

EBDHS-AT-PRM

RF ceiling PIR presence detector – Switching

Overview



The EBDHS-AT-PRM is a passive infrared (PIR) motion sensor combined with a switched output channel. The EBDHS-AT-PRM is a high sensitivity PIR detector suitable for high bay applications, such as warehouses and factories, and where high detection sensitivity is needed.

The output channel comprises a mains voltage relay capable of simple on/off switching.

Functioning as a presence detector, the unit can turn lights on when a room is occupied and off when the room is empty. Optional settings allow lights to be turned off in response to ambient daylight. The unit also includes stored scenes for versatile manual on / off control of lighting.

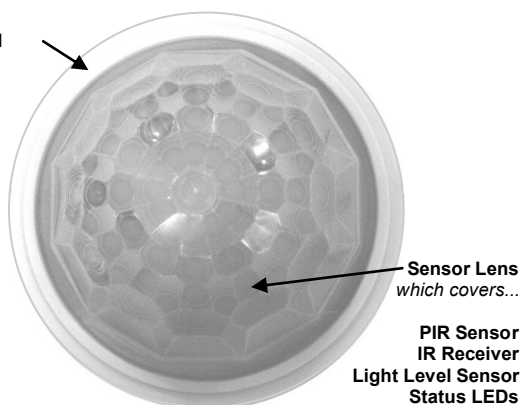
The EBDHS-AT-PRM can be used as a standalone unit or integrated with other devices as part of a system. The built-in RF transceiver allows wireless communication with all other **An-10** compatible products, e.g. the AT-BB-IN Input Unit, useful for push-button scene selection and absence detection.

All functionality is fully programmable.

Features

Front features

Mounting Bezel



Sensor Lens
which covers...

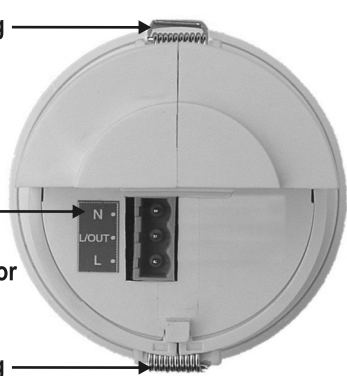
PIR Sensor
IR Receiver
Light Level Sensor
Status LEDs

Back features

Retaining Spring

Power Input & Switched Output Connector

Retaining Spring



PIR Sensor

Detects movement within the unit's detection range, allowing load control in response to changes in occupancy.

IR Receiver

Receives control and programming commands from an IR (infrared) handset.

Light Level Sensor

Monitors the ambient light level, allowing load control based on minimum and maximum Lux Level.

Status LEDs

These flash Red and/or Green to indicate the following:

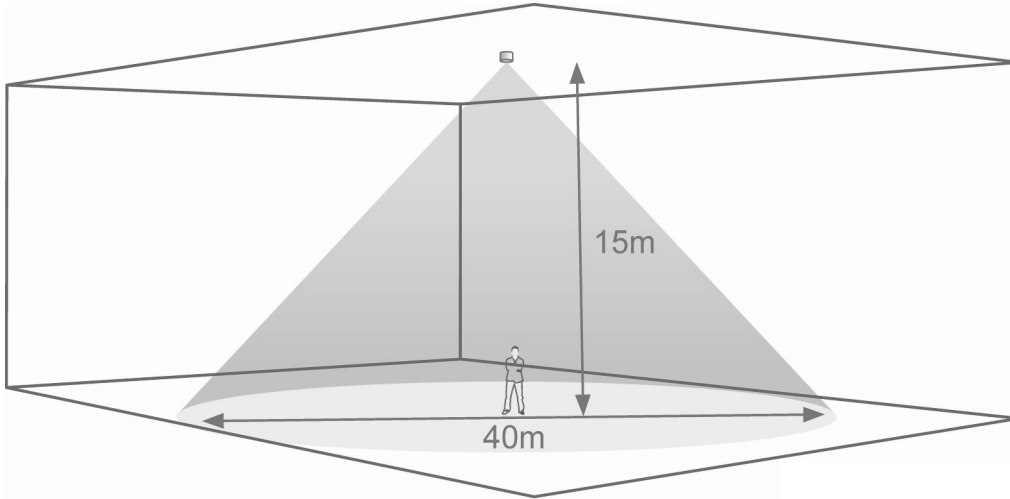
Walk Test LED active	when movement is detected
Valid setting received	
Invalid setting received	
Software reset received	
Factory reset received	

Power Input & Switched Output Connector (Channel 1)

Used to connect mains power to the unit and to connect a switched load.

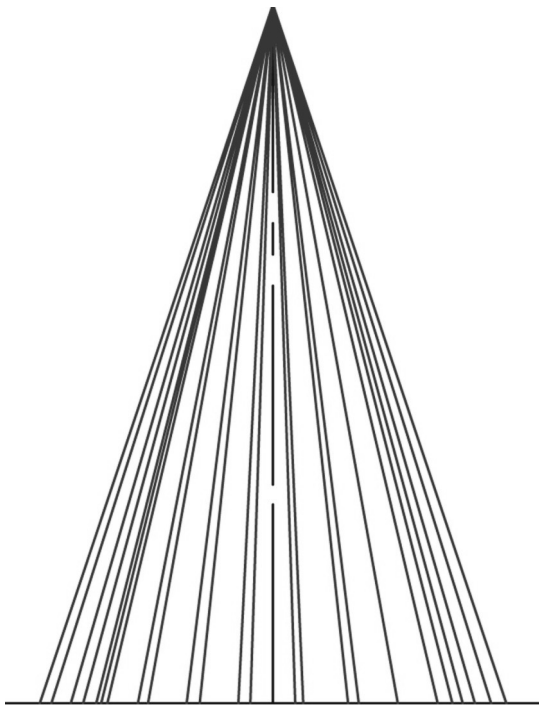
Detection diagrams

Range

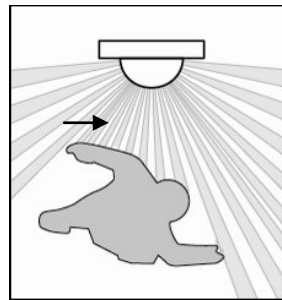


Maximum mounting height 20m

Detection pattern

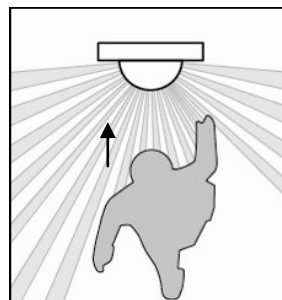


Walk across



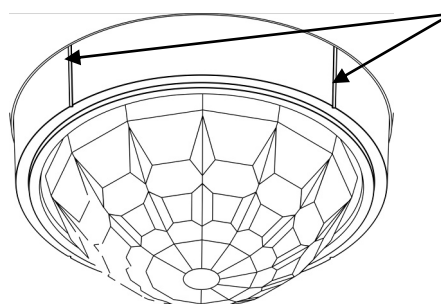
Height	Range Diameter
15m	40m
10m	26m
6m	16m
3m	9m

