

ES1MS-RFB16A HF Motion Sensor Power Controller User Manual



General

The ES1MS-RFB16A power controller is a HF "Doppler" type electronic occupancy detector, which in turn drives a high current AC relay to do the switching. The unit contains an integrated microwave sensor, which is an active motion sensor that emits high-frequency waves (5.8GHz). The sensor detects the change in the echo return, and is sensitive to movement in its detection zone.

There are three adjustments that can be made to influence the operation of the device, i.e. "distance", "lux level", and "on-time".

If, after reviewing this guide, you require additional information or assistance please contact Eco Heat Equipment at info@ecosensor.co.za, +27 (0)861 999 887, or www.ecosensor.co.za.

Technical Specifications

- Voltage: 220 – 240V/AC
- Frequency: 50/60Hz
- Working temperature: -15°C to 70°C
- Load: 16 A max
- Detection Range: 2 – 10m
- Detection Angle: 360° ceiling, ± 180° wall
- Light level: 2 – 500 LUX
- Time setting: 10 seconds – 30 minutes
- Installation height: 2 – 10m
- Motion Sensor HF system: 5.8GHz CW radar, ISM band
- Motion Sensor transmission power: <0.2mW RF power
- Dimensions: 126mm* (L) x 87mm (W) x 56mm (H)
(* excludes glands – total length 173mm)

Safety

Any incorrect use or installation procedure not recommended by the manufacturer may cause fire, electrical shock or injury to persons.

Box Contents

- Your box should contain the following items:
- HF Sensor in electrical box

WARNING:

Controlling a load in excess of the specified ratings will damage the unit and device and could pose risk of fire and electric shock.

Do not install this unit to control a power socket.

Installation Instructions

WARNING: ALL WIRING MUST BE DONE IN ACCORDANCE WITH NATIONAL AND LOCAL ELECTRICAL CODES AND STANDARDS.

WARNING: DO NOT WORK ON THIS DEVICE WITHOUT DISCONNECTING THE MAINS.

Note: Do not install the motion sensor on unstable or vibrating surfaces, or near doors and windows where outside movement may be detected. Motion may be detected through ceilings, drywall, wood or plastic.

Mounting:

The device may be ceiling mounted up to 10m. At an installation height of 4 meters, it will then have a "pick-up" pattern area of about 14 meters diameters. The device may also be mounted vertically against a wall and will be able to sense movement at a maximum distance of about 10 meters.

Electrical installation:

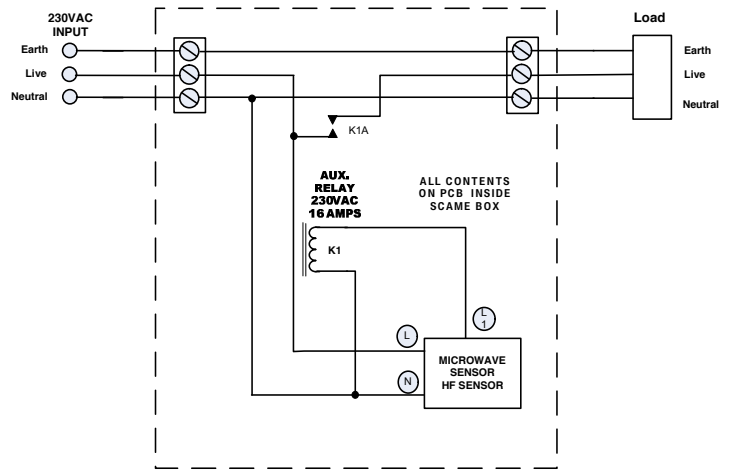
See wiring diagram to wire the device.

Sensor calibration:

Note: Allow up to 1 minute for the motion sensor to recalibrate after it has been connected for the very first time. This is only necessary during installation or when the mains supply is disconnected.

Note: After the connected device switches OFF, it takes approximately 4 seconds before it is able to start detecting movement again. The connected device will only switch on in response to movement once this period has elapsed.

