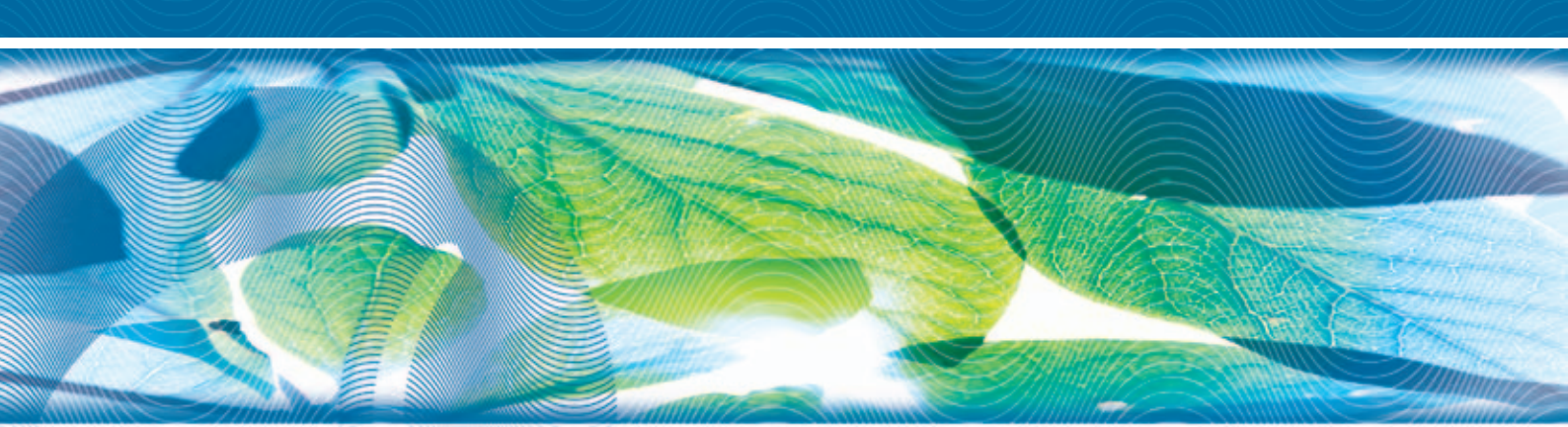


# MLS Digital

Networked Managed Lighting System



I N N O V A T I V E L I G H T I N G M A N A G E M E N T S Y S T E M S



Ex-Or, which was founded in 1984, followed the success of its range of stand-alone energy-saving controls by introducing a truly innovative networked Managed Lighting System. **MLS Digital** offers a flexible, user-responsive, building-wide control solution via a network of communicating detectors, either integrated within individual luminaires or mounted remotely to control groups of lights.

### **Savings**

Switching lights off when no-one is there, dimming or switching them off when there is enough natural light – the savings are automatic and can be as high as 80% and they accrue year after year. Maintenance costs are reduced too – with lamps on less, they last longer and need replacing less often.

### **Environmental Considerations**

Saving energy also cuts CO<sub>2</sub> emissions. The installation of an **MLS Digital** system can help meet the requirements of environmental legislation such as:

- Part L of the Building Regulations (Conservation of Fuel and Power)
- Carbon Reduction Commitment Energy Efficiency Scheme

### **Experience**

As our controls are designed in-house, we have been able to draw on our years of experience in the field to develop a range of products that delivers bottom-line energy savings to building owners and customised, convenient operation to building users.

### **Comprehensive Range**

Customer feedback and the understanding we have built up of the real-life operational requirements in the many and varied types of buildings we have installed, have resulted in a truly comprehensive product range.

**MLS Digital** offers:

- Zoned lighting for enhanced convenience and visual comfort
- Lighting in key circulation areas held on automatically
- Scene-setting facility
- Straightforward installation (including plug-in connection centre option)
- Simple commissioning using a hand-held infrared programmer
- Flexibility to accommodate changes in an area's layout or usage without any alteration to the wiring
- Distributed intelligence – no need for a centralised computer
- Optional computer-based graphical management and control of system
- Optional BACnet interface enables integration with Building Management Systems

### **Reliability**

We've always understood the importance of reliability in operation. Not only are our products engineered for reliability but, with manufacturing taking place at our own state-of-the-art facilities, we can guarantee the quality of components and workmanship too.

### **Expertise**

We'll discuss your own particular requirements and can tell you which solution is best for you and why. We pride ourselves on having a solution for every application, so you can trust our advice – and it's free.

### **Enhanced Capital Allowances**

**MLS Digital** qualifies for the Energy Technology List and thereby attracts ECAs whereby businesses can claim 100% first-year capital allowances. Further information can be found at [www.eca.gov.uk](http://www.eca.gov.uk) and [www.carbontrust.co.uk](http://www.carbontrust.co.uk).



## Products and Systems

### MLS Digital

Networked Managed Lighting System

### Connect

Lighting control modules and plug-in connection centres

### FailSafe

Emergency lighting testing systems

### LightSpot

Stand-alone lighting control by presence detection and photocell

### SceneSelect II

Architectural scene-setting and dimming system

## Complete Service

### Expert technical sales team

- Field based with national coverage
- Solutions designed for specific project and client needs
- Design assistance for new-build projects
- Site visit and survey for existing-building retro-fit projects

### Expert sales support team

- Technical drawings and schematics
- Installation guidance and advice
- Post-sales support

### Expert contracts management team

- Project management
- Commissioning and on-site support

### Service and maintenance

- A tailored solution to meet your needs, from extended on-site warranty to full, planned, preventative-maintenance programme.