Walk towards



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

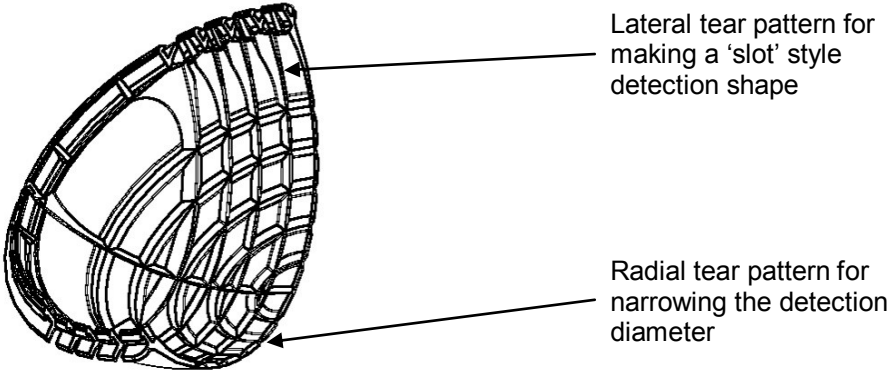
Alignment marks



The sensor head has 4 alignment marks. These correspond to the 4 outer passive infrared sensors under the lens. Use these marks to align with aisles and corridors to ensure the best detection characteristics. See example overleaf.

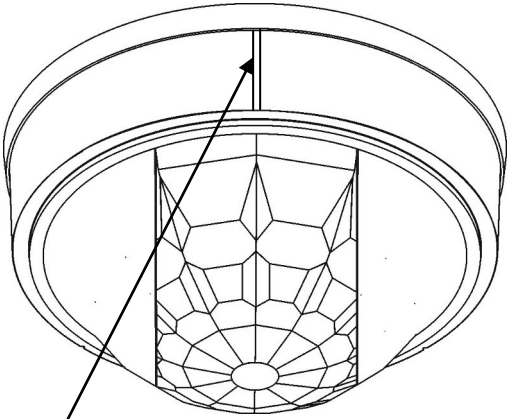
Masking

The EBDHS-AT-PRM includes two clip-on masking shields to allow for precise masking of the detection shape. The masks can be easily shaped to produce detection patterns suitable for applications such as aisles and corners and for narrowing the detection diameter.

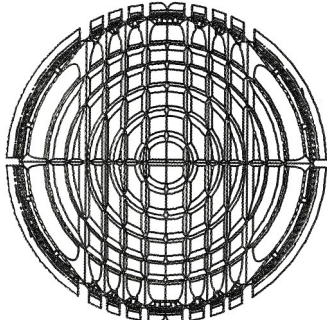


Aisles

Masking shields trimmed for aisle shaped detection



Align trimmed shields with sensor head alignment marks and aisle.



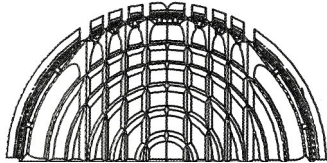
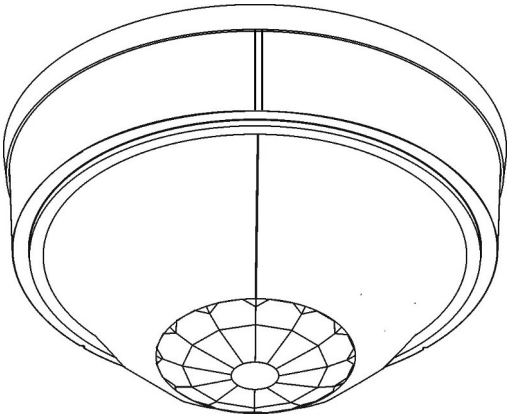
Slot number	Masking shield % coverage
1	45%
2	32%
3	22%
4	11%

Slot number 1 2 3 4 4 3 2 1

Example
 Mounting height 6m
 Trimmed to slots 2
 Aisle detection width 16m x 32% = 5.1m walk across
 12m x 32% = 3.8m walk towards

Narrow detection

Masking shields trimmed for a narrow beam of detection



Diameter number	Masking shield % coverage
1	89%
2	63%
3	45%
4	32%
5	22%

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

Example
 Mounting height 15m
 Trimmed to diameter 3
 Detection diameter 40m x 45% = 18m walk across
 30m x 45% = 13.5m walk towards

Installation

Choosing a Suitable Location

The EBDHS-AT-DD is designed to be ceiling mounted and must satisfy the following criteria:

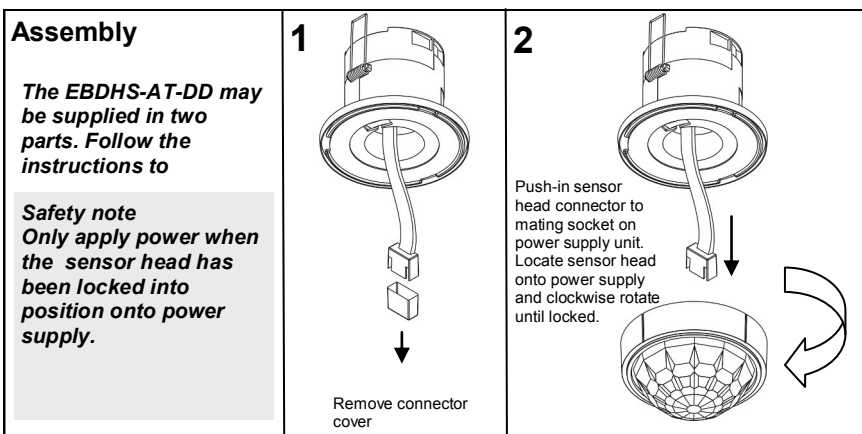
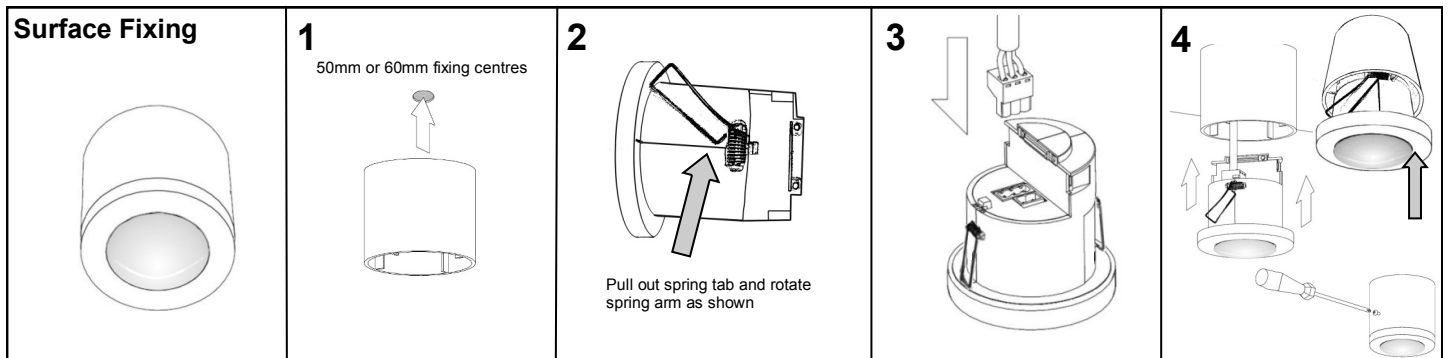
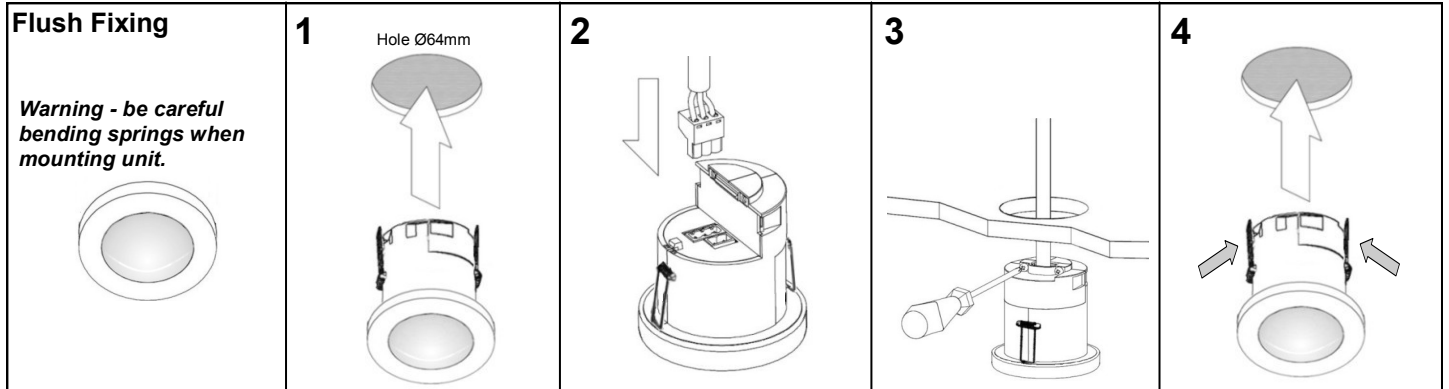
- Avoid positioning the unit where direct sunlight may enter the sensor element.
- Do not site the sensor within 1m of any lighting, forced air heating or ventilation.
- Do not fix the sensor to an unstable or vibrating surface.

The EBDHS-AT-DD is designed to be mounted using either:

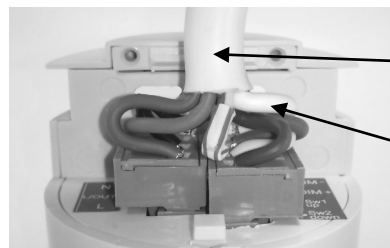
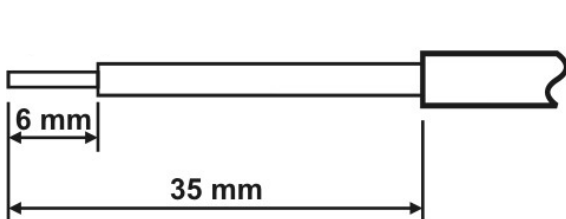
- Flush fixing, or
- Surface fixing, using the optional Surface Mounting Box (part no. DBB).

Both methods are illustrated below.

Use the supplied gasket to ensure IP rating (*not compatible with Surface Mounting Box part no. DBB*).



Wire stripping details



Important

Ensure that the cables are formed as shown before affixing the cable clamp. The clamp **MUST** clamp the outer sheath(s) only.

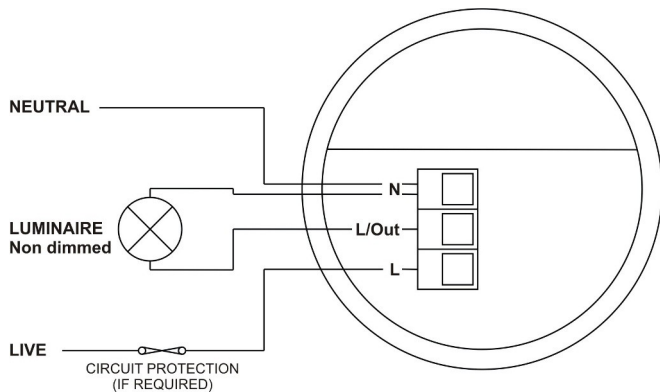
Bend cores as shown.

The switched output of the EBDHS-AT-PRM is used to switch a channel of standard, non-dimming luminaires.

Multiple luminaires may be connected in parallel to the switched output (via the **N** and **L/Out** terminals) as long as the maximum total load is not exceeded.

The wiring example below shows the method of connecting the switched output channel for a single detector unit.

Single channel switching



Functionality

- Simple On/Off load control.
- Presence detection.
- Absence detection using an AT-BB-IN Input Unit and associated switch/button plate.
- Manual On/Off control using IR Handset.
- Lux switching.

Power-up test procedure

When power is applied to the unit, the load will turn on immediately.

