TRIDONIC

MSensor SFI 40 PIR 5DP bDW

Casambi Ready wireless sensor

Sensor without cover

Cover Zhaga 20, 44.2x17.2 mm

Sensor with cover Zhaga 20, 44.2x17.2 mm

Product description

_ Can be integrated in Casambi systems (Casambi Ready)
_ Wireless controllable with an Android / iOS smart device
_ Forms automatically a wireless communication network with up to 250 nodes
_ Digital output to control IEC 62386 compatible drivers
_ Supplied via IEC 62386 compatible power supply
_ Integrated motion and light sensor
_ Zhaga Book 20 compatible with optional accessory
_ Additional mounting from the outside possible
_ Wireless firmware updates possible
_ Defined antenna position outside the luminaire body enables optimal radio distribution
_ Lifetime up to 50,000 h at tc = 60 °C
_ 5 years guarantee (conditions at https://www.tridonic.com/en/int/services/manufacturer-guarantee-conditions)
_ We will provide security updates for the next five years after the date of purchase of this product

Housing properties

_ Casing: polycarbonate, black or white
_ Type of protection IP20

Typical applications

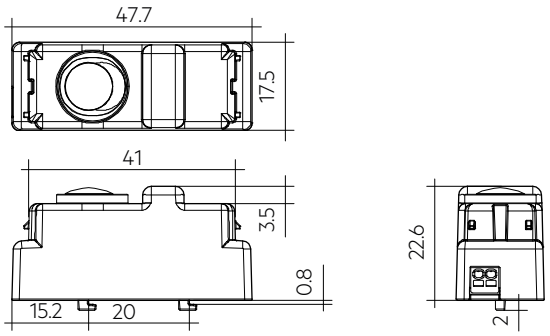
_ Indoor luminaire in-built

Website

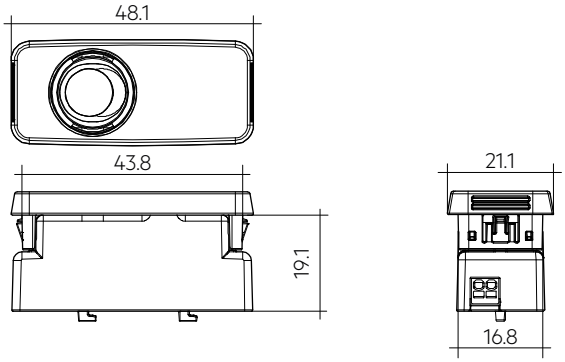
http://www.tridonic.com/28004244

MSensor SFI 40 PIR 5DP bDW

Casambi Ready wireless sensor



Sensor without cover



Sensor with cover

Ordering data

Type	Article number	Packaging, carton	Weight per pc.
MSensor SFI 40 PIR 5DP bDW BK	**28004244**	15 pc(s).	0.016 kg
MSensor SFI 40 PIR 5DP bDW WH	**28004245**	15 pc(s).	0.016 kg

Technical data

Sensor type	PIR sensor
Supply voltage ①	9.5 – 22.5 V
Current draw	9 mA (30 mA at start)
Typ. power consumption ②	0.13 W
Mounting height	5 m
Mounting hole	See mounting variants in data sheet
Type of installation	Zhaga Book 20
Max. cable length	2 m
Detection angle for PIR detection	84°
Detection angle for light measurement ③	30° – 60°
Detection range for light measurement	10 – 2,000 lx
Min. temperature difference between ambient temperature and detected object	± 4 °C
Radio transceiver operating frequencies	2.4 – 2.483 GHz
Max. output power radio transceiver (E.I. R.P.) ④	< + 20 dBm
Radio protocol	Bluetooth 4.0
Capable for mesh network	Up to 250 nodes
Interface	Digital interface according to IEC 62386
Ambient temperature ta	-20 … +50 °C
tc point	60 °C
Storage temperature ts	-20 … +60 °C
Dimensions L x W x H	48.1 x 21.1 x 25.8 mm
Housing material body	Polycarbonate
Type of protection	IP20
Lifetime	up to 50,000 h
Guarantee (conditions at www.tridonic.com)	5 Year(s)

