

C-Bus Application Note

Boardroom

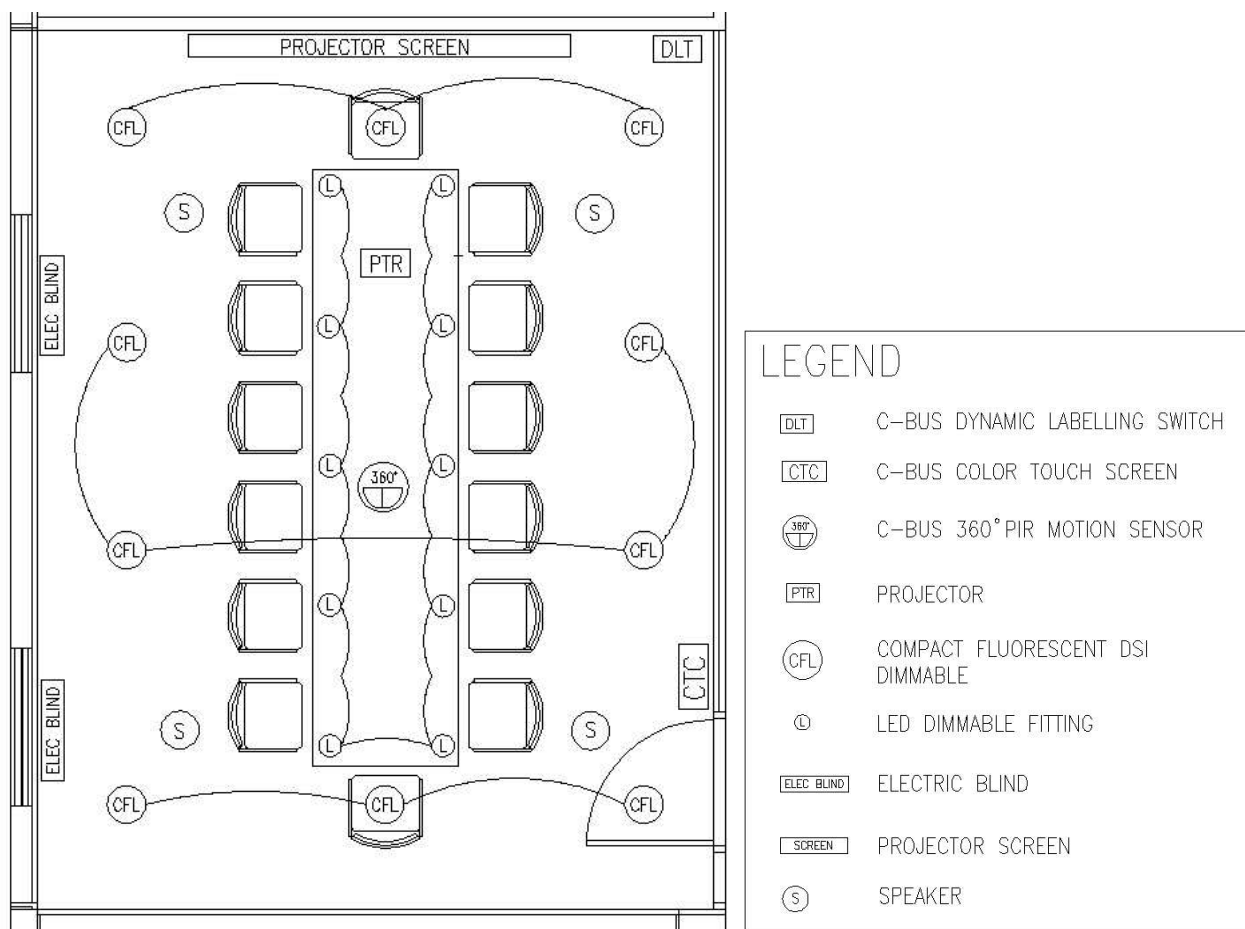
Overview

Larger meeting spaces or Boardrooms are an essential addition to any modern commercial office design. They are generally used not only as a multi-purpose space for day to day activities, but as a way to convey the professional image of the company. Technology and control can play an integral part in helping to achieve this. These meeting spaces need to be simple to use and provide a level of Audio Visual and Control to the people using the space. They also should incorporate energy savings to enhance the buildings overall energy efficiency.

Aside from lighting, other devices commonly seen in Boardrooms and larger meeting spaces include AV equipment, motorised blinds & projectors. A well planned and designed control system can integrate all this equipment from a central point of control.

All of this can be achieved using the Clipsal C-Bus system.

