTIFICATION_SENSOR [0x01]
Security Class	Non-Security, S2 Unauthenticated, and S2 Authenticated
SmartStart Compatible	Support. After powering on, SmartStart is auto activated.
Over The Air (OTA)	Support. Firmware can be updated via RF.
Multi Channel Product	No
Association	Support. Refer to Section 4.7 Association Group Info.
Factory Reset	Support. Refer to Section 3.7 How to factory reset.

Power-down Memory	Support. All command settings will stay unchanged even power down.
Sensor State Report	Support. Send out notification via Group 1 when Magnet is away or near.
Control other product	Support. Control other Z-Wave product directly via Group 2 when Magnet is away or near.

3 QUICK START

3.1 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, importer, 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 this 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 sources.

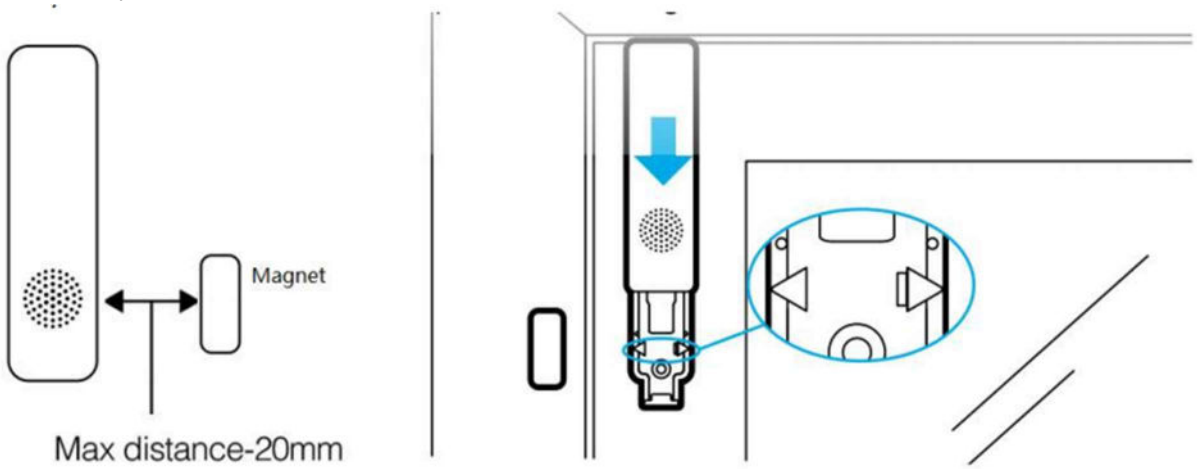
3.2 How to install the product

This is a **secure Alarm Sensor**. To run this device please insert fresh 1 * CR14250 batteries. Please make sure the internal battery is fully charged. The DSK for the S2 inclusion can be found inside the sensors packaging.

If your Z-Wave gateway supports SmartStart: scan the QR code on Smart Contact Sensor using the gateway's app. Your sensor will join your Z-Wave network automatically.

The sensor can be mounted either on the moving part or on the fixed part of a door or a window. Mounting can be accomplished either using the tape by peeling off the protection foil or using two screws with the holes inside the battery compartment.

• The magnet covered by plastic part, mountable beside the sensor. Make sure the two indicating lines on sensor enclosure and magnet are opposite to each other. The image on the right-hand side shows the position of magnet and sensor body.



3.3 How to add the product

The following will step you through adding the product to your Z-Wave network.

1. Open the housing.

2. Remove the battery protection.

3. Press the action button twice quickly.

If your Z-Wave gateway supports SmartStart: scan the QR code on Smart Contact Sensor using the gateway's app. Your sensor will join your Z-Wave network automatically.

