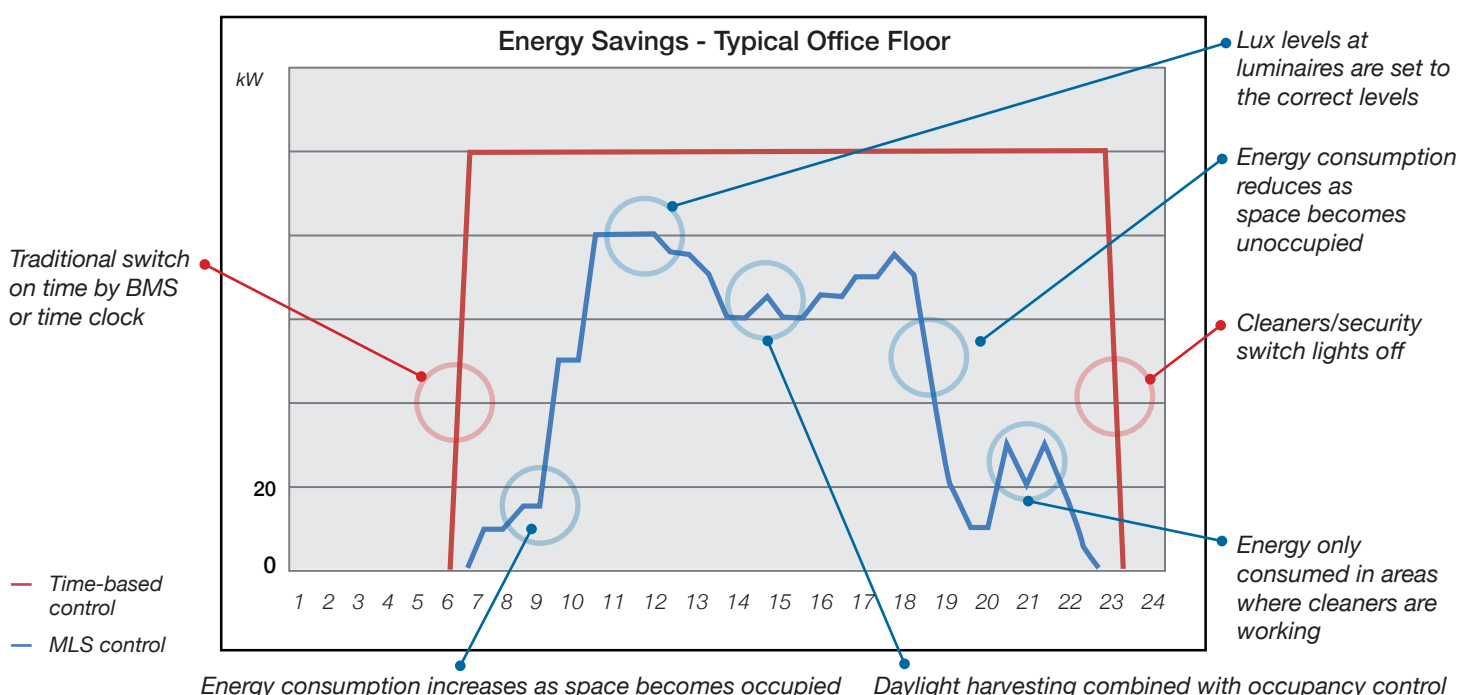# MLS

Managed Lighting System

Ex-Or

MLS allows you to change the way you think about lighting control. The Managed Lighting System (MLS) from Energy Conservation Solutions enables you to implement lighting controls that are energy efficient, scalable and reliable. MLS is a flexible building-wide solution that can drive down energy consumption and maintenance costs, improving the overall financial performance of your facility.

MLS uses a network of intelligent devices to:

- control lighting to your requirements
- reduce energy consumption by:
  - switching lights off when areas are unoccupied
  - dim or switch luminaires off when there is enough natural light present (daylight harvesting)
  - reduce maintenance costs, as lamp run-hours are reduced, thus lasting longer
  - interface with your Building Management System (BMS) to reduce your HVAC energy consumption

Savings are realised year-on-year and can be up to 80% of your lighting energy consumption (when combined with energy efficient lighting fixtures). Energy savings associated with HVAC can be up to 30%, due to the reduced heat load and adjusted temperature control in unoccupied areas. MLS automatically controls lighting based on occupancy and light levels and can be manually controlled via standard or proprietary control panels, enabling switching, dimming and scene setting.

