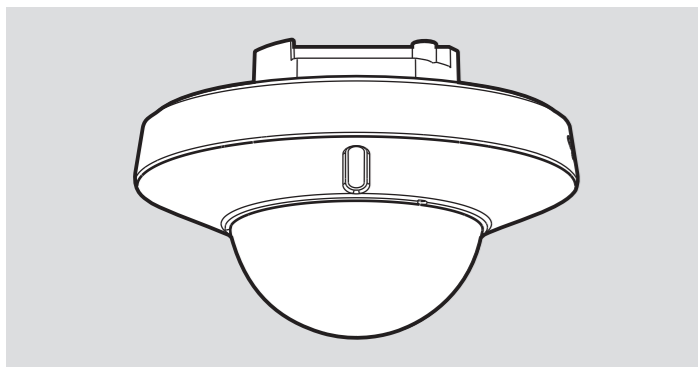# PRESENCE DETECTOR
for LIGHTING and HVAC AUTOMATION CONTROL
OS-464Pi

INSTRUCTION MANUAL

TECHNICAL SPECIFICATIONS

Rated voltage	230V~±10% 50/60Hz

Load
OS-464Pi

Load I (CH1) For Lighting: μ
Incandescent Lamp : Max. 2300W
AC Halogen Lamp : Max. 1100W
LV Halogen Lamp : Max. 1150VA / 690W
(traditional)
Max. 1150VA / 1000W
(electronics)
Fluorescent Lamp : Max. 1150VA / 690W
(uncompensated)
Max. 1200VA / 140μF
30 x (1 x 18W); 20 x (2 x 18W);
25 x (1 x 36W); 15 x (2 x 36W);
20 x (1 x 58W); 10 x (2 x 58W)
LED Lamp : Max. 500VA / 400W
Energy Saving Lamp: Max. 600VA / 400W
(include CFL and PL lamp)

Load II (CH2) For HVAC (Reaction is regardless of Lux value):
Max. 5A (cos φ =1) for ≤ 250VAC
Max. 5A for ≤ 30VDC
Max. 1A (cos φ =0.4) for ≤ 250VAC

Auto Off Timer Adjustment **OS-464Pi**	Time 1 (for lighting): Adjustable from approx. 10sec to 30min, Test & ⌐⌐⌐ Time 2 (for HVAC): Adjustable from approx. 10sec to 60min and ⌐⌐⌐
Lux Adjustment	Adjustable from approx. 10Lux to 2000Lux
Detection Range	360° circular, up to Φ30m at height of 2.5m
Operating Temperature	0°C to +45°C (Indoor usage) -20°C to +45°C (Outdoor usage)
Environmental Protection	Class II IP40 (Flush mount with power box cap SP-96 and European standard junction box) IP54 (Surface mount with junction box JB-41)

Installation and assembly of electrical equipment must be carried out by qualified electricians. Contact a qualified electrician in the event of fault or break down.

CAUTION!

- A circuit breaker (250VAC, 10A) type C according to EN60898-1 of load I shall be installed in the fixed wiring for protection.
- A circuit breaker (250VAC, 6A) type C according to EN60898-1 of load II (CH2) shall be installed in the fixed wiring for protection.
- Do not open the enclosure frequently.
- Turn off power when change the light sources.
- High in-rush current would be caused when bulbs of certain brands burned which might damage the unit permanently.

1 PACKAGE CONTENTS

● OS-464Pi

Pattern				
Item	Detector	Screw Φ3 x 16mm	Lens shield	Manual
Quantity	1	2	3	1

● **Accessories for optional purchase**

Pattern				
Item	Junction box JB-41	Non-dropping screw Φ3 x 15mm	Wood screw Φ4 × 25.4mm	Rubber washer
Quantity	1	4	2	

Pattern		
Item	Power box cap SP-96	IR remote controller
Quantity	1	1

2 PRODUCT DESCRIPTION

OS-464Pi is a ceiling mount presence detector for lighting automation control. User can pre-set the desired Lux and Time values by VR or IR setting for automatic control lighting on / off with low initial cost and great energy saving potential. It can be widely used in home, warehouse, open office, conference room, class-room, library, corridor, etc.

2.1 Features

- Available in various mounting methods, e.g. surface mount and flush mount both applicable, and can be fitted into the European standard junction box.
- Automatic sensitivity adjustment function: The sensitivity of detector will be raised after the load is switched on to reduce false-off problem, and after the load is switched off, sensitivity returns to the normal condition for standby mode.
- To enlarge the detection range by connecting the slave detector to master detector, max. 10pcs slave detectors can be connected.
- OS-464Pi: Dual loads – One for controlling lighting device and one voltage free contact for controlling the HVAC (heating, ventilation and air conditioning).
- A red LED is equipped as an indicator for test triggering and IR setting.
- IR remote controller for easy and quick settings (Optional purchase).
- The ambient Lux value can be read-in as the threshold for switching on / off the loads by IR if the pre-set Lux value does not match user's requirement.
- The accessories JB-41 & SP-96 can be optionally purchased according to actual mounting requirement.

