# MICROWAVE PRESENCE DETECTOR
## FOR ZONE 1/21

# MWS-Ex



# 1  Safety information and Notes

## 1.1  Storage of this manual

Keep this user manual safe and in the vicinity of the device. All persons who work on or with it should be advised on where the manual is stored.

## 1.2  Special conditions of safe use

The rated temperature range is listed on the label and is more restricted than in the certificate.

## 1.3  List of notes

| WARNING! | Installation to be by skilled electricians and instructed personnel in accordance with national legislation, including the relevant standards and, where applicable, in accordance with IEC 79.17 on electrical apparatus for explosive atmospheres. |
|---|---|
| WARNING! | For the installation, maintenance and cleaning of the sensor, it is absolutely necessary to observe the latest applicable regulations and provisions concerned with explosion protection (EN60079-0, EN60079-14) as well as the Accident Prevention Regulations. |
| WARNING! | The sensor can be operated in ATEX Gas/Dust Zone 1/21 or Zone 2/22 hazardous area, or in safe area. Refer to the ATEX certificates for further information. |
| WARNING! | The sensor must not be stored or operated outside of its rated temperature range as stated on the ATEX certification label |
| WARNING! | The technical data indicated on the ATEX rating labels, this manual and the ATEX certificates must be observed at all times. |

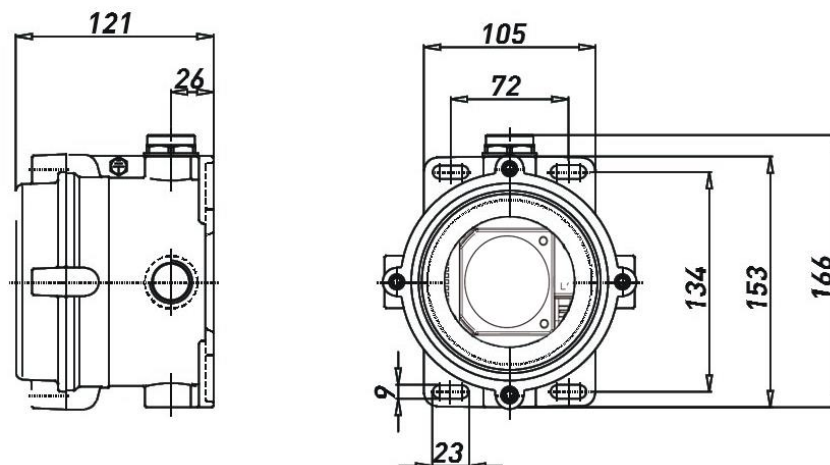| WARNING! | The ATEX rating labels must be fitted at all times, if damaged they must be replaced immediately or the sensor must be removed from service and the hazardous area. |
|----------|--------|
| WARNING! | Changes to the design and modifications to the equipment are not permitted. |
| WARNING! | Never operate the sensor outside its rated voltage, current and power as indicated in the specification or the safety of the unit may be impaired. |
| CAUTION | Ensure that the sensor is mounted safely and securely using suitable fixings. |

# 2  Technical Specification

The sensor is an active motion detector which emits a high-frequency electromagnetic wave and receives its echo. The sensor detects the change in echo from movement in its detection zone. A microprocessor then triggers the ON command. Detection is possible through doors, panels of glass and thin walls.

## 2.1  Specification

| | |
|---|---|
| **Type:** | MWS-Ex (Housing CPST-26/EMH90) |
| **Ex rating:** | ATEX II 2GD / Ex db IIC T6 Gb / Ex tb IIC T85°C Db IP66 |
| | INERIS03ATEX0009X |
| **Voltage:** | 220/240Vac – 50/60Hz |
| **HF System:** | 5.8GHz CW radar |
| **Transmission Power:** | <0.2mW |
| **Rated Load:** | 400W (capacitive load), 1200W (resistive load) |
| **Terminals:** | Up to 4mm$^2$ max |
| **Operating Temperature:** | -35°C to +55°C |
| **Detection Angle:** | 30~150° |
| **Power Consumption:** | Approx. 0.5W |
| **Detection Range:** | Max. 12m in diameter, adjustable |
| **Time Setting:** | 5s~30min |
| **Light Control:** | 2~50Lux, Disable |
| **Entries:** | 3 x M25 threaded entries (1 x M25 Exd stopping plug supplied) |
| **Zero-cross Operation:** | The load is switched on the zero-cross point to extend the life of the contacts |

| NOTE: | The high-frequency output of this sensor is <0.2mW. This is approximately 1% of the transmission power of a mobile phone. |
|-------|--------|

