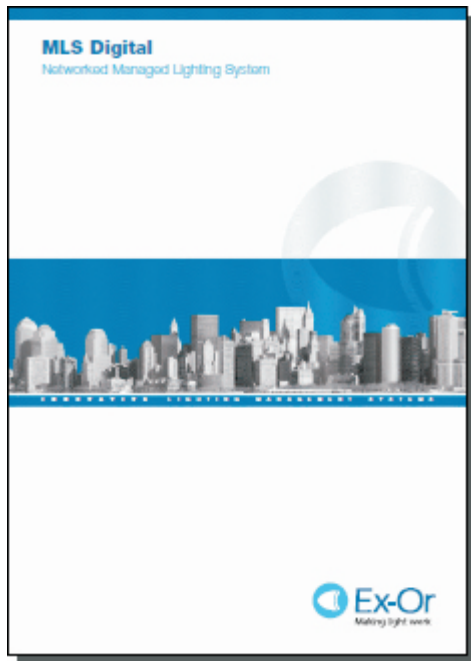




by Honeywell

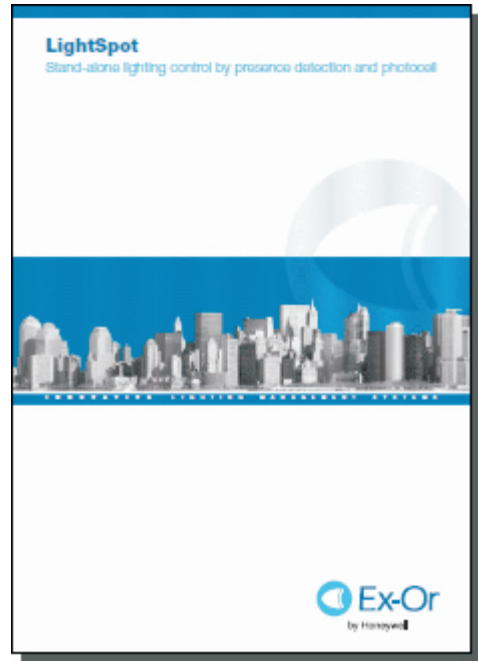
MLS Digital

Networked Managed Lighting System



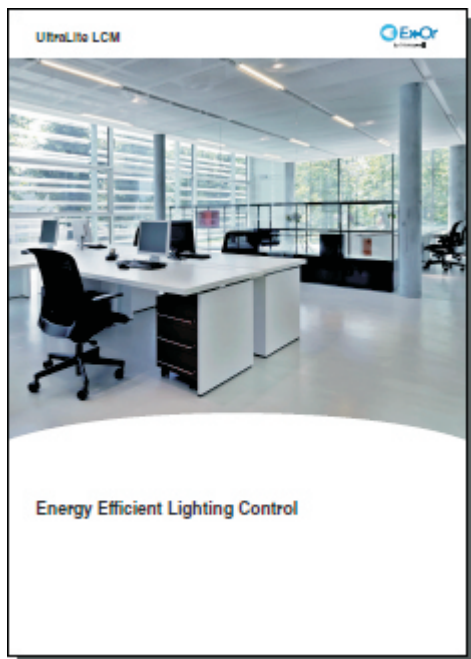
LightSpot

Stand-alone lighting control by presence detection and photocell



UltraLite LCM

Energy Efficient Lighting Control



Ex-Or Sensors - BattenFit

The award-winning BattenFit sensor solution for batten style luminaires.



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 CO₂ 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 and 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

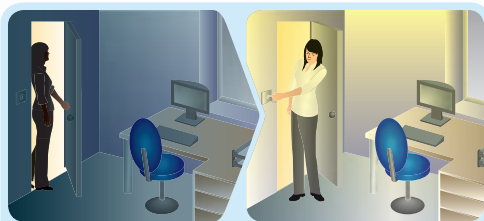
The provision of lighting in response to occupancy can be either **Automatic** or **Semi-automatic** (also known as Absence mode).

Automatic

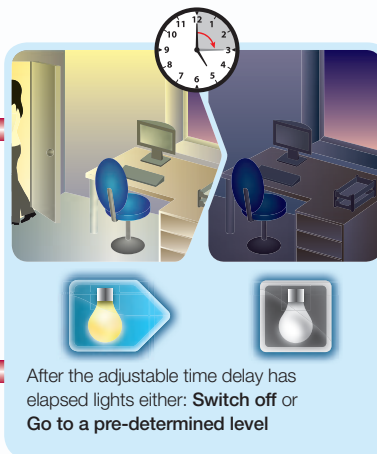


Fully automatic operation for safety and convenience in areas such as corridors or storerooms.

Semi-automatic



Usually employed in an enclosed area, this mode ensures lights are switched on only when needed.



Key:

Work area zone

C Common zone

B Building zone

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.

User control

Enables user control of lighting features:

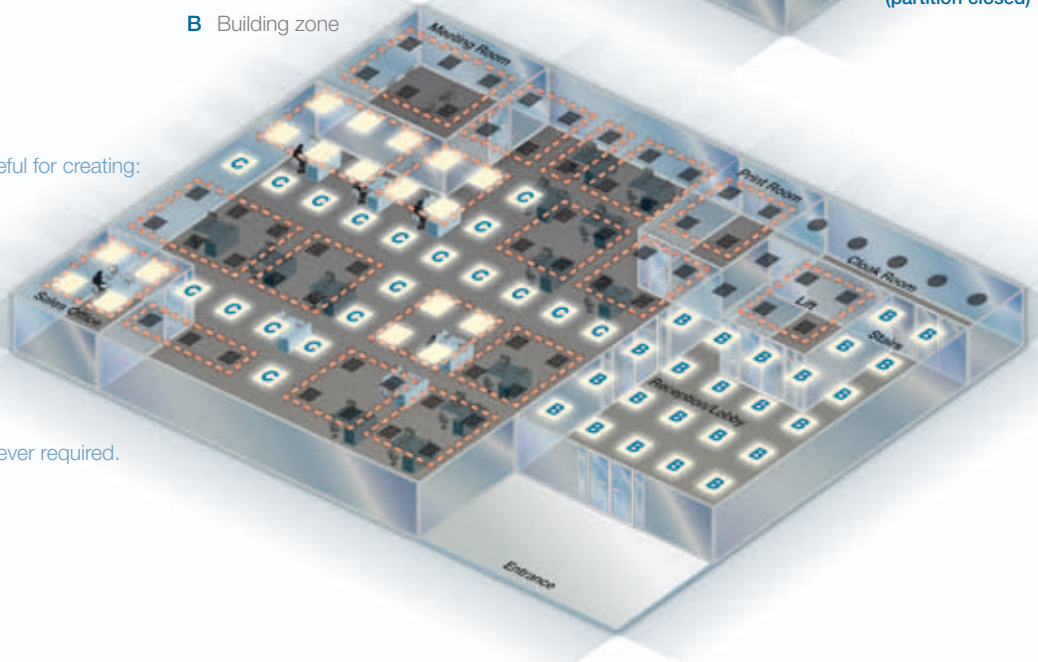
OneSwitch Control Allows the user to switch lights on/off or to change the light level via a wall-switch.

