Zennio

MOTION SENSOR

KNX MOTION SENSOR

ZN1IO-DETEC

Edition 2

Version 3.1

Index

1. INTRODUCTION

The **Motion Sensor** is a device able to detect motion due to the incorporated infrared detection technology.

Moreover, this device counts on a **luminosity sensor** providing, together with the motion detector functions, a great functionality.

The Motion Sensor is offered as an accessory for the **QUAD**.

Figure 1 Motion Sensor

Device Features:

- Reduced size: External diameter equal to 48 mm.

- Easy installation in false ceiling, due to two pressure clips..

- Light guide with double function that allows both visualizing the LED flashes (red) when presence is detected and the light entrance for the luminosity sensor.

- Double micro-switch in its back that allows disconnecting both the LED for indicating activity and the link between the luminosity sensor and the light control channel.

- Direct connection to QUAD input (ZN1IO-41AD).

- External power supply not required.

- CE Compliant.

2. INSTALLATION

2.1. MOTION SENSOR INSTALLATION

The Motion Sensor is connected to a QUAD input and it is possible to increase the detection area by installing two sensors in parallel in the same input, provided that one of the luminosity sensors is switched off.

Once the device is connected to the QUAD and it is supplied through the BUS, both, the physical address and the application program, can be downloaded to the motion sensor.

This device does not require any external power supply, since it is supplied through the QUAD.

For its installation, making a circular hole with a diameter equal to 40 mm is enough. The connections scheme is carried out according to the information given in the following lines and finally, raising the pressure clips, the sensor is put in the false ceiling until the enclosure touches the ceiling.
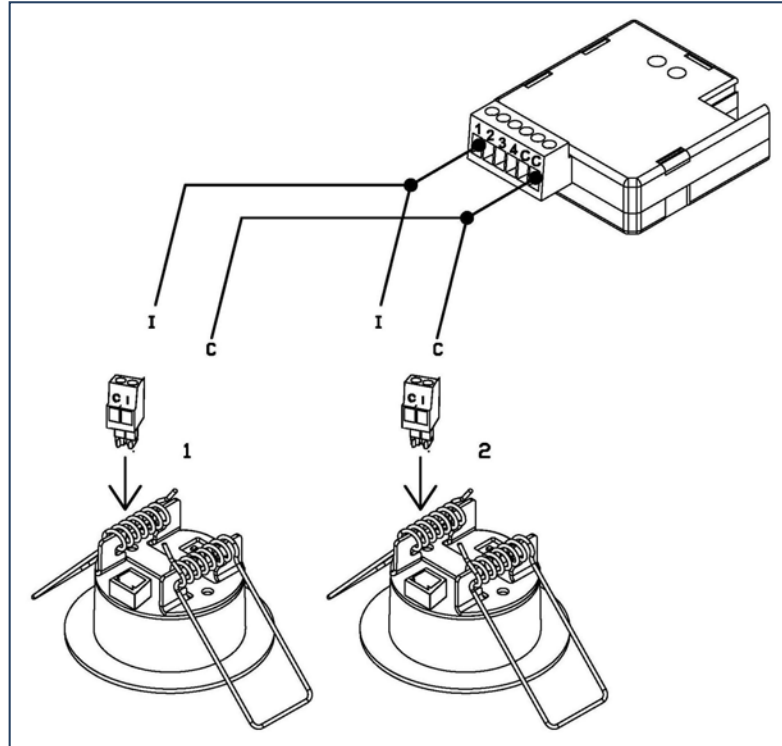
One Motion Sensor Connection

1- Directly connect the sensor terminal marked with letter "**I**" to the desired QUAD input.

2- Next, connect the QUAD common (any QUAD terminal marked with letter "**C**") to the sensor terminal marked with letter "**C**".
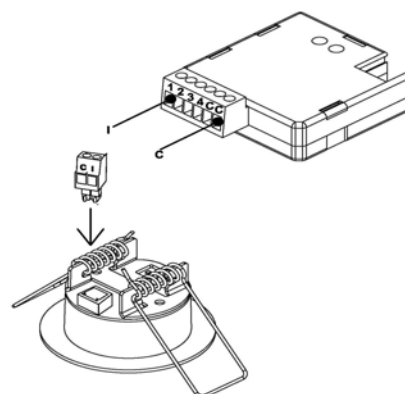
Figure 2 One Motion Sensor connected to QUAD

Two Motion Sensors connected in parallel

1- Directly connect the terminal of first sensor, marked with letter "**I**", to the desired QUAD input.

