IQDAA00
4 Channel Digital to Analog Audio Converter

CE

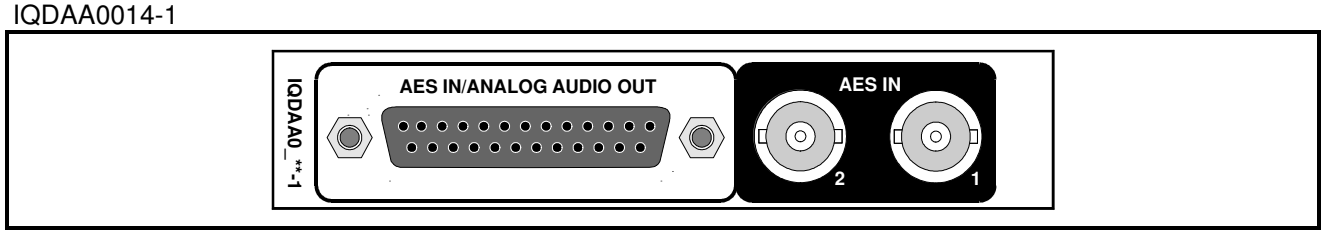
Table of Contents

Module Description

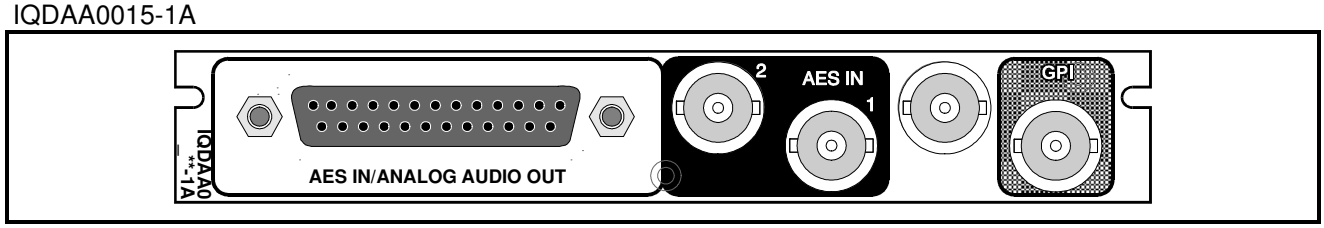
The IQDAA00 converts two AES/EBU digital audio streams into two analog stereo pairs, or four analog mono channels. The AES streams are converted to analog with 20-bit resolution, and the IQDAA00 also provides proc. amp control, channel routing and mixing, up to 0.5s of tracking audio delay and additional fixed delay of up to 3 s adjustable in 1 ms steps.

Rear Panel Views

IQDAA0014-1



IQDAA0015-1A



This manual covers the following products:

IQDAA0015-1A Analog Audio DAC. 2 unbalanced/balanced AES/EBU inputs, 4 balanced analog audio outputs, 1 GPI

IQDAA0014-1 Analog Audio DAC. 2 unbalanced/balanced AES/EBU inputs, 4 balanced analog audio outputs

Product Comparison

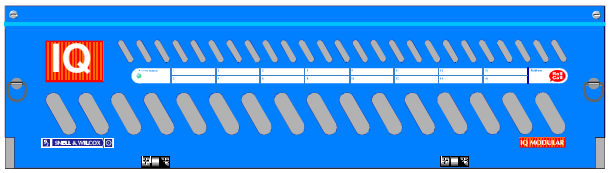
Product	AES Inputs		Analog Outputs	GPI	Width & Style
	Number	Type			
IQDAA0015-1A	2	BAL*	4 BAL	1	Single A
	or 1	BAL*			
	and 1	UNBAL*			
	or 2	UNBAL*			
IQDAA0014-1	2	BAL*	4 BAL	No	Single O
	or 1	BAL*			
	and 1	UNBAL*			
	or 2	UNBAL*			

* Input type is automatically detected.

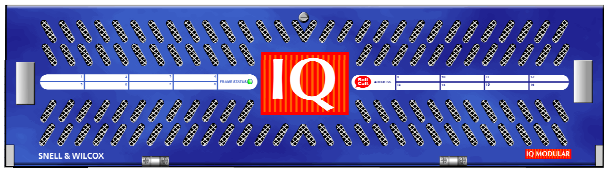
Note that there are two styles of rear panels available. They are not interchangeable between the two styles of enclosures. However, the cards may be fitted into any style of enclosure.

'A' Style Enclosure

Rear panels ***with*** the suffix A may only be fitted into the 'A' style enclosure shown below.



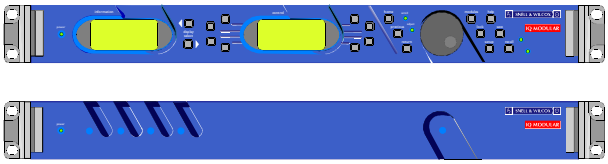
(Enclosure order codes IQH3A-E-0, IQH3A-E-P, IQH3A-0-0, IQH3A-0-P)



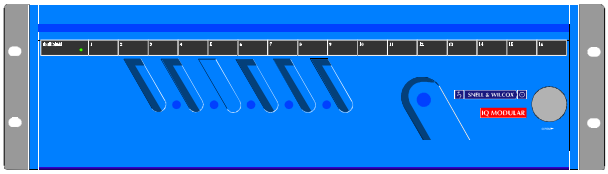
(Enclosure order codes IQH3A-S-0, IQH3A-S-P)

'O' Style Enclosures

Rear panels ***without*** the suffix A may only be fitted into the '0' style enclosures shown below.



