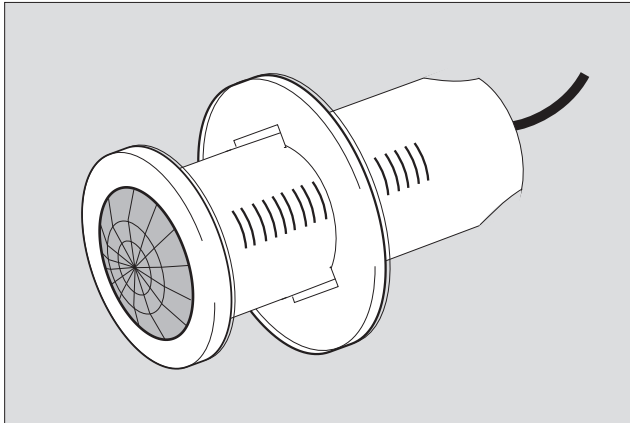# Ex-Or
by Honeywell

Silver Series Regulating LightSpot
MS2000DF for DSI ballasts
MS2000DALIF for DALI ballasts

Installation and Commissioning
Instructions

Note: HP2000 (or HP10*/HP18*) required for commissioning
* Please note that the HP10 and HP18 offer different/limited programming options

Silver Series LightSpot: MS2000DF for DSI ballasts / MS2000DALIF for DALI ballasts

**Only suitably qualified personnel should install this equipment.**

Fixing

This unit is suitable for flush fitting to a suspended ceiling of thickness up to 54mm. A minimum clearance of 125mm is required between the front surface of the ceiling tile and the hard ceiling.

Choose a suitable mounting location; ideally this should be in the centre of the controlled lighting and as close as possible to where occupants normally sit.

Cut a 50mm diameter (64mm if using an FR64 flush ring or PB64 plasterboard fixing kit) circular hole in the tile. UltraLite versions (MS2000DFCWL7 and MS2000DALIFCWL7) require the use of an FR64 (supplied with the detector - see separate leaflet for full instructions) and therefore always need a 64mm hole. Feed the flying lead and detector through the hole and secure in position with the locking ring. Twisting the locking ring will release the detector should this be necessary.

Note: Do not position within 25cm of a luminaire.

FR64
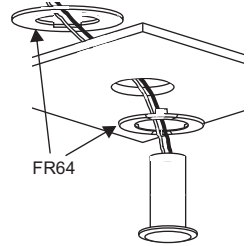
Connection

The detector is supplied with a flying lead which should be taken into the nearest luminaire, from where it will pick up its 230V supply.

Control of a group of luminaires is achieved via the detector's two-wire digital control circuit. Each luminaire to be controlled must contain a digital regulating type ballast with the appropriate DSI or DALI input. Ballast types must not be mixed. Connect all ballasts in the control group (max 9) in parallel and also to the polarity-free digital output of the detector.

Each luminaire is controlled completely by its digital input and therefore would normally have a permanent power supply. If, however, it is desired to have manual wall switches, any or all of the fittings in a controlled group may also be controlled in the traditional way - by turning off the power. The control circuit will continue to operate properly even if some of the luminaires in the group have had mains power removed.

'OneSwitch' Dimming

OneSwitch dimming affords local control to the end-user whereby a simple, momentary, push-to-make wall switch can be used to raise or lower the lighting level or to toggle the output ON/OFF. A short press of the switch (less than 1 second) will toggle the output status while a longer press will raise or lower the output. Each time the switch is pressed, the direction of dimming reverses. If the switch has not been pressed for 5 seconds, the direction will be up (brighter) - unless the output is already above 90% in which case the direction is down. If the switch is held continuously, and the output reaches maximum, the light output will remain at this level until the switch is released - a latching switch may be connected in parallel allowing the occupancy detection to be overridden on (Note: If the initial direction was down, when the output reaches minimum it will ramp back up automatically).

Setting the Regulating Photocell

This product is intended for use with high frequency regulating ballasts with digital control inputs. An infrared programming tool is required for programming the regulating light level set point. The setting is preserved in the event of a power failure and can be re-programmed any number of times.

Using the HP2000 MLS Programmer, enter the Utilities menu and select 'Set Light Level'. Use the 'up' and 'down' buttons to manually adjust the light output from the luminaire(s) and when at the required level press and hold 'OK' to store. The luminaire(s) will blink to acknowledge a successful store operation.

On the HP10 Programmer, use the 'UP' and 'DOWN' buttons to manually adjust the light output from the luminaire(s) and when at the required level press 'STORE' to store. The luminaire(s) will blink to acknowledge a successful store operation.

On the HP18 Programmer, use the '+' and '-' buttons to manually adjust the light output from the luminaire(s) and when at the required level press '✓' to store. The luminaire(s) will blink to acknowledge a successful store operation.

