MLS Digital - Networked Managed Lighting System

Remote Detectors for Regulating Ballasts

MLS Digital offers a flexible, user-responsive, building-wide control solution via a network of communicating detectors. Constant monitoring of occupancy and ambient light levels enables the system to automatically deliver optimum lighting conditions while effecting energy and cost savings.

The detectors covered by this data sheet are designed for use with regulating ballasts (with specific controls for DSI, DALI and 1-10V Analogue types). They are designed for ceiling mounting to provide a group of luminaires with presence detection, daylight regulation/photocell control and full communication functions.

MLS2001DF
MLS2001DALIF
MLS2001AF

MLS2000DF
MLS2000DALIF

MLS2001DSM
MLS2001DALISM
MLS2001ASM

Presence detection is by passive infrared, effectively enhanced to improve sensitivity to small movements.

Regulating photocell ensures a minimum maintained light level, taking account of the contribution from adjacent luminaires and daylight.

Off delay: Period following the last observed movement after which the lights switch off.
1 min- 96 hrs

Detection pattern and approximate range in metres at floor level for 2.5m mounting height (detection pattern is cone shaped).
6m

Incorporates simple scene-setting - up to six scenes can be set or recalled via user remote.
SS

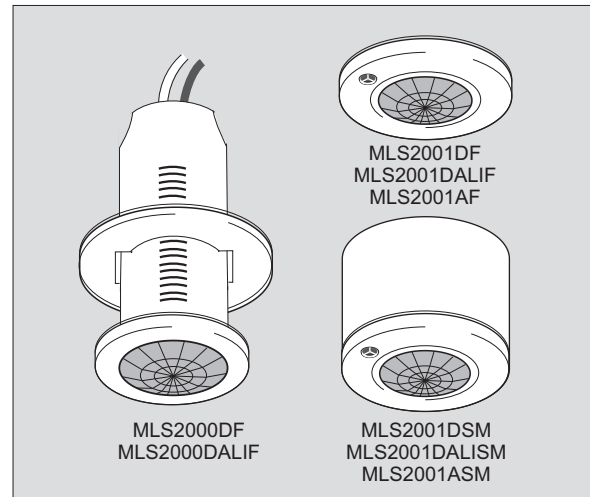Hand Controller provides local user override.

Remote programming via HP2000 ensures changes can be easily accommodated.

OneSwitch Dimming. Manual input to adjust light level or turn luminaires on or off.

100-hour Burn-in. Inhibits dimming functions to allow new lamps to burn in. Available on MLS2001D/DALI only.
100 hr

Commissioning the Programmable Parameters

Operation of the system is determined by its commissioning. This is carried out using a menu-driven infrared remote programmer (HP2000) with virtually no disturbance to the building's occupants. Settings can be changed whenever required in the same way. The programmable parameters are shown overleaf in the order they are presented on the programmer. Options are selected from alternatives.

Commissioning of Lighting Scenes

Lighting scenes are set up using the infrared HC5 Hand-held Controller. The scene is set manually then stored by a long press on the selected scene button. New scenes can be set in this way without the need for separate programming devices.

Ancillary Items

HP2000 MLS Digital Programmer
Menu-driven LCD Programmer with automatic equipment recognition and parameter download facilities.

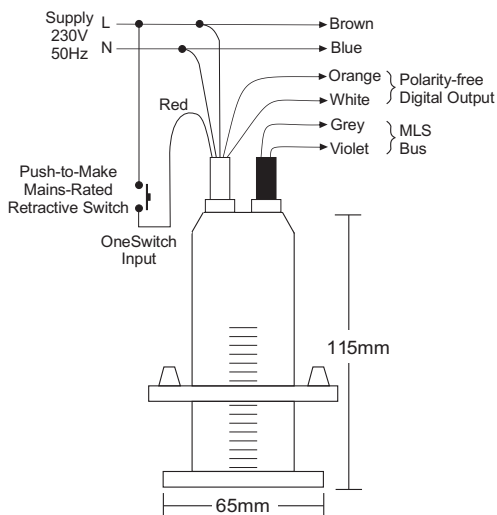**HC5 Universal Hand-held Controller**

RB2000 Bus Power Supply
A single Bus Power Supply synchronises and powers the bus for up to 200 MLS Controllers. It also provides a test facility. Units may be linked for larger installations and to provide a building-wide common zone. (RB2000LT Bus Power Supply Lite may also be used.)
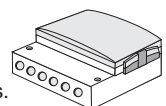
Please check www.ex-or.com to ensure this is the most recent issue - Ref: D4029I

