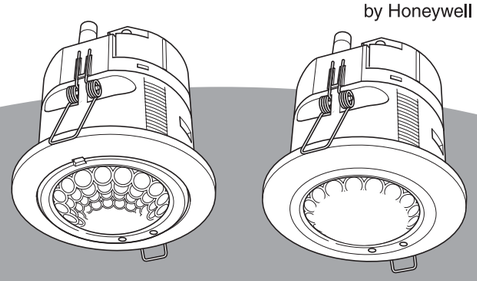
Installation Instructions

Ex-Or by Honeywell



LightSpot HD Dimming PIR Sensors

Only suitably qualified personnel should install this equipment

50093557-001 / Dimming

Part Number	Switching	Digital Dimming	Analogue Dimming	QuickLink	Office	Mid Bay	High Bay	Tilting Lens
LS3000AR	●		●		●			
LS3000D		●			●			
LS3000DR	●	●			●			
LS3243R	●			●	●			●
LS3043AR	●		●	●	●			●
LS3043DR	●	●		●	●			●
LS3000ARMB	●		●			●		
LS3000DMB		●				●		
LS3000DRMB	●	●				●		
LS3000ARHB	●		●				●	
LS3000DHB		●					●	
LS3000DRHB	●	●					●	
LS3243RMB	●			●		●		●
LS3043DRMB	●	●		●		●		●
LS3243RHB	●			●			●	●
LS3043DRHB	●	●		●			●	●

Add suffix F for flush mount or SM for surface mount

Positioning the Sensor

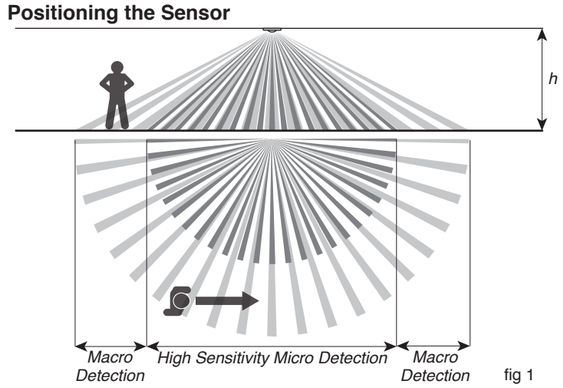


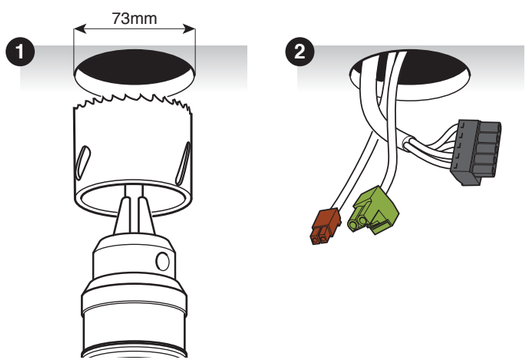
fig 1

The sensor should be positioned on the ceiling in the centre of the occupied space. This product is available in three different mounting height variants; see fig.1 and the table below. Ensure that the maximum recommended mounting height is not exceeded.
Avoid mounting next to an AC unit.
For additional information on positioning please refer to Tilt and Lock the Sensor, overleaf.

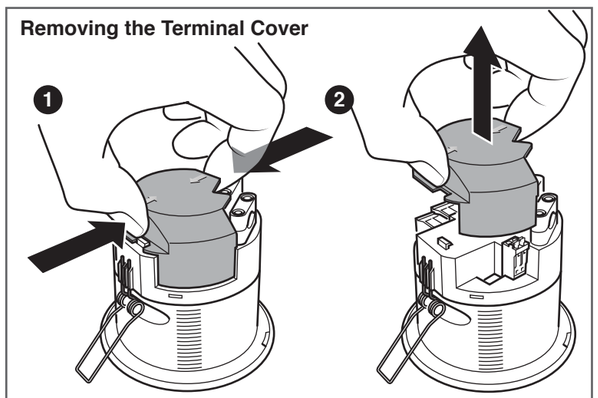
The sensor is more sensitive to movement across the beam compared with movement towards the centre.

