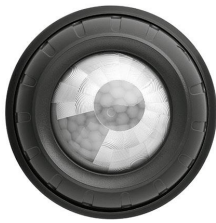


**PSensor SSI 31 2xPIR 8DP DG**

D4i motion and light sensor for street lighting



**Product description**

- \_ Monitoring of ambient light and occupancy detection
- \_ Integrated temperature measurement
- \_ 2 x PIR Sensor built-in enabling extended features like detecting objects with side orientation
- \_ Low energy consumption over DALI-2 bus supply
- \_ Ready for Zhaga Book 18 Ed. 3 receptacle for easy and flexible installation to luminaire
- \_ Rectangular detection area ideal for street applications
- \_ Pressure equalizing membrane built-in
- \_ D4i approved and fully compatible with DALI Part 351 including MB201
- \_ Lifetime up to 100,000 h at  $t_c = 60^\circ\text{C}$
- \_ 8 years guarantee in combination with Tridonic LED driver PRE3 (other case 5 years guarantee) (conditions at <https://www.tridonic.com/manufacture-guarantee-conditions>)

**Housing properties**

- \_ Casing: Dark grey (RAL 7040)
- \_ Type of protection up to IP66
- \_ Impact protection degree IK08 (lens excluded)

**Benefits**

- \_ Innovative: First DALI-2 asymmetric motion sensor based on Zhaga receptacle
- \_ Flexible: Individual adjustment of parameters with configuration software
- \_ Reliable: Highest outdoor requirements tested

**Typical applications**

- \_ Rectangular detection area ideal for street application at 4 to 8 m mounting height