2- Next, connect the QUAD common (any QUAD terminal marked with the letter "**C**") with the terminal of first sensor marked with letter "**C**".

3- Repeat the same operations with the second motion sensor using the same QUAD input. In order to make easier the operation, the QUAD has two terminals corresponding to the common, both marked with letter "**C**".

Figure 3 Connecting Two Sensors in Parallel

> **Take into account:** The maximum number of sensors that can be connected in parallel is 2 and, at least one of the luminosity sensors, must be in OFF position. Look up the Motion Sensor Datasheet.
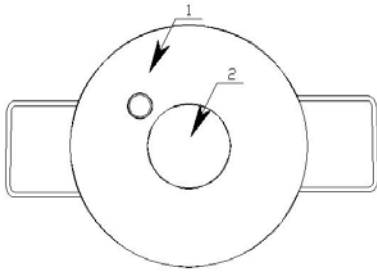
2.2. ELEMENTS DESCRIPTION

The Motion Sensor is a device with small dimensions. With a external diameter equal to 48 mm, it counts on pressure clips for its installation to false ceiling.
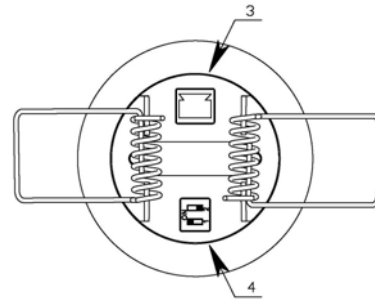
Next figures show the different motion sensor elements as well as its dimensions.
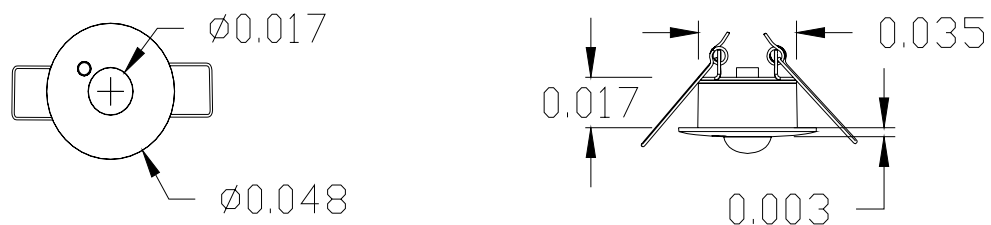
Figure 4 Motion Sensor Dimensions

Figure 6. Upper view

Figure 5. Down view

Nº	Description
1	LED indicating operation (red) – luminosity sensor
2	Superficial enclosure for motion sensor.
3	Connection terminal.
4	Double micro-switch: On/Off LED indicating operation (Led) – On/Off luminosity sensor (Lux)

3. CONFIGURATION

For carrying out the configuration of the motion sensor, it is necessary to configure the QUAD input where the motion sensor is going to be connected as **_Motion Detector_**.

Once the user configures the corresponding input as **_Motion Detector,_** the application program offers the possibility of enabling up to three channels associated to the above-mentioned input and different communication objects for calibration and error detection.

Motion detector.

Once the QUAD input where the motion sensor is connected is configured, a binary communication object indicating the presence of motion in the room will be enabled.

Moreover, the channels associated to the sensor can be configured for acting when a _motion detection_ or a _no motion detection_ takes place, as well as establishing different timers. As a result of the _motion_ or _no motion detection_, the channel sends the corresponding information through the bus.

Luminosity sensor.

The motion sensor also relies on a luminosity sensor that allows configuring the performance of the different channels depending on the luminosity levels that are previously calibrated, which means the configuration of the motion detection/no detection is conditioned on the detected luminosity level.