## Case Studies

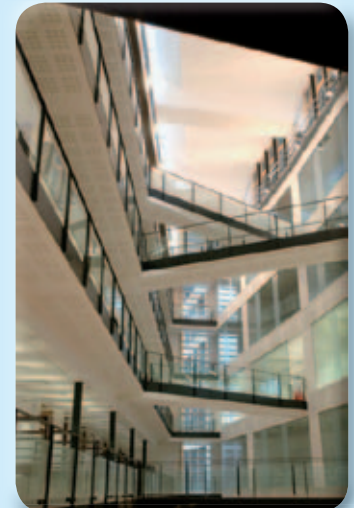
### Acergy

Designed to stringent environmental standards, Acergy's 17-acre office campus has a 'very good' BREEAM (Building Research Establishment Assessment Method) rating. MLS Digital ensures that lighting is provided only when and where it is needed throughout the office, workshop, warehousing and leisure facilities.



### Manchester University

With a £15m energy budget, energy efficiency is a priority for the UK's largest single-site higher education institution. Trials showing savings of 69% led to MLS Digital featuring in both new-build and refurbishment projects. As well as the savings, MLS Digital's ability to adapt to constantly changing work and study layouts was a key factor in its specification.



### South East England Development Agency

Installing MLS Digital throughout their HQ in Guildford helped SEEDA achieve BS EN ISO 14001, the standard for environmental responsibility and sustainability. In addition, electricity consumption is being cut by up to 15%, saving around £8,000 per annum.

### Royal & Sun Alliance

Lighting refurbishment at the insurance group's Birmingham offices has resulted in savings of £3,000 a year. Built into the new luminaires, MLS Digital automatically provides the correct lighting levels, creating an improved working environment for staff.



### National Savings & Investments

A 40% annual saving in lighting costs followed the installation of MLS Digital as part of the £2.6m upgrade of NS&I's Blackpool HQ. The building's Energy Performance Certificate rating has improved from D to B and its BREEAM ranking from 'poor' to 'very good'.

# System Capabilities

MLS Digital offers flexible, building-wide lighting control 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.

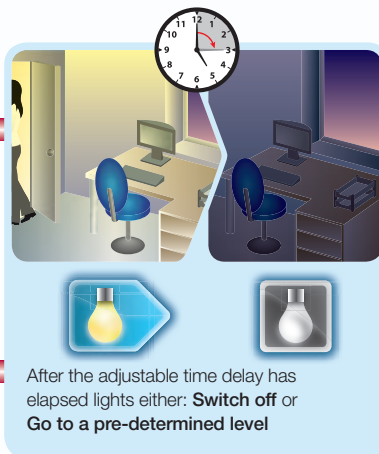
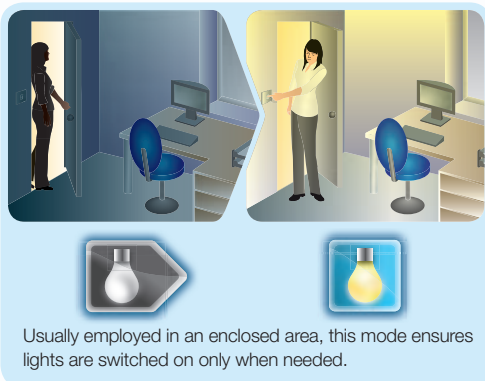
## Occupancy

The provision of lighting in response to occupancy can be either **Automatic** or **Semi-automatic** (also known as Absence mode).

### Automatic



### Semi-automatic



### Key:

-  Work area zone
- C** Common zone
- B** Building zone

## User control

Enables user control of lighting features:

**OneSwitch Control** Allows the user to switch lights on/off or to change the light level via a wall-switch.

**Wireless Switching** Some detectors are enabled for use with wireless, batteryless switches.

**Scene Control** Users can create lighting scenes to suit their individual requirements and then recall them whenever required. This feature is ideal for multi-function rooms that require different lighting scenes on different occasions. There is also a partition switch feature for use in areas which can be sub-divided into separate rooms.

Presentation (partition open)

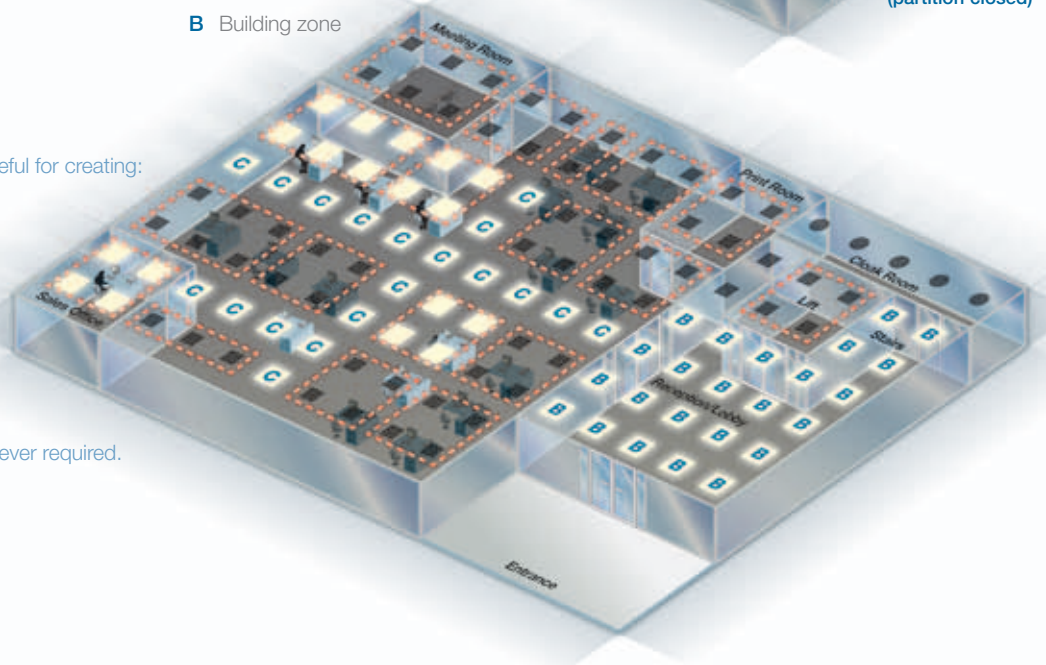
Small meeting (partition closed)

## Zoning

The ability to create lighting zones is useful for creating:

- Work areas with grouped lighting.
- Common zones, e.g. an exit route or corridor (real or notional).
- Building-wide zones, e.g. a stairwell to maintain safe lighting levels when the building is occupied.