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)

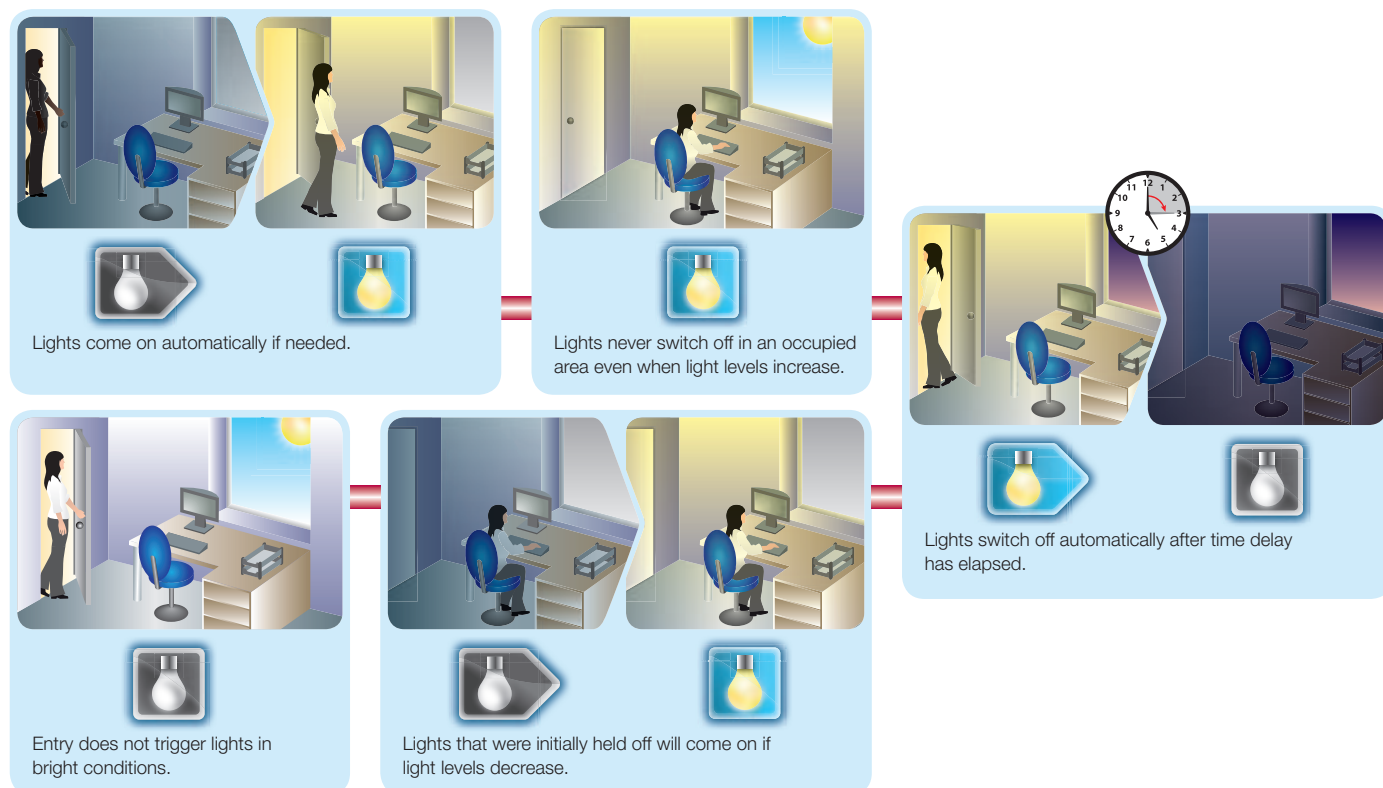
Small meeting
(partition closed)