Type	Aspect ratio (diameter : height)		Max recommended mounting height
	Micro Detection - High Sensitivity	Macro Detection - Standard Sensitivity	
Office	2.8:1 (7m diameter @ 2.5m height)	4:1 (10m diameter @2.5m height)	3.5m
Mid Bay	N/A	2:1 (20m diameter @10m height)	12m
High Bay	N/A	1.9:1 (27m diameter @14m height)	16m

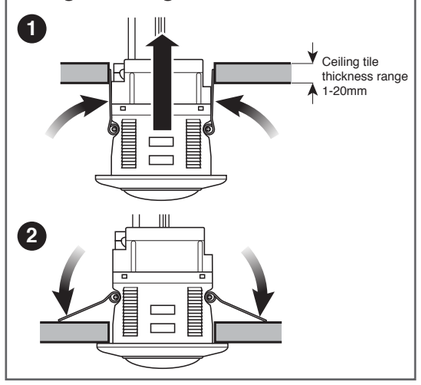
Installing the Sensor into Ceiling Tile



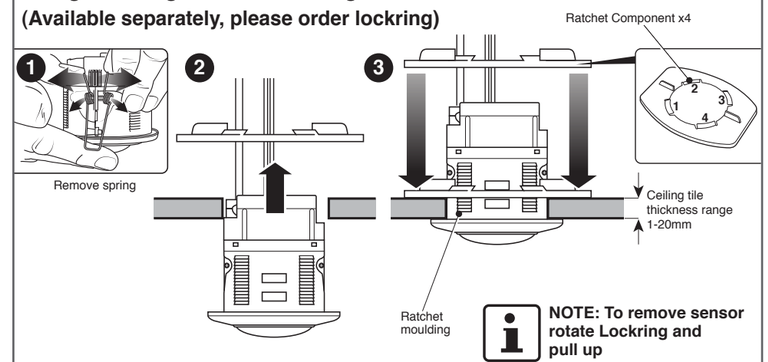
Removing the Terminal Cover



Fixing to Ceiling – Standard Method



Fixing to Ceiling – Secure Lockring Method (Available separately, please order lockring)



NOTE: To remove sensor rotate Lockring and pull up

Electrical Connections

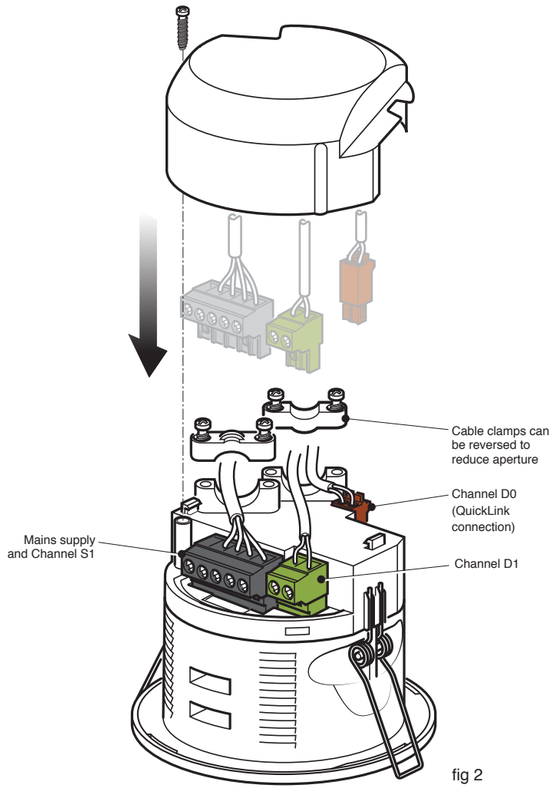


fig 2

The following wiring diagrams show how to connect some of the more fully-featured products listed in the product table above. For clarity, the wiring for some of the lesser-featured products is not shown, but the wiring principles are the same and equally applicable. Simply omit any sections that are not relevant to the product being installed.