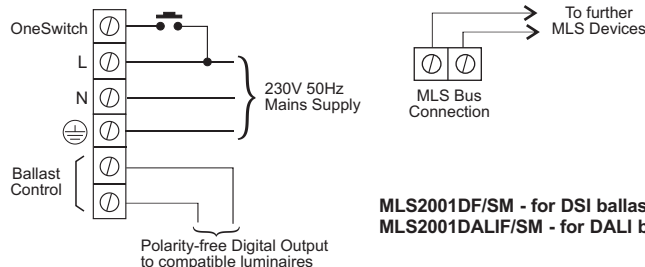## Electrical Connections and Installation Notes

Supply 230V 50Hz — L, N
Red
Brown
Blue
Orange — Polarity-free Digital Output
White
Grey — MLS Bus
Violet

Push-to-Make Mains-Rated Retractive Switch
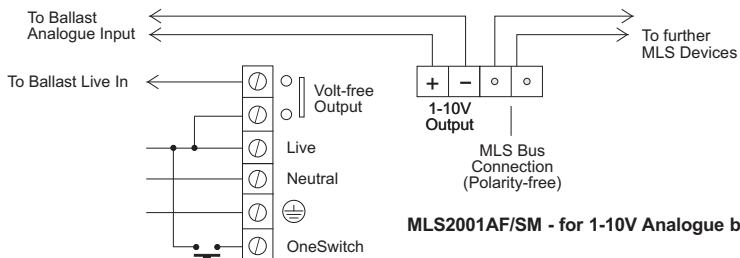OneSwitch Input

115mm
65mm

MLS2000DF - for DSI ballasts
MLS2000DALIF - for DALI ballasts

Installation
Slimline flush versions: Cut a 50mm diameter (64mm if using an FR64 flush ring or PB64 plasterboard fixing kit) circular hole in the ceiling tile, feed the flying lead and detector through and secure into position with the locking ring. Do not mount within 25cm of a luminaire.

OneSwitch
L
N
230V 50Hz Mains Supply
Ballast Control
Polarity-free Digital Output to compatible luminaires

To further MLS Devices
MLS Bus Connection

MLS2001DF/SM - for DSI ballasts
MLS2001DALIF/SM - for DALI ballasts

To Ballast Analogue Input
To Ballast Live In
Volt-free Output
Live
Neutral
OneSwitch
To further MLS Devices
1-10V Output
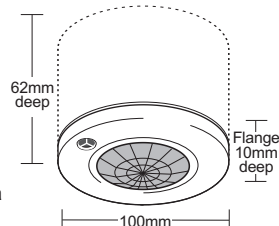MLS Bus Connection (Polarity-free)

MLS2001AF/SM - for 1-10V Analogue ballasts

Installation
Flush versions: Depth required behind ceiling: 62mm from front flange. Sinking box fits into 89mm diameter hole in ceiling tile or plasterboard ceiling. No access above the ceiling is necessary. The detector fits into the sinking box with a simple bayonet action thus concealing the fixing screws.

Surface versions: The housing may be secured to a hard surface or a BESA box. The detector fits into the housing with a simple bayonet action thus concealing the fixing screws.
Note: Do not mount within 25cm of a luminaire.

