

Observatory Tower SYDNEY

C-Bus Energy Management System

*Case Study*⁸



Home automation in Sydney's most prestigious inner city address

The historical Rocks area of Sydney represents one of Australia's earliest and most significant areas of settlement. With the arrival of the Observatory Tower luxury apartments, the area now features one of Australia's most prestigious and sought after residential addresses.

The building's architects, Crone and Associates, set out to convert the former IBM building into one of Australia's premier inner city apartment buildings, complete with luxurious decor and Clipsal's C-Bus Energy Management and HomeMinder Home Automation Systems.

Automated for Smart Living

Smart living means more efficient time allocation, better communications, energy awareness and the ability of the home environment to suit a lifestyle.

Systems Integration Designer, AVD Home Technologies was given the task of completely redesigning every aspect of the 30 storey building's electronic systems to conform to this smart living concept.

This included a complete redesign of the building's cabling loom infrastructure through to each apartment's needs in terms of lighting control and interfacing to the Observatory Tower's other electronic services.



The Observatory Tower consists of 191 apartments and 9 penthouse suites and has been described as Australia's most intelligent residential address because it has introduced the concept of "smart living" to residential development.

Observatory Tower Sydney

Electronic Systems

Clipsal has made great inroads into building automation technology with its C-Bus Energy Management System and HomeMinder Home Automation System.

In Brief, Clipsal HomeMinder was selected to:

- Control all lighting, HVAC, security, floor heating, heated towel rails, motorised curtains in the apartments and penthouses with special global functions such as "Welcome Home", "Goodbye", "Goodnight" and "Vacation".
- Control lighting in all common areas such as the library, swimming pool, foyers and entrance hall.

Furthermore, Clipsal HomeMinder and C-Bus were also integrated with the building's other electronic services such as the AMX touch screens to provide:

- Energy management through monitored and restricted output of lighting.
- Control of building services, including common area lighting through computer based touch sensitive screens.

As well as specifying the Clipsal HomeMinder and C-Bus control systems, AVD also specified and integrated the building's:

- MATV, PAY TV and CCTV systems.
- Access control through all common areas and entrances using radio remote controls, Weigand Insertion keys and PINs.
- PABX and voice mail to approximately 1200 extensions.



Each C-Bus keypad can dim lighting up or down when pressed for 1.5 seconds.

- Video playback networks to all apartments.
- Closed circuit TV from 18 camera locations plus modulation of entrance location cameras to each apartment via the MATV backbone system.
- Entrance communications to 200 apartments through the telephone backbone cabling and PABX systems.

Systems Distribution Philosophy

From the outset, AVD developed a total systems integration package whereby each of the electrical and electronic products within the building had the ability to be integrated with each other.

To help achieve this, conventional methods of cabling were rethought. AVD decided upon a philosophy of cable distribution where all high and low voltage, intelligent and non-intelligent systems and cabling were distributed from common locations to each other.

Consequently, within the building, there are three major distribution points:

Central Distribution Point

This is located in the basement of the building from where all the main electrical and telecommunications services for the building emanate.

It contains equipment and head end distribution for the following systems:

- MATV, Foxtel, Galaxy and Free to Air head end equipment.
- Telstra ISDN and PSTN Lines.
- Closed Circuit Television.
- PABX equipment.
- AMX building apartment link equipment.
- Access control equipment.
- Clipsal HomeMinder and C-Bus equipment for common areas.



Each function within the apartment can be changed to suit specific needs of each resident.

Integration through central, intermediate and local Distribution Points

In all respects, the systems are routed through the building to be terminated in the second distribution location known as Common Area Distribution Point

Common Area Distribution Point

Located within each common area for each floor, allowances from the design stage were provided to offer close proximity of all services to each other.

This allows for maximum cross linking of the systems and technologies at this location if required. This location is known as the intermediate point for the systems distribution.

The following services emanate from this location:

- Power distribution to apartments.
- Television line connections.
- PABX intermediate distribution frame.
- AMX building apartment connection.
- Clipsal HomeMinder and C-Bus equipment for common areas.

From here the systems are distributed to each apartment to what is known as:

Local Distribution Point

Located in the kitchen area of each apartment, design allowances had been made to distribute the systems from a common location to each other so as to maximise the potential for cross linking of the different systems and formats now and for the future.

The following systems therefore emanate from this location:

- Power distribution consumer panel.
- Foxtel and Galaxy splitting to apartment points.
- PABX final distribution point.
- Clipsal HomeMinder and C-Bus equipment location for each apartment.

Local Distribution Point located in the kitchen area of each apartment.

Meeting Individual Requirements

C-Bus provides Savings in Mains Cabling

Had the distribution points been conventionally wired, the installation would have required many thousands of metres of costly mains cabling. However, multiple dimming and switching capabilities would have been limited and extremely difficult to achieve.

The advantage with C-Bus is that the system replaces much of the mains cabling with low cost Unshielded Twisted Pair (UTP) Cable for the control and monitoring of installations.

Indeed, the Observatory Tower required 56 thousand metres of UTP cable, not a great amount considering the complex lighting configurations that were achieved.

Simon Carves Electrical wired the distribution points and commissioned C-Bus lighting configurations for each apartment thirty four different lighting configurations were devised for the apartments.

This was achieved by designing the lighting configuration on software. This was downloaded onto the program through each of Clipsal HomeMinder's local distribution points.

Entering the Building

When residents arrive at the building they insert their Weigand type access key into the slot beside the front door.

The door opens and the residents enter the Observatory Tower Grand Entrance Foyer and take the lift to their floor.