2.2 Dimension

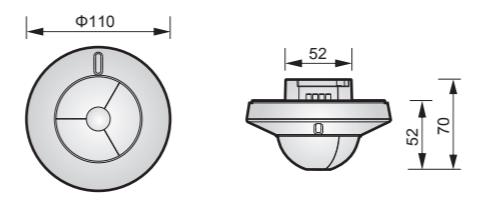- **OS-464Pi :** Φ110 x 70mm (See FIG.1-A)

FIG.1-A

- **Detector with power box cap SP-96 (Optional purchase)** (See FIG.1-B)
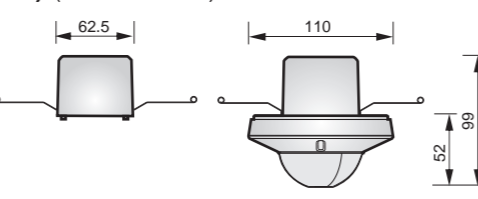

FIG.1-B

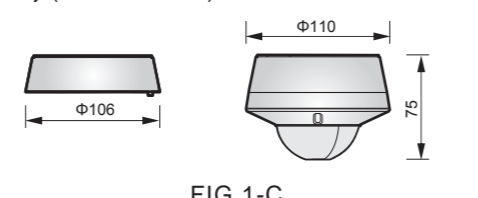- **Detector with junction box JB-41 (Optional purchase)** (See FIG.1-C)

FIG.1-C

3 INSTALLATION AND WIRING

⚠ Please disconnect power completely and read the entire instruction manual carefully before installation.

3.1 Select a proper location

3.1.1 OS-464Pi can be installed at the height of 2 - 3m, it's recommended to install it at the height of 2.5m to gain the optimal detection pattern, the detection range can reach up to the diameter of 30m and 360° detection angle (See FIG.2).
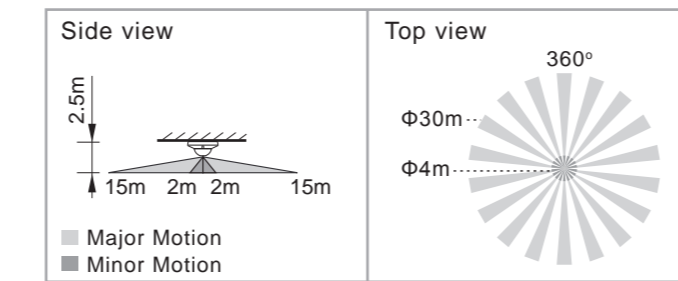

FIG.2

3.1.2 Pay attention to the walking direction in the test proceeding. It is more sensitive to movement across the detector and less sensitive to movement directly toward to detector which will reduce the detection coverage (See FIG.3).
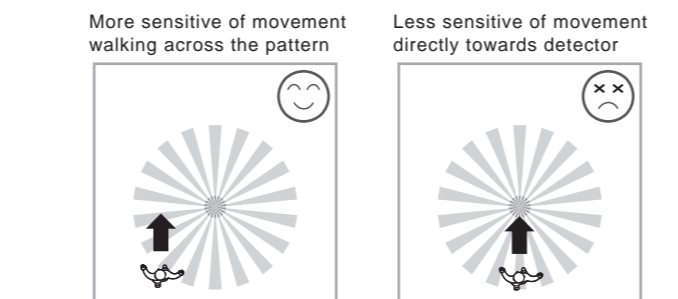

FIG.3

3.1.3 Helpful tips for installation

Since the detector is in response to temperature change, please avoid the following conditions (See FIG.4-A & FIG.4-B):

- Avoid aiming the detector toward the objects which may be swayed in the wind, such as curtain, tall plants, miniature garden, etc.
- Avoid aiming the detector toward the objects whose surfaces are highly reflective, such as mirror, monitor, etc.
- Avoid mounting the detector near heat sources, such as heating vents, air conditioning, vents as dryers, lights, etc.
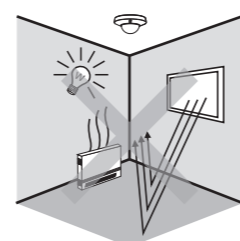

FIG.4-A   FIG.4-B

3.2 Function

3.2.1 The function of R/S terminal

3.2.1.1 Terminal of R/S and push button (N.O.) can be series connected to control load's on / off manually. (case 1: on → off; case 2: off → on). While pressing push button (≤ 1sec):

Case 1: Manual off switching (Lux settings is invalid):
If the lighting is under on mode, it can be manually switched off.
If the lighting is switched off manually by pressing (≤ 1sec) the push button (activate the manual off mode), it keeps off even the detector is triggered.
If the room is vacant for a longer period (switch off delay time elapsed), the manual off status (= manual off mode) is deactivated, then the detector backs to the last setting mode before entering into manual off mode.
If the device is in the manual off mode, the second press on the push button activates the manual on mode.

Case 2: Manual on switching (Lux settings is invalid):
If the lighting is under off mode, it can be manually switched on.
If the lighting is switched on manually by pressing (≤ 1sec) the push button (activate the manual on mode), it keeps on while the detector is triggered constantly, and it turns off when no movement detected and the switch off delay time elapsed, and the detector backs to the last setting mode before entering into manual on mode.
If the device is in the manual on mode, the second press on the push button activates the manual off mode.