Energy Savings - Typical Office Floor

kW

Lux levels at luminaires are set to the correct levels

Energy consumption reduces as space becomes unoccupied

Traditional switch on time by BMS or time clock

Cleaners/security switch lights off

20

0

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Energy only consumed in areas where cleaners are working

— Time-based control

— MLS control

Energy consumption increases as space becomes occupied

Daylight harvesting combined with occupancy control

MLS OFFERS:

☑ **Motion and photocell sensors to cover every application**

- PIR sensors for mounting heights up to 16m and a detection range of 30m (diameter)
- Microwave sensors for greater coverage and sensitivity
- Photocells integral with all motion sensors
- Control all types of ballasts; 240V switched, DSI, DALI and 1-10V
- Non-volatile memory in every sensor

☑ **Distributed intelligence for peace of mind**

- No single point of failure as intelligence is retained in each sensor
- Lights controlled locally and not reliant on BUS communications*
- Data sharing across the BUS for additional monitoring and flexibility

☑ **Zoned lighting for enhanced convenience and visual comfort**

- Sensors can be linked to create larger control groups
- Lighting in certain areas can be 'held on' due to occupancy in other areas. e.g. circulation areas and egress paths

☑ **Intelligent Lighting Control Module (iLCM) for flexibility**

- Low or high-level integration with AV systems, blind controls, air conditioning etc.
- Scene settings for boardrooms, classrooms, hospital wards, etc.

☑ **QuickSet Pro for commissioning and configuration**

- All program settings in all devices altered in situ with no cables and no fuss

☑ **High-level interface via BACnet for superior control**

- Data sharing with HVAC system for enhanced monitoring and control
- Increased energy savings through occupancy control temperature adjustment
- Web-based user interface, providing access to the system from anywhere at any time via any browser
- Global commands to accommodate emergency situations

☑ **BIM ready**

- 3D modelling using Revit files

* Except for lighting control associated with non-local commands

SYSTEM CAPABILITIES

Installation

The MLS installation is straight forward and uncomplicated. Components are not pre-addressed, meaning time is not wasted matching luminaires and location of sensors.

Zoning

Local Zoning
Sensors control the luminaires to which they are connected

Group Zoning
Multiple sensors with the same address enable groups of luminaires in a room or area to act in unison

Corridor Zoning
Work areas can be grouped with common lighting zones e.g. an exit route or corridor (real or notional)

Building Zoning
Building wide zones can be created through out the facility

High-Level Interface with BACnet compatiable systems
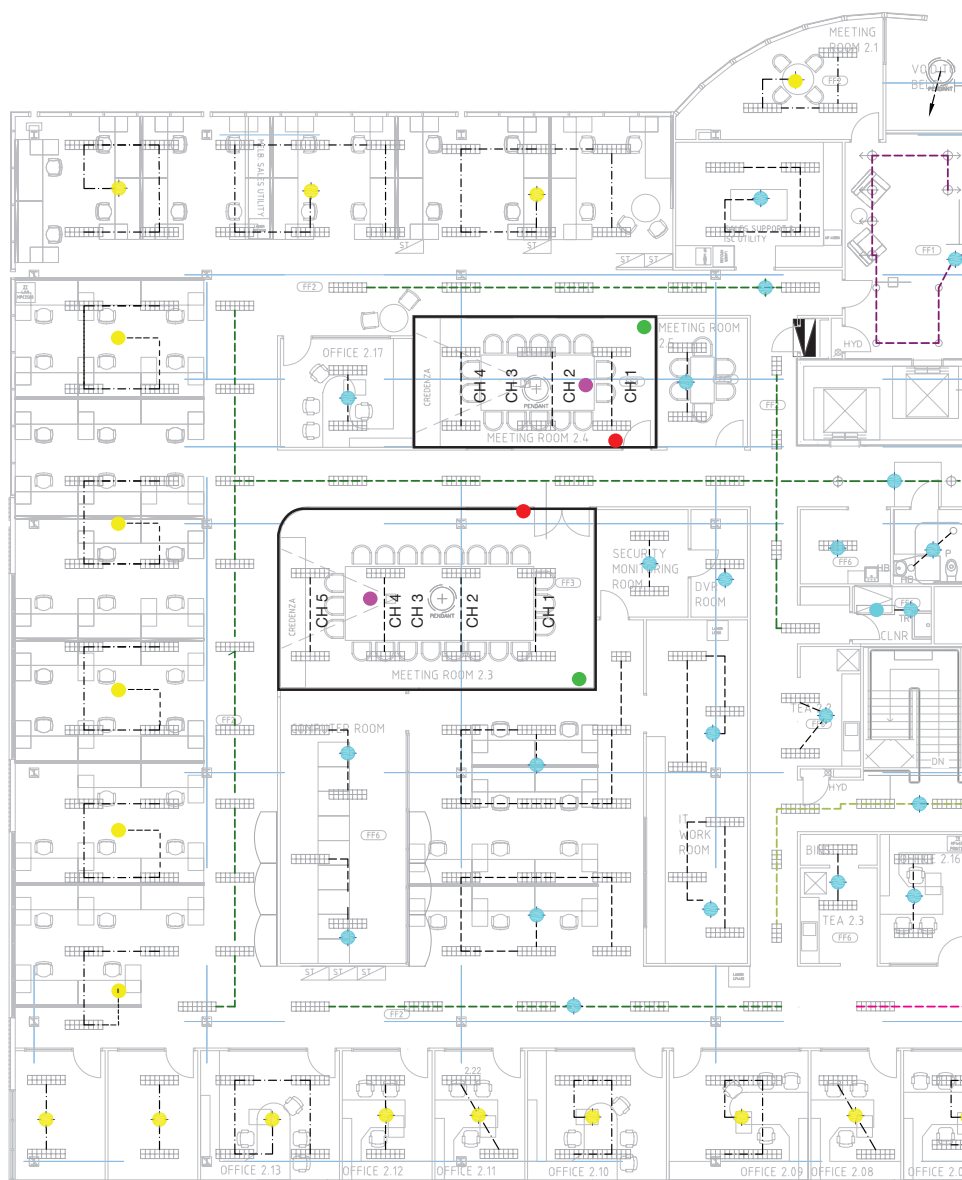Building wide monitoring, and control of all sensors

