



# Motion detector

**ZN1IO-DETEC**



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## INDEX

1. Introduction.....	3
1.1. Motion detector .....	3
1.2. Compatible Zennio devices .....	3
2. Installation.....	4
2.1. One motion detector connection.....	5
2.2. Two motion detectors connected in parallel .....	6
3. Configuration.....	7
3.1. Movement detector .....	7
3.2. Luminosity Sensor .....	7
4. ETS Parameterization.....	8
4.1. Movement detector input .....	8
4.2. Channel configuration .....	10

# 1. INTRODUCTION

## 1.1. MOTION DETECTOR

Zennio **motion detector** is a device that allows detecting movement in rooms thanks to the infrared detection technology it incorporates.

This device also counts on a **luminosity sensor** that, together with the motion detector functions, makes the detector a device with a great versatility.



Figure 1.1. Zennio Motion detector

## 1.2. COMPATIBLE ZENNIO DEVICES

The motion detector is offered as an accessory for other compatible devices from Zennio, which allow connecting external elements and configuring their entries as "Movement Detector".

In the Table 1.1 one can consult the Zennio devices (name and version of the application program) to whose entries it is possible to connect the motion detector. This table will be updated every time the number of versions and devices on which the connection of the Zennio motion detector is available increases.

Device	Application Program Version
QUAD	4.0
ACTinBOX Classic-Hybrid	2.0
ZAS	1.0 (Roll-ZAS)

Table 1.1. Zennio devices compatible with the motion detector

**Note:** To obtain more detailed information about the parameterization of the entries of these Zennio as movement detector, please consult the "**ETS Parameterization**", in the section 4 of this document.

## 2. INSTALLATION

The motion detector is connected to one entry of the chosen Zennio device (see compatible devices in Table 1.1).

Once the device to which the detector is connected is provided with power supply from the KNX bus, both the physical address and the associated application program of the device can be downloaded.

The motion detector does not need an external power supply, since it is fed through the Zennio device it is connected to.

In the figure 2.1, the elements scheme of the motion detector is shown.

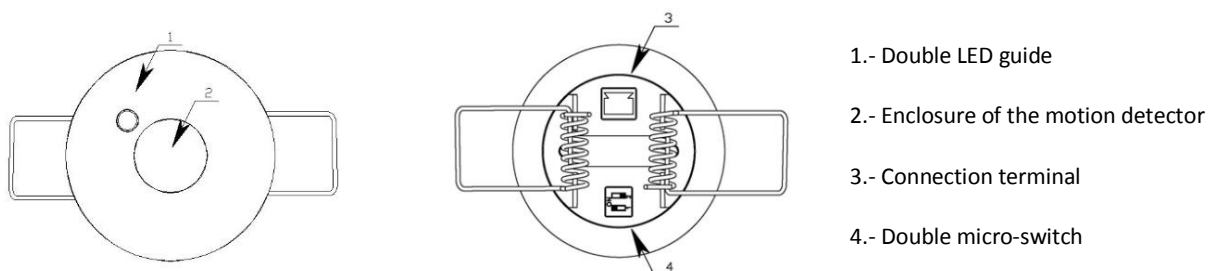


Figure 2.1. Motion detector. Elements scheme

It is described below the functionality of its main elements:

**Double LED guide (1):** it is a light guide with a double aim, which allows visualizing the LED flashes when the device detects presence (red flashes) and also allows the light to enter through it in order to carry out the luminosity sensor function.

**Double micro-switch (4):** located in the rear side of the detector, this micro-switch allows enabling and disabling the LED that indicates presence and linking the luminosity sensor to the channel that controls the luminosity (Lux). The available combinations are shown in Figure 2.2.

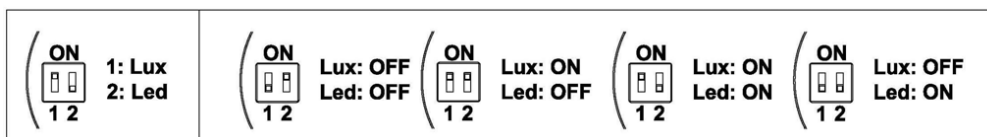


Figure 2.2. Double micro-switch positions

For the installation of the motion detector, just make a circular hole with a diameter of 40 mm. in the false ceiling. Next, it must be connected to the corresponding device, as explained in the following sections and finally, raising the pressure clips, the sensor is put in the false ceiling until the enclosure touches the ceiling.