Two-Channel Application, One Channel Switching, One Channel Digital Dimming (fig 3)

NOTE:
1. **Digital ballasts are normally wired from an unswitched supply.**
2. **The sensor will automatically adjust to control DSI or DALI ballasts, but all ballasts must be of the same type.**

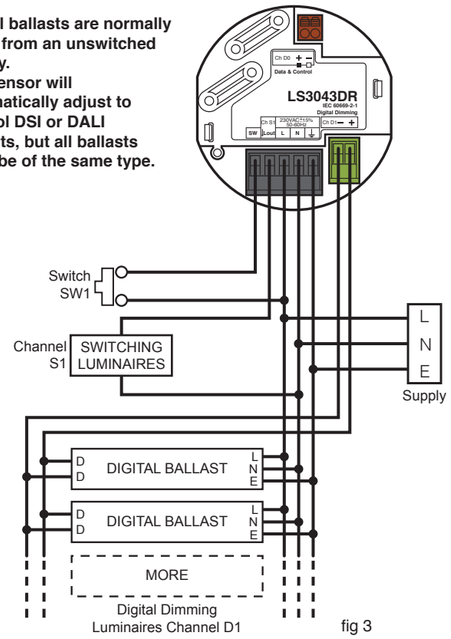


fig 3

Single Channel Dimming Using Analogue or Digital Ballasts (fig 4)

Analogue ballasts cannot be switched off from the control terminals, so it is necessary to switch the mains power from the sensor as shown in the diagram below. Although switching the mains power is not necessary with digital ballasts, they may be wired this way in order to reduce the quiescent power consumption in unoccupied areas to an absolute minimum.

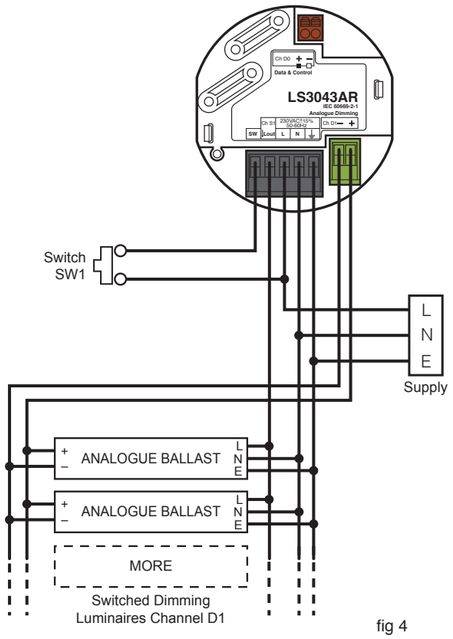


fig 4

Connecting Sensors together with QuickLink, and Creation of an Additional Dimming Channel (fig 5)

The wiring diagram below shows how to connect sensors together using the QuickLink Bus. QuickLink is a convenient way of wiring multiple sensors so that they share information (e.g. occupancy) and are able to work in harmony. Some sensors operate from a low voltage derived from the QuickLink bus and therefore do not require a mains connection – this enables fast and convenient installation. The Low Voltage Bus sensors are not described in detail here (see QuickLink Bus Sensors Installation Instructions for further information). It is permissible to connect up to four sensors together in this way. No more than two mains-powered sensors are allowed in a common connection.

