ALC-AD
Product Guide

mySmart

Ceiling mounted photocell for 1 -10V dimming

Overview

The ALC-AD dimming photocell automatically adjusts the light output of luminaires depending on the amount of natural light available, to maintain constant brightness (maintained illuminance) using 1 -10V control.

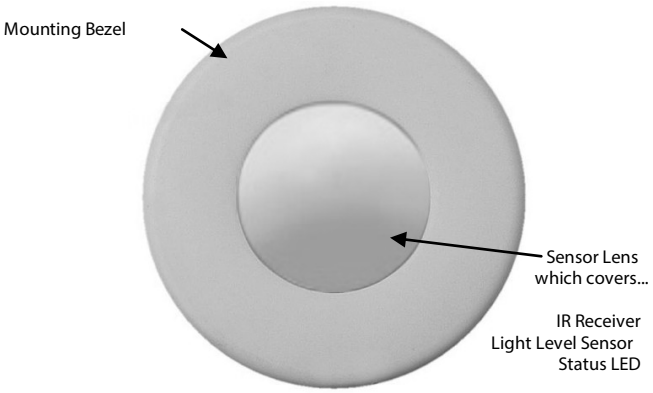
An optional manual control, using a switch input, allows the user to override the dimming levels and turn the output on and off.

In addition to changing the output level, the photocell can be set to turn lighting on when the ambient light falls below a preset level. The lighting can also be set to turn off when the total light level rises above a separate preset level. An integral, adjustable time delay prevents nuisance switching caused by, for example, dark clouds.

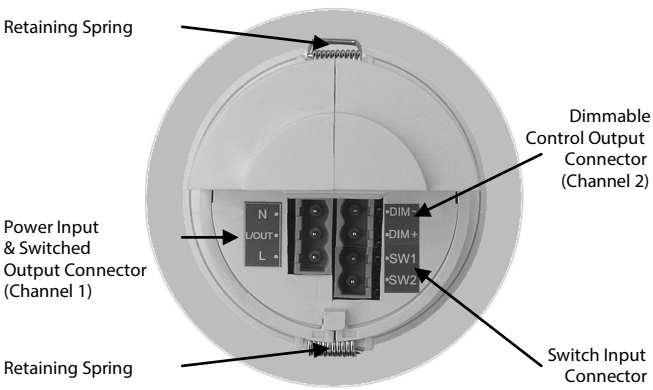
All functionality is fully programmable using an IR handset.

Features

Front features



Back features



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

Light Level Sensor
Measures the overall light level in the detection area

Status LEDs
The LED flashes R ed to indicate the following:

Valid setting received	

Power Input & Switched Output Connector (Channel 1)
Used to connect mains power to the unit and to connect a switched load.

Dimmable Control Output Connector (Channel 2)
Used to connect 1 -10V controllable ballasts and transformers for dimmable loads.

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

Installation

Choosing a Suitable Location

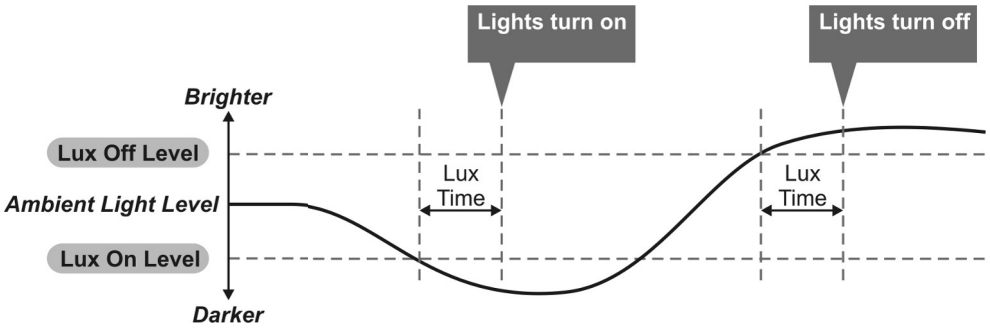
The ALC-AD is designed to be ceiling mounted and must satisfy the following criteria:

- Avoid positioning the unit where direct sunlight may enter the sensor element.

Sensor functionality

Switch Level On/Off

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



Maintained Illuminance (daylight harvesting)

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 or daylight harvesting).

