CLIPSAL

multi room audio

C-Bus ENABLED

Multi Room Audio Matrix Switcher

User's Guide

560884

V1.0 Dec 2005

Contents

1.0   Description

The Multi Room Audio (MRA) Matrix Switcher is the heart of a C-Bus enabled audio distribution system. Used in conjunction with Multi Room Audio Amplifiers, the Matrix Switcher accepts inputs from several audio sources and distributes them to up to eight zones. Each zone (equipped with one or more Amplifiers) has control over which source it receives.

Two mono audio inputs are provided to broadcast messages to all zones simultaneously. These can be used with audio sources such as a door bell, intercom or public address system.

Audio distribution is performed via digital connection to maintain audio quality. Amplifiers may be located up to 45 metres from the Matrix Switcher. C-Bus switches are used in each zone to select the source and adjust the volume, bass and treble.

The Matrix Switcher is installed in a room together with audio sources such as a radio tuner, CD player and digital TV set top box. Connections are made to the Amplifiers and to C-Bus.

2.0   Important Notes

·   The Matrix Switcher is suitable for operation in moderate to tropical climates. It should be mounted indoors only.

·   Use only the supplied power cord to connect the unit to the mains supply. A replacement cord can be purchased from Clipsal Integrated Systems if required.

·   Do not expose the unit to dripping or splashing.

·   Do not place objects filled with liquid (such as vases) on the unit.

·   Do not cover or block the vents on the Matrix Switcher enclosure.

·   The digital audio outputs must only be used with MRA Amplifiers.

·   Both C-Bus and digital audio cables are terminated with RJ45 connectors. Never plug either of these cables into the wrong socket. C-Bus cable is pink. The RJ45 sockets on the rear of the Matrix Switcher are identified in Figure 1.
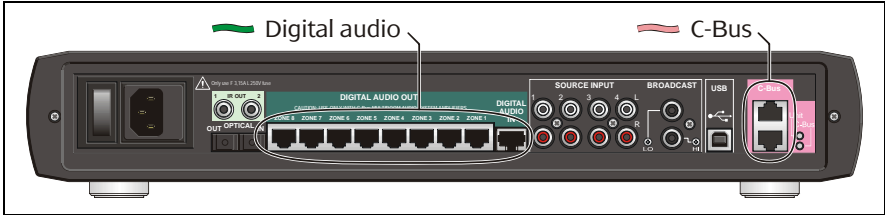
Figure 1 – Never plug a C-Bus cable into a digital audio socket or vice versa

3.0 Using the Matrix Switcher

This section describes how to use a Matrix Switcher which has been installed as part of a Multi Room Audio system. Installation details are provided in the Multi Room Audio System Installation Manual.

3.1 Powering the Unit

The Matrix Switcher must be plugged into an AC mains power outlet, via the supplied IEC type cable. A switch is located next to the AC power socket at the rear of the unit. Push the top of the switch inwards to turn the Matrix Switcher on.

3.2 Front Panel Control

The front panel of the Matrix Switcher (shown in Figure 2) has eight buttons which are used to view and control the status of each zone.

Figure 2 – Matrix Switcher front panel

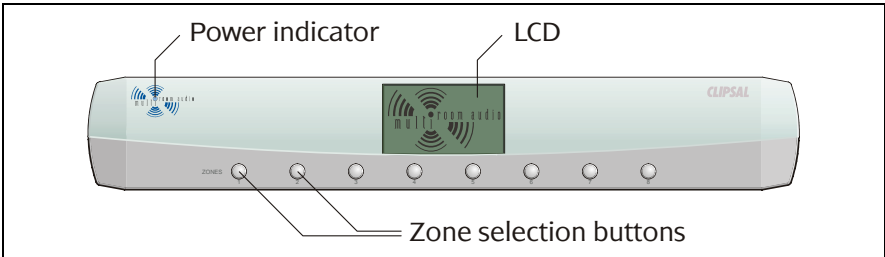NOTE   The power indicator may be disabled by the installer (using the MARPA configuration software).

Pressing a Zone selection button displays the name and input source of the zone (as shown in Figure 3). Pressing the button again within 8 seconds selects the next input source which is routed to the zone.