Zoning Legend

------- **Corridor Zoning**
------- If presence is detected within the surrounding zones (e.g green zone) that corridor will remain on

------- **Building Wide Zoning**
If presence is detected anywhere on the floor these areas will remain on
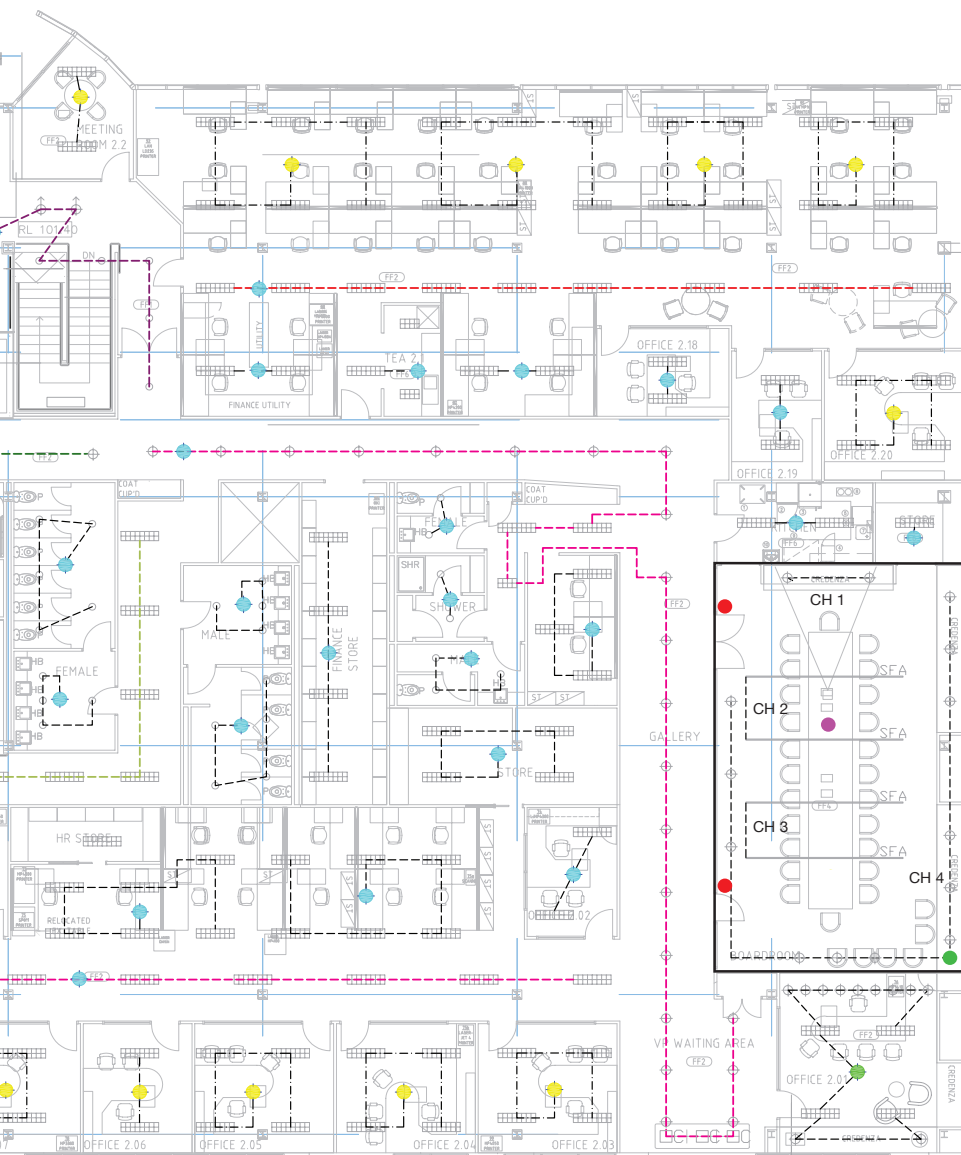
System Components

MLS Passive Infra-red (PIR)
- ● 240V switching
- ● DALI/DSI/0-10V dimming
- · 360 Deg PIR
- · Integral photocell
- · Precise lens masking

MLS Microwave
- · Dual output
- · 240V switching
- · DSI/DALI/0-10V dimming
- · Increased sensitivity
- · Integral photocell

Disclaimer: Layout diagram is provided for illustration purpose only.