Moreover, the configuration of one input as motion detector will enable a communication object called _Luminosity Level_. This object will contain the reading of the luminosity level, in percentage, detected by the sensor and can be read through the Bus. The user has the configuration options of cyclical sending of the detected luminosity level or avoid sending.

> **Take into account:** Every input will automatically detect if a physical error happens in the motion sensor, indicating short or open circuits (cut wire or disconnected sensor). When an error occurs, the information is periodically sent to the bus through the corresponding communication object and, moreover, the disappearance of the error will be also notified.

4. PARAMETERIZATION

As the motion sensor is a QUAD accessory, it is parameterized in the QUAD application program. For starting to parameterize the device, once the ETS is opened, it is necessary importing the database of the product QUAD.vd2.

Next, the device is added to the desired project and, with the right button of the mouse on the device, the option "Edit Parameters" is selected to start with the configuration.

In the following sections there is a detailed explanation of the different motion sensor functionalities in the ETS.

4.1. GENERAL

In the *General* window the different QUAD inputs can be configured as:

- **Binary Entry**
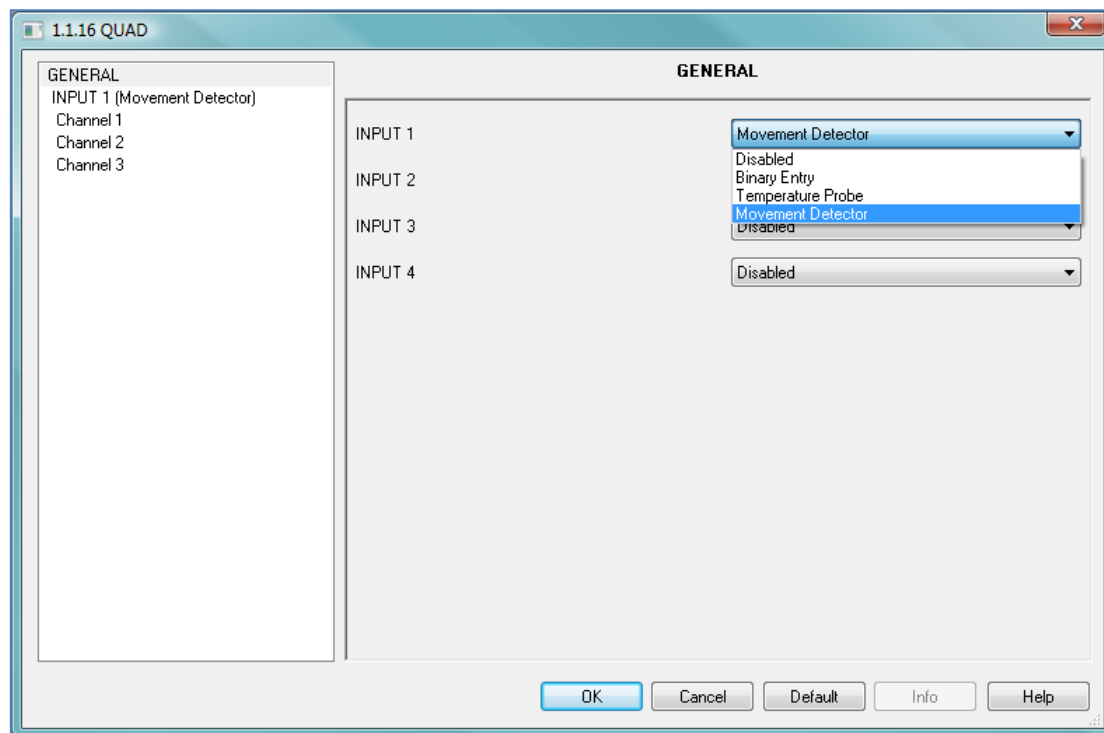
- **Temperature Probe**