Approval marks

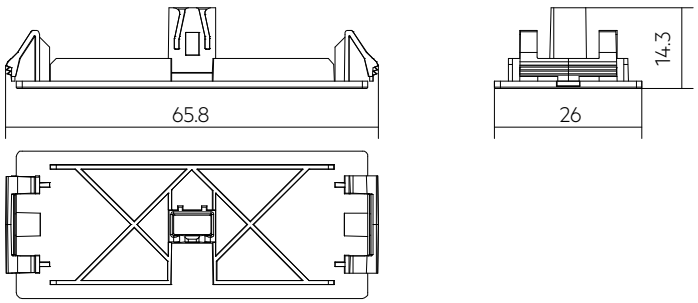
Standards

EN 55015, EN 61347-1, EN 61347-2-11, EN 61547, EN 62311, EN 62493, ETSI EN 300 328, ETSI EN 301 489-1, ETSI EN 301 489-17

① Use only IEC 62386 compatible power supply.
② At 16 V supply voltage.
③ The measured value at the sensor head corresponds to approx. 30 to 6,300 lux on the surface measured.
④ E.I.R.P.: Equivalent Isotropically Radiated Power.

ACU BLIND COVER 60x22mm

Accessory



Interfaces

_ Plastic mounting accessories in white and black color: BLIND COVER 60 x 22 mm and MOUNTING ADAPTER 60 x 22 mm
_ Fit to 60 x 22 mm Zhaga Book 20 cut out
_ The BLIND COVER has a holder for luminaire plug connector LEX-LP according to Zhaga Book 20 standard
_ MOUNTING ADAPTER 60 x 22 mm establish possibility to install a shutter for preventing occupancy detection

Housing properties

_ Casing: polycarbonate, black or white
_ Type of protection IP20

Benefits

_ Used for sensor integration to any lighting fixture which comply with Zhaga Book 20 standard
_ Simple retrofitting thanks to the option of mounting the sensor in the luminaire from the outside
_ No tools required for installation
_ Possibility to remove BLIND COVER 60 x 22 mm and MOUNTING ADAPTER 60 x 22 mm without opening of the lighting fixture

Website

http://www.tridonic.com/28005056

Ordering data

Type	Article number	Packaging, bag	Packaging, carton	Weight per pc.
ACU BLIND COVER 040 60x22 WH	**28005056**	10 pc(s).	100 pc(s).	0.004 kg
ACU BLIND COVER 040 60x22 BK	**28005057**	10 pc(s).	100 pc(s).	0.004 kg

ACU BLIND COVER 040 60x22 LED

Accessory

Interfaces

_ Plastic mounting accessories in white and black color: BLIND COVER 60 x 22 mm and MOUNTING ADAPTER 60 x 22 mm
_ Fit to 60 x 22 mm Zhaga Book 20 cut out
_ With hole for emergency light status LED (EM LED is not included and must be ordered separately - 28005763 & 28005769)
_ Special mounting bracket for EM LED fixation is included in the packaging
_ The BLIND COVER has a holder for luminaire plug connector LEX-LP according to Zhaga Book 20 standard
_ MOUNTING ADAPTER 60 x 22 mm establish possibility to install a shutter for preventing occupancy detection

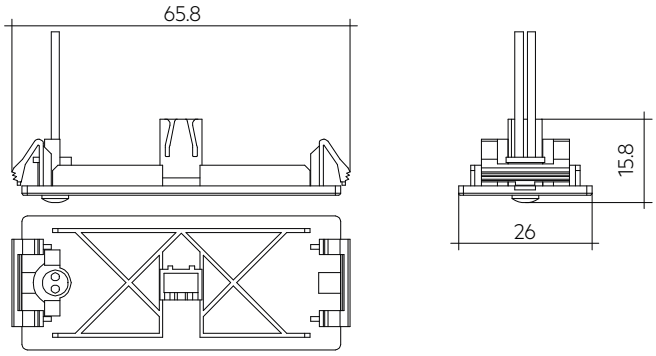
Housing properties

_ Casing: polycarbonate, black or white
_ Type of protection IP20

Benefits

_ Used for sensor integration to any lighting fixture which comply with Zhaga Book 20 standard
_ Simple retrofitting thanks to the option of mounting the sensor in the luminaire from the outside (not possible for 28001538 smartSWITCH 5DP 14f there the lighting fixture must be opened)
_ No tools required for installation
_ Possibility to remove BLIND COVER 60 x 22 mm and MOUNTING ADAPTER 60 x 22 mm without opening of the lighting fixture