Upon exiting the lift and opening the front door of their apartment they are welcomed by a pre-programmed "Welcome Home" scenario generated by the Clipsal HomeMinder Home Automation System. These scenarios are varied according to the clients' needs and preferences.

Clipsal HomeMinder enables 'Scenarios' set to Individual Requirements

Each apartment contains both the Clipsal HomeMinder and C-Bus systems with all functions being controlled through the C-Bus Key Input switch plates.

Electronic Environments designed the software for Clipsal HomeMinder and then commissioned the system so that residents could enjoy one-touch control of their preferred living environment. Altogether, forty six different programs were devised for the 200 apartments.

Aspects which determined these different programs were the varying layouts and number of bedrooms in each apartment.



Clipsal HomeMinder gives residents a new world of programmable options.

A base level program was individually programmed into each apartment incorporating the following functions or scenarios.

Welcome Home reactivates the apartment systems after the Goodbye or Vacation scenarios have been used or will simply provide welcome lighting to the apartment.

It will turn on an entrance scene of lighting to the apartment, reactivate the Clipsal HomeMinder time clock for the floor heating and heated towel rail and activate the airconditioning system.

In some circumstances, where electric curtains have been installed, the system opens the curtains automatically.

Goodbye is a single button function that shuts down any light or appliance that is left on, inadvertently, except for the floor heating and heated towel rails.

Goodnight, as the name suggests, shuts down all the systems when the residents go to bed.

Vacation completely shuts the apartment down. Everything from heated towel rails to the lighting and airconditioning are left in a dormant state until the "Welcome" function is used.

The Master Bedroom also features another 4 gang C-Bus keypad, located on the right hand side of the bed. Programmed into this keypad are four scenarios including: "Goodnight," "Bed Main Lights," "Bed Reading Lights" and "Ensuite".



"Welcome Home" Scenario activates lights, floor heating, towel rail and airconditioning.

Automated for multipoint switching and dimming features



Even the heated towel rail is programmed to operate at set times.

Multipoint Dimming in each Apartment

An added bonus is C-Bus' keypads soft touch operation. These are programmed for on/off switching and to dim up or down when pressed for 1.5 seconds.

Even bathroom lighting is programmed to dim down to 30% capacity between 12am and 5am, to minimise glare in the middle of the night.

The heated towel rail in the same bathroom area is automated to come on between the hours of 5am and 8am and between 5pm and 8pm. This can be manually overridden at any time.

Each function within the apartment can be changed to suit specific needs of each resident if required. This is achieved through the computer interface point on the kitchen bench.

Central Control of Building Systems

There is a total interlinking of the building control systems within Observatory Tower.

Everything from closed circuit television, vocal communications, access control, security and concierge monitoring, lift security and access control, fire door sensing and the entire lighting systems, including the common areas, has the ability to be communicated by one means or another.

Monitoring of the systems is also located at the Concierge Desk. From this location, the management can monitor all aspects

of the building, from knowing who is at the front door to access control of the library, fire indication and response requirements to simply providing telephone support to apartment occupiers, 24 hours a day.

The systems designed for the Concierge are simple and intuitive. Interaction to the different systems is provided via touch sensitive screens using software and graphical user interfaces specifically designed for the project.

In the future, Clipsal C-Bus and Home-Minder have the potential to allow central control of each apartment's lighting and airconditioning from the Concierge's office via PC.



Another set of scenarios can be activated from the bedside keypad.

Control of Common Areas via Clipsal HomeMinder

Clipsal HomeMinder was also commissioned to program lighting in the lift lobby, car park, swimming pool, gymnasium and library.

Control of the common areas is accessed via a Clipsal HomeMinder control PC Interface. This is located in the security office on the ground floor.

At any time the concierge can check the status of circuits in the common areas and re-program any changes.



Functions can be reprogrammed at the computer interface point, situated above the kitchen bench.

Multipoint Dimming

Multipoint Dimming in Library

The Observatory Tower Library is a spectacular feature of the apartments, featuring low voltage downlights, table lamps and case lights.

Eight C-Bus keypads are located throughout the library, programmed to perform a number of pre-set lighting sequences.

One keypad pre-set can dim lights from 100% capacity to the following levels; 75%, 50% and 25%, while another pre-set will activate fireplace lighting and wall lights only.

So impressive was the use of UTP cable in this location, that to achieve the same results with conventional mains cabling would have required many complicated networks of cabling with up to forty dimmable switches.

C-Bus provides the library with impressive dimming features.

The Benefits of C-Bus Control

Lighting the Spire

After completion of the Observatory Tower project, the management decided to add exterior lighting to the spire.

An advantage of C-Bus is that any addition such as this is easily achieved. A C-Bus network bridge was simply installed on the roof with a PE Sensor. C-Bus is programmed to illuminate the spire at 200 lux and programmed to switch off at 600 lux.

The Management is very impressed with the Clipsal C-Bus and HomeMinder systems. Maintenance of both these systems have been described as very reliable and extremely user friendly.

Features	Benefits
Use of Unshielded Twisted Pair Cable	Savings in mains cabling
Programmable lighting options	Flexible lighting control
Central control of common areas	Convenient single point control
Alterations can be programmed	High degree of customisation possible, to suit individual requirements

Project	Observatory Tower, Sydney, Australia
Architect	Crone and Associates
C-Bus Installer and Programming Services	Simon Carves Electrical
HomeMinder Programming	Electronic Environments
Building Automation System	\$500,000
Total Project Value	\$150 million

Installation Data

A product of Clipsal Integrated Systems Pty Ltd

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