- **Movement Detector**

Figure 7 General Window

When the desired entry is configured as motion sensor in the drop list, the access to the motion sensor configuration window associated to that entry will appear in the left menu.
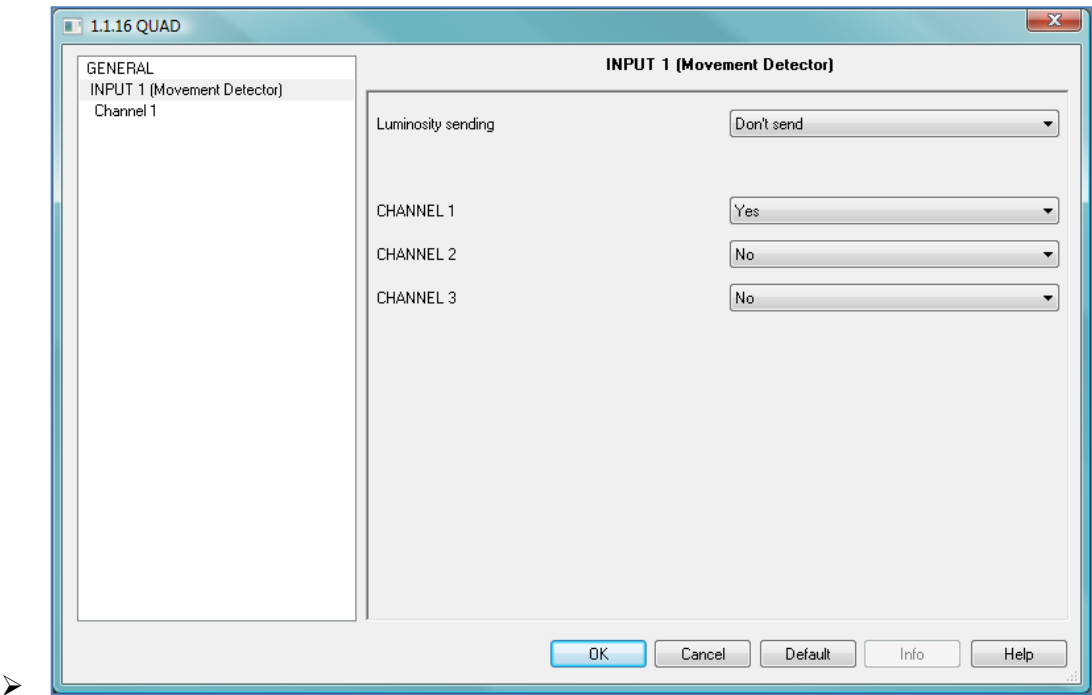
4.2. INPUT (MOVEMENT DETECTOR)

Once the desired entry is parameterized as motion sensor, in the window *Input (Movement Detector)* the sensor performance can be configured:

- **Luminosity Sending**

    It allows establishing when the detected luminosity value must be sent:

    ➢ Do not send

    ➢ Send periodically: this option allows setting a sending period in seconds.

    ➢

➢

Figure 8. Luminosity sending configuration

Figure 9. Communication Object Luminosity level

- **Channel 1:** Yes or no.

- **Channel 2:** Yes or no.

- **Channel 3:** Yes or no.

