EyeZen TP v2

Motion detector with luminosity sensor for ceiling mounting

ZPDEZTPV2

USER MANUAL

Application program version: [1.5]
User manual edition: [1.5]_a

www.zennio.com

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1 INTRODUCTION

1.1 EYEZEN TP V2

EyeZen TP v2 from Zennio is a device that aims at, among other functions, the detection of motion, the measurement and control of the room luminosity and the detection of occupancy within the room where it has been installed. It has been designed for ceiling or false ceiling mounting by means of the bundled accessories.

The most outstanding features of EyeZen TP v2 are:

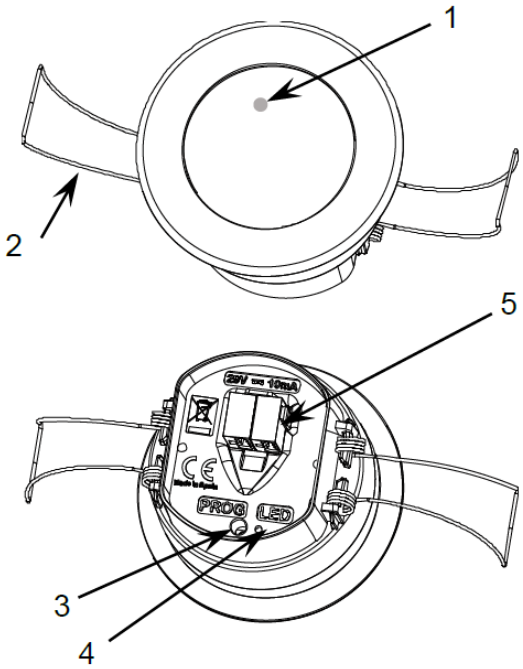
- **Sensor** with configurable sensitivity.
- **LED** to indicate motion.
- **Two colours of lenses:** white and black.
- **Motion detection**:
  - 6 motion detection channels.
  - Luminosity-dependent motion detection (optional).
  - Periodic and delayed sendings (binary, scene, HVAC, percentage).
- **Occupancy detection**:
  - 1x occupancy detection channel.
  - Master / slave configuration.
  - Trigger upon door opening or closing.
  - Periodic and delayed sendings (binary, scene, HVAC, percentage).
- **Luminosity measurement**:
  - Configurable correction factor and offset.
  - Periodic sending or upon value change.
- 2 **constant light control** channels with configurable setpoints.
- **Day / night** configuration.
- **10** customisable, multi-operation **logic functions**.
- **Heartbeat** or periodical “still alive” notification.

1.2 INSTALLATION

EyeZen TP v2 connects to the KNX bus through the on-board KNX connector.

Once the device is provided with power from the KNX bus, both the individual address and the associated application program may be downloaded.

This device does not need any additional external power since it is entirely powered through the KNX bus.



1. Detection LED indicator.
2. Retaining spring.
3. Test/Prog. button.
4. Test/Prog. LED.
5. KNX connector.

Figure 1. EyeZen TP v2. Elements

The main elements of the device are described next.

- **Programming button (3)**: a short press on this button sets the device into the programming mode, making the associated LED (4) light in red.

  Note: *if this button is held while plugging the device into the KNX bus, the device will enter the **safe mode**. In such case, the LED will blink in red every 0.5 seconds.*

- **Detection notification LED (1)**: emits a red light flash when the sensor observes motion.

To get detailed information about the technical features of this device, as well as on the installation process and on security procedures, please refer to the corresponding **Datasheet**, bundled with the original packaging of the device and also available at www.zennio.com.

1.3 START-UP AND POWER LOSS

During the start-up of the device, the detection notification LED flashes red for **one minute** before the motion sensor is ready.

Depending on the configuration, some specific actions will also be performed during the start-up. For example, the integrator can set whether the detection channels should start up enabled or disabled.

2 CONFIGURATION

2.1 GENERAL

After importing the corresponding database in ETS and adding the device into the topology of the desired project, the configuration process begins by entering the parameters tab of the device.

ETS PARAMETERISATION

From **General** screen it is possible to activate/deactivate all the required functionality.

