



SITERWELL

Instruction Manual

Motion Sensor

Model number: STW-W3300WU

Thank you for your support

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



Siterwell Technology HK Co., LTD

Introduction

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.

In the back casing, there is a button that is used to carry out add, remove, wakeup device

or reset factory default settings.

When power is first supplied, the LED will flash on and off alternately at one second intervals within 5 seconds if the detector has not been added a Z-Wave network. Please get familiar with the terms below before starting the operations.

Manufacture ID: 0x0266

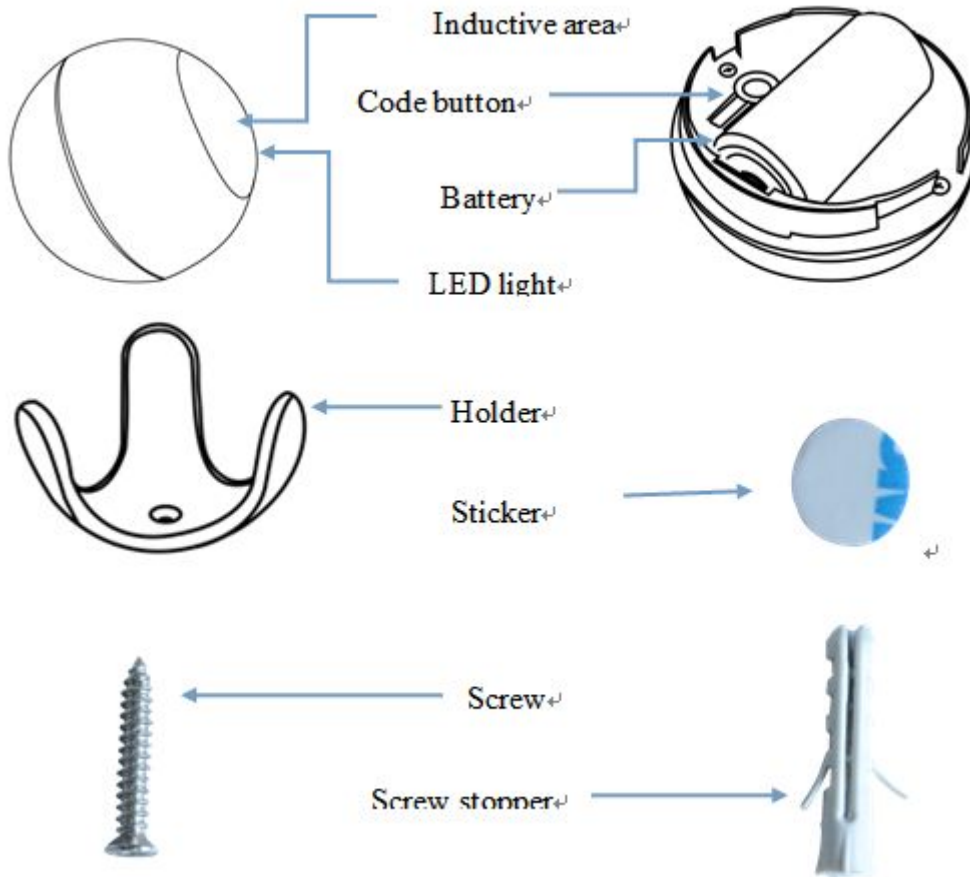
Product ID: 0x0083 (US)

Product ID: 0x1083 (EU)

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: 120 degree
- Operation temperature: 0-40°C
- Storage temperature: 0-60°C
- Size (D x W x H): 45mm x 45mm x 48mm

Product Configuration



Product List

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

Add Motion Detector to Z-Wave Network

1. Remove the sensor cover.
2. Make sure the sensor is powered with battery included in the package.
3. Set Z-Wave controller or Z-Wave gateway into adding mode (Refer to the controller or gateway operating user manual)
4. Press the button three times within 1.5 second to make device in adding mode. And the LED will flash five times.

Note: If device has not been added to Z-Wave network, the device will enter adding mode automatically when it is powered on (NWI). Make the controller in adding mode first

before power on the device to make this function work properly.

Remove Motion Detector 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 remove mode (Refer to the controller or gateway operating manual)
4. Press the button three times within 1.5 second to make the controller in remove mode.

Restore Motion Detector to Factory Default

Reset procedure will delete all information on the Z-Wave network and Z-Wave controller or Z-Wave Gateway, and restore the sensor to factory default settings.

1. Remove the device cover.
2. Make sure the sensor is powered.
3. Press and hold the button for 10 seconds, LED will blink once.
4. Release the button.