Burn-in

Overview

It is a requirement of many fluorescent lamp manufacturers to have the lamps on at maximum output for a period of time to guarantee lamp life (refer to the manufacturer's datasheet for details) As this ALC-AD is able to dim the lamps using 1 -10V, the product provides a facility to disable this for a given period of time.

Operation

By setting the "Burn in" parameter, you can select a time during which the lamps are not allowed to deviate from maximum output. The unit counts the time, and even remembers how long has elapsed in the event of a power failure. To cancel the burn in function, simply select a time of 0. Note that when the lamps are changed, the burn in time should be set again.

Fault finding

What if the load does not turn ON?

- Check that the live supply to the circuit is good.
- Increase the Lux on level to switch on at a higher brightness .

What if the load does not turn OFF?

- Increase the lux off level to switch off at a lower brightness.

Load cycles on and off

- Increase the difference between the lux on level and the lux off level.
- Increase the time setting.
- Angle the sensor away from the light that it is controlling.

Installation

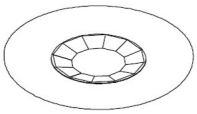
The ALC-AD is designed to be mounted using either:

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

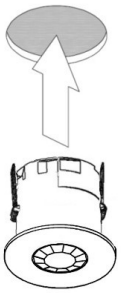
Both methods are illustrated below.

Flush Fixing

Warning - be careful bending springs when mounting unit.



1 Hole Ø64mm



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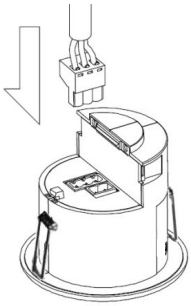

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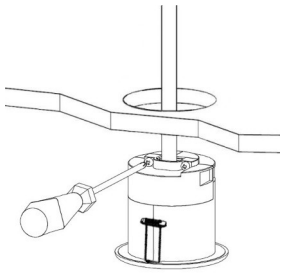

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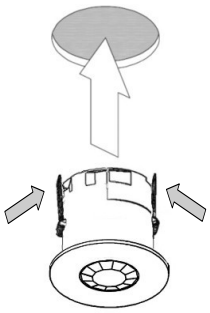
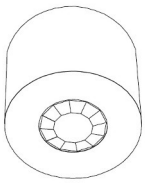
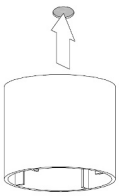


Surface Fixing



1 50mm or 60mm fixing centres



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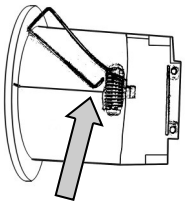
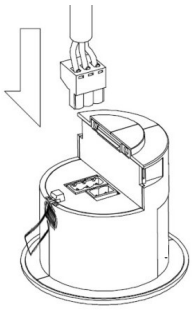


Pull out spring tab and rotate spring arm as shown

3



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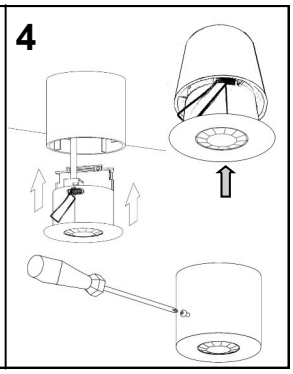
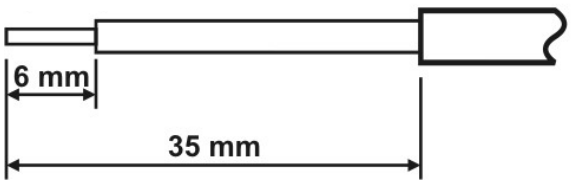
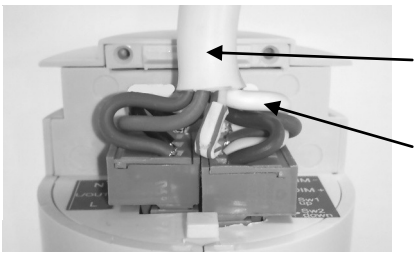


Wire stripping details





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.

Readback function *(UNLCDHS handset only)*

The UNLCDHS has the ability to read back the settings stored in a device.