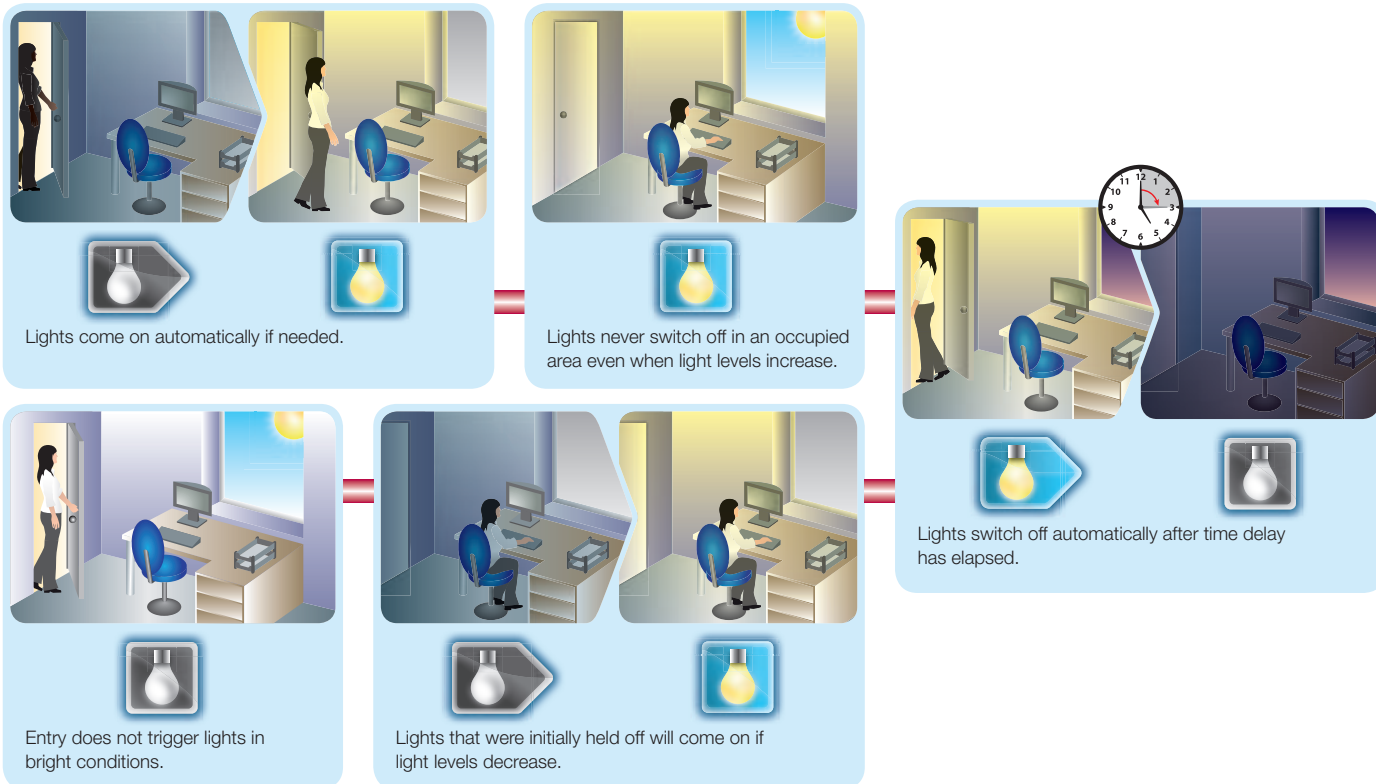
Zones can easily be reconfigured whenever required.



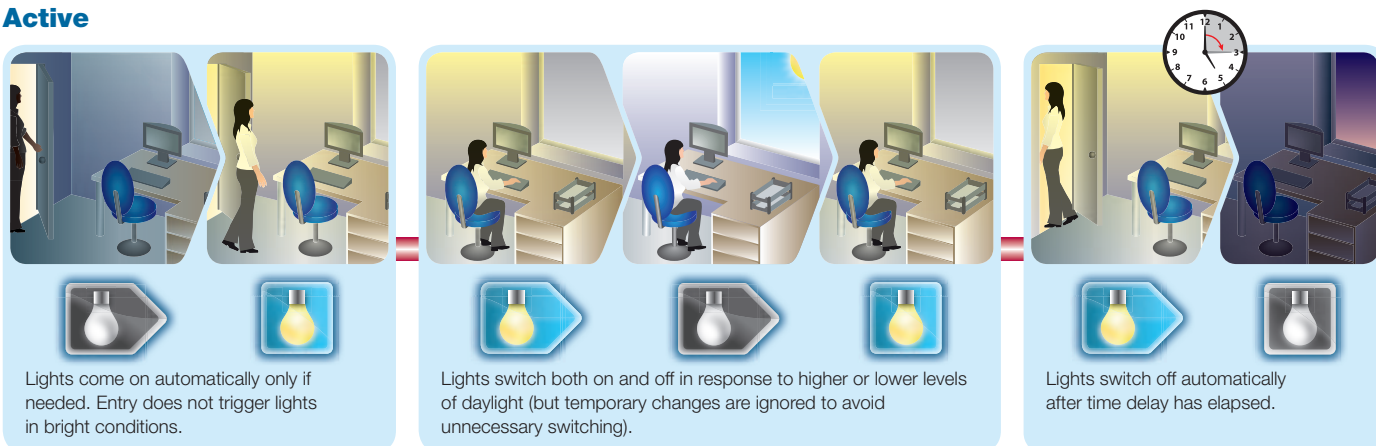
## Daylight influenced operation

The system can respond to varying levels of natural light in three different ways: **Passive**, **Active** or **Regulating**.