62mm deep
Flange 10mm deep
100mm

Programmable Parameters	Selectable Options (Factory pre-set shown in bold)
Power up	**On** / Off
Response	**Auto** / Manual/Bus / Manual Only
Off Delay	1 min to 96 hrs / 10-second Walk-test Mode / Disabled. **20 mins**
24 Hour Cycle	On / **Off** Output turns off for duration of Off Delay if area is unoccupied for 24 hrs. Useful for hygiene flush when controlling water.
On Sensitivity**	0-100 Sensitivity to movement when area occupied. **100** (= max)
Bus Connect	**Yes** / No
Zone 1, 2, 3 & 4	1-100 addresses. **None**
Corridor 1 & 2	Set addresses to begin and end contiguous group of zones. **None**
Global 1 & 2 Rx	Yes / **No**
Manual I/P	**Local** / Share This determines whether OneSwitch operates locally (just one detector) or on all devices on the same zones.
Start Lamps	**Max** / Min
Entry Scene	Select Scenes 1 - 6. **Scene 1**
Bright-out	Yes/ **No**
Dimming *This parameter refers to digital detectors only: see 'Photocell' below for analogue detectors.*	Reg 100-50% **Reg 100%** Sets the regulating range of the ballast in daylight conditions, i.e. at 100% the ballast can regulate over its full range, at 70% the ballast will not dim below 30% output. Manual override is not affected.
Fade to Off	Yes/ **No**
When Vacant	**Switch Off after Off Delay**
	Go to Minimum — and do not switch off
	Regulate up to 25% — for 3 x Off Delay (XTN) then switch off
	Go to Scene 6 — until building is vacated then switch off
Photocell †	Reg 100 - 50% / Passive / Active / Disabled **Reg 100%** See 'Dimming' above for details of regulating range.
	Active — Holds/switches lights off in bright ambient conditions — If either of these options is chosen, the Bright-out and ambient light dimming functions are de-activated. The photocell will not dim the luminaire.
	Passive — Holds lights off in bright ambient conditions
	Disabled — No photocell action
Lamp Max	10-100% (10- 50% in 5% increments; 50%+ in 10% increments) **100%** Limits the maximum output of the ballast in all operating modes.
Lower Threshold †	0-254 Point at which photocell allows lights to switch on.
Upper Threshold †	0-254 Point where photocell turns lights off if Photocell Mode = Active
Set-point Low**	0-1023 Aiming point as photocell adjusts ballast output. **1023**
Set-point High**	0-1023 Level above which photocell switches its output off (only if Bright Out = Yes) **1023**
Additional feature available under Utilities on HP2000:	
100-hr Burn-in**	Inhibits dimming functions during burning-in of new lamps. **0hr**

Technical Data

All types:
MAX RECOMMENDED 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
COLOUR: White
MATERIAL: Flame retardant PC/ABS
PHOTOCELL: Regulating (operational in Scene 1 only)
OPERATING TEMPERATURE: 0°C to 40°C

MLS2000DF / MLS2000DALIF:
WEIGHT: 70g excluding cable
OUTPUT: Digital DSI/DALI
CAPACITY: 9 ballasts
IP RATING: 4X

MLS2001D* / MLS2001DALI* / MLS2001A*:
WEIGHT: Approx 200g
OUTPUT: Digital DSI (MLS2001D*)
            DALI (MLS2001DALI*)
            1-10V Analogue (MLS2001A*)
CAPACITY: 25 ballasts
IP RATING: 4X (MLS2001D*/MLS2001DALI*)
            3X (MLS2001A*)

* Denotes suffix F or SM

Ex-Or operates a genuine policy of continuous improvement. You may expect the specification to be regularly enhanced. For latest technical information, please visit www.ex-or.com

Part Numbers

MLS Digital Detectors:

MLS2000DF	for DSI ballasts - slimline flush
MLS2001DF	for DSI ballasts - flush
MLS2001DSM	for DSI ballasts - surface
MLS2000DALIF	for DALI ballasts - slimline flush
MLS2001DALIF	for DALI ballasts - flush
MLS2001DALISM	for DALI ballasts - surface
MLS2001AF	for Analogue 1-10V ballasts - flush
MLS2001ASM	for Analogue 1-10V ballasts - surface

Ancillary Items:

RB2000	MLS Digital Bus Power Supply
RB2000LT	MLS Digital Bus Power Supply 'Lite'
HP2000	MLS Digital Programmer
HC5	Universal Hand-held Controller c/w wall bracket

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† Analogue versions only   ** MLS2001D/DALI only

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