Note: use the reset procedure only when the primary controller is missing or inoperable.

Wakeup Motion Detector

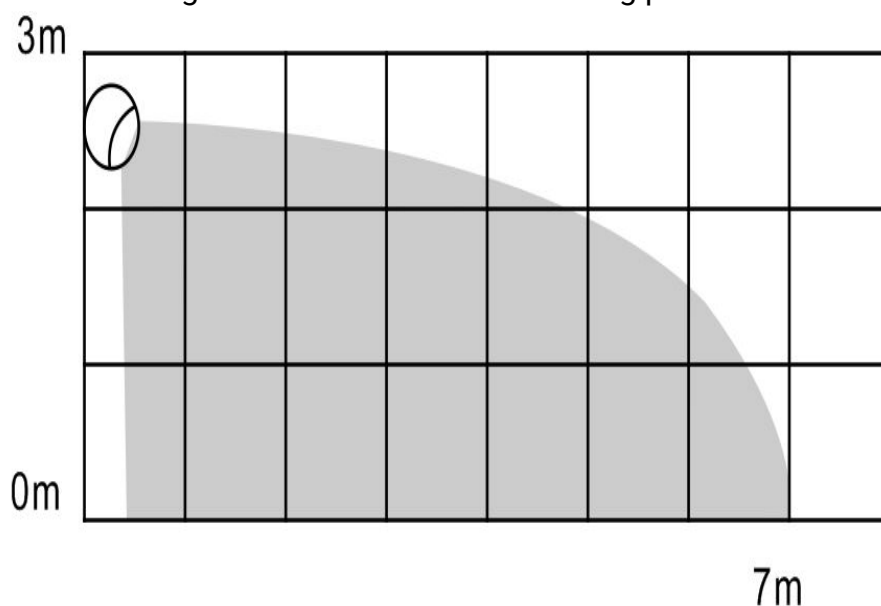
You can press the button once to wake up the device and send wakeup notification to controller. If press successfully, the LED will blink one time.