Website
http://www.tridonic.com/28005935

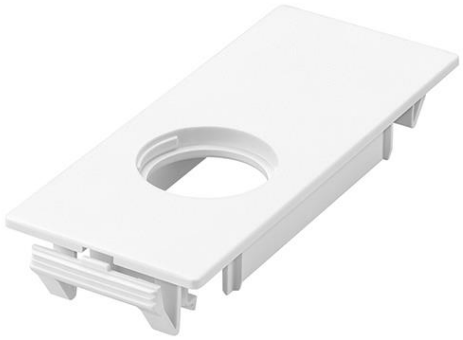


Ordering data

Type	Article number	Packaging, bag	Packaging, carton	Weight per pc.
ACU BLIND COVER 60x22 LED 1.3 WH	**28005935**	10 pc(s).	100 pc(s).	0.005 kg
ACU BLIND COVER 60x22 LED 1.3 BK	**28005936**	10 pc(s).	100 pc(s).	0.005 kg

ACU MOUNTING ADAPTER 60x22mm

Accessory



Interfaces

_ Plastic mounting accessories in white and black color: BLIND COVER 60 x 22 mm and MOUNTING ADAPTER 60 x 22 mm
_ Fit to 60 x 22 mm Zhaga Book 20 cut out
_ The BLIND COVER has a holder for luminaire plug connector LEX-LP according to Zhaga Book 20 standard
_ MOUNTING ADAPTER 60 x 22 mm establish possibility to install a shutter for preventing occupancy detection

Housing properties

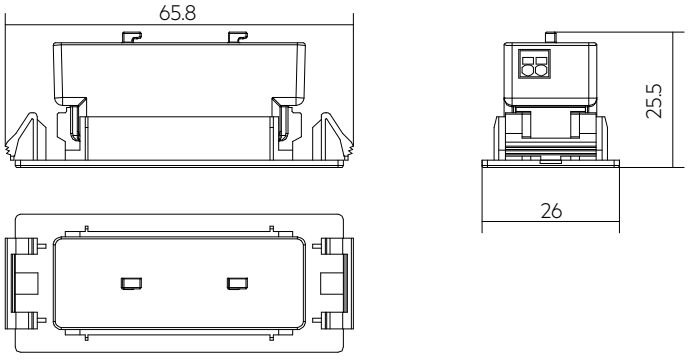
_ Casing: polycarbonate, black or white
_ Type of protection IP20

Benefits

_ Used for sensor integration to any lighting fixture which comply with Zhaga Book 20 standard
_ Simple retrofitting thanks to the option of mounting the sensor in the luminaire from the outside
_ No tools required for installation
_ Possibility to remove BLIND COVER 60 x 22 mm and MOUNTING ADAPTER 60 x 22 mm without opening of the lighting fixture

Website

http://www.tridonic.com/28005054



Ordering data

Type	Article number	Packaging, bag	Packaging, carton	Weight per pc.
ACU MOUNTING ADAPTER 040 60x22 WH	28005054	10 pc(s).	100 pc(s).	0.005 kg
ACU MOUNTING ADAPTER 040 60x22 BK	28005055	10 pc(s).	100 pc(s).	0.004 kg

ACU MOUNTING ADAPTER 040 60x22 LED

Accessory

Interfaces

_ Plastic mounting accessories in white and black color: BLIND COVER 60 x 22 mm and MOUNTING ADAPTER 60 x 22 mm
_ Fit to 60 x 22 mm Zhaga Book 20 cut out
_ With hole for emergency light status LED (EM LED is not included and must be ordered separately - 28005763 & 28005769)
_ Special mounting bracket for EM LED fixation is included in the packaging
_ The BLIND COVER has a holder for luminaire plug connector LEX-LP according to Zhaga Book 20 standard
_ MOUNTING ADAPTER 60 x 22 mm establish possibility to install a shutter for preventing occupancy detection

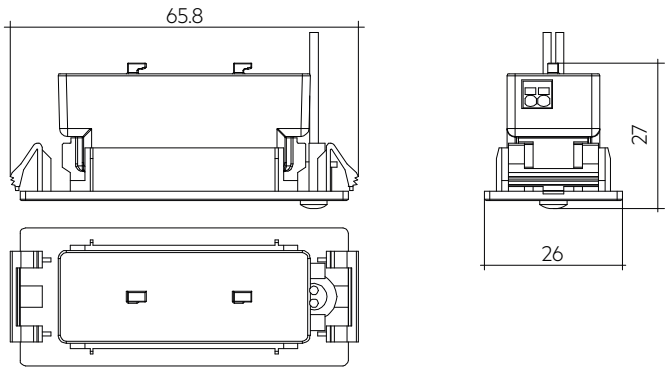
Housing properties

_ Casing: polycarbonate, black or white
_ Type of protection IP20

Benefits

_ Used for sensor integration to any lighting fixture which comply with Zhaga Book 20 standard
_ Simple retrofitting thanks to the option of mounting the sensor in the luminaire from the outside (not possible for 28001538 smartSWITCH 5DP 14f there the lighting fixture must be opened)
_ No tools required for installation
_ Possibility to remove BLIND COVER 60 x 22 mm and MOUNTING ADAPTER 60 x 22 mm without opening of the lighting fixture

