



Making light work

INTELLIGENT LIGHTING CONTROL MODULES

Making light work Since 1984

For over 30 years our bright ideas have been helping our customers make light work.

We're acknowledged leaders in developing elegant and innovative lighting control systems that are easy to install and maintain. Our solutions help our customers to reduce their energy bills, lower their carbon footprints, and improve performance.

There was a time when lighting was just about illumination. Today it's still about creating a comfortable working environment, but not at any cost.

Our range of new generation lighting controls switch lights off when no-one's there, and dim or switch them off when there's enough natural light. So they help you save on your energy costs – sometimes as much as 70%, year after year.



The Ex-Or Commitment

Making light work of energy savings

Our high performance lighting controls deliver reductions of up to 70% in energy use. This means significant savings on energy bills at a time when energy costs are rising rapidly.

Making light work with ease

At Ex-Or we pride ourselves on being easy to do business with, from your initial contact with our sales and customer service teams to the installation, commissioning and use of our products. We aim to delight you with our solutions, service and support.

Making light work for comfort and productivity

The breadth of our portfolio and our know-how helps you achieve optimum energy saving in any space, whilst enhancing comfort and productivity for the building's users.

Making light work with quality

Ex-Or have been creating award winning lighting control systems since 1984.

Our unrivalled expertise has delivered some of the industry's most innovative solutions.

Ex-Or's excellence in design and manufacturing provides robust and reliable products which are backed by a five-year warranty.



MLS Connect Digital Intelligent LCMs



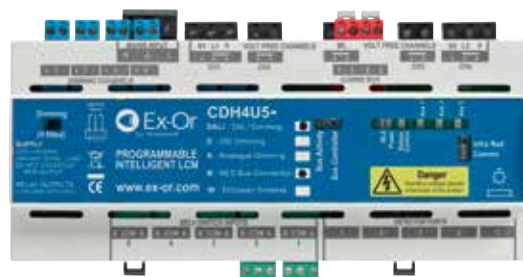
MLS Connect Digital Intelligent Lighting Control Modules (LCMs) are multi-purpose connection centres which enable luminaires, sensors and switches to be installed quickly and conveniently.

Available in Hard Wired and Pluggable versions, they offer multiple, independently controllable channels for dimmable (Analogue 1-10V, Digital DSI or DALI) or non-dimmable luminaires through pluggable SELV sensors.

Manual functions can be achieved through the use of the SELV switch inputs. Functions include on/off, dimming, scene control, partitioning, last-man-out, emergency test.

The LCMs are intelligent because they are programmable, offering a wide range of configurations and operational modes. They are commissioned via a dedicated program running on a Windows-based computer or by a QuickSet Pro hand-held infrared programmer.

MLS Connect Digital LCMs are networkable and can form part of a building-wide managed lighting system incorporating BACnet BEMS (Building Energy Management System) linking and automated testing of emergency lighting.



Hard Wired - 4 Channel (CDH4U5)



Hard Wired - 8 Channel (CDH8U5)



Pluggable - 6 Channel (CDW12U5)



MLS Connect Digital

Making light work of energy savings

Achieve optimal energy savings through occupancy detection and daylight detection.

Provide the right amount of light at the right time through multiple independently controllable switching and dimming luminaire outputs.

Control other energy consuming facilities in the room with a signal level volt-free output (8 channel variant).

Reduce quiescent (standby) power consumption by controlling individual groups of luminaires.

Making light work for for comfort and productivity

Improve lighting and safety with the new absence-by-day, presence-by-night feature which provides optimum energy saving during daylight hours, then switches to a safety-first presence mode at a user-defined lux level.

Maximise control of the lighting through multiple SELV occupancy detector and volt-free switch inputs.

Create sophisticated lighting control schemes with Advanced Occupancy Lifecycle which enables individually programmable modes including Occupied, Transition, Background & Unoccupied.

Pre-programmed lighting scenes enable the delivery of the right lighting profile for the task in hand.

As part of a building-wide MLS System the emergency test system constantly monitors status and executes pre-programmed scheduled tests, swiftly identifying potential system faults and providing a clear and concise log of events for audit purposes.



Making light work with ease

QuickSet Pro offers fast and simple programming of sophisticated lighting control schemes.

Avoid mis-wiring with colour-coded, pluggable connections for quick, simple installation.

Plug-and-play capability for connection of pre-wired luminaires.

Easy set-up and recall of multiple lighting scenes via infrared remote control.

Create flexibility in the system with partitioning mode, break the system out into zones and configure different lighting schemes for each.

Simple and soft re-mapping enables luminaires, switches and sensors to be reconfigured and re-grouped easily.

Making light work with quality

Each unit is individually line tested at manufacture to ensure its quality.

All products are supplied with a 5-year warranty.



Product component Overview

Intelligent Lighting Control Modules

LCMs offer the following variants:

Dimming - DSI, DALI or Analogue 1-10V.

MLS Bus Operation - With the addition of MLS bus communications, the LCMs can form part of a networked lighting management system.

Integral MLS Bus Supply (Hard Wired only) - Designed for creating small groups of Intelligent Lighting Control Modules working together. This provides the flexibility to group up to 20 units to work in harmony without requiring any additional Bus Power Supply units.

Wireless Switch Enabled (Pluggable only) - For use with wireless, battery-less switches.

CDW12U5	MLS CONNECT DIGITAL PLUGGABLE LCM - 6 CHANNEL
Further options	
-B	MLS Bus
-A	Analogue 1-10V Dimming
-D	DSI Dimming
-DALI	DALI Dimming
-WL	Wireless switching

E.g. CDW12U5-BDALIWL is an MLS Bus version offering DALI Dimming and Wireless Switching

CDH4U5	MLS CONNECT DIGITAL HARD WIRED LCM - 8 CHANNEL
CDH8U5	MLS CONNECT DIGITAL HARD WIRED LCM - 4 CHANNEL
Further options	
-RB	MLS Bus version with integral Bus Power Supply
-B	MLS Bus
-A	Analogue 1-10V Dimming
-D	DSI Dimming
-DALI	DALI Dimming

E.g. CDH8U5-RBD is an MLS Bus version with integral Bus Power Unit offering DSI Dimming

Plug-in Cards - The functionality of the LCM is determined by its plug-in card/s. For example, a CDW12U5-BDALI incorporates an MLS Bus operation card and a DALI dimming card. Plug-in cards for the CDW variants can be ordered separately for retro-fitting thus making the LCMs upgradeable.

Sensors

A dedicated range of passive infrared and microwave presence/absence detectors is available – all connect to the LCM via Ethernet-style RJ45 connector terminated patch leads. Sensors are SELV when correctly installed. (Max allowable distance between sensor and LCM is 100m.)