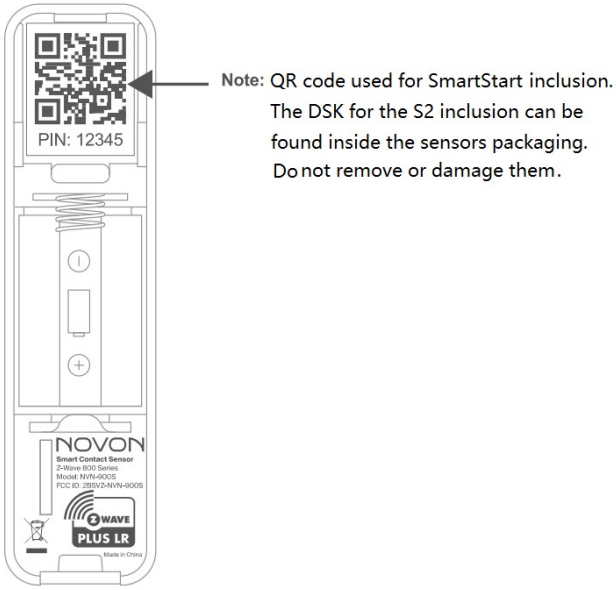
3.4 How to remove the product

1. Open the housing.

2. Press the action button twice quickly.

3.5 About SmartStart

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. You can find the QR code on the back of the product, like this:



The DSK for the S2 inclusion can be found inside the sensors packaging, like this: Z-Wave DSK: **50554**-06998-54684-57669-03764-19363-64700-38321



3.6 About Product

This product can be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers. All mains operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

3.7 How to factory reset

Reset procedure allows to restore the product back to its factory settings, which means all information about the Z-Wave controller and user configuration will be deleted.

1. Make sure the product is powered.

2. Press and hold the button for at least 12s, and then Factory Reset is performed. The product will issue a Device Reset Locally Command via its Lifeline to notify the Lifeline destination that the product 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.

Note:

If you press and hold the button, 5 to 12 seconds, the Green LED will fast flash, and then Green LED light 2 seconds until the factory settings are restored.

Resetting the product is not the recommended way of removing the product from the Z-Wave network. Use reset procedure only if the primary controller is missing or inoperable. Certain product removal can be achieved by the procedure of removing described in “How to remove the product”.

3.8 Safety Warning for Batteries

The product contains batteries. Please remove the batteries when the device is not used. Do not mix batteries of different charging level or different brands.

3.9 Product Usage

Once installed the sensor will report "open" and "close" status changes to a central Z-Wave controller using notification commands. Additionally, the sensor can directly control other devices using association group. The device is protected by a tamper switch.

3.10 Long Range

ZWA068 A (US_LR) can be included using Z-Wave Long Range.
ZWA068 C (EU_LR) can be included using Z-Wave Long Range.

3.11 About Z-Wave® Role Type

1. When include to the network using USB power, the role type of the product is Always On. Changing to battery power will keep the role type in its network, which is also a Always On Slave.
2. When powered by battery and include to the network, the role type of the product is Reporting Sleeping. Changing to USB power supply will keep the role type in its network, which is also Reporting Sleeping Slave.

4 SOFTWARE FUNCTION DEFINITION

4.1 User Behavior Interaction

The following brightness levels are all 100% unless otherwise specified.