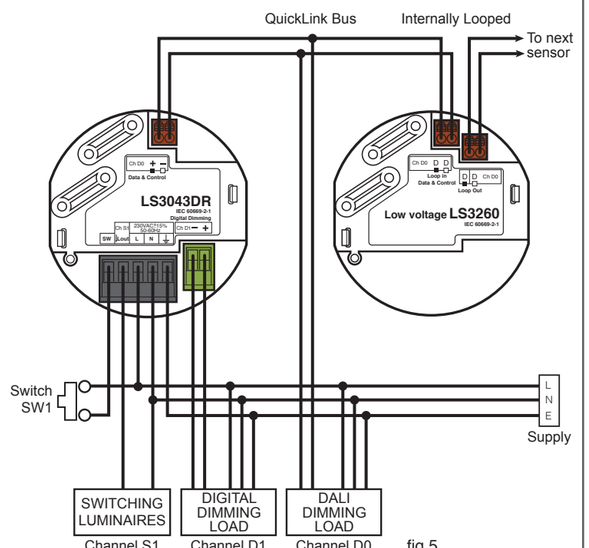


fig 5

Fixing to Ceiling – Surface Mounting (optional)

Product variants with “SM” suffix on the part number are supplied with the surface fitting kit as standard. The surface mount kit is available as a separate part, please order **Surfmt**. The sensor may be mounted to any suitable surface, but is most commonly fixed to a conduit stop-end (fig 6 set) (BESA) box or bushed to trunking.

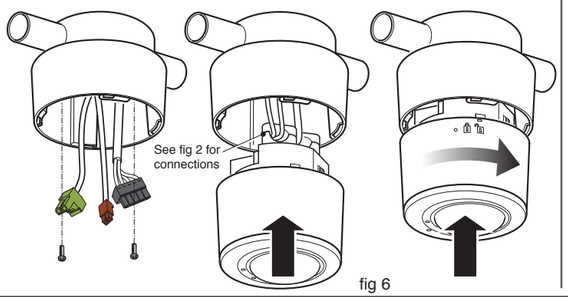


fig 6

Uninstalling and Repositioning

Insert a flat headed screwdriver into the slot as shown and twist the collar anti-clockwise to release, fig 7. To separate the sensor from the surface mount casing, push a flat headed screwdriver onto the tab via the inside void of the casing and pull the sensor upwards, fig 8.

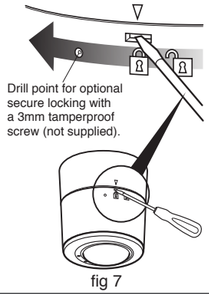


fig 7

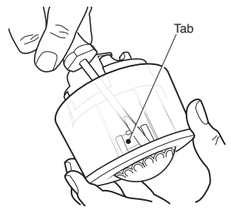
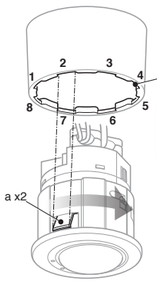


fig 8



Eight segments on the collar allow up to four different rotational positions for the sensor, when inserting tabs (a) into slots (1-8). See positioning the sensor.

NOTE: Setting the correct position is important when using products with tilting lenses

Tilt and Lock the Sensor

Some products feature the ability to tilt the sensor (before fitting) by up to 10° in 2° increments, in order to extend the range in one direction. This may be useful in cases where the ideal mounting location is not available. The incresed range is indicated in fig 9.

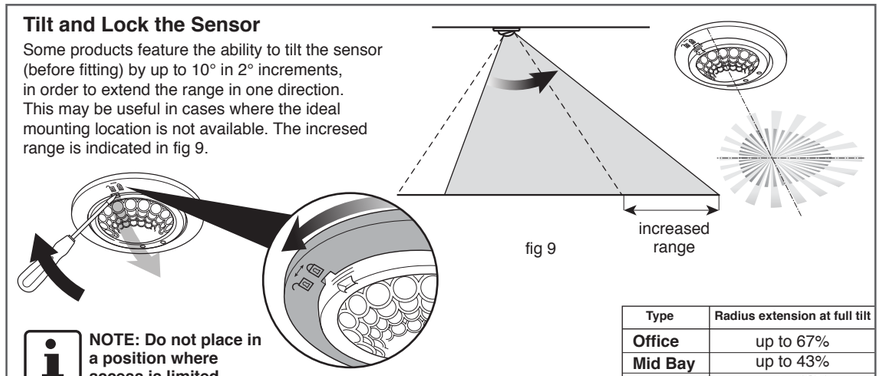


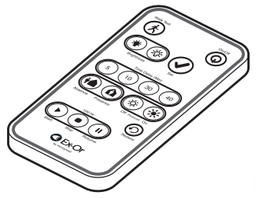
fig 9

NOTE: Do not place in a position where access is limited

Type	Radius extension at full tilt
Office	up to 67%
Mid Bay	up to 43%
High Bay	up to 42%

