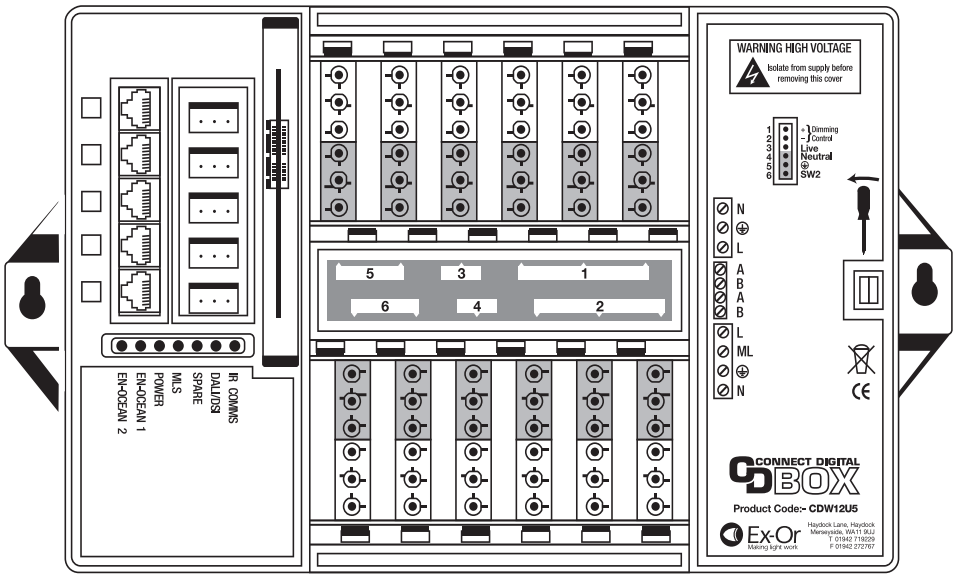
Ex-Or
by Honeywell

CDW12U5
Programmable Connect Digital Box



Installation and Commissioning Instructions

Introduction

The CDW12U5 is an intelligent connection box providing connections for up to twelve luminaires, up to five detectors and up to five switch inputs. The unit is designed to simplify installation whilst providing an intelligent managed lighting system, including provision for emergency lighting.

Fixing

The box should be attached to a suitable smooth, flat surface, using the two end-located fixing points. Consideration should be given to the need for access to install and maintain the lighting system when choosing a location for the box.

The box must not be distorted when fixing. If the box is to be mounted on an uneven surface it may be necessary to use packing pieces or self-adhesive stand-off feet.

When the box is to be rod-fixed, the fixing should be substantial enough to withstand the action of plugging and unplugging the connectors.

Electrical Connection

The connections to this equipment should be made only by a suitably qualified person and in accordance with current wiring regulations.

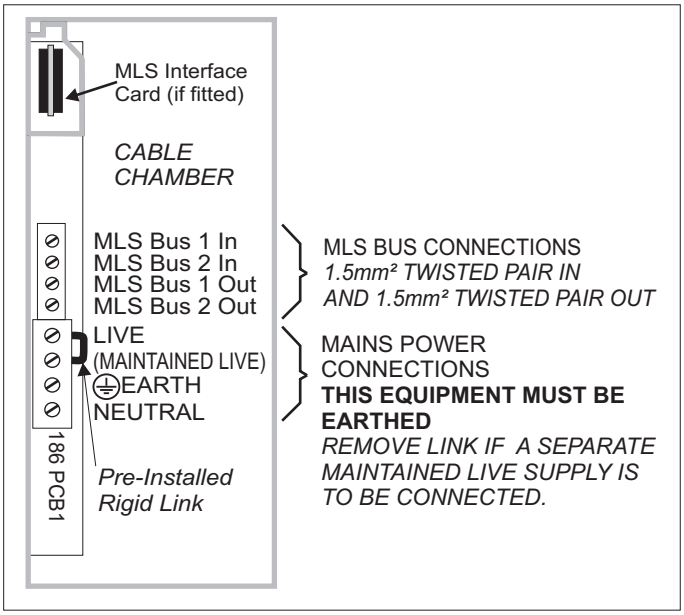
A means of disconnection must be incorporated in the fixed mains wiring to this box in accordance with current wiring regulations.

It is imperative that the MLS Bus be wired in the correct type of cable. Normally it should be 1.5mm² unscreened twisted pair. See Application Note AN4001. **Do not connect Mains to the MLS Bus.**

The cover of the cable chamber is removed by inserting the tip of a flat bladed screwdriver into the catch recess and exerting light pressure on the handle in an inboard direction while lifting the long outboard edge of the cover.