To read back individual parameters

- Navigate to the parameter and press the 'R' (Read) button whilst pointing at the device. The handset will click when the parameter has been read back, the device will flash its LED, and the value will be shown against the parameter in the menu.

To read back all of the parameters in a menu

- Press and hold the 'R' (Read) button for more than 1 second.
- The handset will click every time a parameter is received
- The device will show multiple flashes of its LED
- All of the values will be shown against the parameters in the menu.
- The individual parameters may be edited and then saved as a 'Macro'.

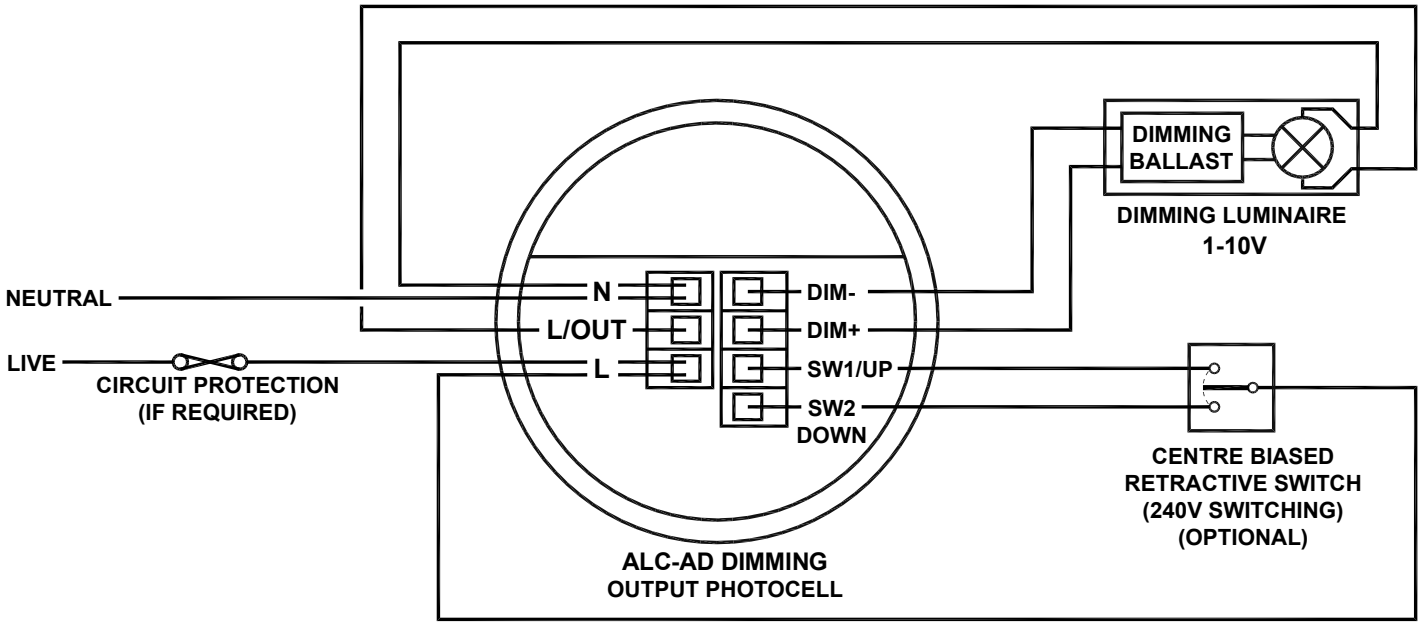
Notes

- *If a parameter(s) has been missed because of a communication error, the missing value(s) is replaced by dashes.*
- *When reading back, the Channel 1 relay (where fitted) will temporarily be switched off, and will return to it's normal state 2 seconds after the read back has been completed.*