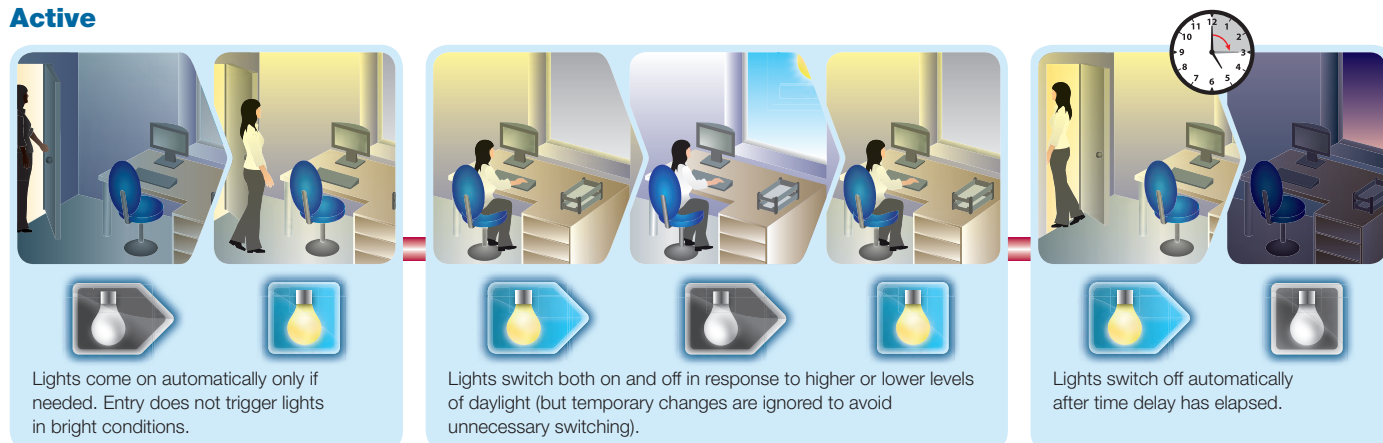
Daylight influenced operation

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

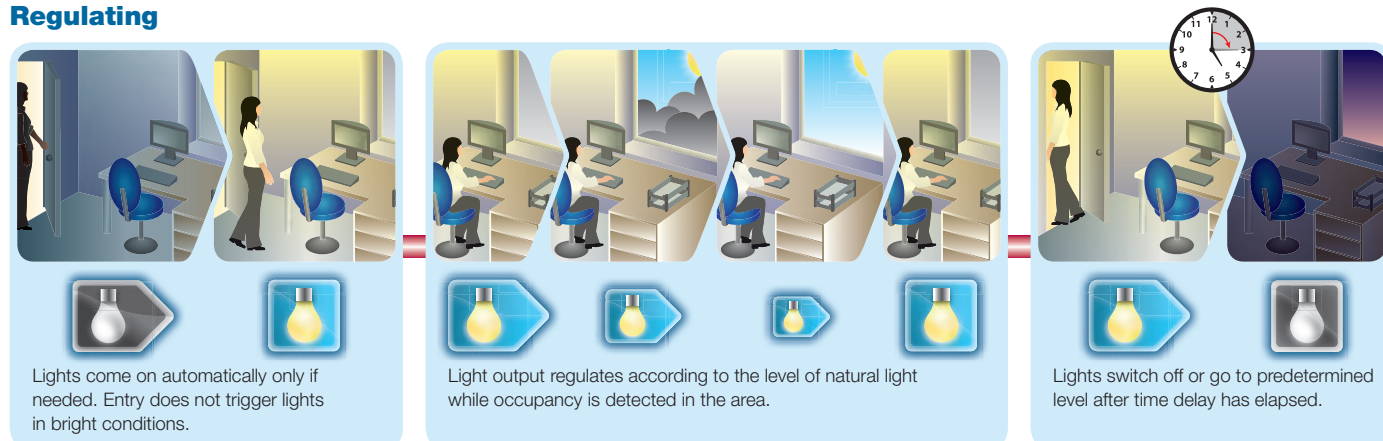
Passive



Active

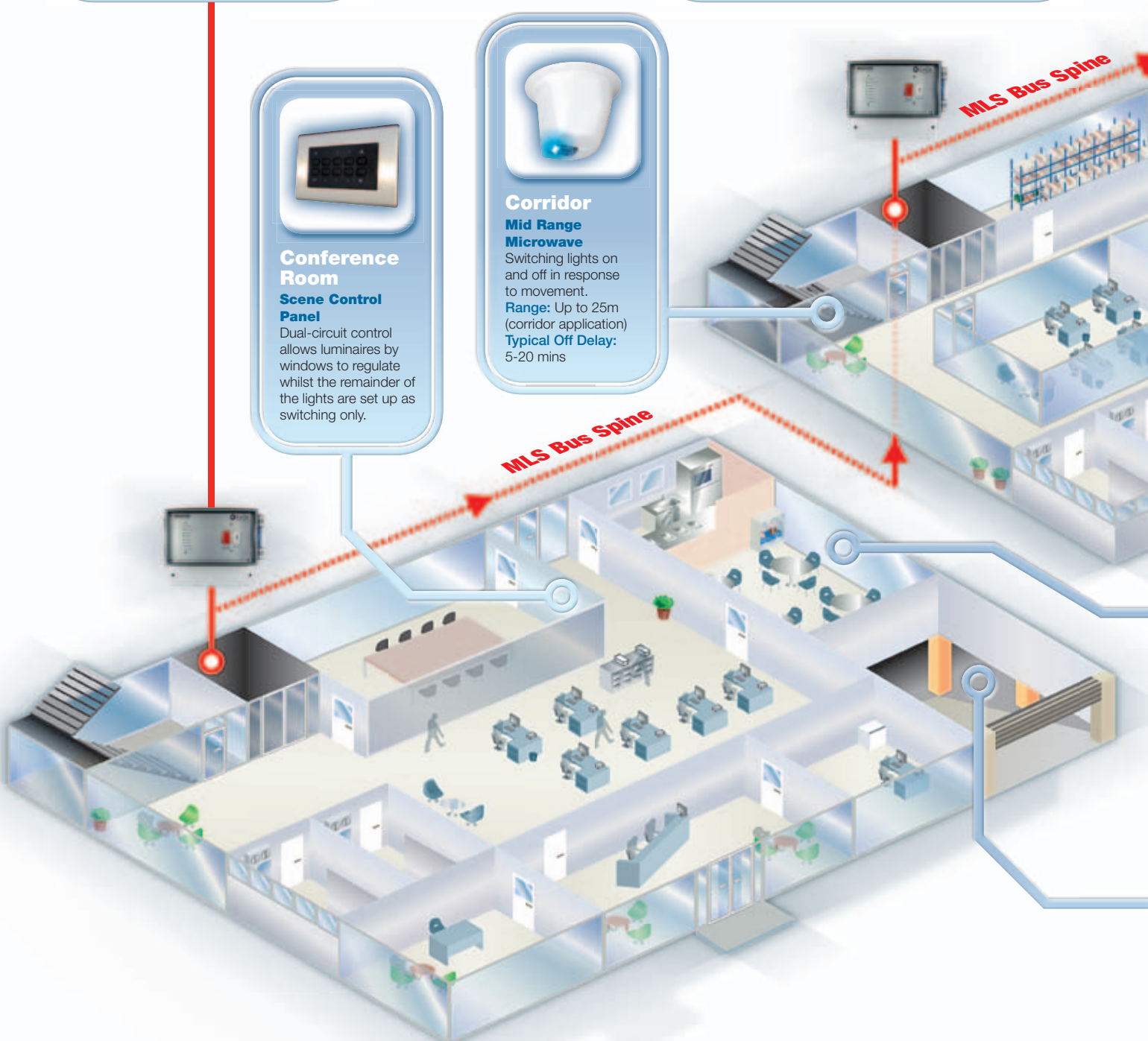


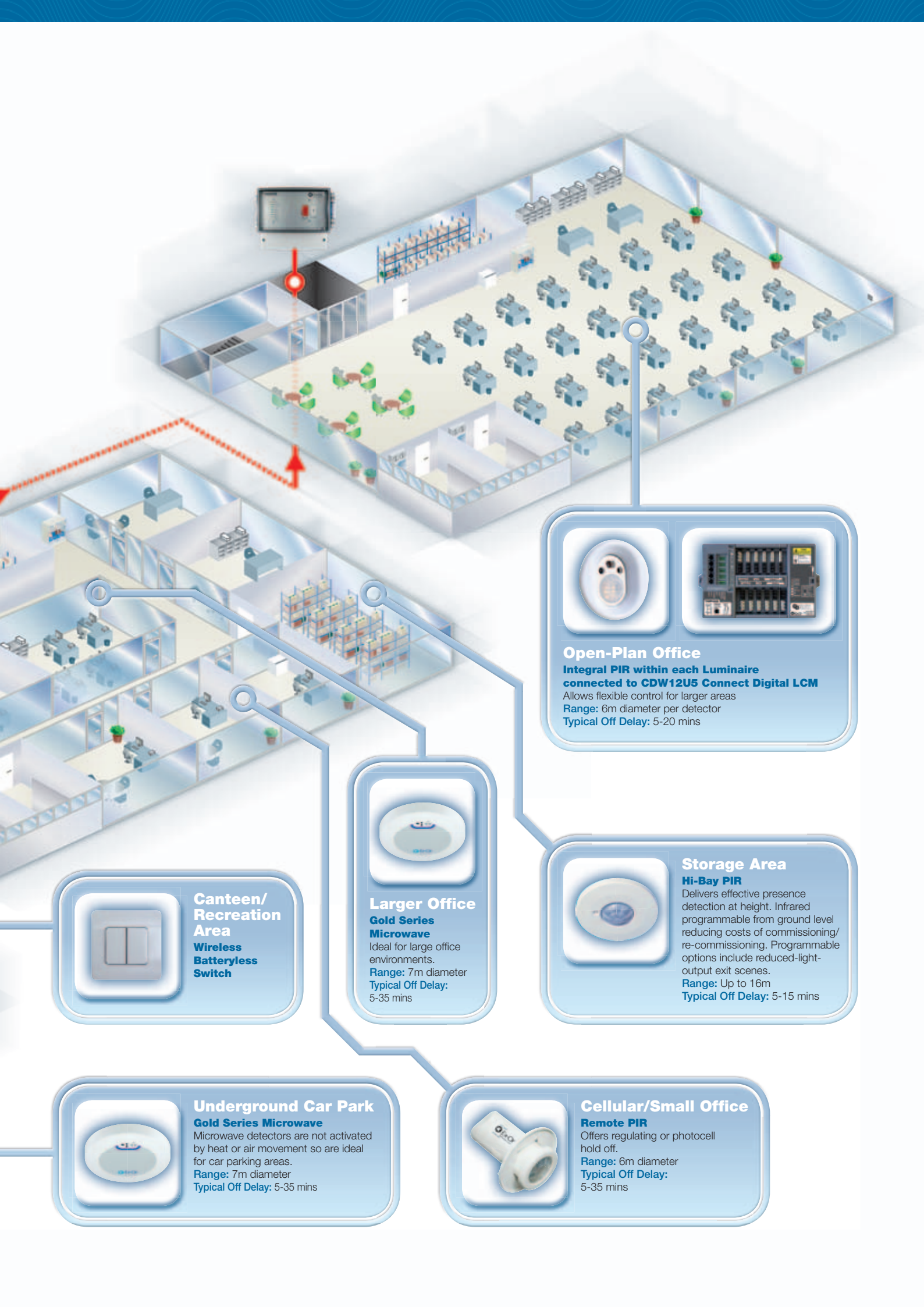
Regulating



Example of MLS Building-wide Solution

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





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

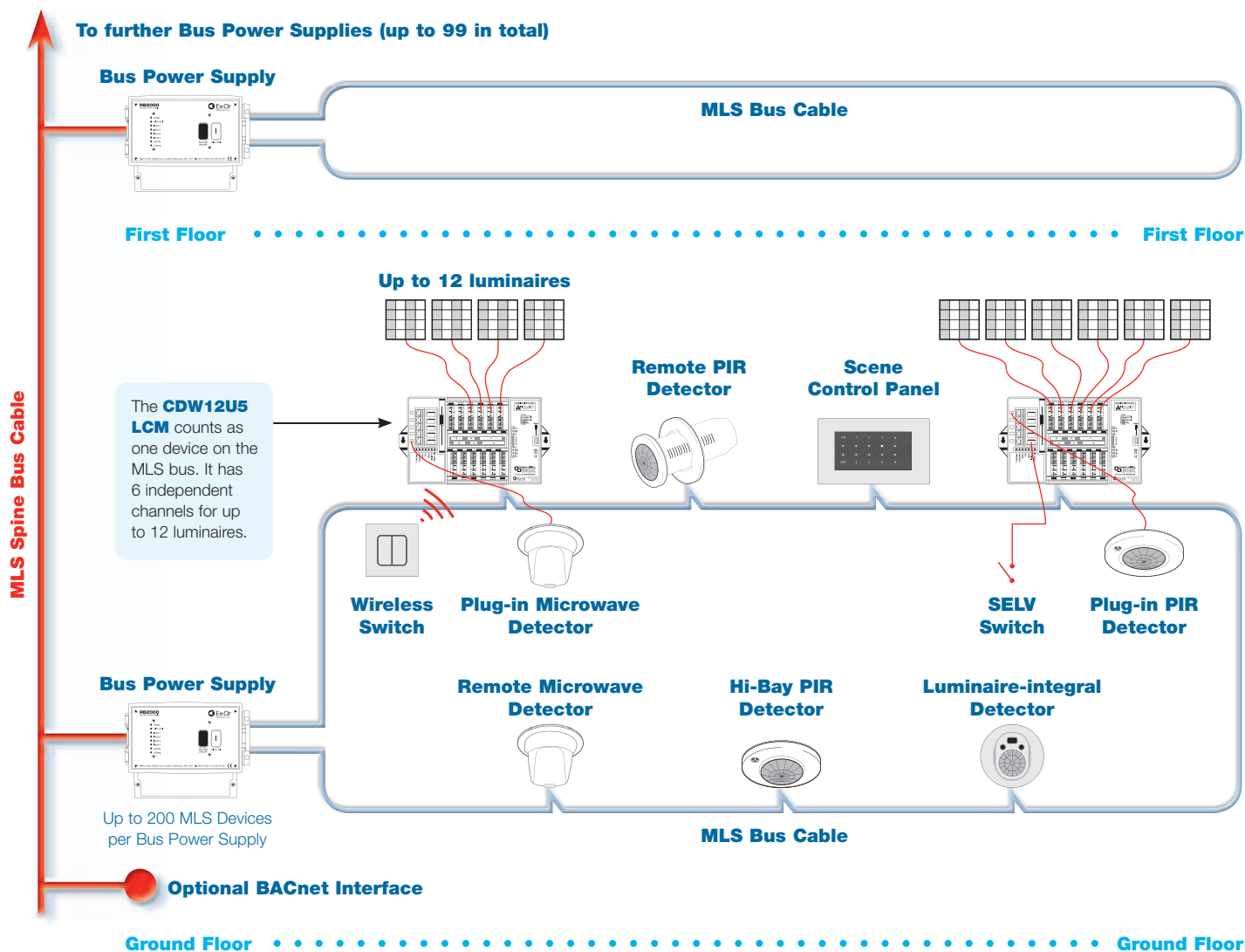
Offers regulating or photocell hold off.

Range: 6m diameter

Typical Off Delay: 5-35 mins

Installation

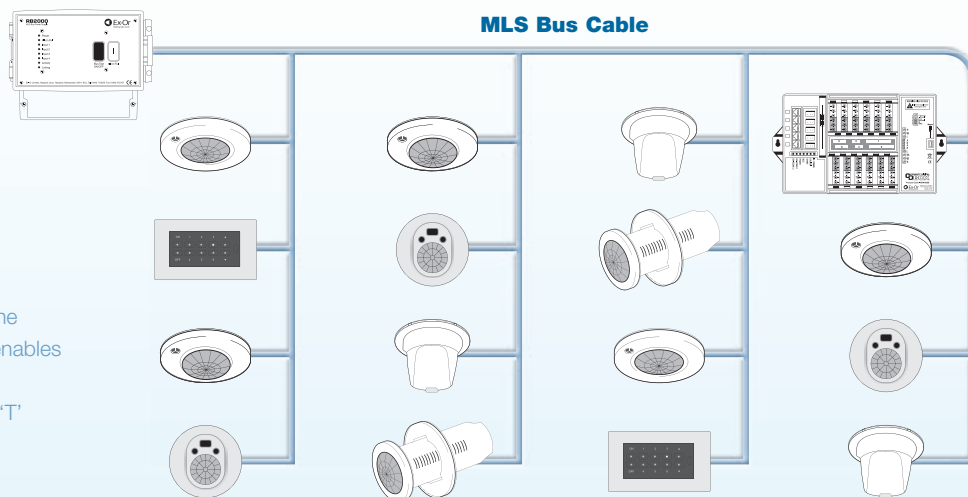
Installation is straightforward and uncomplicated. There are no pre-addressed components, so time is not wasted matching equipment with location. The wide choice of detector types ensures that all areas of a building can be included and the system can be expanded to cover tens of thousands of detectors. 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.



Free bus topology for maximum flexibility

The 2-wire communications bus that connects all the devices so that they can share occupancy information can be run alongside the mains wiring.

The loop arrangement (shown in the example above) is preferred as it enables automatic bus-integrity testing but the bus may also be installed in a 'T' (shown right) or star arrangement.



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'

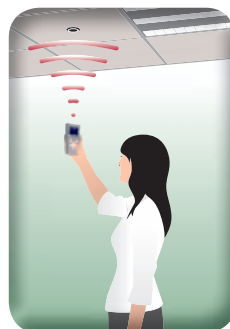
You can 'copy and paste' settings from one detector to adjacent detectors in the same group. Commissioning can therefore be carried out very speedily as settings can be copied between detectors in seconds.



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



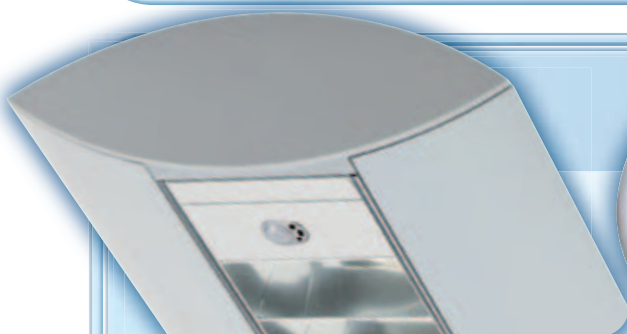
MLS2001CDR
360° PIR
with photocell



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

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W: www.ex-or.com



Ex-Or is a Honeywell brand



LightSpot

Stand-alone lighting control by presence detection and photocell



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 was founded in 1984 when the first energy-saving **LightSpot** controls were brought to market. Over the years, **LightSpot** has grown both in the range of solutions it offers and in reputation.

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 - lamps are on less, they last longer and need replacing less often.

Environmental Considerations

Saving energy also cuts CO₂ emissions. The installation of **LightSpot** controls 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.

