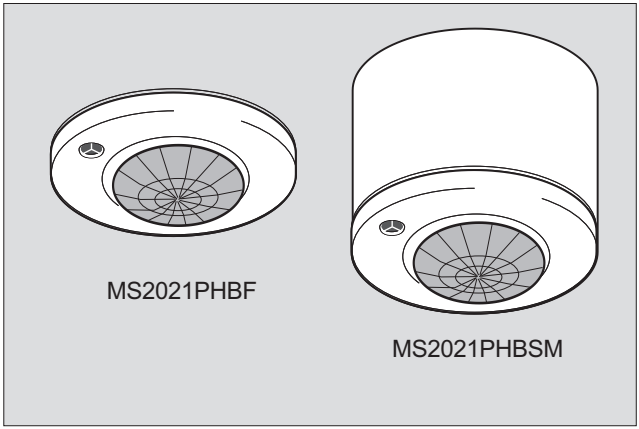
Ex-Or

by Honeywell

MS2021PHBF / MS2021PHBSM
Hi-Bay Multi-Function Dual Output LightSpot with photocell



Installation and Commissioning Instructions

Note: HP2000 required for commissioning
User override available via the HC7 and HC8 (dedicated) and HC5 (general purpose) Hand-held Infrared Controllers

Hi-Bay Multi-Function Dual Output LightSpot with photocell

The Hi-Bay Multi-Function Dual Output LightSpot is a high performance presence detector with photocell. In all operating modes, for one of the two outputs, the photocell can hold lights off as a vacant area becomes occupied, and if the light level falls too low during the period of occupancy, switch the lights on. In 'Passive Mode' the lights do not switch off whilst the area is occupied no matter how much light is measured. In 'Active Mode' the photocell is able to switch the lights off whilst the area is occupied.

Four operating modes can be configured using the HP2000 Hand-held Programmer:-

1) **Two Channel Lighting Controller**

The Switched Live output is influenced by the photocell while the Volt-free output is not. The Switched Live and Volt-free outputs have independent Off-delay timers. The Volt-free output operates in AUTO mode while the Switched Live output can be operated in AUTO or SEMI-AUTO (Absence Detection) modes. The occupancy detection may be disabled allowing the MS2021PHB to operate as an active photocell with an Infrared local override. The HC5 Small +/- keys operate the Switched Live output while the Big +/- keys operate the Volt-free output.

2) **Lighting Control + Water/Fan Controller** ***(15mm 230V Solenoid Valve SV2 and Housing SVB are available separately)***

Switched Live output for Lighting and Volt-free output for, typically, toilet flush cistern fill valve or extractor fan

Independent Off-delays so that cistern only just fills to flush level following occupancy. There is also an automatic urinal hygiene fill to flush cycle executed every 24 hours if no occupancy is detected in that period.

3) **Lighting Control + Air Conditioning Controller**

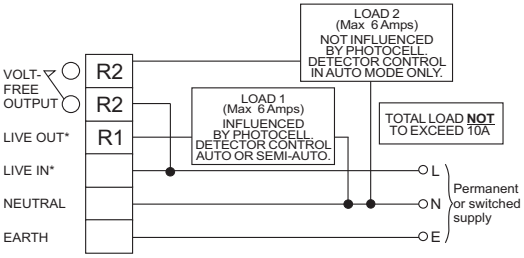
Switched Live output for Lighting and Volt-free output for Air Conditioning. There are two independently settable timers for the Air Conditioning Control - a hold-off timer to avoid responding to momentary occupancy, (1, 3 or 5 minutes delay) and a fully programmable run-on timer. The HC7 is a dedicated hand-held Infrared controller for this mode but the HC5 will also switch the two outputs, as outlined in 1) above.

4) **Lighting Control + Emergency Test Controller**

This operating mode allows the testing of an area of Emergency Lighting to be conveniently implemented without the expense of a special, single function controller. The Switched Live output remains available for main Lighting and the Volt-free output is used to disconnect the Maintained Live to Emergency Luminaires. The Emergency Test is initiated by the dedicated HC8 hand-held Infrared controller or by the HP2000. A highly visible BLUE LED indicates that an Emergency Test is underway. Automatically timed test durations of 1 minute or 1, 2, 3 or 5 hours can be commanded and a test can be terminated manually at any point. A lock-out feature is provided whereby only a 1 minute test can be initiated if there has been either more than 5 minutes of emergency back-up battery usage or a mains outage, within the preceding 24 hour period.

