

# C-Bus Application Note

## Function Rooms and Ballrooms

### Overview

A function venue or hotel will generally include large spaces purpose designed and built for holding functions. Function rooms and Ballrooms are designed for multiple uses including; corporate meetings, presentations, or large seated dinners like wedding or gala events. The spaces may be smaller purpose designed rooms, or be built as a larger space which can be partitioned appropriately. Regardless, each space needs to be flexible from a lighting and audio visual perspective.

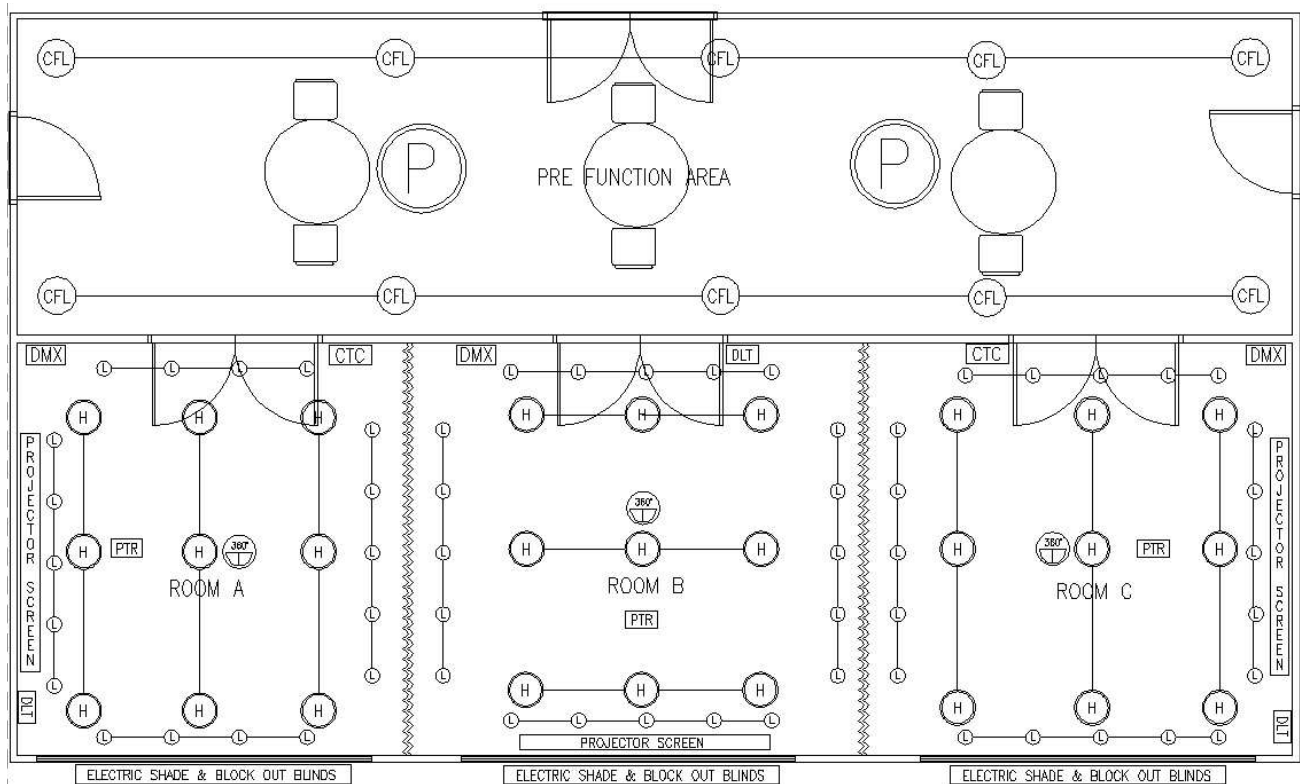
A lighting control system will allow the venue flexible control of a room or multiple joined rooms. The user will benefit from professional, seamless and intuitive control of the room for events, particular to the type of event required.

One of the key elements required of the lighting control system, is the smooth transition between lighting scenes and specific modes that can be easily customised and adapted according to events and time of day. When designing the room's functionality a lighting control system will provide the lighting designer the ability to deliver concepts and scenes that showcase the function areas full potential.

With the correct lighting control strategy energy efficiency gains can be achieved, providing additional benefits and savings to the building owner.

