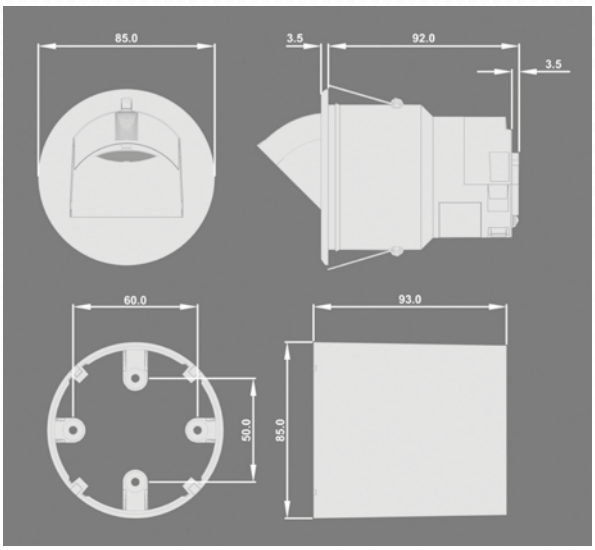
PRE4203-DD

Ceiling mounted microwave detector

Cleverly simple
control of energy.



DESCRIPTION & OPERATION

The PRE4203-DD microwave detector provides automatic control of lighting loads with optional manual control.

It can be used on incandescent, fluorescent and compact fluorescent lighting, and DSI or DALI digital dimming ballast over 1 or 2 channels. The PRE4203-DD detects movement using a highly sensitive microwave detector. This works by emitting low power microwave signals and measuring the reflections as the signals bounce off moving objects. The PRE4203-DD has a unique adjustable sensor head that allows the area of detection to be optimized for the application.

The dimming channel of the detector can be used to control the light output of luminaires that are fitted with dimming ballasts. The detector measures the overall light level in the detection area and calculates the correct output for the luminaires, to achieve a preset lux level (maintained illuminance). the switching channel of the detector can either be used to isolate the supply to the dimming ballasts(saving on the standby current of the ballasts) or to switch a separate channel, non-dimming luminaires.

Two input terminals can be used to manually override the dimming levels and override the lights on and off.

The flexibility of having two channels and two switch inputs allows the following example scenarios:

1. Dim an outside row of luminaires whilst internal fittings are switched.
2. Provide absence detection (see below) for two separate channels
3. Maintained illuminance system with manual up/down controls

An integral infra red sensor in the unit allows the unit to be programmed using the optional PRE5901 programming handset. This gives complete flexibility over many of the operating parameters. Without the handset, manual adjustments can be made to the sensitivity, lux and time settings using controls accessible behind the lens. The PRE5903 user handset can be used to change output lux levels and override the lights on or off.

Presence detection:
When movement is detected the load will automatically turn on. When the area is no longer occupied the load will automatically switch off after an adjustable time period.

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SPECIFICATION

Load	Channel 1(switching): 10A of lighting and or ventilation including incandescent, fluorescent, low voltage (switch primary of transformer) Channel 2 (dimming): Maximum number of DSI or DALI ballasts is 10 unless the relay is disabled then it is 20.
Supply voltage	220-240 Votls AC 50Hz
Time out period	Adjustable 10 seconds to 99 minutes
Light Level	Light to dark.
Terminal Capacity	2.5mm2
Materia	Flame retardant ABS,
Type	Class 2
Temperature	-10°C to 35°C
Safety	The microwave radiation emitted by these units is extremely low power. At a distance of >50mm the power density is <6% of the ANSI IEEE C95.1-1991 recommended microwave power density.
Conformity	EMC-89/336/EEC LVD-73/23/EEC