Vacate the room or remain very still and wait for the load to switch off (this should take around 10 minutes).

Check that the load switches on when movement is detected.

The unit is now ready for programming.

Fault finding

What if the load does not turn ON?

- Check that the live supply to the circuit is good.
- Check that the load is functioning by bypassing the sensor (e.g. link terminals **L** and **L/ Out** on Channel1).
- Check that the unit is correctly addressed, see 'Step 1: Set channel addresses and channel load type' on page 7.
- If the detection range is smaller than expected, check the diagrams in page 2. Rotating the sensor slightly may improve the detection range.

HINT: The Walk Test LED function can be used to check that the unit is detecting movement in the required area (see page 8 for further details).

What if the load does not turn OFF?

- Ensure that the area is left unoccupied for longer than the Time Adjustment Period (default is 10 minutes).
- Ensure that the sensor is not adjacent to circulating air, heaters or lamps.

HINT: The Walk Test LED function can be used to check that the unit is detecting movement in the required area (see page 8 for further details).

Basic programming

The functionality of the EBDHS-AT-PRM Sensor is controlled by a number of parameters which can be changed or programmed by any of the following devices:

- **UHS4** Infrared Handset
- **UNLCDHS** Infrared Handset (with LCD)

For most basic programming operations the UHS4 handset is recommended and the following procedures are based on using this device.

Point the handset at the Sensor and send the required programming commands to the unit as shown in Steps 1, 2 and 3.

Valid commands will be indicated by a green LED flash. See page 1 for details of other LED responses.

Step 1: Set channel addresses and channel load type

The Sensor has one output channel:

- Channel 1 - Switched Output

and one input channel:

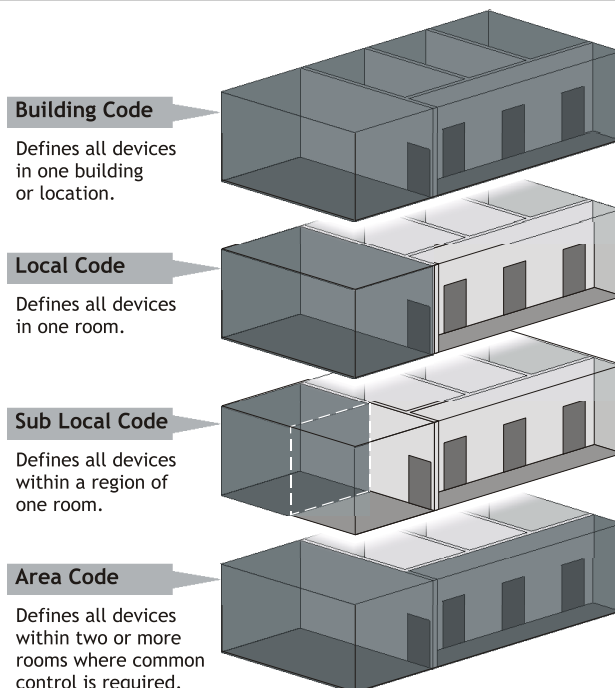
- Channel 3 - PIR Sensor

To relate the function of different channels it is necessary to set the addresses correctly. For example, a scene select message sent from a device with a Local Code of 1 will only be actioned by devices that also have a Local Code of 1.

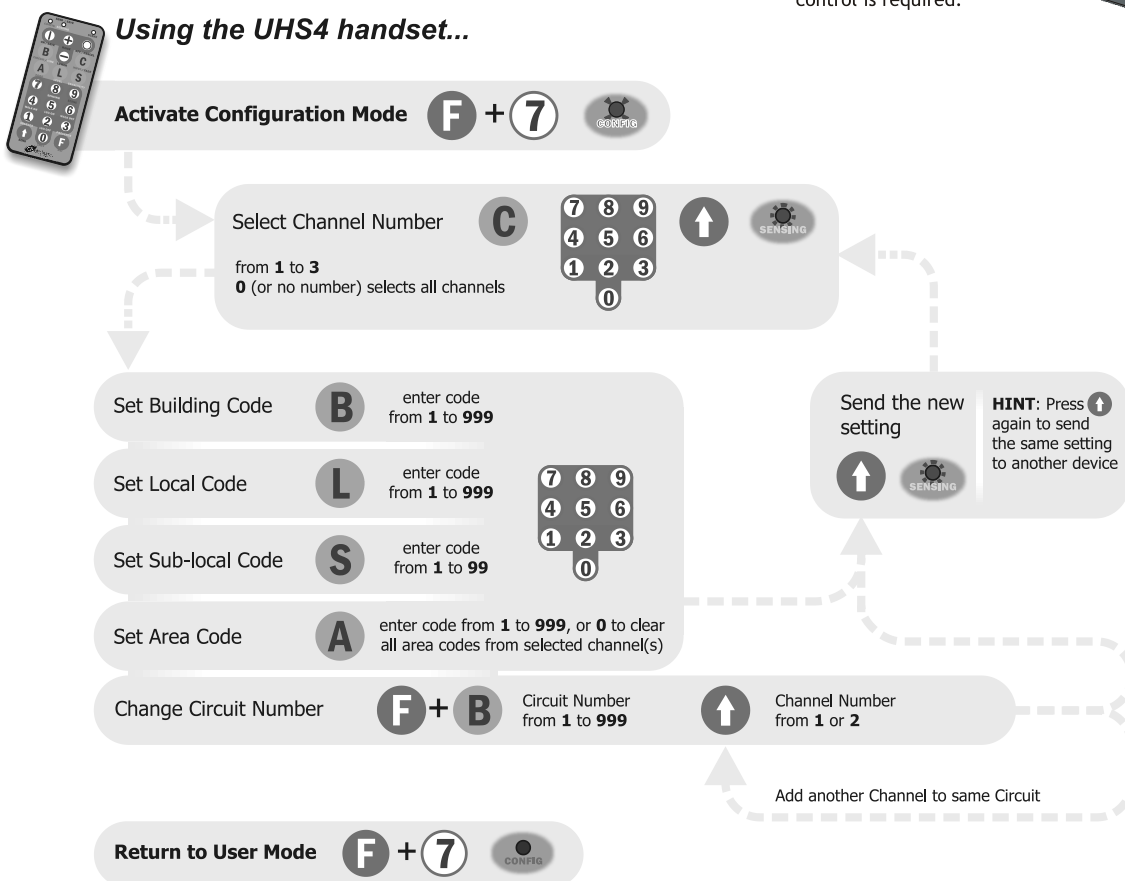
To program the settings for a specific channel on the Sensor you must specify the appropriate channel number (i.e. 1 to 3) using the programming device.