User behavior status	Out of the Z-Wave network	In the Z-Wave network
Power OFF	N/A	N/A
Power ON	1, The red and green led will on for 1 second, indicating self inspection. 2, The green led breathing 3 times and then turn off, indication out the Z-Wave network. 3, Send Inclusion Requests for SmartStart Learn Mode.	1, The red and green led will on for 1 second, indicating self inspection 2, LED will light up green for 1 seconds and turn off, indicating in the Z-Wave network. 3, Send Wake Up Notification. 4, Send door report and battery report LED will become flash green once, and device will wake up for 15 seconds.
Click Z-Wave button once	**1, Exit Classic Inclusion Learn Mode:** If during the Classic Inclusion Learn Mode, the Classic Learn Mode will exit. LED will turn off. **2, Indicate network status** The green led breathing 3 times and then turn off.	**1, Exit Classic Inclusion Learn Mode:** If during the Classic Inclusion Learn Mode, the Classic Learn Mode will exit. LED will turn off. **2, Send Wake Up Notification** green led will on for 1 second, and device will wake up for 15 seconds(if received wakeup no more information, will go to sleep immediately).
Click Z-Wave button twice	**1. Send Node Info for Adding.** LED will blink green for 30s until it is added into the network. If Adding succeeds, LED will light up green for 2 seconds If Adding fails, LED will turn off. Device will auto-reset and then activate SmartStart Learn Mode again. **2.Exit Classic Inclusion Learn Mode:** If Z-Wave button is clicked again during the Classic Inclusion Learn Mode, the Classic Learn Mode will exit. LED will turn off. Device will auto-reset and then activate SmartStart Learn Mode again.	**1. Send Node Info for Removing.** LED will blink green for 30 seconds until it is removed from the network. If Removing succeeds, LED will light up green for 2 seconds and become breathing light 3 times. If Removing fails, LED will light up green for 1 seconds and turn off **2.Exit Classic exclusion Learn Mode:** If Z-Wave button is clicked again during the Classic exclusion Learn Mode, the Classic Learn Mode will exit. LED will turn off.
Press and hold Z-Wave button for (0, 1s]	LED: OFF	LED: OFF
hold Z-Wave button for (1, 3s]	Green light on 10%	Green light on 10%

hold Z-Wave button for (3，5s]	Green light on 100%	Green light on 100%，Release and enter door reporting mode, Send battery report
Press and hold Z-Wave button for (5, 12s]	Green Led will accelerate Flash.	Green Led will accelerate Flash.
Press and hold Z-Wave button for >12s	**Factory Reset And Restart** Green Led will become constantly light for 1 second, and become breathing light indicates the reset is success.	**Factory Reset AND Restart.** Green Led will become constantly light for 1 second, and become breathing light. 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.
Wakeup notification of Periodic	N/A	LED will light up green for 1 seconds and turn off
Plug in or unplug the USB	The red led will light up green for 1 seconds and the green led breathing 3 times and then turn off.	LED will light up red for 1 seconds and turn off
Tamper triggered or released	The red led will light up green for 1 seconds and the green led breathing 3 times and then turn off.	LED will light up red for 1 seconds and turn off
Door opened or closed	The red led will light up green for 1 seconds and the green led breathing 3 times and then turn off.	LED will light up red for 1 seconds and turn off

4.2 Supported Command Classes

Command Class	Version	Securely 2 added	
		Non-secure CC List	Secure CC List
ZWAVEPLUS_INFO	2	Support	Support
ASSOCIATION	2		Support
MULTI_CHANNEL_ASSOCIATION	3		Support
ASSOCIATION_GRP_INFO	3		Support
TRANSPORT_SERVICE	2	Support	Support
VERSION	3		Support
MANUFACTURER_SPECIFIC	2		Support
DEVICE_RESET_LOCALLY	1		Support
INDICATOR	3		Support
POWERLEVEL	1		Support
BATTERY	1		Support
SENSOR_BINARY	2		Support
CONFIGURATION	4		Support
SECURITY_2	1	Support	Support
NOTIFICATION	8		Support
WAKE_UP	2		Support

SUPERVISION	1	Support	Support
FIRMWARE_UPDATE_MD	5		Support

4.3 Basic Command Class mapping

Basic Command Class is not mapped to any of the supported command classes.

4.4 Z-Wave Plus® Info

Parameter	Value
Z-Wave Plus Version	0x02
Role Type	USB Supply: 5 (ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_END_NODE_ALWAYS_ON) Battery Supply: 6 (ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_SLEEPING_REPORTING)
Node Type	0x00 [ZWAVEPLUS_INFO_REPORT_NODE_TYPE_ZWAVEPLUS_NODE)
Installer Icon Type	0x0C06 [ICON_TYPE_SPECIFIC_SENSOR_NOTIFICATION_ACCESS_CONTROL]
User Icon Type	0x0C06 [ICON_TYPE_SPECIFIC_SENSOR_NOTIFICATION_ACCESS_CONTROL]

Mark:

1. When include to the network using USB power, the role type of the product is Always On. Changing to battery power will keep the role type in its network, which is also a Always On Slave.
2. When powered by battery and include to the network, the role type of the product is Reporting Sleeping. Changing to USB power supply will keep the role type in its network, which is also Reporting Sleeping Slave.