WalkTesting / Lens Masking

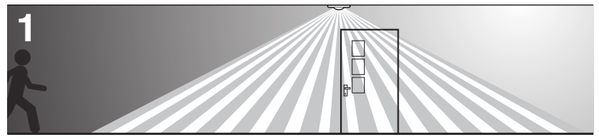
In order to verify correct installation, walk-testing is recommended. An infrared commissioning tool will be required to put the detector(s) into walk-test mode. Two infrared commissioning tools are available: QuickSet and QuickSet Pro (Sold separately).



QuickSet

QuickSet Pro

Follow the instructions provided with the selected commissioning tool. While the sensor is in walk-test mode, the LEDs on the sensors are automatically enabled and it will turn on the lighting for only a few seconds each time occupancy is detected.



Stand out of the sensor’s viewable footprint or remain motionless within the viewable footprint and wait for the lights to go out.

Wait a further 5 seconds for the sensor to stabilise then make a movement, the lights should come back on. Observe that the detection / non-detection is as expected.

NOTE: After 5 minutes, the sensor will automatically exit walk-test mode without requiring any action from the operator.

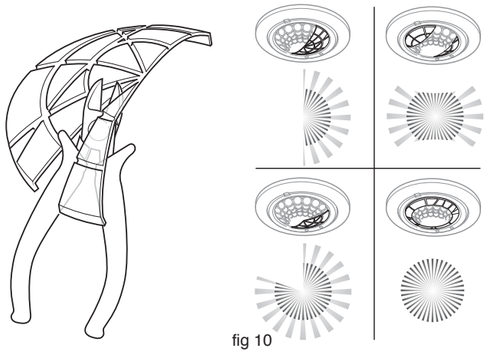


fig 10

Two lens masks are provided which may be used to restrict the viewable footprint of the sensor e.g. unwanted detection through a doorway. Cut the mask segment(s) as desired and install by pushing the mask lip between the bezel and the lens on the sensor as shown in fig 10.

This range of products features a rich set of adjustable parameters that may be programmed via the hand-held infrared commissioning tools in order to create a sophisticated lighting control installation. There are no physical switches or potentiometers on the product.

Out of Box Behaviour

Prior to commissioning, the default settings for each channel of the sensor will be as follows:

Time Delay: 20 minutes

Photocell Setting: Always turn lights on when occupied

Dimming Level: 100%

Occupancy Mode: Automatic (lights Auto ON, Auto OFF)

Movement Sensitivity: Maximum

Digital Ballast Type (DSI/DALI): Auto detect

NOTE: Please go to www.ex-or.com for a complete list of programmable parameters.