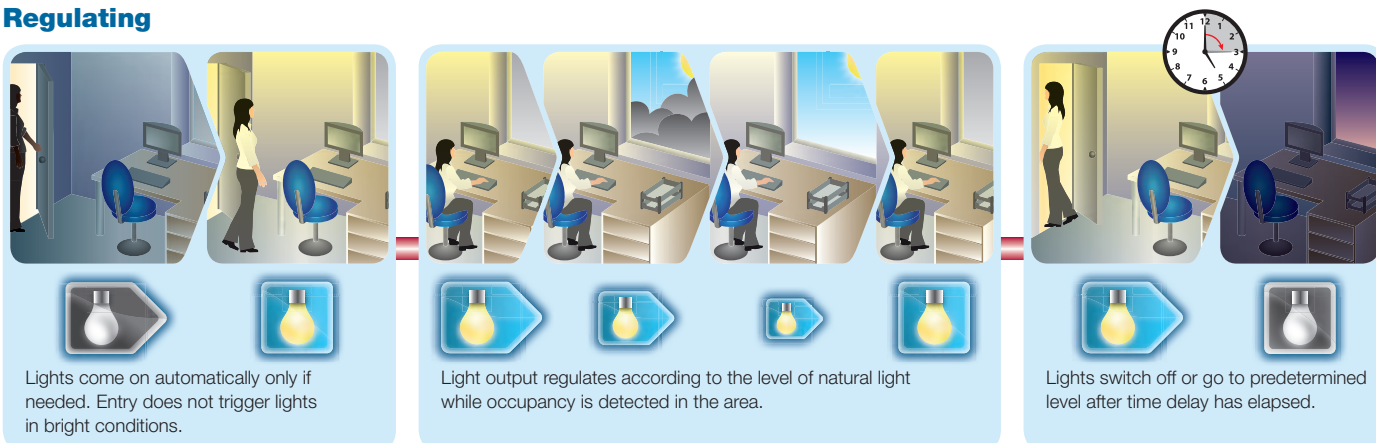
### Passive



### Active



### Regulating




# Example of MLS Building-wide Solution

Reliability is a key feature of the system; its distributed intelligence avoids the possibility of an overall breakdown.




**MLS Bus Power Supply**  
One per floor



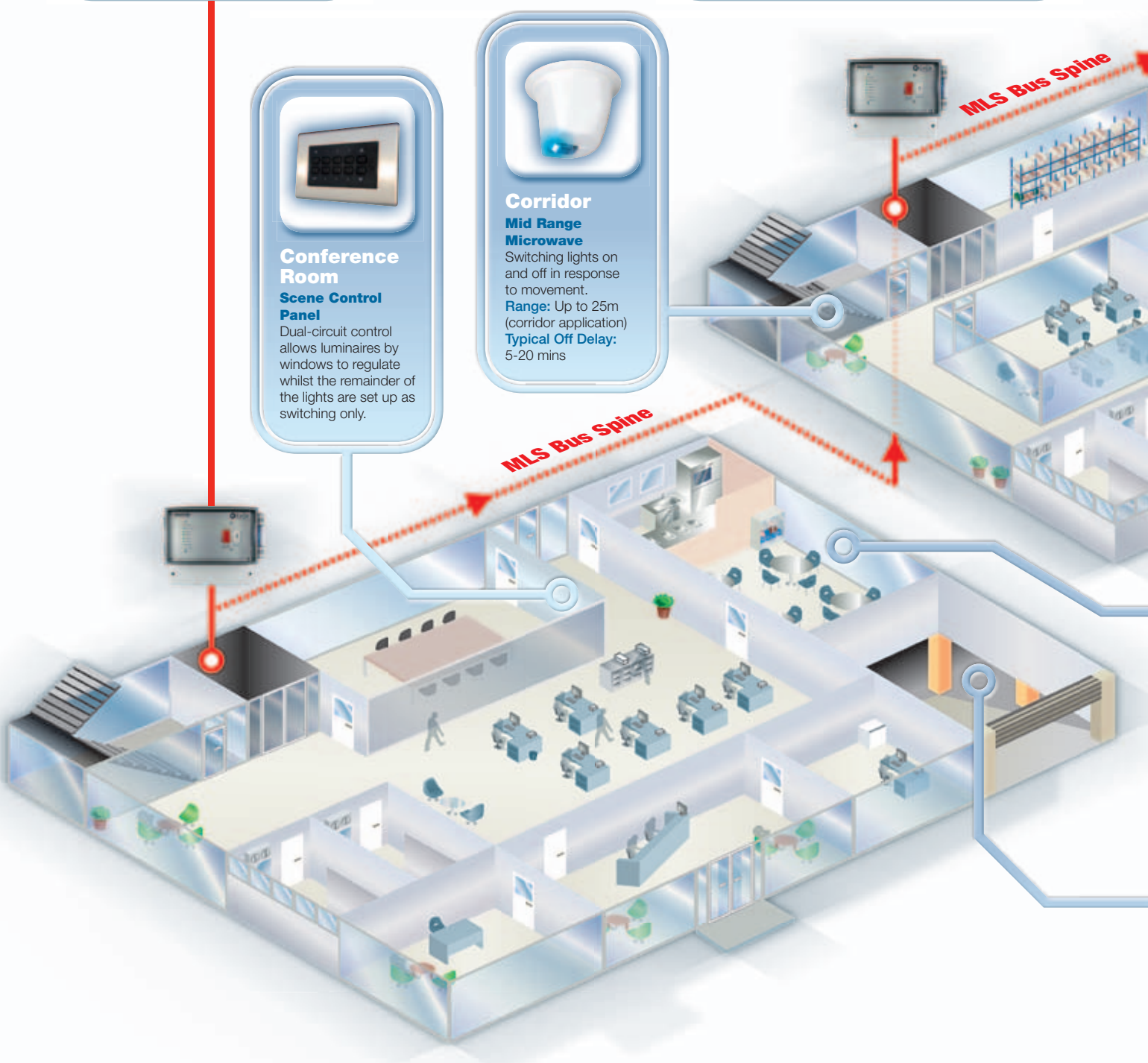
**BACnet Interface with supervisory and scheduling control**

