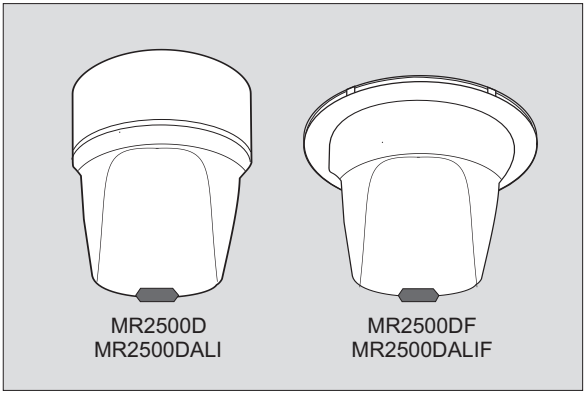
Ex-Or

by Honeywell

MR2500D / MR2500DF
MR2500DALI / MR2500DALIF
Mid Range Regulating LightSpot



Installation and Commissioning Instructions

Note: HP2000 required for commissioning

Mid Range Regulating LightSpot

Fixing

Only suitably qualified personnel should install this equipment.

1. The Mid Range Regulating LightSpot is an extremely sensitive movement detector; it is essential therefore that it be installed on a rigid surface that will not itself be subject to any movement or vibration.
2. Before isolating the circuits to be switched, check that all lighting is fully operational and that there is no moving equipment or machinery within the monitored area which may cause nuisance switching.
3. Position the detector where it has a good forward "view" of the area to be controlled. Ideal mounting location is normally in a corner by the entrance or at one end of a corridor at a height of 2.5 to 4m. Do not mount within 25cm of a fluorescent fitting.

   Please note that this product uses microwave technology to detect occupancy and is not recommended for applications where there are large areas of metal, e.g. metal ceiling or panelling, as unpredictable sensitivity may result.

   Also, microwave presence detection is not completely attenuated by materials such as plasterboard, wood and glass, so the possibility of unwanted presence detection through office partitions should be considered when determining detector positioning and sensitivity settings within the intended application.

4a. **MR2500D - Surface version**

Separate the detector from its back-box by loosening the locking screw so that approximately 3mm of thread is visible and then twisting the detector off the back-box. Note the arrow symbol moulded into the bottom of the back-box. The fixing holes allow for mounting on a BESA box or direct to a rigid surface. Secure the back-box firmly to a rigid surface so that the arrow points into the controlled area.

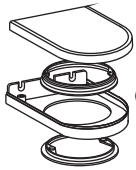
4b. **MR2500DF - Semi-flush version**

Use a hole saw to drill a 76mm hole into the ceiling tile. The flush ring is designed to clamp the tile between its two halves. Loosen the locking screw so that approximately 3mm of thread is visible and remove the bottom half of the flush ring. With the detector in the ceiling, pointing towards the area to be controlled, fit the bottom half of the flush ring to the assembly. Depending on the thickness of the ceiling tile, screws longer than those supplied may be required to hold the two halves of the flush ring together.

It is recommended that Mid Range detectors be ceiling mounted. Where this is not possible, the wall-mounting kit (WMK - see below) must be used.

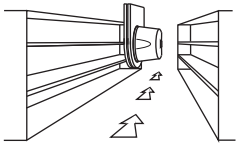
Exploded view of detector for fixing into ceiling tiles.

WMK Wall-mounting Kit



(Supplied assembled)

Horizontal installation
For general applications where ceiling mounting is not convenient and wide angle coverage in the horizontal plane is desirable. The WMK can be screwed to a hard surface or the lid of a conduit stop-end box.



Vertical installation
Use this method of mounting for racking aisle applications and where adjustment in the vertical plane will give improved control over the precise point of entry detection.

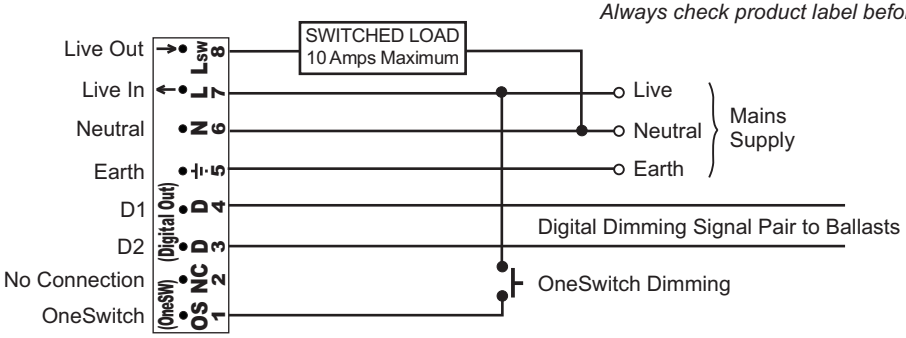
Electrical Connections

Mid Range Regulating LightSpot should be connected in accordance with the diagram below.