Room Controls

MLS offers conventional room control

- Scene select panels used for manual switching, dimming and scene selection
- Standard wall switch used for on/off or on/off/dim control
- Partition control

MLS offers complex room control with Intelligent Lighting Control Module

- Intelligent touch screen, scene select panels or local control switch
- Interface with multiple switch inputs for more intricate control
- Partition control
- Low or high-level integration with AV systems
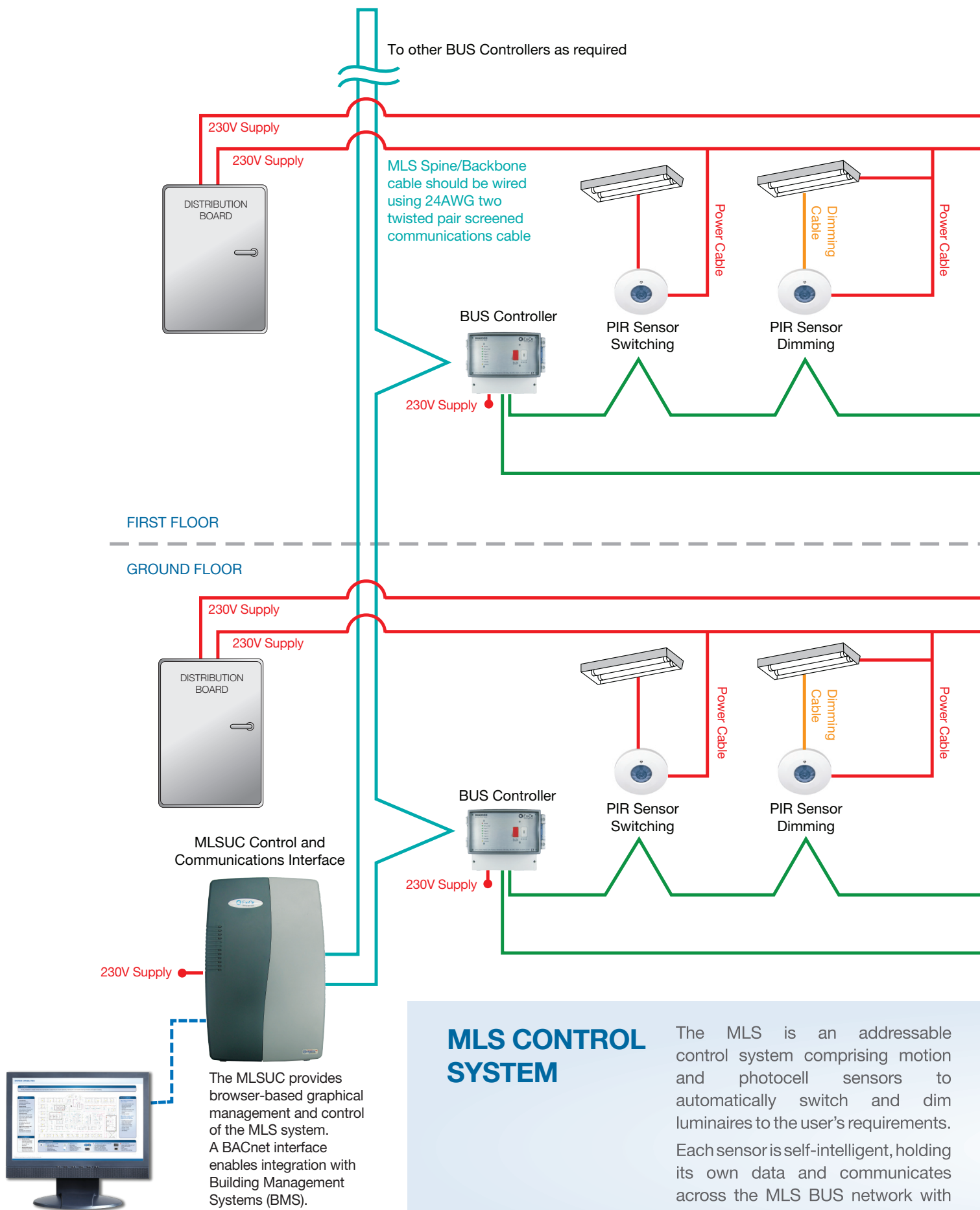
● **Intelligent Lighting Control Module**
- 4, 6 and 8 channel options
- 16A switching capacity
- DSI/DALI/1-10V dimming
- Colour coded connections
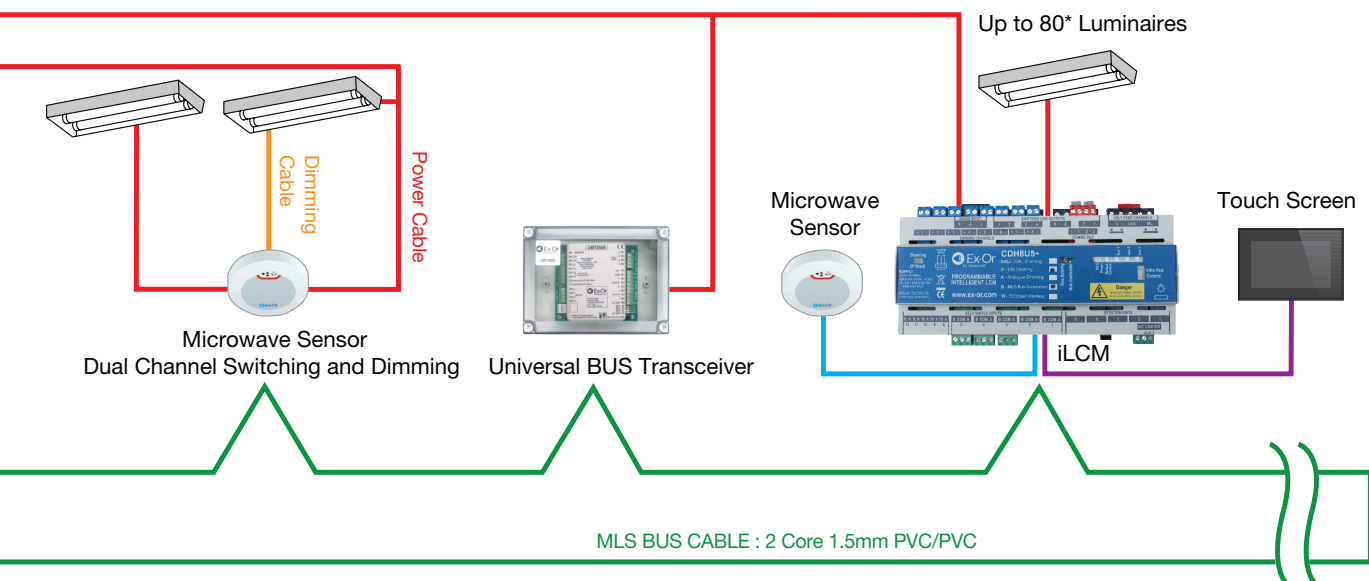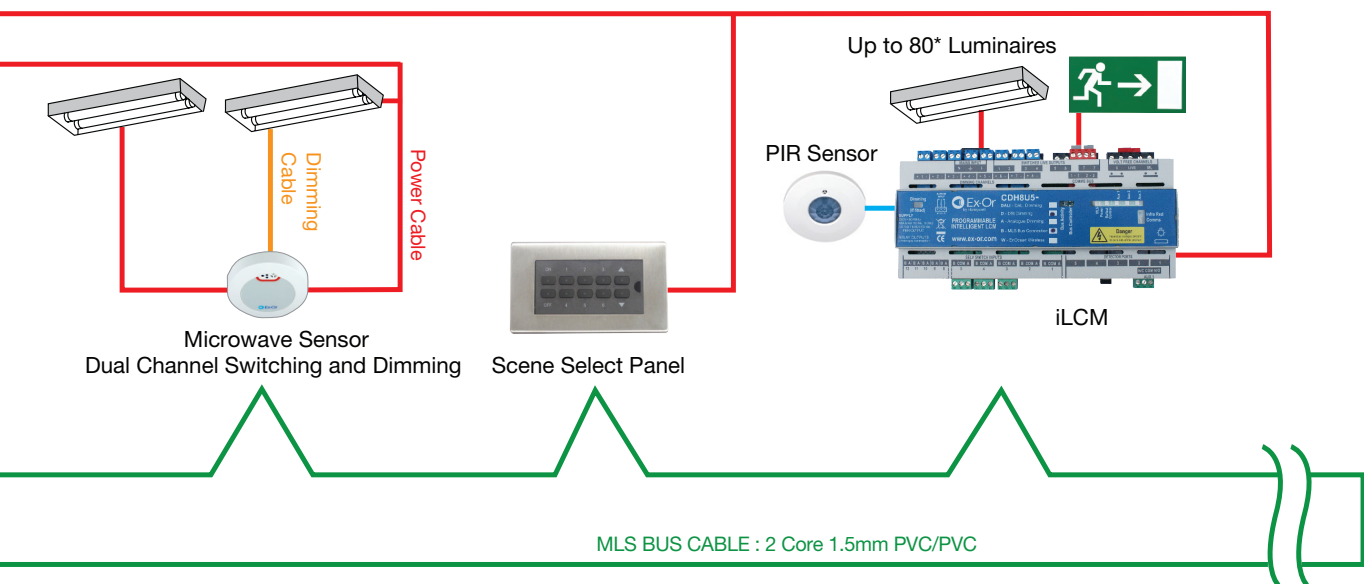- Emergency lighting test mode