The cable entries, for 20mm conduit, bushes or glands are semi-pierced in the walls of the cable chamber and can easily be removed from the outside with a 20mm hole saw.

If the cables are not routed right into the box through conduit or trunking, a cable restraining gland must be fitted at the cable entry for strain relief.



Connecting the Luminaires

Separate versions of the CDW12U5 are provided to control DSI, DALI and 1-10V Ballasts. (See Part Numbers list on the back page.)

Note: Ballast types CANNOT BE MIXED on a single CDW12U5

The CDW12U5 is equipped with twelve GST 18/6 sockets for the connection of individual luminaires. These connections are equipped to take Ex-Or's Latching Plug Shells. Alternatively non-latching "Wieland style" plugs with hoods of up to 21mm depth may be fitted.

The luminaire sockets are grouped into six channels, each capable of independent control, as follows:

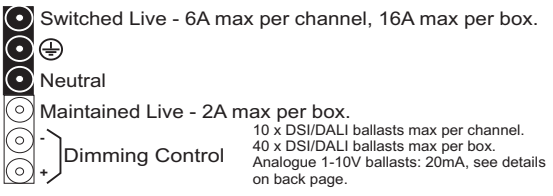
2 channels each controlling 3 luminaire sockets,

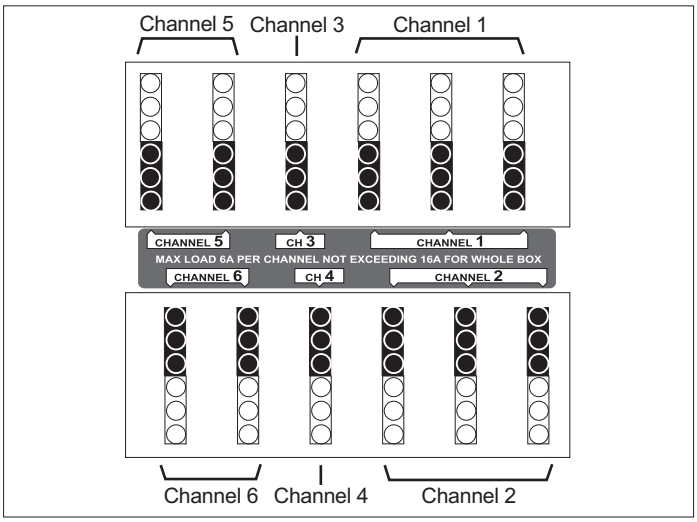
2 channels each controlling 2 luminaire sockets,

2 channels each controlling a single luminaire socket.

The CDW12U5 may be commissioned with configurations which allow two or more of the six channels to act together, in any combination required.

Connections Available on each Luminaire Socket.





Connecting the Detectors

The following SELV detectors are designed to interface to the CDW12U5:

MLS2500CDR	Corner-mount Microwave presence detector with photocell, semi-flush mounted. Available surface mounted (SM suffix)
MLS2401CDR	360º Microwave presence detector with photocell, flush mounted. Available surface mounted (SM suffix)
MLS2001CDR	360º PIR presence detector with photocell, flush mounted. Available surface mounted (SM suffix)
MLSM2002CDR	Controller for a 360º PIR detector with photocell. Used with the DHS or DHW mini-head to form an integral luminaire-mounted unit.

All connect to the CDW12U5 by means of an Ethernet-style RJ45 connector terminated patch lead which are available ready-made in 3m, 5m and 10m lengths. Up to five detectors may be connected to a CDW12U5 box. The maximum allowable cable length from the CDW12U5 to a detector is 100m.

Positioning the Detectors

The MLS2500CDR is designed to project below the ceiling and to sense a volume of space defined by an slanting cone, radiating from its flat face. Typically sited in the corner of a room ceiling diagonally opposite the door, it can then sense presence over the entire room. At the maximum sensitivity setting it can sense an area extending to 20m from its own position.

The MLS2401CDR is designed to be set in the plane of the ceiling and to sense a conical space vertically below such that its diameter at floor level is equal to 2.8 x the detector's height above floor level (typically 7m diameter with a ceiling height of 2.5m).

Note that in the above two cases microwave presence detection is not completely blocked by materials such as plasterboard, wood, and glass, so the possibility of unwanted presence detection through lightly built partitions should be considered when determining detector positioning and sensitivity settings.