Mid Range Regulating LightSpot is designed to control up to 25 DSI or DALI ballasts, a switched load of up to 10 Amps or a combination of the two. When controlling DSI or DALI ballasts the ballast types must not be mixed. The DSI or DALI input terminals on the ballasts should be connected in parallel with each other and to the Polarity-Free Digital Output terminals of the MR2500D. Each DSI or DALI luminaire is controlled completely by its digital input and therefore would normally have a permanent power supply. Turning the power off to some lights within a control circuit will not affect the operation of those lights that remain powered and under the control of the MR2500D.

When switching via the relay output, multiple MR2500Ds' relay outputs may be connected in parallel provided the controlled load does not exceed 10 Amps. If digital ballasts are also being controlled, the digital outputs from different detectors must never be connected one to another, even if they are of the same type.

Always check product label before wiring



Note: A means of disconnection must be incorporated into the fixed wiring in accordance with the current wiring regulations.

Commissioning

The units are supplied with the factory default settings shown below which render commissioning unnecessary in many applications. To make use of the programmable settings, an infrared commissioning tool is required (HP2000). A ten-second time delay is selectable to aid commissioning.

Sensitivity to Movement

While the factory settings will be correct for many applications, the sensitivity can be adjusted if required.

ON Sensitivity: This sets the detector's range when the lights are ON. Choose setting from 1-100 where 1 is lowest and 100 is maximum. (Note: Choose the lowest level possible to give adequate detection.)

OFF Sensitivity: This sets the detector's range when the lights are OFF. Choose % setting from 10% to 100% where 10% = 10% of ON Sensitivity and 100% = same as ON Sensitivity. This is an approximation and should be tested on site during commissioning.

Like all programmable parameters, the sensitivity settings will be retained in the event of a power failure and can be re-programmed any number of times.

Factory Default Settings

These are the settings to which the units have been programmed before they leave the factory.

Parameter	Options	Default Setting	Options
Power Up	On/Off	ON	
Response	Auto, Manual/Bus, Manual only	AUTO	Each of these settings
Off Delay	1min-96hrs, 10 secs (walk test), Disabled	20 min	can be re-programmed,
On Sensitivity	0-100	19	if desired, by use of the
Off Sensitivity	100-10% in 10% increments	100%	infrared programming
Start Lamps	Max/Min	MAX	tool HP2000.
Entry Scene	1-6	1	
Lamp Max	100-10%	100%	
Dimming	Regulate 100-50%	100%	
Fade to Off	No/Yes	NO	
When Vacant	Off, 9 Exit Scenes (3 options x 3 durations)	OFF	
Bright-Out	No/Yes	NO	
Pcell Rly	Disabled/Passive/Active	Disabled	
Set-Point Low	0-1023	766	
Set-Point High	0-1023	1022	

Photocell Control

i) Regulating Photocell

Regulating photocell control tries to maintain a constant level of total illumination in the space controlled by dimming and brightening the controlled luminaires to compensate for changes in illumination from other sources.

With the photocell configured as DISABLED the Regulating Control module is influenced only by the BRIGHT-OUT setting. BRIGHT-OUT = YES allows it to hold-off the lights at the start of occupancy if natural light already exceeds SET-POINT LOW and to extinguish the lights during occupancy if total light, after the controlled luminaires have been dimmed to minimum, exceeds SET-POINT HIGH continuously for a period equal to the OFF DELAY . The lighting is restored immediately if the illumination level subsequently drops below SET-POINT LOW.