3.2.1.2 Max.10pcs slave detectors can be connected in parallel to the "R/S" terminal of the master detector OS-464Pi / OS-464PAi to expand detection range if detection range of one OS-464Pi / OS-464PAi does not match the user's desire. Slave detector can only be used to transfer detecting signal to master detector for expanding the detection range, the connected loads will only act according to the pre-set values of master detector.

3.2.2 ON / OFF delay function

According to the changeable ambient light level, detector can postpone load's delay time of turning on and off to avoid load's unnecessarily turning on or off due to rapid ambient light change:
Ambient light level changes from bright to dark: If the ambient light level keeps be lower than the preset Lux value for 10sec, the light will be automatically switched on after 10sec. (LED will be on 10sec for indication)
Ambient light level changes from dark to bright: If the ambient light level continuously exceeds the switch off Lux value for 5min, there are different reactions according to the time setting value.
Time setting ≥ 5min, the light will be automatically switched off after 5min.
Time setting < 5min, the light will be automatically switched off when the set time reached if no movement is detected during the 5min. But if there is movement detected within the 5min, the time will be reset upon detection and until 5min later, the light is switched off.

3.2.3 Auto sensitivity adjustment function

To raise the sensitivity of detector after load is switched on can reduce the possibility of false-off problem. When the load is on, the sensitivity of detector will be raised automatically. When the load is off, the sensitivity of detector will return to normal standby condition.

3.3 Wiring
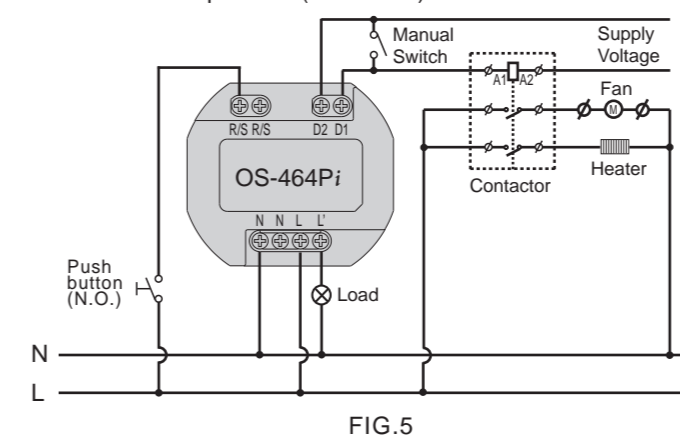
3.3.1 OS-464Pi

3.3.1.1 Normal operation (See FIG.5)

FIG.5

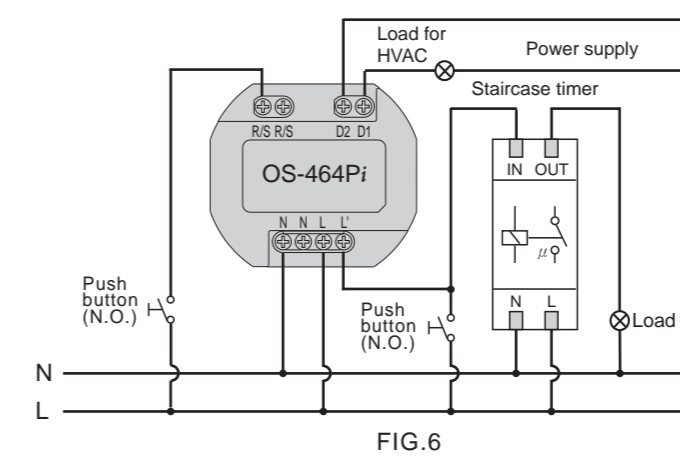3.3.1.2 Staircase timer switch controlled by one detector (Time should be set to ⌐⌐⌐, see FIG.6)

FIG.6

3.3.1.3 Master / Slave operation (Max.10pcs slave detectors can be connected to R/S terminal of the master detector) (See FIG.7).
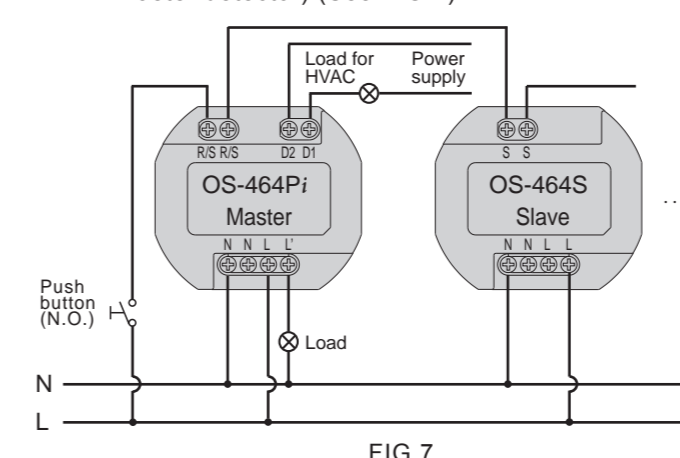