It is possible to connect two motion detectors in parallel to the same device input. With this type of connection, it is possible to **increase the detection area**, provided that the luminosity sensor of one of them is in the position OFF (switched-off). See figure 2.2.

## 2.1. ONE MOTION DETECTOR CONNECTION

The connection is carried out as follows:

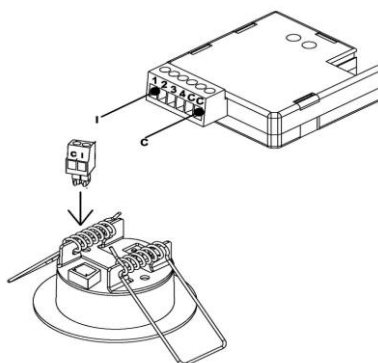


Figure 2.3. One motion detector connection

- Directly connect the motion detector terminal marked with the letter "I" to the desired device input.
- Next, connect the common point of the device terminal block (terminal marked with the letter "C") to the motion detector terminal marked with the letter "C".

## 2.2. TWO MOTION DETECTORS CONNECTED IN PARALLEL

The connection is carried out as follows:

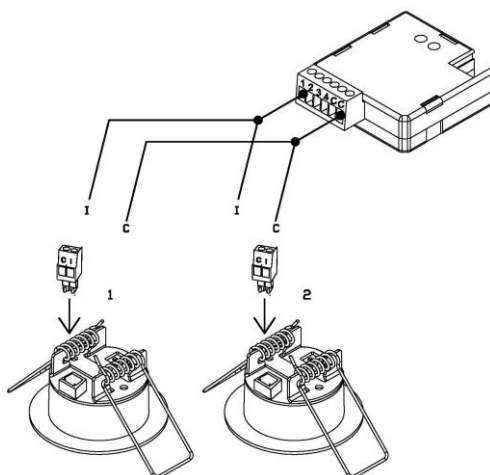


Figure 2.4. Two motion detectors connected in parallel

- ➊ Directly connect the first motion detector terminal marked with the letter "I" to the desired device input.
- ➋ Next, connect the common point of the device terminal block (terminal marked with the letter "C") to the first motion detector terminal marked with the letter "C".
- ➌ Repeat the two last steps with the second motion detector, using the same input of the device.

**Take into account:** *The maximum number of detectors that can be connected in parallel is two and, at least one of them must have the luminosity sensor switched-off (OFF position).*

**Note:** *The device shown in figures 2.3 and 2.4 is the A/D QUAD sensor. The connection to other compatible devices is carried out the same way.*

To obtain more detailed information about the technical features of the Zennio motion detector, as well as security and installation information, please read its **Datasheet**, included in the original package of the device and also available at: <http://www.zennio.com>.

It is also recommended to consult the **Installation technical note**, available at the same web site, where several installation tips are presented.

## 3. CONFIGURATION

For carrying out the ETS configuration of the motion detector it is necessary to parameterize the input (or inputs) of the device where the detector is connected as **Movement detector**.

Once the corresponding input has been parameterized as Movement detector, the application program allows enabling several detection channels, associated to that entry, besides enabling a set of parameters and communication objects related to the calibration and errors detection.

### 3.1. MOVEMENT DETECTOR

Once configured the input of the corresponding device as movement detector, one binary communication object will be enabled to show a movement presence in the room.

Moreover, the associated channels can be configured for acting to a detection or a no detection of movement, as well as establishing different timers. As result of the movement detection or not detection, the channel will transmit the corresponding information through the KNX bus, only when the channel is enabled (not blocked).

All the associated functionality and its ETS configuration is explained in detail in section [4. ETS Parameterization](#).