## 2.2  Dimensions

# 3 Installation and Wiring

| WARNING: | **Please ensure that the electricity supply is switched OFF before installing or servicing the sensor.**<br>**DO NOT OPEN THE Exd ENCLOSURE WHEN ENERGISED** |
|---|---|
| WARNING: | **DO NOT OPEN IF AN EXPOSIVE ATMOSPHERE IS PRESENT** |



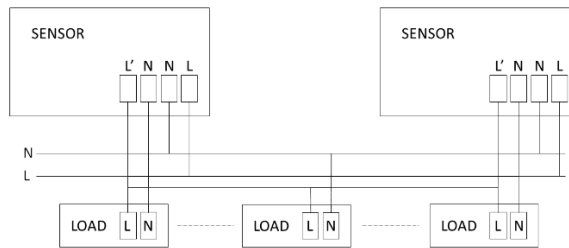The sensor has a 6-wire electrical interface (4mm$^2$ max):
- 2 x N (neutral)
- 1 x L (phase / external supply)
- 1 x L' (switched phase / output to load)
- 2 x PE

## 3.1 *Wiring*
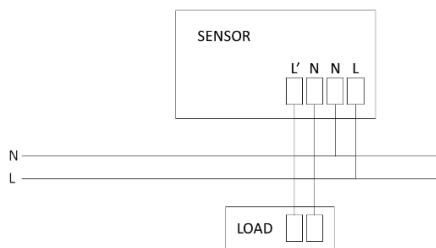


**ON/OFF function:**

A single sensor can trigger multiple luminaires. Connect L' and N to the drivers/ballasts of the grouped fittings for simultaneous switching.

**Synchronisation Control:**

In many cases, several sensors are connected together to control the same fittings, or to trigger each other, the sudden on/off of the lamp tube or the ballast/driver causes a huge magnetic pulse, which may falsely trip the sensor. This sensor has very advanced software to ignore that interference.

By connecting the L' terminal with the L' on another sensor, if any of the sensors is triggered all luminaries in the group will light up.
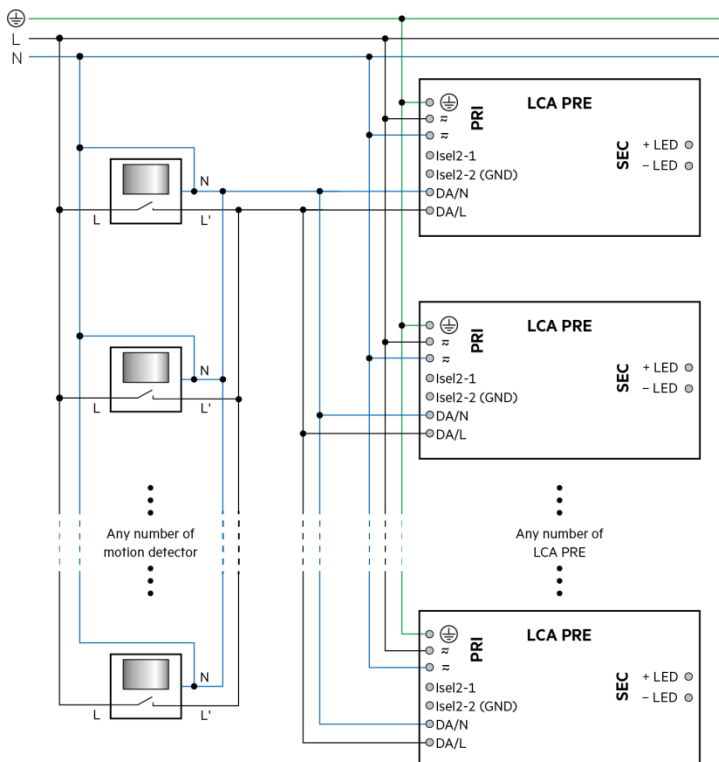


**corridorFUNCTION:**

The corridorFUNCTION allows the illuminance to be linked to the presence or absence of people/objects by connecting a conventional relay motion sensor and/or pushbutton (Tridonic DALI drivers required). The luminaire is switched ON or the illuminance is increased (6) when a person/object enters the detection area. The brightness can be increased slowly (1) if preferred.

When the person/object leaves the area, the motion sensor switches off and after a certain delay (2) the luminous intensity is automatically reduced to 0% or a residual continuous low level (5). The brightness can be decreased slowly (3) if preferred.

If required, the lights can be switched OFF completely after a set time of inactivity (4).

When using a pushbutton, the corridorFUNCTION effectively acts like an off-delay timer.