LightSpot offers:

- Different technologies to suit different applications
- Control of different ballast types
- Switching and dimming options
- Different photocell modes
- Extensive programmable features
- Choice of mounting options for different construction types
- Straightforward installation (including plug-in connection centre option)
- Easy operational set-up


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

-  **LightSpot** controls qualify for the Energy Technology List and thereby attract ECAs whereby businesses can claim 100% first-year capital allowances. Further information can be found at www.eca.gov.uk and www.carbontrust.co.uk.



Products and Systems

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Networked Managed Lighting System

Connect

Lighting control modules and plug-in connection centres

FailSafe

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- Site visit and survey for existing-building retro-fit projects

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- 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

Offices

The Carbon Trust

practises what it preaches with **LightSpot** detectors installed in their offices at Clement's Inn, London.



Car Parks

Monitoring at **Southampton City Council Multi-storey Car Park** revealed a 35% cut in energy usage following the installation of Ex-Or lighting control systems including Long Range **LightSpot** presence detectors. The 170,000kW reduction equates to a saving of £15,000 per year.



Schools

LightSpot controls are employed at **Lakeside Primary School**, one of five schools in a major PFI project with the lighting designed by building services consultants Pick Everard.



Hospitals

At **Southampton General Hospital**, **LightSpot** controls are employed in open-plan office areas, meeting rooms, corridors and patients' waiting areas. As well as dimming and switching off lighting when not required, the ventilation systems are switched in line with usage patterns.



Residential

Berkeley Homes installed **LightSpot** controls in its prestigious Salamanca Square apartment development on the Albert Embankment in order to cut energy costs and ensure regulatory compliance with Part L of the Building Regulations.

Universities

Environmental sustainability is a key objective for the **University of Essex** which has cut its total energy bill by 5%. As lights are on less, there are fewer lamp and control gear failures, so **LightSpot** is saving a further £2,000 per year on maintenance costs at The Quays, student accommodation complex.