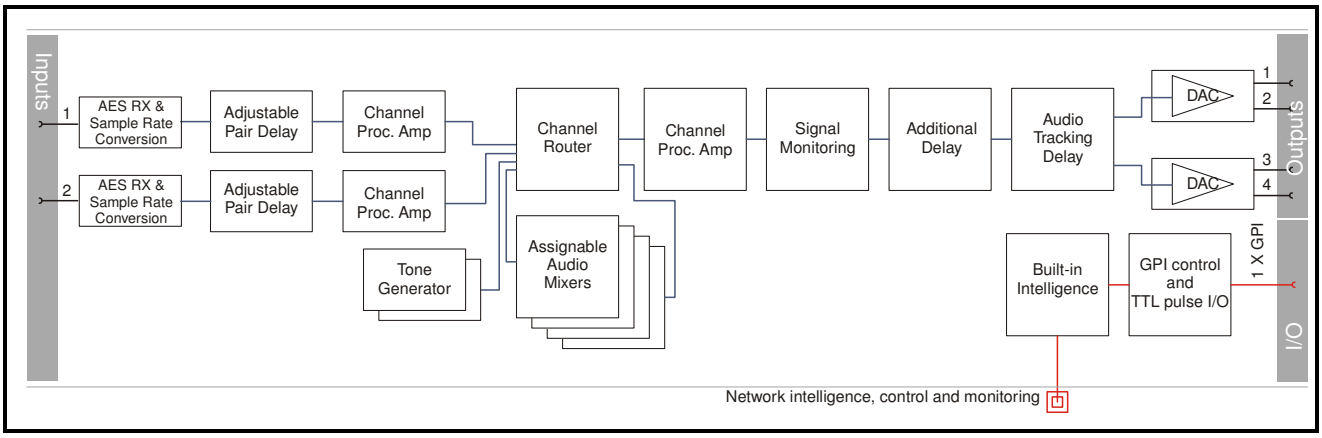
(Enclosure order codes IQH1S-RC-0, IQH1S-RC-AP, IQH1U-RC-0, IQH1U-RC-AP, Kudos Plus Products)



(Enclosure order codes IQH3N-0, IQH3N-P)

(Enclosure order codes IQH3U-RC-0, IQH3U-RC-P)

Block Diagram



Features

- Converts two AES/EBU digital audio streams into four analog audio channels
- Channel-level (Sub-frame) routing
- 4 off 4 channel assignable audio mixers
- Flexible audio delay including per pair fixed delay, common fixed delay and tracking delay
- Variable audio delay of up to 0.5s which seamlessly tracks an external video delay via RollTrack / GPI input
- Audio proc-amp (gain, mute, polarity))
- RollCall control and monitoring compatible
-

Technical Profile

Signal Inputs

Unbalanced digital audio.....2 x AES/EBU (BNC)

Balanced digital audio .....2 x AES/EBU (25 Way D-Type)

Standards.....AES3 - 1992

Signal Outputs

Analog Audio ..... 4 Channels (2 Stereo Pairs) (25Way D-Type)

Control Interface

GPI ..... 1x Closing contact I/O interface

Card Edge Controls

NONE

Card Edge Indicators

Input Present.....1 x LED per pair

CPU running / Power.....One green LED, flashing = OK

RollCall Functions

Audio Controls

Set line up level .....+20 to –20 dBu in 1 dB steps

Set headroom.....4 to 24 dB in 1 dB steps

Set audio detector thresholds
High/low levels, silence, overload, time delay

Audio input delay.....Up to 1.5 s additional delay in 1 ms steps

Input side control proc. - audio gain and polarity
Independent Gain, Mute, Polarity control over input channels. +18 dB to –18 dB in 0.1 dB steps.

Channel routing .....Output channels routed from AES pairs 1 & 2, test tone and silence

Output side control proc. - gain and polarity
Independent Gain, Mute, & Polarity control over output channels. +18 dB to –18 dB in 0.1 dB steps.

Global delay offset.....up to +1.5 s in 1 ms steps, common to all processed audio.

Variable audio delay control source
Up to 0.5 s from RollTrack + GPI

Tone frequency, amplitude & Ident
2-channel tone generator. 100 Hz to 15 kHz in 100 Hz steps.

Tone Setup:

Frequency..... 100 Hz to 15 kHz in 100 Hz steps

Channel Ident ..... 0.5 s interruption every 2 s

Other Controls

Preset Unit..... Returns settings to factory defaults

User Memories ..... Name, clear, save and read 8 user memories

GPI/O set-up..... May be attached to any memory function/polarity

Reporting (* also Logged)

Audio Silence, High Level, Low Level, Overflow
For processed audio channels only

Input AES audio state ..... Pair present

RollTrack Input

Delay ..... RollTrack + fixed

RollTrack Output

Delay ..... Current audio delay

Audio state..... PCM, Non-PCM, LOST

GPI ..... High, Low, Inactive

Specifications

Digital Audio Input (Balanced)

Connector/Format .....25 W D

Sample Frequency .....25 – 96 kHz

Input Cable Length .....>150 m of AES3 cable

Impedance.....110 Ω

Digital Audio Input (Unbalanced)

Connector/Format.....BNC

Sample Frequency .....25 – 96 kHz

Input Cable Length .....>500 m of RG59 cable

Impedance.....75 Ω

Analog Audio Outputs

Output Impedance ..... ~25 Ohms

THD+N ..... -92 dB @ 23 dBu typical, at 1 kHz

Conversion ..... min 20-bit – 105 dB dynamic range

Sampling ..... 48 kHz

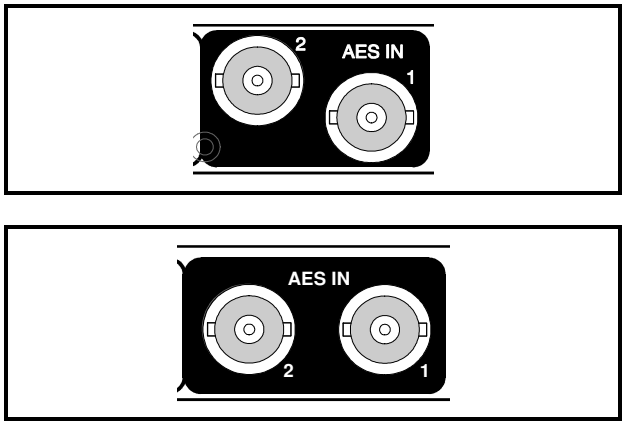
Power Consumption

Module Power Consumption
8.5 W max.