FIG.7

3.4 Installation procedure

3.4.1 Flush mount with European standard junction box

3.4.1.1 Take off decorative frame of OS-464Pi , then take the detector head apart from power box by unscrew its 4pcs non-dropping screws (See FIG.11).
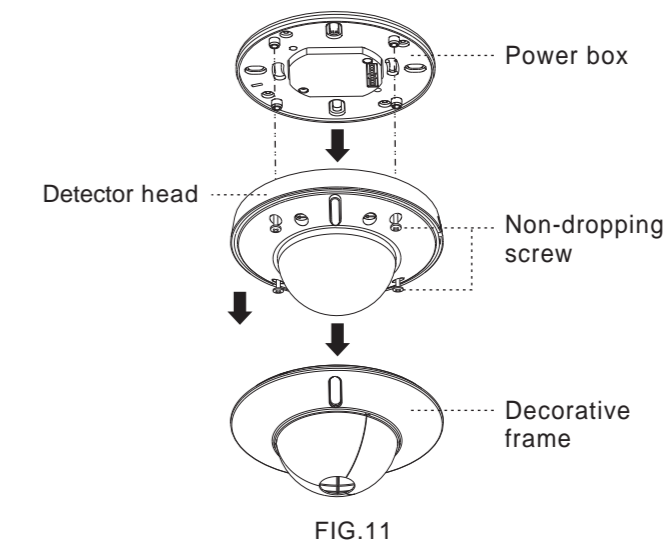

FIG.11

3.4.1.2 Pull out AC power cables from European standard junction box (See FIG.12), then strip off 6 - 8mm of cable sheathing for wiring (See FIG.5 - FIG.10).
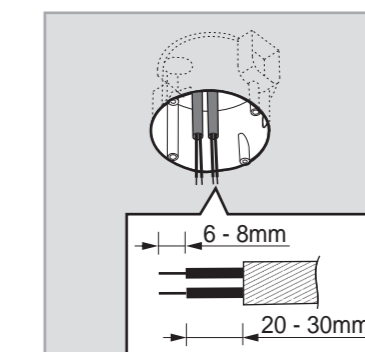

FIG.12

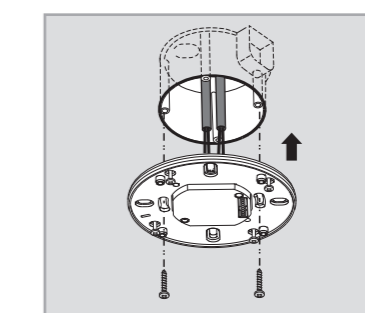3.4.1.3 Fix the power box into European standard junction box with 2pcs screws (See FIG.13).

FIG.13

3.4.1.4 Fix the detector head on power box by inserting its four non-dropping screws into the corresponding screw holes, then cover up the decorative frame (See FIG.11).
3.4.1.5 Restore the power supply.

3.4.2 Flush mount with power box cap SP-96 (Optional purchase)

3.4.2.1 To install detector, please drill a hole with diameter of 65mm on ceiling board and keep the power cable outside. Please strip off 6 - 8mm of cable sheathing for wiring (See FIG.14).
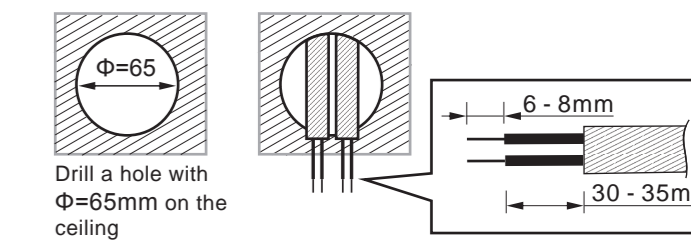

FIG.14

3.4.2.2 Use screwdriver to break the rubber gasket on SP-96, then feed cables through it (See FIG.15).
3.4.2.3 Please refer to illustration of FIG.5 - FIG.10 for correct wiring and then screw the SP-96 tightly.