PIR Sensors - 360° ceiling mount

- Enhanced sensitivity and range: 7m Micro Detection, 10m Macro Detection
- Mid-Bay and Hi-Bay versions for greater mounting heights (up to 12m and 16m respectively)
- Variants with tilting lenses which enable the precise area of sensing to be adjusted as required
- Flush and surface mount versions



360° PIR with tilting lens

Integral PIR Sensor

- Comprises Control Module and separate Mini Detector Head with silver or white bezel
- Detector head can be mounted within the luminaire or remotely
- Mounting kit available to facilitate installation
- Option for suspended/plasterboard ceilings of up to 25mm thickness



Just the discreet detector head shows when installed

Microwave Sensors

Microwave sensors are more sensitive over larger areas making them ideal for use in classrooms, corridors, conference rooms and larger offices.

- 360° for open-plan areas or directional for corridors
- Wall-mount kit (WMK) available for directional version
- Flush (semi-flush for directional) and surface mount versions



360° Microwave



Directional Microwave

Patch Leads

Sensors are linked to the LCM via Ethernet-style RJ45 connector terminated patch leads (available ready-made in various lengths).

Luminaire Plugs & Leads (CDW12U5 only)

Available in various lengths for dimming, non-dimming and emergency luminaires.

Terminated with GST18/6 plug with Ex-Or locking mechanism for added security.

Its unique 'dual-latching' system prevents improper installation that could result in loose or overheated connections.

Output Plugs

The Hard Wired LCMs come populated with the relevant plugs. (For example, dimming versions include the CDHDOP dimming plugs.) Extra/replacement plugs are available.

Input Plugs

Four input plugs are supplied with the CDH4U5, six with the CDH8U5 (plug type common with Aux output channel) and five with the CDW12U5. Extra plugs are available – see part numbers for options and pack details.

A high-density switch (CDHHDIP) is available for the CDH8U5 to expand the number of available switches.

Wireless Battery-less Switches

1-gang or 2-gang for use with wireless enabled variants of the CDW12U5.

Programming Devices

UIRD1 programming dongle for use with Microsoft Windows-based laptop. Alternatively, programming can be carried out via the QuickSet Pro hand-held infrared programming device.



UIRD1



QuickSet Pro

Protective Enclosure for CDHs

Features a robust base with an all-over front cover and moulded lid in an impact-resistant, flame-retardant thermoplastic.

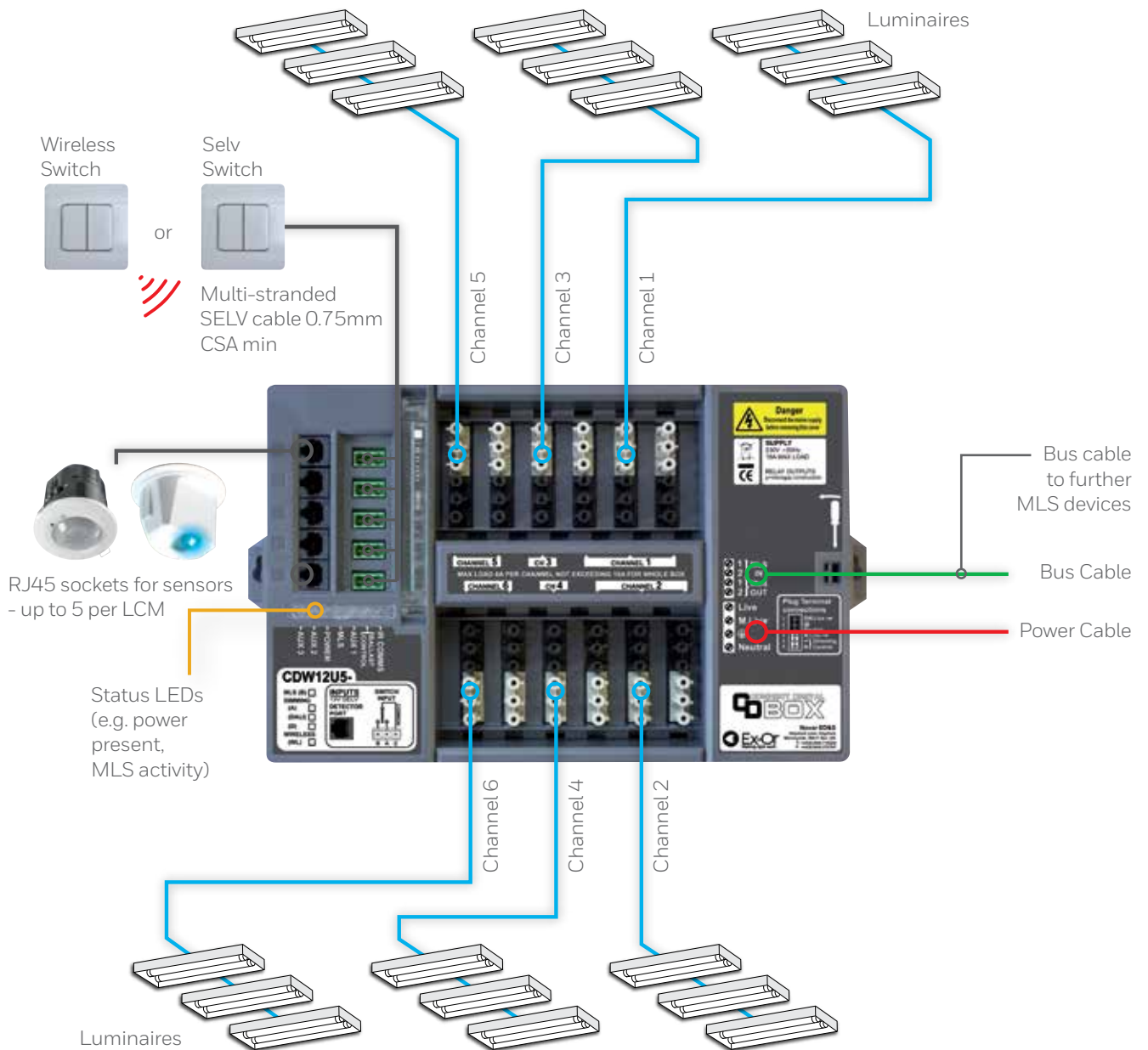
AV Interface

Interface to an MLS Connect Digital LCM from any AV system that uses Dynet commands via RS232 or RS485. Allows AV system commands to initiate lighting scenes/behaviours via the MLS system.



