Instruction Manual
PIR Motion Sensor

Thank you for your support

- Please read the instruction manual carefully before operating
- Please keep the instruction manual for future reference

Shenzhen Neo Electronics Co., LTD

Product Introduction

PIR is a passive infrared detector or physical sensor, the sensor doesn't emit any energy but only passively receive and detect infrared radiation from outside. Under room temperature, all items have radiation. Human beings are warm-blooded animal with stable infrared radiation, are most easily to be detected. That's why we also call it body sensor. PIR send messages via Z-wave network to the Z-wave main controller. In the Z-wave network communications, PIR can be connected to any Z-wave main controller, Different countries or areas, the radio frequency is different of the Z-wave network. In the communication between the PIR and Z-wave main controller, PIR can only send messages, not be able to receive messages. When the PIR is triggered, PIR will send message to the Z-wave main controller, and associate devices to work through the Z-wave main controller. The PIR is battery powered, is small and can be installed easily.

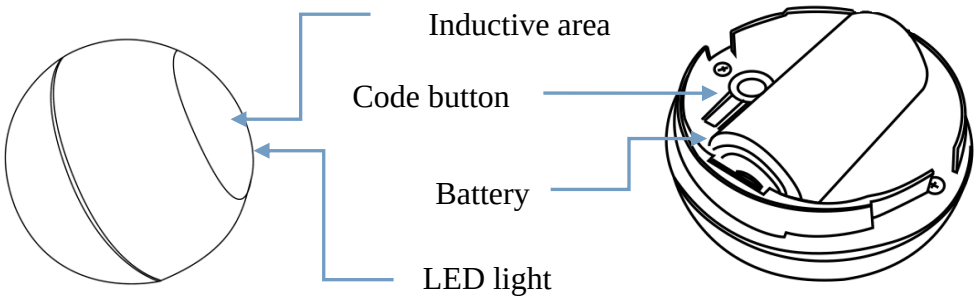
Technical Parameters

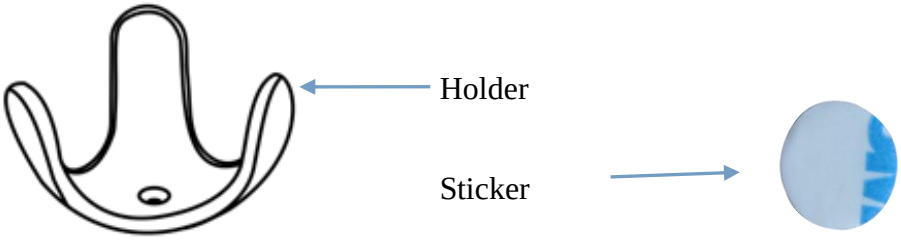
- Motion detection
- Measure the light sensitivity
- Compatible with 300 series and 500 series
- Easy installation on wall or any surface
- Range: up to 50m outdoor
- up to 30m indoor
- Power supply: CR123A x 1
- Standby current: 16uA
- Battery life: 1 years
- Radio Protocol: Z-wave
- Radio Frequency: 868.4MHz EU; 908.4MHz US; 921.4MHz ANZ; 869.2MHz RU
- Detection range: 7 meters
- Viewing angle: 110 degree
- Operation temper: 0-40℃
- Storage temperature: 0-60℃
- Size (D x W x H): 45mm x 45mm x 48mm

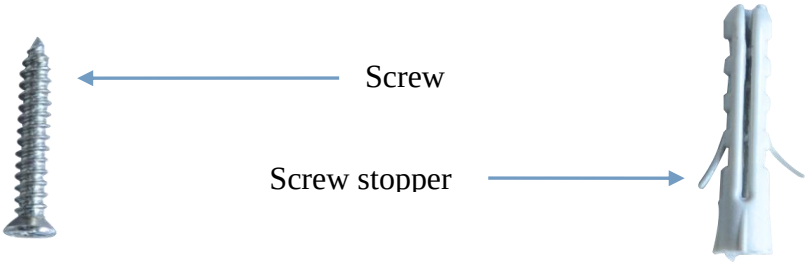
Technical Information

- Use passive IR sensor to detect what is moving.
- When the PIR is triggered, LED light flashes in the detection area.
- Easily install with screws or sticker on the wall or the table.
- When there are people or animal that is moving in the PIR detection area, PIR will send alarm messages to the Z-wave main controller.
- Compatible with any Z-wave main controller.