Website
http://www.tridonic.com/28005937



Ordering data

Type	Article number	Packaging, bag	Packaging, carton	Weight per pc.
ACU MOUNTING ADAPTER 60x22 LED 1.3 WH	**28005937**	10 pc(s).	100 pc(s).	0.005 kg
ACU MOUNTING ADAPTER 60x22 LED 1.3 BK	**28005938**	10 pc(s).	100 pc(s).	0.005 kg

ACU 034 Z20 LEX-MR 150mm

Accessory

Product description
_ LEX-MR is optional accessory suporting the Zhaga 20 standard
_ Responding luminaire plug LEX-LP available from Amphenol Benelux to be specified by lighting OEM's depending on specific fixture design:
_ FLM-S23-00, FLM-S23-W0
_ P-FLM-S21-00, P-FLM-S21-W0
_ Further information:
https://www.zhagastandard.org/products.html, product (zhagastandard.org) and supplier information:
https://www.amphenol-cs.com/product-series/zhaga-book-20-compliant-flm.html

Interfaces
_ Supplies Zhaga Book 20

Website
http://www.tridonic.com/28004616

Ordering data

Type	Article number	Packaging, bag	Packaging, carton	Weight per pc.
ACU 034 Z20 LEX-MR 150mm	**28004616**	100 pc(s).	2,000 pc(s).	0.002 kg

1. Standards

EN 55015
EN 61347-1
EN 61347-2-11
EN 61547
EN 62311
EN 62493
ETSI EN 300 328
ETSI EN 301 489-1
ETSI EN 301 489-17

1.1 Glow wire test

according to EN 61347-1 with increased temperature of 850 °C passed.

2. Common

2.1 Description

The MSensor SFI 40 PIR 5DP bDW is one of the new generation of Tridonic Bluetooth sensors.
With this Sensor, the customer gets a small sized wireless sensor for low height applications and a protection against environmental influence up to IP20.

This sensor provides measurement of ambient light, occupancy detection via PIR sensor.
MSensor SFI 40 PIR 5DP bDW is created for following main applications:
Low height buildings such as
- Corridors, passages und Garages
- Office buildings

The sensor is powered by a IEC 62386 compatible power supply.

The sensor can be connected to one or more IEC 62386 compatible drivers, also in combination with a XC G3.
The built-in sensors make it easy to integrate daylight control and motion detection.

All basicDIM Wireless devices can be controlled with the Tridonic app “4remote BT“. The app can be downloaded free of charge from the Apple App Store and Google Play Store.

2.2 Operation

The MSensor SFI 40 PIR 5DP bDW is fully compatible with networks which support up to 250 nodes (Evolution networks).
If the sensor is used with different types of basicDIM Wireless devices in an Evolution network, their compatibility has to be checked before.

Multiple devices automatically form a mesh network that can be controlled from any point. These networks communicate wirelessly directly with the smartphone or tablet. Therefore, an external gateway or wireless LAN network is not needed.

basicDIM Wireless devices have an integrated 2.4 GHz antenna.
For optimum RF-performance, a special attention will have to be given when the device is integrated into a luminaire.
See chapter 6.5 Placement for further instructions.

basicDIM Wireless devices can be used very flexible for different use cases.
The operating modes (profiles) can be changed in the 4remote BT app.

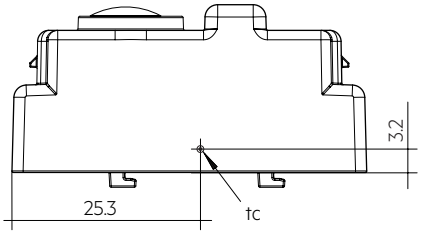
3. Thermal details and lifetime

3.1 Expected lifetime

Expected lifetime

Type	**ta**	**50 °C**
MSensor SFI 40 PIR 5DP bDW	tc	60 °C
	Lifetime	50,000 h

The device is designed for a lifetime stated above under reference conditions and with a failure probability of less than 10 %.



