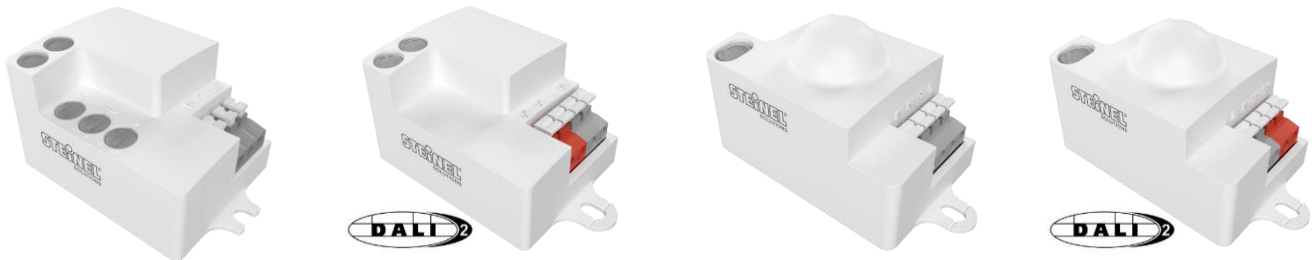


Luminaire-integrated modules

SENSOTEC MB Sensor Modules

110042808	SENSOTEC MB HF1 COM1
110051733	SENSOTEC MB HF1 DALI-2
110059684	SENSOTEC MB HF2 COM1
110059685	SENSOTEC MB HF2 DALI-2



Function description

With the new HF sensor modules, you, as a lighting manufacturer, can upgrade your products with HF sensor technology. Designed for indoor applications and featuring the latest HF technology from STEINEL, these modules switch light ON and OFF in response to ambient brightness and detected movement. Capable of detecting movement through thin non-metallic materials, these modules can be installed inside lights without a problem.

- For installing in innovative luminaires
- Constant-lighting control
- Dimming of main and/or basic light (DALI-2 versions)

Benefits

- User-specific remote controls (RC) to simplify organisation of control activities: service RCS 1 + 2 and user RC4
- Can be connected without the need for tools, compact design
- Detection through non-metallic materials, can be installed out of sight inside the luminaire
- Infinitely adjustable reach and time settings
- Selectable constant-lighting control with light-level teach-in function (Teach; DALI-2 versions)
- Current ambient brightness can be adopted (TEACH function)
- Low intrinsic power consumption
- 100 – 240 V power supply for COM1 version

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Sensor technical specifications