If no channel number (or channel 0) is specified, all channels will be set to the same address.

The output channel also has a Circuit number. This allows different physical channels to be linked and controlled as a single Circuit.



Using the UHS4 handset...



Step 2: Set-up sensor functionality

Detection Mode

The Detection Mode for the output Channel 1 can be set to behave in Presence or Absence mode:

- **Presence** mode allows a channel to turn on when movement is detected. Once turned on, if no movement is detected the Time Adjustment (10 minutes by default) the channel will turn off.
- **Absence** mode requires the channel to be turned on by some other means (e.g. by issuing a Scene Select message via an Input Unit or IR Handset). Once turned on, if no movement is detected for period of time (the Time Adjustment) the channel will turn off.

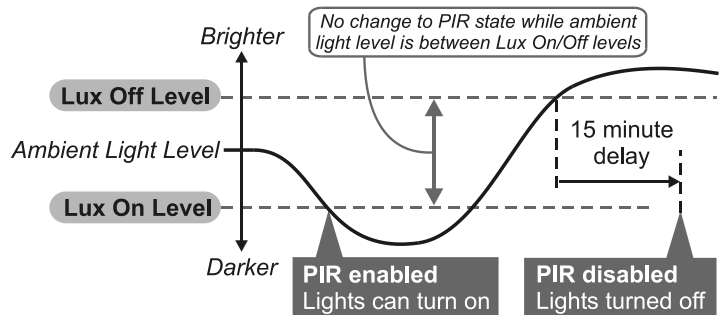
In either case, sensitivity to movement of the PIR sensor (Channel 3) can be adjusted using the Sensitivity parameter (set to 5 by default).

HINT: To assist in setting the Sensitivity, turn on the Walk Test LED which will flash red when movement is detected.

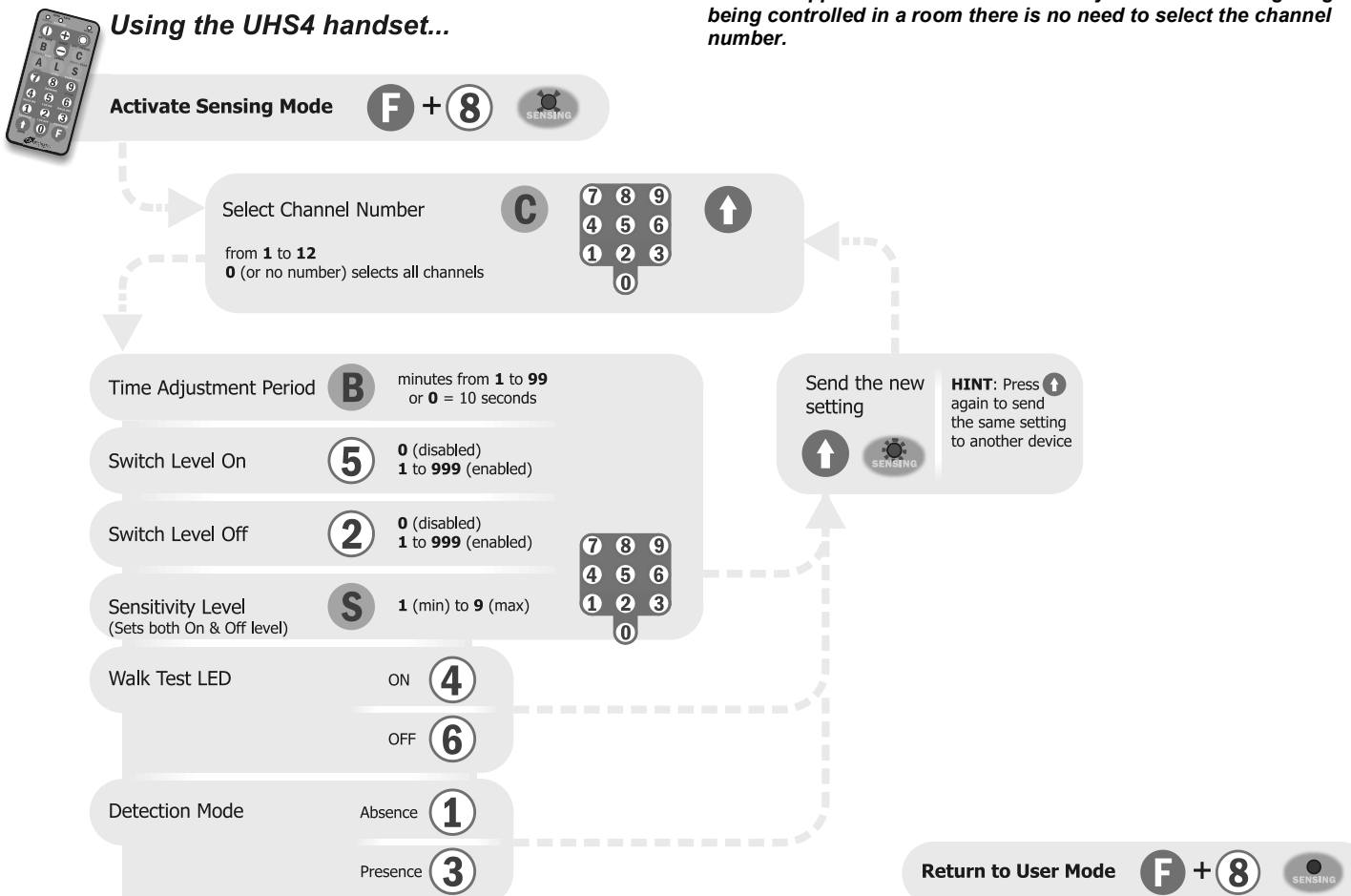
By default when the detector turns on Local Scene 1 is selected. When the detector turns off Local Scene 20 is selected. See 'Scenes Used for Occupancy Detection' in Step 3 for further details.

Switch Level On/Off

Occupancy detection can be made dependant on the ambient light level using the Lux On Level and Lux Off Level parameters.



Using the UHS4 handset...



Note: for applications where there is only one channel of lighting being controlled in a room there is no need to select the channel number.