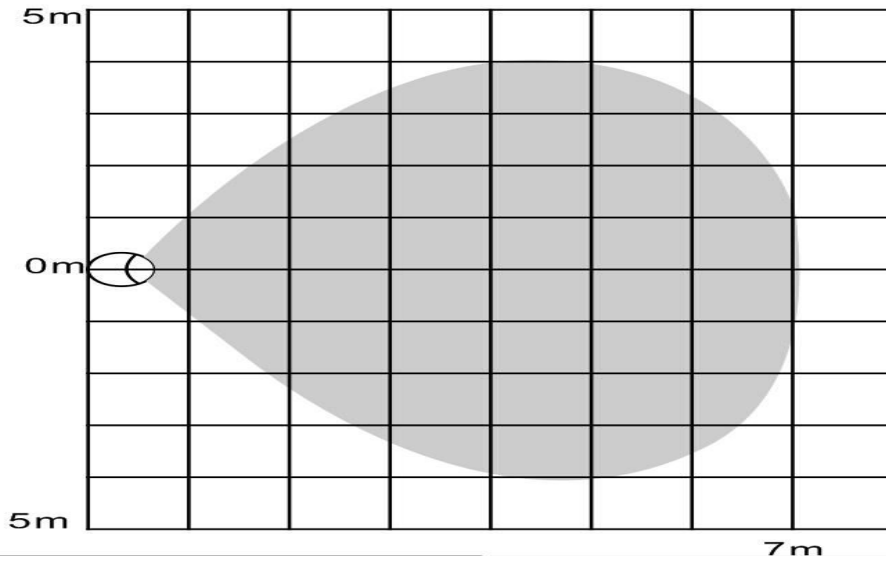
Detection Range and Working Conditions

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

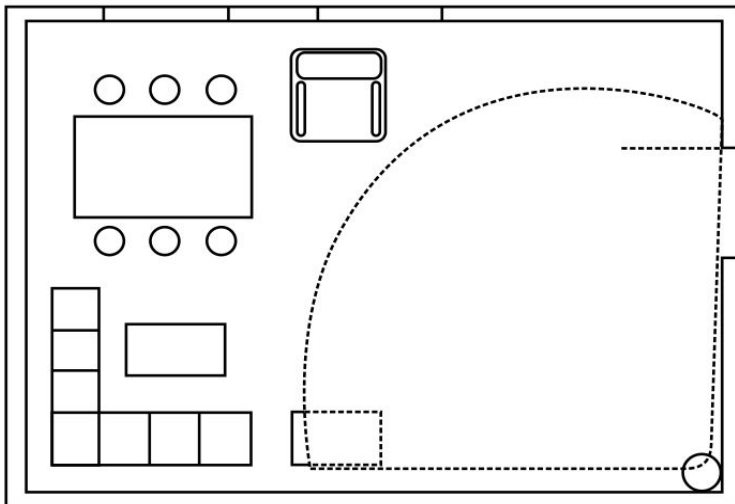


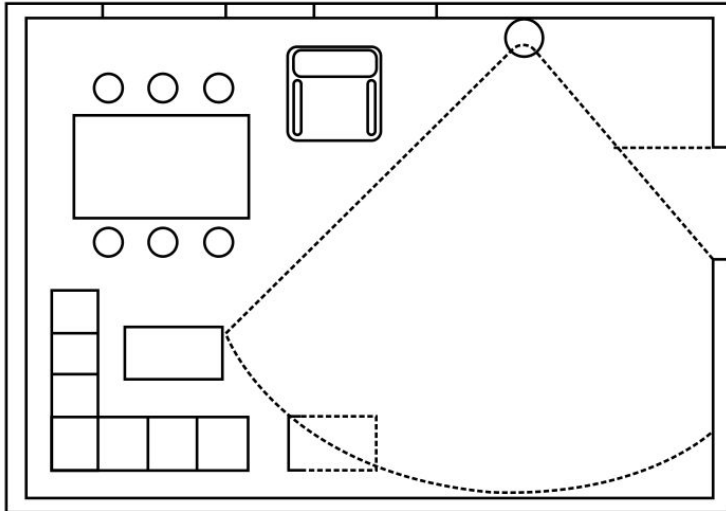


Working Condition

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





Associations (Association Command Class Version 2)

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. an alarm device, wall plug, lamp etc.

Every group can support up to 4 associated devices.

GROUP 1 is lifeline service assigned to sensor (motion detector) status. The sensor sends 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 BASIC SET command frame 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 supports:

BASIC_SET

GROUP 3 allows for sending Notification command frame to associated devices in this group. This group supports:

NOTIFICATION_REPORT_V4

GROUP 4 allows for sending Sensor Binary Report command frame to associated devices in this group. This group supports:

SENSOR_BINARY_REPORT_V2

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. PIR 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 8 through 255, where 8 means high sensitivity and 255 means lowest sensitivity.

Function: PIR Sensitivity Level Setting.

Parameter Number: 1

Parameter Size: 1 Byte.

Available Settings: 8 ~ 255.

Default Setting: 12

2. Non-Motion Duration (Motion Cleared Time)

This parameter defines the duration of the continuous non-motion to make the device in non-motion status and report 'motion cleared' event. This also affects to the associated devices in the group 2. For instance, this parameter is set to 30 (second), this device will send a Basic Set command to associated devices with value set in parameter #3 if PIR is triggered and then, after this duration, send another Basic Set command to the associated devices with value 0x00 (see description in parameter #3) if no motion is detected in the meantime. This parameter value must be large than parameter #6. If user set this parameter to default by Configuration command, the parameter #6 will be set to default value.

Function: Non-Motion Duration Setting

Parameter Number: 2

Parameter Size: 2Byte

Available Settings: 5 ~ 600 (second)

Default Setting: 30

3. Lighting Control Basic Set Value

This parameter defines the value in Basic Set command will be sent to devices in association group 2 when PIR detector is triggered; This can be used to scenarios like lighting control. For instance, if a lamp module receives the Basic Set command of value decisive as to how bright of dim level of lamp module shall be. This parameter is used to some associated devices.

Function: Lighting Control Basic Set Value

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 – Dim Level (Multilevel Switch Device)

255 – ON (Binary Switch Device)

Default Setting: 255

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. Lighting Control Ambient Illumination Lux Threshold

This parameter defines ambient luminance threshold (lux) to enable lighting control when the light sensor is activated (parameter #8). If the ambient illumination level falls below this threshold and a motion is detected, PIR detector will send a Z-Wave "ON" command (i.e. BASIC_SET (value = parameter #3) to associated devices in association group 2.

Function: Lighting Control Ambient Illumination Lux Threshold

Parameter Number: 5

Parameter Size: 2 Byte

Available Settings: 0 ~ 1000(Lux)

Default Setting: 100(Lux)

6. Motion Sensor Re-Detection Interval Setting

This parameter can be used to adjust the interval of PIR detection interval. This Parameter value must be less than Parameter #2. If user set this parameter to default by Configure CC, the parameter #2 will be set to default value.