Pluggable LCM Overview

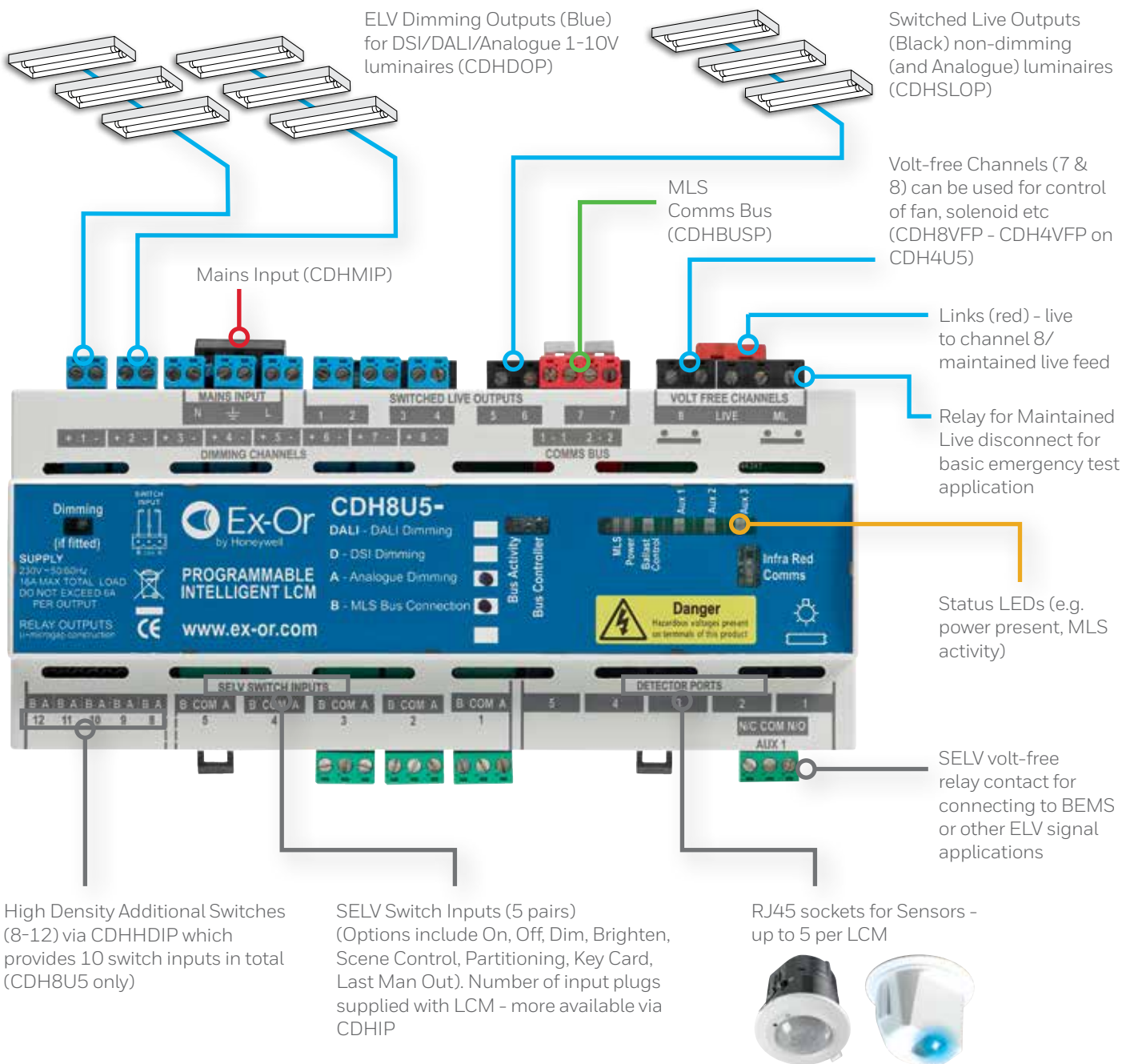
CDW12U5



Hard Wired LCM Overview

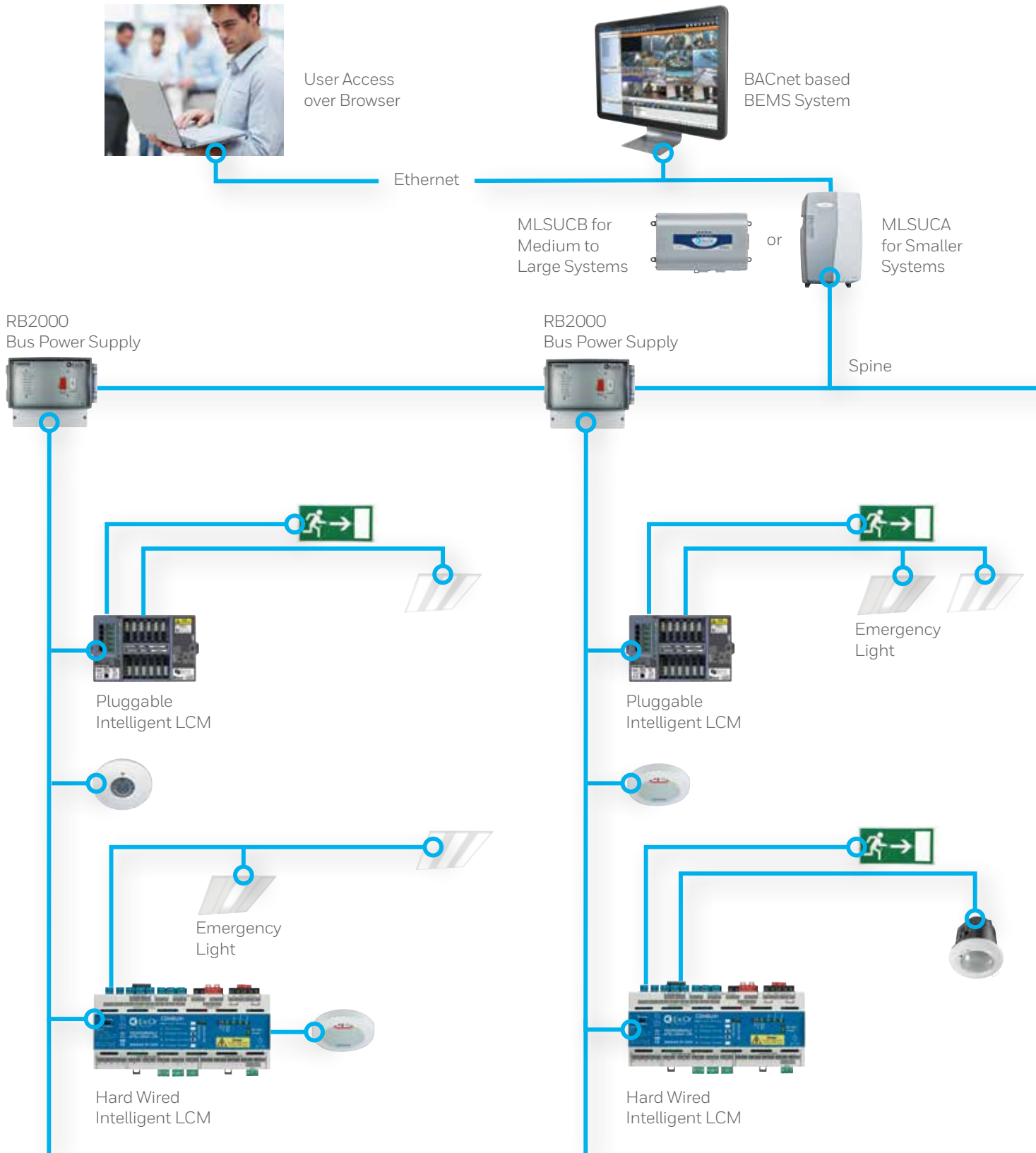
CDH8U5

The CDH4U5 supports dual supplies which can be on differing phases (see Healthcare application). Other key features are as the CDH8U5 but with 4 output channels and 5 SELV switch inputs.