Examples of product specification




Conference Room
Mid Range Regulating Microwave
Dual-circuit control allows luminaires by windows to regulate whilst the remainder of the lights are set up as switching only.
Range: Up to 20m
Typical Off Delay: 10-35 mins




Storage Cupboard
BattenFit PIR
Easily fitted to batten-style luminaires for cost-effective control.
Range: 6m diameter approx
Typical Off Delay: 5-15 mins



Short Corridor
Standard Series Ultrasonic
Switching lights on and off in response to movement.
Range: Up to 13m in corridor application
Off Delay: 5-15 mins



Canteen
Gold Series Microwave
Microwave detectors are not activated by heat or air movement so are ideal for kitchen area.
Range: 7m diameter
Typical Off Delay: 5-35 mins



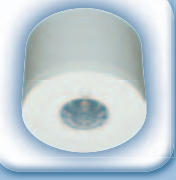
Cellular/Small Offices with Air Conditioning
Multi-Function PIR
Configured here to control air conditioning as well as lighting.
Range: 6m diameter
Typical Off Delay: Lighting 5-35 mins; Air conditioning 5 min start delay with 5-35 mins run on.



Open-Plan Office
Integral PIR within each Luminaire
Gives full control of larger area and control of regulating luminaires.
Range: 6m diameter per detector
Typical Off Delay: 5-20 mins



Long Corridor
Mid Range Microwave
Switching lights on and off in response to movement.
Range: Up to 20m
Typical Off Delay: 5-20 mins

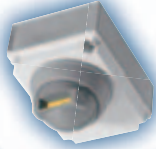


Toilets
Multi-Function PIR
Configured here to control lighting plus fan and automatic urinal flushing.
Range: 6m diameter
Typical Off Delay: 5-35 mins with independent 24-hour single-operation cycle to provide hygiene flush during shutdown periods.



LightSpot detectors operate on the basis of presence/absence detection.

For areas where natural light is good, there are versions incorporating photocells to regulate light output accordingly.



Sports Hall

Long Range Microwave

Ideal for control of a large, open area with a single detector. Robust die-cast housing offers protection against accidental damage from sports balls etc.

Range: Up to 60m
Typical Off Delay: 10-15 mins



Classroom 1

MLS2401CDR Microwave Detector connected to CDW12U5 Programmable LCM

Six hard-wired channels can be independently switched, dimmed or 'bound together' in any configuration using a hand-held infrared programmer for an incredibly flexible lighting control solution.

Range: 7m diameter
Typical Off Delay: 5-20 mins



Classroom 2

2 x MLS2001CDR PIR Detectors connected to CDW12U5 Programmable LCM

With this modular approach, all the luminaires are independently plugged into the LCM which can be programmed (via infrared programmer) to give different SELV switching arrangements. Here the window-row lights regulate in response to daylight detection.

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

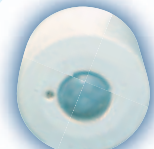
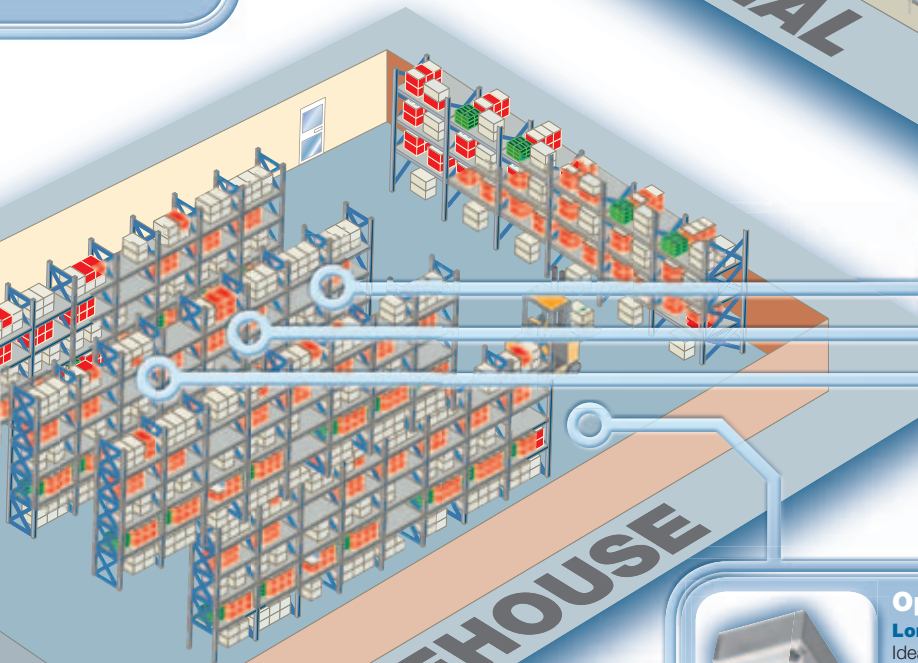
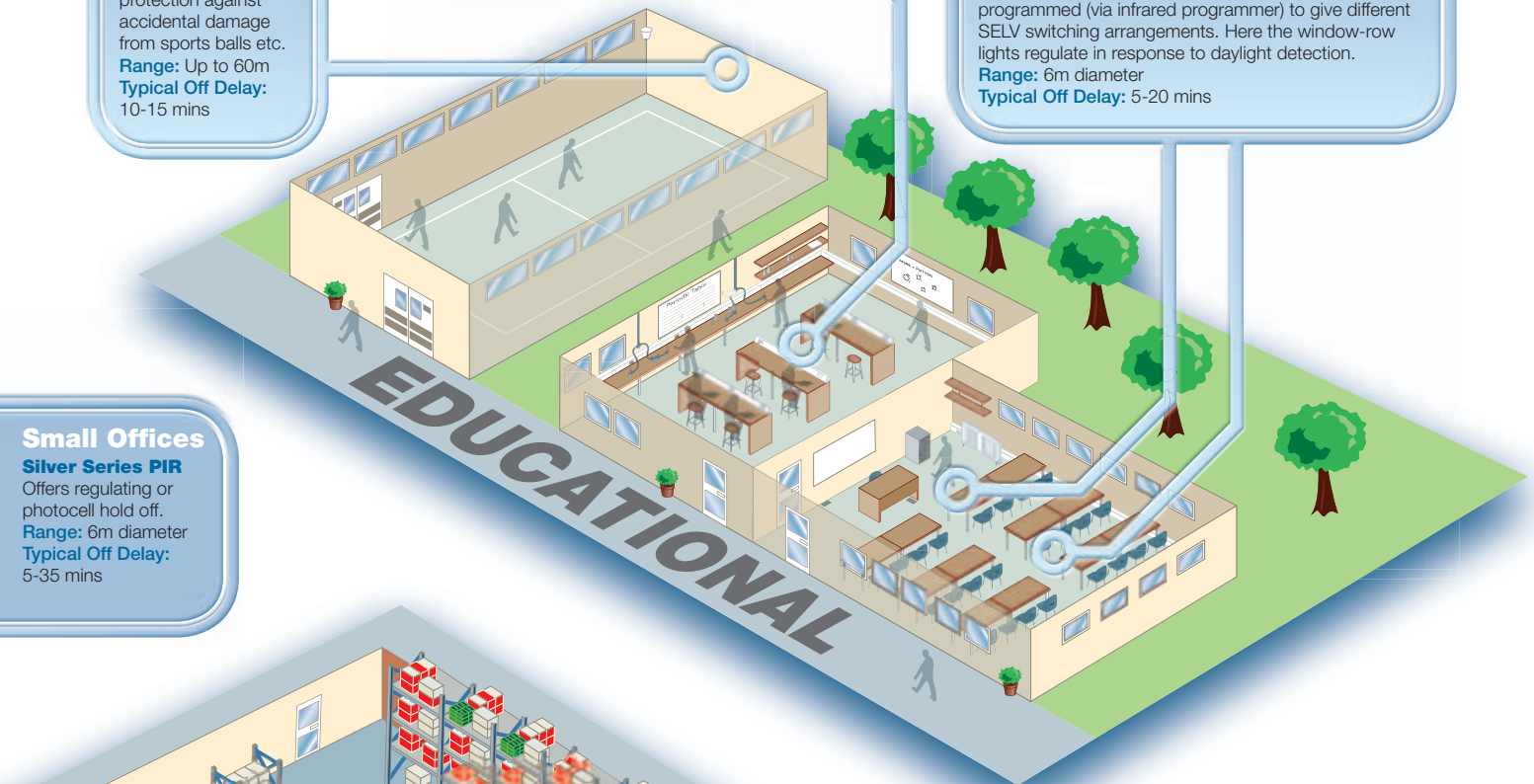


Small Offices

Silver Series PIR

Offers regulating or photocell hold off.

