Installation Guide High-Bay PIR Presence/Absence Detector (317M)

Helvar

The 317M High-Bay PIR Presence/Absence Detector, in conjunction with a Helvar lighting control system, provides automatic control of lighting loads in buildings and interior spaces with high ceilings. The 317M is typically installed in warehouses and factories, and is used in other applications where mounting heights are too high for standard sensors.

The 317M is compatible with Helvar's lighting systems and configuration software, Designer and Toolbox. Once connected to a Helvar DALI network and lighting control system, the software automatically detects the unit, which can then be programmed with the required functions.

Features and Connections

Mounting bezel

Retaining spring

DALI +
DALI −

Retaining spring

Sensor lens
- PIR Sensor
- Status LED
- IR Receiver

PIR Sensor - Detects movement within the detection range, allowing load control in response to changes in room occupancy.

Status LED - The red LED flashes to indicate:

- **Valid setting received** (single flash of LED)
- **Identify active** (LED flashes repeatedly)

DALI Connection - The DALI connection is made via DA+ and DA− terminals. The device is not polarity-sensitive.

Sensitivity, Time-Outs, Identify

Adjust the sensitivity using Designer or Toolbox. The factory default setting is 9 (maximum).

Note: *On maximum sensitivity, the detector unit is* **extremely sensitive** *to movement and may detect through glass, thin walls or partitions. If this causes a problem, reduce its sensitivity.*
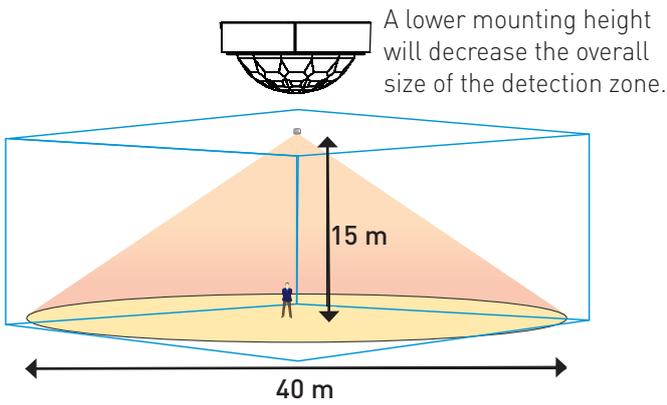
The temperature difference between the detection target and the background must be at least 4 °C.
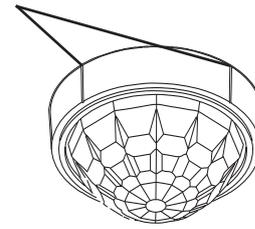
Adjusting On, Exit and Transition Time-Outs

The default time-outs for On, Exit and Transition can be altered using Designer, or Toolbox.

To make sure that the sensor is correctly connected to the DALI network, use the *Identify* function in Designer or Toolbox. The sensor's status LED flashes repeatedly until *Identify* is cancelled.

Detection Area and Detection Area Masking

Detection area

A lower mounting height will decrease the overall size of the detection zone.

15 m

40 m

Alignment Marks

The sensor head has four alignment marks. These marks correspond to the four outer passive infrared sensors located under the lens.

Use these marks to align with aisles and corridors to ensure the best detection characteristics.

Detection Area Masking

Two adaptable clip-on shielding masks are supplied with the 317M. Each can cover half of the sensor lens.

Lateral or radial strips can be cut out of the masks to customise the detection area.

Aisles/Corridors (lateral masks)

Cut the mask to make two lateral masks. This leaves a straight section of the lens uncovered.

The slots you cut out approximate to the levels of sensor coverage given in the following table.

| Slot number	Masking shield: approx. % coverage
1	45 %
2	30 %
3	20 %
4	10 %

Alignment mark

Slots: 1 2 3 4 4 3 2 1
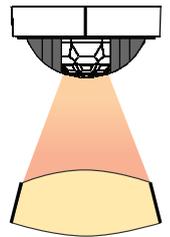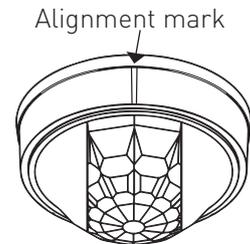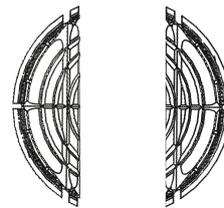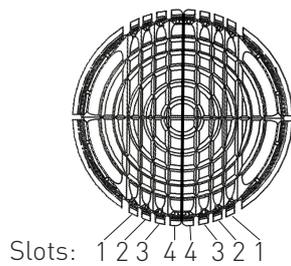
Small Areas (Radial Masks)

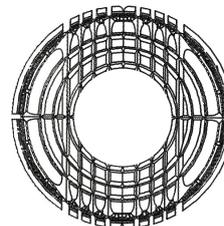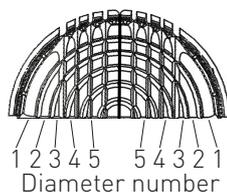Cut semicircles out of the mask to make two radial masks. This leaves a circular section of the lens uncovered.