● **Local Interfacing**
- Colour touch screen 4.3" or 7"
- Scene select panels
- On/off
- Dim up/down
- Up to six scene settings

WIRING TOPOLOGY

To other BUS Controllers as required

230V Supply

230V Supply

MLS Spine/Backbone cable should be wired using 24AWG two twisted pair screened communications cable

DISTRIBUTION BOARD

Power Cable

Dimming Cable

Power Cable

BUS Controller

PIR Sensor Switching

PIR Sensor Dimming

230V Supply

FIRST FLOOR

GROUND FLOOR

230V Supply

230V Supply

DISTRIBUTION BOARD

Power Cable

Dimming Cable

Power Cable

BUS Controller

PIR Sensor Switching

PIR Sensor Dimming

230V Supply

MLSUC Control and Communications Interface

230V Supply

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

MLS CONTROL SYSTEM

The MLS is an addressable control system comprising motion and photocell sensors to automatically switch and dim luminaires to the user's requirements.

Each sensor is self-intelligent, holding its own data and communicates across the MLS BUS network with other sensors to provide enhanced

Up to 80* Luminaires

PIR Sensor

iLCM

Microwave Sensor
Dual Channel Switching and Dimming

Scene Select Panel

Dimming Cable

Power Cable

MLS BUS CABLE : 2 Core 1.5mm PVC/PVC

Up to 80* Luminaires

Microwave Sensor

Touch Screen

iLCM

Microwave Sensor
Dual Channel Switching and Dimming

Universal BUS Transceiver

Dimming Cable

Power Cable

MLS BUS CABLE : 2 Core 1.5mm PVC/PVC

control functionality. Sensors can be manually overridden with scene select panels and/or local switches.

Sensors communicate with each other to create common and building-wide zones. For example, corridors can be illuminated when surrounding rooms are occupied (corridor zoning), and the main foyer can also be illuminated if any area in the building is occupied (building zoning).

The system has the ability to share occupancy information and communicate to the BMS through a high-level interface (MLSUC) via BACnet communications.

The system can respond to time scheduling and provide real-time monitoring and control of the lighting control system zones. The MLSUC communicates to all the sensors via the MLS BUS Controllers which are located throughout the building.
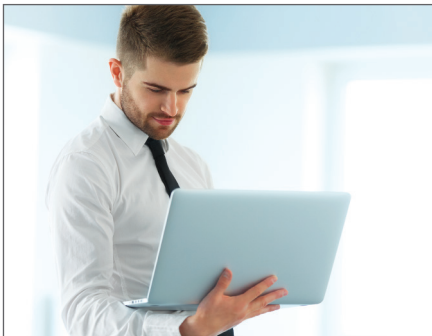
*80 ballasts max based on DALI control only

Disclaimer: Layout diagram is provided for illustration purposes only.

SYSTEM INTEGRATION

HIGH-LEVEL INTERFACING

The MLSUC series of high-level interfaces provide browser-based graphical management and control of the Managed Lighting System. The MLSUC is not a third party gateway but an integral part of the MLS. The MLSUC has been developed so that it seamlessly integrates with the BMS via BACnet.

USER ACCESS OVER BROWSER

BACNET-BASED BMS SYSTEM

HIGH-LEVEL INTERFACING

Some of its features include:

- Remote monitoring and control of MLS lighting zones
- Programmable timed-event scheduling
- Browser-based user interface
- Real-time event control from the BMS
- Remote scene-recall
- Data sharing between the MLS and BMS
- Remote execution of test modes
- No software licences or fees required

QUICKSET PRO

The QuickSet Pro infra-red programming tool makes it quick and easy to adjust or commission your system, make changes to the settings and add new devices.

Some of its features include:

- Auto software update
- Holds and stores data
- Pre-commission prior to visiting site
- Fully backwards compatible with all Ex-Or products
- Localised commissioning
- Copy and paste function - copy from one sensor to another
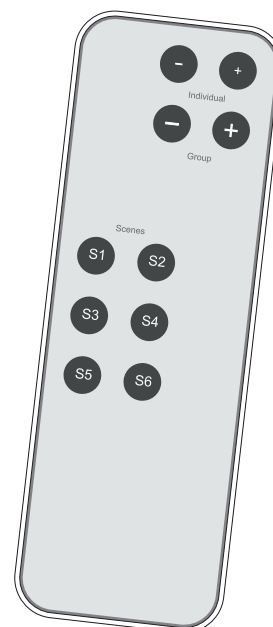- Allows the user to easily reprogram or adjust settings

HC5A CONTROLLER

The HC5A universal hand-held controller offers the user temporary override control and light level adjustments. In addition, it can recall up to six different scenes. It is supplied complete with a wall mount bracket.