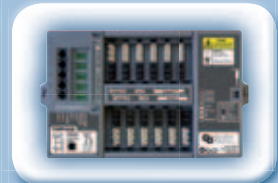
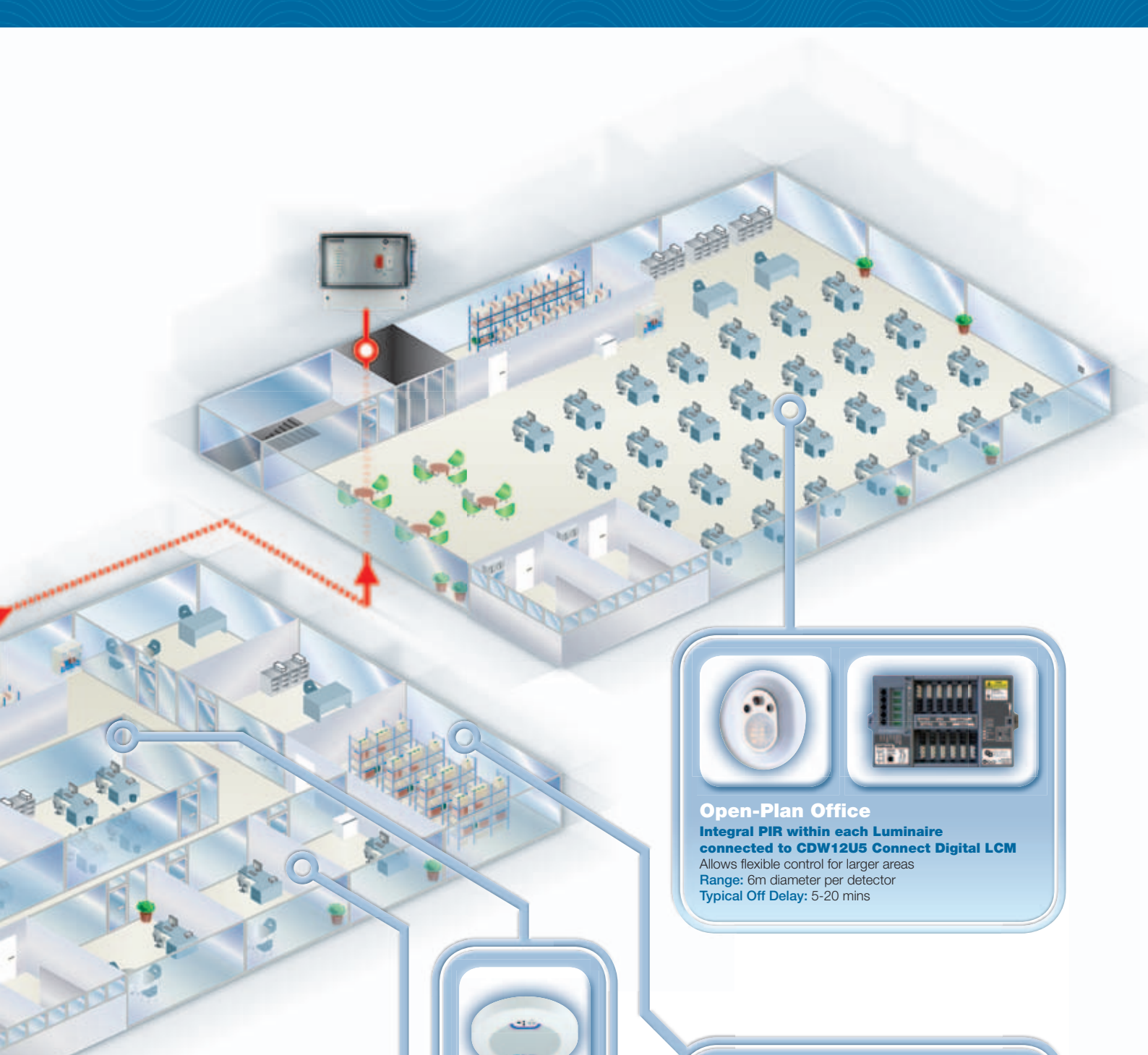


**Conference Room Scene Control Panel**  
Dual-circuit control allows luminaires by windows to regulate whilst the remainder of the lights are set up as switching only.



**Corridor Mid Range Microwave**  
Switching lights on and off in response to movement.  
Range: Up to 25m (corridor application)  
Typical Off Delay: 5-20 mins





### Open-Plan Office

**Integral PIR within each Luminaire connected to CDW12U5 Connect Digital LCM**

Allows flexible control for larger areas

**Range:** 6m diameter per detector  
**Typical Off Delay:** 5-20 mins



### Larger Office

**Gold Series Microwave**

Ideal for large office environments.

**Range:** 7m diameter  
**Typical Off Delay:** 5-35 mins



### Storage Area

**Hi-Bay PIR**

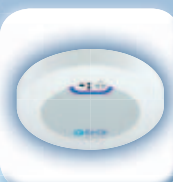
Delivers effective presence detection at height. Infrared programmable from ground level reducing costs of commissioning/re-commissioning. Programmable options include reduced-light-output exit scenes.

**Range:** Up to 16m  
**Typical Off Delay:** 5-15 mins



### Canteen/Recreation Area

**Wireless Batteryless Switch**



### Underground Car Park

**Gold Series Microwave**

Microwave detectors are not activated by heat or air movement so are ideal for car parking areas.