If the photocell is configured for ACTIVE or PASSIVE control of the relay switched load then the Regulating Control module adopts the decision made by the Switching Control module in the case of turn-on inhibit on entry, but still obeys the BRIGHT-OUT YES/NO setting with regard to turn-off during occupancy.

ii) Switching Photocell (PHOTOCELL: ACTIVE or PASSIVE)

Both ACTIVE or PASSIVE modes hold off the controlled lighting on entry when natural light is sufficient, i.e. SET-POINT LOW is exceeded, but only ACTIVE mode will extinguish the lighting if natural light increases sufficiently during occupancy, i.e. SET-POINT HIGH is exceeded continuously for a period equal to OFF DELAY. The lighting is restored immediately if the illumination level subsequently drops below SET-POINT LOW.

iii) Photocell DISABLED

If the photocell is configured as DISABLED for relay Switching Control it will have no effect on the control of that load, which will be ON continuously during periods of occupancy unless commanded OFF via manual switch or infrared control. The photocell readings are still available for use by the Regulating Control module while in this mode.

Programming the Photocell Set-points

The parameters SET-POINT LOW and SET-POINT HIGH programme the detector's photocell response The SET-POINTS can be manually programmed as numbers between 1 (darkest) and 1023 (brightest). This number is not scaled to correlate with 'lux' measurements made using a light meter, but nevertheless is a true representation of the light level perceived by the detector. To assist with finding the appropriate SET-POINT settings, the light level currently perceived by the photocell can be viewed on the HP2000 screen briefly, following a download operation. The number represents the light level read immediately before the download took place.

Tip: Turn the lights off (HP2000 UTILITIES/USER-REMOTE) to measure the perceived light level with no contribution from the controlled lighting.

Alternatively the SET-POINTs can be configured semi-automatically;

i) The Primary Interest is the Regulating Control Output.

With the photocell configured as DISABLED:-

Using HP2000 (UTILITIES / SET LIGHT LEVEL) or HC5 (+,- Scene 1) set the required light output from the controlled luminaires and then press and hold OK (HP2000) or Scene 1 (HC5) until the controlled lights "blink" to indicate that a new SET-POINT LOW has been stored and a calculated SET-POINT HIGH has also been inserted. Using the HP2000 the photocell can now be re-configured as ACTIVE or PASSIVE if required.

ii) The Primary Interest is the Switching Control Output
With the photocell configured as ACTIVE or PASSIVE:-

1) If the lights are not already on, switch them on manually by pressing 'UTILITIES/USER-REMOTE/Luminaire+/OK' (HP2000) or "+" (HC5). 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.
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' (HP2000) or Scene 1 (HC5). The detector takes a photocell reading, adds a small amount and stores the value in SET-POINT HIGH. Then it turns the lights off, makes another measurement and stores the value in SET-POINT LOW. 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 slightly more than the contribution made by the electric lighting. This is the perfect amount of hysteresis to ensure that the lights will not oscillate.

OneSwitch

OneSwitch Dimming affords local control to the end-user whereby a simple, momentary, push-to-make wallswitch can be used to raise or lower the lighting level or toggle the output of the unit ON or OFF. A short press (less than 1 second) toggles all outputs from *both* OFF to *both* ON or from *either* ON to *both* OFF. A long press will ramp the digital output either up or down with no effect on the volt-free output. If the output prior to pressing the switch is above 90% the output will ramp down; if below 90% it will ramp up. If the latest press and the current press are within 5 seconds of each other it will ramp in the opposite direction.

Important Additional Notes

1. 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.
2. Although nominally 12V, the dimming output is not ELV and therefore should be treated with the same respect as mains with regard to wiring practice.
3. Take care when choosing a location for this equipment since this type of device is capable of detecting large moving metal objects well beyond the normal range at which it is sensitive to human targets.
4. Please note that, although configurable as a regulating photocell, [closed-loop dimming according to daylight], due to the probable corner-of-room location where there will be excessive influence by daylight reflected from the walls, this product is not intended to achieve precise light level regulation measured on the working plane.
5. 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.

Technical Data

OPERATING VOLTAGE: 230V ~ 50Hz (UK & Europe)
SWITCH CAPACITY: 10 Amps max any lighting load except incandescent lamps: 1500W max (at 230V~)
MAXIMUM RECOMMENDED LOAD (DSI/DALI): 25 Ballasts
MAXIMUM RECOMMENDED MOUNTING HEIGHT: 3.5m
RANGE: Adjustable up to 20m
OFF DELAY: 1 min - 96 hours plus 10-second walk-test mode
PHOTOCELL: Passive/Active/Regulating adjustable 50-5000 lux
MATERIAL: Flame retardant PC/ABS
COLOUR: White
WEIGHT: 160g
IP RATING: 4X

Contact Ex-Or Technical Helpline on 01942 719229 for guidance on installation and commissioning.

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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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