The MLS2001CDR is designed to be set in the plane of the ceiling and to sense a conical space vertically below, such that its diameter at floor level is equal to 2.4 x the detector's height above floor level (typically 6m diameter with a ceiling height of 2.5m).

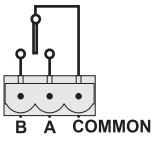
Fixing instructions for these three detector types are provided in the individual installation instruction sheets packed with them.

None of the three detector types above should be positioned within 0.25m of a luminaire.

The MLSM2002CDR and its associated DHS or DHW mini-head sensor are mounted within the structure of the luminaire with only the small oval face of the sensor showing. See installation instructions for this product.

Connecting the Switches

The CDW12U5 is equipped to take a set of up to five SELV switches which will typically be two way, centre-off, momentary rockers, (e.g. the MK K4900 range). The logical function of a switch can be configured from a wide range of options and its action can be associated with any combination of channels. The switch connection consists of a 3-pole pluggable terminal block comprising a common and two returns from normally open contacts. Two plugs are provided with each CDW12U5.



Note that if the SELV status of any one of the switches is compromised by reason of inadequate insulation or segregation of the cabling, then the SELV status of all other switches AND OF THE DETECTORS will also be compromised.

For connection of the SELV switches, multi-core cable such as 3-core 300/500V 0.75mm² cable to CMA Reference 3183Y or, for LS0H, to CMA Reference 3183B or CAT5 cable for example may be used. The maximum allowable cable length between the switch mechanism and the CDW12U5 switch terminal block is 100m.

Three separate singles cables should not be used.

Commissioning

The CDW12U5 is commissioned from a dedicated programme running on a portable PC.

Communication from the PC can be by means of a USB Infrared Transceiver which can signal directly to the CDW12U5's onboard Infrared port over a short range or via any attached detector over longer ranges. Alternatively a specialised wired serial link can be established with the CDW12U5 itself.

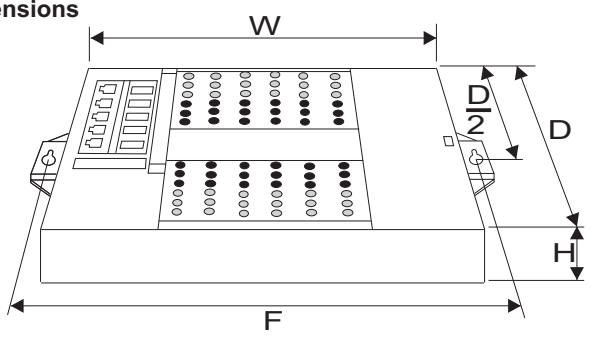
The main parameters available for configuration are tabulated below. These parameters may be re-programmed any number of times and all settings will be retained in the event of a power loss.