Connection Example

MS2021PHBF or MS2021PHBSM



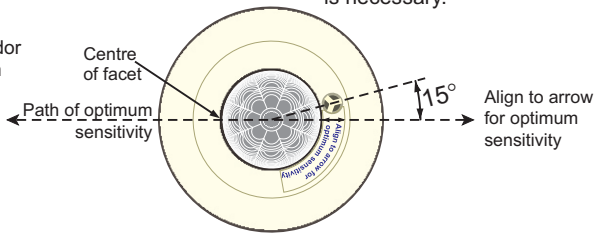
* The Live terminals are internally linked

Fixing

MS2021PHBSM - The housing may be secured to a hard surface or to a BESA box. The unit fits into the housing with a simple bayonet action.

MS2021PHBF - Supplied with a sinking (dry-lining) box for flush fitting. The sinking box fits into an 89mm diameter hole in a ceiling tile or plasterboard ceiling or a 91mm diameter hole in a hard substrate such as a metal panel. To avoid damage to ceiling tile do not overtighten. Depth required behind ceiling or panel 62mm from front flange plus an allowance for the minimum bend radius of the cable. No access above the ceiling is necessary.

Note: For aisle or corridor applications, there is an optimum orientation for approach:



Programmable Parameters

Power Up: ON/OFF

Set to ON the detector will automatically switch both outputs on when Mains is applied. If set to OFF, the detector will power up without turning its outputs on, wait 30 seconds and then look for occupancy. Only if the area is occupied will the outputs switch on at this time. The detector must be set to Power Up ON to allow manual switch as opposed to infrared operation, in Semi-Automatic mode. (See below).

Response: AUTO/SEMI AUTO

Where absence detection is required, (i.e. the user manually turns the lights On, if required, but the lights still turn off automatically once the area is vacated), SEMI AUTO-matic operation should be selected. If the manual operation is to be effected using ONLY an infrared hand-held controller then Power Up OFF may be used in SEMI AUTO mode, but if it is desired to use a manual wall switch, Power Up ON coupled with a means of interrupting the mains power to the MS2021PHB is required, e.g. using a push-to-break momentary switch capable of switching the load on the Switched Live output, plus the load on the Volt-free output, if this is not supplied separately.

R1 Off Delay In all modes this determines the time from the last detection of occupancy to primary Lights Off. It can be set between 1 minute and 96 hours, or DISABLED so that the lights never turn off for lack of detected movement.

R2 Off Delay In Lighting mode this defines the period from last detected occupancy to secondary Lights Off. In other modes setting this to longer than R1 Off Delay allows for an extended filling time for flush cistern or for extractor fan or air conditioning run-on. In Emergency Test mode it is not used, so that its configured value is a "don't care", the duration of the Maintained Live disconnection being set by the HC8 or HP2000 command.

R2 Mode This sets the mode of operation of the R2 load circuit to one of those discussed opposite

PCELL (Photocell) Mode: PASSIVE / ACTIVE / DISABLED (affects the R1 Load only)

Passive Mode

The photocell will inhibit the turn on of the controlled lights if sufficient natural light is available but it will not turn the lights off whilst the area is occupied.

Active Mode

The photocell will both inhibit turn on of the controlled lights and turn them off during occupancy if sufficient natural light becomes available. Turn off occurs when there has been sufficient natural light continuously for a period of the R1 Off Delay or 20 minutes, whichever is the shorter. There is no delay in switching the lights back on when natural light reduces.

Disabled

The photocell has no effect and the lights are on for the full period of occupancy plus the Off Delay.

Commissioning

The units are supplied with factory default settings (Power-Up On, fully Automatic operation, Lighting mode, 20 minute Off Delays, Photocell Disabled). Programme using the HP2000 MLS Digital Programmer with LCD display.

Walk-test Mode

Walk-test mode is used to check that the detector is operating as required. The short off-delay enables the installer to check that lights are switching on when movements are made at the edge of the detection zone. It is easier to carry out a walk-test when the photocell is not holding the lights off.