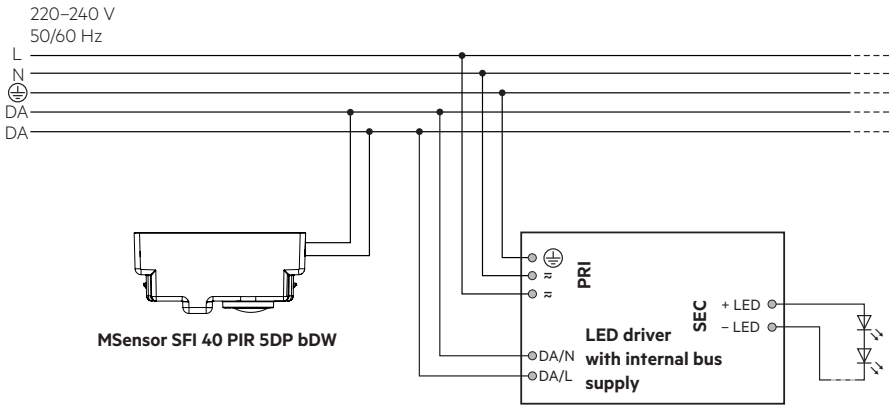
4. Interfaces / communication

4.1 Digital output

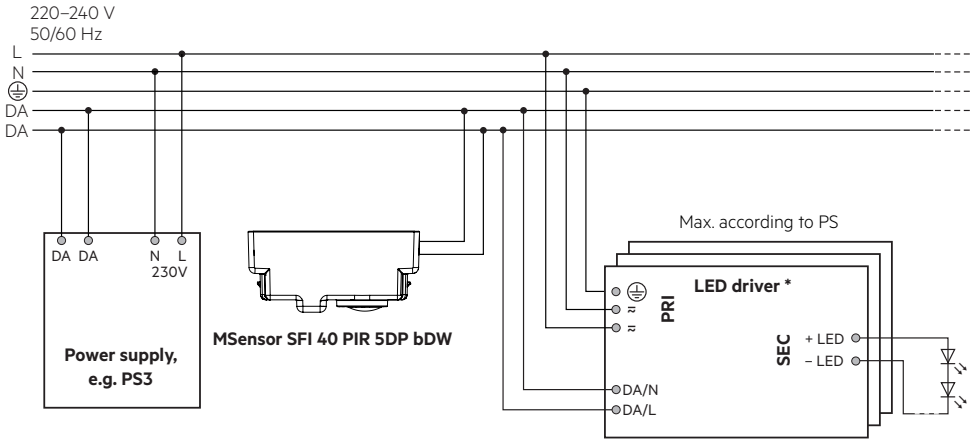
The MSensor SFI 40 PIR 5DP bDW draws its operating power directly from the bus. Ensure the supply of the external bus with a IEC 62386 compatible power supply.

5. Installation / wiring

5.1 Wiring diagram with an internal bus supply



5.2 Wiring diagram with an external bus supply



* Max. 4 single / group addresses (A0 … A3 / G0 … G3) controllable,
depending on the device profile of the basicDIM Wireless sensor.
The rest of the connected drivers can be controlled via broadcast – depending on the device profile.

6. Installation

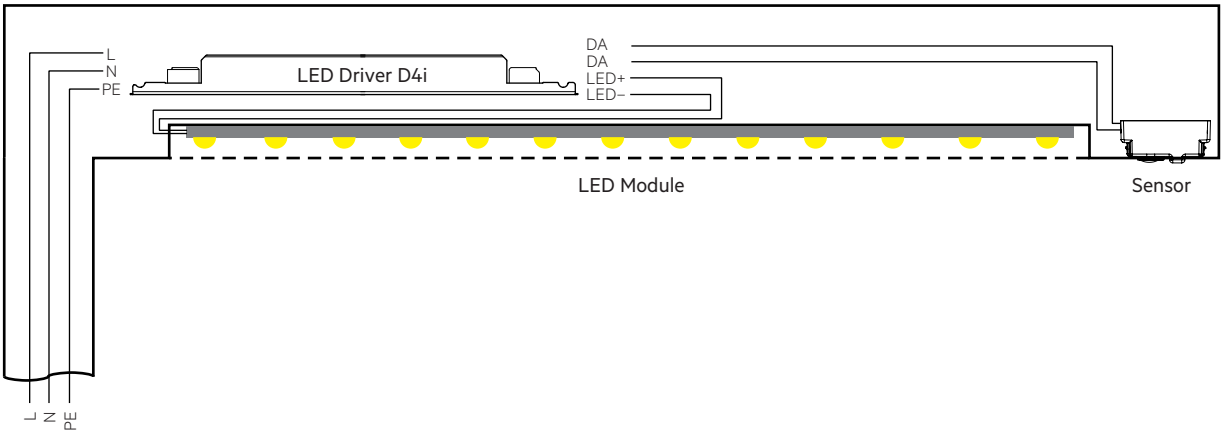
It is supplied directly via the bus.