**Range:** 7m diameter  
**Typical Off Delay:** 5-35 mins



### Cellular/Small Office

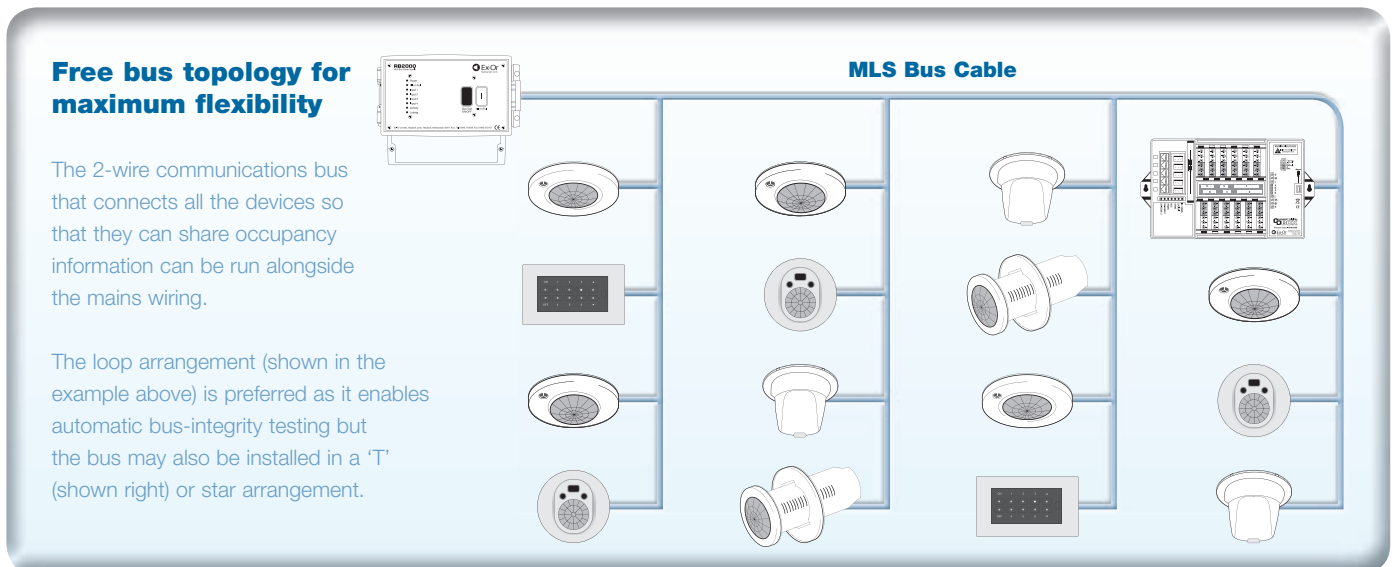
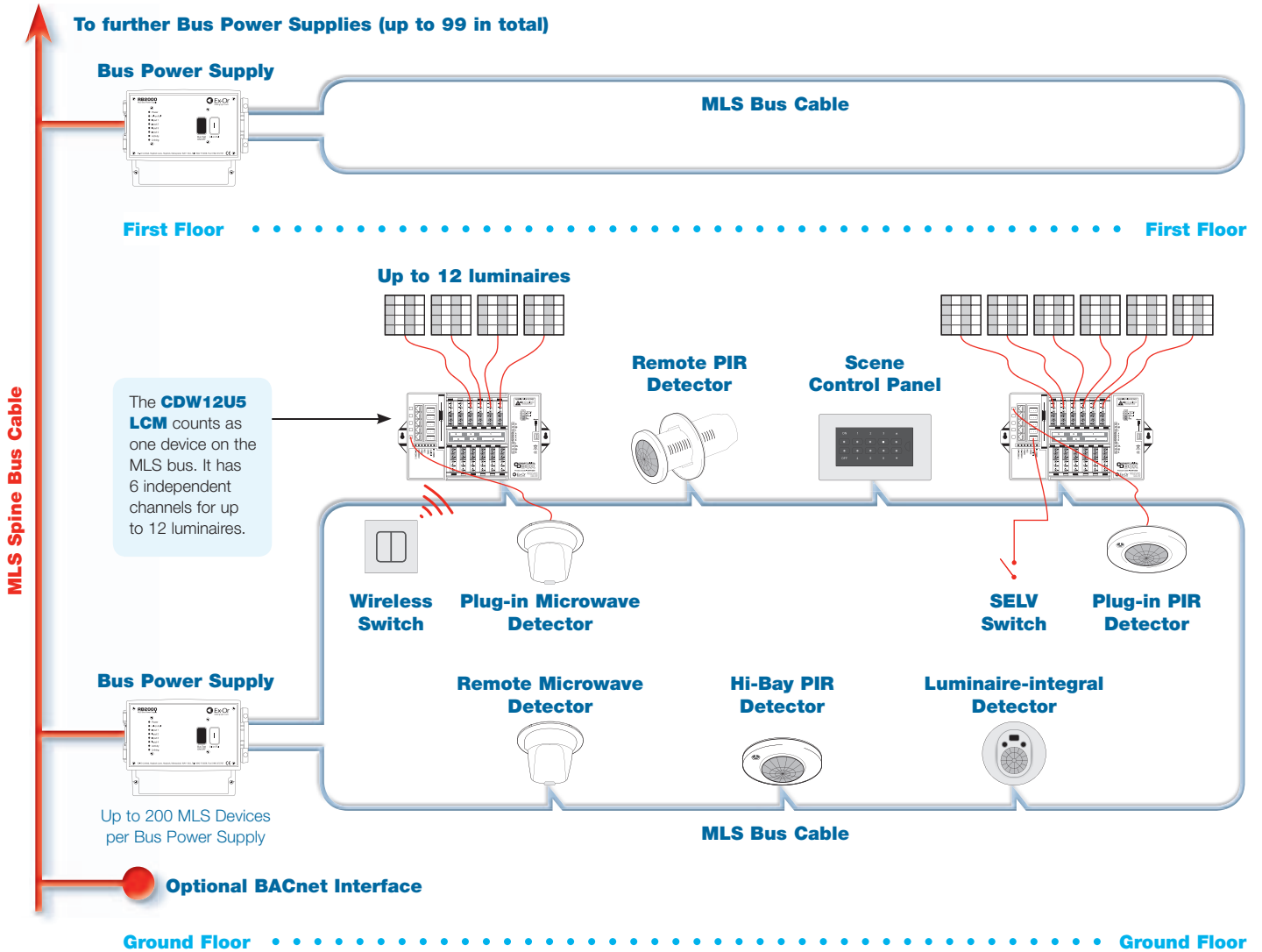
**Remote PIR**

Offers regulating or photocell hold off.