The 'diameter numbers' of the semicircles you cut out approximate to the levels of sensor coverage given in the table.
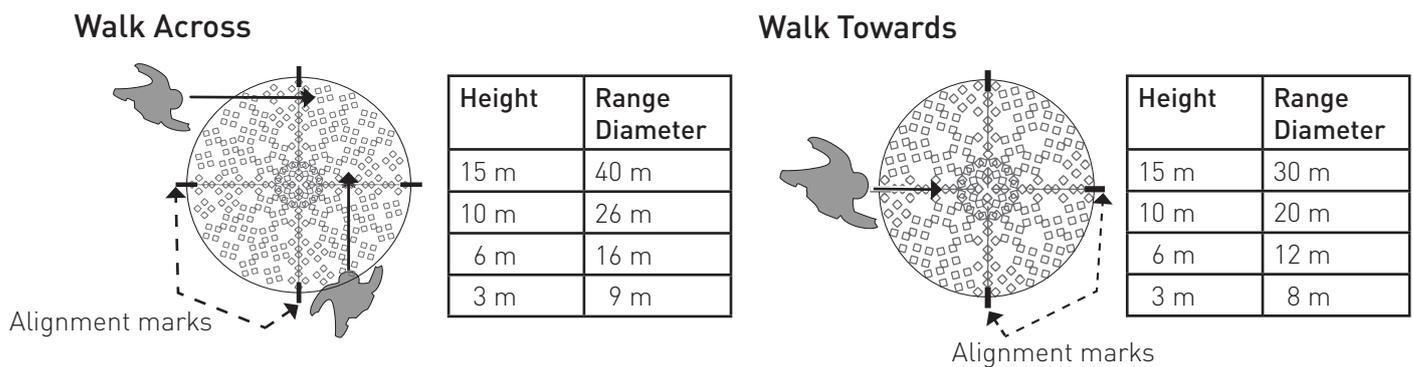
Diameter number	Masking shield: approx. % coverage
1	90 %
2	65 %
3	45 %
4	35 %
5	20 %

1 2 3 4 5   5 4 3 2 1
Diameter number

Orientation and Sensitivity
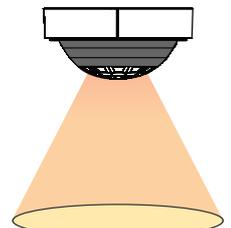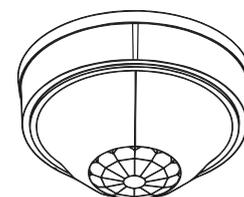
When someone walks 'across' the detection area (not directly towards the centre of the sensor), the sensor range is greater than when someone walks towards the centre of the sensor. Therefore, in applications where occupants are free to move in all directions, such as sports halls, the 'walk-across' detection range can be used when planning sensor positions.

In applications where the occupants direction of movement is restricted, such as aisles and corridors in warehouses, the 'walk-towards' detection range can be used when planning sensor positions. To ensure the best detection characteristics, use the alignment marks on the sensor head (see 'Alignment Marks') to align with aisles and corridors.

Due to the nature of PIR technology, it is not possible to guarantee the range diameter at any mounting height. The performance of the sensor can be altered by site-specific conditions that affect the sensor's ability to detect movement; for example, the occupants' clothing, the use of machinery or an uneven air temperature distribution within the space. It can also be altered by the detection target's speed of movement. The faster the target moves, the less accurate the detection becomes, so that fast moving vehicles, for example, can go undetected.

Walk Across

Alignment marks

Height	Range Diameter
15 m	40 m
10 m	26 m
6 m	16 m
3 m	9 m

Walk Towards

Alignment marks

Height	Range Diameter
15 m	30 m
10 m	20 m
6 m	12 m
3 m	8 m

Installation

The 317M can be mounted into a ceiling void or onto a solid surface using an appropriate back box.

The detector can be used with Helvar's SBB-A back box for surface-mount, IP40 installation or with Helvar's SBB-P for surface-mount, IP65 installation.

The following steps are required for all versions and installation of the unit.