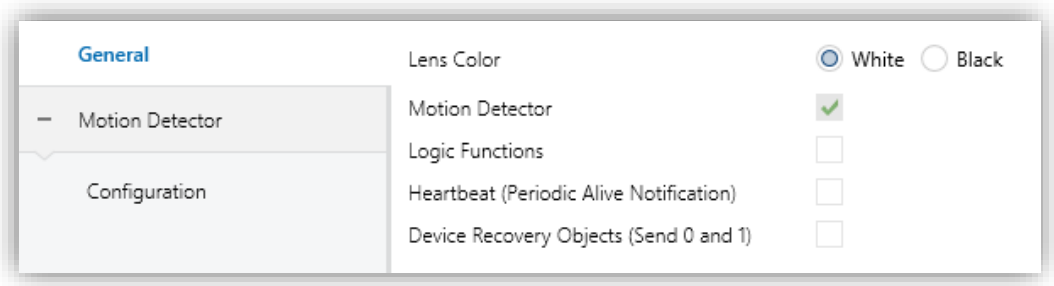


Figure 2. General

- **Lens Color** [*White / Black*][1]: parameter to select the lens colour that EyeZen TP v2 has installed, for correct sensor luminosity measurement.
- **Motion Detection** [*enabled*]: enables the "Motion Detector" tab in the tree on the left. For more information, see section 2.2.
- **Logic Functions** [*enabled/disabled*] enables or disables the "Logic Functions" tab in the tree on the left. For more information, see section 2.3.
- **Heartbeat (Periodic Alive Notification)** [*enabled/disabled*]: incorporates a one-bit object to the project ("**[Heartbeat] Object to Send '1'**") that will be sent periodically with a value of "1" to notify that the device is still working (still alive).

[1] The default values of each parameter will be highlighted in blue in this document, as follows: [*default/rest of options*].

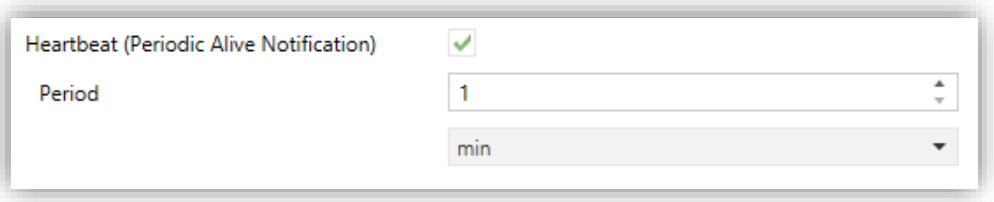


Figure 3. Heartbeat

Note: *the first sending after download or bus failure takes place with a delay of up to 255 seconds, to prevent bus overload. The following sendings match the period set*.

- **Device Recovery Objects (Send 0 and 1)** [*enabled/disabled*]: this parameter lets the integrator activate two new communication objects **("[Heartbeat] Device Recovery**"), which will be sent to the KNX bus with values "0" and "1" whenever the device begins operation (for example, after a bus power failure). It is possible to parameterise a certain **delay** [*0…255*][*s*] to this sending.

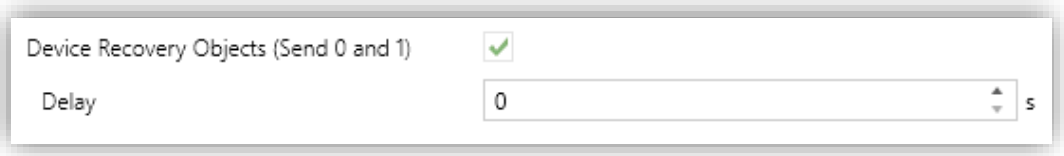


Figure 4. Device Recovery Objects

Note: *after download or bus failure, the sending takes place with a delay of up to 6,35 seconds plus the parameterised delay, to prevent bus overload.*

2.2 MOTION DETECTOR

EyeZen TP v2 incorporates six independent motion detection channels, two more for constant light control and one for occupancy detection.

- **Motion detection** consists in sending objects to the bus whenever the device observes a moving body (or no longer observes it) in the environment of the room where it has been installed.

- **Constant light control** consists in sending KNX orders to the dimmer device that controls the in-room luminaries so the ambient light level remains constant even if other light sources are present.

- **Occupancy detection** is an algorithm that allows determining whether a particular space is under occupation no matter if the occupant moves or not (i.e., no matter if the device is detecting motion in the room or not).

It also allows setting different luminosity setpoints or object types for **daytime and night time** as well as activating or deactivating the **motion indicator LEDs**.

EyeZen TP v2 can also set custom **sensitivity** of the motion sensor and measure the **luminosity** of the room by making certain adjustments. This measurement will be made according to the **color of lens** selected.

Please refer to the specific manual "**Presence Detector**" available in EyeZen TP v2 product section at the Zennio website (www.zennio.com) for detailed information about the functionality and the configuration of the related parameters. Please note that references to presence detection in this manual in this case correspond to motion detection.

2.3 LOGIC FUNCTIONS

This module makes it possible to perform numeric and binary operations to incoming values received from the KNX bus, and to send the results through other communication objects specifically enabled for this purpose.

EyeZen TP v2 can implement up to **10 different and independent functions**, each of them entirely customisable and consisting of **up to 4 consecutive operations**.