**Range:** 6m diameter  
**Typical Off Delay:** 5-35 mins

# Installation

Installation is straightforward and uncomplicated. There are no pre-addressed components, so time is not wasted matching equipment with location. The wide choice of detector types ensures that all areas of a building can be included and the system can be expanded to cover tens of thousands of detectors. The installation process can be further streamlined by using the MLS Connect Digital system. Pre-wired detectors simply plug into a Connect Digital LCM thus eliminating wiring errors.





# Commissioning

MLS Digital is simplicity itself to commission. Using the HP2000 hand-held infrared programmer, you can tell each MLS Detector exactly how you want it to behave, receiving positive feedback at every stage of the process.



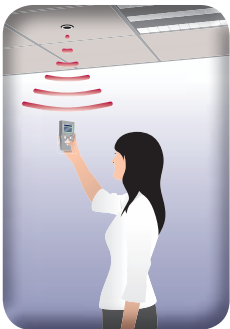
Set parameters using on-screen scroll-down menus



Upload settings to detector - the luminaire blinks to confirm

## Simple two-step commissioning

Commissioning is carried out locally, making it much easier to set the light levels as you can see what's going on. No special skills are required, you don't need ladders or to refer to installation records.



Download ideal settings from one detector

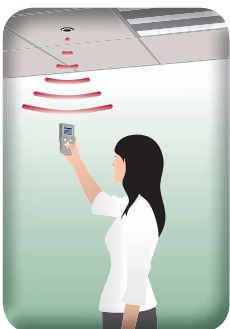


'Paste' to other detectors



## Time-saving 'copy and paste'

You can 'copy and paste' settings from one detector to adjacent detectors in the same group. Commissioning can therefore be carried out very speedily as settings can be copied between detectors in seconds.



Download existing settings



Change just those settings required using the on-screen menu



Upload new settings to detector/s

## Changing settings at a later date

The same simple procedures apply if, at a later date, you need to change any of the settings. Simply download the settings from the detector, change the relevant parameter/s and upload the new settings to this and other detectors.



Install new detector and wire it up



Using HP2000, choose new settings or simply 'copy and paste' as shown above



## Adding new devices at a later date

If you need to add to the system to accommodate changes to the building, e.g. a storeroom being converted into an office, it's a straightforward matter to connect another detector to the system. Once it's wired up, just upload the settings with the HP2000 and you're done.

# MLS Digital Product Range

The following provides an overview of the **MLS Digital** range.

Comprehensive technical details can be found on the appropriate technical data sheets.



## MLS Connect Digital

### Programmable LCM

- Direct connection and control of up to 12 luminaires
- Six independently switched or dimmed channels
- Digital DSI, DALI or 1-10V Analogue dimming options
- Channels can be programmably bound in any combination to make larger groups
- Five SELV PIR and/or Microwave presence detector inputs and five SELV switch inputs
- Wirelessly enabled option for 2 x 2-way batteryless wireless switches with programmable functions
- Mechanically locked plug-and-socket arrangement
- Infrared programmable directly to box or via any connected detector
- For emergency lighting, 3-wire mains as standard, removable link for 4-wire installations

## MLS Connect Digital Detectors

PIR and Microwave options for optimum energy saving.

SELV connection via RJ45 patch leads.

Luminaire-integral and remote versions available.



**MLSM2002CDR**  
360° integral PIR with photocell



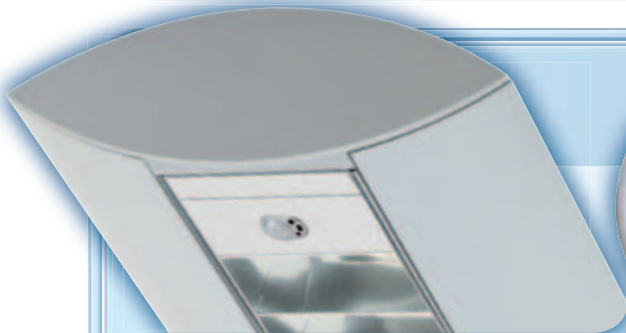
**MLS2001CDR**  
360° PIR with photocell



**MLS2401CDR**  
360° Microwave with photocell



**MLS2500CDR**  
Directional Microwave with photocell



Actual size

## Integral MLS Digital Detectors

- Two types of small, discreet luminaire controller
- Suitable for integration in most luminaire designs
- Moulded-in features to assist in mounting
- Versions for on/off switching of fixed-output ballasts and for dimming analogue and digital ballasts

## Remote MLS Digital Detectors

- Operate in association with a group of luminaires
- Suitable for areas where lighting layouts are not expected to change
- Hi-Bay version for mounting heights up to 16m
- Directional, microwave version with extended coverage available
- Versions for on/off switching of fixed-output ballasts and for dimming analogue and digital ballasts

Remote PIR



Hi-Bay PIR



Gold Series Microwave



Mid Range Microwave



## Manual and Scene Control

### Local Control Plate

- Gives simple, localised control over a group of luminaires
- Dim/brighten, switch on/off and 3 scene recall



### Scene Control Panel

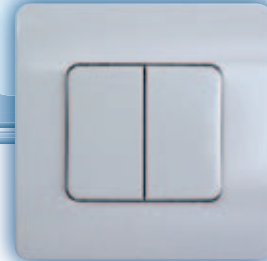
- On/off, dim/brighten and 6 scene recall
- Infrared programmable
- 25 DSI/DALI ballast output

Choice of fascias: Brushed stainless steel, polished chrome, polished brass, white

## Wireless Switching

Wireless, batteryless switches allow:

- Total location flexibility
- Simple re-configuration when areas are re-arranged



## Bus Power Supply

- Single Bus Power Supply synchronises and powers the bus for up to 200 MLS Digital devices
- Test facility for checking bus integrity
- Linking units enables building-wide common zones to be established
- Up to 99 Bus Power Supply units may be installed on one system to support around 20,000 detectors
- 'Lite' version available for small buildings or areas with fewer than 100 MLS devices



## Universal Bus Transceiver

- Enables otherwise uncontrolled lighting and non-lighting loads to be brought into the system
- Allows external devices to provide inputs to the system to provide global features such as load shedding and override on or off
- DIN-rail mount or box enclosure



## Control and Communications Interface

The MLSUCA provides browser-based graphical management and control of an MLS Digital system. A BACnet interface enables integration with Building Management Systems (BMS).