WIRING DIAGRAMS

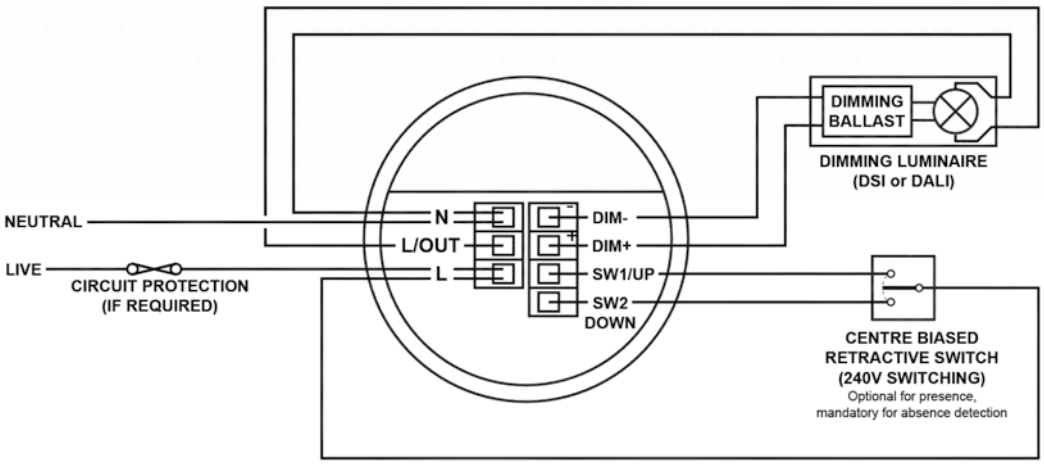
Functions: Switches the luminaire with occupancy and maintains illuminance. Dims switches using optional centre biased retractive switch (MKK4900 or similar).

Configured to presence detection: Turns on automatically with occupancy. Maintains illuminance. Press and release down switch to turn off. Press and release the up switch to turn back on press and hold up switch to dim up, press and hold down switch to dim down. Turns off occupancy.

Configured to absence detection: Press and release up switch to turn on. Maintains illuminance>press and release the down switch to turn off. Press and hold the up switch to dim up, press and hold down the switch to dim down. Turns off after occupancy.

Channel mode: Set to "switch and dim together".

Switch mode: Set to "2 position switch together".



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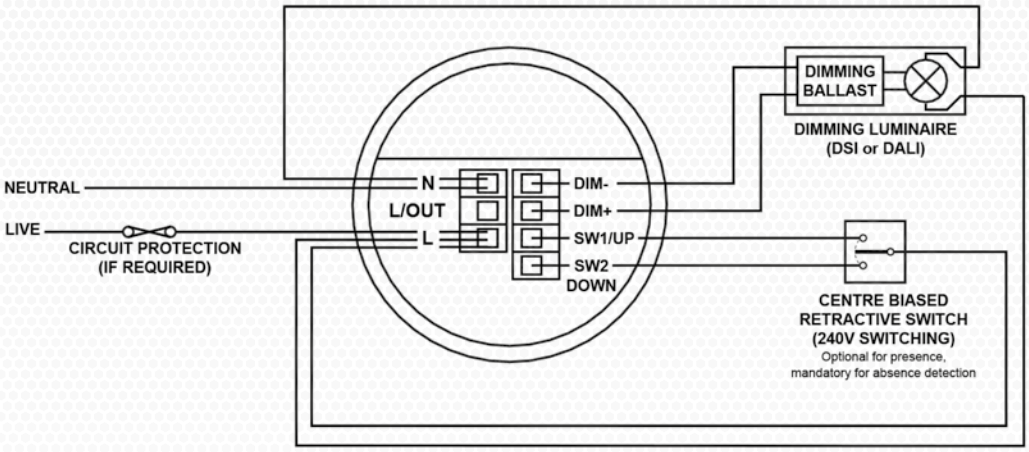
When there is a requirement to have an "Off" state that requires a permanent dimmed level. The use the DSI/DALI "pair" to both switch and dim, and a live feed direct to the ballast. Set the "Off value" (section 4.10 in the programming section) to a value greater than to achieve a permanent dimmed level for the Off state. See the diagram below for wiring detail.