1. Change the Off Delay to 10 seconds using 'Utilities/Walk Test/OK' on the HP2000.
2. Move around the area that is being controlled, stopping for 10 seconds to allow the lights to switch off, before moving and triggering the lights back on. Note: When the HP2000 is used to engage 'soft' walk test mode as described above, the programmed Off Delay will be automatically restored after 5 minutes.

Important Additional Notes

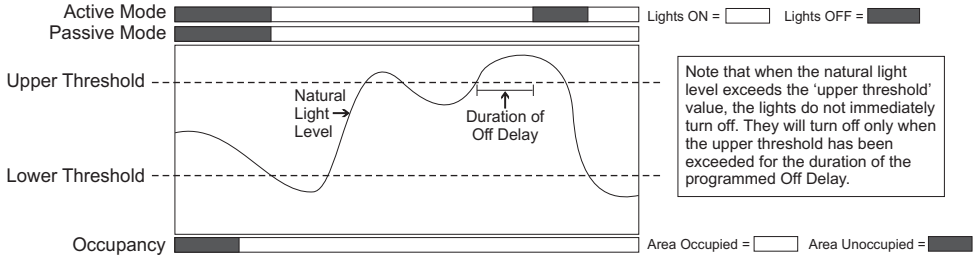
1. Only suitably qualified personnel should install this equipment.
2. All terminals on this product are provided for final connections. It is not intended that the product be used as a junction box for looping cables.
3. A means for disconnection must be incorporated in the fixed wiring in accordance with the current wiring regulations.
4. This equipment switches lights no more frequently than would a responsible human occupant. However, manufacturers of some 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.

Setting the Photocell

1. If the lights are not already on, switch them on manually by pressing 'Utilities/User Remote/Luminaire+/OK'on the HP2000. Fluorescent lights do not reach full output until up to 15 minutes after being switched on, so ensure that the lights are fully warmed up before continuing. This stage may be omitted if the intention is to operate the detector's photocell in Passive Mode only [the detector must have already been programmed to Passive Mode].
2. Wait until the time of day when the natural light level is at the point below which you ***would*** want the lights to be on, and above which you ***would not*** want the lights to be on.
3. Start the internal self-programming mechanism by pressing 'Utilities/Set Light Level/OK' on the HP2000. The detector takes a measurement, adds a small amount and stores the value in the Upper Threshold. Then it turns the lights off, makes another measurement and stores the value in the Lower Threshold. The lights now switch on again to acknowledge a successful programming operation.

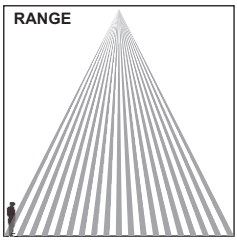
The two switching thresholds have now been set, and the difference between them is equal to the contribution made by the electric lighting; this is the perfect amount of hysteresis to ensure that the lights will not oscillate. The thresholds may be read back and fine-tuned if necessary using the HP2000. Please note that the values are non-specific units i.e. not lux.

Note: The light level perceived by the detector at the moment immediately prior to a Download operation is shown momentarily on the HP2000 screen following the Download; this is a useful mechanism for troubleshooting.

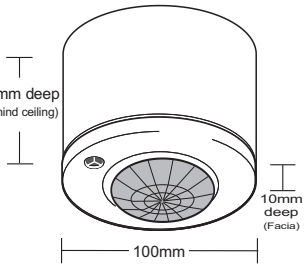


Technical Data

OPERATING VOLTAGE: 230V ~ 50Hz (UK & Europe)
RECOMMENDED CIRCUIT PROTECTION: 10 Amps
TERMINAL CAPACITY: 2 x 2.5mm^2
MAXIMUM LOAD: 6 Amps per output [not exceeding 10A in total]
MAXIMUM RECOMMENDED MOUNTING HEIGHT: 16 metres
RANGE: Cone-shaped detection pattern,
diameter (at floor level)
= 1 x mounting height
PHOTOCELL: Adjustable 50-5000 lux via HP2000
OFF DELAY 1 & 2: 1 minute - 96 hours adjustable and 10 second Walk Test Mode.
[Each output independently adjustable]
MINIMUM MOUNTING PITCH (SPACING):
0.5 x mounting height (when utilising the photocell - see note under 'Fixing')
COLOUR: White (RAL9010)
MATERIAL: Flame retardant PC/ABS
WEIGHT: 200g approx
IP RATING: 3X
OPERATING TEMPERATURE: 0°C to 40°C



Dimensions



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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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