In a typical Multi Room Audio system installation, there are several ways to change a zone's input source. You can do this via:

· a Zone selection button on the Matrix Switcher
· the Source selection buttons on a Desktop Amplifier
· a remote control used with a Desktop Amplifier
· an appropriately configured C-Bus wall switch or touch screen.
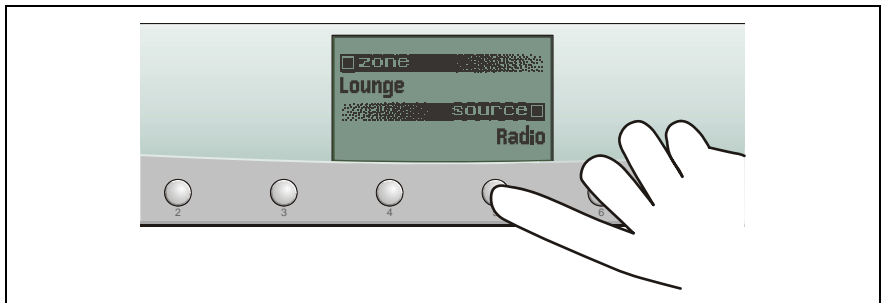
Figure 3 – In this example the Radio input is selected for the Lounge (zone 5)

4.0   Annunciation

The Matrix Switcher has the capability of announcing the name of an input source whenever it is selected. This annunciation is broadcast through the speakers in the zone where the input source has changed.

Annunciation provides instant feedback when changing the source selection using a C-Bus switch, Amplifier or remote control.

NOTE   The annunciation feature may be disabled by the installer (using the MARPA configuration software).

5.0   Rear Panel Connections

All connections to the Matrix Switcher are made via the rear panel. Connectors and indicators are identified in Figure 4 and described in Table 1.
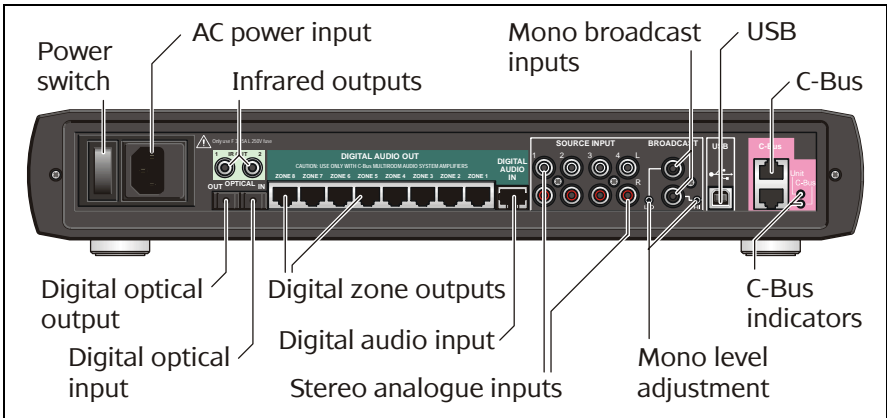
Figure 4 – Matrix Switcher rear panel connectors and indicators

Connection /Indicator	Description
Power switch	Switches the mains power input on and off.
Mains power input (IEC)	Connect mains here to power the Matrix Switcher. Since the Matrix Switcher provides power to connected Amplifiers, this connection also affects Amplifiers which do not have an external power supply.
Infrared outputs (×2)	Use these 3.5 mm sockets to connect to IR Emitter Leads. IR Emitters can be coupled to IR receivers on equipment, providing remote control from any zone through the Multi Room Audio system.