INPUTS

AES Inputs

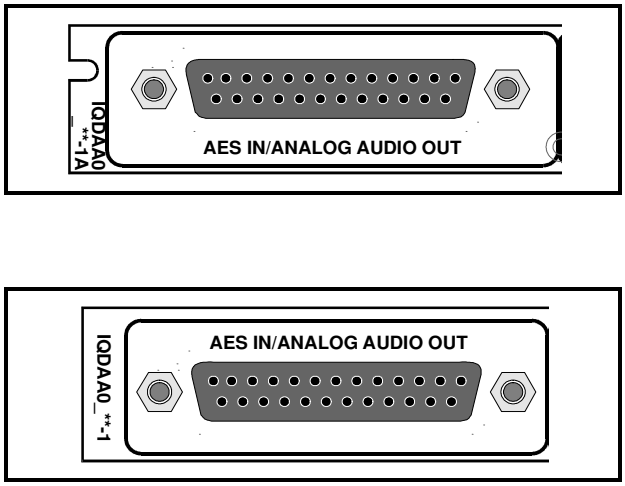
Unbalanced AES inputs are made to the unit via BNC connectors which terminate in 75 Ohms.



Balanced AES inputs are made to the unit via a 25 way D Type connector.

For connection details please see page 7.

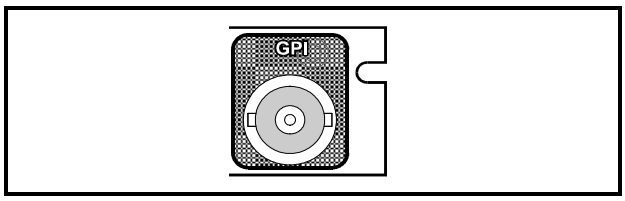
Note that the unit can accept either 2 unbalanced or 2 balanced inputs or 1 unbalanced and 1 balanced AES input. The unit automatically detects the type of signal.



GPI I/O (-1A only)

This connector is used for accepting GPI information (from mechanical switch contacts, relay contacts etc.) The resulting action that the unit takes may be programmed via RollCall.

It may also be configured as an output.

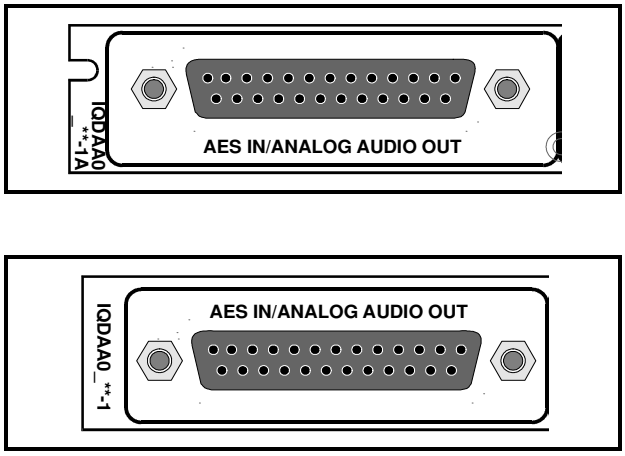


OUTPUTS

Analog Audio Out

All balanced analog outputs are available via a 25 way D type connector.

For connection details please see page 7.