Example Area Layout & Features



Features:

- Dimmable LED fittings
- Dimmable Compact Fluorescent Light fittings (CFL)
- High level third party AV integration
- Motorised blinds
- Motorised projector screen
- C-Bus PIR Occupancy sensor
- C-Bus Colour Touch screen
- C-Bus LCD switch featuring Dynamic Labelling Technology (DLT)
- A/C After Hours ON/OFF control

Control Strategy – Boardroom

- **Central point of control**

A C-Bus touch screen ideally located near the entrance to the boardroom allows for total control of lighting, blinds and Audio Visual equipment. A C-Bus DLT switch can be also used for local control from the front of the room.

- **General lighting dimming**

Having the ability to dim lights not only provides a more suitable meeting environment, it provides for energy efficiency gains. C-Bus provides dimmer modules to control loads such as Low Voltage down lights (LV), Compact Fluorescent Light fittings (CFL) and LED.

- **Occupancy detection**

To conserve energy, occupancy sensors detect when a room is unoccupied and then ramp lighting OFF after a set period of time. If the sensors detect activity, lighting remains ON.

A “Manual ON, Auto OFF” control philosophy provides a simple and effective functionality between switches and occupancy sensor within an enclosed room.

- Manually switching lighting ON/DIM will also enable the room occupancy sensor. Lighting will remain ON or to a set level while the room is occupied and motion detected.
- Manually switching the lights OFF will disable the occupancy sensor.
- If the room is left unoccupied and no movement is detected for a set period of time the lighting will automatically ramp OFF.

- **Air Conditioning**

A high level interface to the BMS can be used (i.e. BACnet, OPC) to integrate with the buildings A/C system. The BMS can monitor an occupancy sensor and control the A/C accordingly providing energy efficiency gains.

Alternately a low level contact output from a C-Bus relay could be used. A C-Bus switch configured as a timer can provide manual after hour control of the A/C.

- **AV Equipment**

Audio Visual devices such as CD players and data projectors, can be controlled either directly from a C-Bus touch screen or through a third party device using high level integration methods such as the RS232 or TCP/IP protocols.

- **Blind control**

Clipsal C-Bus blind control relays can connect to motorised blinds allowing control from one button on any C-Bus switch. Blinds, through effective control, can assist to reduce the thermal transfer in a room, reducing reliance on artificial heating and cooling methods. Blinds can be controlled manually or automatically when used in conjunction with a C-Bus Light Level Sensor or time schedules.

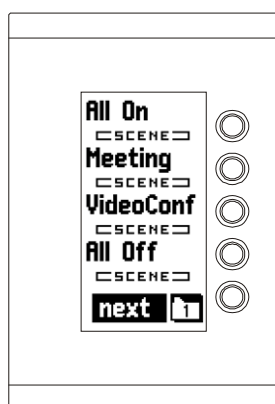
- **Screen Control**

Projector screens can be manually controlled from the DLT switch or as part of a scene for presentation mode, when connected to a Clipsal C-Bus blind control relay.

Typical Scene Configuration

SCENE	Front	Over Table	Rear	Feature	Projector	Projector Screen	Amplifier	Window Blind
All On	ON	ON	ON	ON	OFF	UP	OFF	UP
Meeting	ON	ON	ON	OFF	OFF	UP	OFF	DOWN
Video Conference	OFF	70%	70%	ON	ON	DOWN	ON	DOWN
All Off	OFF	OFF	OFF	OFF	OFF	UP	OFF	UP

Example Switch Function and Labelling

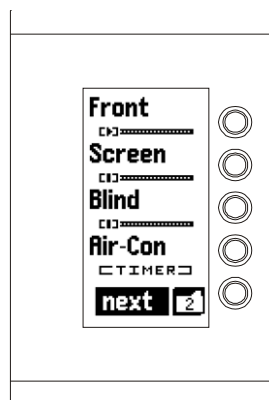


Page 1 Functions

- Button 1: All On Scene
- Button 2: Meeting Scene
- Button 3: Video Conference Scene
- Button 4: All Off Scene
- Next Page Button

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Page 2 Functions

- Button 5: Front Lights Dim
- Button 6: Screen Control Up/Down
- Button 7: Blind Control Up/Down
- Button 8: After hours A/C control
- Previous Page Button

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*Note: Labelling and functionality is customisable to suit project and client

Typical Touch Screen Layouts



Touch screen Main Page.

The Touch Screen main page should be configured with a simple and logical layout



Lighting Control Page

Lighting levels can be adjusted live and then saved into the touch screen to be replayed by the client when needed. This is done by using the "Scene Store" function which is pre-configured onto the touch screen



Password Page

Touch Screen pages can be given specific user access with the use of password protection

Touch Screen pages can be programmed to time-out and the user must login again for control.