Basic programming

Step 3: Re-program scenes

The EBDHS-AT-PRM has capacity to store 20 Local Scenes and 120 Area Scenes. By default all Scenes are pre-programmed with the following channel levels, but these can be changed as required:

Local Scenes	
	1 2 3 4 5 6 ... 19 20
Ch1	on on on on on on ... on off
Area Scenes	
	101 102 103 104 105 106 ... 119 220
Ch1	on on on on on on ... on off

NOTE: Local Scene 20 and Area Scene 120 are designated 'off' scenes within a system and should normally be programmed with all channels off or at zero.

Scenes can be recalled by using an IR Handset or by a switch/button plate via an AT-BB-IN Input Unit.

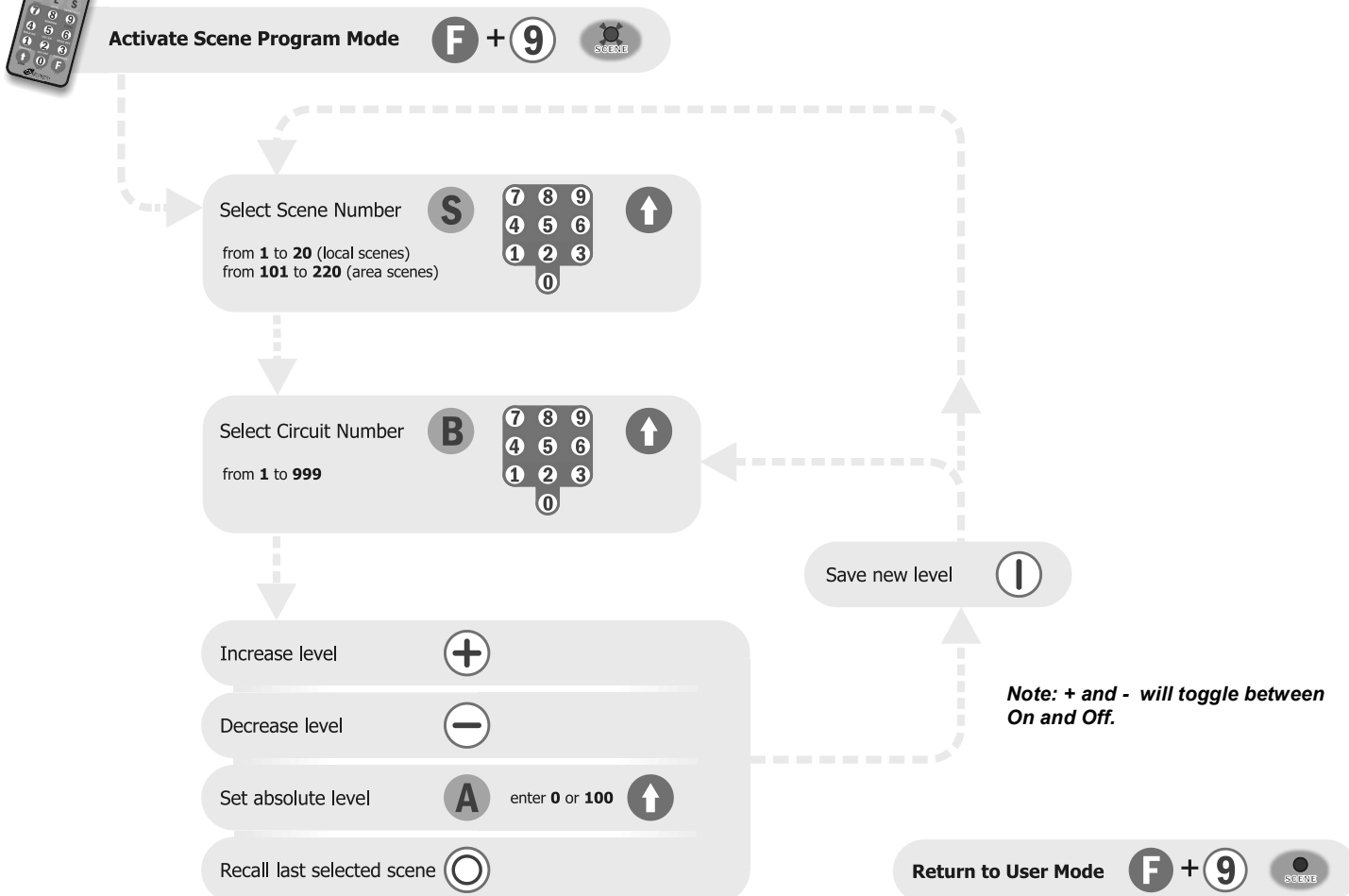
Scenes Used for Occupancy Detection

If movement is detected (in Presence mode), Local On Scene 1 is selected. By default this switches Channel 1 On.

If no movement is detected for the Time Adjustment Period (in Presence or Absence mode), Local Off Scene 20 is selected. By default this switches Channel 1 Off.

NOTE: These 'On' and 'Off' Scene selections cannot be changed using the UHS4 handset. You can, however, reprogram, on or off values, for Scenes 1 and 20 if required.