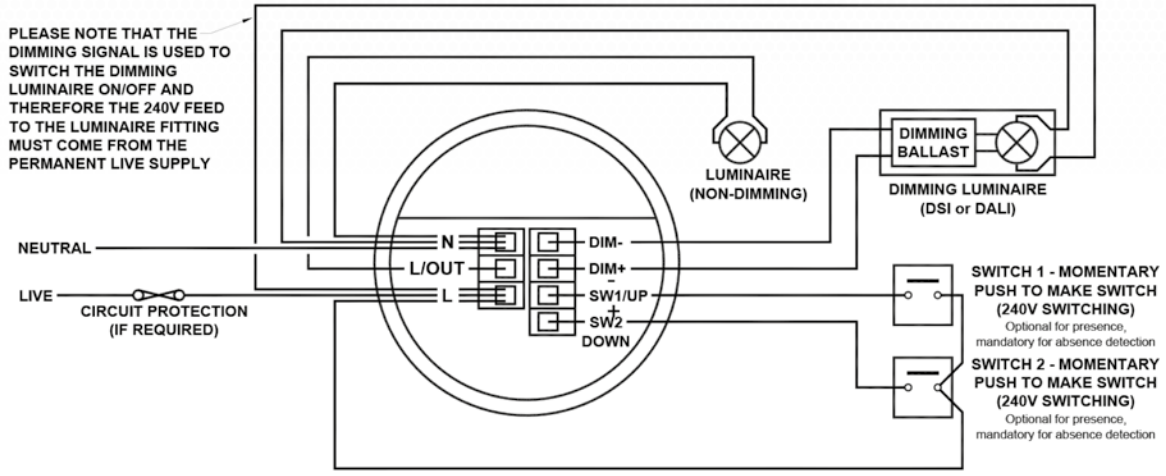
Functions: Switches both channels with occupancy. Maintains illuminance, dims switches the dimming channel using optional single position retractive switch 2) . Switches the switching channel using the optional single position retractive switch (Switch 1).

Configured to presence detection: Turns on automatically with occupancy. Maintains illuminance (dimming channel only). Press and release switch to toggle output. Press and hold switch to dim up and down (reverses direction with each press). Turns off after occupancy.

Configured to absence detection: Press and release switch to turn on. Maintains illuminance (dimming channel only). Press and release switch to turn off. Press and hold switch to dim up and down (reverses direction with each press). Turns off after occupancy.

Channel mode: set "switch ad dim separate"

Switch mode: Set to "1 position switch separate"



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Two channel, common switch

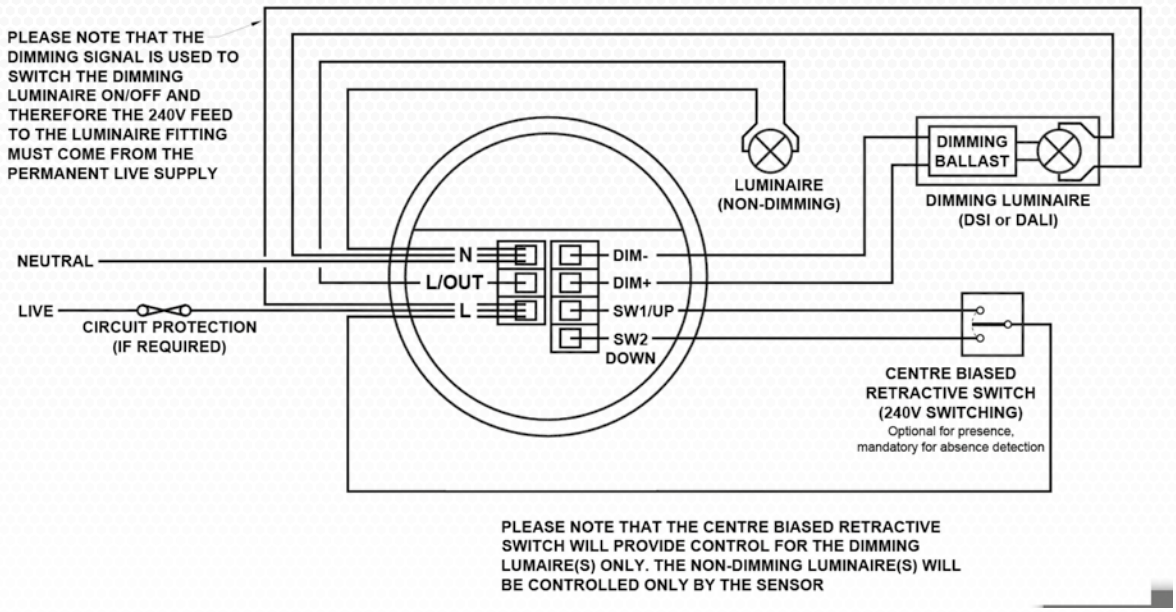
Functions: switches both channel's with occupancy. Maintains illuminance, dims and switches the dimming channel using an optional centre biased retracitve switch.