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

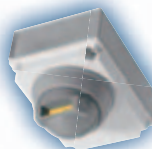


Racking Aisles

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: 1:1 height to diameter ratio (e.g. at 12m mounting height, coverage is 12m diameter)
Typical Off Delay: 5-15 mins



Open Storage Area

Long Range Microwave

Ideal for control of a large, open area with a single detector. Very sensitive to movement of fork-lift trucks.

Range: Up to 60m
Typical Off Delay: 5-15 mins

LightSpot product range

The following provides an overview of the **LightSpot** range.

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

Bronze Series PIR

- Simple, cost-effective PIR detector
- 360° movement detection
- Rapid payback
- Ideal solution for simple retrofit
- Optional passive photocell (inhibits switch-on if there is sufficient daylight)

Mounting options:

- Slimline Flush
- Flush
- Surface



Silver Series PIR

- High-performance, programmable PIR detector
- Ideal for offices and open-plan workstations
- 360° movement detection
- Programmable photocell mode
- Dual-circuit versions: either switching, or switching and dimming (useful where just the perimeter lights require photocell operation)
- Single-circuit analogue output version
- Dimming versions incorporate terminals for optional OneSwitch Dimming

Mounting options:

- Slimline Flush
- Flush
- Surface



Gold Series Microwave

- Superior performance, programmable microwave detector
- Ideal for offices, open-plan workstations, classrooms etc
- 360° movement detection
- Programmable photocell mode
- Dual-circuit versions: either switching, or switching and dimming (useful where just the perimeter lights require photocell operation)
- Single-circuit analogue output version
- Dimming versions incorporate terminals for optional OneSwitch Dimming

Mounting options:

- Flush
- Surface



Multi-function PIR

Offers dual control for:

- Lighting and emergency test
- Lighting and air conditioning
- Lighting and water/fan
- Two-channel lighting

Mounting options:

- Flush
- Surface



Standard Series Ultrasonic

- High-performance, ultrasonic presence detector
- Directionally adjustable
- Passive photocell
- Ideal for offices, classrooms, corridors and other medium-range applications

Mounting options:

- Semi-flush
- Surface



Hi-Bay PIR

Programmable PIR presence detector for use at high level

- Can be mounted at up to 16m height
- Programmable with infrared programmer from ground level
- 360° movement detection
- Lens mask available for end-of-aisle applications

Mounting options:

- Slimline Flush
- Flush
- Surface



Mid Range Microwave

- Superior performance, microwave presence detector
- Directionally adjustable
- 20 x 20m coverage
- Ideal for larger classrooms, longer corridors, conference rooms, storage aisles etc
- Either passive photocell, or regulating
- Dimming versions incorporate terminals for optional OneSwitch Dimming
- Infrared programmable (dimming version)

Mounting options:

- Semi-flush
- Surface
- Wall mounting kit available



Long Range Microwave

- Powerful, versatile microwave presence detection system
- Ideal for sports halls, stadia, warehouses and other large areas
- Ranges of 15m, 30m and 60m
- Directionally adjustable
- Two types of detector housing: LRD-type particularly robust and secure against accidental damage
- Detectors and control units can be combined, or separated for more convenient electrical connection and commissioning
- Optional remote photocell

Mounting options:

- Flush
- Surface
- Box-mounted
- Wall mounting kit available for LR-type detectors



LightSpot Photocells

- **Universal Photocell** - programmable for either switching or regulating ballasts, ideal for higher specification projects
- **Digital Dimming Photocell** - high-performance, regulating photocell
- **Two-part Switching Photocell** - monitors ambient daylight, can be mounted inside or outside



BattenFit PIR

- Simple-to-fit control solution for batten-style luminaires
- Infrared programmable
- Switching and regulating versions
- IP65 versions



Integral PIR Detector

Actual size

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



Programmable and Controllers

Most LightSpot controls feature a range of programmable parameters. By using an infrared programmer you can tailor operation to your exact requirements. The HP10 offers basic programming while the HP2000 allows access to the full range of options. For temporary on/off user override and light-level adjustment, there is the HC6 or the HC5 which offers further functionality. Dedicated hand-held controllers are available for air conditioning (HC7) and emergency lighting testing (HC8).



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 in minutes from last observed movement until lights switch off *up to 96 hours with HP2000



Detection pattern and range in metres under normal operating conditions



Dual circuit option (switching or switching and dimming) available



Analogue dimming with relay on/off



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



Infrared programming for easy commissioning and re-commissioning. HP10 and HP2000 used depending on product and requirements.



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



Dual Sensitivity: Sensitivity to movement is greater when lighting is on than when it is off, eliminating nuisance switching in larger areas



Washroom Mode: Controls urinal flushing/ extractor fan



Air-conditioning Control: Connection and programmable features



Emergency test control: Connection and programmable features for test procedures

LightSpot Part Numbers

BattenFit PIR

MSB1000T	2A switching
MSB1000PT	2A switching with photocell
MSB1000DT	with regulating photocell for DSI ballasts
MSB1000DALIT	with regulating photocell for DALI ballasts
MSB1001T	IP65 2A switching
MSB1001PT	IP65 2A switching with photocell
MSB1001DT	IP65 with regulating photocell for DSI ballasts
MSB1001DALIT	IP65 with regulating photocell for DALI ballasts

Bronze Series PIR

MS1000F	- slimline flush
MS1001F	- flush
MS1001SM	- surface
MS1100PF	with digital passive photocell - slimline flush
MS1101PF	with digital passive photocell - flush
MS1101PSM	with digital passive photocell - surface

Silver Series PIR

MS1200PF	with digital passive/active photocell - slimline flush
MS1201PF	with digital passive/active photocell - flush
MS1201PSM	with digital passive/active photocell - surface
MS2000DF	for DSI ballasts - slimline flush
MS2001DF	for DSI ballasts - flush
MS2001DSM	for DSI ballasts - surface
MS2000DALIF	for DALI ballasts - slimline flush
MS2001DALIF	for DALI ballasts - flush
MS2001DALISM	for DALI ballasts - surface
MS2001AF	for 1-10V analogue regulating ballasts - flush
MS2001ASM	for 1-10V analogue regulating ballasts - surface
MS1221PF	dual output & digital passive/active photocell - flush
MS1221PSM	dual output & digital passive/active photocell - surface
MS1224UF	ELV for analogue/DSI/DALI ballasts - slimline flush

Gold Series Microwave

MS2421PF	dual output & digital passive/active photocell - flush
MS2421PSM	dual output & digital passive/active photocell - surface
MLS2421DF	dual output for DSI/fixed-output ballasts - flush
MS2421AF	for 1-10V analogue regulating ballasts - flush
MS2421ASM	for 1-10V analogue regulating ballasts - surface
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

Hi-Bay PIR

MS2001DHBF	for DSI ballasts - flush
MS2001DHBSM	for DSI ballasts - surface
MS2001DALJHBF	for DALI ballasts - flush
MS2001DALJHBSM	for DALI ballasts - surface
MS2001AHBF	for 1-10V analogue regulating ballasts - flush
MS2001AHBSM	for 1-10V analogue regulating ballasts - surface
MS1200PHBF	with digital passive/active photocell - slimline flush
MS1201PHBF	with digital passive/active photocell - flush
MS1201PHBSM	with digital passive/active photocell - surface
MS2021PHBF	Multi-function Hi-Bay - flush
MS2021PHBSM	Multi-function Hi-Bay - surface