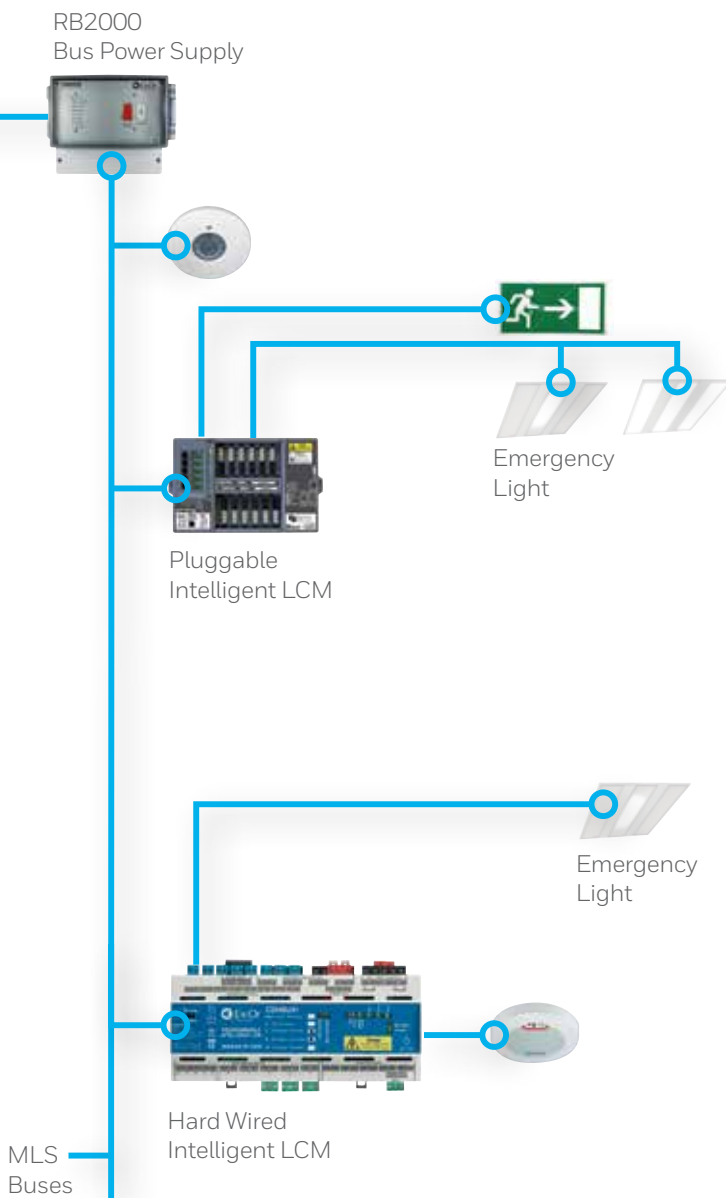
NOTE: Should be used in a suitable 12-module DIN rail enclosure (Ex-Or part number K5612SMAG)

System Architecture



MLS Connect Digital LCMs can be used to facilitate the connection of luminaires, sensors and switches.

They can be bus-connected and scaled to form a flexible lighting system encompassing, if required, emergency lighting testing and BEMS interface.



MLS Digital Networked Managed Lighting System

- Up to 99 x RB2000 bus power supply
- Up to 200 MLS devices per RB2000 bus power supply (or up to 100 per RB2000LT bus power supply 'lite')
- An MLS Connect Digital LCM counts as one device on the MLS bus (irrespective of the number of luminaires or sensors it supports)
- 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

DALI Emergency Lighting Testing/BEMS Interface

By adding an MLSUCA or MLSUCB System Controller/Interface, you can automate the testing of DALI emergency luminaires and/or interface to BEMS or HVAC via BACnet.

Smaller Systems - MLSUCA

- Up to 6 x RB2000 bus power supply
- Up to 127 Intelligent LCMs per RB2000
- Up to 250 MLS Zones
- Up to 500 EM Test Channels (dependent on MLS Zones)
- Max 1 Emergency Device per LCM Channel