Wiring diagrams

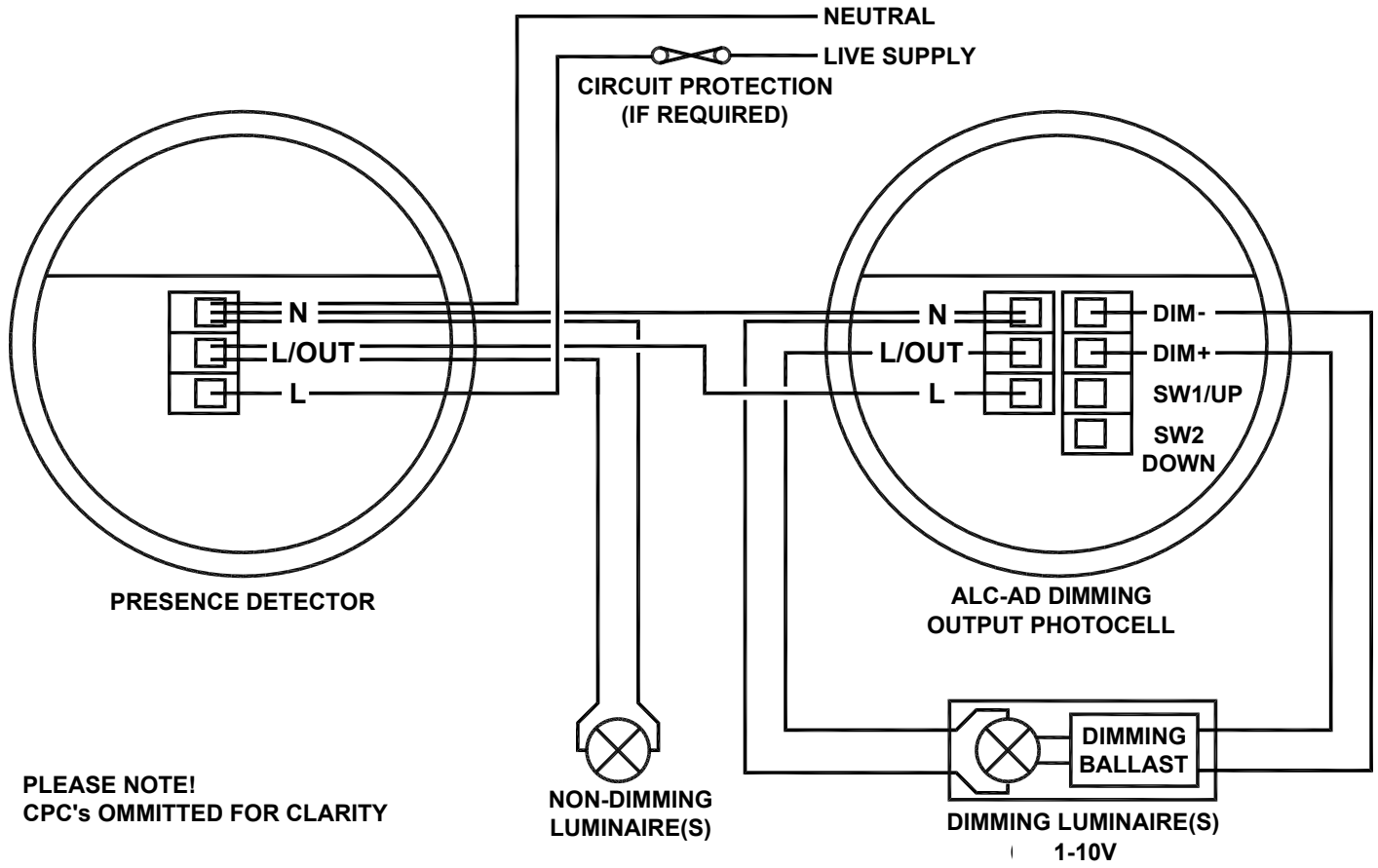
Standard wiring schematic also showing optional manual override switch

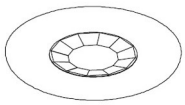
This is a general wiring diagram. In this configuration the unit will switch the supply to a luminaire using the switched output, and dim using 1-10V. Manual dimming and switching can be achieved using the optional centre biased retractive switch (MK K4900 or similar).



ALC-AD being switched on by presence detector

In some configurations it is useful to supply the sensor from a separate presence detector. .





The functionality of the ALC-AD is controlled by a number of parameters which can be changed or programmed by any of the following devices:

- **UHS5** Infrared Handset. See below for programmable functions.
- **UNLCDHS** Infrared Handset (with LCD). See user guide for full programming details.

For most basic programming operations the UHS5 handset can be used 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 below.
Valid commands will be indicated by a red LED flash. See page 1 for details of other LED responses.
Note: other functions on the UHS5 which are not shown below are not applicable to this product.