Multi-Function PIR

MS2021PF	- flush
MS2021PSM	- surface

Standard Series Ultrasonic

MS1500P	with photocell - surface
MS1500PF	with photocell - semi-flush

Mid Range Microwave

MR1500P	with passive photocell - surface
MR1500PF	with passive photocell - semi-flush
MR2500D	with photocell for DSI ballasts - surface
MR2500DF	with photocell for DSI ballasts - semi-flush
MR2500DALI	with photocell for DALI ballasts - surface
MR2500DALIF	with photocell for DALI ballasts - semi-flush

Long Range Microwave

LR15SM	15m Detector - surface mounted
LR15F	15m Detector - flush mounted
LR15B	15m Detector - box mounted
LR15C1	15m Detector with C1 control unit
LR15C2	15m Detector with C2 control unit
LR30SM	30m Detector - surface mounted
LR30F	30m Detector - flush mounted
LR30B	30m Detector - box mounted
LR30C1	30m Detector with C1 control unit
LR30C2	30m Detector with C2 control unit
LRD30F	30m Robust Detector - flush mounted
LRD30B	30m Robust Detector - box mounted
LRD30C1	30m Robust Detector with C1 control unit
LRD30C2	30m Robust Detector with C2 control unit
LRD60F	60m Robust Detector - flush mounted
LRD60B	60m Robust Detector - box mounted
LRD60C1	60m Robust Detector with C1 control unit
LRD60C2	60m Robust Detector with C2 control unit
LRC1L	Control unit with single switch relay
LRC2L	Control unit with dual switch relay
LRP1	Photocell for remote mounting

LightSpot Photocells

MP102	Two-part mains photocell
MP2000UF	Universal photocell for all ballast types - slimline flush
MP2000DF	Digital photocell - slimline flush

Integral PIR Detectors - please contact Ex-Or for details

Programmers and Controllers

HP2000	MLS Digital Programmer
HP10	LightSpot Programmer
HC5	Universal Hand-held Controller
HC6	Two-button Hand-held Controller
HC7	Hand-held Controller for lighting and air conditioning
HC8	Hand-held Controller for emergency test and lighting control

Reference No: A4002F

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Energy Efficient Lighting Control

CONNECT WITH TECHNOLOGY

Simplifying the installation process

The use of connection centres (also known as Lighting Connection Modules or LCMs) has gained widespread acceptance over recent years; indeed it has become the industry standard for lighting installations.

As a contractor's entire installation team cannot be expected to possess specialist knowledge of lighting management systems, the desirability of simplifying the installation process is obvious. CONNECT provides the ideal solution.

Using CONNECT requires a minimum of electrical expertise as luminaires and detectors are delivered to site pre-wired.

Ex-Or UltraLite connectors employ a unique "dual-latching" system providing safe and secure connections preventing improper installation that could result in loose or overheated connections. The whole installation process is accelerated, cutting contract times and allowing buildings to be occupied within a shorter time-frame.



Flexibility for the future

The benefits are not confined to the initial installation process either. If, at some later date, the lighting requirements change, it is a simple matter to un-plug the luminaires or detectors and to change or re-position.

ULTRALITE LCM

CDW10U2UL

UltraLite LCM is an economical solution for the connection of luminaires to either presence/absence detectors or conventional switches. It provides ten 6-pole sockets for dimmable or fixed output luminaires.

Presence/absence detection - one detector can control up to 10 luminaire outputs, or two detectors up to 5 luminaire outputs each.

Local switching only - luminaires may be switched via conventional switches able to handle up to 10 luminaire outputs, or two switches up to 5 luminaire outputs each.

OneSwitch - 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.

Luminaire Leads

Luminaire leads are fitted at one end with an industry-standard, GST18/6 6-pin plug for connection to the centre. The other end is supplied stripped, ready for connection to the luminaire. Leads are available in various combinations of length and number of cores for standard or dimming luminaires.

Emergency Lighting

Mains terminals are provided for live and separate maintained live. This enables testing of emergency luminaires via a key switch to be carried out.






CDW10U2UL

UltraLite LCM



ULTRALITE CONNECT ACCESSORIES

MS1100PFSWCWL7	Bronze Series UltraLite LightSpot PIR switching detector Slimline flush. 230V 6A PIR presence detector with 20 minute, fixed time-out delay complete with passive photocell and 'OneSwitch' override.	
MS1200PFSWCWL7	Silver Series UltraLite LightSpot PIR switching detector Slimline flush. 230V 6A PIR presence detector with adjustable time-out delay complete with active photocell and 'OneSwitch' override.	
MS2000DFCWL7	Silver Series UltraLite LightSpot PIR detector for DSI ballasts Slimline flush. DSI regulating photocell and 'OneSwitch' override.	
MS2000DALIFCWL7	Silver Series UltraLite LightSpot PIR detector for DALI ballasts Slimline flush. DALI (broadcast) regulating photocell and 'OneSwitch' override.	
MLS2021DFCWL7	Gold Series UltraLite dual-output PIR detector for DSI ballasts Flush. Dual output PIR presence detector with 230V 6A output and digital dimming (DSI) output complete with photocell.	
MLS2021DALIFCWL7	Gold Series UltraLite dual-output PIR detector for DALI ballasts Flush. Dual output PIR presence detector with 230V 6A output and digital dimming (DALI) output complete with photocell.	
MLS2421DFCWL7	Gold Series UltraLite dual-output microwave detector for DSI ballasts Flush. Dual output, microwave presence detector with 230V 6A output and digital dimming (DSI) output complete with photocell.	
MLS2421DALIFCWL7	Gold Series UltraLite dual-output microwave detector for DALI ballasts Flush. Dual output, microwave presence detector with 230V 6A output and digital dimming (DALI Broadcast) output complete with photocell.	

All UltraLite LCM presence detectors are pre-wired with 7-pole connectors for simple connection to UltraLite LCM and come complete with 3m flexible cables.





Luminaire Leads

CPWL633	3m, 3-core, 6-pole GST 18/6 Plug & Ex-Or Latching Shell
CPWL635	5m, 3-core, 6-pole GST 18/6 Plug & Ex-Or Latching Shell
CPWL653	3m, 5-core, 6-pole GST 18/6 Plug & Ex-Or Latching Shell
CPWL655	5m, 5-core, 6-pole GST 18/6 Plug & Ex-Or Latching Shell

Emergency Luminaire Leads

CPWL643	3m, 4-core, 6-pole GST 18/6 Plug & Ex-Or Latching Shell
CPWL645	5m, 4-core, 6-pole GST 18/6 Plug & Ex-Or Latching Shell
CPWL663	3m, 6-core, 6-pole GST 18/6 Plug & Ex-Or Latching Shell
CPWL665	5m, 6-core, 6-pole GST 18/6 Plug & Ex-Or Latching Shell

Accessories

CPWL7	7-Pole Latching Connector GST 18/7 Plug & Ex-Or Latching Shell for detectors.	
CPWL6	6-Pole Latching Connector GST 18/6 Plug & Ex-Or Latching Shell for luminaires.	
HP10	LightSpot Programmer Infrared programming tool with 12 dil switches for the setting of individual parameters. <i>Not all detectors / parameters are programmable via the HP10. Check technical datasheets for details.</i>	
HP2000	MLS Digital Programmer Menu-driven LCD Programmer with automatic equipment recognition and parameter download facilities.	

