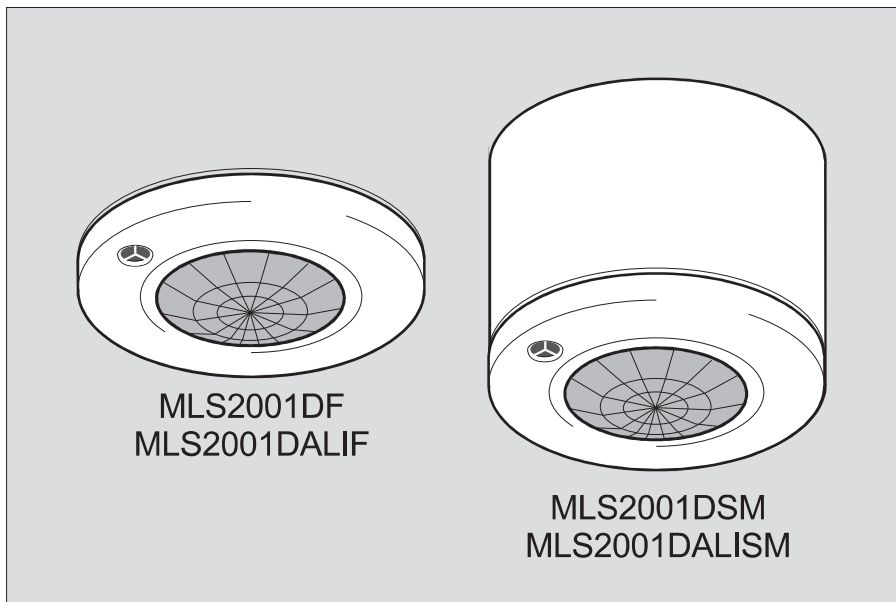




by Honeywell

**MLS Digital Detectors**  
**MLS2001DF & MLS2001DSM for DSI ballasts**  
**MLS2001DALIF & MLS2001DALISM for DALI ballasts**



**Installation and Commissioning**  
**Instructions**

Note: HP2000 required for commissioning

## **MLS Digital Detectors: MLS2001DF/SM for DSI ballasts & MLS2001DALIF/SM for DALI ballasts**

**Note: Connections to this equipment should be made by a suitably qualified person and in accordance with the current wiring regulations.**

MLS Digital Detectors are the high-performance, communicating, presence detectors which lie at the heart of the advanced lighting management system known as The Ex-Or MLS Digital. These MLS Detectors are equipped with a regulating photocell to work with digital DSI/DALI ballasts.

### **Fixing**

**Flush Versions:** Depth required behind ceiling: 62mm from front flange plus an allowance for the minimum bend radius of the cable. The sinking box fits into a 89mm diameter hole in ceiling tile or plasterboard ceiling. To avoid damage to ceiling tile, do not overtighten. No access above the ceiling is necessary.

**Surface Versions:** The housing may be secured to a hard surface or a BESA box. The unit fits into the housing with a simple bayonet action.

**Note:** Do not mount within 25cm of a luminaire.

### **Connection Overview (see last page for diagram)**

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 (maximum 25) in parallel and also to the polarity-free digital output of the MLS Detector.

Each 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 that remain powered-up.

The MLS Bus must be connected to the MLS bus wiring network. An MLS Bus Power Supply is required for each network of up to 200 MLS Detectors. Please refer to Bus Power Supply installation instructions prior to commencement of any bus wiring.

It is imperative that the MLS bus is wired with the correct type of cable; normally it should be 1.5mm<sup>2</sup> unscreened twisted pair. Please read Application Note AN4001 for more details. **Do not connect mains to the MLS bus.**

### **'OneSwitch' Dimming**

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 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). A wiring diagram is shown on the last page.

### **Setting the Regulating Photocell**

This product is intended for use with high frequency regulating ballasts with digital control inputs. An infrared programming tool HP2000 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.

### **Commissioning**

Detectors are supplied factory pre-set which ensures the lighting will switch on automatically as soon as power is applied. Final commissioning of the detectors, including assigning to zones, requires the use of the HP2000 Programmer.

Please read carefully the operating instructions that accompany the programmer prior to performing a programming operation.

### **Commissioning Detectors using the HP2000**

1. Switch on HP2000 by pressing the red power button.
2. Point HP2000 at detector and press the DOWNLOAD button. The HP2000 will confirm the product's identity and call up the correct menu of parameters and their current settings.
3. Use a combination of UP, DOWN, FORWARD and BACK buttons to navigate the parameter menu, selecting options for each shown. (See Tips following.)

4. When options for all parameters have been selected, point the HP2000 at the detector and press the UPLOAD button. The luminaire(s) will switch off briefly during the programming process and the HP2000 shows DATA OK to confirm operation.
5. After a short period of inactivity (default 5 minutes), the HP2000 hibernates retaining the most recent settings.

### Tips

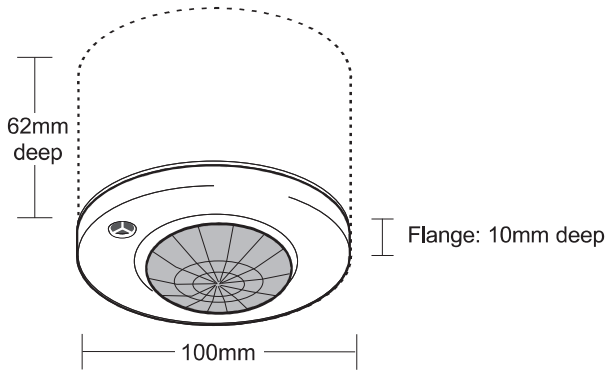
- i) Where there are only two options such as ON/OFF, a double click of the OK button toggles between them.
- ii) Where there are multiple options, a double click of the OK button recalls a list of all options for that parameter. Use the UP, DOWN and OK buttons to select.
- iii) Use the OK button to go forward (through the menus) without displaying help pages.
- iv) Press UPLOAD at any time to transfer all current settings from the handset to the product.