Connection /Indicator	Description
Mono broadcast inputs (×2)	Line level mono audio connected here is broadcast to all zones which have an analogue input source selected. There are two mono inputs with different priorities. Audio connected to the LO input is transmitted by Amplifiers at their current level. Audio connected to the HI input is transmitted at a preset level. Amplifiers which have a digital input source selected, change to the fourth analogue source so they can receive the high priority broadcast audio. Note: High priority (HI) broadcast audio uses left channel speakers. Low priority (LO) broadcast audio uses right channel speakers.
USB (Type B)	This is used by the installer to configure the Matrix Switcher.
C-Bus (×2)	Connects to the C-Bus network.
Digital optical output	Retransmits the data received by the digital optical input.
Digital optical input	Use this to connect a digital optical audio source to be distributed to any of the eight zones. The digital audio format must be 44.1 or 48 kHz stereo. Some digital audio formats (such as surround sound) are not compatible with the Matrix Switcher.
Digital zone outputs (×8)	Each zone output is used to connect the Matrix Switcher to one Amplifier in each zone. Additional Amplifiers can be added to a zone by connecting their Digital Audio In socket to the Digital Audio Out of an existing Amplifier.
Digital audio input	A Multi Room Audio Distribution Unit can be connected to this input, providing an additional stereo audio input.

Connection /Indicator	Description
Stereo analogue inputs (4× RCA pairs)	Connect up to four stereo analogue inputs to be distributed to any of the eight zones.
Mono level adjustment (×2)	These adjust the level of the audio source connected to the mono broadcast inputs. Use a small flat head screwdriver to rotate the control if the audio source is too quiet or loud.
C-Bus indicators	<u>Unit</u> On: C-Bus network connected Flashing: Data exchange in progress <u>C-Bus</u> On: C-Bus network operational Off: Insufficient C-Bus power or clock Flashing: Insufficient C-Bus power

Table 1 – Matrix Switcher connectors and indicators

6.0   Care Instructions

The Matrix Switcher contains electrical and electronic parts. Note the following precautions:

- Clean using a soft lint free cloth.
- Do not use chemicals or spray cleaners when cleaning.
- Do not operate with wet hands.
- Do not use hard, sharp objects to select the controls.
- Allow adequate ventilation. Do not cover the unit.
- The Matrix Switcher is designed for indoor use only.
- Keep the unit away from water and other liquids.
- Do not expose the unit to high temperatures.

6.1   Replacing the Fuse

The fuse is located next to the AC power socket on the rear of the Matrix Switcher (as shown in Figure 5). To replace the fuse:

1) Switch the mains off at the power point. Unplug the power cord at both ends (the power point and Matrix Switcher).
2) Insert your finger against the right edge of the socket and lift the fuse compartment outwards.
3) Use a small instrument such as a screwdriver or pen. Insert the instrument through the hole on the right hand side of the fuse compartment, and push the fuse out.
4) Insert a replacement 3.15 A Fast Blow 20 × 5 mm fuse.
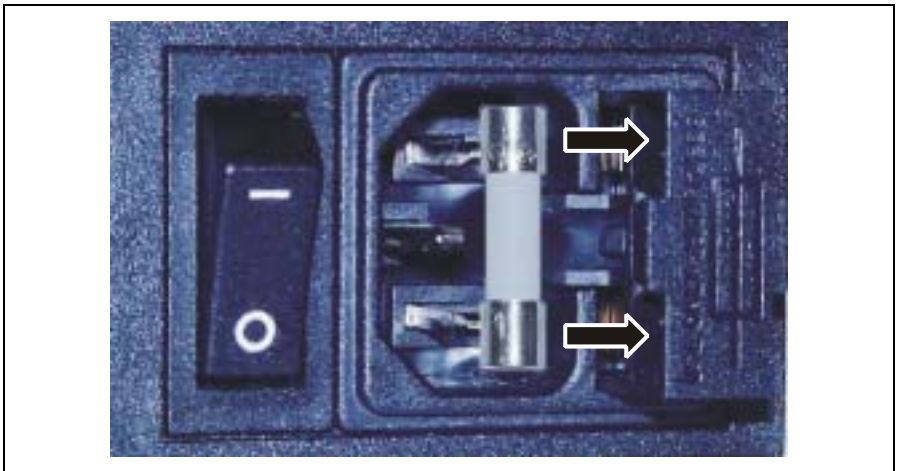5) Close the fuse compartment by pushing it inwards.

Figure 5 – Replacing the fuse

7.0   Broadcast Audio

The Matrix Switcher includes two broadcast inputs; 1 × high priority (labelled HI) and 1 × low priority (labelled LO). These allow a mono input such as a door bell, telephone extender or alarm to be broadcast throughout the Multi Room Audio system.