Product Configuration







Product List

- PIR 1pc
- Holder 1pc
- Battery 1pc
- Screw 2pcs
- Screw stopper 2pcs
- Sticker 1pc
- Instruction manual 1pc

Including Sensor (PIR) to Z-wave Network

The PIR can be included to the Z-wave network by pressing on the code button.
1) Power to the code, the device is plugged into the power 20S can not have any operation!
2 Disassemble the PIR main body and insert the battery into the contact sensor. Make sure the device is located within the direct range of the controller.
3) Set the controller into the learning mode (see mail controller's operating manual).
4) Quickly, triple click the code button, LED light will flash red for 5 times.
5) PIT will be detected and included in the Z-wave network.
6) Wait for the main controller to configure the PIR.

Excluding Sensor (PIR) from Z-wave Network

1) Remove the device cover.

2) Make sure the sensor is powered.

3) Set Z- Wave controller or Z- Wave gateway into exclusion mode (Refer to the controller or gateway operating manual)

4) Press the button three times within 1.5 second, the device will enter exclusion mode.

Wakeup Motion Detector

You can press the button once to wake up the device and send wakeup notification to controller. If press successfully, the LED will blink one time.

Installation Steps

- Holder Installation
- Battery Installation
- Fix PIR on the holder

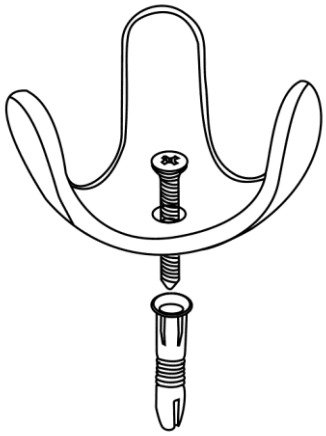
Holder Installation

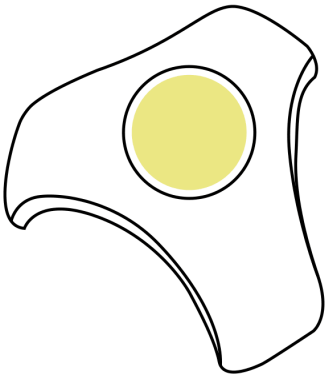
Option One

Fix the holder with screws and screw stopper adhesive

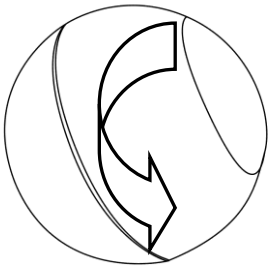
Option Two

Fix the holder with double-sided

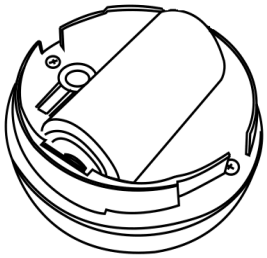




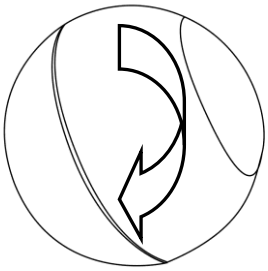
Battery Installation



Open the PIR

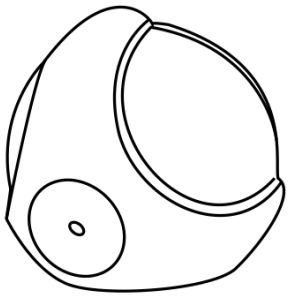


Install the battery



Close the PIR

Fix PIR on the Holder

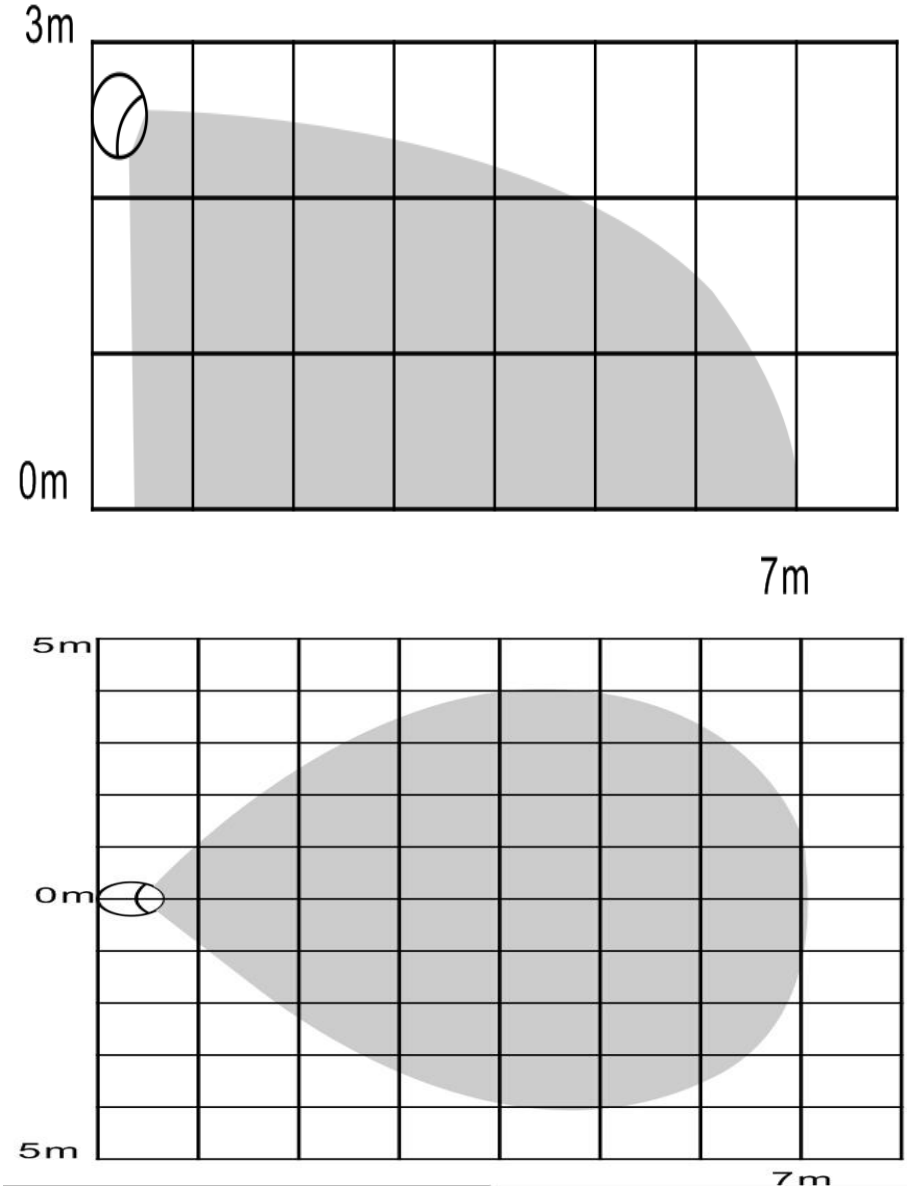


Detection Range and Working Conditions

PIR has to be installed in a corner of the room or perpendicularly to the doors.

Actual detection range of the sensor can be influenced by environment conditions. If there are false alarms be reported, check for any moving objects within the sensor's detection area, such as trees blowing in the wind, cars passing by, windmills. False motion alarms may be caused by moving masses of air and heat as well. If the device keeps on reporting false alarms, despite eliminating all of the above-mentioned factors, install the device in another place.