The execution of each function can depend on a configurable **condition**, which will be evaluated every time the function is **triggered** through specific, parameterisable communication objects. The result after executing the operations of the function can also be evaluated according to certain **conditions** and afterwards sent (or not) to the KNX bus, which can be done every time the function is executed, periodically or only when the result differs from the last one.

Please refer to the "**Logic Functions**" user manual available under the EyeZen TP v2 product section at the Zennio homepage (www.zennio.com) for detailed information about the functionality and the configuration of the related parameters.

ANNEX I. COMMUNICATION OBJECTS

- "**Functional range**" shows the values that, with independence of any other values permitted by the bus according to the object size, may be of any use or have a particular meaning because of the specifications or restrictions from both the KNX standard or the application program itself.

Number	Size	I/O	Flags	Data type (DPT)	Functional Range	Name	Function
1	1 Bit		C - - T -	DPT_Trigger	0/1	[Heartbeat] Object to Send '1'	Sending of '1' Periodically
2	1 Bit		C - - T -	DPT_Trigger	0/1	[Heartbeat] Device Recovery	Send 0
3	1 Bit		C - - T -	DPT_Trigger	0/1	[Heartbeat] Device Recovery	Send 1
4	1 Byte	I	C - W - -	DPT_SceneNumber	0 - 63	Scene Input	Scene Value
5	1 Byte		C - - T -	DPT_SceneControl	0-63; 128-191	Scene Output	Scene Value
6	2 Bytes	I/O	C R W - -	DPT_Coefficient	0 - 100	Correction Factor - Internal Sensor	[0, 80] x0.1
7	2 Bytes	I/O	C R W - -	1.xxx	0/1	Offset - Internal Sensor	[-200, 200] Luxes
8	2 Bytes	O	C R - T -	DPT_Value_Lux		Luminosity - Internal Sensor	Luxes
12	1 Bit	I	C - W - -	DPT_DayNight	0/1	Day/Night	0 = Day; 1 = Night
	1 Bit	I	C - W - -	DPT_DayNight	0/1	Day/Night	0 = Night; 1 = Day
13	1 Bit	I	C - W - -	DPT_Enable	0/1	Detection LED	0 = Disable; 1 = Enable
	1 Bit	I	C - W - -	DPT_Enable	0/1	Detection LED	0 = Disable; 1 = Enable Only During the Day
14	1 Bit	O	C R - T -	DPT_Switch	0/1	Occupancy: Output (Binary)	Binary Value
	1 Bit		C - - T -	DPT_Start	0/1	Occupancy: Slave Output	1 = Motion Detected
15	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	Occupancy: Output (Scaling)	0-100%
16	1 Byte	O	C R - T -	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	Occupancy: Output (HVAC)	Auto, Comfort, Standby, Economy, Building Protection
17	1 Bit	I	C - W - -	DPT_Window_Door	0/1	Occupancy: Trigger	Binary Value to Trigger the Occupancy Detection
18	1 Bit	I	C - W - -	DPT_Start	0/1	Occupancy: Slave Input	1 = Detection from slave device
19	2 Bytes	I	C - W - -	DPT_TimePeriodSec	0 - 65535	Occupancy: Waiting Time	0-65535 s.
20	2 Bytes	I	C - W - -	DPT_TimePeriodSec	0 - 65535	Occupancy: Listening Time	1-65535 s.
21	1 Bit	I	C - W - -	DPT_Enable	0/1	Occupancy: Lock	0 = Unlock; 1 = Lock
	1 Bit	I	C - W - -	DPT_Enable	0/1	Occupancy: Lock	0 = Lock; 1 = Unlock
22	1 Bit	O	C R - T -	DPT_Occupancy	0/1	Occupancy: Occupancy State	0 = Not Occupied; 1 = Occupied
23	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	Sensor Sensitivity	1-100%