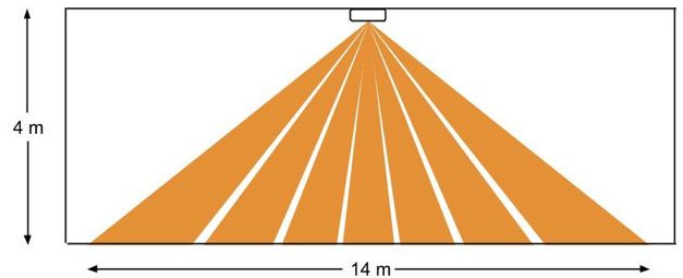
Installation wire diagram



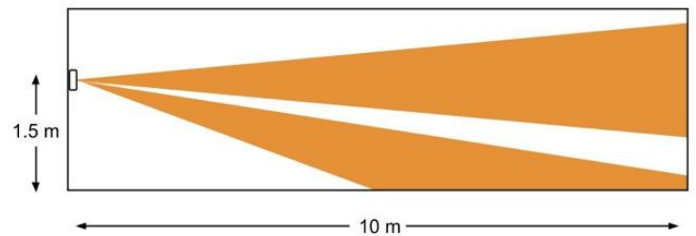
Operation and Field of View

The motion sensor detects motion within its coverage area and controls the associated load connected to the sensor. For best performance, persons or objects moving towards the sensor are ideal. Detection is possible through wooden doors, panes of glass, dry wall, ceiling tiles, or thin brick walls. Beware of windows facing passages or roads.

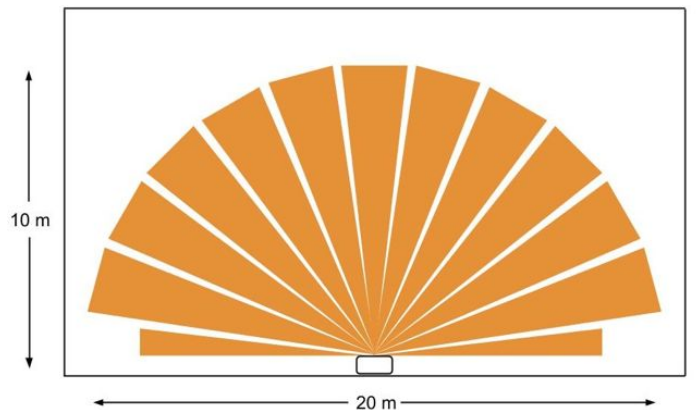
Ceiling Mount



Wall Mount (side view)



Wall Mount (top view)



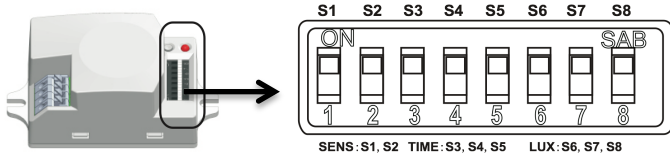
Motion Sensor Settings and Adjustments

The motion sensor is a high frequency (HF) type electronic occupancy detector, which in turn switches a load when connected to the motion sensor. There are three adjustments that can be made to influence the operation of the motion sensor:

1. RANGE: motion detection range
2. TIME: time delay after motion until shut off
3. LUX/LIGHT: level of ambient light sensitivity

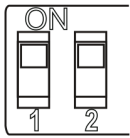
The three adjustments settings are as follows:
 Detection range: 2m to 10m
 Time setting range: 10 sec to 30 min
 Lux (light) sensitivity: 10 to 500 LUX

There are 8 settings on the motion sensor that control the range, time and lux.



Step 1 – Adjust the detection range of the motion sensor
 The detection range is the term used to describe the radius of the circular detection zone produced on the ground after mounting the unit at a height of about 2.5m.

ON position = "1"
 OFF position = "0"



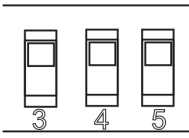
SENS: S1, S2

| S1 | S2 | RANGE |
|----|----|-------|
| 0 | 0 | 2m |
| 0 | 1 | 5m |
| 1 | 0 | 8m |
| 1 | 1 | 10m |

WARNING: If the sensitivity is adjusted too high, the sensor will pick up movement such as curtains blowing in the wind, small animals or movement through windows and thin walls. If the sensor is too sensitive, adjust the detection range lower.

Step 2 – Adjust the time setting of the motion sensor
 The time setting will determine the time that needs to lapse before the motion sensor switches off due to lack of movement in the detection area. Any movement detected during the time setting will restart the timer and keep the connected device on.