PARAMETERS	OPTIONS	DEFAULT
Per Box Parameters:		
Switch 1A	Including, for each of Switches 1-5: A = On; B = Off, or A = Brighten; B= Dim, or A = Start Emergency Test; B = End Emergency Test, or A = Short Press = On/Long Press = Dim; B = Short Press = Off/Long Press = Brighten, or Traditional OneSwitch action on switch element A or B, or Recall Scene Number 1-6 - one Scene Number per switch element	For all switches: Switch #A = On Switch #B = Off
Switch 1B		
Switch 2A		
Switch 2B		
Switch 3A		
Switch 3B		
Switch 4A		
Switch 4B		
Switch 5A		
Switch 5B		
Detector 1 - 5 ON Sensitivity	0-100% of maximum for detector model in question	Low/100% for all
Detector 1 - 5 OFF Sensitivity		
Per Channel Parameters:		
Ballast Type	Non-Dimming, 1% DSI, 3% DSI, 10% DSI, 1% DALI, 3% DALI, 10% DALI	1% DSI
Power Up	On / Off	On
Response	Auto, Manual/Bus, Manual	Auto
Off Delay (Main Time Delay)	10 seconds to 96 hours	20 minutes
Bus Connect	Yes / No	Yes
Zones 1-4	Zone number 1-100	No zone
Corridor 1-2: Begin	Zone number 1-100	No zone
Corridor 1-2: End	Zone number 1-100	No zone
Global 1-2 Rx	Yes / No	Yes
Start Lamps	Max / Min	Max
Entry Scene	Scene 1-6	Scene 1
Bright Out	Yes / No	No
Lamp Max	100%, 90%, 80%, 70%, 50% 45%, 40%, 35%, 30%, 25%, 20%, 15%, 10%	100%
Fade to Off	Yes / No	No
When Vacant (Turn-Off Options)	Off until next occupancy detection Minimum, 25% or Scene 6 until next occupancy detection Minimum, 25% or Scene 6 for 3 x Off Delay Minimum, 25% or Scene 6 until the building is empty	Off until next occupancy detection
Photocell Action	Regulate (100%, 90%, 80%, 70%, 60%, 50%) / Passive / Active / Disabled	Regulate 100%
Set-Point Low (Photocell Lower Threshold)	0-1024 (used in Regulating Scene 1)	350 - All channels
Set-Point High (Photocell Upper Threshold)	0-1024 (used in Regulating Scene 1)	450 - All channels
Scene 2	Output 0-100% (can be configured and downloaded directly)	80%
Scene 3	Output 0-100% (can be configured and downloaded directly)	40%
Scene 4	Output 0-100% (can be configured and downloaded directly)	20%
Scene 5	Output 0-100% (can be configured and downloaded directly)	10%
Scene 6	Output 0-100% (can be configured and downloaded directly)	5%
Assigned Switches	Swtich 1A - Switch 5B Assigned or Not Assigned to this channel	All switches assigned to all channels
Local/Share for each switch	Obey Locally only/Obey Locally and transmit command on MLS Bus	Local for all switches
Assigned Detectors	Detector 1 - Detector 5 Assigned or Not Assigned to this Channel	All detectors assigned to all channels
Assigned Photocell	Photocell 1 - Photocell 5 (in Detectors 1-5) Assigned or Not Assigned to this channel	Photocell 1 assigned to all channels
100 Hour Burn-In	Burn-in 100 hrs / Cancel / Resume	See Application Note AN4028 (limited functionality via HP2000)

Important Additional Notes

1. The CDW12U5 must be earthed as it provides the only path to earth for luminaires connected through it.
2. A dimming control output should be connected only to the control inputs of ballasts, never to another channel's dimming output and never to other types of equipment.
3. Although nominally 12V, the dimming control outputs are not to be treated as SELV, due to their passage through multiple luminaire enclosures and therefore should be treated with the same respect as mains with regard to wiring practice.
4. This equipment switches lights no more frequently than would a responsible human occupant. However, manufacturers of some particular lighting types (e.g. '2D' luminaires) may specify a maximum number of switching cycles and/or a minimum on-time in order to achieve a predicted lamp life. Please check with the manufacturer of the luminaires to ensure that they are compatible with automatic controls in this respect.

Dimensions



Height (H) = 50mm (108mm including plug and lead)
Width (W) = 315mm (361mm including mounting feet)
Depth (D) = 205mm
Fixing Centres (F) = 340mm
Weight = 1.85 kg

Technical Data

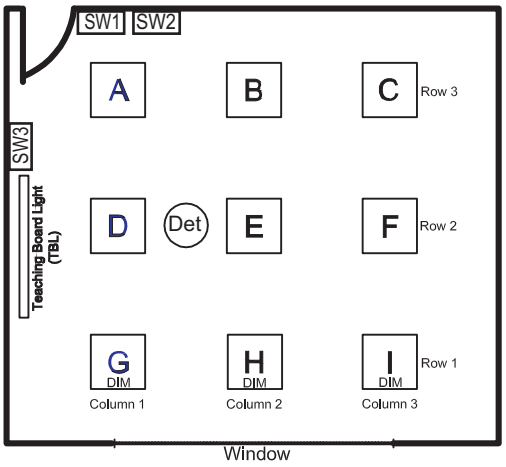
Operational Supply:	230V ~ 50Hz
Power Consumption:	18W maximum
Product Rating & Recommended Circuit Protection:	16A
Max Switched Live Load per Channel:	6A
Max Total Switched Live Load:	16A
Digital Dimming Ballasts per Channel:	10 maximum
Digital Dimming Ballasts per CD Box:	40 maximum
1-10V Dimming Ballasts per Channel:	20mA (SINKING only). See manufacturer's specification: worst case 10 ballasts but Philips HF-R, for example, 20 ballasts. Observe Switched Live Load limits above.
Maintained Live Output:	2A total per CD Box
Mains Supply Terminal Capacity:	1x2.5mm² or 1x4.0mm²
Override Switch Input Connector:	2.5mm²
MLS Bus Connector:	2.5mm²
MLS Bus Cable:	1.5mm² unscreened twisted pair - see Application Note AN4001
Case Material:	Polycarbonate
Case Finish:	Lightly textured gunmetal grey