### 3.2. LUMINOSITY SENSOR

The motion detector also relies on a luminosity sensor that allows configuring the performance of the different channels depending on the luminosity level that have been previously calibrated; i.e., the configuration of the motion detection/no detection is constrained by the detected luminosity level.

Moreover, the configuration of an input as movement detector will enable a 1-byte communication object, which will contain the reading of the luminosity level, in percentage, detected by the sensor and can be read directly from the KNX bus. The luminosity levels may be sent periodically, if configured.

Every input of the device configured as movement detector will be able to automatically detect whether a physical error has occurred in the motion detector, indicating situations of shortcircuits or open circuits (cut wire or disconnected detector). When an error occurs, the information is

periodically sent to the bus through the corresponding communication object and, moreover, the end of these anomalous situations will be also notified.

## 4. ETS PARAMETERIZATION

Next the Zennio motion detector configuration in ETS is shown.

The screen-shots are taken from the A/D QUAD sensor, but all the options, parameters and aspect of the configuration window of the inputs parameterized as movement detector are the same for all the compatible Zennio devices (see Table 1.1), except from the number detection channels that can be enabled and configured and the number of inputs that can be configured as movement detector: see Table 4.1.

Device	Detection Channels	Configurable Inputs
QUAD	3	All (1-4)
ACTinBOX Classic-Hybrid	2	Input 6
ZAS (Roll)	2	All (1-2)

Table 4.1. Channels and configurable inputs, per device

### 4.1. MOVEMENT DETECTOR INPUT

In the application program there is an exclusive window for configuring all of the device inputs parameterized as movement detector.

**Note:** *The number of inputs configurable as movement detector may vary, depending on the Zennio device to be used (see Table 4.1).*

This configuration window shows the following default aspect:

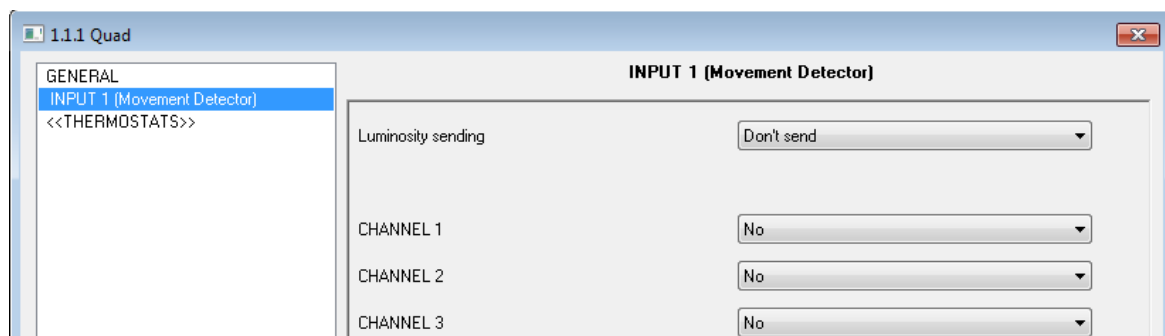


Figure 4.1. Input configured as movement detector




Once configured the desired input as movement detector, 3 communication objects will be enabled and shown in the topology window:

- "**[Ix] Short Circuit**": 1-bit object to indicate the appearance of a shortcircuit event in the detector connected to the input, by sending the value "1" in a cyclical way (every 30 seconds). When the shortcircuit ends, the device will send the value "0" through this object.

- "**[Ix] Open Circuit**": 1-bit object to indicate the appearance of an open circuit event in the detector connected to the input, by sending the value "1" in a cyclical way (every 30 seconds). When the open circuit ends, the device will send the value "0" through this object.


- "**[Ix] Luminosity level**": 1-byte object to show, in percentage, the amount of light detected by the sensor.

In the window shown in figure 3.1, the following parameters can be configured:

 **Luminosity sending**: sets when the value of detected luminosity (in %) will be sent, through the 1-byte communication object "[Ix] Luminosity level", choosing among:

➤ **Don't send**

➤ **Send periodically**: a new drop-down box is shown to select the period, in seconds, to cyclically send the luminosity level.