Medium to Large Systems - MLSUCB

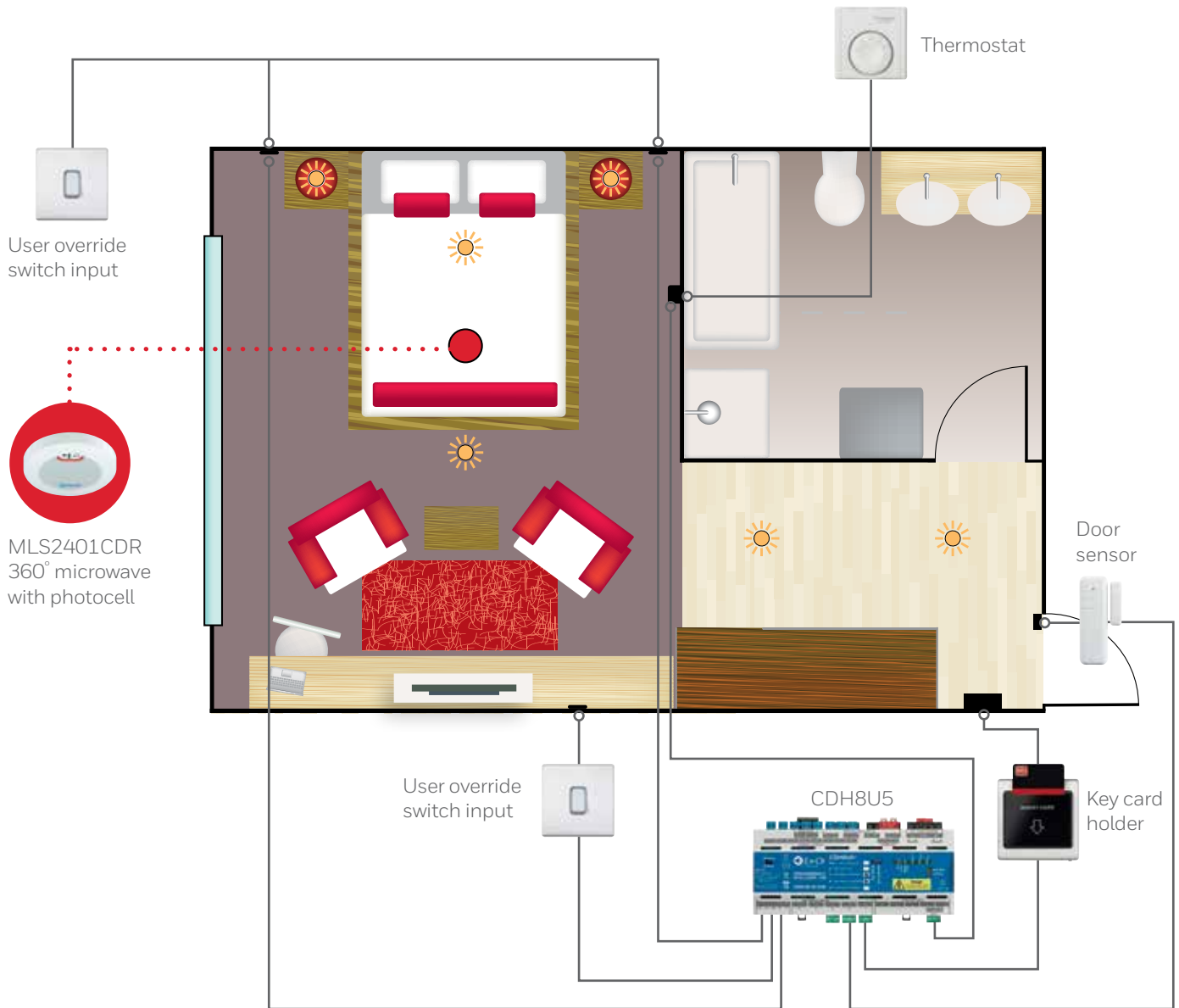
- Up to 13 x RB2000 bus power supply
- Up to 127 Intelligent LCMs per RB2000
- Up to 500 MLS Zones
- Up to 1000 EM Test Channels (dependent on MLS Zones)
- Max 1 Emergency Device per LCM Channel

Applications

Hotel Room

The Hard Wired Intelligent LCM is ideal for Hotels. The 8-Channel version provides multiple channels, SELV inputs, plug-in sensors and an auxiliary interface for signalling a Building Energy Management System BEMS.

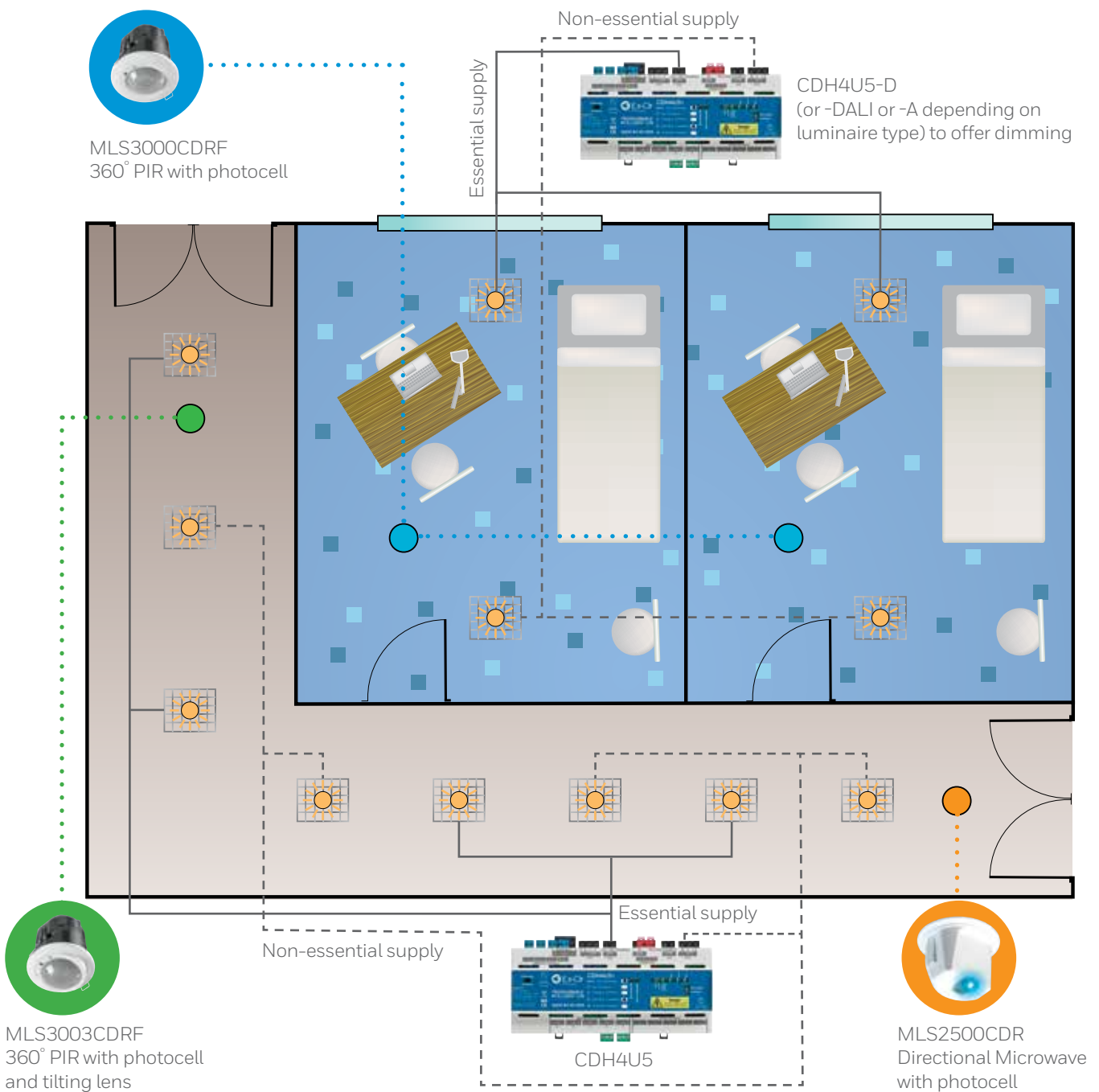
Vacant Room Detection (VRD) maximises energy savings by ensuring lights and air conditioning switch off when rooms are vacant - even if a keycard has inadvertently been left in position.



Applications

Healthcare - Consulting/Treatment Rooms

The 4 Channel Intelligent LCM allows control of lights from two separate power supplies - such as in a hospital where 'essential' and 'non-essential' supplies are provided.