4.5 Manufacturer Specific

Parameter	Value
Manufacturer ID	0x046D
Product Type ID	0x2A94
Product ID	0x1A32

4.6 Version

Parameter	Value
Z-Wave Protocol Library Type	0x03
Z-Wave Protocol Version	0x07
Z-Wave Protocol Sub Version	0x16
Firmware 0 Version	0x01 [Z-Wave Chip Firmware Version]
Firmware 0 Sub Version	0x00 [Z-Wave Chip Firmware Sub Version]
Hardware Version	0x44(68)
Number of firmware targets	0x00

4.7 Association Group Info

Root product

ID	Name	Node count	Profile	Function
1	Lifeline	5	General: Lifeline (0x0001)	**Device Reset Locally Notification:** Issued when Factory Reset is performed. **Battery Report:** Issued when battery becomes low. **Sensor Binary Report:** Issued when door state is changed. **Notification Report** Issued when door alarm, tamper alarm, Power Management

2	Control	5	Notification: Access Control (0x7106)	**Basic Set:** Control devices when a magnet
3	Alarm	5	Notification: Access Control (0x7106)	**Notification Report:** Sends out alarm message when a magnet
4	Tamper	5	Notification: home Security (0x7107)	**Notification Report:** Sends alarm messages when tamper is trigger

4.8 Notification

Notification Type		Notification Events		Description
Access Control	0x06	Window/Door is open	0x16	Open Status.
		Window/Door is closed	0x17	Close Status.
Home Security	0x07	Tamper trigger	0x03	Tamper trigger
		State idle	0x00	Going to idle
Power Management	0x08	State Idle	0x00	Issued when replace new battery that battery power more than 90%.
		Power has been applied	0x01	Power has been applied
		AC mains disconnected	0x02	Supply by battery
		AC mains re-connected	0x03	Supply by USB
		Replace battery now	0x0B	Issued when battery level is less than the value of configuration parameter 10

4.9 Binary Sensor

Sensor Type		Sensor Value	Description
Door/Window	0x0A	0x00 / 0xFF	Door/Window State

4.10 Wake Up

Parameter	Value	Time
Min Wake Up Interval Seconds	0x000E10	3600s [1 hour]
Max Wake Up Interval Seconds	0xEFF100	15724800s [182days]
Default Wake Up Interval Seconds	0x093A80	604800s [1 week]
Wake Up Interval Step Seconds	0x0000F0	240s [4 minutes]

4.11 Battery

1. The 2.90V or more battery voltage corresponds to 100% battery level, and 2.60V or less corresponds to 0%.
2. If send Battery Get to the device, it will issue Battery Report with battery level to the requester when waked up.
3. If waked up or power on, it will detect battery level, and issue Battery Report via Lifeline when battery level change over 10%.
4. If waked up or power on, it will detect battery level, and issue Battery Report 0xFF via Lifeline when battery level is less than the value of configuration parameter 23.

4.12 Indicator

Indicator ID		Property ID	
Node Identify (Green Led)	0x50	On Off Period	0x03
		On Off Cycles	0x04
		On time within an On/Off period	0x05

4.13 Configuration

Parameter	0x01 (1)							
Name	Enable led indication							
Info	Enable led indication							
Properties	Size		1		Min Value		0x00	
	Format		Bit field		Max Value		0x0F	
	Read-only		False		Default Value		0x0F	
	Altering capabilities		False		Advanced		False	
Description	This parameter defines when the green or red LED will indicate events. Disabling all indications may extend battery life. Value 0 means no indications. 0 - disable, 1 - enable							
	7	6	5	4	3	2	1	0
	Reserved	Reserved	Reserved	Reserved	Device Tampering (red led)	Open/Close Status Change (red led)	Wake up interval report (green led)	Periodic Reports (green led)