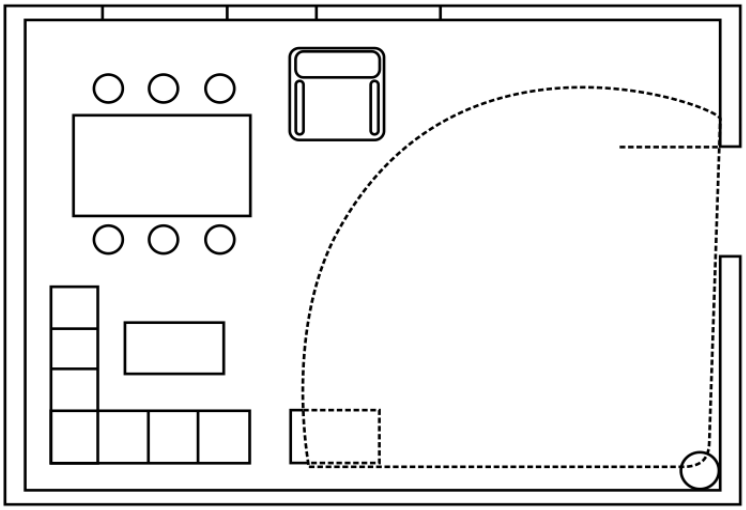
Detection range of PIR shown in the following picture

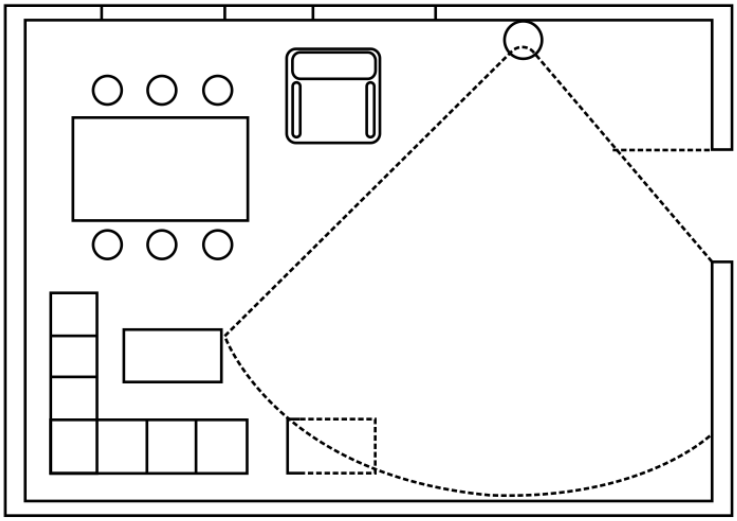


Working Condition

If there is someone moving within the detection area, alarm triggered, and LED lights flash in the inductive area at the same time.

Work schematic diagram of PIR shown in the following picture





Tips

- Make sure the PIR is within the Z-wave network.
- PIR is recommended to be fixed at the height of 2- 4 meters off the ground.
- When install PIR, please keep it far away from the place where the air temperature changed sensitively, e.g., the neighborhood of air conditioners, refrigerators, stoves and so on.
- Furniture, large bonsai or other spacers shouldn't be placed within the PIR's detection area.
- When installing the PIR, please avoid stairs、elevators and other obstructions within the PIR's detection area.
- After installation of the PIR, please test whether the PIR works properly or not, if there is false alarm from PIR, please change the location of the PIR.
- Association allows for direct communication between Z-wave network devices.

Main controller does not take part in such communication. Using this mechanism, PIR may communicate with other devices even when the main controller is damaged.

The Status of LED

1. When the PIR is triggered, LED light flashes red for 1 times.
2. When the PIR installs battery, LED light will flash red for 5 times.
3. Quickly, triple click the code button ,add the PIR to the Z-wave network or delete PIR from Z-wave network , LED light flashes red for 5 times.
4. Press on the code button for 10 seconds, the PIR will be restored to factory default settings, LED light flashes red for 1 times.
5. In the normal condition, the LED light keeps being off.
6. Wakeup motion detector, press the button once to wake up the device and send wakeup notification to controller, LED light flashes red for 1 times.