Configured to presence detection: turns on automatically with occupancy. Maintains illuminance (dimming channel only). Press and release the down switch to turn off. Press and release the up switch to turn back on. Press and hold the up switch to dim up, and press and hold the down button to dim down. Turns off after occupancy. Channel 1 does not operate with switch.

Configured to absence detection: press and release the up switch to turn on. Maintains illuminance(dimming channel only). Press and release down switch to turn off. Press and hold the up switch to dim up, press and hold down the switch to dim down. Turns off after occupancy. Channel 1 does not operate with switch.

Channel mode: Set to "switch and dim separate"

Switch mode: Set to "2 position switch separate"



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Single channel switching

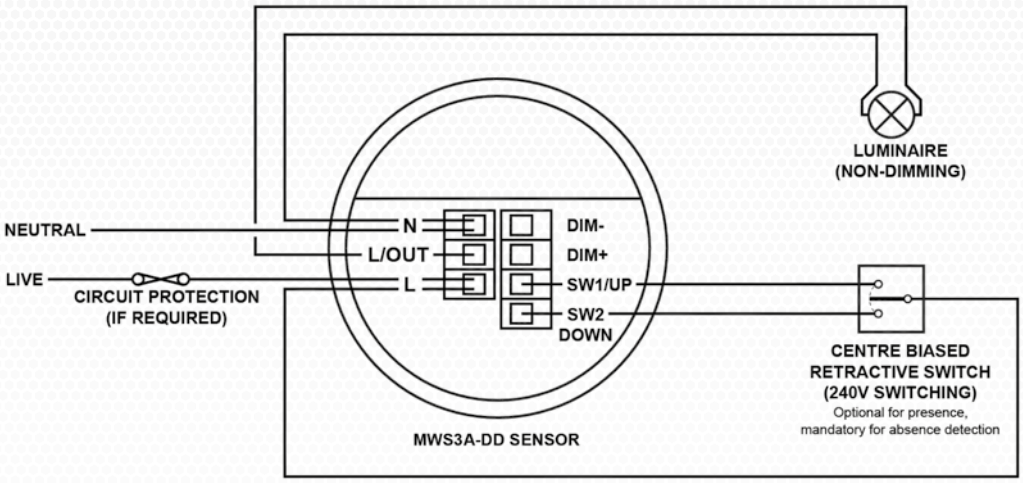
Functions: Switches channel 1 only with occupancy, optional override switch. No dimming output.

Configured to absence detection: Turns on automatically with occupancy. Press and release down switch to turn off. Press and release down switch to turn back on. Turns off after occupancy.

Configured to absence detection: Press and release up switch to turn on. Press and release down switch to turn off. Turns off after occupancy.