Some of its features include:

- On/off control of luminaires associated with individual sensors or groups of sensors
- Up/down dimming of luminaires associated with individual sensors or groups of sensors

MLS PRODUCT RANGE

MLS SENSORS

MLS offers a range of sensors including PIR and Microwave

- On/off switching
- DSI/DALI or 1-10V dimming options
- Photocell in every sensor
- Available in surface and flush mounting
- Mid-bay or hi-bay versions for heights up to 16m
- Microwave sensors, providing significantly greater coverage and sensitivity
- Programmed via an infra-red signal using the QuickSet Pro

MLS INTEGRAL SENSORS

MLS offers two types of small, discreet sensors, suitable for integration into luminaires

- On/off switching
- DSI/DALI or 1-10V dimming options
- Photocell in every sensor

MLS INTELLIGENT LIGHTING CONTROL SENSORS

iLCM units operate with a range of SELV sensors, including PIR and Microwave

- PIR with a 10m detection zone
- Microwave sensors, providing significantly greater coverage and sensitivity
- Photocell in every sensor
- Mid-bay or hi-bay versions for heights up to 16m
- RJ45 "plug and play" connection

MLS BUS CONTROLLER

The MLS BUS Controller powers and synchronises the communication BUS for the MLS devices
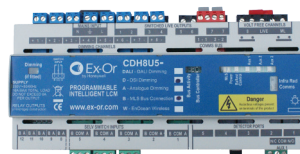
- Connect up to 200 devices per BUS Controller or 100 individual zones.
- Expand the system to the buildings requirements by adding more BUS Controllers.
- Lite version available for smaller installations
- Provides testing and checking of BUS integrity

MLS PRODUCT RANGE

MLS INTELLIGENT LIGHTING CONTROL MODULES

iLCM units combined with dedicated sensors offer more complex control functionality required for specific areas within a building

- 4, 6 and 8 output channel versions available
- Up to 5 SELV motion and daylight sensor inputs per unit
- Up to 20 switch inputs per unit
- Output channels support 240V switching and DSI/DALI or 1-10V dimming
- Fully programmable mapping of inputs and outputs
- Programmed via an infra-red signal using the QuickSet Pro
- Can operate stand alone or integrated with the MLS
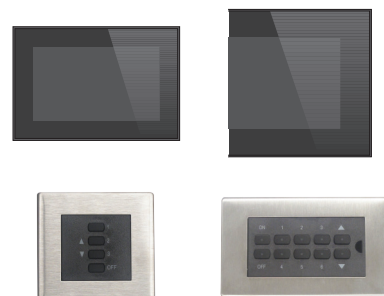- Low and high-level integration with AV systems

MLS UNIVERSAL BUS TRANSCEIVER

The UBT allows external devices to interface with the MLS. For example:

- AMX
- Moveable partitions/blinds
- HVAC
- BMS or time clock overrides

TOUCH SCREENS, SCENE SELECT AND LOCAL CONTROL PANELS

LCD colour touch screens (4.3" and 7.1") and scene select panels (SSP) or local control panels (LCP) offer a range of options for manual override of the system, including dimming and choice of pre-set scenes.

HIGH-LEVEL INTERFACING

The MLSUC series provide browser-based graphical management and control of the MLS. A BACnet interface enables integration with compatible Building Management Systems (BMS).

- Remote monitoring and control of the MLS lighting zones
- Programmable timed-event scheduling
- Browser-based user interface
- Real-time event control from the BMS
- Remote scene-recall
- Data sharing between the MLS and BMS enabling occupancy control of HVAC, load shedding, etc.

Comprehensive technical details can be found at www.ecs.net.au

PRODUCT SELECTOR

MLS 360 DEGREE PIR SENSORS

PRODUCT CODE	DESCRIPTION
MLS2000D	DSI ballast - slimline flush mount
MLS2001D	DSI ballast - flush or surface mount
MLS2000DALI	DALI ballast - slimline flush mount
MLS2001DALI	DALI ballast - flush or surface mount
MLS2000P	Fixed output - slimline flush mount
MLS2001A	1-10V analogue/fixed-output ballast - flush or surface mount
MLS2021D	Dual-output DSI ballast - flush or surface mount
MLS2021DALI	Dual-output DALI ballast - flush or surface mount