		Number of Shift key presses					
Parameter Name	**Default Value**	**0** SHIFT 1 ○ SHIFT 2 ○	**1** SHIFT 1 ☼ SHIFT 2 ○	**2** SHIFT 1 ○ SHIFT 2 ☼	**3** SHIFT 1 ☼ SHIFT 2 ☼	**UHS5 Handset Graphics**	**Description**
		Button Activation					
On / Raise		On	Raise				Turn lights on or to raise lights.
Off / Lower		Off	Lower				Turn lights off or to lower lights.
Lux on level ***(Switch level on)***	9	2, 5 & 7	4, 6 & 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.
Light Level	6 (600)			2 (200) 5 (500) 7 (700)	4 (400) 6 (600) 9 (900)		Sets a target light level to be maintained by the lighting system.
Lux off level ***(Switch level off)***	9	2, 5 & 7	4, 6 & 9				Lux level setting to switch the luminaires off 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". *Note: the Lux Off Level value must always be greater than the Lux On Level value.*
Defaults				D			Returns the unit to the default settings.
Burn-in	0	0	50	100			Determines how long the output will be at 100% so that lamps 'burn-in'. The 'burn-in' time is not affected by power supply interruptions.
Shift							Use this button to select the settings in red and blue signified by the 'Shift 1' and 'Shift 2' LEDs

Advanced programming

Parameter Name	Default Value	Range / Options	Description	UHS5	UNLCDHS
Detector Parameters					
Lux time	0	0 (disabled) 1-99 minutes	If the detector measures the lux level and decides that the output needs switching on or off as a consequence, the lux time must elapse first. If at any time during the timed delay the lux change reverses then the process is cancelled. Lux Time enables absence detection to be implemented with a lux off level set. When the button is pressed, the lights will go on, regardless of ambient light level. However, if there is sufficient ambient light, they will turn off again after the Lux Time. *Note that whenever the an external switch is pressed, whether in absence or presence mode, if the lights were out because of the lux level, they will be immediately turned on again for at least the Lux Time.*	✗	✓
Factory default	-	-	Restores factory default settings	✓	✓

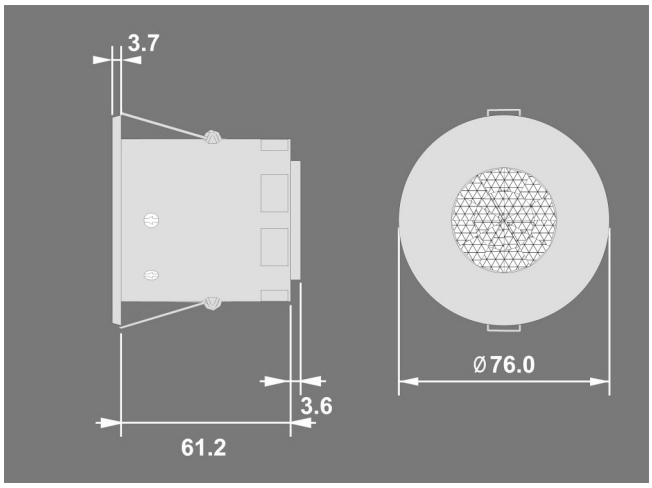
User Modes					
Raise	-	-	Increase light level.	✓	✓
Lower	-	-	Decrease light level.	✓	✓
Scene up	-	-	Steps up between 6 pre-defined scenes.	✗	✓
Scene down	-	-	Steps down between 6 pre-defined scenes.	✗	✓
Scene #	-	-	Select the individual scene, between 0 and 6. (1 = min. output; 2 = 10%; 3 = 25%; 4 = 50%; 5 = 75%; 6 = 100%)	✗	✓
Override On	-	-	If the lights are off, sending the IR command will turn them on immediately and revert to automatic operation using the manual timeout period.	✓	✓
Override Off	-	-	If the lights are on, sending the IR command will turn them off immediately. After the manual timeout period (described above), the sensor will revert to automatic.	✓	✓
Cancel	-	-	Cancels the on or off override, returning the detector to normal operation.	✗	✓