- The digital interface is not SELV.
  The installation instructions for mains voltage therefore apply.
- For a correct MSensor SFI 40 PIR 5DP bDW operation use the device only within the ta window.
- Ensure correct assembly of the MSensor SFI 40 PIR 5DP bDW.
- Other RF signals may cause disturbances to the MSensor SFI 40 PIR 5DP bDW communication.
- Avoid direct illumination of light source on sensor housing.
- Please ensure that the detection range of the sensor lies in the lighting area of the controlled luminaires.
- Please ensure that the detection ranges of the sensors do not overlap. This may have influence to the lighting control.
- When installed at a height other than the recommended installation height, the sensor might show different characteristics.
  When mounted at a higher level, its sensitivity is reduced.
  If mounted at a lower level, its range is reduced.
- Heaters, fans, printers and copiers located in the detection zone may cause incorrect occupancy detection.
- Avoid direct illumination of the light source on the sensor including housing.
- When using the black sensor, the gain value of the sensor must be set to „Black Housing“ in the 4remoteAPP BT for optimum measurement accuracy, „White Housing“ is the default setting.

System overview:

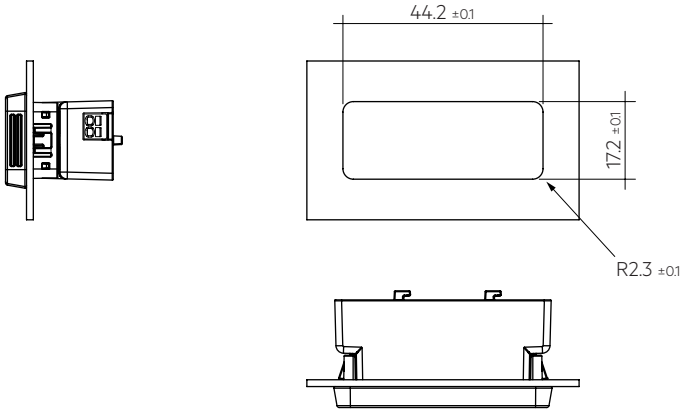
The MSensor SFI 40 PIR 5DP bDW is optimized to be used in combination with Tridonic LED driver PRE3 with internal power supply.
The following illustration visualizes the wiring of the components inside the luminaire.

Maximum allowed wire-length for the bus is 2 m.

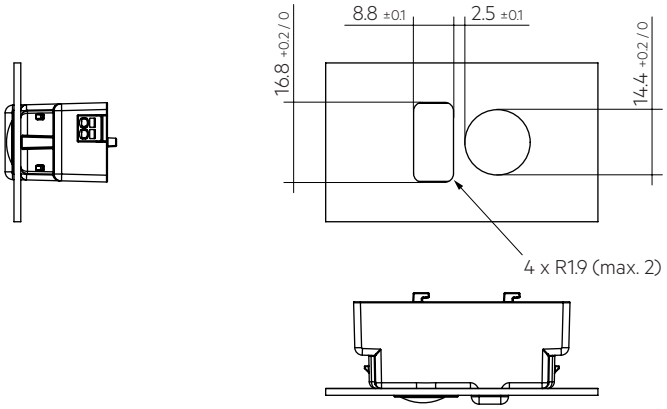


6.1 Mounting variants luminaire installation sensor

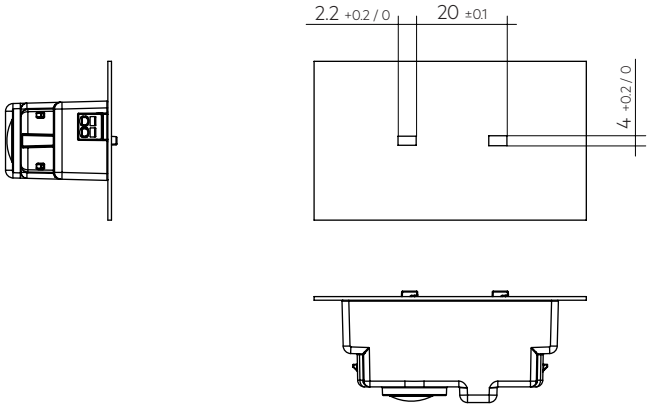
Variant 1 acc. to Zhaga Book 20, 44.2x17.2 mm:
Size of the sheet: 0.4 – 1.5 mm