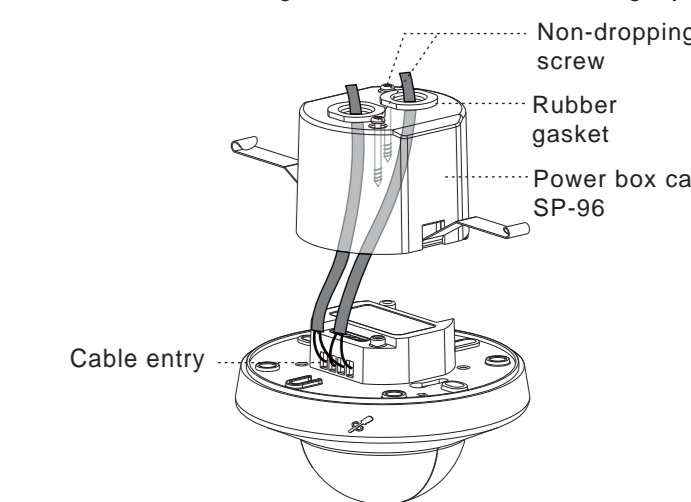FIG.15

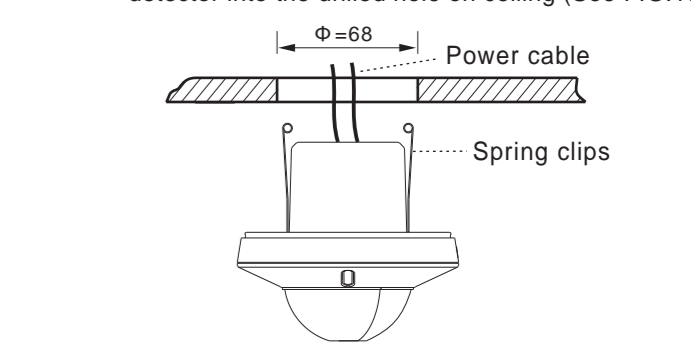3.4.2.4 Close up detector's two spring clips and insert detector into the drilled hole on ceiling (See FIG.16).

FIG.16

3.4.2.5 Restore the power supply.

3.4.3 Surface mount with junction box JB-41 (Optional purchase)

3.4.3.1 There are 4 pairs of knockouts with various distances from 41mm to 85mm on the bottom cover of combined junction box JB-41 can be selected for different mounting applications (See FIG.17-A). Select two same figures on both ends for the corresponding distance for fixing (See FIG.17-B).
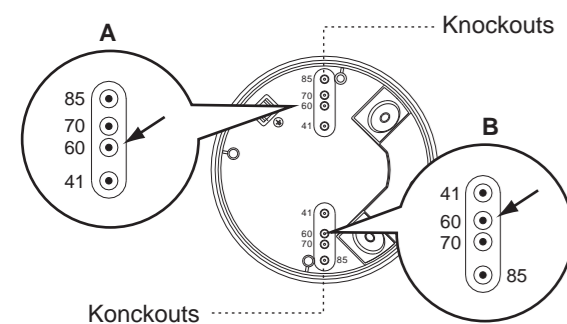

FIG.17-A

FIG.17-B

NO.	A	B	The distance between A and B
1	41	41	41mm
2	60	60	60mm
3	70	70	70mm
4	85	85	85mm

3.4.3.2 To feed AC power cables through the side of junction box, please use the cutting pliers to break the cable entry knockouts on the side of junction box, then insert cables into junction box and feed through it. Strip off 6 - 8mm of cable sheathing for wiring (See FIG.18).
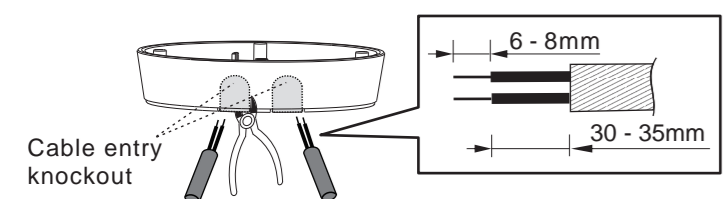

FIG.18

3.4.3.3 Choose proper knockouts to fix the junction box JB-41 on the surface of ceiling board with 2pcs wood screws attached with rubber washer (See FIG.19).
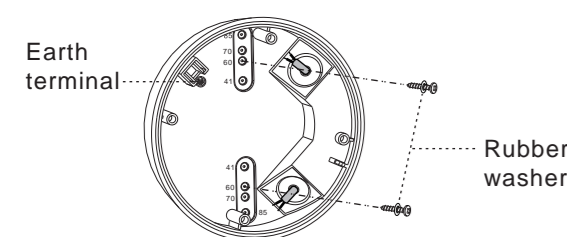

FIG.19

3.4.3.4 Insert 4pcs non-dropping screws to the correspond-ing screw holes on detector's fixing plate, and those 4pcs screws will not drop off to provide convenience to the subsequent installations (See FIG.20).
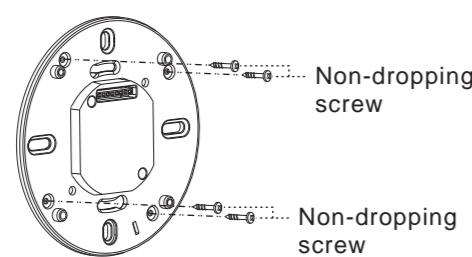

FIG.20

3.4.3.5 Refer to wiring diagrams for correct wiring con-nection (See FIG.5 - FIG.10). There is a square hole in the fixing plate, when you put the fixing plate into the junction box, please fit the fillister to the junction box's protrusion (See FIG.21), then fix the detector head on the power box following FIG.8 and assemble them with the attached 4pcs non-dropping screws.
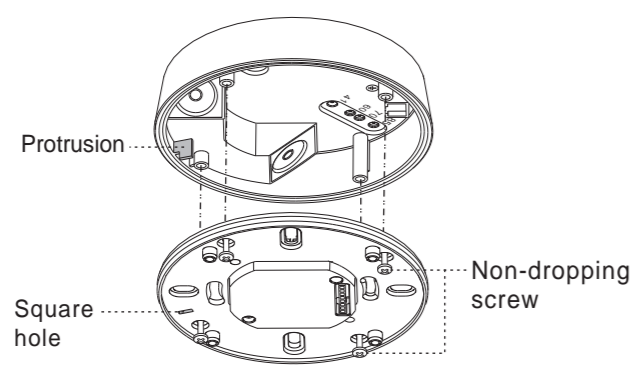