Parameter	Options	Pre-Set	Notes
Power Up	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	Auto, Manual/Bus, Manual only	Auto	If set to Auto, the presence detector switches the luminaire on and off automatically. If set to Manual Only, it can only be turned on by using OneSwitch or the hand-held controller. If set to Manual/Bus, an MLS Bus turn-on command for a Zone to which the detector belongs will also bring the light on. In all modes the "When Vacant" behaviour (below) is initiated automatically.
Off Delay	1 min - 96 hrs, 10-sec (walk-test), Disabled	20 mins	The time for which the luminaire will stay on following the last detected movement. Also 10-second setting for walk-testing.
On Sensitivity	0-100	100	Sensitivity to movement when area is occupied. 100 = max
Bus Connect	Yes / No	Yes	Do/Do not Signal/Receive on MLS Bus.
1st - 4th Zone	Address 1-100; -- (no zone); Common 1-3	No Zone	Individual Zones influencing and being influenced by this detector.
Corridor 1 & 2	0-100; -- (no zone); Building	No Zone	Zone ranges influencing and being influenced by this detector.
Global 1 & 2 Rx	Yes / No	No	Respond to selective load shedding.
Manual Input	Shared / Local	Local	Do/Do not signal OneSwitch commands across the MLS Bus.
Start Lamps	Max / Min	Max	Sets the level at which the lamps strike when turning on.
Entry Scene	1-6	Scene 1	Sets which scene is recalled when unoccupied area is entered.
Bright Out	Yes / No	No	If set to yes, movement fails to refresh the off delay if ambient light level exceeds 125% of set level and the luminaire will switch off when the off delay has elapsed. NB: Dimming must be set to 100%.
Dimming	Reg 50%-Reg100%	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.
Lamp Max	10%-100%	100%	Can be set to limit the absolute maximum output of the ballast in all operating modes.
Fade to Off	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	Off / Min / Reg <25% / Scene 6	Off	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, there are further programmable options to switch off after 3 times the Off Delay (XTN) or when no further movement has been detected anywhere in the building (BLD).
Set-point Low	0-1023	1023	Aiming point as photocell adjusts ballast output.
Set-point High	0-1023	1023	Level above which photocell switches its output off (only if Bright Out = Yes).

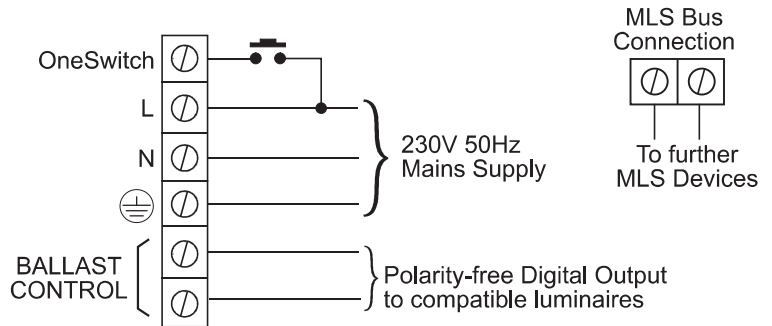
#### Additional feature accessible under Utilities on HP2000:

100 Hour Burn-In	Burn-in 100 hrs / Cancel / Resume	0 hr	See Application Note: AN4028
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## Dimensions



## Electrical Connections

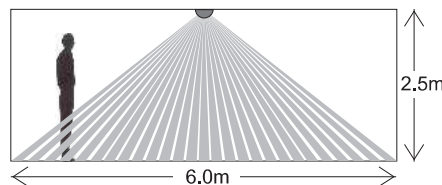


## Technical Data

MLS CABLE: 1.5mm<sup>2</sup> unscreened twisted-pair : see Application Note AN4001

RECOMMENDED MAXIMUM MOUNTING HEIGHT: 3.0m

RANGE: Cone-shaped detection pattern,  
diameter (at floor level)  
= 2.4 x mounting height



OPERATING VOLTAGE: 230V 50Hz (UK & Europe)

PRODUCT RATING & RECOMMENDED CIRCUIT PROTECTION: 10 Amps

CAPACITY: 25 ballasts

OUTPUT: 2-wire digital polarity free

PHOTOCELL: Regulating

OFF DELAY: Adjustable via Programmer - factory pre-set to 20 minutes

DEPTH REQUIRED BEHIND CEILING (FLUSH VERSION): 62mm from front flange plus an allowance for the minimum bend radius of the cables.

WEIGHT: 200g approx

COLOUR: White

MATERIAL: Flame retardant PC/ABS

IP RATING: 4X

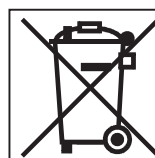
OPERATING TEMPERATURE: 0°C to 40°C

### Important Additional Notes

- 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.
- A means for disconnection must be incorporated in the fixed wiring in accordance with the current wiring regulations.
- 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.
- The dimming control output should be connected only to the control input of the ballasts - never to other detectors.
- This equipment should be used to control only those ballasts powered from the same phase as the detector.
- 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.

## Ex-Or

Novar ED&S Limited  
Haydock Lane, Haydock, Merseyside WA11 9UJ  
Tel: +44 (0)1942 719229  
Fax: +44 (0)1942 508753  
Email: technicalsales.ex-or@honeywell.com  
www.ex-or.com



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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