After page time out a screen saver can be displayed

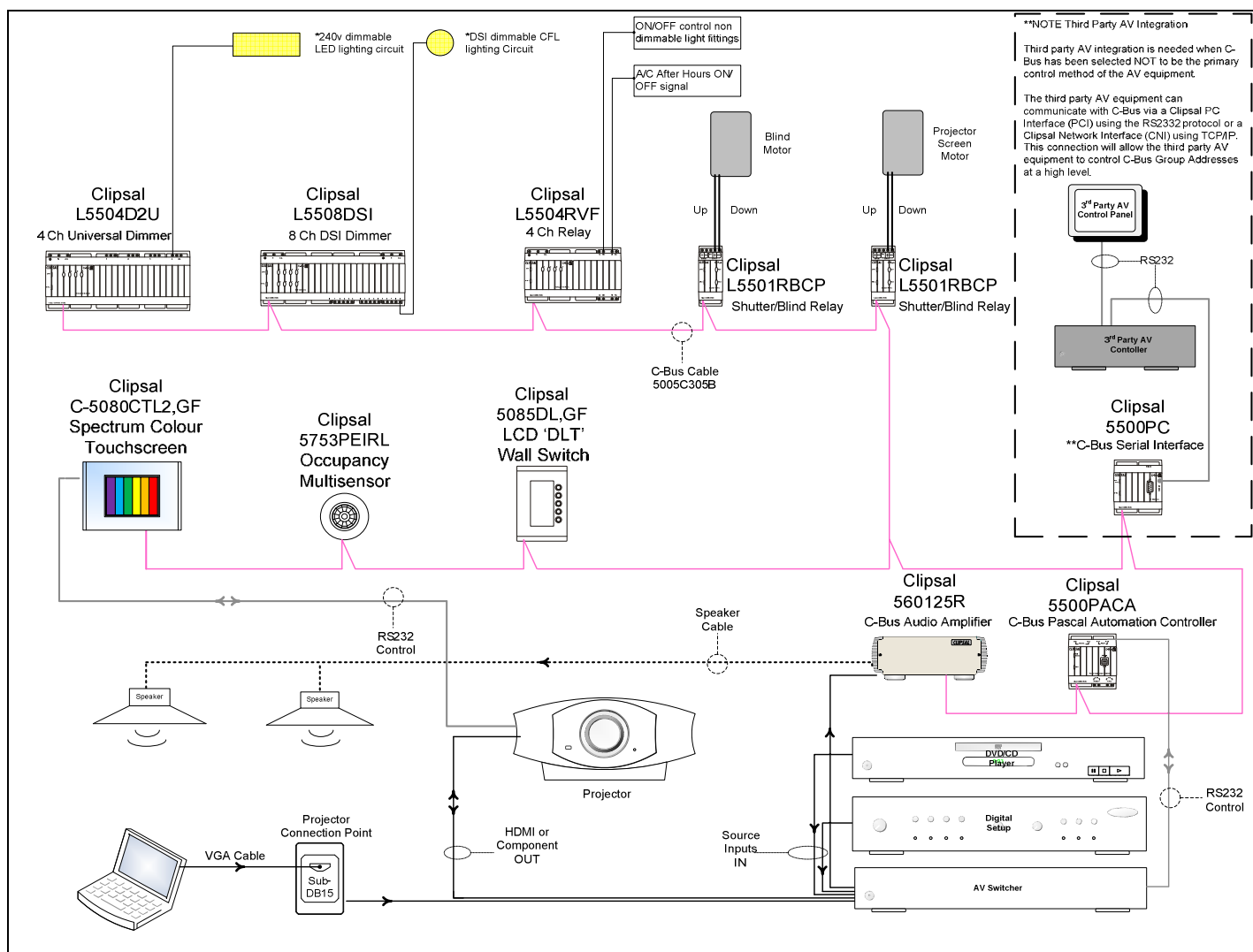


Audio Visual Control Page

Audio Visual equipment that is connected to the C-Bus network can be configured and controlled from the Touch Screen

Note: Screen layouts are customisable to suit each project and client

Boardroom Single Line Diagram



NOTES:

*Alternately DALI florescent light fittings could be controlled using a C-Bus/DALI gateway (5502DAL2PS) if required. Instead of DSI dimmable lighting fittings using C-Bus DSI (L5508DSI) output modules. C-Bus also can provide analogue 0-10v output modules (L5504AM) if 0-10v dimmable ballasts are used.