4.3. CHANNEL CONFIGURATION

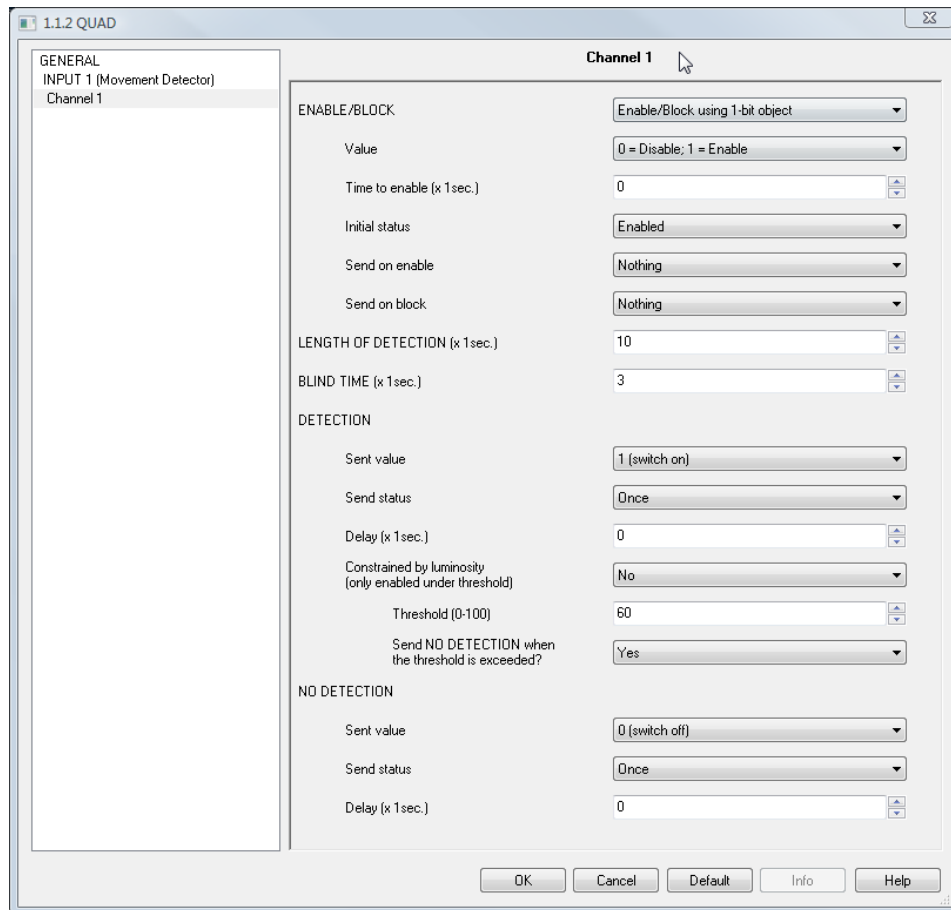This window allows configuring the channel associated to the motion detector and its performance.

Figure 10. Channel Configuration

The parameters to configure in this window are the following:

🔵 **Enable/Lock**

It allows specifying when the channel must be enabled or locked:

➤ Always enabled: the channel is always enabled for motion detection.

➤ Enable/block using 1-bit object: it enables a binary object for enabling/blocking the detection. This option also allows establishing the values that enable and disable the channel.

➤ 0 = Disable; 1 = Enable

➤ 1 = Enable; 0 = Disable

➤ Enable/block using scene: this option allows setting a scene number to enable the channel and another one to disable it. The Scene reception communication object is used for this.

If the channel is blocked by a 1-bit communication object or a scene, there are some other options of configuration:

➢ Time to enable(x1sec.): time between the reception of the value that enables the sensor and the real sensor enabling.

➢ Initial status: it sets the initial status of the sensor after a bus failiure or a download among enabled, disabled and last status.

➢ Send on enable: it sets the status that is sent when the sensor is enabled (nothing, detection or no detection).

➢ Send on block: it sets the status that is sent when the sensor is blocked (nothing, detection or no detection).
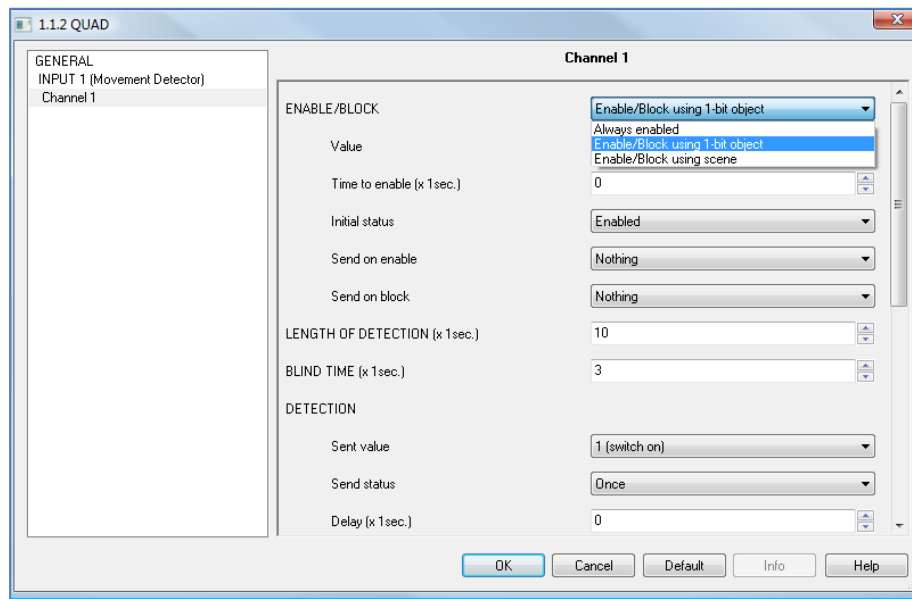

Figure 11. Enable/Block configuration

Figure 12. Communication Object Channel enabling

🔵 **Length of detection (×1sec):** it allows establishing the time that must pass from the last motion detection until the sensor returns to *no detection* status.