Parameter Name	Default Value	Range / Options	Description	UHS5	UNLCDHS
Channel 1 –Switching Channel					
Lux on level *(Switch level on)*	9	1 to 9 For a higher resolution a scale of 101-199 is available	Sets a minimum light level below which the PIR sensor is enabled, allowing lights to be turned on by movement. *Note: the Lux Level Off value must always be greater than the Lux Level On value.*	✓	✓
Lux off level *(Switch level off)*	9	1 to 9 For a higher resolution a scale of 101-199 is available	Sets a maximum light level above which the PIR sensor is disabled, preventing lights from being turned on by movement.	✓	✓
Channel 2 -Dimming Channel					
Lux on level *(Switch level on)*	9	1 to 9 For a higher resolution a scale of 101-199 is available	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. *Note: the Lux Level Off value must always be greater than the Lux Level On value.*	✓	✓
Lux off level *(Switch level off)*	9	1 to 9 For a higher resolution a scale of 101-199 is available	Lux level setting to switch the luminaires off the ambient light level goes above the setting.	✓	✓
Light Level (maintained illuminance)	600	1 to 998 (999 disabled)	Sets a target light level to be maintained by the lighting system.	✓	✓
Max Value	100%	0 to 100%	Maximum dimming output level.	✗	✓
Min Value	0%	0 to 100%	Minimum dimming output level.	✗	✓
Memorise	N	Yes or No	If this is set to Yes, the last manual lux level set will be memorised and used as the new switch on level.	✗	✓
On value	99	0 to 99	Dimming output level when switched on (0-99).	✗	✓
Off value	0	0 to 99	Dimming output level when switched off (0-99). If a non-zero off value is set, then the output will toggle between this value and completely off depending on the switch level on and off values. This feature is only enabled if 'Min value' is set to 99.	✗	✓
Burn-in	0	0 (disabled) or 1 to 999 hours	Determines how long the output will be at 100% so that lamps 'burn-in'. The 'burn-in' time is not affected by power supply interruptions.	✓	✓
Speed On	40	Measured in 0.1 sec intervals.	Determines the dimming response speed after the setup time has finished.	✗	✓
Speed Set	5	Measured in 0.1 sec intervals.	Determines the dimming response speed during the set up time. Measured in 0.1 sec intervals. If set to 0 will disable dimming for "Set seconds" below, used if fittings are required to warm up before dimming.	✗	✓
Set Seconds	120	1 to 999 seconds	Determines how long the dimming response set-up period lasts on power-up or on setting change. This enables the desired lux level to be achieved rapidly when the lights come on, or during setup.	✗	✓

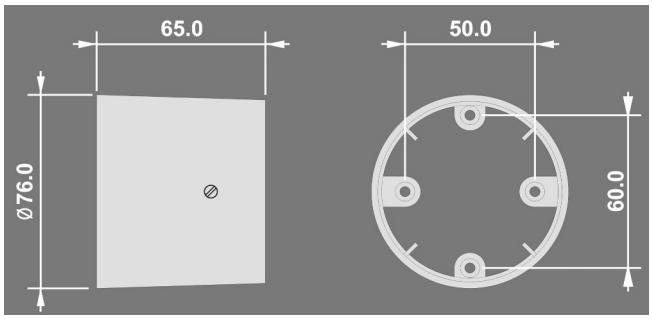
Technical data

Dimensions	See diagrams opposite
Weight	0.15kg
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). Channel 2 (dimming): Maximum number of 1 -10V ballasts is 10.
Power consumption	On 708mW, Off 255mW
Dimming output	Basic insulation only. Although low voltage, this is not an SELV output and should be treated as if mains potential. Use mains rated wiring.
Terminal Capacity	2.5mm ^{2}
Temperature	-10ºC to 35ºC
Humidity	5 to 95% non -condensing
Material (casing)	Flame retardant ABS and PC/ABS
Type	Class 2
IP rating	IP40
Compliance	EMC -2004/108/EC LVD -2006/95/EC

ALC -AD



DBB



Part numbers

	Part number	Description
Detector	ALC -AD	Ceiling mounted photocell for 1 -10V dimming
Accessories	DBB	Surface mounting box
	UHS5	Programming IR handset
	UNLCDHS	Universal LCD IR handset

IMPORTANT NOTICE!

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

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