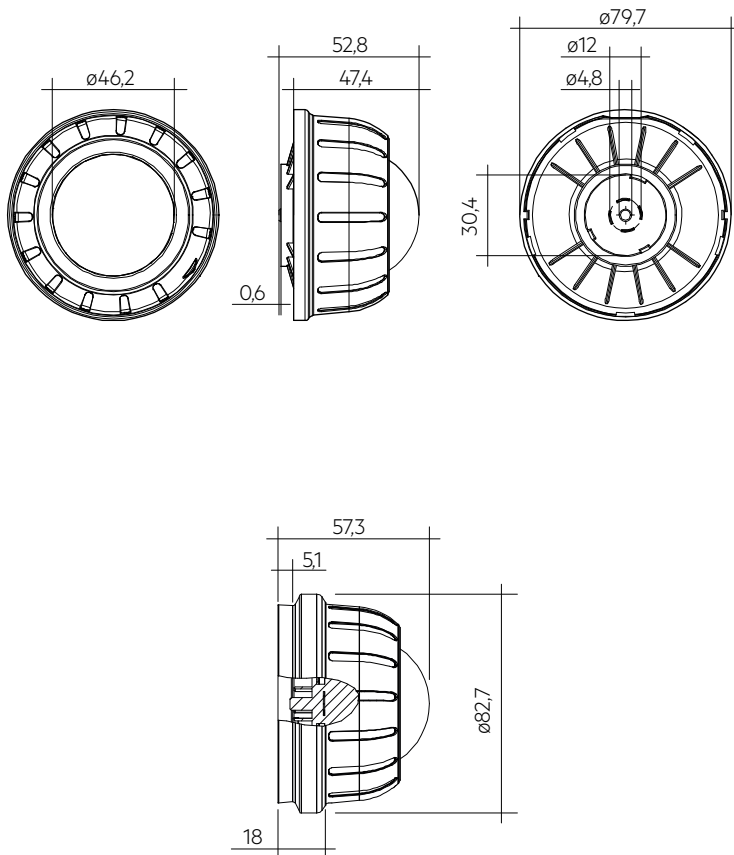
**Website**

<http://www.tridonic.com/28002642>



PSensor SSI 31 2xPIR 8DP DG

D4i motion and light sensor for street lighting



# Fagerhult Art No: 86514

## ZHAGA TYPE B PSENSOR PIR

### Technical data

|   |  |
|---|--|
| Sensor type   | Movement and light sensor, including 2 x PIR sensors |
| Supply via  | DALI   |
| Supply voltage <sup>①</sup>   | 9.5 – 22.5 V   |
| Current consumption (no LED)  | max. 7 mA  |
| Current consumption (with LED)  | max. 8.1 mA  |
| Starting time   | 30 s   |
| Supported operating modes   | 0 or 128 (default)                                   |
| Mounting height   | 4 – 8 m  |
| Mounting hole   | acc. to Zhaga Book 18 Ed. 3                          |
| Type of installation <sup>②</sup>   | Zhaga Book 18 Ed. 3 socket                           |
| Presence detection area at 6 m height   | 26 m x 12 m = 312 m <sup>2</sup>                     |
| Detection angle for light measurement   | 76°  |
| Detection range for light measurement <sup>③</sup>                                | 1 – 4,000 lx   |
| Temperature sensor built-in   | Yes  |
| Min. temperature difference between ambient temperature and detected object       | ± 4 °C   |
| Ambient temperature ta <sup>④</sup>   | -25 ... +50 °C                                       |
| tc point  | 60 °C  |
| Storage temperature ts  | -25 ... +60 °C                                       |
| Humidity  | 0 ... 90 %   |
| Dimensions Ø x H  | Ø 79.7 x 52.8 mm                                     |
| Diameter with dust and dirt protection  | Ø 82.7 mm  |
| Height with dust and dirt protection  | 57.3 mm  |
| Housing material body   | Lexan 923  |
| Housing material lens   | HDPE   |
| Housing <sup>⑤</sup>  | Dark grey (RAL 7040)                                 |
| Housing colour lens   | Transparent white                                    |
| Type of protection  | IP66   |
| Impact protection degree <sup>⑥</sup>   | IK08   |
| Lifetime  | 100,000 h  |
| Guarantee (conditions at <a href="http://www.tridonic.com">www.tridonic.com</a> ) | 5 Year(s)  |

### Approval marks



### Standards

EN 61347-2-11, EN 55015, EN 61000-3-2, EN 61000-3-3, EN 61547, EN 62386-101, EN 62386-103, EN 62386-303, EN 62386-304, EMC directive 2014/30/EC

① Uin acc. IEC 62386-101.

② Device must be installed on the bottom side of the luminaire.

③ The measured value at the sensor head corresponds to 20 – 90 % of the lux value measured on the surface located below the sensor.

④ Correct sensor operation can not be guaranteed if operated outside this ta window.

⑤ Technical colour specification = 7040, optical colour specification = 9007.

⑥ It is essential to mount the plug connection (AZU Z18 Set) and sensor correctly to achieve the full IK rating. These impact protection degree does not apply to the lens.

### 1. Standards

EN/IEC 61347-2-11:2001  
EN 55015:2013  
EN 61000-3-2:2014 Part 3-2  
EN 61000-3-3:2013 Part 3-3  
EN 61547:2009  
EN 62386-101 Ed.2  
EN 62386-103 Ed.1  
EN 62386-303  
EN 62386-304  
EMC directive 2014/30/EC

#### 1.1 DALI note



Sensor only applicable for DALI-2 installations according to EN 62386-101 Ed.2.

#### 1.2 D4i note

D4i luminaire-mounted control devices (part 351) = Type B

#### 1.3 Glow wire test

according to EN 61347-1 passed with 750 °C.

### 2. Common

The Tridonic PSensor SSI 31 2xPIR 8DP DG is one of the first motion sensor developed especially to fit perfectly in Urban Outdoor Applications. With its 2 PIR technology elements the PSensor allows a wide detection range of typical streets and supporting a coverage area at 8 m height of up to 35 m x 16 m = 560 m<sup>2</sup>. Furthermore the sensor with its 2 PIR elements provide a three area detection, supporting side orientation and heatmapping. An integrated temperature measurement allowing deeper analysis of ambient temperature surrounding the luminaire. The innovative platform design of the sensor enables easy plug and play by supporting the Zhaga Book 18 Ed. 3. The flexible mounting height from 4 – 8 m allows in addition a huge variation of use-cases to be covered. Next to its robust design and long lifetime the IP66 rating complement an excellent protection against harsh outdoor environment.

