**Installation and operating manual**
**EnOcean ceiling mounted presence detector**

EN

**Ref.** *10020051*

## 1. General

### 1.1 Use

The detector **$0_2$LINE** ***10020051*** detects the presence (movement) of persons. It forms an integral part of the **TRI$0_2$SYS** radio system.
Its installation is fully wireless because the presence detector has solar cells with which it can supply the energy necessary for its operation.

**Note:**
- No batteries or maintenance required!
- Read the operating manual carefully before initial use.

### 1.2 Guarantee terms

This operating manual is an integral part of the device and our guarantee terms. It must always be delivered to the user. We reserve the right to modify the technical design of these devices without warning. **TRI$0_2$SYS** products are manufactured and their quality checked by making use of the latest technologies and taking into account the applicable national and international directives. If nevertheless a fault arises, **TRI$0_2$SYS** undertakes to remedy the default as follows, without prejudicing the rights of the end customer that arise from the sales contract with his reseller:

If the event of exercising of a legitimate and regular right, **TRI$0_2$SYS**, may at its sole discretion, rectify the device fault or supply a fault-free device. Any claim beyond this and all claims for consequential damages are excluded.
A legitimate fault exists if the device cannot be used at the time of delivery to the end customer because of a design or manufacturing defect or if its practical use is severely limited. The guarantee is void in cases of natural wear and tear, incorrect use, incorrect connection, where the device has been repaired or external influence. The period of guarantee is 24 months (from the date of invoicing). French law applies to the regulation of guarantee rights.

### 1.3 Recycling of the device

To recycle the device, conform to the legislation and standards in force in the country of use.

## 2. Safety

**Observe the following points:**
• The laws, standards and directives in force.
• Best practice at the time of installation
• The device operating manual.
• An operating manual can only give general instructions. They must be interpreted in the context of a specific installation.

The device is intended solely for use conforming to its purpose. Any repairs or modifications by the user are forbidden! Do not use with other devices the operation of which could endanger people, animals or property.

## 3. Technical characteristics

| General characteristics | |
|---|---|
| **Transmission frequency** | 868.3 MHz |
| **Power supply** | Solar cell (50-200 lux), optional battery type CR2032 (<50 lux) or external power supply 3-5V (DC) |
| **Minimum charging time** | 20 minutes (>500 lux) or 5 minutes in a well lit location with assistance |
| **Time for complete charging** | 9h at 200 lux |
| **Operating time in total darkness** | 48h (after complete charging) |
| **Detection range** | 12 m diameter |
| **Endurance without assistance** | (in stand-alone operation) |
| • **Standard luminosity** | 15 years (200 lux for 2h/day, 5d/week) |
| • **Low luminosity** | 10 years (50lux for 5h/day, 7d/week) |
| • **Total darkness** | 5 years |
| **EnOcean Profile Equipment** | A5-07-01 |
| **Installation height** | 2 to 3m (recommended) |
| **Operating environment** | -10° to 40°C, 20 to 95% relative |
| **Marking** | CE and R&TEE directive 1999/5/CE |
| **Size and weight** | 160x60x37mm / 125g |

| Range in buildings | |
|---|---|
| **Masonry** | 20m, through 3 walls at most |
| **Reinforced concrete** | 10m, through 1 wall/ceiling at most |
| **Plasterboard / wood** | 30m, through 5 walls at most |

**Note:** The signal strength between the detector and the receiver decreases as the distance increases. Where there is a line of sight connection, the range is approximately 30 m in corridors and 100 m in large workshops or halls. The range can be increased with an **$0_2$LINE** repeater.

## 4. Installation and initial use


Take the required time to verify each of the points below to ensure optimum operation of the detector with all of the other installation components.

### 4.1 Installation instructions

Withdraw the sensor from its packaging and place it in daylight for 20 minutes to provide it with the required start-up power; if necessary install a CR2032 type battery for five minutes in a well lit location.

