Occupancy Sensor

OS11(ceiling mount)
OS12(wall mount)

OS11/OS12 is a Z-Wave occupancy sensor based on 24GHz millimeter wave Doppler technology, it can accurately detect and distinguish motion, minor motion and even breathing signals to interact with lights, shutters, fans, air conditioning and various electrical appliances, as well as security alarm, person monitoring etc. Suitable for home, hotel, office and other places, not affected by temperature, humidity, noise, airflow, dust, light and other factors. Sensor can be added into any Z-Wave network, and is compatible with any other Z-Wave certified devices.

Specification

• Power Supply: AC90-250V (optional DC12V)

• 3db horizontal beam angle up to 80°, vertical beam angle up to 85°, with high accuracy and wide detection range.

• Maximum range of respiratory presence: 2-3m in diameter

• Maximum range of minor presence: 3-4m in diameter

• Maximum range of motion presence: 5-8m in diameter

• The switch time of detecting absence or presence: within 0.5sec

• Ultra-low RF power output, harmless to human health

• Comes with 3A dry contact output

• Z-Wave 800 series, support S2 encryption

• Visual LED indicator for pairing network or detecting the movement, minor motion, breathing

• Operating Temperature: -10℃-50℃

• Operating Humidity: 20%-85%（non-condensing）

• Z-Wave Frequency: Operating frequency range, defined by the regulatory bodies (for Z-wave in Europe: 868.4 MHz, or other regions 908.4/916.0 MHz , 921.4 MHz)

• Maximum Transmitting Power: +13dbm

• Housing: V0 flame-retardant PC material

• Installation: Top-mounted or wall-mounted

• Z-Wave Compliance

The device is a fully compatible Z-Wave Plus V2 device.

Important Safety Instruction

⚠ Read the instructions before starting up the unit!

⚠ This product is not a toy. Keep out of reach of children and animals!

⚠ Do not expose the device to moisture, water or other liquids. Do not place liquids near or on the device!

⚠ Do not attempt to disassemble, repair or modify the device yourself!

⚠ This product is for indoor use only. Do not use outdoors!

⚠ CAUTIONS!

Flush-mount only into a UL/ETL/CE certified plastic junction box. The minimum size should be 86*86*60mm, minimum Volume is 443cm³. Use Copper Conductors Only.

⚠ CAUTIONS!

Risk of Electric Shock - More than one disconnect switch may be required to de-energize the equipment before servicing.

Installation

⚠ IMPORTANT:

• A qualified electrician with the understanding of wiring diagrams and knowledge of electrical safety should complete the installation inside the main circuit box (normally outside your house).

• Read all instructions and documentation and save for future reference.

⚠ CAUTIONS!

1. Cut off power supply at circuit breaker or fuse before installation to avoid fire, shock or death!
2. It is recommended that the device installation should be at least 1 meter apart from the wireless devices such as routers.
3. The device install away from large metal equipment, pipes, air conditioning air outlets, air exhaust vents, and smoke exhauster to avoidvibration affecting detection effects.
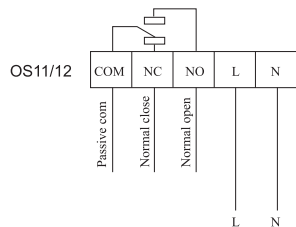
Interference factor: radar is a wireless electromagnetic wave detection sensor. Movement or vibration generated by moving inanimate objects may lead to false positives, such as shaking fans, moving vehicles, pets, metal curtains, etc. Also, installation in all-metal environments should be avoided because metal can reflect radar waves and cause false positives.

Non-interfering factor: radar electromagnetic wave will penetrate human clothes, curtains, thin boards (less than 3mm), glass etc. Users need to reasonably arrange the location of radar sensors according to the requirements of application effect.

Semi-interfering factor:radar judges the existence of human body, so it is not suitable to directly face or close to air conditioning installation, so as to avoid false alarms caused by vibration generated by motor inside air conditioning equipment or air conditioning operation.
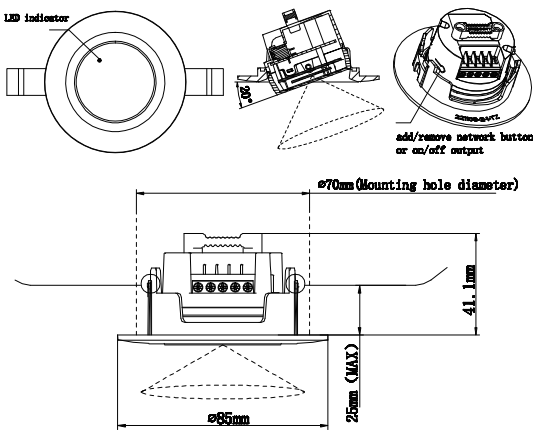
Wiring Diagram