### 3. Installation

- The PSensor must not be connected to mains. It is supplied directly via the DALI power supply.
- DALI is not SELV. The installation instructions for mains voltage therefore apply.
- Please ensure that the detection ranges of the sensors do not overlap. This may have influence to the light measurement.
- When installed at another height than the recommended installation height, the presence sensor might show different characteristics. When mounted at a higher level, the sensitivity is reduced. If mounted at a lower level, the range is reduced.
- Heat sources located in the detection zone may cause incorrect presence detection.
- The triangular sign indicates the direction to the street (Zhaga y axis) when the sensor is locked in place.
- PSensor is developed to cover the mentioned detection area. Depending on the environment, sensor may also detect objects located outside the mentioned detection area.
- Correct sensor operation can not be guaranteed if operated outside his ta window.
- Make sure the sensor is mounted correctly and locked in place.
- Motions of the pole may trigger the sensor.
- The detection range can be reduced if the sensor is mounted too close to the pole.
- Sensor may be triggered by nearby trees, branches or smaller animals.
- Min. temperature difference between ambient temperature and detected object is  $\pm 4^{\circ}\text{C}$ . Objects inside this window may not be detected by the sensor.
- Avoid direct illumination of the light source on the sensor including housing.

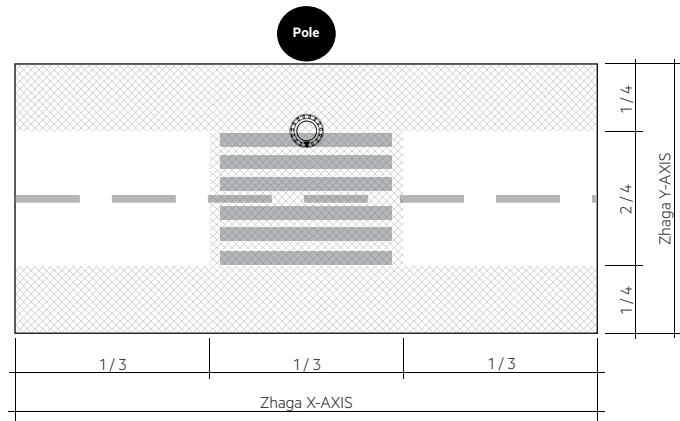
# Fagerhult Art No: 86514 ZHAGA TYPE B PSENSOR PIR


## 4. Sensor function

### 4.1 Motion detection

PSensor is designed to be used in urban street lighting application. The sensor lens is designed for 0 degrees tilt, parallel to the road surface. The motion sensor detects a moving object with different surface temperature compared to the background (mainly pedestrians). The PIR technology is used, covering a rectangular area (part of a street).

Overview of sensitivity areas:

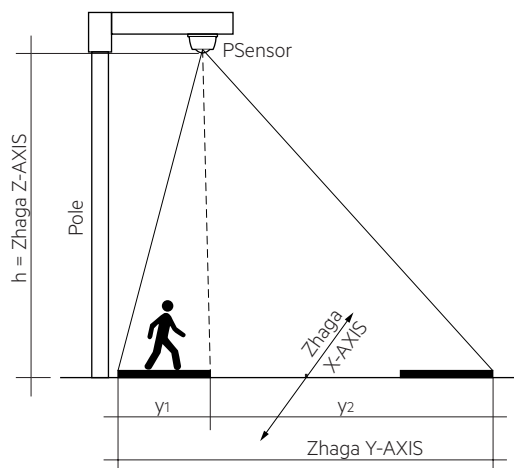


 The full detection area is rectangular, the highlighted area is optimized for detection of pedestrians. The detection area is not sharp-edged but runs smoothly over the marked borders.