Channel mode: set to "switch only"

Switch mode: set "2 position switch together". Note: A single position switch can be used instead to toggle the output, set to "2 position switch separate"



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SET UP

1. Make sure the load is connected and in working order.
2. Isolate the mains supply to the circuit at the main consumer unit.
3. Connect the sensor via the terminal blocks. Live supply to the L terminal; Load to L/OUT terminal; Neutral to the N terminal on the green terminal block. Dimming / external connection should be made as required according to the applicable wiring diagrams shown above.
4. Use a small screw driver to set the LUX level adjuster fully clockwise, the time to minimum (fully anti clockwise) and the sensitivity to maximum (fully clockwise) using the diagram overleaf.
5. Apply power - the load should come on immediately.
6. Vacate the room or remain very still and wait for the load to switch off (should take no more that 2 minutes). Check that the load switches on when movement is detected.
7. For dimming applications, set the light output level by using the LUX adjustment thumb wheel or the handset. See page 8 for handset instructions.

- During operation the output level varies very gradually. However when the LUX level is changed the unit automatically enters setup mode: in this mode the output level varies rapidly. After the setup time the unit reverts to normal.
- When adjusting the output, allow the output level to settle by changing very gradually.
- To disable the maintained illuminance function completely, set the LUX level to maximum.

8. Select the time out range using the adjuster, fully clockwise is the maximum.
9. The area of detection can be varied by altering the angle of the sensor head and the sensitivity adjuster. Note : on maximum sensitivity this unit is extremely sensitive to movement and may detect through glass, thin walls or partitions. If this causes a problem reduce the sensitivity by turning the adjuster anti clockwise.
10. Using the PRE5901 infra-red handset: the override on button turns the unit on permanently; the override off button turns the unit off permanently; the cancel button cancels the overrides. When an override is selected an LED will flash inside the unit. The PRE5903 handset can also be used to set the lux levels - see Page 5 section 5.

Note: the above adjustments can also be made with the use of the PRE5901 Handset.

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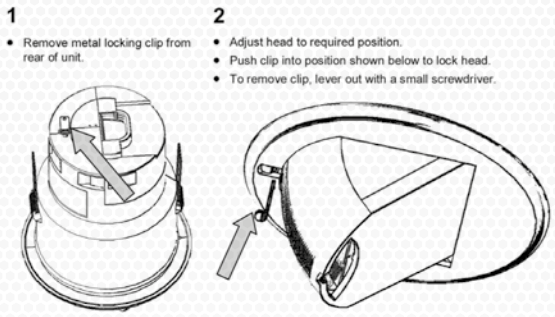
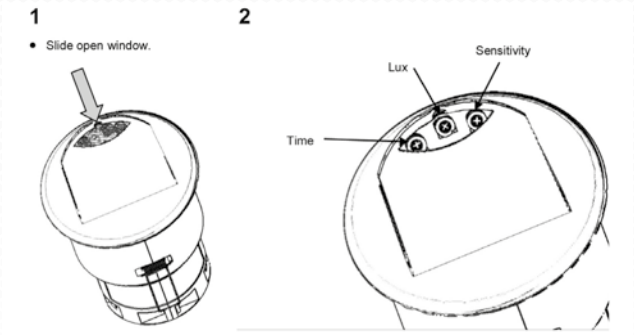
INSTALLATION

DETECTOR HEAD LOCKING



TIME, LUX & SENSITIVITY ADJUSTERS



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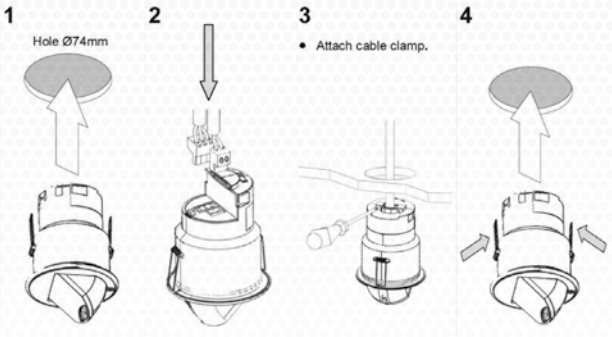
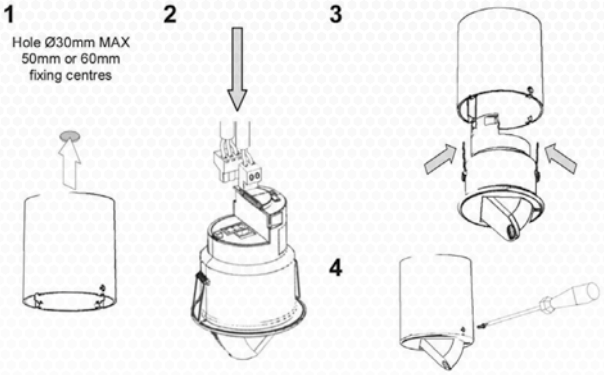
FIXING THE DETECTOR