 **Channels (Channel 1, Channel 2, etc.)**: the number of detection channels that can be enabled vary depending on the device (see Table 4.1). The configuration of those channels is explained in detail in the next section.

## 4.2. CHANNEL CONFIGURATION

In the windows associated to each enabled channel (see figure 3.2) the channel parameterization can be carried out (configuration and working).

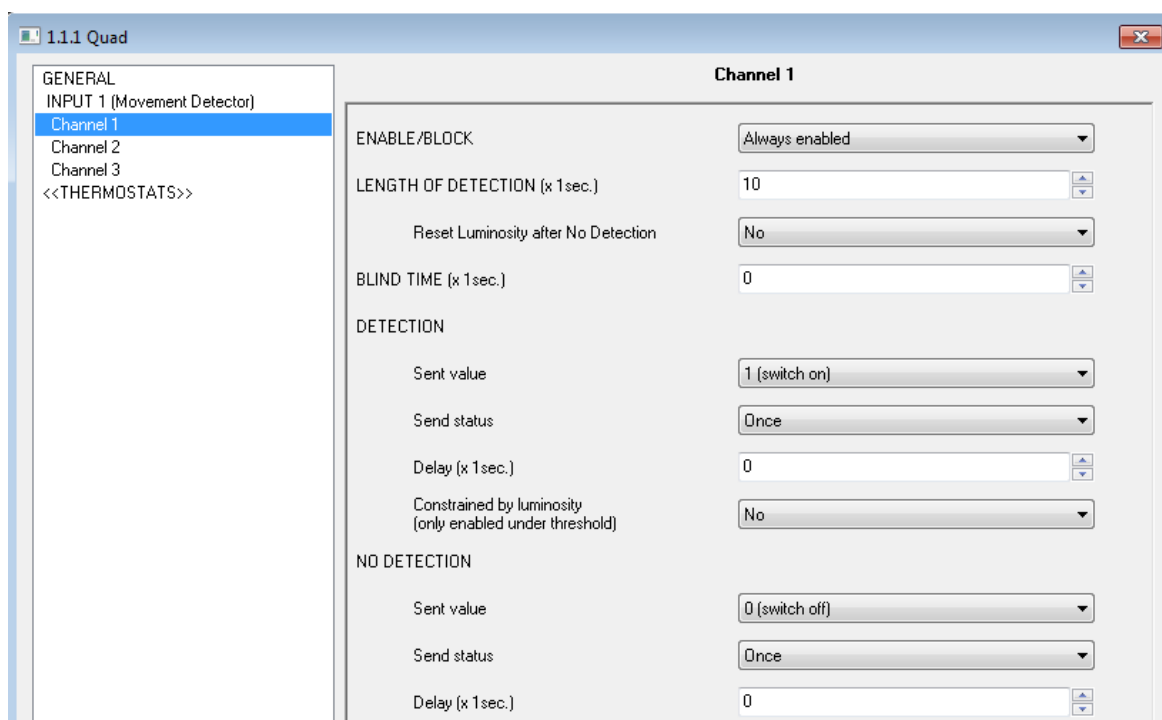



Figure 4.2. Channel configuration

The configuration parameters for every channel are the following:

 **Enable/Block:** allows activating/deactivating the detection channel. When the channel is enabled, it will transmit the information about the status of the movement detection to the KNX bus through its associated communication objects. When the channel is blocked, although the sensor continues detecting movements, the channel will not send any detection or no detection statuses. The available options are:

- **Always enabled:** the channel will be always active and it will send to the KNX bus the corresponding detection statuses, through the object "[Ix][Ch.y] Detection Status".
- **Enable/block using 1-bit object:** to select the value used to enable the channel and the value to block it, and depending on this choice, a 1-bit communication object or other will be enabled:

- **0=Disable; 1=Enable:** the object "[Ix][Ch.y] Channel enabling" is enabled, to enable or block the channel, by sending the values "1" or "0", respectively.
  - **0=Enable; 1=Disable:** the object "[Ix][Ch.y] Channel block" is enabled, to block or enable the channel, by sending the values "1" or "0", respectively.
- **Enable/block using scene:** to enable and block the channel using scenes, which number (from 1 to 64) must be specified in the field "Scene to enable" and "Scene to disable", respectively. The 1-byte object "[Ix][Ch.y] Scene Reception" is used for this aim.