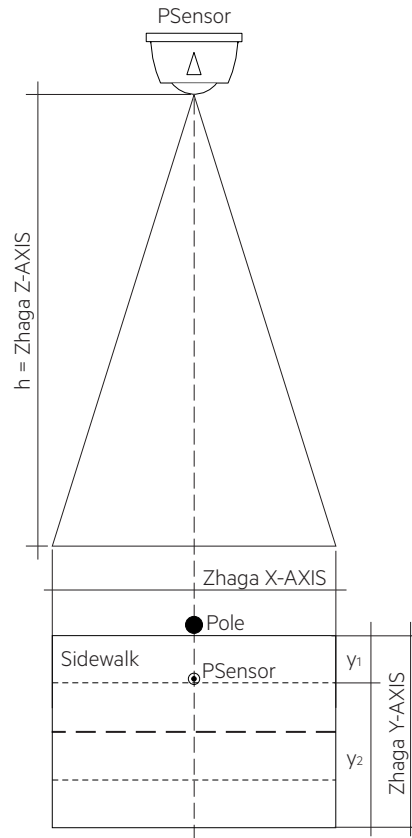
Sensitivity of the sensor can be matched via Application-Controller.

### 4.2 Motion detection area

The triangular sign indicates the direction to the street (Zhaga y axis) when the sensor is locked in place.



The detection range area  $y_1$  can be reduced if the sensor is mounted too close to the pole.

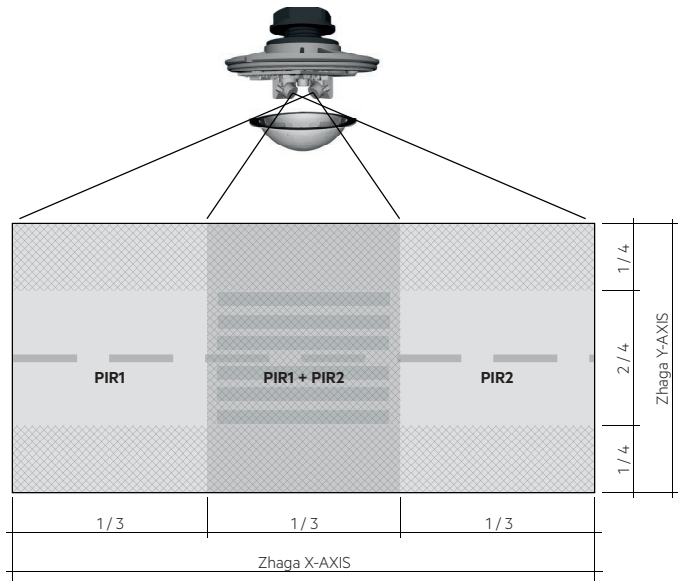


| Height | Detection area |      |       |        | Covered area       |
|--------|----------------|------|-------|--------|--------------------|
|        | x              | y    | $y_1$ | $y_2$  |                    |
| 4.0 m  | 17.0 m         | 8 m  | 2.0 m | 6.0 m  | 136 m <sup>2</sup> |
| 4.5 m  | 19.3 m         | 9 m  | 2.3 m | 6.8 m  | 173 m <sup>2</sup> |
| 5.0 m  | 21.5 m         | 10 m | 2.5 m | 7.5 m  | 215 m <sup>2</sup> |
| 5.5 m  | 23.8 m         | 11 m | 2.8 m | 8.3 m  | 261 m <sup>2</sup> |
| 6.0 m  | 26.0 m         | 12 m | 3.0 m | 9.0 m  | 312 m <sup>2</sup> |
| 6.5 m  | 28.3 m         | 13 m | 3.3 m | 9.8 m  | 367 m <sup>2</sup> |
| 7.0 m  | 30.5 m         | 14 m | 3.5 m | 10.5 m | 427 m <sup>2</sup> |
| 7.5 m  | 32.8 m         | 15 m | 3.8 m | 11.3 m | 491 m <sup>2</sup> |
| 8.0 m  | 35.0 m         | 16 m | 4.0 m | 12.0 m | 560 m <sup>2</sup> |

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## 4.3 Direction based presence detection

The 2 PIR technology allows direction based presence detection.