** If LED lighting is not 240v dimmable (Phase Control) then other common methods of control can be used including 0-10v/DSI/DALI/DMX provided that the LED controller type is compatible.

Typical Equipment

Part Number	Description	Quantity
L5504D2U	Clipsal 4 Ch Universal Dimmer	1
L5508DSI	Clipsal 8 Ch DSI Dimmer	1
L5504RVF	Clipsal 4 Ch Relay	1
L5501RBCP	Clipsal Shutter Relay Unit	2
5500PACA	Clipsal Pascal Automation Controller	1
5500PC	Clipsal PC Interface (RS232)	1
C-5080CTL2,GF	Clipsal 'Spectrum' Colour Touch screen	1
5753PEIRL	Clipsal 360 Degree Occupancy multisensor	1
560125R/2	Clipsal Remote Amplifier	1
5600K03-WE	Clipsal Ceiling Mount Speaker	2
5085DL,GF	Clipsal LCD Dynamic Labelling Switch	1

Third Party Integration

- **AMX & Crestron** AV equipment can communicate with C-Bus via a Clipsal PC Interface (PCI) using the RS232 protocol or a Clipsal Network Interface (CNI) using TCP/IP. This connection will allow the third party AV equipment to control C-Bus Group Addresses at a high level.
- **DALI** light fittings are almost a standard inclusion to any modern energy conscious office design. The Clipsal C-Bus/DALI gateway enables the mapping of C-Bus Group Addresses to DALI Addresses and or DALI Groups. This allows C-Bus devices to control DALI light fittings or other DALI equipment on the DALI line.
- **Building Management Systems (BMS)** can be integrated to the C-Bus system at either a low level using simple contact closures to communicate a state change. High level integration can be offered using a BACnet gateway (5000BACNET) or OPC server software license (5000SDINST/*) allowing multiple software applications to share C-Bus data, and achieve a high level interface between the C-Bus Lighting Control System and Building Management System. This integration allows for further energy efficiency gains when integrating to the buildings mechanical services such as air-conditioning.
- **TCP/IP** is a standard Ethernet protocol which can be used for integration using a Clipsal Network Interface (5500CN2).
- **RS232** is a common protocol used when integrating third party products. RS232 integration can be achieved using a Clipsal PC Interface (5500PC), C-Bus MKII touch screens and the Pascal Automation Controller (5500PACA).
- **Infra-red Control** can be achieved using a C-Bus NIRT 5034NIRT transmitter which maps C-Bus Group Addresses to IR commands.

DB Output Channel Schedule

Output unit	Channel Number	Description	Load Type	Control Gear	Number of Light Fittings
DSI Dimmer	1	Front Lights	CFL	DSI Ballast	3
	2	Centre Lights	CFL	DSI Ballast	3
	3	Rear Lights	CFL	DSI Ballast	3
	4	Spare	-	-	-
	5	Spare	-	-	-
	6	Spare	-	-	-
	7	Spare	-	-	-
	8	Spare	-	-	-
Universal Dimmer	1	Table Feature Lights	LED	Phase Control Driver	
	2	Spare	-	-	-
	3	Spare	-	-	-
	4	Spare	-	-	-
C-Bus Relay	1	A/C After Hours ON/OFF	240v supply	A/C	-
	2	Spare	-	-	-
	3	Spare	-	-	
	4	Spare	-	-	-
Shutter Blind Relay 1	1	Up	Motor	1A AC Motor	-
	2	Down	Motor		-

Shutter Blind Relay 2	1	Up	Motor	1A AC Motor	-
	2	Down	Motor		-

Resource Links

For further information including **Product Datasheets, Installation Instructions and Downloads** visit

<http://www.clipsal.com/cis>

It is recommended that a Clipsal C-Bus trained specialist is engaged on large integration projects for design programming and commissioning. This should be a C-Bus Approved installer, Clipsal PointOne systems Integrator or a Clipsal Platinum partner depending on the size of the project and level of integration required.

C-Bus Platinum partners are skilled in commercial projects covering areas such as TCP/IP, lighting control design, building management systems, lighting principles, as well as sound understandings of Building Code of Australia Section J, Australian Standards, NABERS and Green Star Ratings.

In addition, C-Bus Platinum members will provide professional detailed documentation and specifications for projects including handover training to the client.

Engaging a Clipsal Platinum Partner provides key benefits to the contractor, consultant and the end user including the manufacturers support from project design through to completion.

C-Bus Platinum Partner can also offer extended C-Bus product warranty from the standard 2 years to 4 years subject to the site being inspected and becoming a certified C-Bus Approved site.

For further information on the Clipsal Platinum Partner program visit

<http://www.clipsal.com/platinum>

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