Associations

This Sensor supports 4 association groups; each group supports max 4 associated nodes.

This has the effect that when the sensor is triggered, all devices associated with the sensor will receive the relevant reports. Through an association the sensor may control another Z- Wave network device, e.g. a alarm device, wall plug, lamp etc.
Every group can be support to associated 4 devices max.

GROUP 1 is lifeline service that assigned to Sensor (Motion detector) status – Open/Close. It enables the sensor to send reports and readings to Z- Wave Controller or Z- Wave Gateway whenever the sensor is triggered. This Group Support:

NOTIFICATION_REPORT_V4
SENSOR_BINARY_REPORT_V2
SENSOR_MULTILEVEL_REPORT_V7
BATTERY_REPORT
DEVICE_RESET_LOCALLY_NOTIFICATION

GROUP 2 allows for sending control commands to associated devices such as relay module, lighting, etc. This association group is configured through the advanced parameters no. 2, 3, 5 and 8. This Group Support:

BASIC_SET

GROUP 3 allows for Send Notification to associated devices in this group. This Group Support:

NOTIFICATION_REPORT_V4

GROUP 4 allows for Send Sensor Binary Report to associated devices in this group. This Group Support:

SENSOR_BINARY_REPORT_V2

NOTE

Association allows for direct communication between Z-wave network devices. Main controller does not take part in such communication.

Restore the Sensor (PIR Motion Detector) to Factory Default Settings

Reset procedure will delete all information on the Z-wave network or Z-wave controller , and restore the sensor to factory default settings.
1. Remove the sensor's cover.
2. Make sure the sensor is connected to power source.
3. Press the code button for 10 seconds, LED will flash red for 1 times.
4. Release the code button.

NOTE
When the PIR is being restored factory settings, please make sure power source is connected.

Battery Usage Tips
Battery life of the contact sensor is approximately 1 years at factory default settings. The current battery level is displayed in the gateway. Red battery icon means the battery needs replaced. In order to avoid tamper detection, while replacing the battery, please disconnect the association of the contact sensor with other devices.

Note
Contact sensor is battery powered. Using batteries other than specified may result in explosion. Dispose of properly, please observe environmental protection rules.

Advanced Configuration

The following information is for someone that has some experience in setting up a Z-wave system or someone that has computer software running a Z-wave controller or Z-wave Gateway. Please get familiar with software of Z-wave controller or Z-wave Gateway before getting started.

1. Sensitivity Level Setting
This parameter defines the sensitivity of PIR detector, it is recommended to test the detector with movements from a farthest end of the coverage area at first time of use. If movements cannot be detected sensitively, simply adjust the sensitivity level with this parameter. This parameter can be configured with the value of 1 through 4, where 1 means high sensitivity and 4 means lowest sensitivity.

Function: Sensitivity Level Setting.
Parameter Number: 1.
Parameter Size: 1 Byte.
Available Settings: 8 - 255.
Default Setting: 12.

2. On/Off Duration

This parameter can be determined how long the associated devices should stay ON status. For instance, this parameter is set to 30(second), the PIR detector will send a BASIC SET Command to an associated device with value basic set level if PIR detector is triggered and the associated device will be turned on 30(second) before it is turned off. This Parameter value must be large than Parameter 6#.

Function: On/Off Duration Setting
Parameter Number: 2
Parameter Size: 2 Byte
Available Settings: 5 - 600(second)
Default Setting: 30

3. Basic Set Level

Basic Set Command will be sent where contains a value when PIR detector is triggered, the receiver will take it for consideration; for instance, if a lamp module is received the Basic Set Command of which value is decisive as to how bright of dim level of lamp module shall be. This
Parameter is used to some associated devices.