OS11/12 COM NC NO L N
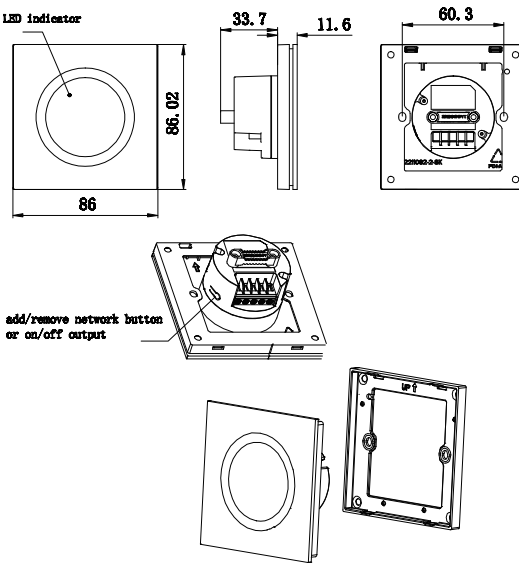
Passive com / Normal close / Normal open
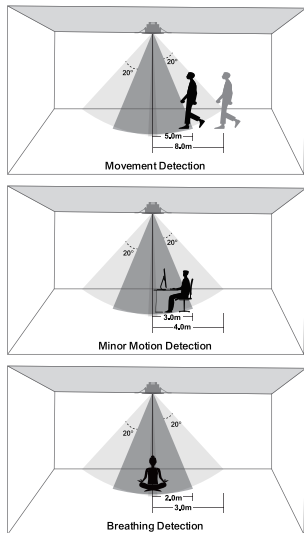
L   N

Independent Flush-Mounted Installation Design

Independent flush-mounted installation design makes the device not limited to lamps.The device can be well hidden in the existing lighting environment to avoid any damage.

ø70mm(Mounting hole diameter)

41.1mm

25mm (MAX.)

ø85mm

Wall-Mounting Design

33.7   11.6   60.3

86.02

86

add/remove network button or on/off output

Detection Pattern (OS11 detection probe angle can be adjusted up to 20° with more flexible installation design).

20°   20°

5.2m
8.8m

Movement Detection

20°   20°

3.0m
4.0m

Minor Motion Detection

20°   20°

2.0m
3.0m

Breathing Detection

Operation

Local Operation

Short press the button will switch the relay output on/off status. If the sensor has been added to the Z-Wave gateway, the sensor will automatically report the occupancy status to the Z-Wave gateway.

When motion is detected:

1. LED indicator flashes once by default, this function can be enabled or disabled by setting the configuration parameters.

2. Terminal COM is closed with NO and disconnected from NC. If no movement, minor motion, breathing is detected during the time setting of parameter 5, the device will switch to 'unoccupied' status, send notification_report command to the Z-Wave gateway to report State Idle, terminal COM will be disconnected from NO and closes with NC. If movement, minor motion, breathing is detected again during the delay process, the delay will be re-counted again.

During "Unoccupied" status:

If the sensor detects motion, status will change to 'occupied', LED indicator flashes once and terminal COM is closed with NO and disconnected from NC, it will also send notification_report command to the Z-Wave gateway to report Motion Detected.

Note: Breath detection is effective only when it is set at least 30 sec (please refer to parameter 5). It is recommended that the minor motion detection is set at least 10 sec.

Z-Wave operation

• **Adding & Removing the device from Z-Wave network**

1. Activate Add/Remove mode in the gateway (refer to your controller manual).

2. 3 clicks the button in quick succession, the LED indicator will keep flashing and the device enter in learning mode.

Note: If inclusion is successful, the LED indicator will stop flashing.

3. Follow the same step to remove the device from Z-wave network.

Note: A Security Enabled Z-Wave Controller must be used in order to fully utilize the product.

• Association Group

The device supports 2 association groups (AG):

AG Identifier	Max Node ID	Command Class	Trigger Situation
1	1	COMMAND_CLASS_ NOTIFICATION, NOTIFICATION_REPORT	When the sensor detects movement, minor motion, breathing, the status changes.
		COMMAND_CLASS_BASIC, BASIC_SET	
2	5	COMMAND_CLASS_BASIC, BASIC_SET	

• Command Class supported by the device:

(Support S2 unauthenticated level)