25 Way D Type Connection Details

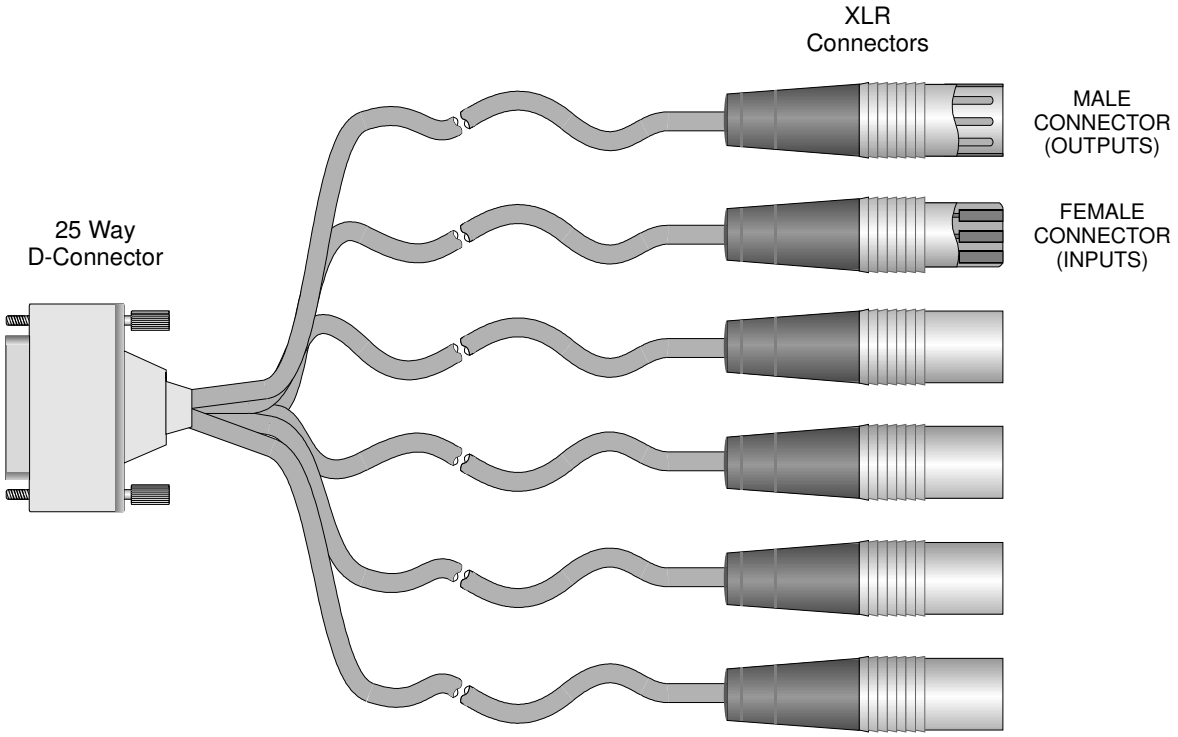
By Pin Number

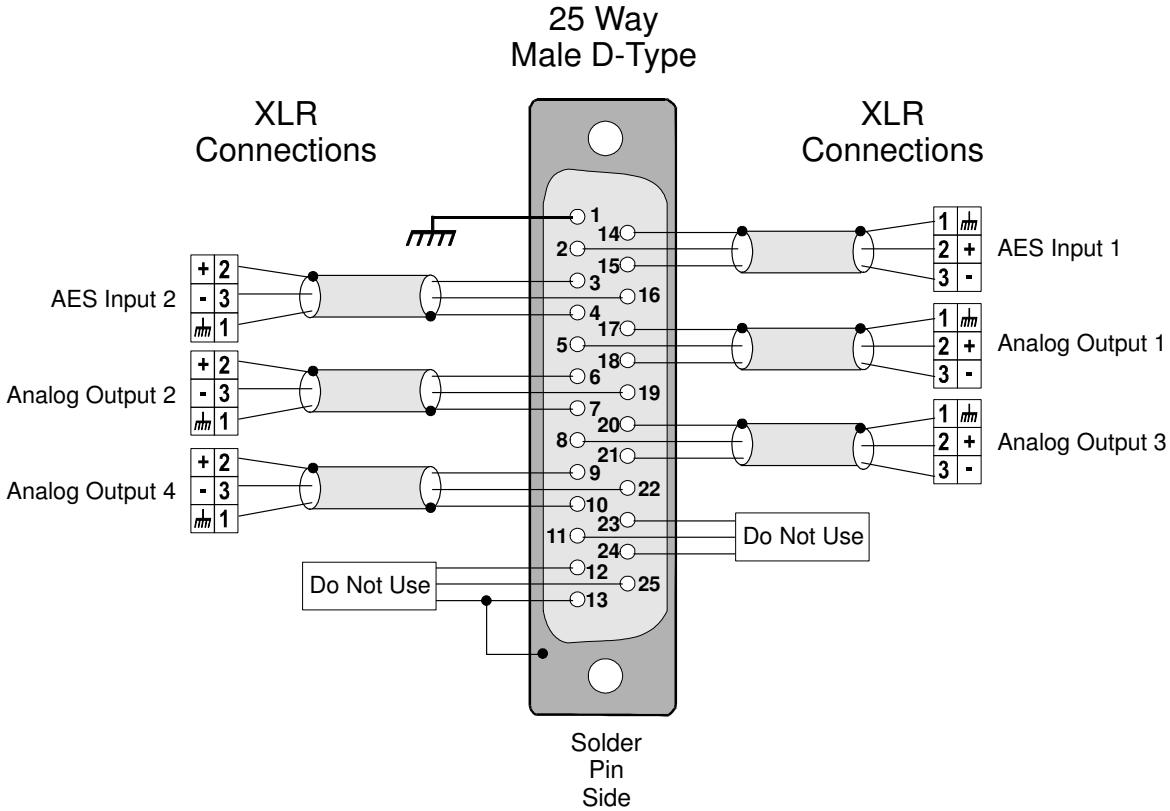
Pin No	Description	Connection
1	Chassis Ground	Ground
2	Channel 1 +	AES Input 1 +
3	Channel 2 +	AES Input 2 +
4	Ground (2)	Ground
5	Channel 1 +	Analog Output 1 +
6	Channel 2 +	Analog Output 2 +
7	Ground (2)	Analog Output 2 Ground
8	Channel 3 +	Analog Output 3 +
9	Channel 4 +	Analog Output 4 +
10	Ground (4)	Analog Output 4 Ground
11	Channel 7 +	Do not use
12	Channel 8 +	Do not use
13	Ground (8)	Ground
14	Ground (1)	Ground
15	Channel 1 –	AES Input 1 -
16	Channel 2 –	AES Input 2 -
17	Ground (1)	Analog Output 1 Ground
18	Channel 1 –	Analog Output 1 –
19	Channel 2 –	Analog Output 2 –
20	Ground (3)	Analog Output 3 Ground
21	Channel 3 –	Analog Output 3 –
22	Channel 4 –	Analog Output 4 –
23	Ground (7)	Ground
24	Channel 7 –	Do not use
25	Channel 8 –	Do not use

By Function

Pin No	Description	Connection
1	Chassis Ground	Ground
2	Channel 1 +	AES Input 1 +
15	Channel 1 –	AES Input 1 -
14	Ground (1)	Ground
3	Channel 2 +	AES Input 2 +
16	Channel 2 –	AES Input 2 -
4	Ground (2)	Ground
5	Channel 1 +	Analog Output 1 +
18	Channel 1 –	Analog Output 1 –
17	Ground (1)	Analog Output 1 Ground
6	Channel 2 +	Analog Output 2 +
19	Channel 2 –	Analog Output 2 –
7	Ground (2)	Analog Output 2 Ground
8	Channel 3 +	Analog Output 3 +
21	Channel 3 –	Analog Output 3 –
20	Ground (3)	Analog Output 3 Ground
9	Channel 4 +	Analog Output 4 +
22	Channel 4 –	Analog Output 4 –
10	Ground (4)	Analog Output 4 Ground
11	Channel 7 +	Do not use
24	Channel 7 –	Do not use
23	Ground (7)	Ground
12	Channel 8 +	Do not use
25	Channel 8 –	Do not use
13	Ground (8)	Ground

Example of Connection Details to XLR Connectors





CARD EDGE INDICATORS

CPU Run (Green)

This LED will flash to indicate that the CPU is running.

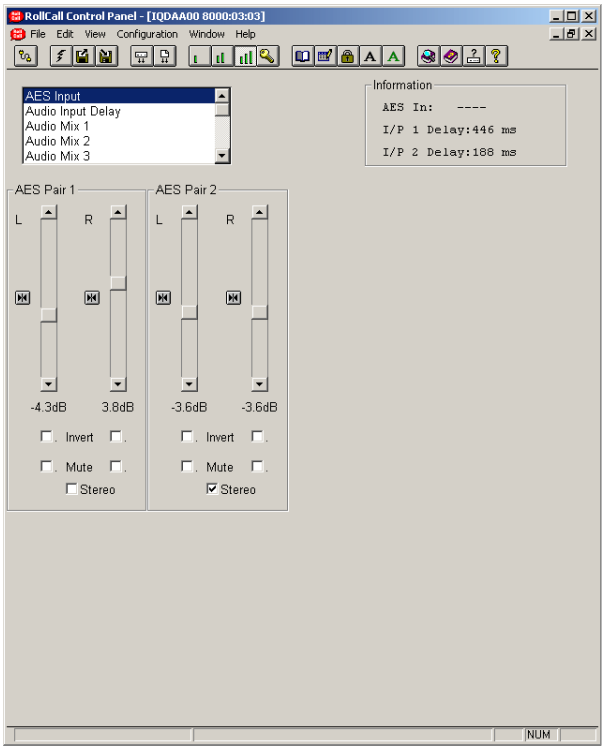
AES 1 and 2 Present (Green)

When illuminated these LED's will indicate that the associated AES input pair is present.