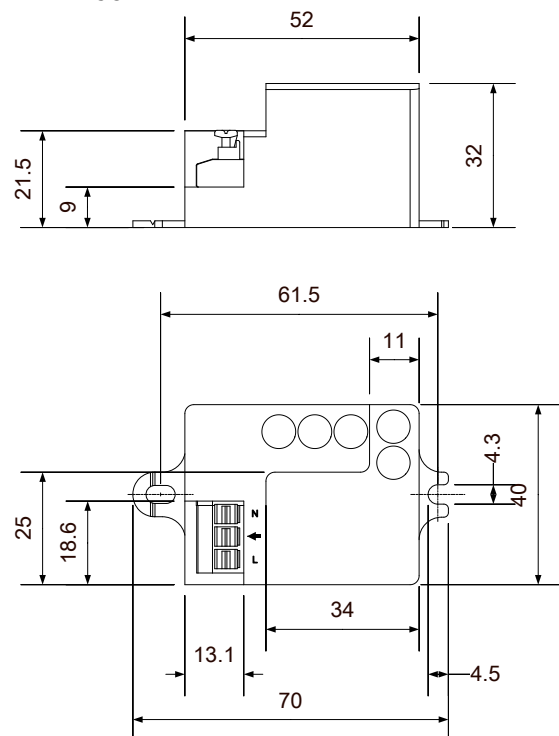
	MB HF1 COM1	MB HF1 DALI-2	MB HF2 COM1	MB HF2 DALI-2
Type	9000	9008	9009	9010
Dimensions	52 x 40 x 32 mm Hole spacing 62 mm	52 x 40 x 32 mm Hole spacing 62 mm	63 x 40 x 42 mm Hole spacing 71 mm	65 x 40 x 42 mm Hole spacing 71 mm
Features	Motion detector Light sensor Feedback indicator Configuration interface Potentiometer	Motion detector Light sensor Feedback indicator Configuration interface	Motion detector Light sensor Feedback indicator Configuration interface Potentiometer	Motion detector Light sensor Feedback indicator Configuration interface
Sensor technology	High-frequency technology Patch antenna	High-frequency technology Patch antenna	High-frequency technology Pin antenna	High-frequency technology Pin antenna
Transmitter power	1 - 2 mW	1 - 2 mW	1 - 2 mW	1 - 2 mW
Transmission frequency	5.8 GHz	5.8 GHz	5.8 GHz	5.8 GHz
Light measurement range	2 - 2000 lx	2 - 2000 lx	2 - 2000 lx	2 - 2000 lx
Angle of coverage	360° with 110° angle of aperture	360° with 110° angle of aperture	360° with 160° angle of aperture	360° with 160° angle of aperture
Detection zone for movement	At a mounting height of 5 m: max. Ø 5 m	At a mounting height of 5 m: max. Ø 5 m	At a mounting height of 4 m: max. Ø 8 m	At a mounting height of 4 m: max. Ø 8 m
Power supply	100 – 240 V, 50/60 Hz	220 – 240 V, 50 Hz	100 – 240 V, 50/60 Hz	220 – 240 V, 50 Hz
Output	300 W / 10 A, max. 2 electronic ballasts	max. 15 electronic ballasts	300 W / 10 A, max. 2 electronic ballasts	max. 15 electronic ballasts
Supply current DALI-2	-	30mA guaranteed (15 ballasts), max. 250mA	-	30mA guaranteed (15 ballasts), max. 250mA
Connection	0.5 – 2.5 mm ²	0.5 – 2.5 mm ²	0.5 – 2.5 mm ²	0.5 – 2.5 mm ²
IP rating:	IP20	IP20	IP20	IP20
Protection class	II	II	II	II
Temperature range	-20°C to +60°C	-20°C to +60°C	-20°C to +60°C	-20°C to +60°C
Conformity	CE / ENEC	CE	CE	CE

SENSOTEC MB Sensor Modules

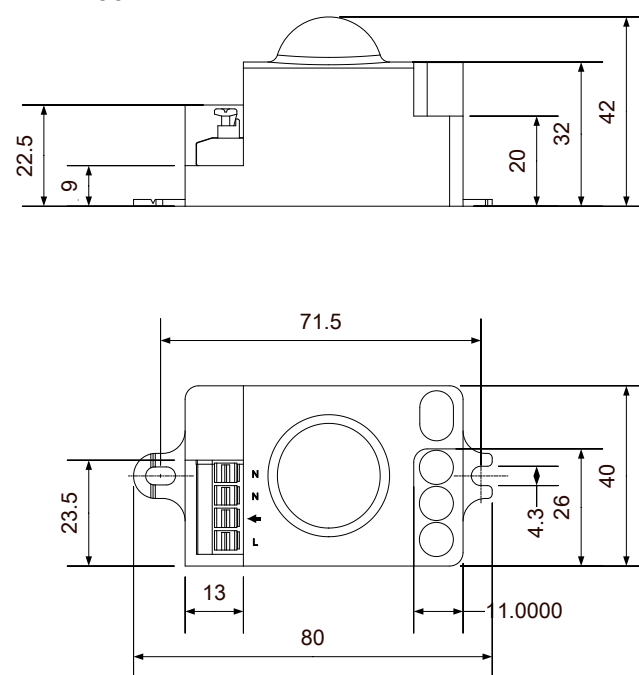
110042808	SENSOTEC MB HF1 COM1
110051733	SENSOTEC MB HF1 DALI-2
110059684	SENSOTEC MB HF2 COM1
110059685	SENSOTEC MB HF2 DALI-2