FIG.21

3.4.3.6 Cover up the detector's decorative frame and restore the power supply.

4 OPERATION AND FUNCTION

4.1 Lux, Time knobs

Knob	Function	Knob setting
Lux	Set the light value for switching on load	Range: Approx. 10 to 2000Lux User can set the knob according to their requirement for application. The marked values are for reference only.
Time1	Set delay off time for lighting	Range: Approx. 10sec to 30min Test: Test mode (Load and red LED will be 2sec on, 2sec off) ⊓ : Short impulse mode for staircase timer switch control (Load will be 1sec on, 9sec off)
Time2	Set delay off time for HVAC	Range: Approx. 10sec to 60min (Reaction is regardless of Lux value) ⊓ : Short impulse mode for staircase timer switch control (Load will be 5sec on, 5sec off)

4.2 Usege of lens shield

4.2.1 OS-464Pi has supplied 3pcs lens shields to allow elimination of coverage in unwanted areas. Each lens shield has 3 layers, each layer includes 4 small units and each small unit can cover 30° detection area. For example, to install the detector at the height of 2.5m, the detection range can reach up to 1m diameter if the complete lens shields has been used, and up to 6m diameter if layer C has been cut, as well, up to 12m diameter if layer B also has been cut, the detection range can reach up to 30m diameter when no lens shield is used.
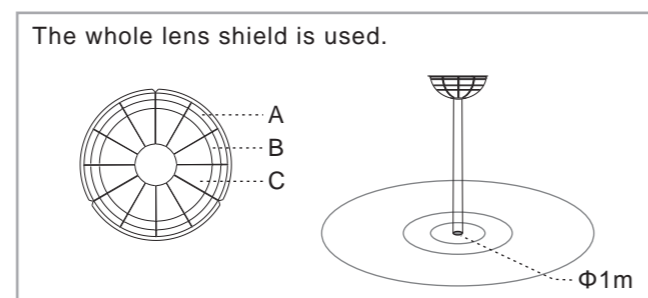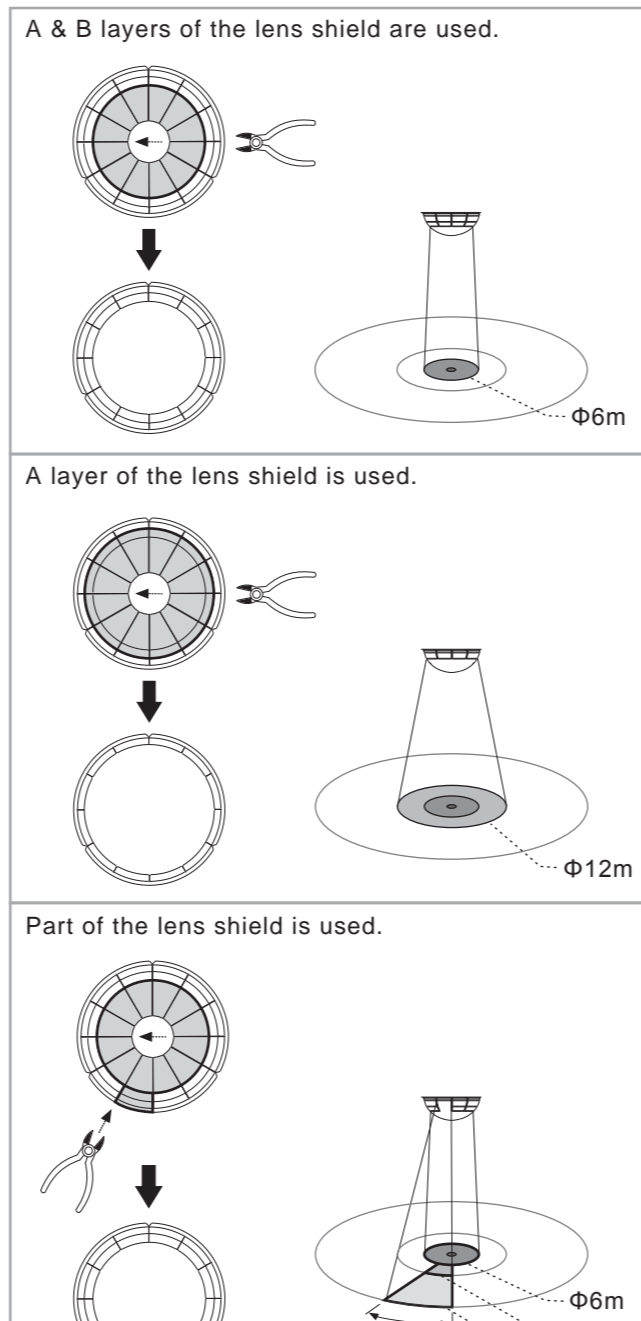
The whole lens shield is used.