1. Connect the DALI connector to the socket located at the rear of the sensor.

2. **Flush fixing:** Insert the unit into the ceiling or wall (see 'Connection and Fixing: Flush Fixing'); or
   Surface mounting: Install the unit using the SBB-A or the SBB-P surface back boxes, as appropriate (see 'Connection and Fixing: Surface Mounting').

3. Power the unit up.
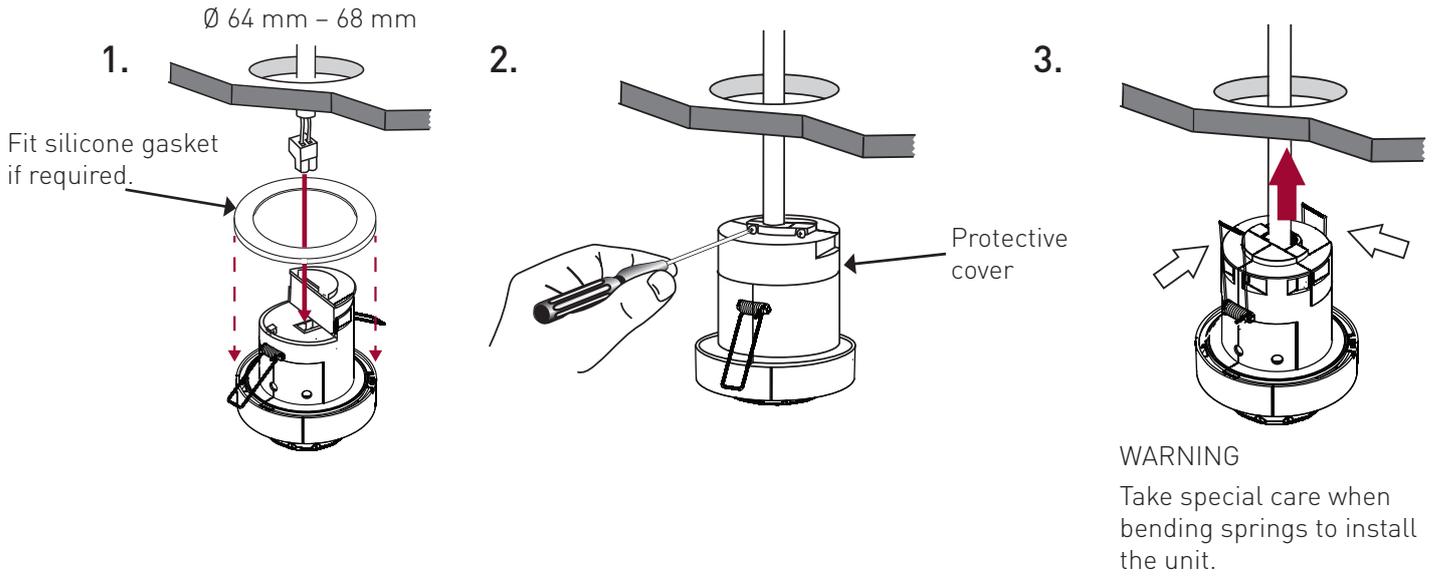
4. Configure the unit using Designer or Toolbox.

   If the load triggered by the sensor comes on, by default it will take 20 minutes (of no movement detected) for the load to switch off.

Installation Notes

• Position the sensor so that the occupants of the room are normally inside the detection zone.

• Do not fix the sensor to an unstable or vibrating surface.

• Do not install the sensor within 1 m of any lighting, forced air heating, or ventilation equipment.

• Consider the possible effects on infrared detector of layers of hot and cold air in large buildings.

Note: *Layers of cold or hot air can form in the upper part of large buildings, such as warehouses, due to a number of factors, including the layout of the building, heating and ventilation systems, shelving system arrangements, roofing materials and the weather. If the sensor is positioned in or above such a layer of air, the sensitivity of the sensor cannot be guaranteed.*

For information on how to insert the unit into a ceiling or wall, see 'Connection and Fixing: Flush Fixing'; for information on how to insert the unit into a surface back box, see 'Connection and Fixing: Surface Mounting'.

Connection and Fixing: Flush Fixing

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Ø 64 mm – 68 mm

1.

Fit silicone gasket if required.

2.

Protective cover

3.