Commissioning

The factory default settings will be appropriate for most applications. However, the installer does have the facility to re-programme a wide range of parameters and to set the regulating light level using the infrared programming tools. Please note that the full range of parameters is accessible via the HP2000; the HP10 and HP18 offer different/limited programming options. Please read carefully the operating instructions that accompany the programmer prior to performing a programming operation.
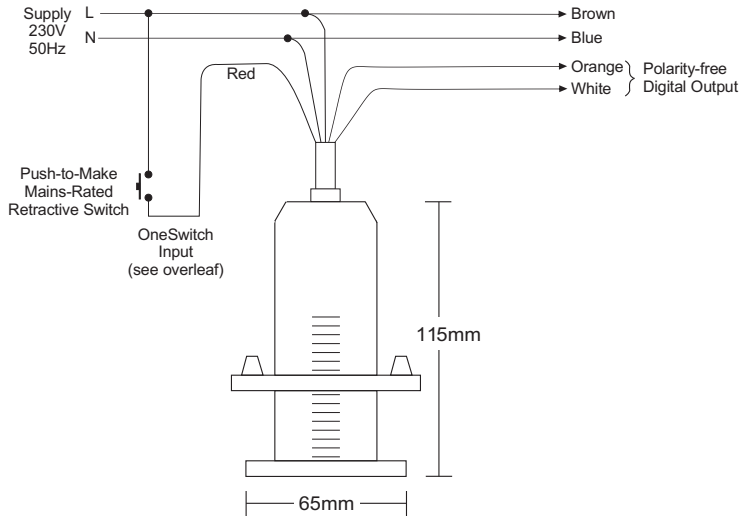
Below is a table showing the pre-set factory settings and a brief explanation of each parameter. These parameters may be re-programmed any number of times and all settings will be retained in the event of a power loss.

Parameter	Programmer	Options	Pre-Set	Notes
Power Up	HP10 / HP2000	On / Off	On	Sets the luminaire state at power up irrespective of occupancy. Useful in reducing start-up load following power cut. Power-up off - responds to occupancy after 30 seconds.
Response (or Mode)	ALL	Auto / Semi-auto	Auto	If set to auto, the presence detector switches the luminaire on and of automatically. If set to semi-auto (also known as absence mode), the luminaire will not turn on automatically when a person enters the area. It can be turned on using the hand-held controller or by toggling the power switch. When the area is vacated, the light will turn off automatically.
Off Delay	HP2000	1 min - 96 hrs / Disabled	20 mins	The time for which the luminaire will stay on following the last detected movement. A 10-second setting for walk-testing is also available.
	HP10	5-35 mins		
	HP18	5, 10 or 20 mins		
Start Lamps	HP10 / HP2000	Max / Min	Max	Sets the level at which the lamps strike when turning on.
Entry Scene	HP2000	1-6	Scene 1	Sets which scene is recalled when an unoccupied area is entered.
Bright Out	HP10 / HP2000	Yes / No	No	If set to yes, movement fails to refresh the off delay if the ambient light level exceeds 125% of the set level and the luminaire will switch off when the off delay has elapsed. (Note: Dimming must be set to 100%)
Dimming	HP10 / HP2000	50%-100%	100%	Can be set to operate between 50% and 100% ballast output from max down to a bottom end limit when working on photocell control.
Photocell	HP18	Enabled/Disabled	100%	
Lamp Max	HP2000	10%-100%	100%	Can be set to limit the absolute maximum output of the ballast in all operating modes.
Fade to Off	HP10 / HP2000	Yes / No	No	When no presence is detected, and after the off delay period, the lamps can fade out instead of switching off (approx 80 seconds to fade from 100% to 0%)
When Vacant	HP10 / HP2000	Off / Min / Reg <25% / Scene 6 (latter via HP2000 only)	Off	These are the options for a vacant area after it has timed out. Luminaires can turn off, remain at minimum output, or regulate with a 25% output limit, until the next period of occupancy. If programmed to remain at minimum, to regulate below 25% (or go to scene 6 - via HP2000 only), there is a programmable option to switch off after 3 times the Off delay (XTN).

Important Additional Notes

1. A means for disconnection must be incorporated in the fixed wiring in accordance with the current wiring regulations.

2. Although nominally 12V, the dimming output is not SELV and therefore should be treated with the same respect as mains with regard to wiring practice. The 0V line of the dimming output is almost at Neutral potential.

3. The dimming control output should be connected only to the control input of the ballasts - never to other detectors.

4. This equipment should be used to control only those ballasts powered from the same phase as the detector.

5. Due to the fact that the photocell is on the ceiling looking down, it is not possible for measurements made with a lux meter on the working plane to remain constant when daylight illuminates the ceiling and the working plane to a differing extent. Therefore, products of this type should be regarded as capable of maintaining an APPROXIMATE light level only.

6. 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 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.
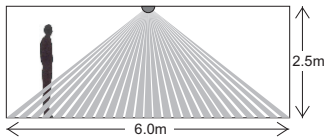
Electrical Connections

Supply 230V 50Hz
L → Brown
N → Blue

Red

Orange ⎱ Polarity-free
White ⎰ Digital Output

Push-to-Make
Mains-Rated
Retractive Switch

OneSwitch
Input
(see overleaf)

115mm

65mm

Technical Data

RECOMMENDED MAXIMUM MOUNTING HEIGHT: 3.0m
RANGE: Cone-shaped detection pattern, diameter (at floor level) = 2.4 x mounting height

2.5m

6.0m

OPERATING VOLTAGE: 230V 50Hz (UK & Europe)
PRODUCT RATING & RECOMMENDED CIRCUIT PROTECTION: 10 Amps
CAPACITY: 9 ballasts
OUTPUT: 2-wire digital polarity free-max extended cable length: 12m
PHOTOCELL: Regulating
OFF DELAY: Adjustable via Programmer - factory pre-set to 20 minutes
DEPTH REQUIRED BEHIND CEILING: 125mm
WEIGHT: 70g approx excluding cable
COLOUR: White
MATERIAL: Flame retardant PC/ABS
IP RATING: 4X

Ex-Or

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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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