FIG.22-A

4.2.2 Fixing lens shield: There is cicular hook on the back of the decorative frame and the lens shield is designed with a circular groove. The lens shiled can be fitted by joining the groove of lens shield with its corresponding hook on the decorative frame (See FIG.23-A & FIG.23-B).

A & B layers of the lens shield are used.

A layer of the lens shield is used.

Part of the lens shield is used.

FIG.22-B

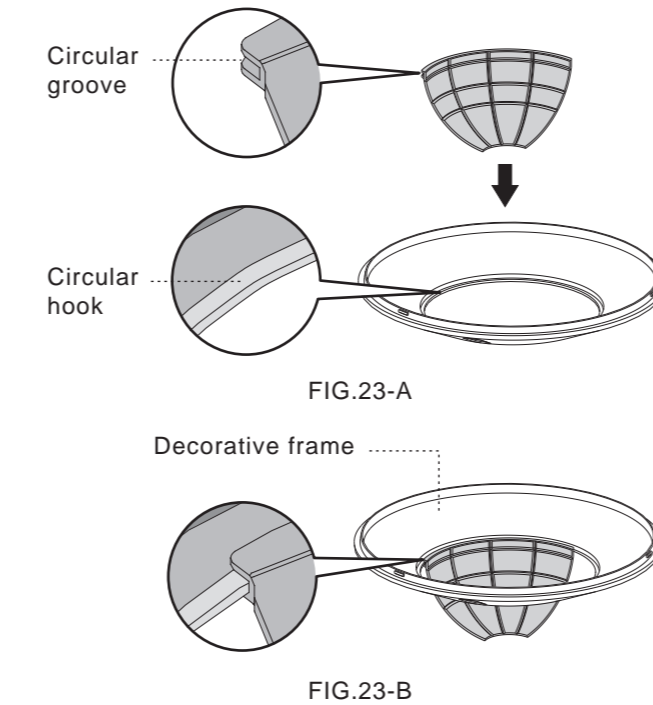● The shadow part of the lens shields in the FIG.22-A & FIG.22-B is needed to be cut off.

FIG.23-A

FIG.23-B

4.3 Walk test

The purpose of conducting the walk test is to check and adjust the detection coverage. Set Time knob to "Test", then conducting a walk test and Lux is disabled.

> **NOTE**
> It takes approx. 60sec for detector to warm up after power is supplied, then enters into normal operation to carry out a walk test.
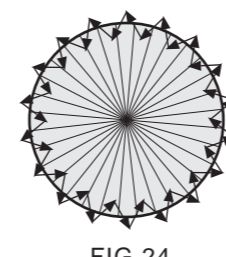
Test procedure
4.3.1 Tester must be within the detection coverage.
4.3.2 Switch power on.
4.3.3 OS-464Pi takes approx. 60sec to warm up with load and LED on, then turns off after warming up time.
4.3.4 Walk from outside across to the detection pattern until LED turns on for approx. 2sec then off, the next trigger should be 2sec interval (See FIG.24).
4.3.5 Adjusting lens shield for desired detection range.
4.3.6 Repeat step 4.3.4 and 4.3.5 until it meets user's demands.

FIG.24

5 TROUBLE SHOOTING

When OS-464Pi works abnormally, please check assumptive problems and suggested solutions in following table that will hopefully to solve your problem.

Problem	Possible cause	Suggested solution
Lighting device does not turn on	1. Power does not turn on. 2. Wired incorrectly. 3. Lux knob adjusted incorrectly. 4. Malfunctioned load.	1. Switch on the power. 2. Refer to wiring diagrams for correct connection. 3. Check if Lux knob are set to the correct position. 4. Replace the disabled load with a new one.
Lighting device does not turn off	1. Auto off time is set too long. 2. Detector is nuisance triggered. 3. Wired incorrectly.	1. Set auto off time to a shorter time and check the load is switched off or not according to the pre-set off time. 2. Keep away from detection coverage to avoid activating detector while doing the test. 3. Make sure load and wires are connected correctly.
LED does not turn on	1. Time konb is not set to Test. 2. Exceeding the detection range.	1. Time knob must be located to Test position. 2. Walk in the effective detection range of 30m diameter.
Nuisance triggered	There are heat sources, highly reflective objects or any objects which may be swayed in the wind within the detection coverage.	Avoid aiming the detector towards any heat sources, such as air conditioners, electric fans, heaters or any highly reflective surfaces. Make sure there are no swaying objects within the detection coverage.

