

INTRODUCTION

Zennio motion sensor includes a luminosity sensor that allows filtering the sending of detection values according to a luminosity threshold, set by the integrator.

Luminosity detected by Zennio sensor is quantified in 100 luminosity levels. These levels depend on the light quantity that reaches the lens in the visible side of the device, which includes light in visible spectrum. The way the light arrives at the lens (direct, diffuse illumination, reflection, etc) has also an effect on the measured luminosity level.

Due to this variation in luminosity measurement with light intensity and the relative situation of the sensor, a previous study about the sensor placement is very important when any motion sensor channel is configured as depending on the luminosity level. The most appropriate place to install it should be determined by not only the detection area, but also the luminosity levels that sensor detects in several points of the room with different lighting conditions.

STUDY FOR MOTION SENSOR INSTALLATION

The luminosity sensor should be placed where it does not receive direct light from a light source in the room, since it would have a strong effect in the sensor. Under this circumstance, light would saturate the sensor and would prevent it to detect luminosity variations.

Shades of elements in the building, such as columns, walls or external elements to the building should be also avoided when placing the luminosity sensor.

The following tests should be carried out in order to find most suitable place:

- **Natural light only**, note where the areas of shade are:



Natural light

- **Artificial light only (shutters down or night)**, note where the areas of shade are. It must be bear in mind that a lamp light reaches more directly the luminosity sensor in the ceiling. In the other hand, a ceiling light is placed in the same plane and height that the sensor and thus, there is no direct light towards the sensor.

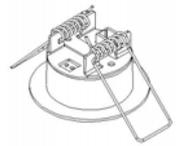


Ceiling light



Lamp light

In the **common area of shades (or less illuminated areas) for both types of lighting**, several positions should be selected for evaluating the most suitable place for the sensor.



The motion sensor can monitor the detected luminosity level (in a range from 0 to 100, where 0 is the darkest level and 100 is the brightest level or saturation level) if the communication object “**Luminosity level**” is enabled.

In the selected positions, luminosity levels should be studied under **several lighting conditions** which provide the same light intensity in lux (a lux meter should be used to check this intensity).

EXAMPLE OF MEASUREMENTS

Measurements can be carried out under the following lighting conditions (the light intensity should be established with the help of a lux meter), for example:

- **Natural light only:** Reach 300lux. Measure the luminosity level that the motion sensor sends through the KNX bus.
- **Artificial light only:** Reach 300lux. Measure the luminosity level in KNX bus again.
- **Natural and artificial light:** Reach 300lux. Measure the luminosity level in KNX bus again.
- Repeat these measurements with sensor in every selected position.

Regarding the obtained measurements, the position with **less luminosity level deviation** should be selected, which indicates the less dependency of the measured luminosity level with the lighting source (for the same light intensity).

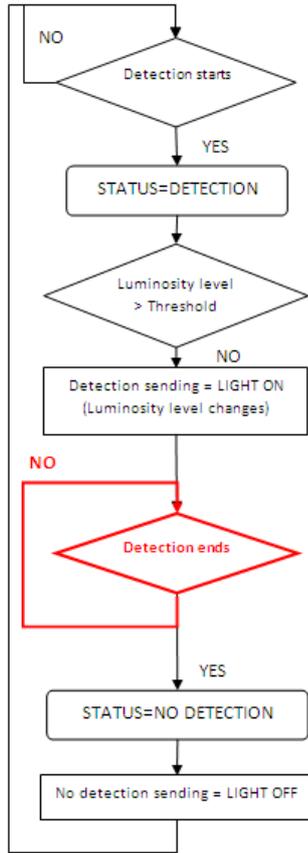
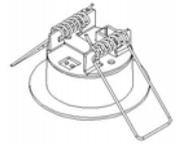
For example, in the table below, the measures obtained in three positions are shown. The values with less deviation correspond to position 3, where the motion sensor should be placed according to these criteria.

Study of luminosity levels with 300lux of light intensity			
Light source	Position 1	Position 2	Position 3
Natural	50	42	53
Artificial	89	85	79
Natural and Artificial	78	76	76

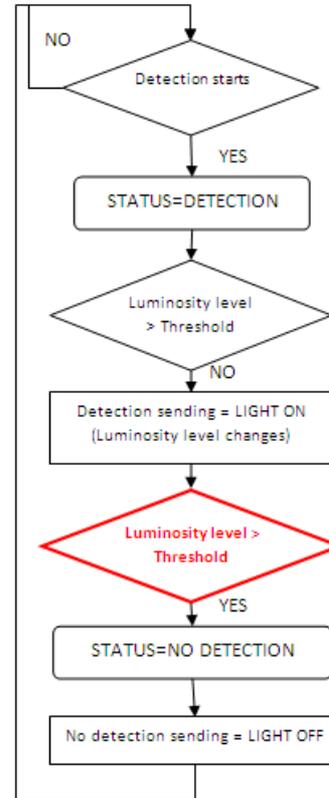
SETTING A LUMINOSITY THRESHOLD

In ETS parameterization of Zennio motion sensor, a **luminosity threshold** can be set. This way the 1bit value or scene for detection is sent only when luminosity level is under the threshold, allowing the control of artificial lighting when luminosity level due to natural light is under the threshold or when an artificial light source does not provide the needed luminosity level, etc.

There is an option for sending the **no detection value** (usually used to turn off lights) when **luminosity level is over the luminosity threshold** and thus, the controlled light source is not needed. Nevertheless, it must be bear in mind that the no detection sending depending on the luminosity could cause a **loop of on/off switching** of the light source, since it makes the luminosity level fluctuate and it activates the “detection sending” when light is off and the “no detection sending” when light is off (see flux diagrams in the following page for a better understanding).



No detection status does not depend on the luminosity level, only motion



No detection status depends on the luminosity level; an ON/OFF loop depending on the lighting can appear

When setting the **luminosity threshold**, it must be thought which light source provides the luminosity when detection happens and which light source is activated with the sending of detection value. If artificial light sources are turned on when natural light provides a level of luminosity under threshold, the luminosity level with natural light only should be taken into account for the threshold.