WARNING
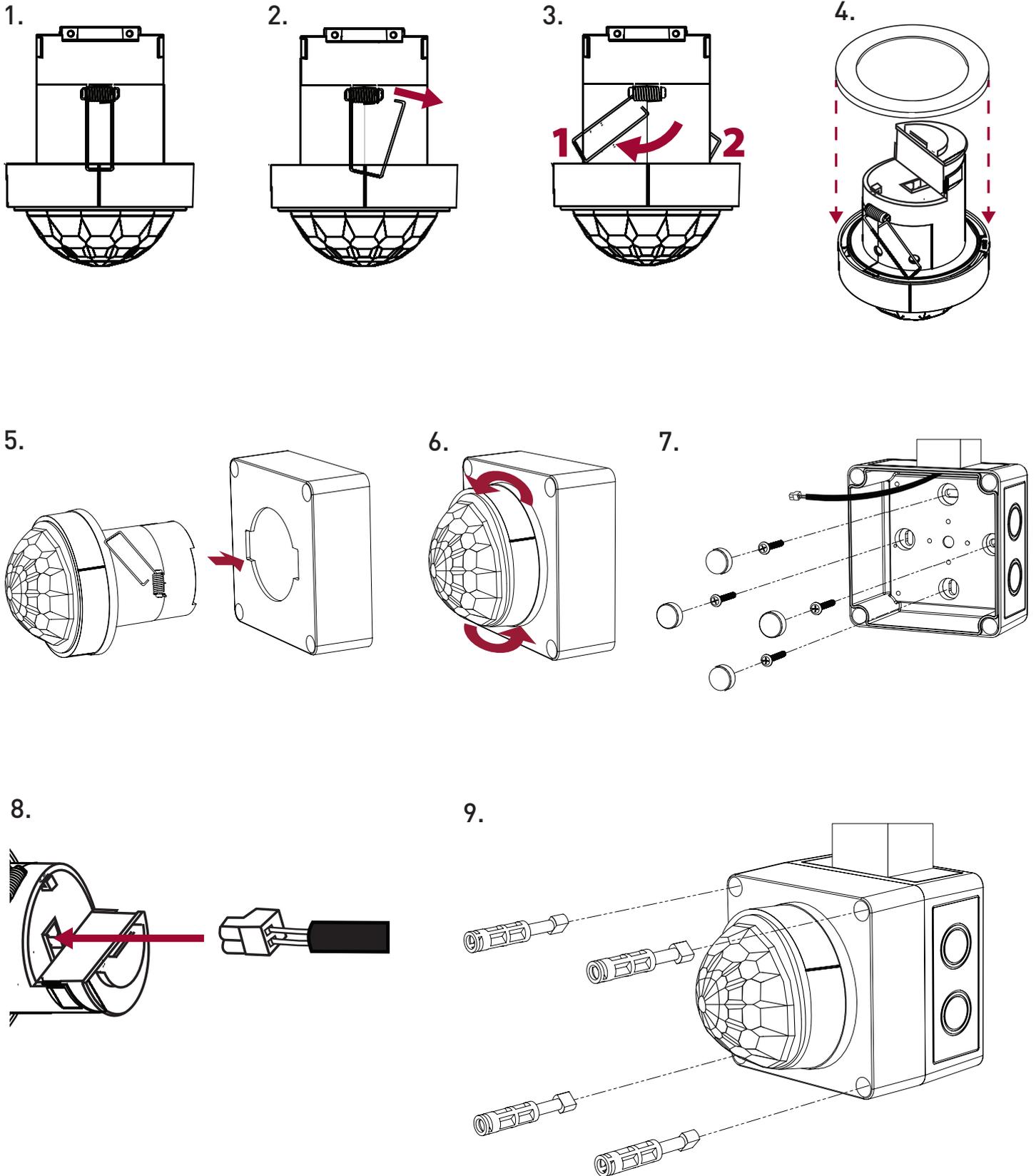Take special care when bending springs to install the unit.

Connection and Fixing: Surface Mounting

There are two different mounting procedures, one for the SBB-A surface back box and the other for the SBB-P surface back box. Both back boxes must be ordered separately.

Mounting onto Surface Back Box SBB-A (IP 40)

1.

2.

3.

1 2

4.

50 mm

60 mm

SBB-A surface back box

1.

2.

3.

1 **2**

4.

5.

6.

7.

8.