If the enable/block of the channel is performed via one of the two last methods (1-bit object or scene), the following parameters can be also configured:


- **Time to enable:** set the time, in seconds, the device waits before enabling the channel, once it has received the corresponding enabling object.
- **Initial status:** set if the channel starts disabled, enabled or in the last status it had before the bus power failure.

**Note:** *After a download from ETS, if the initial status is last, the channel will start enabled.*


- **Send on enable:** to select the value the device will send to KNX bus through the object "[Ix][Ch.y] Detection Status" when the channel is enabled through the corresponding object, thus noticing it is enabled and that it will start sending detection statuses. To choose between:

- **Nothing**
- **Detection:** the value configured in the section "Detection" will be sent.
- **No detection:** the value configured in the section "No detection" will be sent.


- **Send on block:** to select the value the device will send to KNX bus through the object "[Ix][Ch.y] Detection Status" when the channel is blocked through the corresponding object, thus noticing it is disabled and that it will stop sending detection statuses. The available options are the same as for Send on enable.


-  **Length of detection:** to configure the time, in seconds, that must elapse from the last motion detection until the sensor returns to the No detection status. If during this time, the

sensor detects new movements, the established length of detection will be reset and this time starts counting again.

 **Reset luminosity after No Detection:** this parameter is thought to work jointly with the option Detection constrained by luminosity. If it is enabled ("Yes"), just after a No Detection, the luminosity level will be reset (0%), thus allowing the movement detection and the sending of the associated status (although the current luminosity level does not cause the detection sending). To better understand the functioning of this parameter, please consult the example at the end of this section.

**Note:** *Take into account that the luminosity level after a no detection affects all the enabled detection channels of the input.*

 **Blind time:** to set the time the channel must remain inactive after returning to the No detection status.

 **Detection:** in this section it is possible to configure different parameters related to the detection status of the sensor connected to the input.


➤ **Sent value:** it indicates the value that the device sends to the KNX bus through the 1-bit object "[Ix][Ch.y] Detection status" or the 1-byte object "[Ix][Ch.y] Scene sending", when the sensor connected to its input detects presence:

- **Nothing**
- **1 (switch on)**
- **0 (switch off)**
- **Scene**

➤ **Send status:** it indicates if the last value is sent to the bus a single time (once) or in a periodical way (Cyclic), setting the period, in seconds.

➤ **Delay:** set a delay, in seconds, to send the value configured previously, after the detection.

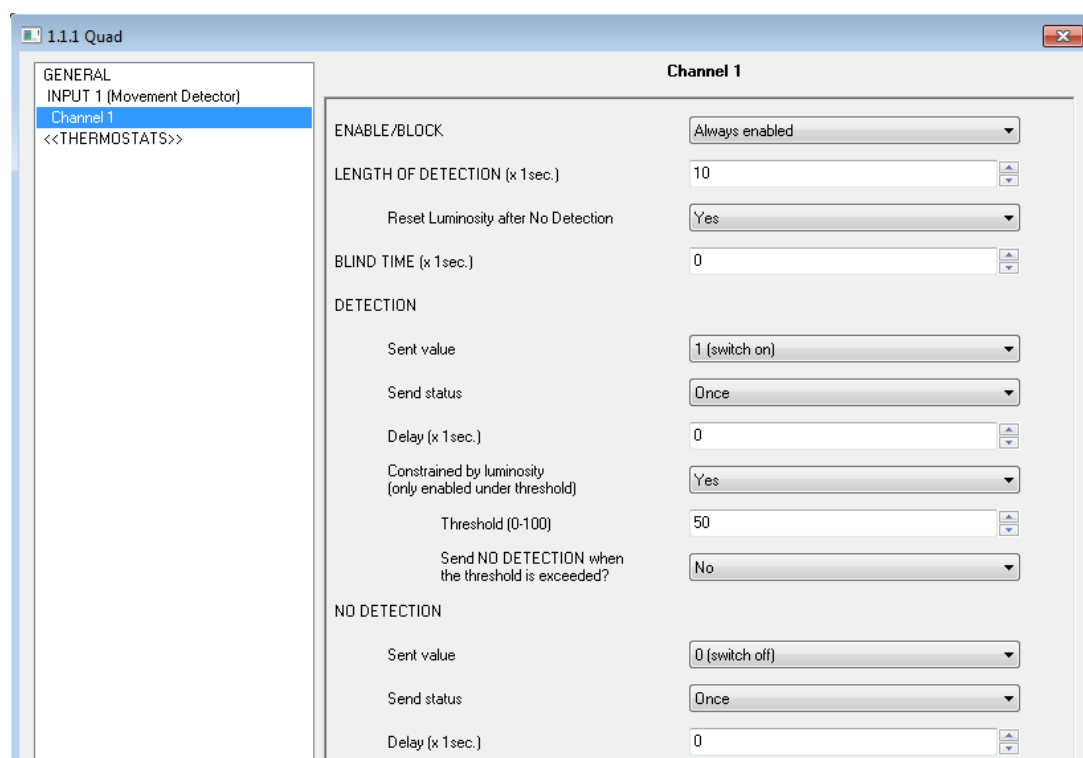
➤ **Constrained by luminosity:** if "Yes" is selected, the detection value sending only takes place when the luminosity level is under a predefined value (threshold):