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

## Example Area Layout & Features



### Features:

- Dimmable LED fittings
- Dimmable Compact Fluorescent Light fittings (CFL)
- Motorised blinds
- Motorised projector screen
- C-Bus PIR Occupancy sensor
- C-Bus Colour Touch screen
- C-Bus LCD switch featuring Dynamic Labelling Technology (DLT)
- Staging desk DMX-512 control of C-Bus house lighting
- High level third party AV integration
- Room Join and local control lock out modes

### LEGEND

	C-BUS DYNAMIC LABELLING SWITCH
	C-BUS COLOR TOUCH SCREEN
	DMX WALLPLATE
	C-BUS 360° MOTION DETECTOR
	PROJECTOR
	COMPACT FLUORESCENT FITTING
	LED PENDANT FITTING
	HALOGEN FITTING
	LED FEATURE LIGHT

## Control Strategy – Function Rooms and Ballroom

- **Local Control**

Function rooms will be required to be setup in a variety of ways, so it is important to install multiple control points to accommodate any configuration that the space maybe used for. A C-Bus touch Screen or C-Bus wall switch located near the entrance of each individual meeting space, provides local control of the rooms in either individual or combined mode. A C-Bus DLT wall switch can also be used at a fixed podium, if further control is required. This provides total control of Lighting, Blinds and AV equipment from multiple points and gives a presenter control over their environment.

- **General lighting dimming**

Having the ability to dim lights not only provides a more suitable meeting environment, it provides for energy efficiency gains. The C-Bus system provides dimmer modules to control loads such as Low Voltage down lights (LV), Compact Fluorescent Light fittings (CFL), LED and multicolour RGB LED. Clipsal's Infinity Architectural dimmer range is specifically designed for this purpose and can controlled from both C-Bus and DMX.

- **Room Joining**

Fig. 1 depicts three rooms A, B, C that are separated by partition walls. This means that there are four possible configurations of the space:

- Individual Rooms A, B & C
- Rooms A & B Joined, Room C individual
- Rooms B & C Joined, Room A individual
- All Rooms Joined

Room joining functionality can be implemented from the C-Bus touch screen modes or from local DLT switches. The user can select which rooms are to be joined for larger functions and this can be password protects on the touch screen. Local room C-Bus switches can be locked out by the touch screen if required. The result is seamless control of lighting and scenes in the zones as one or as separate rooms.

- **Staging DMX-512 house lighting control**

Theatrical lighting desks using the DMX512 protocol, are commonly used in large function room environments. The use of the C-Bus Architectural dimmers for house lighting allows the rooms to be pulled under the partial or full control of the staging companies DMX-512 lighting desk. The rooms can be controlled independently or when joined. Local C-Bus control of lighting can be locked out when under staging desk control.

Each room would normally have a DMX wall plate for a staging company to connect a lighting desk for DMX-512 control of the room, when used for higher end theatrical performances or functions. Once the function has finished, control of the lighting can be returned to local C-Bus devices.

- **Lighting Control System Override**

In the event of an emergency, there is a requirement to bring on all connected lighting to 100%. In the event of a power failure when in standby generator mode, some lighting maybe required to be load shed automatically. The C-Bus Architectural dimmers range includes an additional set of hard wired priority inputs contacts, which can be used to override local lighting control.

- **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 sensors 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 Building Management System (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, this can provide energy efficiency gains. Alternately a low level contact output from a C-Bus relay can be used for integration to the AC system input. A C-Bus switch configured as a timer can provide manual after hours control of the A/C.

- **AV Equipment**

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

- **Blind or curtain 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 a touch screen or DLT switch or as part of a scene for presentation mode when connected to a Clipsal C-Bus shutter blind relay.

- **Time Schedules**

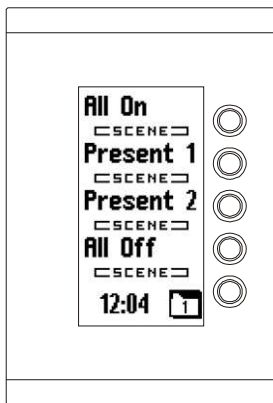
A touch screen can provide time scheduling of the rooms lighting scenes if required. This can be used as an after hour reset function by turning lighting off and closing the blinds ready for use the next day. This functionality would also provide energy saving benefits.

## Typical Scene Configuration

SCENE	LIGHTING					AV EQUIPMENT			
	Front	Centre 1	Centre 2	Rear	Feature	Projector	Projector Screen	Amp	Window Blind
All On	ON	ON	ON	ON	ON	OFF	UP	ON	UP
Presentation Mode 1	25%	75%	75%	75%	OFF	ON	DOWN	ON	DOWN
Presentation Mode 2	10%	50%	50%	50%	OFF	ON	DOWN	ON	DOWN
All Off	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	UP

These lighting scenes can be applied to the different room configurations.