Technical diagrams

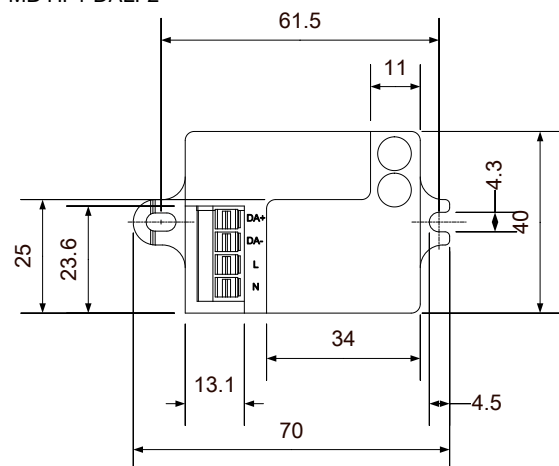
MB HF1 COM1



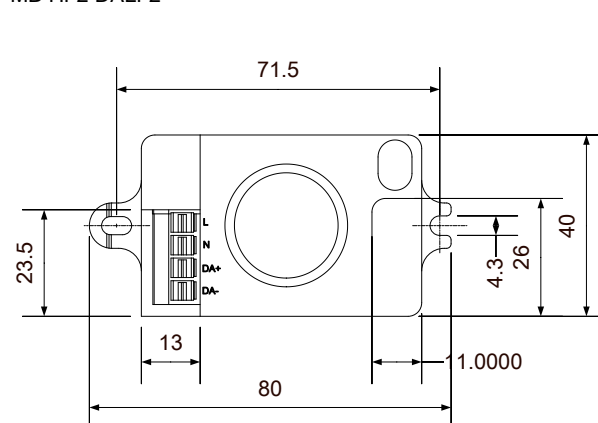
MB HF2 COM1



MB HF1 DALI-2



MB HF2 DALI-2

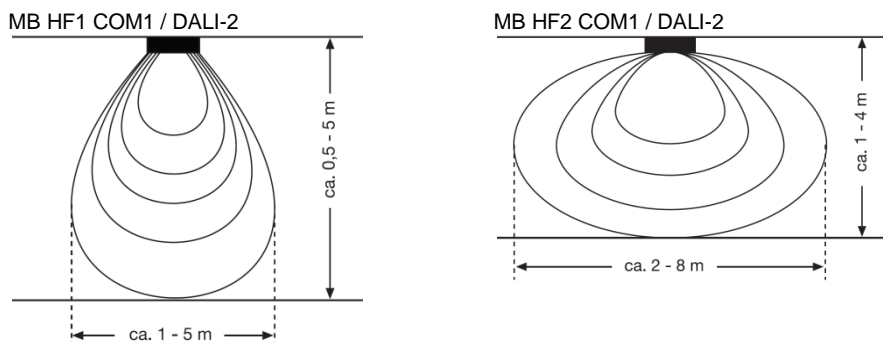


Luminaire-integrated modules

SENSOTEC MB Sensor Modules

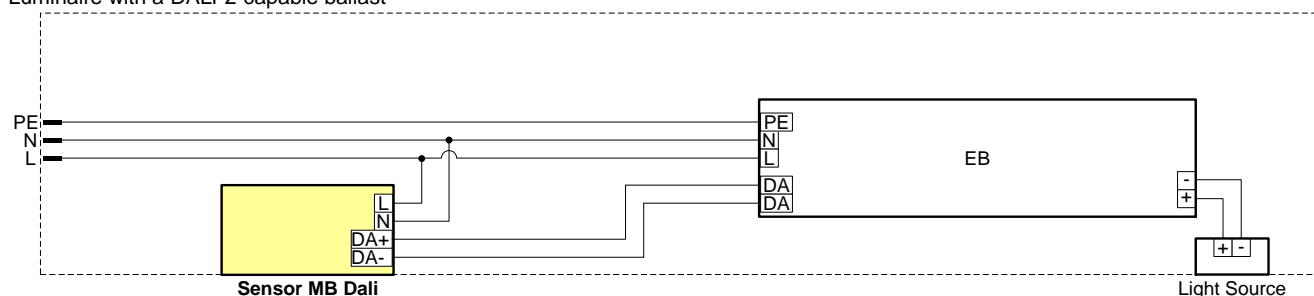
110042808	SENSOTEC MB HF1 COM1
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Detection zones