- Remote monitoring and control of MLS lighting zones
- Programmable timed-event scheduling
- Straightforward browser-based user interface
- Real-time event control from the BMS
- Remote scene-recall commands
- Sharing of occupancy information with the BMS
- Remote execution of test modes

## Programmers and Controllers

The key to the MLS Digital system is the HP2000 MLS Digital Programmer. This battery-operated, infrared programmer is used to set all the detectors' programmable features as well as to download previously programmed information for checking.

For temporary on/off user override and light-level adjustment, there is the HC5 Universal Hand-held Controller. This can also be used to set and store up to six lighting scenes for future recall.



HP2000



HC5

## Icons Key



Advanced presence detection by passive infrared (PIR) technology



Active presence detection by ultrasonic or microwave technology



Passive photocell holds lights off when area becomes occupied in bright ambient conditions



Active photocell switches lights on and off according to ambient conditions



Regulating photocell adjusts luminaire output to maintain constant light levels



Incorporates simple scene setting - up to 6 scenes can be set via user remote



Off delay: Time from last observed movement until lights switch off



Detection pattern and range in metres under normal operating conditions



Dual circuit option (switching or switching and dimming) available



Remote control for temporary user-override on/off and light level adjustment



Infrared programming for easy commissioning and re-commissioning



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



Wireless OneSwitch via MK wireless switches

# MLS Digital Part Numbers

## Remote PIR 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 1-10V analogue/fixed-output ballasts - flush
MLS2001ASM	for 1-10V analogue/fixed-output ballasts - surface
MLS2000PF	with photocell - slimline flush
MLS2001PF	with photocell - flush
MLS2001PSM	with photocell - surface

## Hi-Bay PIR

MLS2001DHBF	for DSI ballasts - flush
MLS2001DHBSM	for DSI ballasts - surface
MLS2001DALIHBF	for DALI ballasts - flush
MLS2001DALIHBSM	for DALI ballasts - surface
MLS2001AHBF	for 1-10V analogue/fixed-output ballasts - flush
MLS2001AHBSM	for 1-10V analogue/fixed-output ballasts - surface

## Gold Series PIR

MLS2021DF	Dual-output for DSI/fixed-output ballasts - flush
MLS2021DSM	Dual-output for DSI/fixed-output ballasts - surface
MLS2021DALIF	Dual-output for DALI/fixed-output ballasts - flush
MLS2021DALISM	Dual-output for DALI/fixed-output ballasts - surface

## Remote Microwave Detectors

### Mid Range Microwave

MLS2500D	for DSI ballasts - surface
MLS2500DF	for DSI ballasts - semi-flush
MLS2500DALI	for DALI ballasts - surface
MLS2500DALIF	for DALI ballasts - semi-flush
MLS2500DWL	for DSI ballasts with wireless capability - surface
MLS2500DWLF	for DSI ballasts with wireless capability - semi-flush
MLS2500DALIWL	for DALI ballasts with wireless capability - surface
MLS2500DALIWLF	for DALI ballasts with wireless capability - semi-flush

### Gold Series Microwave

MLS2421DF	Dual-output for DSI/fixed-output ballasts - flush
MLS2421DSM	Dual-output for DSI/fixed-output ballasts - surface

MLS2421DALIF	Dual-output for DALI/fixed-output ballasts - flush
MLS2421DALISM	Dual-output for DALI/fixed-output ballasts - surface
MLS2421AF	for 1-10V analogue/fixed-output ballasts - flush
MLS2421ASM	for 1-10V analogue/fixed-output ballasts - surface

## Integral PIR Detectors - please contact Ex-Or for details

## Control and Communications Interface

MLSUCA	BACnet Interface with supervisory and scheduling control
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## System Components

MLS2000SSP	Scene Control Panel (requires Cover Plate)
MSSPBSS	Cover Plate for MLS2000SSP - brushed stainless steel
MSSPWHI	Cover Plate for MLS2000SSP - white
MSSPPBR	Cover Plate for MLS2000SSP - polished brass
MSSPPOC	Cover Plate for MLS2000SSP - polished chrome
MLSLCP4	4-button Local Control Plate - stainless steel
MSS182BSS	Cover plate for MLSLCP4 - brushed stainless steel
MSS182WHI	Cover plate for MLSLCP4 - white
MSS182PBR	Cover plate for MLSLCP4 - polished brass
MSS182POC	Cover plate for MLSLCP4 - brushed chrome
RB2000	Bus Power Supply
RB2000LT	Bus Power Supply 'Lite'
UBT2000	Universal Bus Transceiver
UBT2000DIN	Universal Bus Transceiver - DIN-rail mount
MLS2000ETM	Emergency Test Module

## Programmers and Controllers

HP2000	MLS Digital Programmer
HC5	Universal Hand-held Controller c/w wall bracket
HC6	Two-button Hand-held Controller c/w wall bracket

## MLS Connect Digital

CDW12U5	Connect Digital LCM (various versions available)
MLS2001CDR	360° PIR with photocell
MLS2401CDR	360° Microwave with photocell
MLS2500DDR	Directional Microwave with photocell
MLSM2002CDR	360° integral PIR with photocell

Reference No: A4004E

## Ex-Or

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