## Example DLT Switch Function and Labelling

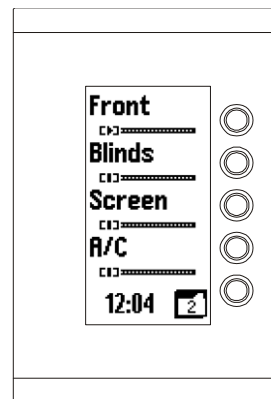


Clipsal 'DLT'

Wall Switch

### Page 1 Functions

- Button 1: All On Scene
- Button 2: Presentation Scene 1
- Button 3: Presentation Scene 2
- Button 4: All Off
- Next Page Button



Clipsal 'DLT'

Wall Switch

### Page 2 Functions

- Button 5: Front Lighting Dim
- Button 6: Blinds
- Button 7: Projector Screen Control
- Button 8: After Hours A/C Control
- Previous Page Button

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

# Typical Screen Layouts

Touch screen Main Page



Blind Control Page



Lighting Control Page



Room Joining Page



Scene Edit & Store



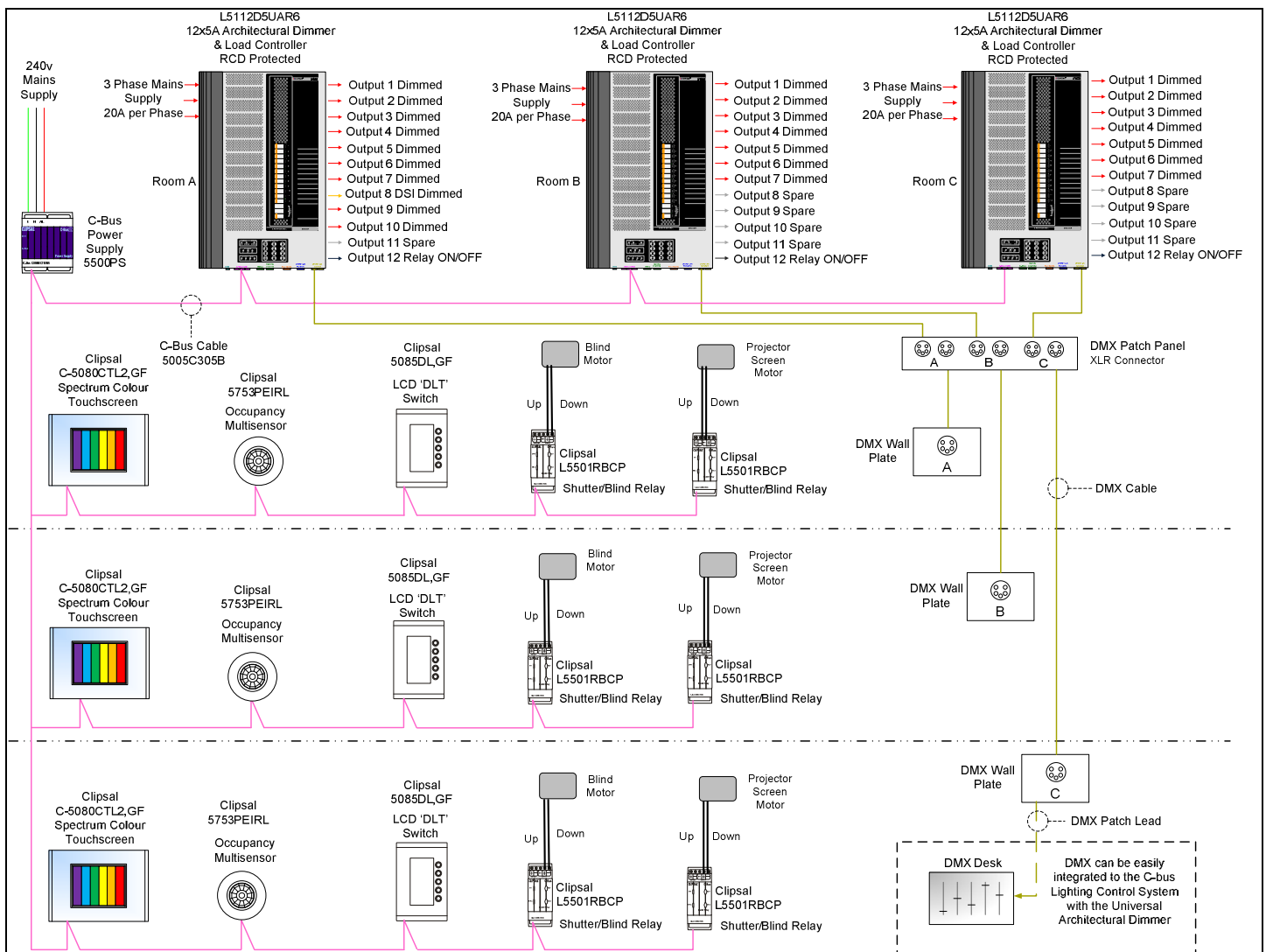
DMX Mode Page



Touch screen layouts are customisable to suit the project and client and can include:

- Display lighting status levels and control of each individual room
- Lighting Scenes can be configured live and saved by the client via the touch screen
- DMX mode allows staging desks to take control of the house lighting for that room
- Join Mode allows lighting in rooms to be linked when controlled
- Lock out mode disables local room switches
- Pages can be programmed to time-out to a logo page and require password for control.
- Pages can be given specific user access with the use of password protection

## Large Function Room Single Line Diagram



\*Note: The Clipsal Infinity range of high powered architectural dimmers contain modular output channel cards and are controllable from both C-Bus and DMX.

Optional ballast control cards DSI, DALI, 0-10V dc or Relay are available allowing customization to suit any site needs.



## Typical Equipment

Part Number	Description	Quantity
L5112D5UAR6	Clipsal 12 Ch Infinity Architectural Universal Dimmer 10A	3
L5501RBCP	Clipsal Shutter Relay Unit	6
5500PS	Clipsal C-Bus Power Supply 350mA	2
C-5080CTL2,GF	Clipsal 'Spectrum' Colour Touch screen	3
5753PEIRL	Clipsal 360 Degree Occupancy Multisensor	3
5085DL,GF	Clipsal LCD Dynamic Labelling Switch	3

## 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 allows 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 building design. The Clipsal C-Bus/DALI gateway enables the mapping of C-Bus Group Addresses to DALI Groups allowing for C-Bus devices to control light fittings on the DALI line. An additional modular card can be installed to the Infinity dimmer that enables C-Bus to send DALI broadcast commands.
- **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 the Building Management System. The synergy of both C-Bus and BMS systems can provide energy efficiency gains when scheduling function room bookings for HVAC and lighting requirements.
- **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 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 Fittings
Infinity 12 Ch 10A Dimmer	1	Room A Front Lights	2x50w Halogen	Phase Control	3
	2	Room A Centre Lights	-	-	3
	3	Room A Rear Lights	-	-	3
	4	Room A Feature Light 1	40w LED	Phase Control Driver	5
	5	Room A Feature Light 2	-	-	5
	6	Room A Feature Light 3	-	-	4
	7	Room A Feature Light 4	-	-	4
	8	Pre Function Area	CFL	DSI Ballast	10
	9	Pre Function Area	20x50W LED -	Phase Control Driver	1
	10	Pre Function Area	-	-	1
	11	Spare	-	-	-
	12	Room A A/C ON/OFF	240v Supply	A/C	N/A
Infinity 12 Ch 10A Dimmer	1	Room B Front Lights	2x50w Halogen	Phase Control	3
	2	Room B Centre Lights	-	-	3
	3	Room B Rear Lights	-	-	3
	4	Room B Feature Light 1	40w LED	Phase Control Driver	5
	5	Room B Feature Light 2	-	-	5
	6	Room B Feature Light 3	-	-	4
	7	Room B Feature Light 4	-	-	4
	8	Spare	-	-	-
	9	Spare	-	-	-
	10	Spare	-	-	-
	11	Spare	-	-	-

	12	Room B A/C ON/OFF	240v Supply	A/C	N/A
Infinity 12 Ch 10A Dimmer	1	Room C Front Lights	2x50w Halogen	Phase Control	3
	2	Room C Centre Lights	-	-	3
	3	Room C Rear Lights	-	-	3
	4	Room C Feature Light 1	40w LED	Phase Control Driver	5
	5	Room C Feature Light 2	-	-	5
	6	Room C Feature Light 3	-	-	4
	7	Room C Feature Light 4	-	-	4
	8	Spare	-	-	-
	9	Spare	-	-	-
	10	Spare	-	-	-
	11	Spare	-	-	-
	12	Room C A/C ON/OFF	240v Supply	A/C	N/A
Shutter Relay	1	Up	Motor	1A AC Motor	N/A
	2	Down	Motor		-
Shutter Relay	1	Up	Motor	1A AC Motor	-
	2	Down	Motor		-
Shutter Relay	1	Up	Motor	1A AC Motor	-
	2	Down	Motor		-
Shutter Relay	1	Up	Motor	1A AC Motor	-
	2	Down	Motor		-
Shutter Relay	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 for 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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