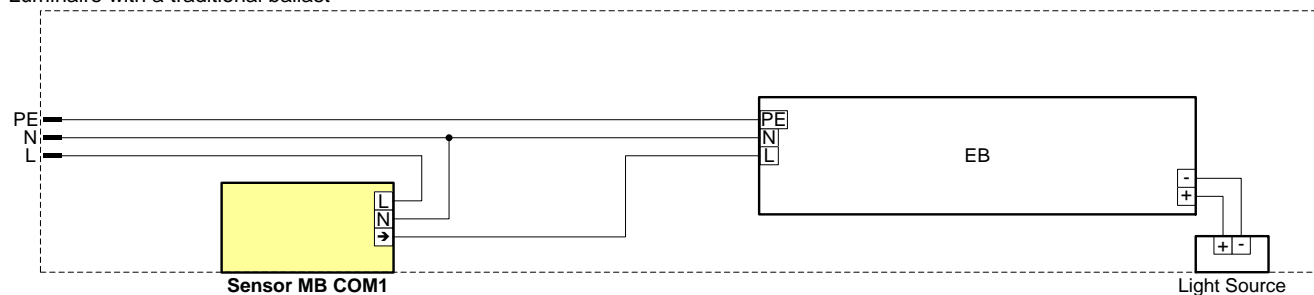


Wiring

Luminaire with a DALI-2-capable ballast



Luminaire with a traditional ballast



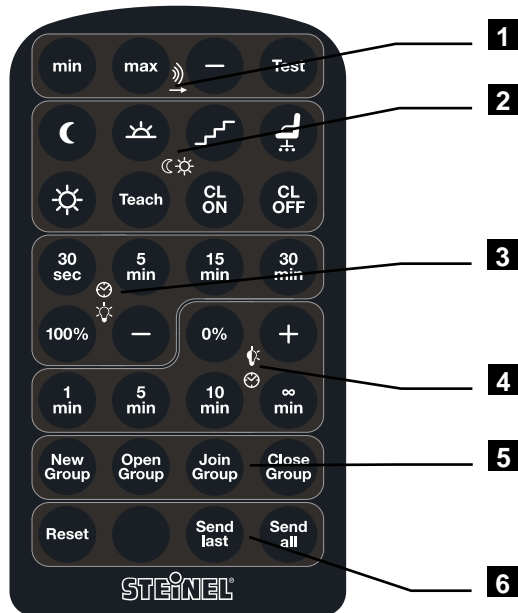
Safety precautions

- Electrical devices must only be assembled and installed by qualified electricians.
- Fire hazard. The maximum permissible load must not be exceeded.
- Risk of electric shock. Disconnect before attempting work on the unit or load. Take into account all circuit breakers supplying dangerous voltages to the unit or load.
- Risk of electric shock. Before installing the sensor, check the enclosure to make sure it is not damaged. Never open the enclosure.
- Keep button cell batteries away from children. Immediately seek medical advice if button cell batteries are swallowed.
- Explosion hazard. Do not recharge batteries. Do not throw batteries into fire.
- The sensor is not suitable for use in burglar alarm systems or other alarm equipment.

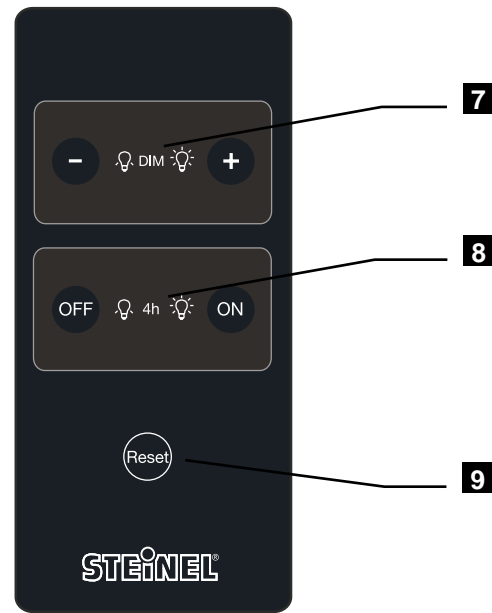
SENSOTEC MB Sensor Modules

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Remote controls for DALI-2 versions



RCS2 (service remote control)



RC4 (user remote control)

Description of buttons / functions

1 Reach setting / test mode

Reach can be set directly to minimum or maximum ("min", "max" buttons) and, if necessary, reduced in 10% steps ("-") button). In test mode ("Test" button), reach can be checked with a shortened stay-ON time of 5 seconds. When selecting test mode, daylight operation is activated and basic light switched OFF. The mode is terminated manually by re-pressing the "Test" button, otherwise automatically after 2 minutes.