MLS 360 DEGREE MID-BAY PIR SENSORS

PRODUCT CODE	DESCRIPTION
MLS2001DMB	DSI ballast - flush or surface mount
MLS2001DALIMB	DALI ballast - flush or surface mount
MLS2001AMB	1-10V analogue/fixed-output ballast - flush or surface mount
MLS2021DMB	Dual-output DSI ballast - flush or surface mount
MLS2001DALIMB	Dual-output DALI ballast - flush or surface mount

MLS 360 DEGREE HI-BAY PIR SENSORS

PRODUCT CODE	DESCRIPTION
MLS2001DHB	DSI ballast - flush or surface mount
MLS2001DALIHB	DALI ballast - flush or surface mount
MLS2001AHB	1-10V analogue/fixed-output ballast - surface or flush mount
MLS2021DHB	Dual-output DSI ballast - flush or surface mount
MLS2001DALIHB	Dual-output DALI ballast - flush or surface mount

MLS DIRECTIONAL MICROWAVE SENSORS

PRODUCT CODE	DESCRIPTION
MLS2500D	Dual-output DSI ballast - semi-flush or surface mount
MLS2500DALI	Dual-output DALI ballast - semi-flush or surface mount

MLS 360 DEGREE MICROWAVE SENSORS

PRODUCT CODE	DESCRIPTION
MLS2421D	Dual-output DSI ballast - flush or surface mount
MLS2421DALI	Dual-output DALI ballast - flush or surface mount
MLS2421A	Dual-output 1-10V analogue/fixed-output ballast - flush or surface mount

MLS HIGH-LEVEL INTERFACING

PRODUCT CODE	DESCRIPTION
MLSUCA	BACnet interface up to 6 RB2000
MLSUCB	BACnet interface up to 13 RB2000

MLS PROGRAMMER AND CONTROLLER

PRODUCT CODE	DESCRIPTION
QUICKSET PRO	Programmer
HC5A	Universal hand-held controller

MLS INTEGRAL 360 DEGREE SENSORS AND CONTROLLERS

PRODUCT CODE	DESCRIPTION
DH	PIR sensor available in white or silver - Control module required MLSM2000D/DALI/A
MLSM2000D	Control module for DSI ballast - DH-W/S required
MLSM2000DALI	Control module for DALI ballast - DH-W/S required
MLSM2000A	Control module for 1-10V analogue/fixed-output ballast - DH-W/S required
MLS2000DI	Luminaire sensor and controller for DSI ballast in white or sliver
MLS2000DALI	Luminaire sensor and controller for DALI ballast in white or sliver
MLS2000DMB	Mid-bay luminaire sensor and controller for DSI ballast - white
MLS2000DALIMB	Mid-bay luminaire sensor and controller for DALI ballast - white
MLS2000DHB	Hi-bay luminaire sensor and controller for DSI ballast - white
MLS2000DALIHB	Hi-bay luminaire sensor and controller for DSI ballast - white
DHFK	Flush mounting kit for mini-head sensor - available in white, silver or black

INTELLIGENT LIGHTING CONTROL MODULE

PRODUCT CODE	DESCRIPTION
CDH4U5***	4 channel hard wired iLCM-available with BUS Controller, MLS BUS, and DSI, DALI, and 1-10V dimming options
CDW12U5***	6 channel soft wired iLCM-available with BUS Controller, and DSI, DALI, and 1-10V dimming options
CDH8U5***	8 channel hard wired iLCM-available with BUS Controller, MLS BUS, and DSI, DALI, and 1-10V dimming options
MLS3000CDR	360° PIR sensor - surface or flush mount
MLS3003CDR	360° PIR sensor with tilting lens - flush or surface mount
MLS3003CDRMB	360° mid-bay PIR sensor with tilting lens - flush or surface mount
MLS3003CDRHB	360° hi-bay PIR sensor with tilting lens - flush or surface mount
MLS2421CDR	360° microwave sensor - flush or surface mount
MLS2500CDR	Directional microwave sensor - semi-flush or surface
DH	360° PIR sensor available in white or silver - Control module required MLSM2002CDR
MLSM2002CDR	Control module for DH-W/S
MLSM2002 CDRDHPB	360° PIR sensor c/w control module and plaster board mount kit - white

MLS SYSTEM COMPONENTS

PRODUCT CODE	DESCRIPTION
TS4.3	4.3" touch screen - available in black or white
TS7	7" touch screen - available in black or white
MLS2000SSP	Scene select panel (cover plate required)
MSSP***	Cover plate for MLS2000SSP - available in brushed stainless steel, polished brass, white and polished chrome
MLSCP4	Local control panel (cover plate required)
MSS182***	Cover plate for MLSLCP4 - avaliable in brushed stainless steel, polished brass, white and polished chrome
RB2000	BUS Controller
RB2000LT	BUS Controller "Lite"
UBT2000	Universal BUS transceiver
UBT2000DIN	Universal BUS transceiver DIN-rail mount
MLS2000ETM	Emergency test module

Information correct at the time of printing.