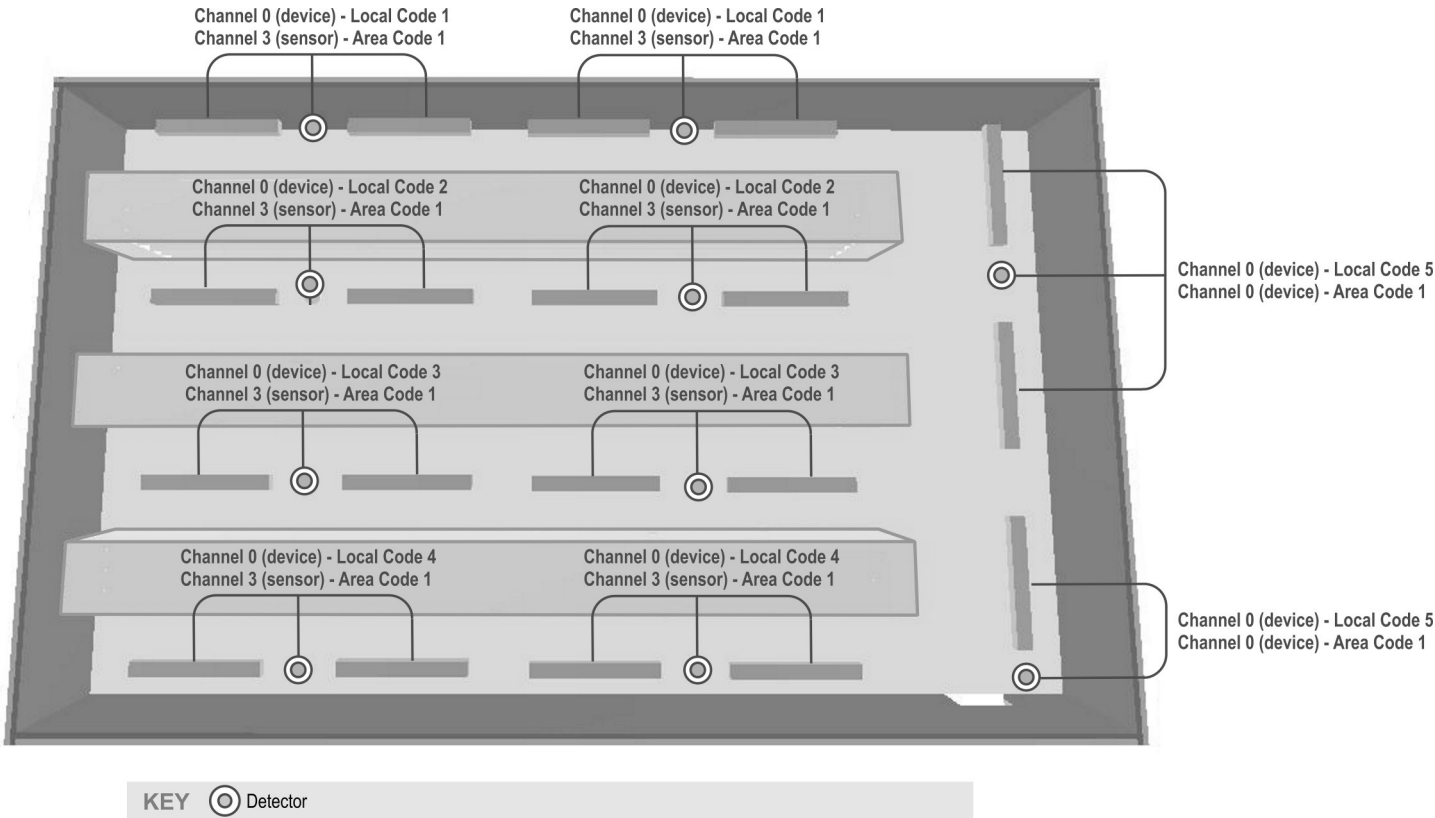
Using the UHS4 handset...



Warehouse

This example shows a warehouse with 19 light fittings in 4 aisles and 1 corridor. Each storage aisle has 4 fittings connected to 2 EBDHS-AT detectors. These detectors, in each aisle, have an aisle specific Local Code and the same Area codes. The corridor to the right has 3 fittings and 2 detectors, set to a fifth Local Code, **and** also a member of the aisle's Area Code.

In this arrangement the corridor lighting is activated when an aisle is entered, but the other aisles do not light unless entered. When any of the aisles detectors are activated all of those aisle fittings will be illuminated.



Advanced programming

The tables on pages 12 to 14 give a summary of all programmable parameters for the EBDHS-AT-PRM Sensor.

Parameter Name	Default Value	Range / Options	Description	Programming Devices	
				UHS4	UNLCDHS
<i>For Device</i>					
Product ID	<i>Automatically assigned by the device</i>	1 to 999	A number used to uniquely identify each device within a range of devices that are set to the same Local Code.	✗	✓
Building Code	1	1 to 999	A number shared by all devices that belong to the same building or system.	✓	✓
Lock	0	Enable (1) or disable (0)	Lock the An-10 network. Prevents more devices joining the network.	✗	✓
<i>For Channel 1 (Switched Output)</i>					
Local Code	1	1 to 999	A number corresponding to the Local Code of all devices to be controlled by an associated input channel.	✓	✓
Sub Local Code(s)	<i>Not set</i>	1 to 99 0 to clear	A number corresponding to the Sub Local Code of all devices to be controlled by an associated input channel. Up to 20 Sub Local Codes can be set for the switched output Channel 1.	✓	✓
Area Code(s)	999	1 to 999 0 to clear	A number corresponding to the Area Code of all devices to be controlled by an associated input channel. Up to 32 Area Codes can be set for the switched output Channel 1.	✓	✓
Circuit Number	1	1 to 999	Sets the circuit number for this channel.	✓	✓
Detection Mode	Presence	Presence or Absence	Presence mode allows the output to turn on when movement is detected and off when movement ceases. Absence mode allows the output to turn off when movement ceases, but must be manually turned on first.	✓	✓
Output State	<i>Set by Scene</i>	0-100% 0=off	The current output state of the channel, for example as set by a Scene Select command.	✓	✓
Raise from off	1	Enable (1) or disable (0)	Enables raise from off feature.	✗	✓
Lower from off	1	Enable (1) or disable (0)	Enables lower from off feature.	✗	✓
Lux off period	0	0 to 999 in minutes (0=15 seconds)	Number of minutes above the Lux Off level before a lux switching decision is made.	✗	✓
Lux switching enabled	1	Enable (1) or disable (0)	Enables or disables the output channel to respond to lux switching commands.	✗	✓
Detector enabled	1	Enable (1) or disable (0)	Enables the output channel to be controlled by detector occupancy.	✗	✓
Detector inhibit period	0	0 to 255	Detector inhibit period in 100s of milliseconds (255 = 25 seconds).	✗	✓