Applications

Commercial Office

The Pluggable LCM is ideal for areas with suspended ceilings. A mixture of open-plan and cellular offices is shown but if, at any point, any area requires re-configuring, it is a simple matter to re-patch and re-plug sensors and switches or to add more as required. Choosing a dimming-version LCM allows luminaires adjacent to windows to regulate according to natural light levels.

MLS-enabled versions of the LCM offer numerous operational enhancements. Flexible zoning of lights allows notional corridors, for example, to be created (see MLS Digital brochure for full details and further options).



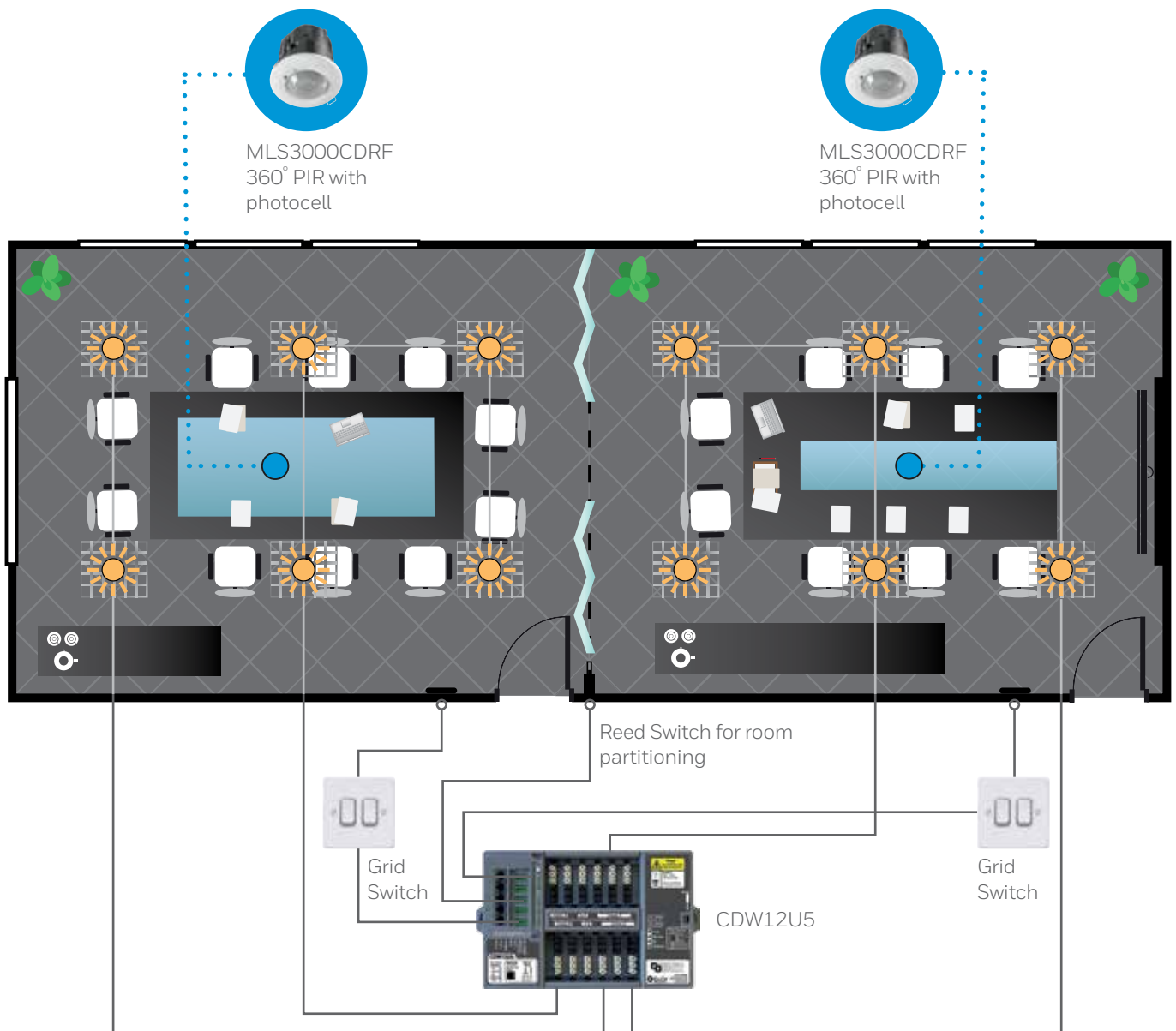
Applications

Meeting Room with Partitioning

This meeting room/boardroom can be separated into two areas by a partitioning door, allowing individual lighting control of each area.

The wall switches can be programmed as scene control or dim/on/off control of specific lighting circuits and will operate both rooms together or individually based on the position of the partition.

The presence detectors ensure the luminaires switch off when the room is vacant.