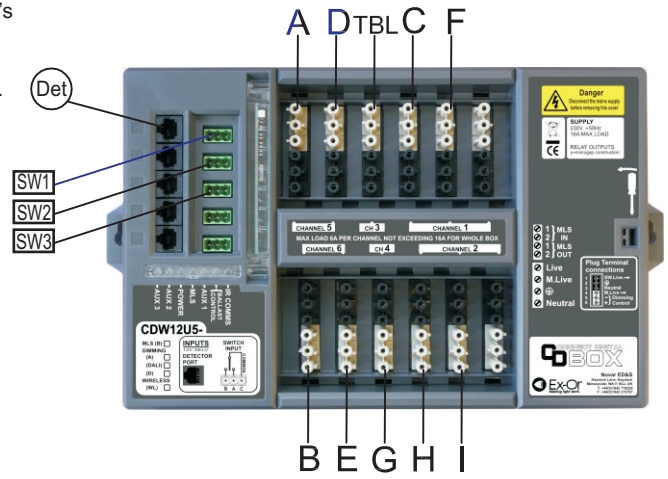
Part Numbers

CDW12U5	Programmable CD Box with 12 luminaire sockets, 5 detector sockets and 5 override sockets
CDW12U5-B	As above with MLS Bus operation card
CDW12U5-A	Programmable CD Box with 12 luminaire sockets, 5 detector sockets, 5 override sockets and digital dimming card for analogue 1-10V ballasts
CDW12U5-BA	As above with MLS Bus operation card
CDW12U5-BAWL	As above with MLS Bus card and wireless switch card
CDW12U5-DALI	Programmable CD Box with 12 luminaire sockets, 5 detector sockets, 5 override sockets and digital dimming card for DALI ballasts
CDW12U5-BDALI	As above with MLS Bus operation card
CDW12U5-BDALIWL	As above with MLS Bus card and wireless switch card
CDW12U5-D	Programmable CD Box with 12 luminaire sockets, 5 detector sockets, 5 override sockets and digital dimming card for DSI ballasts
CDW12U5-BD	As above with MLS Bus operation card
CDW12U5-BDWL	As above with MLS Bus card and wireless switch card
CDWDC	Plug-in Digital Dimming Card
CDWAC	Plug-in Analogue Dimming Card
CDWBC	Replacement MLS Bus Interface
CDWIP	Switch Input Plugs (set of 5)
Presence Detectors with photocell:	
MLS2500CDR	Corner-mount Microwave, semi-flush mounted
MLS2500CDRSM	As above - surface mounted
MLS2401CDR	360° Microwave, flush mounted
MLS2401CDRSM	As above - surface mounted
MLS2001CDR	360° PIR, flush mounted
MLS2001CDRSM	As above - surface mounted
MLSM2002CDR	Control module for integration within luminaire
DHS	360° PIR detector for use with MLSM2002CDR - silver bezel
DHW	360° PIR detector for use with MLSM2002CDR - white bezel
Detector Patch Leads:	
BT5E030GY	3m Patch Lead
BT5E050GY	5m Patch Lead
BT5E100GY	10m Patch Lead
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
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
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:	
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
CPWL6	GST 18/6 Plug & Ex-Or Latching Shell
RB2000	MLS Digital Bus Power Supply
RB2000LT	MLS Digital Bus Power Supply 'Lite'

An Example Configuration

A school classroom, where a sophisticated blend of manual and automatic control is required, with overall manual control by staff augmented by automatic dimming control of luminaires adjacent to large windows and the automatic switch-off of the lights following an often ragged quitting of the room at the end of a teaching session, where staff typically will not be the last to leave.





Detection Mode	:	Absence, (All Channels, 1-6)
Photocell Mode	:	Regulating, Window (Row 1) Only, (Channels 2 & 4)
Manual Switch Control	:	***3 Switches***: 1 Column 1, (Channels 4 & 5) 2 Columns 2 & 3, (Channels 1, 2 & 6) 3 Teaching Board, (Channel 3)

* In absence detection mode, lights are switched on manually.
* Window (Row 1) lights (G, H & I) will regulate in response to natural light.
* The manual switches can be used to turn on or off their associated lights independently.
* Lights will automatically turn off with absence (20 minutes time delay default).

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

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At the end of their useful life the packaging and product should be disposed of via a suitable recycling centre.
Do not dispose of with

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