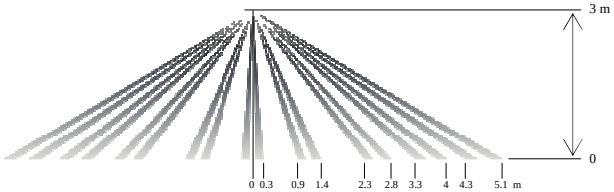
▪ Ensure that the location provides adequate coherent light
▪ Position the sensor between 2 and 3 meters from the ground
▪ Avoid installing the detector close to a ceiling fan or suspended luminaires
▪ Take into account the use of the zone to be surveyed (traffic, work, rest, etc.)
▪ Allow for a minimum clearance of one metre from all heat sources (light bulbs, convection air currents, ventilation systems, etc.)
▪ Identify the construction materials (metal, wall) in the detection zone which could interfere with the RF signals.

A single occupation sensor provides adequate coverage for most zones. However in certain situations, several sensors may be necessary to ensure complete coverage.

### 4.2 Installation

The presence detector can be installed on most ceilings with single screws (not supplied).

Detection cone:




1. Decide where to install the presence detector.
2. Position the detector using a double glue line (not supplied) and use the test modes (see section **5.2**) to determine if the selected location is suitable
3. Remove the sensor from the support **(1)**
4. Use the support as a template to mark holes for drilling
5. Drill holes for 5mm wall plugs
6. Fix the support with screws (not supplied)
7. Slide the detector on to the support until it engages

**NOTE**: It is often easier to associate the detector with its receiver before it is mounted on the ceiling.

### 4.3 Association

To associate or disassociate the detector:
1. Place the desired receiver in learn mode (refer to the installation guide for this device).
2. Press once on the detector's **LRN** button.

## 5. Functions and

The ***10020051*** detector transmits the presence information using the frame described in the document EnOcean Equipment Profiles EEP §A5-07-01 (consultable under www.enocean.com).

### 5.1 Movement detection

This detector is equipped with a permanently active PIR sensor.
If a movement is detected, a radio telegram indicating the occupied state is immediately transmitted; a time delay of 2 minutes is then triggered (no telegram will be sent before this time delay elapses). Once elapsed, the detector can react in 2 ways:

a) An occupation has been detected, the device therefore transmits a telegram. A new time delay is started.
b) No occupation is detected, the device transmits two messages to signal that it is in an unoccupied state: the first after 10 minutes and the second 30 minutes after the last movement transmission. If the device detects a movement in this state, a movement signal is transmitted **immediately**.

### 5.2 Test modes

Before starting a test, ensure that the detector is adequately charged. (see section **4.1 Installation instructions**).

**NOTE**:
- if the product is not sufficiently charged, it cannot enter the selected test mode: red flashing will occur during use of the **SET** button (green flashing if the charge is adequate).
- after selection the test will remain active for 3 minutes.
- to exit the selected test and resume normal operation, press the **LRN** button for 5 seconds.

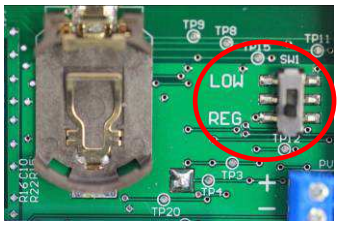
#### 5.2.1 Detection zone test

Use this test to determine the zone covered by the detector.

1. Press and hold the **SET** button for 5 seconds: a red LED flashes to confirm the acknowledgement of the test.

2. Move about within and outside the range of the sensor to determine the zone covered: the detector flashes when it detects a movement.

3. Make small movements of the hand at the zone limit to see if the movement triggers a response.




**NOTE**: Ensure that the sensor does not trigger as a result of activities outside the desired zone or because of heat sources. If inadvertent actuations are detected, adjust the sensitivity switch from REG towards LOW (on the back of the product next to the assistance options).

#### 5.2.2 Luminosity test

Use this test to measure the level of illumination received by the detector.

1. Press and hold the **SET** button for 10 seconds: red and green LEDs flash to confirm the acknowledgement of the test.

2. Monitor the LED flashing sequences to determine the illumination level at the detector:
   - MAX 5 flashes indicate very good illumination (200 lux or better).
   - MIN 1 flash indicates minimum illumination (<25 lux).