- The detector should be sited so that the occupants of the room fall inside the detection pattern shown overleaf.
- Corridors or aisles: the unit should be placed at the end of the corridor or aisle and the sensor head should be angled to look down the corridor or aisle.
- Open plan areas and offices: the unit can be mounted in a corner looking outwards in which case the sensor head should be angled, or the unit can be mounted in the centre of the area with the sensor head flat. Note that the higher the sensor is installed the shorter the detection range will be.
- Site as far away as possible from any lighting or ventilation equipment.
- Do not fix to a vibrating surface.
- Do not fix to a suspended luminaire.
- Site as far away as possible from the surface of metal objects.
- Mount using one of the two options below.

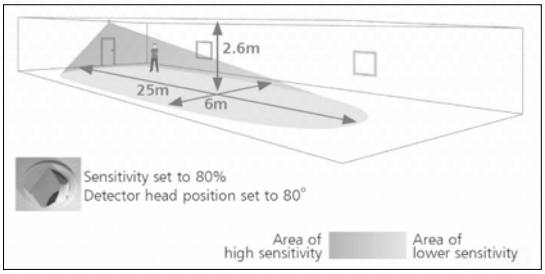
FLUSH MOUNTING



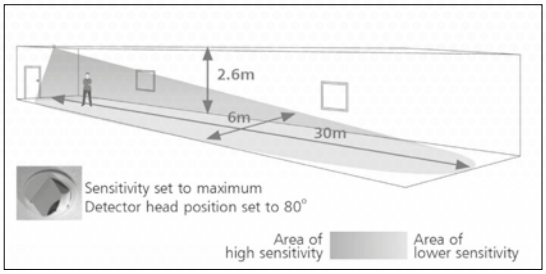
SURFACE MOUNTING USING PRE3BB BACK BOX (NOT SUPPLIED)



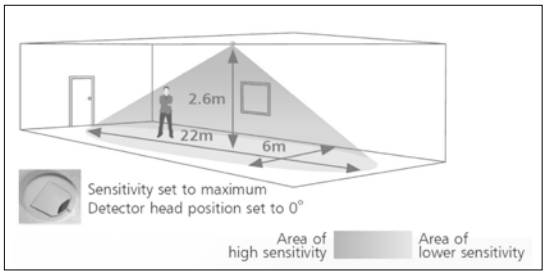
DETECTOR PATTERNS



Ideal for large office or classroom



Ideal for corridor or aisle applications



Ideal for open-plan areas and offices

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PROGRAMMING

All the following functions can be programmed using the PRE5901 programming handset.

1 Detector Parameters (factory default in brackets)

1.1	**Time adjustment**	10 seconds to 99 minutes time delay (select 0 for 10 second delay - use for commissioning only).
1.2	**Sensitivity On (9)**	Sensitivity level when the detector is already operational adjustable between 1 (min.) and 9 (max.)
1.3	**Sensitivity Off (9)**	Sensitivity level for switching the detector on - adjustable between 1 (min.) and 9 (max.).
1.4	**Power Up On (Y)**	Select No for a 30 second delay on start up. If Yes is selected, there will be no delay on start up and the detector will always power up detecting.
1.5	**Walk Test (N)**	An LED behind the detector lens will flash to show movement has been detected (use for commissioning).
1.6	**Disable Detector (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.
1.7	**Factory Default**	Restores factory default settings.