2 Activation basis / constant lighting control

When constant-lighting control is deactivated ("CL OFF" button), any movement / human presence will only switch the main light ON if ambient light is below the selected ambient light level thresholds ("moon, twilight, stairs, office" buttons, approx. 2, 40, 100, 300 lx). If the luminaire is currently providing basic light or if daylight operation is activated ("Sun" button), it switches directly to main light. It is also possible to teach in the current ambient light level ("Teach" button). If constant-lighting control is activated ("CL ON" button), specific light-level settings can be programmed for controlling lighting ("Moon, Twilight, Stairs, Office" buttons, approx. 500, 600, 700, 800 lx). Teaching brightness is more practical and provides greater precision. To do this, the chosen level of brightness must be selected via main light level or light adjustment before starting the teaching cycle ("Teach" button).

3 Main light level / stay-ON time

The main light level can be set directly to maximum ("100%" button) and, if necessary, reduced in 5% steps ("-") button) down to a minimum main light level of 55%. The main light stay-ON times can be set to between 30 seconds and 30 minutes ("30 sec, 5 min, 15 min, 30 min" buttons). Main light is activated in response to movement if the activation condition is met. Once the stay-ON time has elapsed, the light returns to basic light (if this is activated) or the luminaire switches OFF if basic light is deactivated.

4 Basic light level / stay-ON time

The basic light level can be set directly to minimum ("0%" button) and, if necessary, increased in 5% steps ("+" button) to a maximum basic light level of 45%. At 0% basic light, basic light is permanently deactivated. The basic light stay-ON times can be set to between 1 minute and 10 minutes ("1 min, 5 min, 10 min" buttons). It is also possible to activate basic light so that it stays on all the time ("∞ min" button).

5 Grouping

No function

SENSOTEC MB Sensor Modules

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6 Parameter reset

If necessary, the current parameter set can be reset to factory settings ("Reset" button on RCS1).

7 Light adjustment

If necessary, the current light level can be adjusted in 5% steps ("DIM +, -" buttons). The newly adopted value will be maintained until the next time the luminaire is switched ON/OFF.

8 Override mode

Override mode ("4 h ON, OFF" buttons) deactivates normal sensor operation for 4 hours. When override mode is selected for permanent lighting, the luminaire permanently assumes the configured main-light level. Permanently OFF switches the luminaire OFF permanently and in spite of any movement activity. This, for example, is required during presentations. Light can also be adjusted in override mode.

9 State reset

Although clearing parameters intentionally via remote control is not possible, it can be used to terminate the current operating state, return to sensor mode and assume the initial state = "no movement / light OFF" ("Reset" button on RC4 remote control).

Feedback indicator flash pattern

	Meaning	Application
Short flash (1 x 100 ms)	"Confirmation"	Remote control command successfully processed
Double flash (2 x 100 ms)	"Completed"	State has been reset / teach cycle completed / test mode terminated
Triple flash (3 x 100 ms)	"Reset"	Parameters have been reset
Long flash (1 x 700 ms)	"Fault"	No unused group code available / maximum basic light already reached / minimum main light already reached / minimum reach already reached

Relationship between power consumption and light perception

Light level is selected on the basis of the way in which it is perceived. The following table of values shows the relationship between possible basic and main light level settings and the relative output in percent.

Basic light level setting	Relative output	Main light setting	Relative output
0%	0.0%	55%	11%
5%	1.0%	60%	15%
10%	1.3%	65%	18%
15%	1.7%	70%	24%
20%	2.2%	75%	29%
25%	2.7%	80%	38%
30%	3.5%	85%	48%
35%	4.3%	90%	61%
40%	5.7%	95%	76%
45%	7.1%	100%	100%

Installation advice

- For indoor use only.
- The sensor must project beyond the lamp. The angle of aperture must reach at least 45%.
- Pay attention to luminaire materials (interference, reflections, attenuation).
- The connected electronic ballast must not exceed the specifications at any time.

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Remote control RCS1 for COM1 versions



Description of buttons / functions

10 Reach adjustment

Reach can be set directly using the percentage buttons and additionally increased by pressing + and reduced by pressing – (in 5% steps).