Technical Data

	Manual Switch	Live Output	Power Supply			Dimming		QuickLink and Dimming	
Marking	**SW**	**ChS1 Lout**	**L**	**N**	**E**	**D1-**	**D1+**	**D0+**	**D0-**
Colour	Black					Blue		Red	
Terminal type	Pluggable rising cage clamp					Pluggable rising cage clamp		Pluggable screwless	
Terminal capacity	1 x 0.5-2.5mm sq solid or stranded					1 x 0.5-2.5mm sq solid or stranded		1 x 0.5-1.5mm sq solid or stranded	
Recommended cable	0.75mm sq	Derive from appropriate wiring regulations				0.75mm sq		0.75mm sq	
Maximum length	10m					100m		100m	
Function	input	output	input			output		input and output	
Operating voltage	230VAC+/-15% 50-60Hz Recommended circuit protection: 16A MCB					Low Voltage – isolation 1.5kV			
Power consumption	Negli-gible	N/A	150mW [QuickLink master]			N/A		N/A	
Maximum load current	N/A	10A (maximum inrush 80A)	N/A			60mA Max 15 ballasts for DSI, DALI and analogue		60mA	
Permissible load types/connections	N/A	Magnetic-ballasted fluorescent, Compact fluorescent, Electronic-ballasted fluorescent, LED (maximum inrush 80A), Tungsten lamps (Max 6A)	N/A			15 DALI digital ballasts or 15 DSI digital ballasts *some products, analogue ballasts (max 15)		10 DALI digital ballasts QuickLink Low Voltage sensors (max 3) or 1 additional QuickLink Mains powered Master sensor (max 2 in network)	

Diagnostics

A number of LED indications are provided in order to help with fault-finding. Sensors are supplied with the LEDs disabled, however they may be enabled at the point of commissioning if required. LEDs become enabled temporarily during walk-test. Detectable wiring faults are always indicated by the LEDs, irrespective of whether they are enabled.

Wiring faults on analogue dimming circuits are difficult to detect automatically. If analogue dimming is not working as expected, the recommended method for checking is as follows:

1. Disconnect the dimming control pair from the sensor.
2. With the [now open-circuit] dimming control wiring still connected to the luminaires, the brightness should immediately go to full.
3. Briefly short together the two wires from the luminaire dimming pair, the luminaires should go to low brightness, but not off.
4. If either of steps 2, 3 above do not work as described on every luminaire, investigate the wiring. When working correctly, re-connect the dimming pair to the sensor.

NOTE: With regard to safety, the dimming control connections should be treated with the same respect as mains.

LED indication	Meaning
G G G Green in response to movement or not	Movement detected
B B 1 blue flash every 2 seconds	Light level demand – photocell striving for more light in order to reach set-point
B B B B 2 blue flashes every 2 seconds	A manual switch is being activated
R R Long red flash every 2 seconds	Lamp burn-in is in progress – this means dimming will not be permitted for the duration
R R R R 2 red flashes every 2 seconds	Channel D0 or Channel D1 error – e.g. 1. Too many QuickLink mains-powered devices connected together, or 2. Dimming terminals connected somewhere they shouldn’t be
R R R R R R 3 red flashes every 2 seconds	Channel D0 or Channel D1 error – e.g. 1. Possible short circuit, or 2. Too many luminaires, or 3. Too many QuickLink low voltage sensors, or 4. QuickLink mains-powered sensors connected together with wrong polarity

IMPORTANT NOTES

1. A means for disconnection must be incorporated in the fixed wiring in accordance with the current wiring regulations.
2. Dimming (DALI, DSI and Analogue) and QuickLink terminals have only basic isolation from mains and therefore should be wired in mains-rated cable and treated with the same respect as mains with regard to wiring practice.
3. This equipment is designed to switch lights no more frequently than normal manual operation. However, manufacturers of some particular lighting types (e.g. '2D' luminaires) may specify a maximum number of switching cycles and/or a minimum on-time in order to achieve a predicted lamp life. Please check with the manufacturer of the luminaires to ensure that they are compatible with automatic controls in this respect.
4. In order to achieve satisfactory light level regulating operation, a sensor must observe a substantially greater proportion of artificial light from the luminaire(s) under its control than from neighbouring luminaires not under its control. This is particularly important when planning the installed layout of linear luminaires that have an integral detector positioned at one end.
5. Due to limited space within the enclosure, it is not recommended that this product be used as a wiring junction box. System connections should be made elsewhere and wiring not looped within the product enclosure.
6. All information given in this document was correct at the time of publication.

TECHNICAL SUPPORT
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At the end of their useful life the packaging and product should be disposed of via a suitable recycling centre.
Do not dispose of with normal household waste. Do not burn.

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