2 Modes

2.1	**Channel modes**	Auto switch on with detection, auto off after movement ceases (default) and time delay ends.
2.1.1	**Switch only**	Usually for absence detection - in this mode the dimming channel is used.
2.1.2	**Switch and dim Together (default)**	The detector will switch and dim the lighting together.
2.1.3	**Switch and dim Separate**	Provides 2 channel operation - Channel 1 is switched via the relay output, and channel 2 is Dimmed / switched via the dimming output.

2.2 Switch modes

2.2.1	**Position together (default)**	A single centre biased retractive switch will be used to control both channels together.
2.2.2	**Position switch Separate**	A single centre biased retractive switch will be used to control only the dimming channel.
2.2.3	**Position switch Together**	A single position retractive switch controls both channels together.
2.2.4	**Position switch Separate**	Two single position retractive switches, controlling the channels separately.

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3 Switching channel 1 functions

3.1	**Presence detection**	Auto switch on with detection, auto off after movement ceases (default) and time delay ends.
3.2	**Absence detection**	Manual switch on, auto off after movement ceases and time delay ends (default)
3.3	**Switch level on (9)**	LUX level setting to prevent the luminaires being switched on if the ambient light level is sufficient (adjustable between 1 and 9). The luminaires will always be switched on at level 9. For a higher resolution of "switch level on" a scale of 101-199 is available in the "special menu"
3.4	**Switch level off (9)**	Lux level setting to switch the luminaires off during occupancy if the ambient light level goes above the setting (adjustable between 1 and 9). Level 9 will always keep the light on. This setting can be used for "window row switching". For a higher resolution of "switch off level" a scale of 101-199 is available in the "special menu"

4 Dimming channel 2 functions

4.1	**Light level**	Maintained illuminance level (adjustable between 1 and 99). At 99 the output will be always be at Maximum.
4.2	**Presence detection (Default)**	Auto switch on with detection, auto off after movement ceases and time delay end.
4.3	**Absence detection**	Manual switch on, auto off after movement ceases and time delay ends.
4.4	**Switch on level (9)**	Lux level setting to switch the luminaires being switched off during occupancy if the ambient light level goes above the setting (adjustable between 1 and 9). Level 9 will always keep the lights on. This setting can be used for "window row switching". For a higher resolution of "switch level on" a scale of 101-199 is available in the "special menu".
4.5	**DSI (default)**	Selects DSI dimming
4.6	**DALI**	Selects DALI dimming

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4.7 Memorise (N) If this is set to yes, the last manual lux level set will be memorised and used as the new switch on level.

4.8 On value (99) Dimming output level when switched on (0-99).

4.9 Off value (0) Dimming output level when switched off(0-99). If a non zero off value is set, then output will toggle between this value and completely off depending on the switch level on and off values. For example, if it is light outside, the fittings will be off if there is no occupancy. If it is dark outside, they will adopt the preset off value. This feature is only enabled if "min value" is set to 99.

4.10 Fade value (10) After occupancy ceases, this dimming output level is loaded for the fade time(adjustable between 0 and 99).

4.11 Fade mins (0) This is the time period (adjustable between 0 and 99 minutes) that the luminaires will be held at the fade value before turning off. A value of 0 disables the fade function.

4.12 Max value (99) Maximum dimming output level (adjustable 0 and 99).

4.13 Min value (1) Minimum dimming output level (adjustable 0 and 99)

4.14 Speed on (5) Determines the dimming response after the setup time has finished. Measured in 0.1 second intervals.

4.15 Speed set (5) Determines the dimming response speed during set up time. Measured in 0.1 second intervals. If set to 0 will disable dimming for "set seconds" below, used if fittings are required to warm up before dimming.

4.16 Set seconds (120) Determines how long the dimming response set-up period lasts on power-up or on setting change (adjustable between 1 and 999 seconds). this enables the desired lux level to be achieved rapidly when the lights come on, or during setup.

4.17 Burn-in (0) Determines how long the output will be at 100% of that lamps "burn-in" (adjustable between 1 and 999 hours). The burn-in time is not affected by power supply interruptions. To disable burn-in set to 0.