To be able to use this feature the right instance has to be queried and calculated by the Application-Controller.

Following table shows the instances and which values they provide.

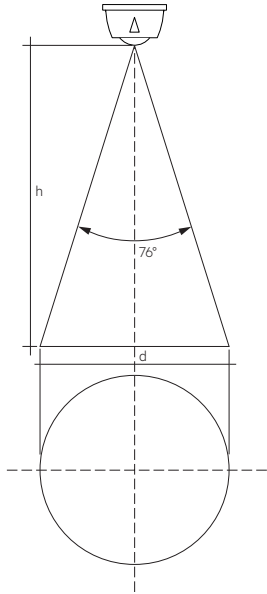
| DALI instances  |                                   |
|-----------------|-----------------------------------|
| Instance number | Explanation                       |
| 0               | OR-conjunction of PIR 1 and PIR 2 |
| 1               | PIR 1 only                        |
| 2               | PIR 2 only                        |
| 3               | Light sensor                      |

## 4.3 Light measurement

The light measurement is detected in an angle of 76°.

The light sensor is located behind the sensor lens, for that reason, the sensor is not sufficient to be used for constant light control.

The triangular sign indicates the direction to the street (Zhaga y axis) when the sensor is locked in place.



| Height | Detection area | Covered area       |
|--------|----------------|--------------------|
| h      | d              | -                  |
| 4.0 m  | 6.2 m          | 31 m <sup>2</sup>  |
| 4.5 m  | 7.0 m          | 39 m <sup>2</sup>  |
| 5.0 m  | 7.8 m          | 48 m <sup>2</sup>  |
| 5.5 m  | 8.6 m          | 58 m <sup>2</sup>  |
| 6.0 m  | 9.4 m          | 69 m <sup>2</sup>  |
| 6.5 m  | 10.2 m         | 81 m <sup>2</sup>  |
| 7.0 m  | 10.9 m         | 94 m <sup>2</sup>  |
| 7.5 m  | 11.7 m         | 108 m <sup>2</sup> |
| 8.0 m  | 12.5 m         | 123 m <sup>2</sup> |

## 4.3.1 Light value format

The default operating mode is 128.

In this mode the user is able to choose from fixed point and floating point values for the light measurement. The default setting are floating point values.

In addition to operation mode 128 also operating mode 0 is implemented.

In operating mode 0 the fixed point values are supported for the light measurement values.

Resolution for fixed point and floating point = 1/64 Lux

The measurement range is between 1 and 4,000 lx.

Measured at the sensor head.



To be able to measure values < 5 lx in an accurate way it is needed to set integration time of light sensor to 800 ms or more. 800 ms is the default value for this sensor.

For values > 5 lx integration time can be set below 800 ms.

## 4.4 Status LED

There is a LED built in to indicate different status information to the user.

| Event                          | Blinking sequence  | LED Color |
|--------------------------------|--|-----------|
| DALI command „identify device“ | 500 ms on / 500 ms off for 10 s  | Red       |
| Powering the sensor            | The LED in the sensor flashes for 5 s with a 500 ms pulse duration to signal the installer that the sensor is ready for use.     | Green     |
| Motion detection <sup>①</sup>  | Default deactivated but can be activated by the application controller.<br>If active, 1,000 ms on every time Motion is detected. | Red       |

Light measurement priority

① By default, these blinking patterns are interrupted by the light measurement, because the light measurement has a higher priority.

This behavior can be changed via the application controller, i.e. it can be configured that the blinking patterns are carried out, regardless of an ongoing light measurement. Consequently, the accuracy of the light measurement will become worse, because the brightness of the LED distorts the measurement.

## 4.5 Temperature sensor

The sensor is typically located below a luminaire and almost no self heating appears the temperatures measured by the sensor are quite similar to the ambient temperature (ta).

The sensor stores the max., min. and mean value of all measurements.

## 5. Miscellaneous

### 5.1 Disposal of equipment



Return old devices in accordance with the WEEE directive to suitable recycling facilities.