11 Stay-ON time

The buttons for stay-ON time can be set to the fixed, programmed values. In addition, the stay-ON time can also be increased and reduced via the + and – buttons. The + button increases the stay-ON time by 10 s to 1 min, then in 1 min increments to a maximum of 60 min. The – button shortens the stay-ON time by 1 min down to 1 min, then by 10 s down to a minimum of 10 s.

12 Activation basis

The sensor's response threshold can be set to the fixed, programmed values via the symbol buttons. The "Teach" button sets the light level currently measured as the response threshold.

13 Test / Burn in / Reset

Pressing the Test button activates the test mode. In this mode, the stay-ON time is 5 seconds and the light level is ignored. The test mode is exited automatically 2 minutes after it is activated and the sensor switches to automatic mode. The burn-in function is activated by pressing the "Burn in" button. The Reset button returns the values to factory setting.

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Settings via potentiometer

As an alternative to setting parameters via remote control, the settings for the COM versions can also be selected using the potentiometers. The parameters previously selected by infrared remote control will then be overwritten. Reach can be adjusted from 0% to 100%. The switch-ON threshold can be adjusted from approx. 2 lx to 2000 lx and the stay-ON time from 10 seconds to 30 minutes.

Twilight setting (response threshold)

The chosen sensor response threshold is infinitely adjustable from approx. 2 lux to 2000 lux. Turning the setting control fully clockwise selects daylight operation at approx. 2000 lux (factory setting). Turning the setting control fully anti-clockwise selects night-time operation at approx. 2 lux. When adjusting the detection zone and performing the walk test in daylight, the setting control must be turned fully clockwise.

Time setting (switch-OFF delay)

The connected luminaire can be set to stay on for any period from approx. 10 sec. to a maximum of 30 min., up to a maximum of 60 min. via remote control. Turning the setting control fully anticlockwise selects the shortest time of approx. 10 sec. (factory setting). Turning the setting control fully clockwise selects the longest time of approx. 30 min. The switch-off delay is re-started by any movement detected before this time elapses. Every time the light switches off, it takes approx. 2 seconds for the sensor to start detecting movement again. The sensor is only able to detect movement again once this time has elapsed.

Reach setting (sensitivity)

The sensor's reach setting can be infinitely varied. Turning the setting control fully anti-clockwise selects minimum reach. Turning the setting control fully clockwise selects maximum reach. The reach may vary depending on room conditions.

Burn-in function for lamps (COM1 versions)

Manufacturers recommend burning in various fluorescent lamps for 100 hours to increase their useful life. This burn-in process can be performed as follows:

1. The burn-in process can be started via the potentiometers. Turn all 3 potentiometers fully clockwise, then turn the right-hand control dial (time) fully anti-clockwise and then fully clockwise again (within 10 sec).
2. The burn-in process is confirmed by switching the light OFF and back ON again twice.
3. The light is now left ON for 100 hours without sensor function. Do not disconnect the light from the mains power supply during this period.
4. The luminaire automatically returns to sensor mode after 100 hours.

Alternatively, the burn-in process can be activated via infrared remote control – see Section "Remote control for COM1 versions"

Factory settings

	MB HF1/2 COM1	MB HF1/2 DALI-2
Reach	Potentiometer (100%)	100%
Switch-ON threshold	Potentiometer (daytime operation)	Office
Constant lighting control	-	deactivated
Main light level	-	100%
Main light stay-ON time	Potentiometer (minimum, 10 s)	5 min
Basic light level	-	0%
Basic light stay-ON time	-	5 min

Luminaire-integrated modules

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Conformity / marks of conformity



Electronic control device with double insulation in compliance with DIN EN 61347
The control connections DA+/DA- to active parts are basic isolated.

Note

As attenuation and reflections can cause a high-frequency sensor to behave differently in any luminaire, we cannot accept any liability for the sensor not working as expected in the particular luminaire it is being used in. However, we are able to provide accreditation. Please contact our OEM Account Manager to find out what assistance we can give you in designing the sensor module into a luminaire. The customer must also guarantee and take responsibility for the way in which the other components behave in the luminaire (lamp, ballast etc.).

This product data sheet provides no guarantee of qualities within the meaning of the statutory warranty provisions for the product described.