3. Try moving/realigning the product to improve its illumination.

**NOTE**: If there is no flashing, move the product or install an assistance to provide a supplementary power supply.

### 5.3 Selectable options

Two parameters can be configured if necessary. They are **deactivated by default**.
Note that these parameters consume extra energy and are not desirable in installations with a low luminosity.

#### 5.3.1 Visual signals

One red LED located below the infrared sensor flashes upon each transmission of an occupation telegram.

1. To activate / deactivate the luminous signal, press and hold the **LRN** button for 3 seconds: the green LED of the **LRN** button flashes once to indicate the correct acknowledgement of the command.

2. The new state is signalled by the following flashes: Activated - by 3 flashes of the green LED, deactivated - by 3 flashes of the red LED.

#### 5.3.2 Sequencing

A non-occupied telegram is sent at interval of 1 h.

1. To activate / deactivate the sequencing, press and hold in the **LRN** button for 5 seconds: the green LED of the **LRN** button flashes once to indicate the correct acknowledgement of the command.

2. The new state is signalled by the following flashes: Activated - by 3 flashes of the green LED, deactivated - by 3 flashes of the red LED.

### 5.4 Assistance (optional)

In poorly lit zones or during extended use in the dark, use of a type CR2032 battery or of an external power supply of 3 to 5 V (DC) may be necessary to supplement the power supplied by the solar cells.

1. Remove the detector from the fixing support and chose the assistance type.

2a. Insert a battery in the clip support, the visible end being the positive pole (+)
2b. Connect the external power supply of 3 to 5 V (DC) observing the polarity + and - of the screw terminals.

3. Replace the sensor on the support (see section **4.2 Installation**)

## 6. Troubleshooting

### 6.1 New or existing installation

• Check the circuit breaker, the electrical supply and the load connected to the receiver associated with this transmitter (qualified electricians).
• If the receiver functions at a shorter distance relative to the transmitter, it is subject to interference or used outside the transmission range.
• Search the system environment for changes that could cause the interference (for example movement of metallic cabinets, furniture or partitions).
• Locate the sensor or receiver in a more suitable location.
• Clear the receiver and perform a new learn process.

### 6.2 Absence of signal transmission

• Press the **SET** button to transmit a telegram.
• Check that the indicator lamp flashes when a movement is detected during a test of the detection zone (see section **5.2**).
• Check that the detector is correctly charged.

### 6.3 Automatic activation of the receiver

• The cause may be the activation of a sensor or transmitter external to the system which has by chance been programmed on the receiver.
• Clear the receiver and perform a new learn process.
• Check that there is 1.2 m clearance relative to heat sources likely to interfere with the detection
• Reduce the sensitivity setting by moving the sensitivity switch of the infrared sensor from REG to LOW (see section **5.2.1**).

### 6.4 Lack of response of the receiver and limitation of the range of the radio signals

• Check the sending of a telegram by pressing on the **SET** button
• Check for environmental problems (interference, proximity of metal objects, walls, etc.). Ensure there is clearance of at least 10 cm from objects or materials with a metal content.
• Check the detector / receiver association
• Check the receiver connection
• Check for moisture in the surrounding materials.
• Check for the presence of devices emitting high frequency signals such as audio and video systems, computers, electronic ballasts or fluorescent tubes. Observe a distance of at least 0.5 m.

### 6.5 Explanation of telegrams and sequencing

• byte DB3: voltage of the internal super capacitor, 0-255 (% of 0-5V)
• byte DB2: current supplied by the solar panels, from 0 to 127 µA
• byte DB1: 0xFF (occupied) or 0x00 (unoccupied)
• byte DB0: 0x0B (ceiling sensor)

### 6.6 Contacts

E-mail:..... contact@trio2sys.fr

## 7. Declaration of conformity

These products can be marketed and distributed in the countries of the European Union, Switzerland, Iceland and Norway. **TRIO$_2$SYS** hereby declares that the presence detector ***10020051*** conforms to the base requirements and other applicable requirements of the directive 1999/5/CE referred to as R&TTE.