🔵 **Blind time (×1sec):** this is the time that the channel must remain inactive after returning to *no detection* status. This functionality allows avoiding errors when controlling light sources.

🔵 **Detection**

➢ **Sent value:** it indicates the information sent to the bus when detecting motion: *Nothing, 1(switched on), 0(switched off)* or *Scene.*

- ➢ **Send status:** it indicates if the information will be sent once or cyclically. In case there is a cyclic sending, the Period(x1sec.) must be set.

- ➢ **Delay (×1sec):** it allows establishing a delay for the value sending after the detection.

- ➢ **Constrained by luminosity (only enabled under threshold):** if YES is selected, the detection value sending only takes place when luminosity is under a threshold.

- ➢ **Threshold:** value between 0 and 100 that establish the luminosity level under which the detection value is sent to the bus. This threshold value must be established regarding the values in the communication object Luminosity level for several lighting conditions.

- ➢ *Example: Under determined luminosity conditions that would require turning on lighting, we read the value in the communication object Luminosity level. We get the value $5E/37% for Luminosity level through the group monitor of ETS. Thus, the value we should set as Threshold would be 37.*

- ➢ **Send NO DETECCIÓN when the threshold is exceeded?:** if luminosity gets the threshold level when the sensor is in detection status, no detection value will be sent to the bus if we select this option. This functioning could be useful when turning on/off lighting in a room regarding the luminosity. But we must bear in mind that the luminosity sensor must not be affected by artificial light, since it could get into a loop of constant on/off switching.

- ➢ *Example: If we have a motion sensor in the ceiling, the luminosity value will not be significantly affected by that ceiling lighting but it will be affected to a greater extent by a table lamp, for example, as it is placed in the luminosity sensor detection area. Therefore, we could enable this option for ceiling lighting but not for table lamps.*

- ➢ If we select NO sending, the channel will still be enabled while a motion is detected even if the luminosity level is above the threshold, and it will send NO DETECTION after detection time has passed.

- ➢ *It is advisable to check the lighting values (range 1-100) sent to the bus by the motion sensor under different ambient lighting conditions to understand the behaviour.*

🔴 **No Detection**

- ➢ **Sent value:** Nothing, 1(switched on), 0(switched off) or Scene.

- ➢ **Send status:** Once or Cyclic. In case there is a cyclic sending, the Period(x1sec.) must be set.

- ➢ **Delay (×1seg):** It allows establishing a delay for the status sending in seconds.

ANNEX I. COMMUNICATION OBJECTS

SECTION	NUMBER	LENGHT	IN/OUT	FLAGS	VALUES			NAME	OBJECT FUNCTION
					RANGE	INITIAL	RESET		
GENERAL	116-119	1bit	O	T	0/1			**Short circuit**	It indicates there is a short circuit in the entry: 1=short-circuit; 0=no short-circuit
	120-123	1bit	O	T	0/1			**Open Circuit**	It indicates there is an open circuit in the entry: 1=open-circuit; 0=no open-circuit
	124-127	1byte	O	R-T	0-100			**Luminosity level**	Luminosity level detected by the sensor
CANAL	128-139	1 bit	O	T	0/1			**Channel enabling**	Enable/disable the sensor channel
	140-151	1 bit	O	T	0/1			**Detection Status**	Detection/no detection value
	152-163	1byte	I	W	0-63			**Scene Reception**	Scene number reception for enabling/disabling the sensor channel
	164-175	1byte	O	W	0-63			**Scene Sending**	Scene number sending for detection/no detection.

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