Function: Basic Set Level
Parameter Number: 3
Parameter Size: 1 Byte
Available Settings：0, 1- 99 or 255
0 – OFF, Alarm cancelling or turning a device off
1 - 99 or 255 – ON (Binary Switch Device
Dim Level (Multilevel Switch Device
Default Setting: 99

4. PIR Detecting Function Enabled/Disabled

This parameter can be enabled or disabled the PIR detector detecting function.

Function: Enabled/Disabled PIR Function
Parameter Number: 4
Parameter Size: 1 Byte
Available Settings：0 or 255
0 – Disable PIR Detector Function
255 – Enable PIR Detector Function
Default Setting: 255

5. Ambient illumination Lux Level (Not Complete, Reserved)

This parameter can be set a lux level value which determines when the light sensor is activated. If the ambient illumination level falls below this value and a person moves

across or within the detected area , PIR detector will send a Z-wave ON command(i.e. BASIC_SET value = parameter 3#) to an associated device and activate it.

Function: Lux Level Set
Parameter Number: 5
Parameter Size: 2 Byte
Available Settings: 0 - 1000(Lux)
Default Setting: 100(Lux)

6. Re-trigger Interval Setting
This Parameter can be used to adjust the interval of being re-triggered after the PIR detector has been triggered. No report will be sent during this interval if a movement is presented. This Parameter value must be less than Parameter 2#.

Function: Re-trigger Interval Setting.
Parameter Number : 6
Parameter Size： 1 Byte
Available Settings： 1 ~ 8(s)
Default Setting： 8

7. Light Sensor Polling Interval
This Parameter can be set the light sensor measure ambient illumination level interval time.
NOTE: This Value Must Be less than Wakeup Interval Time.

Function： Light Sensor Polling Interval
Parameter Number： 7
Parameter Size： 2 Byte
Available Settings： 60 - 36000(second)
Default Setting： 180(s)

8. Lux Level Function Enable
If this parameter is set to '1', and when Lux level less than the value define by parameter #5, PIR detector will send a BASIC_SET command frame(i.e. BASIC_SET (value = parameter 3) to an associated device and activate it. If Lux Level greater than the value define by parameter #5, PIR detector will not send a BASIC_SET command frame.

Function: Lux Level Enable
Parameter Number: 8
Parameter Size: 1 Byte
Available Settings： 0, 1
Default Setting: 0

9. Ambient illumination Lux Level Report

This parameter defines by how much Lux Level must change, in lux, to be reported to the main controller.

Function： Lux Level Report
Parameter Number： 9
Parameter Size： 2 Byte
Available Settings： 0 - 255(Lux)
Default Setting: 100(Lux)

10. Led Blink Enable

This parameter defines the Led on/off enable. If this parameter is set to '1', the led blink will be enabled, the led will blink once when motion sensor detect a movement. Otherwise, the led will be turned off always.

	Led Blink
Function:	Enable
Parameter Number:	10
Parameter Size:	1 Byte
Available Settings：	0, 1
Default Setting:	1

Notification Command Class :

Once the detector datected a movement, it will send NOTIFICATION_REPORT and SENSOR_BINARY_REPORT to the nodes lifeline to inform there is an intrusion event.when the movement is stopped,NOTIFICATION_REPORT and SENSOR_BINARY_REPORT will be sent again to the nodes in lifeline
For compliant to Z-Wave 300 series,There also realize the Binary Sensor Command Class

Notification Report Commed:
Event Present:
Command Class: COMMAND_CLASS_NOTIFICATION
Command: NOTIFICATION_REPORT
Notification Type: NOTIFICATION_TYPE_HOME_SECURITY
Event:NOTIFICATION_EVENT_HOME_SECURITY_MOTION_DETECTION_UNKNOWN_LOCATION
Event Clear:
Command Class: COMMAND_CLASS_NOTIFICATION,
Command: NOTIFICATION_REPORT,
Notification Type: NOTIFICATION_TYPE_HOME_SECURITY,
Event: NOTIFICATION_EVENT_HOME_SECURITY_NO_EVENT