6 OPTIONAL ACCESSORY

6.1 It is strongly recommended to purchase our high quality IR remote controller IR-11 for easy and safe setting operations on OS-464Pi , and to own the "Lux learning" function to read-in the actual light level as threshold for switching the connected load.
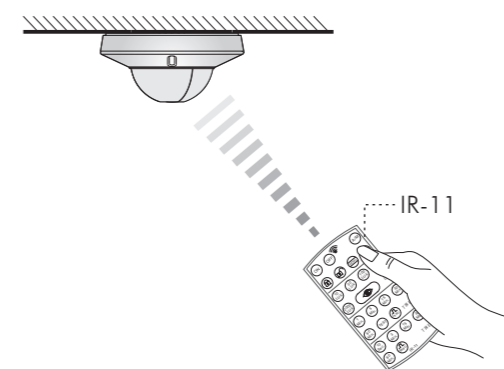

IR-11

FIG.25

6.2 Push button function:

Button	Function
ON	**To set load Ⅰ (CH1) on for long time** ● By pressing " ON " button, the load of detector will be turned on for 8 hours. ● Load will be turned off after 8 hours and return to auto mode. Or press " ON " button again to exit the "8 hours on mode" during this period, detector will return to auto mode. Or switching off power supply of presence detector for 5sec and re-supply it again to lead detector to auto mode. ● Load Ⅰ (CH1) can be lead to off mode by pressing " OFF " button under on mode.
OFF	**To set load Ⅰ (CH1) off for long time** ● By pressing " OFF " button, the load of detector will be turned off for 8 hours. ● Detector will return to auto mode after 8 hours. Or press " OFF " button again to exit this "8 hours off mode" during this period, detector will return to auto mode. Or switching off power supply of presence detector for 5sec and re-supply it again to lead detector to auto mode. ● Load Ⅰ (CH1) can be lead to on mode by pressing " ON " button under off mode.
🔒	**To lock IR-11 buttons** By pressing " 🔒 " button, IR-11 buttons will be locked and no key function is workable (Except " 🔓 " button).
🔓	**Unlock IR-11 buttons** By pressing " 🔓 " button, IR-11 buttons will be unlocked. Thereafter IR remote controller can be used to set presence detector.
A/M	**Ex-changing auto mode and semi auto mode** By pressing " A/M " firstly, detector enters into auto mode with detector's red LED flashing quickly for 2sec no matter it is locked or not. Then, press it again, detector enters into semi-auto mode with detector's red LED keeps on for 2sec.
10 LUX 2000 LUX	**To adjust Lux value** By pressing corresponding button, the selected light level threshold will be set to presence detector for switching on the connected load.
👁	**To read-in the actual light level** Actual light level can be read-in as threshold for switching the connected load, if the set Lux values do not match user's desired value. The steps are as below: Press " 👁 " button till detector's red LED flashing to enter into learning mode, learning time is 10sec. Then the actual light level is read-in confirmed by both load and LED turn on for 5sec to indicate IR-11 learning successfully and then turn off. Afterwards it returns to auto mode. Note: If the ambient light level is out of the range of 10 - 2000Lux, detector will learn for 10sec, then LED flashes quickly for 5sec to indicate IR-11 learning unsuccessfully, but below Lux value will be stored: 2000Lux if the actual light level is above 2000Lux, and 10Lux if the actual light level is below 10Lux.

Button	Function
1 Min. 60 Min.	**To set delay off TIME1 (Lighting)** By pressing corresponding button, the desired switching off delay time of load Ⅰ (CH1) can be exactly set, it is confirmed by flashing of detecor's LED for 2sec.
TEST	**Test mode** ● By pressing " TEST " button to enter into Test mode, it is confirmed by flashing of detecor's LED for 2sec. Walking through the detection coverage, both load Ⅰ (CH1) and detecor's LED turn on 2sec once detector is triggered (Reaction is regardless of Lux value). ● Load Ⅱ (CH2) has no reaction in test mode.
1 Sec	**Short impulse mode** By pressing " 1 Sec " button to enter into short impulse mode, it is confirmed by flashing of detector's LED for 2sec. Load Ⅰ (CH1) will on 1sec and off 9sec when detector detects move-ment. Detector acts depending on movement and the pre-set Lux value under short impulse mode.
10 Sec 60 Min.	**To set delay off TIME2 (HVAC)** By pressing corresponding button, the desired swithing off delay time of load Ⅱ (CH2) for HVAC can be exactly set, it is confirmed by flashing of detector's LED for 2sec. If detector has only one load, TIME2 is invalid.
5 Sec	**Short impulse mode** By pressing " 5 Sec " button to enter into short impulse mode, it is confirmed by flashing of detector's LED for 2sec. Load Ⅱ (CH2) will on 5sec and off 5sec when detector detects move-ment. Detector acts depending on movement under short impulse mode.
MEMO	**To save and duplicate the Lux and Time settings of one detector to others** 1. Set the desired Lux and Time values on one detector by using IR remote controller. 2. Then by pressing " MEMO " button for approx. 3sec aiming to above detector, the Lux and Time settings of this detector will be saved into this IR remote controller by detector's LED flashing. 3. By pressing " MEMO " button again for approx. 1sec aiming to a new detector, the saved settings can be duplicated to the new detector. 4. Transfer the settings to detectors desired by repeating above last step. If no data is saved in IR remote controller, detector has no reaction after press " MEMO " button. 5. Battery removed for more than 5sec or RESET button is pressed, all the data in IR remote controller will be deleted.
RESET	**To reset settings on Presence Detector** By pressing " RESET " button, all settings on presence detector will go back to potentiometers' settings, and all MEMO data will be deleted.

28-MLINS464Pi