ON position = "1"
 OFF position = "0"

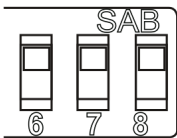


SENS: S3, S4, S5

| S3 | S4 | S5 | TIME |
|----|----|----|-------|
| 0 | 0 | 0 | 10s |
| 0 | 0 | 1 | 1min |
| 0 | 1 | 0 | 5min |
| 0 | 1 | 1 | 10min |
| 1 | 0 | 0 | 15min |
| 1 | 0 | 1 | 20min |
| 1 | 1 | 0 | 25min |
| 1 | 1 | 1 | 30min |

Step 3 – Adjust the lux setting of the motion sensor (if applicable)
 The lux (light) sensitivity can be used to ensure the unit only operates during minimum lux settings. The lux setting can also be disabled by setting it to the '24hr' position, (S6="0", S7="0", S8="0") meaning the lux (light) level will have no effect on the operation of the unit.

ON position = "1"
 OFF position = "0"



LUX: S6, S7, S8

| S6 | S7 | S8 | LUX |
|----|----|----|--------|
| 0 | 0 | 0 | 24H |
| 0 | 0 | 1 | 10LUX |
| 0 | 1 | 0 | 20LUX |
| 0 | 1 | 1 | 50LUX |
| 1 | 0 | 0 | 100LUX |
| 1 | 0 | 1 | 200LUX |
| 1 | 1 | 0 | 300LUX |
| 1 | 1 | 1 | 500LUX |

OTHER CAUTIONS:
 Disconnect power when working on electrical outlets or components.
 Do not push on the surface of the lens.

Cleaning
 Carefully wipe sensor with a soft damp cloth.

Recycling
 Please recycle all packaging material that came with the motion sensor.

Warranty

The sensor has a three (3) year warranty after the date of the original purchase. Please keep your original receipt, as this will be required for any claims under this warranty. The warranty is a strictly carry in policy. (The sensor/s must be returned to Eco Heat offices for a claim to be processed).

The warranty does not cover:

- damage from misuse,
- neglect or abuse,
- products that have been modified in any way,
- shipping and handling cost associated with the product,
- damage resulting from accidents, lightning, fire, water, power surges, natural disasters and/or incorrect installation

For more information, view the Return/Refund Policy at www.ecosensor.co.za.

Trouble Shooting

| Malfunction | Possible Cause | Remedy |
|-------------------------------|---|---|
| The unit will not switch "on" | a. No mains power b. No movement is detected (in detection zone) c. Wrong LUX/LIGHT level setting d. Electrical circuitry faulty e. Electrical Installation not done correctly f. Unit may be faulty | a. Check mains power is on b. Move towards the unit (in detection zone) or increase the detection range settings c. Adjust setting on the LUX/LIGHT settings d. Refer to the 'Electrical Installation' section to ensure correct installation e. Have a certified electrician disconnect and test the unit f. Contact Eco Heat Equipment |
| Unit stays "on" permanently | a. Continuous movement in detection zone b. The sensor is not mounted correctly for reliable operation c. Wrong LUX/LIGHT level setting d. Time setting control is set too high e. Unit may be faulty | a. Check detection range setting and reduce detection range sensitivity b. Check detection range setting and mounting procedure c. Adjust setting on the LUX/LIGHT settings d. Adjust the time setting control e. Contact Eco Heat Equipment |

Due to minor improvements in design or otherwise, the product you purchase may differ from the one shown in this leaflet. For more information or advice on this or any other Eco Heat Equipment products, visit www.ecosensor.co.za or phone +27 (0)861 999 887.

Indemnity: The Author, and supplier, shall not be held liable for any loss, injury or damage, of whatsoever nature, whether consequential or not, either contractual sustained to, or caused by, or which may arise through the use of any comments, suggestions, circuitry, services or equipment offered for purchase. The User, indemnifies the author and supplier, and agrees not to hold him/her responsible for any damages, losses and/or liabilities (including legal costs on a scale as between attorney and user) arising from, or through the use of circuit diagrams, equipment and services, whether such circuit diagrams, equipment and services were used with the consent of the User or not. All risks attached to the use of circuit diagrams, equipment and the connection thereof to the User's equipment shall be deemed to have passed onto the User, once having purchased such equipment from the author or supplier.