Binary Sensor Report Command:
Event Present:
Command Class: COMMAND_CLASS_SENSOR_BINARY
Command: SENSOR_BINARY_REPORT
Sensor Type: SENSOR_MOTION
Value: 0xFF

Event Clear:
Command Class: COMMAND_CLASS_SENSOR_BINARY
Command: SENSOR_BINARY_REPORT
Sensor Type: SENSOR_MOTION
Value: 0x00

Multilevel Sensor

The Motion Detector supports ambient luminance measurement,the scale is LUX.And the default Multilevel sensor is luminance too.
The settings of luminance sensor measurement are listed in Page3,Advanced Configuration

Wakeup Command Class

The motion detector stays in sleep status for the majority of time in order to conserve battery life.
The minimum wakeup interval is 300s
The maximum wakeup interval is 16,777,200s (about 194 days)

Allowable interval among each wakeup interval is 60second, such as 360, 420,480…

Note: The default value is 12 hours. This value is longer, the battery life is greater.

Battery Check Command

The users can also enquire the battery status of the motion detector by sending BATTERY_GET command. Once the motion detector receivers the command, it will return BATTERY_REPORT command. The motion detector will send BATTERY_LEVEL = 0xFF command to the Z- Wave Controller to inform that the motion detector is in dead battery status, otherwise BATTERY_LEVEL value range is 0% to 100%.

Command Classes

This Sensor(Motion Detector) supports Command Classes as Below:
* COMMAND_CLASS_ZWAVEPLUS_INFO (V2)
* COMMAND_CLASS_VERSION (V2)
* COMMAND_CLASS_MANUFACTURER_SPECIFIC (V2)
* COMMAND_CLASS_DEVICE_RESET_LOCALLY (V1)
* COMMAND_CLASS_POWERLEVEL (V1)
* COMMAND_CLASS_BATTERY (V1)
* COMMAND_CLASS_ASSOCIATION (V2)
* COMMAND_CLASS_ASSOCIATION_GRP_INFO (V1)
* COMMAND_CLASS_WAKE_UP (V2)
* COMMAND_CLASS_NOTIFICATION (V4)
* COMMAND_CLASS_SENSOR_BINARY (V2)
* COMMAND_CLASS_CONFIGURATION (V1)
* COMMAND_CLASS_SENSOR_MULTILEVEL (V7)

Guarantee

1. The Guarantee is provided by Shenzhen NEO Electronics Co., Ltd (hereinafter “Manufacture”)
2. The Manufacturer is responsible for equipment malfunction resulting from physical defects (manufacturing or material) of the device for 12 months from the date of its purchasing.
3. During the Guarantee period, the Manufacturer shall remove any defects, free of charge, by repairing or replacing.
4. In special cases, when the device cannot be replaced with the device of the same type (e.g. the device is no longer available in the commercial offer), the Manufacturer may replace it with a different device having technical parameters similar to the faulty one. Such activity shall be considered as fulfilling the obligations of the Manufacturer. The Manufacturer shall not refund money paid for the device.
5. The guarantee shall not cover:
   - mechanical damages (cracks, fractures, cuts, abrasions, physical deformations caused by impact, falling or dropping the device or other object, improper use or not observing the operating manual);
   - damages resulting from external causes, e.g.: flood, storm, fire, lightning, natural disasters, earthquakes, war, civil disturbance, force majeure, unforeseen accidents, theft, water damage, liquid leakage ,battery spill, weather conditions, sunlight, sand, moisture, high or low temperature, air pollution
   - damages caused by malfunctioning software, attack of a computer virus, or by failure to update the software as recommended by the Manufacturer;

Shenzhen NEO Electronics Co., LTD
Address: 6TH Floor, Building No.2, Laobing Industrial Park, Tiezhai Road Xixiang, BaoAn District, Shenzhen, China.
Http://www.szneo.com
Tel: +86-4007-888-929
Fax: +86-755-29667746
E-mail: support@szneo.com