Function: Motion Sensor Re-Detection Interval Setting

Parameter Number: 6

Parameter Size: 1 Byte

Available Settings: 1 ~ 8(s)

Default Setting: 8

7. Light Sensor Re-Detection Interval

This parameter defines the polling interval of light sensor which measures ambient illumination level.

NOTE: This value must be less than wakeup interval time.

Function: Light Sensor Re-Detection Interval

Parameter Number: 7

Parameter Size: 2 Byte

Available Settings: 60 ~ 36000(second)

Default Setting: 180(s)

8. Ambient Illuminance Threshold for Lighting Control Function Enable

If this parameter is set to '1', and when ambient illuminance level less than the value defined by parameter #5, PIR detector will send a BASIC_SET command frame (i.e. BASIC_SET (value = parameter #3) to associated devices. If ambient illuminance level greater than the value defined by parameter #5, PIR detector will not send a BASIC_SET command frame.

Function: Ambient Illuminance Threshold for Lighting Control Function Enable

Parameter Number: 8

Parameter Size: 1 Byte

Available Settings: 0, 1

Default Setting: 0

9. Ambient illumination Level Report Threshold

This parameter defines the threshold of Lux level change compared to previous value to make this device reports to the main controller.

Function: Lux Level Report

Parameter Number: 9

Parameter Size: 1 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.

Function: Led Blink Enable

Parameter Number: 10

Parameter Size: 1 Byte

Available Settings: 0, 1

Default Setting: 1

11. Motion Event Report One Time Enable

'1' – The motion detected event will be sent to controller only once until device report motion cleared event (see parameter #2).

'0' – The motion detected event will be sent to controller when device detects a movement event in every re-detection interval configured in parameter #6.

Function: Motion Event Report One Time Enable

Parameter Number: 11

Parameter Size: 1 Byte

Available Settings: 0, 1

Default Setting: 1

99. Ambient light intensity calibration

This parameter defines the calibrated scale for ambient light intensity. Because the method and position that the sensor mounted and the cover of sensor will bring measurement error, user can get more real light intensity by this parameter setting. User should run the steps as follows for calibrating

1) Set this parameter value to default(Assumes the sensor has been added in a Z-Wave Network).

2) Place a digital luxmeter close to sensor and keep the same direction, monitor the light intensity value (V_m) which report to controller and record it. The same time user should record the value (V_s) of luxmeter.

3) The scale calibration formula: $k = V_m / V_s$.

4) The value of k is then multiplied by 1000 and rounded to the nearest whole number.

5) Set the value getting in 5) to this parameter, calibrate finished.

For example, $V_m = 300$, $V_s = 2000$, then

$$k = 300 / 2600 = 0.11538$$

$$k = 0.11538 * 1000 = 115.38 \approx 115$$

The parameter should be set to 115.

Function: Ambient light intensity calibration

Parameter Number: 99

Parameter Size: 2 Byte

Available Settings : 1 ~ 65536

Default Setting: 1000

Notification Command Class

Once the detector detected a movement, it will send NOTIFICATION_REPORT and SENSOR_BINARY_REPORT to the nodes of 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 Command:

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 Page 3, 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 60 second, 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 receives 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 (V8)
- * COMMAND_CLASS_SENSOR_BINARY (V2)
- * COMMAND_CLASS_CONFIGURATION (V1)
- * COMMAND_CLASS_SENSOR_MULTILEVEL (V7)

LED Color Indicator

| LED Color | Led Display Status | Description |
|-----------|-----------------------------|--|
| Red | Blink 5 Times (1s Interval) | Power on and Not Add in Z-Wave Network |

| | | |
|--|--------------------------------|---|
| | Blink 5 Times (500ms Interval) | Press Button tripled, Adding siren in a Z-Wave Network or Send Node Info. |
| | Blink 5 Times (300ms Interval) | Power on and Already Add in a Z-Wave Network |
| | Blink 1 Time | 1, Press the Button Long Time, Reset the Plug to restore default settings; 2, Detect a Movement 3, Press the Button shortly to Send Wake up information to Controller |

SPECIFICATIONS

Battery type: CR123A (3.0V)

Power Consumption: 0.15W

Max Current: 35mA (In Radio Transmitter Mode)

EU Standards Compliance:

Radio Protocol: Z-Wave

Radio Frequency:EU – 868.4MHz

US – 908.4MHz

Valid Range: Up to 60m outdoors

Up to 30m indoors (Depending on terrain and building structure)

Operational Temperature: 0 – 40 °C

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