Audio connected to the low priority input is broadcast at the currently set volume, to all amplifiers which are switched on and have Source Input 1, 2, 3 or 4 selected.

Audio connected to the high priority input is broadcast to all amplifiers at a volume set by the installer (using the MARPA configuration software). Any Amplifiers which are in standby mode are switched on. All Amplifiers that are not switched off temporarily change to Source Input 4 to ensure the audio is broadcast as widely as possible. Five seconds after the broadcast audio ceases, Amplifiers return to standby (if applicable) and to their previously set volume.

These actions may vary depending on how the installer has configured the Matrix Switcher.

NOTES   Audio connected to a high priority broadcast input must be of sufficient volume to trigger a broadcast.

A high priority (HI) broadcast uses left channel speakers. A low priority (LO) broadcast uses right channel speakers.

8.0   Troubleshooting

Symptom	Possible Explanation
The Matrix Switcher no longer responds to button presses.	Switch the Matrix Switcher off for several seconds, then on. Use the power switch on the rear of the Matrix Switcher, next to the AC power socket.
Dynamic labels don't work on a C-Bus DLT wall switch.	There are several options which need to be selected for labels to function. These options are located: · on the More panel accessed by clicking the "More...." button on the Amplifier's C-Bus Control tab in Toolkit · on the DLT wall switch's Global tab in Toolkit · on the Zones branch of the Project tree in the MARPA software.
An Amplifier emits a high pitched screeching sound when a particular source is selected.	This may occur if an output of an Amplifier is connected to the input of the Matrix Switcher. Such a connection should be avoided as it can cause a feedback loop.
The Matrix Switcher does not power up.	The fuse may need replacing. Fuse replacement is described on Page 11.
Audio is not broadcast via the Matrix Switcher's high priority (HI) broadcast input.	The level of the audio connected to the broadcast input may not be sufficient to trigger the broadcast.
Cannot hear any sound when using the optical input	The digital audio source may be connected to the optical output instead of the input. Some digital audio formats (such as surround sound) are in-compatible with the MRA system.