9.
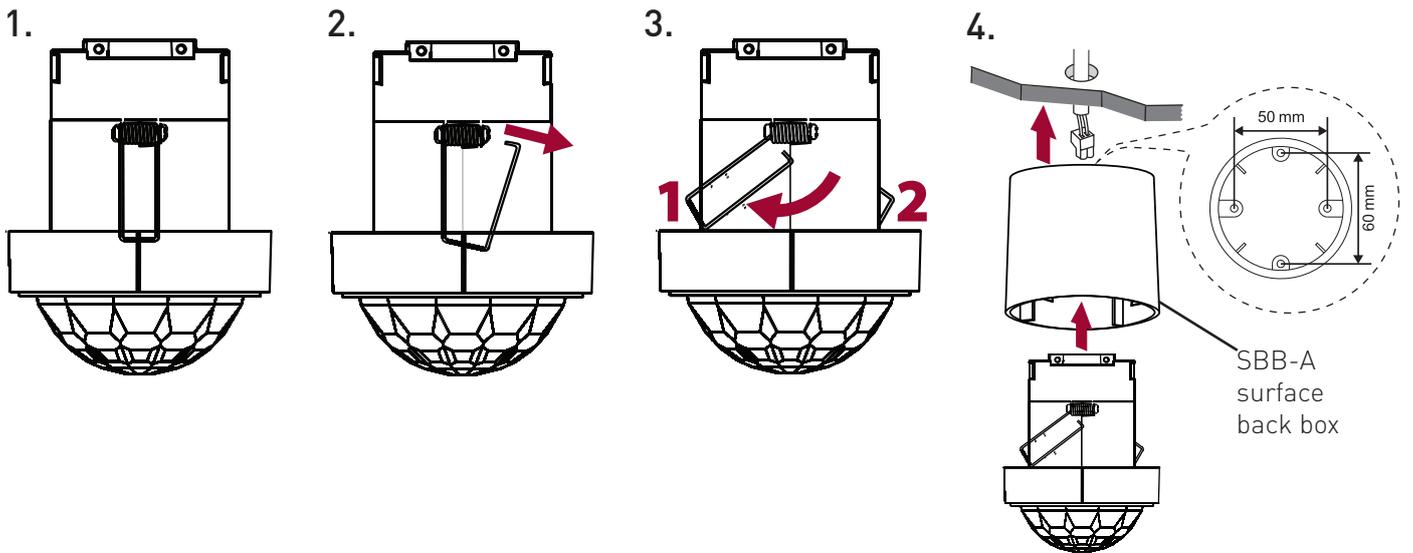
Connections

DALI:	Removable connector block
Wire section:	Wire size: 0.5 mm² – 1.5 mm² solid, flexible or stranded
Cable rating:	All cables must be mains rated.

Electrical data

|	
DALI supply input:	13 V to 22.5 V
DALI consumption:	20 mA

Sensors

Presence detector:	PIR: Passive infrared (PIR)
Infrared receiver:	For remote control commands. *Note: Adjust sensitivity using Designer, or Toolbox (not by remote control unit).*
Range:	5 m – 15 m

Operating conditions

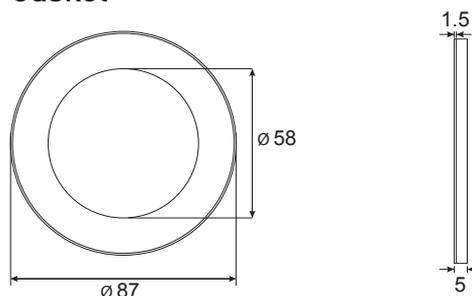|	
Ambient temperature:	–30 °C to +35 °C *Note: The temperature difference between the detection target and the background must be at least 4 °C.*
Relative humidity:	Max. 90 %, noncondensing
Storage temperature:	–30 °C to +70 °C
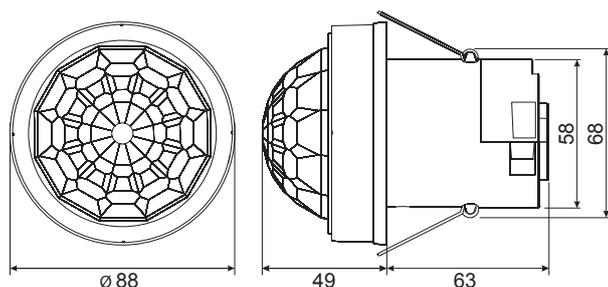
Mechanical data

Mounting hole diameter:	68 mm
Bezel diameter:	88 mm
Recommended clearance depth (incl. 50 mm for cabling):	80 mm (without protective cover); 100 mm (with protective cover)
Material (casing):	Flame retardant ABS and PC/ABS
Finish / Colour:	Matt / White RAL 9003
Weight:	120 g
IP rating:	IP40 & IP65* * When the unit is mounted onto Helvar's SBB-P back box using the supplied gasket.
Gasket:	Silicone ingress protection gasket (not compatible with surface mount box SBB-A)
Masks:	Two adaptable masks included, each covering half of the sensor lens.

Conformity and standards

Conformity:	CE UKCA
EMC emission:	EN 55015
EMC immunity:	EN 61547
Safety:	EN 61347-2-11
Environment:	Complies with WEEE and RoHS directives.

Dimensions (mm)

Gasket