Advanced programming

Parameter Name	Default Value	Range / Options	Description	Programming Devices	
				UHS4	UNLCDHS
<i>For Channel 3 (PIR Sensor)</i>					
Local Code	1	1 to 999	A number corresponding to the Local Code of all devices to be controlled by this PIR input channel.	✓	✓
Sub Local Code	<i>Not set</i>	1 to 99	A number corresponding to the Sub Local Code of all devices to be controlled by this PIR input channel.	✓	✓
Area Code(s)	<i>Not set</i>	1 to 999 0 to clear	A number corresponding to the Area Code of all devices to be controlled by this PIR input channel. Up to 10 Area Codes can be set for Channel 3.	✓	✓
Sensitivity On	5	1 (min) to 9 (max)	Sensitivity level for detecting movement when the detector is already on. *UHS4 sets Sensitivity On and Off to the same value.	✓*	✓
Sensitivity Off	5	1 (min) to 9 (max)	Sensitivity level for detecting movement when the detector is off. *UHS4 sets Sensitivity On and Off to the same value.	✓*	✓
Walk Test LED	Off	On or Off	When set to On this causes a red LED to flash on the sensor when it detects movement. Use this feature to check for adequate Sensitivity On/Off levels.	✓	✓
Lux on level <i>(Switch level on)</i>	400	0 (disabled) or 1 to 999	Sets a minimum light level below which the PIR sensor is enabled, allowing lights to be turned on by movement.	✓	✓
Lux off level <i>(Switch level off)</i>	700	0 (disabled) or 1 to 999	Sets a maximum light level above which the PIR sensor is disabled, preventing lights from being turned on by movement.	✓	✓
Power Up State	On	On or Off	When power is applied to the unit the PIR sensor goes through a settling down period of up to 40 seconds. With Power Up set to On, the outputs go to the last levels for up to 15 seconds, then the Local On Scene (scene 1 by default) is invoked plus the Time Adjustment Period, after which the Local Step/Off Scene (scene 20 by default) is invoked (assuming no movement is detected). With Power Up set to Off, the outputs go to the last levels until movement is detected.	✗	✓
Disable Detector	N	Y or N	Disables detection, leaving the relay output permanently off with the dimming output operational. This mode is used when the unit is for maintained illuminance only.	✗	✓
Verify	N	Y or N	Requires two or more PIR detectors to detect to trigger the lights on.	✗	✓

Parameter Name	Default Value	Range / Options	Description	Programming Devices	
				UHS4	UNLCDHS
<i>When movement is detected...</i>					
Local On Scene	1	1 to 20	The local scene request sent to all devices with the Local Code specified.	✗	✓
Area On Scene	101	101 to 220	The area scene request sent to all devices with the Area Code(s) specified above, when movement is detected. <i>NOTE: The Area On Scene is ignored unless one or more Area Codes are set for the corresponding input channel and they match the Area Codes set in any output channel.</i>	✗	✓
Time adjustment	10 mins	0 (10 seconds) 1 to 99 minutes	Once the detector is turned on, this value sets how long the lights will stay on once movement has ceased. The 10 second setting is for commissioning only.	✓	✓
<i>When no movement is detected for Time Adjustment...</i>					
Local Off Scene	20	1 to 20		✗	✓
Area Off Scene	220	1 to 20		✗	✓

Technical data

Dimensions	See diagrams opposite
Weight	0.1kg
Supply Voltage	230VAC +/- 10%
Frequency	50Hz
Maximum Load	Channel 1 (switching): 10A of lighting and/or ventilation including incandescent, fluorescent, compact fluorescent, low voltage (by switching the primary of transformer).
Power consumption	On 1100mW, Off 653mW
Terminal Capacity	2.5mm ²

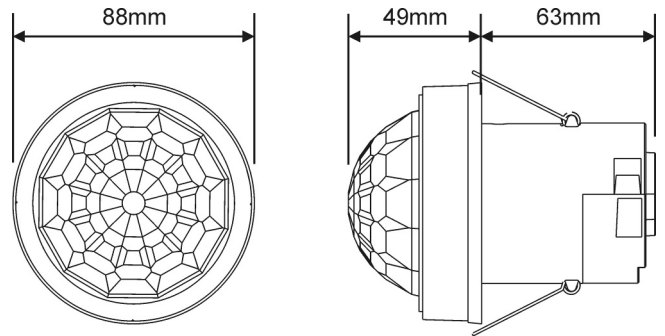


Order code	Region	Radio frequency	Compliance
blank	European Union	868MHz	EN300 220-2 V2.1.2 EN301 489-1 V1.8.1 EN301 489-3 V1.2.1 LVD-2006/95/EC
-A2	Australia & New Zealand	915MHz	AS/NZS 4268:2008

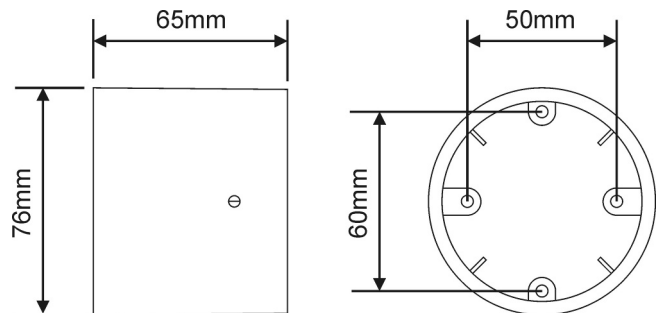
Receiver Class	2
Transmitter Duty Cycle	<10% on g3 band (default band) <0.1% on g2 band <1% on g1 band
Range	The maximum RF range between An-10 devices is 100m in free air and up to 30m indoors. However the materials used within a building will vary and this will impact upon the RF range. In reality the nature of how the An-10's hybrid-mesh works means that in most scenarios the individual range of an An-10 product will not be important.

Temperature	0°C to 35°C
Humidity	5 to 95% non-condensing
Material (casing)	Flame retardant ABS and PC/ABS
Type	Class 2
IP rating	40 without gasket. 65 with gasket.

EBDHS-AT-PRM



DBB



UK and international patents applied for

Hereby, CP Electronics Ltd, declares that this EBDHS-AT-PRM is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. The declaration of conformity may be obtained for CP Electronics Ltd Brent Crescent, London, NW10 7XR, UK.

Part numbers

EBDHS-AT-PRM	RF Ceiling PIR presence detector – switched
EBDHS-AT-AD	RF Ceiling PIR presence detector – 1-10V dimming
EBDHS-AT-DD	RF Ceiling PIR presence detector – DALI/DSI dimming
AT-BB-IN	RF Input unit
AT-SL-R	RF relay controller
AT-SL-R-SA	RF relay controller (standalone)
AT-SL-DDR	RF DALI/DSI + relay controller
AT-SL-DDR-SA	RF DALI/DSI + relay controller (standalone)
AT-SL-ADR	RF 1-10V + relay controller
AT-SL-ADR-SA	RF 1-10V + relay controller (standalone)
VITM4-ATMOD	RF Switching module
VITM6-ATMOD-AD	RF VITM6 1-10V module
VITM6-ATMOD-DD	RF VITM6 DALI/DSI module
UHS4	Programming IR handset
UNLCDHS	Universal LCD IR handset



FM 45789 EMS 534520



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Due to our policy of continual product improvement CP Electronics reserves the right to alter the specification of this product without prior notice.

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