RollCall PC Control Panel Screens

AES Input

This allows control of Gain, Mute, and Polarity over the AES channels.



L and R

These scrollbars allow the gain of the Left and Right channels to be adjusted over a range of ±18 dB in 0.1dB steps. Preset is to 0 dB.

Invert

When checked the signal polarity will be inverted.

Mute

When checked the signal will be muted.

Stereo

When checked the left and right channels will be configured as a stereo pair and any adjustments made to one channel will automatically be applied to both channels.

Note that if a non-PCM signal is detected it will be automatically muted.

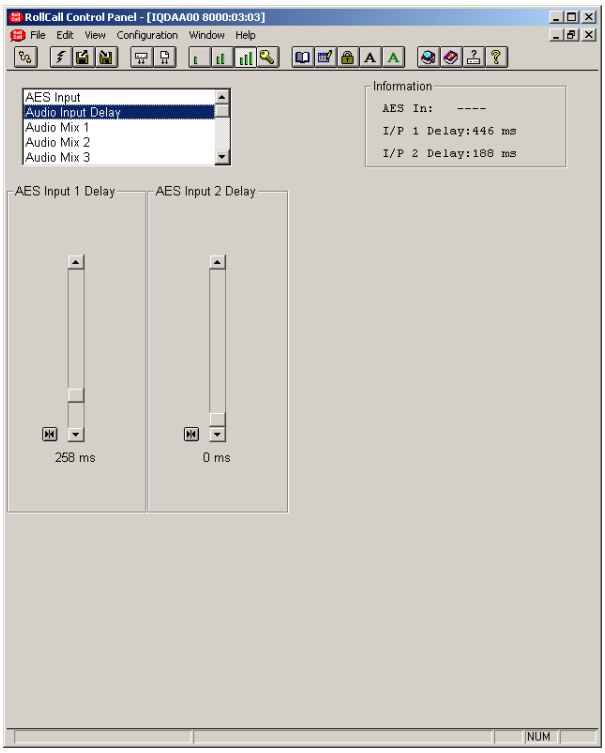
AES Input Delay

This allows the AES inputs to be delayed.

AES Input 1 Delay and AES Input 2 Delay

These scrollbars allow the delay to be adjusted be from 0 to 1500 ms in steps of 1 ms. Preset is to 0 ms.

Note that this delay will not be included in the RollTrack audio delay.



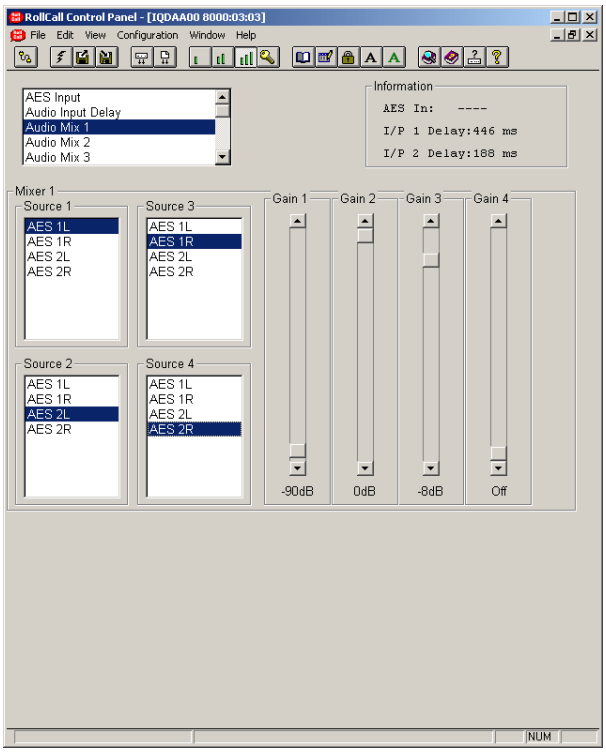
Audio Mix 1, 2, 3 and 4

There are four separate audio mixers Mix 1, 2, 3 and 4.

Each mixer has four inputs with individual gain controls that allow the mixing levels for each of the input signals, to be adjusted. The range of adjustment is from 0 to –90 dB and to Off.
0 to -60 dB is in steps of 1 dB, -60 dB to -90 dB is in steps of 3 dB.

The inputs can be selected from the list in the Source 1, 2, 3 and 4 items.

The outputs of these mixers provide four extra input selections for the Channel Router.



Audio Bus A and B/Audio Bus C and D

This function allows the inputs for the four audio buses of the router to be selected.

For each bus any source may be selected from the list for the left and right channels.

L and R

These scrollbars allow the gain to be adjusted over a range of ±18 dB in 0.1dB steps. Preset is to 0 dB.

Invert

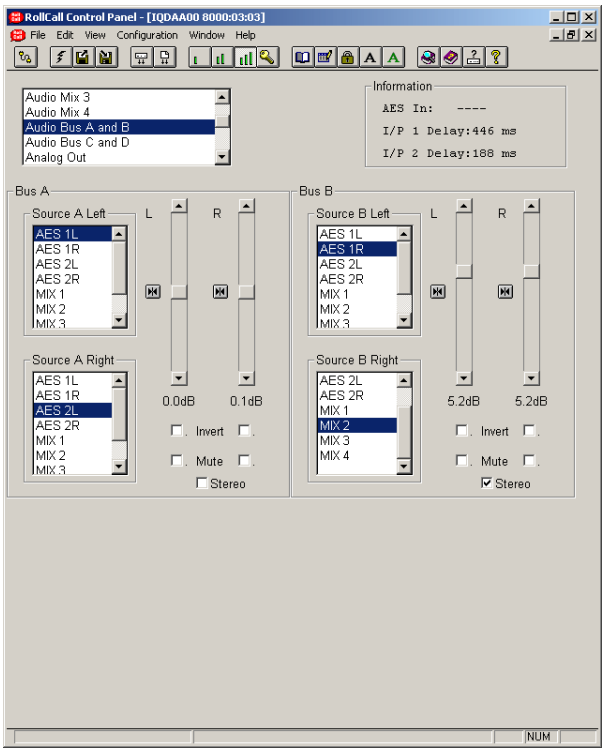
When checked the signal polarity will be inverted.