- **Threshold:** value between 0 and 100 that establishes the luminosity level under which the detection value is sent to the bus. This threshold value must be set regarding the values received through the communication object "[Ix] Luminosity level" for different luminosity situations.
  - **Send No detection when threshold is exceeded?:** if luminosity level gets the threshold level when the sensor is in Detection status, No detection value will be sent to the bus if this option is enabled. This functioning may be useful when turning on/off the lighting in a room regarding the luminosity (and the movement). If No sending is selected, the channel will remain enabled meanwhile there is movement, although the luminosity level is above the threshold, and the No detection value will be sent when there is no movement at all.
-  **No detection:** in this section it is possible to configure different parameters related to the No detection status of the sensor connected to the input.
- **Sent value:** Nothing, 1 (switch on), 0 (switch off) or Scene.
  - **Send status:** Once or Cyclic. If the second option is selected, a sending period must be established.
  - **Delay:** set a delay, in seconds, to send the No detection value configured previously.

Next, an installation example is presented, in order to explain (in a technical way) the functioning of the parameter "**Reset Luminosity after No Detection**".

✓ *Example:*

*Suppose the first input of the QUAD is configured as Movement detector and the Zennio movement sensor is connected to it. The following configuration has been parameterized for Channel 1:*



*Suppose that in the room where the movement sensor is installed there is a light point, whose ON/OFF will be controlled depending on the detection statuses (according to the movement and luminosity level) that the Channel 1 sends.*

*The sensor starts monitoring and it detects a luminosity level equal to 20% (that is lower than the established threshold: 50%) so it sends, through the object "[I1][Ch.1] Detection Status" the value associated to Detection (in this case, the value "1"). This object is linked, via the same group address, to an object in charge of the ON/OFF control of the light point, configured to turn the light on when receiving the value "1" and to turn it off when receiving the value "0". So that, the light point will be turned on, thus making the room luminosity level rises. The movement sensor continues monitoring and once elapsed 10 seconds (time configured for the length of detection) and without detecting activity in the room (no one has entered or left the room, for example), the*

*channel sends, through the aforementioned object, the No Detection value (in this case, "0") thus making the light point to turn off and immediately resetting the luminosity value (0%).*

*This way, if in that concrete moment the sensor detects a movement, the Detection value ("1") will be sent through the status object to the KNX bus and the light point will be turned on again.*

*If the parameter Reset luminosity after No detection is disabled, in this case, after the No detection (after the 10 seconds of Length of detection) the luminosity level will not be reset to 0% and the sensor will take some time to send the updated luminosity status, so in that concrete moment a movement occurs in the room, this will not be detected, since the luminosity level would not be updated, it will be still in a No detection status.*



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