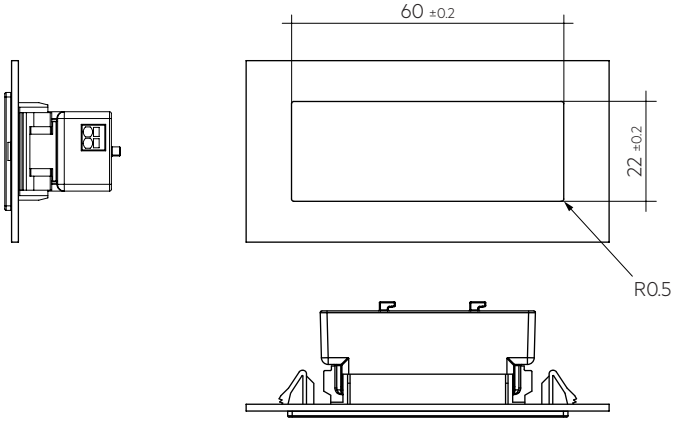
Variant 3, min. cutout:
Size of the sheet: 0.4 – 1.5 mm



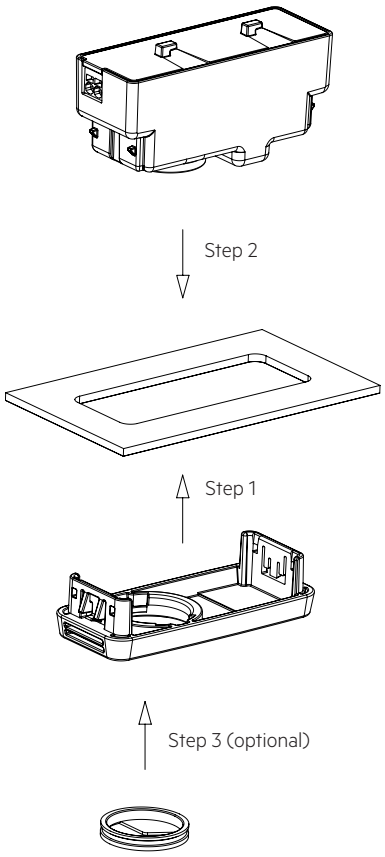
Variant 2 with brackets:
Size of the sheet: 0.8 mm



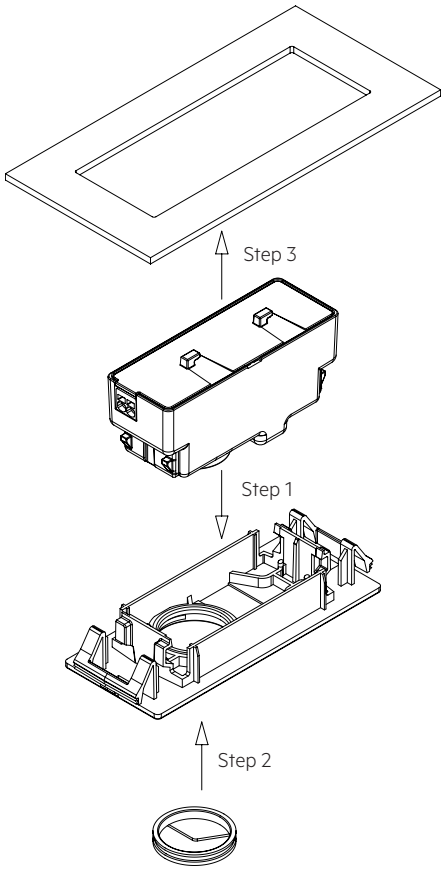
Variant 2 acc. to Zhaga Book 20, 60x22 mm:
Size of the sheet: 0.4 – 1.5 mm



6.2 Mounting Version 1 acc. to Zhaga Book 20, 44.2x17.2 mm

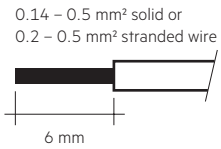


6.3 Mounting Version 2 acc. to Zhaga Book 20, 60x22 mm



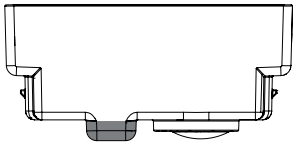
6.4 Wiring type and cross section

For wiring use stranded wire with ferrules from 0.2 to 0.5 mm² or solid wire from 0.14 to 0.5 mm².



6.5 Placement

basicDIM Wireless devices have an integrated antenna for easy integration. In order to maximize the range in every direction some design guidelines should be taken into consideration when mounting the device.
The optimal position of the antenna is determined by the design of the unit. Nevertheless, the underside of the sensor must not be covered by metal.