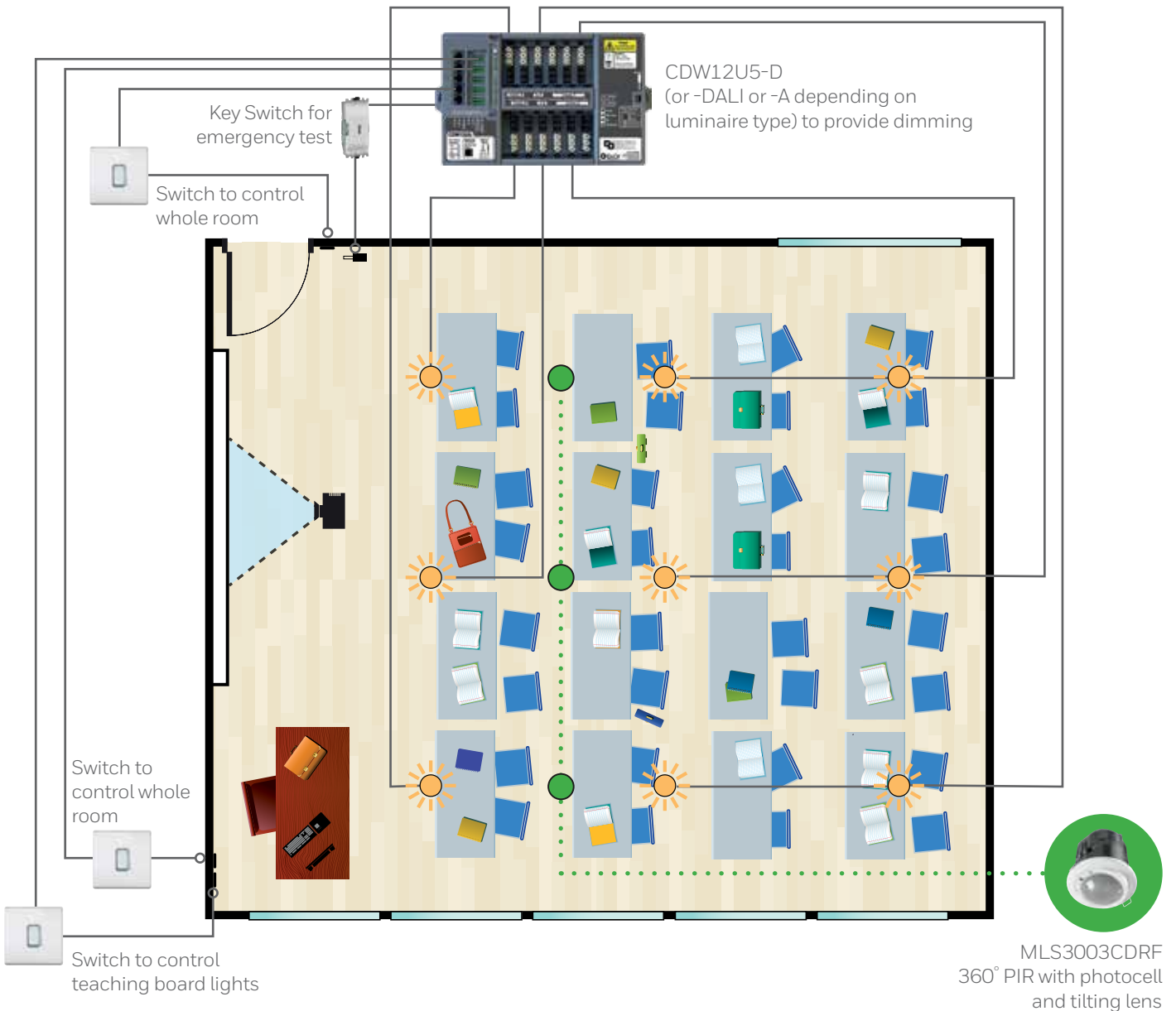
Applications

Classroom

Absence detection, whereby lights are switched on manually but switch off automatically after a time delay, is usually preferred.

Using a dimming-version LCM allows the row of lights alongside the windows to regulate in response to natural light. The remaining rows might also regulate but at levels offset from that of the window row, i.e. the lights furthest from the windows will be brighter than those in the middle row.

Manual switches can be used to turn on or off their associated luminaires independently as a temporary override. Use of the 'Absence Recovery' feature ensures that a lone occupant, e.g. a teacher marking books, would not need to get up to sustain the lights.



Technical Data/Specification

SPECIFICATIONS			
DESCRIPTION	CDH4U5 (4 CHANNEL)	CDH8U5 (8 CHANNEL)	CDW12U5 (6 CHANNEL)
Switch Inputs (SELV for override)	5	10	5
Volt Free Outputs (230V AC)	4	1	0
Switched Live Outputs	0	7	6
Auxiliary Outputs (ELV)	0	1	0
Operational Supply	230VAC ~50Hz/60Hz	230VAC ~50Hz/60Hz	230V ~50Hz
Power Consumption	18W maximum	18W maximum	18W maximum
Product Rating & Recommended Circuit Protection	16A or 20A MCB	16A or 20A MCB	16A
Maintained Live Output	6A	6A	2A total per LCM
Maximum Switched Live Load (per channel)	6A	6A	6A
Maximum Total Switched Live Load	16A	16A	16A
Digital Dimming Ballasts per Channel	10 maximum	10 maximum	10 maximum
Digital Dimming Ballasts per LCM	40 maximum	40 maximum	40 maximum
1-10V Dimming Ballasts per Channel	20mA (sinking only) See manufacturer's specification	20mA (sinking only) See manufacturer's specification	20mA (sinking only) See manufacturer's specification
Case Material	Self-extinguishing blend PC/ABS	Self-extinguishing blend PC/ABS	Polycarbonate
Case Finish	Grey RAL7035	Grey RAL7035	Lightly textured charcoal grey RAL7016
DIMENSIONS:	CDH4U5 (4 CHANNEL)	CDH8U5 (8 CHANNEL)	CDW12U5 (6 CHANNEL)
Width	213mm	213mm	315mm (361mm incl mounting feet)
Height	62mm	62mm	50mm (108mm incl plug & lead)
Depth	91mm	91mm	205mm

Part Numbers

PROGRAMMABLE INTELLIGENT LCM	
PRODUCT CODE	DESCRIPTION
6 CHANNEL	
CDW12U5	Connect Digital LCM with 12 luminaire output sockets, 5 sensor sockets and 5 override input sockets
CDW12U5-B	CDW12U5 with MLS Bus operation card
CDW12U5-A	CDW12U5 c/w Analogue 1-10V Dimming
CDW12U5-BA	CDW12U5 with MLS Bus operation card c/w Analogue 1-10V Dimming
CDW12U5-BAWL	CDW12U5 with MLS Bus operation card and Wireless Switch card c/w Analogue 1-10V Dimming
CDW12U5-DALI	CDW12U5 c/w Digital DALI Dimming
CDW12U5-BDALI	CDW12U5 with MLS Bus operation card c/w Digital DALI Dimming
CDW12U5-BDALIWL	CDW12U5 with MLS Bus operation card and Wireless Switch card c/w Digital DALI Dimming
CDW12U5-D	CDW12U5 c/w Digital DSI Dimming
CDW12U5-BD	CDW12U5 with MLS Bus operation card - c/w Digital DSI Dimming
CDW12U5-BDWL	CDW12U5 with MLS Bus operation card and Wireless Switch card c/w Digital DSI Dimming
Note: Luminaire plugs are not included with CDW12U5 LCM	
WIRELESS BATTERYLESS SWITCHES FOR VERSIONS WITH SUFFIX WL	
K23476 BSS W	Wireless batteryless 1-gang switch - brushed stainless steel
K23476 WHI W	Wireless batteryless 1-gang switch - white
K23477 BSS W	Wireless batteryless 2-gang switch - brushed stainless steel
K23477 WHI W	Wireless batteryless 2-gang switch - white
PLUG-IN CARDS	
CDWBC	Replacement MLS Bus card
CDWDC	Plug-in Digital Dimming card
CDWWLC	Plug-in Wireless Switch card (This card is only to be installed by Ex-Or engineers)
LUMINAIRE LEADS (C/W PLUGS WITH EX-OR LOCKING MECHANISM)	
CPWL633	3m Luminaire Lead - 6-pole, 3-core GST 18/6 plug
CPWL635	5m Luminaire Lead - 6-pole, 3-core GST 18/6 plug
CPWL653	3m Luminaire Lead - 6-pole, 5-core GST 18/6 plug
CPWL655	5m Luminaire Lead - 6-pole, 5-core GST 18/6 plug
CPWL663MF	3m Luminaire Extension Cable - 6-pole, 6-core male/female GST 18/6
EMERGENCY LUMINAIRE LEADS (C/W PLUGS WITH EX-OR LOCKING MECHANISM)	
CPWL643	3m Emergency Luminaire Lead - 6-pole/4-core
CPWL645	5m Emergency Luminaire Lead - 6-pole/4-core
CPWL663	3m Emergency Luminaire Lead - 6-pole/6-core
CPWL665	5m Emergency Luminaire Lead - 6-pole/6-core
PLUGS	
CDWIP	Pack of 5 input plugs - replacements (5 supplied with every LCM)
CPWL6	GST 18/6 plug with Ex-Or locking mechanism (complete)
CPWL6S	GST-6 Ex-Or plug-locking mechanism (shell only)
ANCILLARY ITEMS	
UIRD1	USB Programming Dongle
QUICKSET PRO	QuickSet Pro Digital 2-Way Programmer
HC5A	Ten-button Universal Hand-held Controller c/w wall bracket
AVINTCDR	RS232 or RS485 Interface to AV equipment