9.0   Electrical Specifications
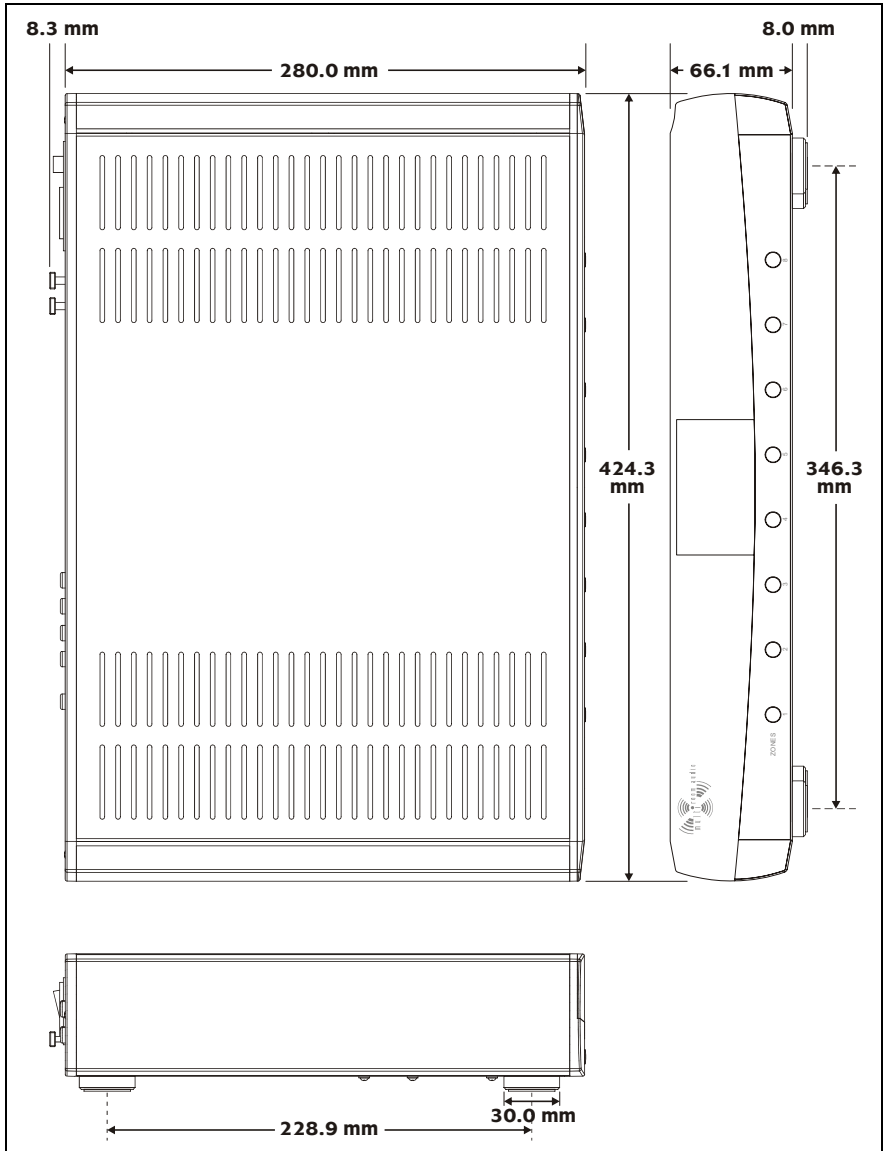
9.1   Matrix Switcher

Parameter	Description
Supply voltage	240 V AC
Mains frequency range	47 to 53 Hz and 57 to 63 Hz
AC input impedance	47 kΩ
Power consumption	200 W maximum
C-Bus output voltage	36 V DC maximum
C-Bus output current	< 330 mA
Network clock and burden	Software selectable
Analogue input signal level (Source inputs)	2.8 V p-p maximum (47 k Ω)
A/D conversion	16 bit PCM
Operating temperature	10 to 40 °C (50 to 104 °F)
Operating humidity	10 to 90% RH (non-condensing)

9.2   System Audio Performance

Parameter	Matrix Switcher + Amplifier*
Frequency response	40 Hz to 20 kHz (+2.4/−0.75 db)
Total harmonic distortion (1 kHz, 20 W RMS into 4 Ω)	0.16%
Signal to noise ratio	> 63 dB (peak, unweighted)

* Analogue inputs of Matrix Switcher, measured from Amplifier speaker outputs

10.0 Mechanical Specifications

8.3 mm

280.0 mm

8.0 mm

66.1 mm

424.3 mm

346.3 mm

228.9 mm

30.0 mm

11.0 Standards Complied

DECLARATIONS OF CONFORMITY

Australian/New Zealand EMC & Electrical Safety Frameworks and Standards
The Multi Room Audio Matrix Switcher complies with the following:

Regulation	Standard	Title
Electrical Safety	AS/NZS 60065	Audio, video and similar electronic apparatus - Safety requirements
EMC (C-Tick)	AS/NZS CISPR 22	Information technology equipment - Radio disturbance characteristics (emissions)

12.0 Warranty

The Multi Room Audio Matrix Switcher carries a two year warranty against manufacturing defects (refer to the Warranty Statement).

Technical Support and Troubleshooting

For further assistance in using this product, consult your nearest Clipsal Integrated Systems (CIS) Sales Representative or Technical Support Officer.

Technical Support Contact Numbers	
Australia	1300 722 247 (CIS Technical Support Hotline)
New Zealand	0800 888 219 (CIS Technical Support Hotline)

Technical Support email: techsupport.cis@clipsal.com.au
Sales support email: sales.cis@clipsal.com.au

A list of worldwide contacts, additional product information and technical resources is provided at http://www.clipsal.com/cis/

Product of Clipsal Integrated Systems Pty Ltd
ABN 15 089 444 931

Head Office
12 Park Terrace, Bowden, SA 5007, Australia
Telephone: (+61) 8 8345 9500
Facsimile: (+61) 8 8346 0845
Email: cis@clipsal.com.au
Web: http://www.clipsal.com/cis/   1031974