COMMAND_CLASS_VERSION,
COMMAND_CLASS_ASSOCIATION,
COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V2,
COMMAND_CLASS_ASSOCIATION_GRP_INFO,
COMMAND_CLASS_MANUFACTURER_SPECIFIC,
COMMAND_CLASS_DEVICE_RESET_LOCALLY,
COMMAND_CLASS_POWERLEVEL,
COMMAND_CLASS_CONFIGURATION,
COMMAND_CLASS_NOTIFICATION_V3,
COMMAND_CLASS_FIRMWARE_UPDATE_MD_V5,

Command Class supported by the device:

(Not support encryption)

COMMAND_CLASS_ZWAVEPLUS_INFO,
COMMAND_CLASS_TRANSPORT_SERVICE_V2,
COMMAND_CLASS_SECURITY_2,
COMMAND_CLASS_SUPERVISION

• The device send the notification_report command to the Z-Wave gateway by following format:

Command Class = COMMAND_CLASS_NOTIFICATION
Command = NOTIFICATION_REPORT
V1 Alarm Type =0
V1 Alarm Level =0
Reserved Notification Status=0x00/0xFF
Notification Type =Home Security(0X07)
Notification Event=Motion detection (0X07, when detects the occupancy) Notification Event=State idle(0X00, no motion)
Sequence =0 ;Event / State Parameters Length =0
Event /State Parameter 1 =0
Sequence Number=0

• Parameter Setting:

Variable(Dec)	Function	Data Size	Description	Default(Dec)	Possible Value(Dec)
1	Detection Range	1	This function can set the maximum detection range parameter radius of the sensor（0~4m）, refer to the following data：89-100：4m；77-88：3.5m；65-76：3m；53-64：2.5m；41-52：2.0m；29-40：1.5m；17-28：1m；1-16：0.5m；0:0m (non-detection)	100	0-100
2	LED Indicator	1	0: Disabled 1: When sensor detected movement, minor motion, breathing, LED indicator flashes once.	1	0-1
3	Minor Motion Detection	1	0: Disabled 1: Enabled	1	0-1
5	Delay Timer Setting	2	If movement, minor motion or breathing is detected, circuit is closed with a timer, n*1sec (This parameter is only valid when parameter No. 9 is set to 0) Note: Breath detection is effective only when it is set at least 30 sec. It is recommended that the minor motion detection is set at least 10 sec.	30	2-7200
6	Switch Report Command	1	0: Basic report 1: Switch binary report	1	0-1
7	Switch Output Control	1	0: Switch on/off only by gateway control commands. 1: The COM and NO terminal are closed when the sensor detects movement, the COM and NC terminal are closed when no movement detects.	1	0-1
8	Detection Sensitivity	1	0: Low 1: High 2: Medium	2	0-2
9	Away Mode Detection	1	0: Disabled 1: Enabled, when everyone is detected away, delay 15 seconds to send idle command	0	0-1
20	Environmental Learning	1	0: Disabled 1: Start learning 2: Learning completed 3: Interrupt learning Note: It is used to eliminate and reduce environmental interference (such as air outlet, curtains, etc.). The learning time is 6min. Please keep no one within five meters during learning to ensure the accuracy of learning. (Learning process LED keeps flashing)	0	0-3
21	Restore The Sensor Factory Settings	1	0: Disabled 1: Restore the sensor factory settings	0	0-1
22	Blocking Time	2	1-14400: n*1 second countdown, the sensor does not detect, the LED light keeps blinking during the blocking period, and automatically returns to normal after the countdown, the LED light stops blinking.	0	0-14400
23	LED Blinking	2	0-5: LED blinks 5 seconds 5-300: LED blinks n*1 second Note: this function is used to find the device, the LED light flashing process can reset the time	0	0-300
255	Write Only	1	85: Factory Restore	0	0, 85

Note: Detection range reference when installation height of 3 meters

Setting value of parameter 1	25	30	35	40	45	50	60	70	80	90	100
Detection radius (meter)	1.1	1.25	1.5	1.6	1.8	1.9	2	2.3	2.4	2.9	3.2

1-Year Limited Warranty

We warrant this product to be free from defects in material and workmanship under normal and proper use for one year from purchase date of the original purchaser. We will, at its option, either repair or replace any part of its products that prove defective by reason of improper workmanship or materials. This limited warranty does not cover any damage to this product that results from improper installation, accident, abuse, misuse, natural disaster, insufficient or excessive electrical supply,abnormalmechanical or environmental conditions, or any unauthorized disassembly, repair or modification. This limited warranty shall not apply if: (i) the product was not used in accordance with any accompanying instructions, or (ii) the product was not used for its intended function. This limited warranty also does not apply to any product on which the original identification information has been altered, obliterated or removed, that has not been handled or packaged correctly, that has been sold as second-hand or that has been resold contrary to Country and other applicable export regulations.