Part Numbers

HARD WIRED INTELLIGENT LCM	
PRODUCT CODE	DESCRIPTION
4 CHANNEL	
CDH4U5	Connect Hard Wired Lighting Connection Centre - 4 Channel
CDH4U5-A	CDH4U5 c/w Analogue 1-10V Dimming
CDH4U5-B	CDH4U5 with MLS Bus Communication
CDH4U5-BA	CDH4U5 with MLS Bus Communication c/w Analogue 1-10V Dimming
CDH4U5-BD	CDH4U5 with MLS Bus Communication c/w Digital DSI Dimming
CDH4U5-BDALI	CDH4U5 with MLS Bus Communication c/w Digital DALI Dimming
CDH4U5-D	CDH4U5 c/w Digital DSI Dimming
CDH4U5-DALI	CDH4U5 c/w Digital DALI Dimming
CDH4U5-RB	CDH4U5 with MLS Bus Power Supply
CDH4U5-RBA	CDH4U5 with MLS Bus Power Supply c/w Analogue 1-10V Dimming
CDH4U5-RBD	CDH4U5 with MLS Bus Power Supply c/w Digital DSI Dimming
CDH4U5-RBDALI	CDH4U5 with MLS Bus Power Supply c/w Digital DALI Dimming
8 CHANNEL	
CDH8U5	Connect Hard Wired Lighting Connection Centre - 8 Channel
CDH8U5-A	CDH8U5 c/w 1-10V Analogue Dimming
CDH8U5-B	CDH8U5 with MLS Bus Communication
CDH8U5-BA	CDH8U5 with MLS Bus Communication c/w Analogue 1-10V Dimming
CDH8U5-BD	CDH8U5 with MLS Bus Communication c/w Digital DSI Dimming
CDH8U5-BDALI	CDH8U5 with MLS Bus Communication c/w Digital DALI Dimming
CDH8U5-RB	CDH8U5 with MLS Bus Power Supply
CDH8U5-RBA	CDH8U5 with MLS Bus Power Supply c/w Analogue 1-10V Dimming
CDH8U5-RBD	CDH8U5 with MLS Bus Power Supply c/w Digital DSI Dimming
CDH8U5-RBDALI	CDH8U5 with MLS Bus Power Supply c/w Digital DALI Dimming
PLUGS	
CDHSLOP	2-way black plug for switched live outputs (2 qty)
CDHBUSP	4-way red plug for MLS bus connection (1 qty)
CDHDOP	2-way blue plug for dimming outputs (2 qty)
CDHIP	3-way green plug for SELV switch inputs (5 qty)
CDHMIP	3-way black plug for 230V mains input (1 qty)
CDH4VFP CDH4U5 only	3-way black plug for volt free channels (2 qty)
CDHHDIP CDH8U5 only	10-way green plug for extension SELV switch inputs (1 qty)
CDH8VFP CDH8U5 only	5-way black plug for volt free channels (1 qty)
ANCILLARY ITEMS	
UIRD1	USB Programming Dongle
QUICKSET PRO	QuickSet Pro Digital 2-Way Programmer
HC5A	Ten-button Universal Hand-held Controller c/w wall bracket
K5612S MAG	Enclosure
AVINTCDR	RS232 or RS485 Interface to AV equipment

Part Numbers

CONNECT DIGITAL SENSORS (FOR ALL ABOVE LCMS):	
PRODUCT CODE	DESCRIPTION
MLS3000CDRF	Low Voltage PIR Sensor - flush mount
MLS3000CDRSM	Low Voltage PIR Sensor - surface mount
MLS3003CDRF	Low Voltage Tilting PIR Sensor - flush mount
MLS3003CDRSM	Low Voltage Tilting PIR Sensor - surface mount
MLS3003CDRHBF	Low Voltage Tilting Hi-Bay PIR Sensor - flush mount
MLS3003CDRHBSM	Low Voltage Tilting Hi-Bay PIR Sensor - surface mount
MLS3003CDRMBF	Low Voltage Tilting Mid-Bay PIR Sensor - flush mount
MLS3003CDRMBSM	Low Voltage Tilting Mid-Bay PIR Sensor - surface mount
MLS2401CDR	360° Microwave Sensor with photocell - flush mount
MLS2401CDRSM	360° Microwave Sensor with photocell - surface mount
MLS2500CDR	Directional Microwave Sensor with photocell - semi-flush mount
MLS2500CDRSM	Directional Microwave Sensor with photocell - surface mount
MLSM2002CDR	Integral Digital Control Module (requires DHS or DHW Mini Detector)
DHS	Mini Detector for use with MLSM2002CDR - silver bezel
DHW	Mini Detector for use with MLSM2002CDR - white bezel
MLSM2002CDRDHPBW	Mini Detector c/w Control Module and Plasterboard Mounting Kit - white bezel
SENSOR PATCH LEADS	
BT5E030GY	3m Cat 5 sensor lead c/w RJ45 connector plugs
BT5E050GY	5m Cat 5 sensor lead c/w RJ45 connector plugs
BT5E100GY	10m Cat 5 sensor lead c/w RJ45 connector plugs
ACCESSORIES	
DHFK-B	Flush-mounting Kit for use with Mini Detector - black
DHFK-S	Flush-mounting Kit for use with Mini Detector - silver
DHFK-W	Flush-mounting Kit for use with Mini Detector - white



Making light work for you

Ready to learn more
about making light work
for your organisation?

With over 30 years' experience in lighting control, we can help you.

Our dedicated team on the road is ready to visit your premises, conduct a comprehensive energy audit, interpret your specification and create a full design scheme to be integrated with your building's electrical system.

We'll also support you through the installation and commissioning process.

Call us today on [+44 \(0\)1942 719229](tel:+44(0)1942719229)
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