27, 36, 45, 54, 63, 72	1 Bit	I	C - W - -	DPT_Start	0/1	[Cx] External Motion Detection	1 = Motion detected by an external sensor
28, 37, 46, 55, 64, 73	1 Bit	O	C R - T -	DPT_Switch	0/1	[Cx] Output (Binary)	Binary Value
29, 38, 47, 56, 65, 74	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[Cx] Output (Scaling)	0-100%
30, 39, 48, 57, 66, 75	1 Byte	O	C R - T -	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Cx] Output (HVAC)	Auto, Comfort, Standby, Economy, Building Protection
31, 40, 49, 58, 67, 76	1 Bit	I	C - W - -	DPT_Enable	0/1	[Cx] Lock Status	0 = Unlock; 1 = Lock
	1 Bit	I	C - W - -	DPT_Enable	0/1	[Cx] Lock Status	0 = Lock; 1 = Unlock
32, 41, 50, 59, 68, 77	1 Bit	I	C - W - -	DPT_Start	0/1	[Cx] Force State	0 = No Detection; 1 = Detection
33, 42, 51, 60, 69, 78	1 Bit	I	C - W - -	DPT_Start	0/1	[Cx] External Switch	0 = No Detection; 1 = Detection
34, 43, 52, 61, 70, 79	2 Bytes	I/O	C R W - -	DPT_TimePeriodSec	0 - 65535	[Cx] Length of Detection	1-65535 s.
81, 97	1 Bit	I	C - W - -	DPT_Start	0/1	[CLCx] External Motion Detection	1 = Motion detected by an external sensor
82, 98	1 Bit	I	C - W - -	DPT_Enable	0/1	[CLCx] Lock Status	0 = Unlock; 1 = Lock
	1 Bit	I	C - W - -	DPT_Enable	0/1	[CLCx] Lock Status	0 = Lock; 1 = Unlock
83, 99	1 Bit	I	C - W - -	DPT_Start	0/1	[CLCx] Force State	0 = No Detection; 1 = Detection
84, 100	1 Bit	I	C - W - -	DPT_Start	0/1	[CLCx] External Switch	0 = No Detection; 1 = Detection
85, 101	2 Bytes	I	C - W - -	DPT_Value_Lux		[CLCx] Setpoint	Setpoint Value (1-2000)
	2 Bytes	I	C - W - -	DPT_Value_Lux		[CLCx] Setpoint During Day	Setpoint Value (1-2000)
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[CLCx] Setpoint	Setpoint Value (1-100)%
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[CLCx] Setpoint During Day	Setpoint Value (1-100)%
86, 102	2 Bytes	I	C - W - -	DPT_Value_Lux		[CLCx] Setpoint During Night	Setpoint Value (1-2000)
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[CLCx] Setpoint During Night	Setpoint Value (1-100)%
87, 103	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[CLCx] Dimming Value	Dimming Value (%)
88, 104	2 Bytes	I/O	C R W - -	DPT_TimePeriodSec	0 - 65535	[CLCx] Length of Detection	1-65535 s.
90, 106	1 Bit	I	C - W - -	DPT_Switch	0/1	[CLCx] Manual Control: On/Off (Input)	1-Bit Control
91, 107	4 Bit	I	C - W - -	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[CLCx] Manual Control: Relative Dimming (Input)	4-Bit Control
92, 108	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[CLCx] Manual Control: Absolute Dimming (Input)	1-Byte Control
93, 109	1 Bit	O	C R - T -	DPT_Switch	0/1	[CLCx] Manual Control: On/Off (Output)	1-Bit Control

94, 110	4 Bit	O	C R - T -	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[CLCx] Manual Control: Relative Dimming (Output)	4-Bit Control
95, 111	1 Bit	I	C - W - -	DPT_Enable	0/1	[CLCx] Manual Control	0 = Disable; 1 = Enable
96, 112	1 Bit	O	C R - T -	DPT_Enable	0/1	[CLCx] Manual Control (Status)	0 = Disabled; 1 = Enabled
113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144	1 Bit	I	C - W - -	DPT_Bool	0/1	[LF] (1-Bit) Data Entry x	Binary Data Entry (0/1)
145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160	1 Byte	I	C - W - -	DPT_Value_1_Ucount	0 - 255	[LF] (1-Byte) Data Entry x	1-Byte Data Entry (0-255)
161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176	2 Bytes	I	C - W - -	DPT_Value_2_Ucount	0 - 65535	[LF] (2-Byte) Data Entry x	2-Byte Data Entry
177, 178, 179, 180, 181, 182, 183, 184	4 Bytes	I	C - W - -	DPT_Value_4_Count	-2147483648 - 2147483647	[LF] (4-Byte) Data Entry x	4-Byte Data Entry
185, 186, 187, 188, 189, 190, 191, 192, 193, 194	1 Bit	O	C R - T -	DPT_Bool	0/1	[LF] Function x - Result	(1-Bit) Boolean
	1 Byte	O	C R - T -	DPT_Value_1_Ucount	0 - 255	[LF] Function x - Result	(1-Byte) Unsigned
	2 Bytes	O	C R - T -	DPT_Value_2_Ucount	0 - 65535	[LF] Function x - Result	(2-Byte) Unsigned
	4 Bytes	O	C R - T -	DPT_Value_4_Count	-2147483648 - 2147483647	[LF] Function x - Result	(4-Byte) Signed
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[LF] Function x - Result	(1-Byte) Percentage
	2 Bytes	O	C R - T -	DPT_Value_2_Count	-32768 - 32767	[LF] Function x - Result	(2-Byte) Signed
	2 Bytes	O	C R - T -	9.xxx	-671088.64 - 670433.28	[LF] Function x - Result	(2-Byte) Float

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https://support.zennio.com

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