Parameter	0x02 (2)			
Name	State when the magnet is closed			
Info	State when the magnet is closed			
Properties	Size	1	Min Value	0
	Format	Enumerated	Max Value	1
	Read-only	False	Default Value	0
	Altering capabilities	False	Advanced	False
Description	This parameter allows to set the states of door/window when the magnet closes to the sensor			
	Value	Function		
	0	Opened is triggered when the magnet is far away, and closed is triggered when the magnet is close		
	1	Closed is triggered when the magnet is far away, and opened is triggered when the magnet is close		

Parameter	0x03 (3)

Name	Group 2 trigger			
Info	Set magnet status that causes sending			
Properties	Size	1	Min Value	0
	Format	Enumerated	Max Value	2
	Read-only	False	Default Value	0
	Altering capabilities	False	Advanced	False
Description	This parameter defines the status of the magnet switch that causes sending a BASIC command to all devices of Association Group 2.			

Value	Function
0	Switch after magnet far away and magnet closed
1	Switch after magnet far away
2	Switch after magnet closed

Parameter	0x04 (4)			
Name	Command sent to Group 2			
Info	Set which command to send			
Properties	Size	1	Min Value	0
	Format	Enumerated	Max Value	2
	Read-only	False	Default Value	2
	Altering capabilities	False	Advanced	False
Description	This parameter defines which commands is sent to 2nd Association Group			

Value	Function
0	On
1	Off
2	On and Off

Parameter	0x05 (5)
Name	Basic On of Group 2

Info	Value of basic set on			
Properties	Size	1	Min Value	0
	Format	Unsigned Integer	Max Value	255
	Read-only	False	Default Value	255
	Altering capabilities	False	Advanced	False
Description	This is the BASIC command value sent in case of On event.			
	Value	Function		
	0-255	Value		

Parameter	0x06 (6)			
Name	Basic Off of Group 2			
Info	Value of basic set off			
Properties	Size	1	Min Value	0
	Format	Unsigned Integer	Max Value	255
	Read-only	False	Default Value	0
	Altering capabilities	False	Advanced	False
Description	This is the BASIC command value sent in case of Off event.			
	Value	Function		
	0-255	Value		

Parameter	0x07 (7)			
Name	Time delay of ON command			
Info	On command is sent after a delay			
Properties	Size	2	Min Value	0
	Format	Unsigned Integer	Max Value	0x7E90 (32400)
	Read-only	False	Default Value	0
	Altering capabilities	False	Advanced	False

Description	On command is sent after a delay defined in this parameter, it unit is seconds	
	Value	Function
	0-32400	seconds

Parameter	0x08 (8)			
Name	Time delay of OFF command			
Info	Off command is sent after a delay			
Properties	Size	2	Min Value	0
	Format	Unsigned Integer	Max Value	0x7E90 (32400)
	Read-only	False	Default Value	0
	Altering capabilities	False	Advanced	False
Description	Off command is sent after a delay defined in this parameter, it unit is seconds			
	Value	Function		
	0-32400	seconds		

Parameter	0x09 (9)			
Name	Enable Binary Sensor Report			
Info	for door state			
Properties	Size	1	Min Value	0
	Format	Enumerated	Max Value	1
	Read-only	False	Default Value	0
	Altering capabilities	False	Advanced	False
Description	Backwards compatibility, Binary Sensor for door state			
	Value	Function		
	0	Disable		
	1	Enable		

Parameter	0x0A (10)			
Name	Low battery threshold			
Info	Low battery threshold			
Properties	Size	1	Min Value	10
	Format	Unsigned Integer	Max Value	50
	Read-only	False	Default Value	20
	Altering capabilities	False	Advanced	False
Description	Report low battery report when level goes under threshold setting			
	Value	Function		
	10-50	10-50%		

Parameter	0x0B (11)			
Name	Periodic Reports			
Info	Periodic Reports			
Properties	Size	4	Min Value	0
	Format	Unsigned Integer	Max Value	2678400
	Read-only	False	Default Value	43200
	Altering capabilities	False	Advanced	False
Description	The period of battery report, the minimum time is 30 seconds.			
	Value	Function		
	0	Disable		
	1~2678400	Seconds (if 1 - 30, the time is 30s)		