Mute

When checked the signal will be muted.

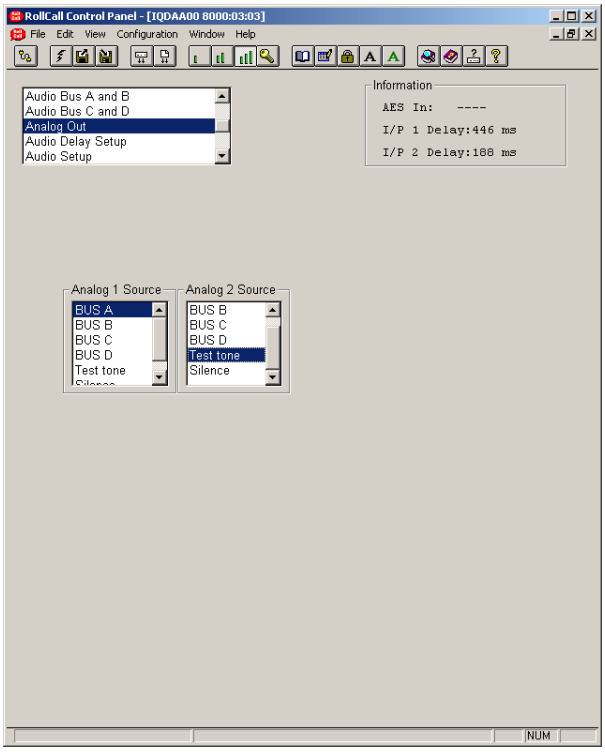
Stereo

When checked the left and right channels will be configured as a stereo pair and any adjustments made to one channel will automatically be applied to both channels.



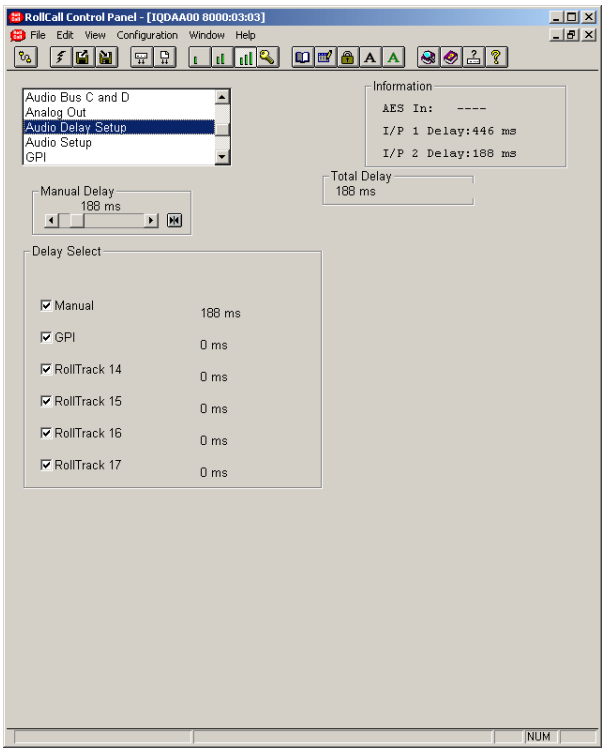
Analog Out

This allows the signal source for the analog output to be selected from the list of items for the two analog sources. Silence and audio test tones may also be selected.



Audio Delay Setup

This screen allows the amount of delay to be set and type of audio delay mechanism to be selected.



Manual Delay

This will affect all processed audio signals equally.

The delay may be set to up to +1.5 s in 1ms steps.

Delay Select

This allows the type of audio delay mechanism to be selected. One or more of the types may be checked. The amount of delay applied will be the sum of the delay from the enabled delay mechanisms.

*Note that up to 0.5 s of delay may be applied from the sum of the **Internal** + **GPI** + **RollTrack** delay inputs.*

Internal

When checked, an audio delay equal to the video delay in the unit will be applied.

Manual

When checked an audio delay set by the **Manual Delay** control will be applied.

GPI

When checked an audio delay will be applied that is equal to the width of the pulse arriving at the GPI connector.

Note that an audio delay pulse of more than 500 ms, applied to the GPI Input will be treated as invalid. This will result in the GPI delay returning to zero.

Note that the GPI must be configured correctly for this function to operate. Please see page 18 for details.

RollTrack 14, 15, 16 and 17

The selected source(s) of the RollTrack input signal(s) will apply an audio delay.

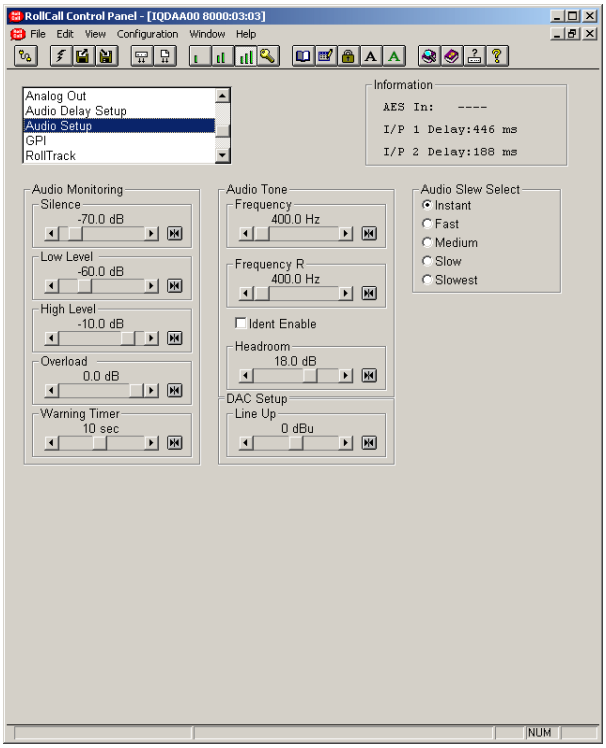
Total Delay

This will show the audio total delay (due to all delay mechanisms) through the unit in ms.