The corridorFUNCTION is particularly beneficial in applications in which light is needed around the clock for safety reasons. Since the luminous intensity only has to be increased when there is a demand for light, the corridorFUNCTION offers effective lighting management and helps saving energy and costs.

Another benefit of the corridorFUNCTION is the enhanced convenience of automatic lighting control and can be combined with the integrated photocell.
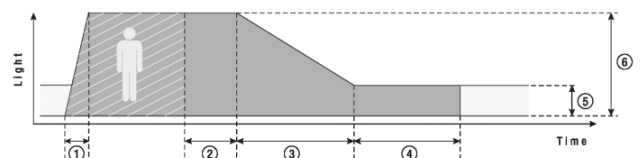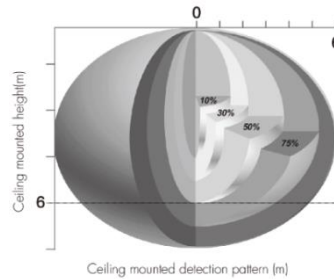
## 3.2 Settings and Functions




The sensor is mounted inside the lid.

- To access the DIP switches, unscrew the microwave sensor holder and flip over.
- Adjust to the required settings and re-assemble.

### a. Detection Range:

The sensor sensitivity can be adjusted by selecting a combination of 3 DIP switches to suit the application.
(50% is the factory default)



| | 1 | 2 | 3 | |
|---|---|---|---|---|
| I | ● | ● | ● | 100% |
| II | ○ | ● | ● | 75% |
| III | ● | ○ | ● | 50% |
| IV | ● | ● | ○ | 25% |
| V | ○ | ○ | ○ | 10% |

I – 100%
II – 75%
III – 50%
IV – 25%
V – 10%

### b. Time Delay

The ON-time of the light, after the person/object leaves the area, can be selected with a combination of 4 DIP switches.
(5 seconds is the factory default)

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| I | ● | ● | ● | ● | 5s |
| II | ○ | ● | ● | ● | 30s |
| III | ● | ○ | ● | ● | 1min |
| IV | ● | ● | ○ | ● | 5min |
| V | ● | ● | ● | ○ | 15min |
| VI | ○ | ○ | ○ | ○ | 30min |

I – 5s
II – 30s
III – 1min
IV – 5min
V – 15min
VI – 30min

### c. Daylight Threshold

The threshold can be selected with a combination of 4 DIP switches. The light will not switch ON if the ambient lux level exceeds the programmed daylight threshold.
(Please note that the ambient lux level refers to the amount of light reaching the sensor internally).
If the daylight sensor is disabled, the sensor will only operate when movement is detected.
(Daylight sensor disabled is the factory default)

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| I | ● | ● | ● | ● | 2Lux |
| II | ○ | ● | ● | ● | 5Lux |
| III | ● | ○ | ● | ● | 10Lux |
| IV | ● | ● | ○ | ● | 30Lux |
| V | ● | ● | ● | ○ | 50Lux |
| VI | ○ | ○ | ○ | ○ | Disable |

I – 2Lux
II – 5 Lux
III – 10 Lux
IV – 30 Lux
V – 50 Lux
VI – Disabled

### d. Set Daylight Threshold Freely (after installation)

To activate, simply turn the sensor rapidly OFF/ON twice within 2 seconds:
a. The green LED on the sensor (behind the label) will flash slowly for 5 seconds while the luminaire(s) will blink twice.
b. The daylight sensor measures the surrounding lux level during 1 sec and stores the value.
c. The luminaire(s) and green LED will be ON for 10s to indicate a successful learning cycle.

This feature enables the sensor to function properly in applications where the amount of daylight that penetrates into housing may vary significantly.
The last ambient lux value measured and stored overwrites any previous lux values stored.
Setting the daylight threshold with the DIP switches will overwrite the measured and stored lux value, and vice versa. The last action takes priority.

**Other Sensors:**

Microwave Sensor (DC)       Daylight Sensor:




# 4 Contact

STL International Ltd

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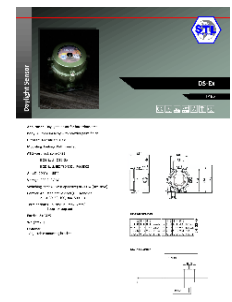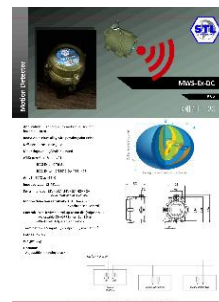eMail   : solutions@stl-int.co.uk
Web     : www.stl-int.co.uk