4.18 DALI on (OFF) Provides a permanent voltage to DALI ballasts when DALI has not been implemented correctly in the ballast. Maximum number of ballasts 10 unless the relay is disabled then it is 20. This is a special menu option.

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5 User menu
PRE5901 Handset user menu or PRE5903 handset functions.

5.1	**Lux up**	Increase light level. Reverts when occupancy cycle complete.
5.2	**Lux down**	Decrease Light level. Reverts when occupancy cycle complete.
5.3	**Scene up**	Steps up between 6 pre-designed scenes.
5.4	**Scene down**	Steps down between 6 pre-designed scenes.
5.5	**Scene**	Select the individual scene, between 0 and 6. (1 = min. output, 2 = 10% 3 = 25%, 4 = 50%, 5 = 75%, 6 = 100%)
5.6	**Override on**	Permanently overrides the luminaire output on.
5.7	**Override off**	Permanently overrides the luminaire output off.
5.8	**Cancel**	Cancels the on or off override, returning the detector to normal operation.
5.9	**Set**	If sent before using lux up or lux down, it will set the light level as in 4.1

FAULT FINDING

Load does not come ON:

- Check to see if the live supply to the circuit is good. Strap across the L and L/out terminal to turn load on.
- If the supply and wiring are good, check the LUX level setting. Increase the LUX level setting to allow the controller to turn on at a higher ambient natural light level.

Lights do not go OFF

- Ensure that the area is left unoccupied for a greater time period set using the switch.
- Make sure that the sensor is not adjacent to vibrating surfaces or objects (e.g. ventilation equipment).
- The unit may pick up movement through thin partition walls. Reduce the sensitivity by turning the Adjuster anti clockwise

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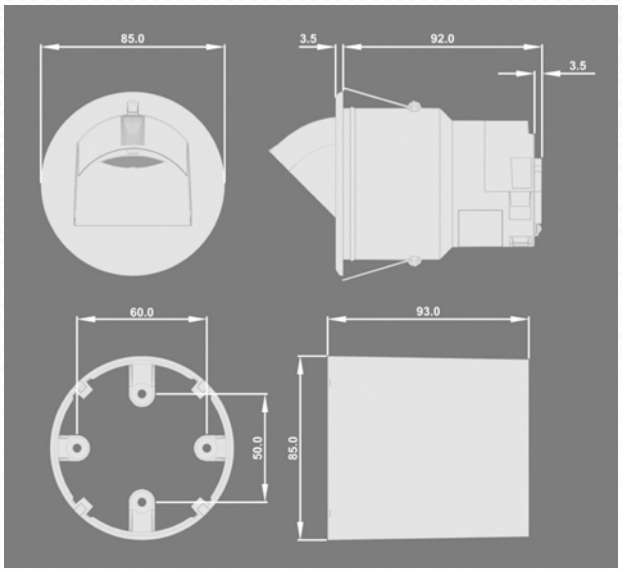
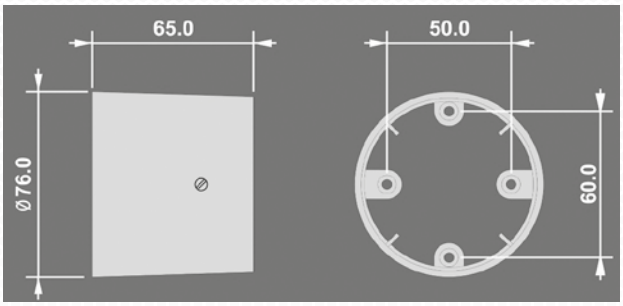
PART NUMBERS

	Part number	Description
Detector	PRE4203-DD	Ceiling PIR presence detector - DALI/DSI Dimming
Accessories	PRE3BB	Surface mounting box
	PRE5901-2	Programming IR handset
	PRE5900L	Universal LCD IR handset

PRE4203-DD



PRE3BB



IMPORTANT NOTICE

This device should be installed by a qualified electrician in accordance with the latest edition of the IEE Wiring Regulations and any applicable Building Regulations.

FM45789

EMS534520

ESTA energy services and technology association

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