Audio Setup

Audio Monitoring

The four audio buses are monitored and level detectors provide status information and logging data.



Silence

The level at which the signal is considered to have dropped to silence may be set with this control.

The range is from -80 dB to 0 dB in steps of 1 dB. Preset is to -70 dB.

Low Level

The level at which the signal is considered to have dropped to a Low Level may be set with this control.

The range is from -80 dB to 0 dB in steps of 1 dB. Preset is to -60 dB.

High Level

The level at which the signal is considered to have risen to a High Level may be set with this control.

The range is from -80 dB to 0 dB in steps of 1 dB. Preset is to -10 dB.

Overload

The level at which the signal is considered to have risen to an Overload condition may be set with this control.

The range is from -80 dB to 0 dB in steps of 1 dB. Preset is to 0 dB.

Warning Timer

All the above monitoring facilities will only operate after a time interval set by this control. A valid signal is reported immediately.
The range is from 1 to 20 seconds. Preset is to 10 seconds.

Audio Tone

The frequency of the Audio Test Tone may be set using this control. Left and right channels may be set independently.

Frequency L and R

The range is from 100 Hz to 15 kHz in steps of 100 Hz. Preset is to 400 Hz.

Audio Setup (continued)

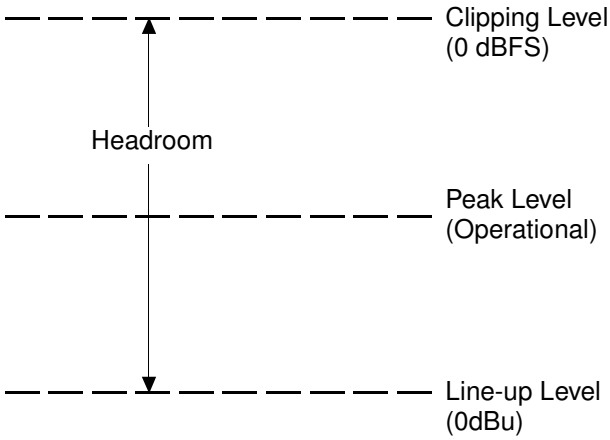
Ident Enable

When enabled the right channel will be identified by the signal being muted for 0.5 second every 2.5 seconds.

Headroom

This allows the headroom to be set. The range is from 4 dB to 24dB in 1 dB steps. Preset is to 18 dB.

Note that in this product headroom is defined as:



Headroom = Clipping Level – Line-up level

DAC Setup

This allows the **Line Up** level of the DAC to be set. The range is ±20 dB. Preset is to 0 dBu.

Audio Slew Select

This is the time taken for the audio to slew when the audio mixing and routing controls have changed.

The options are:

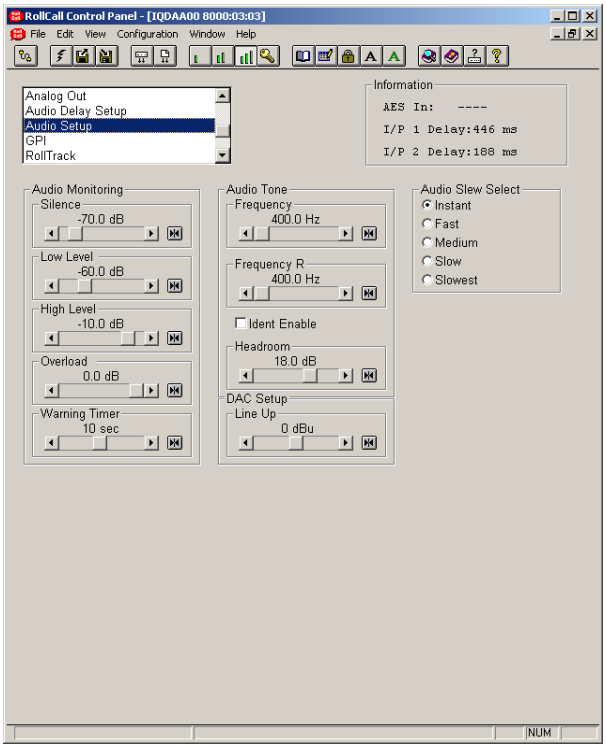
Instant ....The response is immediate

Slowest ..Change takes approximately one second

Slow .....Change takes 75% of Slowest time

Medium ..Change takes 50% of Slowest time

Fast Change takes 25% of Slowest time



Channel Status Dest(ination)

This will set the four character name used in the destination field of the audio channel status.

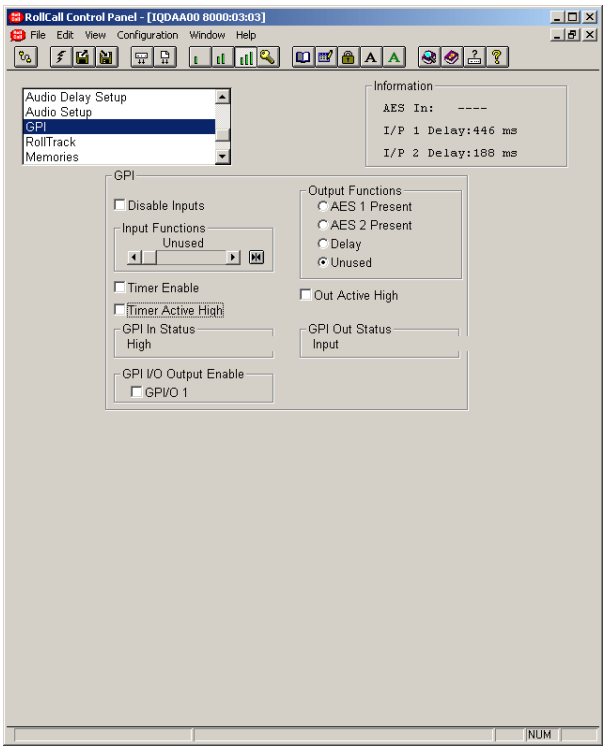
To change the text, type the new text in the text area and then select (return).