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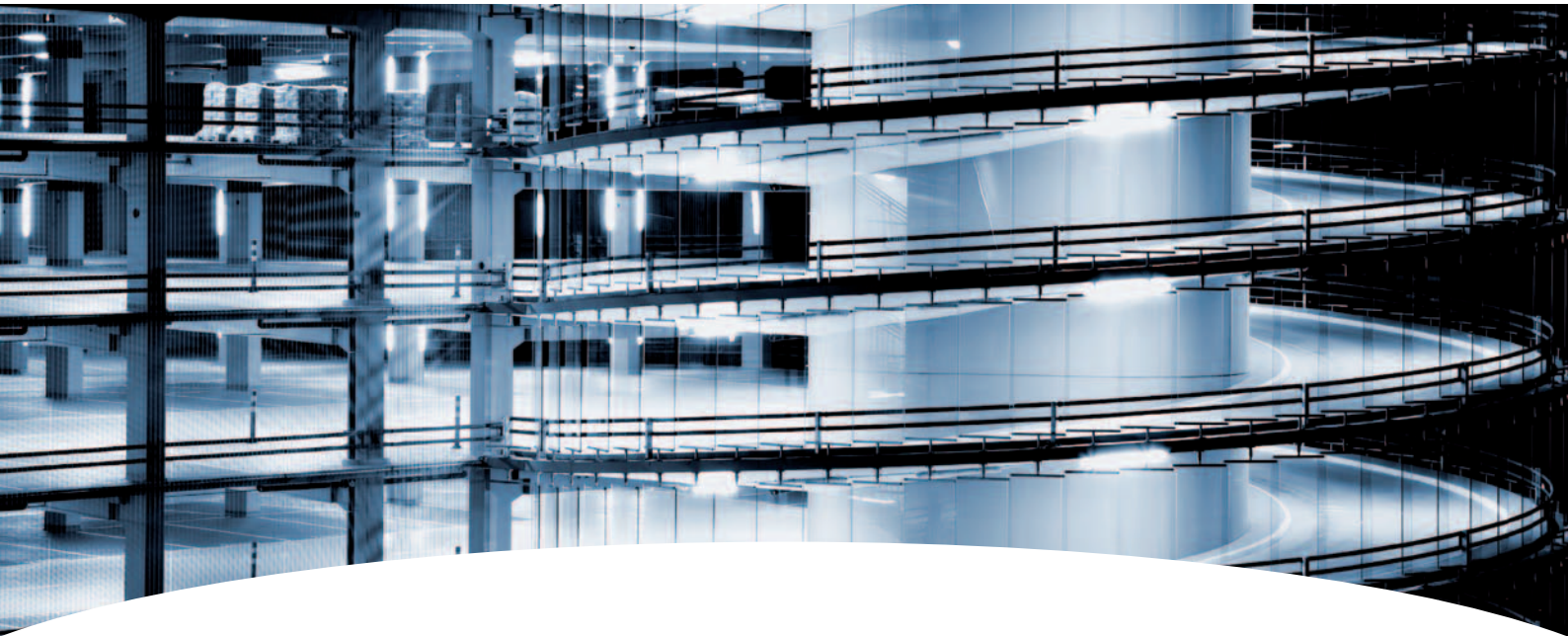
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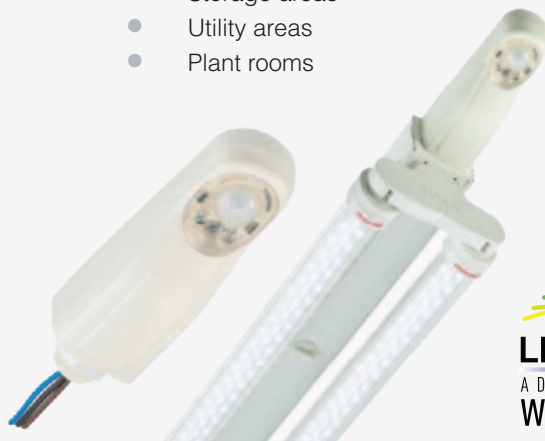


The award-winning BattenFit sensor solution for batten style luminaires.

Using presence detection and photocells, BattenFit sensors can deliver energy savings of up to 80%*

The range comprises of variants with or without photocells and options for controlling DSI and DALI ballasts.

- BattenFit device (MSB1000T + MSB1001T) automatically switches the light on when someone enters an area, and switches the light off again after a fixed period when the area is vacated.
- A Photocell additionally monitors levels of natural light to further eliminate unnecessary use of energy.
- More sophisticated BattenFit variants (MSB1000PT, MSB1001PT, MSB1000DT, MSB1001DT, MSB1000DALIT + MSB1001DALIT) with photocell, have adjustable delay from 1 minute to 96 hours.
- Passive photocell holds lights off in bright ambient conditions. Active photocell can switch lights off in occupied areas (MSB1000PT + MSB1001PT).
- DSI and DALI-compatible BattenFit detectors are capable of maintaining constant light levels by adjusting a luminaire's output in concert with available natural light and adjacent luminaires (MSB1000DT, MSB1001DT, MSB1000DALIT, MSB1001DALIT).
- BattenFit sensors are ideal for customers requiring a simple and cost effective energy saving solution for existing or new installations.
- Suitable for controlling Honeywell LED Utility Lighting.
- Ideally suited for use in;
 - Warehousing / Distribution
 - Industrial units
 - Factories
 - Storage areas
 - Utility areas
 - Plant rooms



* Typical energy savings through occupancy sensors installed in storage areas. Source: E Source, Energy Business Intelligence

Sensors - BattenFit



Advanced presence detection by passive infrared (PIR) technology



Active presence detection by Ultrasonic or microwave technology



Off delay in minutes following the last observed movement after which lights switch off from 1 to 96 hours with K4053



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



Regulating photocell adjusts luminaire output to maintain constant light levels



Active photocell switches lights on and off according to ambient conditions



Detection pattern and range in meters under normal operating conditions and at mounting height (2.5m)



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



Hand-held Controllers provide local user override



Infrared programming enables easy commissioning and re-commissioning



Dual circuit option (switching or switching and dimming) available



Scene setting - lights switch on to a pre-programmed scene when area becomes occupied

PRODUCT SELECTOR

IMAGE	LIST NO.	DESCRIPTION											
	MSB1000T	BattenFit Sensor Switching Output 2 Amps Max IP43	✓		Fixed			6m			✓		
	MSB1000PT	BattenFit Sensor with Switching Photocell 2 Amps Max IP43	✓		1min-96hrs	✓	✓	6m		✓	✓		
	MSB1000DT	BattenFit Occupancy Detector with Regulating Photocell DSI IP43	✓		1min-96hrs		✓	6m	✓	✓	✓	✓	
	MSB1000DALIT	BattenFit Occupancy Detector with Regulating Photocell DALI IP43	✓		1min-96hrs		✓	6m	✓	✓	✓	✓	
	MSB1001T	BattenFit Sensor Switching Output 2 Amps Max IP65	✓		Fixed			6m			✓		
	MSB1001PT	BattenFit Sensor with Switching Photocell 2 Amps Max IP65	✓		1min-96hrs	✓	✓	6m		✓	✓		
	MSB1001DT	BattenFit Occupancy Detector with Regulating Photocell DSI IP65	✓		1min-96hrs		✓	6m	✓	✓	✓	✓	
	MSB1001DALIT	BattenFit Occupancy Detector with Regulating Photocell DALI IP65	✓		1min-96hrs		✓	6m	✓	✓	✓	✓	

Product warranty 2 years

EX-OR LONG RANGE CONTROL UNITS

Hand-held Controllers give temporary on or off override, light level adjustment and scene setting to the buildings occupant (HC6 & HC5)

IMAGE	LIST NO.	DESCRIPTION
	HC6	Two Button Hand-held Controller provides local user to turn lights on or off and adjust the light level.
	HC5	Multifunction Hand-held Controller has the additional feature or allowing the user to select anyone of six preset scenes.

EX-OR PROGRAMMERS

Independent time delays and photocell adjustments can be programmed with virtually no disturbance to the buildings occupants, using on infrared programming tool

IMAGE	LIST NO.	DESCRIPTION
	HP10	An easy-to-use basic Programmer to set time delay function and select semi or fully automatic operation
	HP2000	Commission or re-commission with no disturbance to occupants. Settings are chosen from a menu and transferred instantaneously to the sensor, using an upload feature. Save time by transferring settings from one sensor to another.

TECHNICAL DATA

MOUNTING HEIGHT:	5.0m max
RANGE:	Cone-shaped detection pattern. Detection diameter (at floor level) = approx 6m at typical mounting height of 2.5m. Diameter of detection pattern is approx 2.25 x mounting height.

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