■ Antenna location

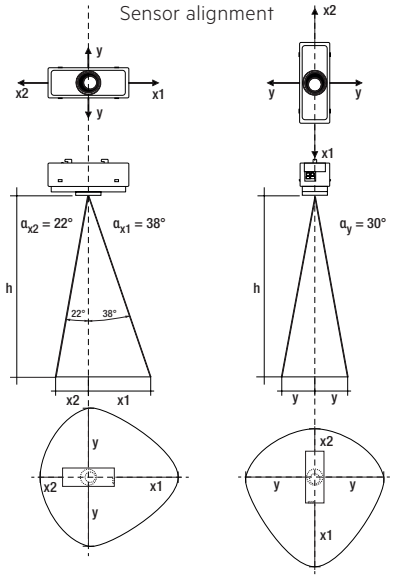
The range of the communication signal is depending on the environment e.g. luminaire, construction of the building, furnitures or humans and needs to be tested and approved in the installation.

To ensure a good radio connection, do not cover the basicDIM Wireless sensor completely with metal!

7. Light level recognition area

The measurement range is between 10 and 2000 lx.
Measured at the sensor head.

Sensor alignment



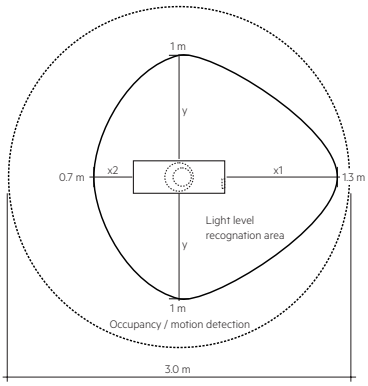
h *	x1	x2	y	d
1.7 m	1.3 m	0.7 m	1.0 m	3.0 m
2.0 m	1.6 m	0.8 m	1.2 m	3.6 m
2.3 m	1.8 m	0.9 m	1.3 m	4.1 m
2.5 m	2.0 m	1.0 m	1.4 m	4.5 m
2.7 m	2.1 m	1.1 m	1.6 m	4.9 m
3.0 m	2.3 m	1.2 m	1.7 m	5.4 m
3.5 m	2.7 m	1.4 m	2.0 m	6.3 m
4.0 m	3.1 m	1.6 m	2.3 m	7.2 m

* The recommended maximum room height for office applications is 3 m and for corridor applications for example 4 m. Detection of slight movements up to 2 m mounting height and bigger movements from 2 m.

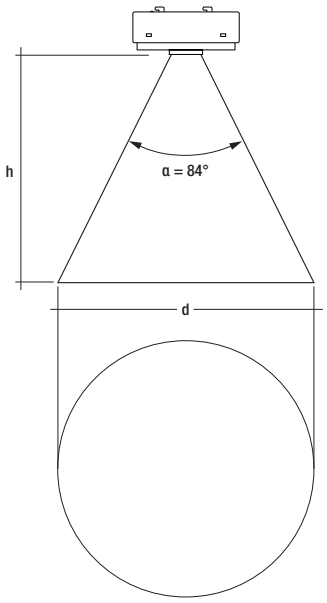
Calculation of the diameter (light area):
$x1 = \tan(\alpha_{x1}) \times h$
$x2 = \tan(\alpha_{x2}) \times h$
$y = \tan(\alpha_y) \times h$

Calculation of the diameter (occupancy area):
$d = 2 \times \tan(0{,}5 \times \alpha) \times h$

Example for light and occupancy detection area at height of 1.7 m:



8. Occupancy / motion detection



8.1 Occupancy detection

For occupancy detection PIR technology is used. PIR Lens is made to detect moving people in working areas such as warehouses, storage buildings and similar working areas with the following performance criteria:

- Ceiling height from up to 5 m
- Movement of human body:
  - up to 2 m mounting height: detection of slight motion.
  - above 2 m mounting height: detection of bigger movements.
- Movement ≥1.0 m/s for mounting heights up to 5 m

9. Miscellaneous

9.1 Disposal of equipment

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

9.2 Conditions of use and storage

Humidity:	0 % up to max. 90 %, not condensed
Storage temperature:	-20 °C up to max. +60 °C

The devices have to be acclimatised to the specified temperature range (ta) before they can be operated.

9.3 Additional information

The Bluetooth® word mark and logos are registered trademarks owned by the Bluetooth SIG, Inc. and any use of such marks by Zumtobel Group AG is under license.
Tridonic GmbH & Co. KG is a subsidiary of Zumtobel Group AG.

Wireless Reference Plattform (WRP) is Tridonic's own wireless architecture which is build in this product.

Additional technical information at www.tridonic.com →Technical Data

Lifetime declarations are informative and represent no warranty claim.
No warranty if device was opened.