Selecting Preset will return the text to the default text (DEST).

Note that the Channel Status Origin data is automatically set by the module to DAA0 and cannot be changed.

GPI

This screen allows the GPI functions to be configured and their actions defined.



Disable Inputs

When selected all GPI input functions will be disabled.

Input Functions

When configured as an input the GPI connection may be used for accepting GPI information (from mechanical switch contacts, relay contacts etc.) The resulting action that the unit takes may be selected using this item.

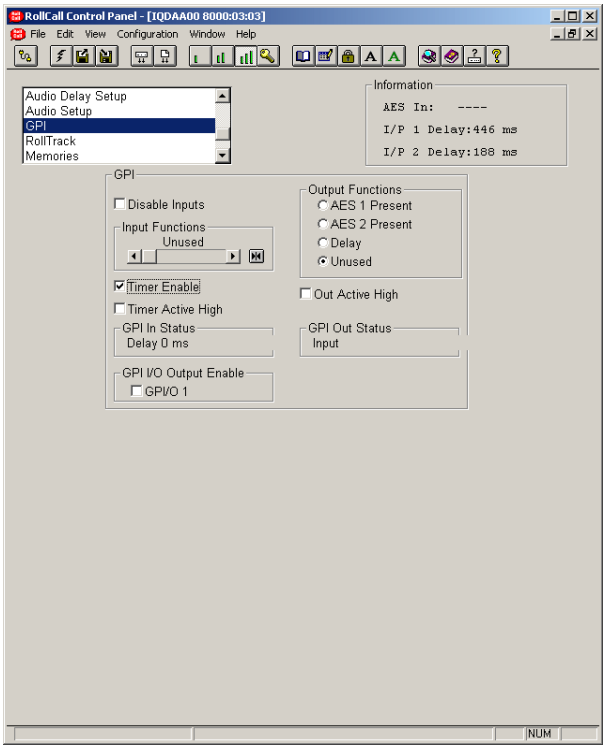
The GPI input functions that may be selected are as follows:

Unused	The unit will perform no function. This is also the Preset Setting.
Memory 1 to 8	The unit will use the settings in the selected memory location when the input changes from open to closed.
Mem1-2	The unit will toggle between the settings of memory locations 1 and 2. Open to Closed = Memory 1 settings Closed to Open = Memory 2 settings
Mem 3-4	The unit will toggle between the settings of memory locations 3 and 4. Open to Closed = Memory 3 settings Closed to Open = Memory 4 settings
Mem 5-6	The unit will toggle between the settings of memory locations 5 and 6. Open to Closed = Memory 5 settings Closed to Open = Memory 6 settings
Mem 7-8	The unit will toggle between the settings of memory locations 7 and 8. Open to Closed = Memory 7 settings Closed to Open = Memory 8 settings

GPI In Status

This will display the current status of the selected GPI input.
This may show either High or Low. When low, the associated function will be triggered.

GPI (continued)



Output Functions

The GPO may be configured to produce an output corresponding to one of the following conditions:

- AES 1 Present
- AES 2 Present
- Delay
- Unused

The preset setting for the output is to Unused.

When the condition is not true the output will float but when the condition is true the output is closed to ground via a transistor.

Note that when delay mode is selected the output is a negative going TTL pulse. The width of the pulse represents the delay through the unit to the nearest millisecond.

GPI Out Status

This will display the current status of the GPI output. This may show either Unused, High, low or delay in milliseconds.

Timer Enable

When checked the GPI will be monitored. The width of the pulse represents the delay that can be used to control audio delays in this unit.

Note that an audio delay pulse of more than 500 ms, applied to the GPI Input will be treated as invalid. This will result in the GPI delay returning to zero.

Timer Active High

When checked the GPI will measure the positive going pulse. When unchecked the negative pulse is measured.

Out Active High

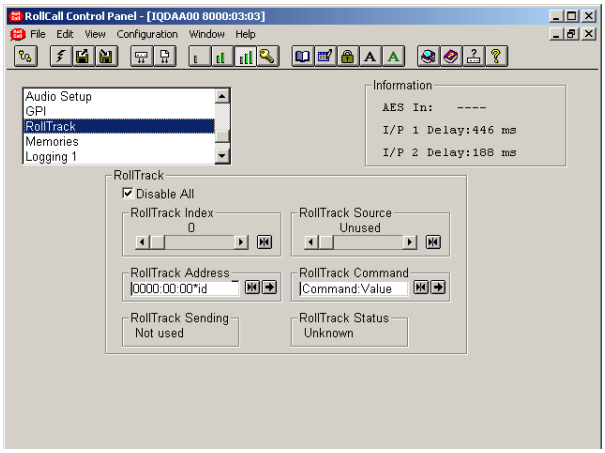
This determines the sense of the asserted GPI output signal. When checked the GPI is active the output sense is high. When unchecked the GPI is active low.

GPI I/O Output Enable

When checked the GPI is configured as an output. When unchecked the GPI is configured as input.

RollTrack

This function allows information to be sent, via the RollCall™ network, to other compatible units connected on the same network.
For example, it can enable compatible audio delay units to produce an audio delay dependent on this and other similar units. The audio delay unit will dynamically follow or track the received delay-time information. This allows processed video signals to be timed correctly with audio signals. This automatic tracking system via the RollCall™ network is call **RollTrack**.
For more detailed information, see the RollTrack section (Appendix) at the end of this manual.



RollTrack Index

This item allows up to 70 destinations to be selected.

Network Address

The destination for the information is set by the network code address as follows:

This item allows the address of the selected destination unit to be set.

To change the address, type the new destination in the text area and then select (return).

(Preset) returns to the default destination

The full **RollTrack** address has four sets of numbers

For example: 0000:10:01*99

The first set (0000) is the network segment code number

The second set (10) is the number identifying the (enclosure/mainframe) unit.

The third set (01) is the slot number in the unit

The Fourth Set (99)

Each RollCall unit has a unique identification embedded in the units' software. In this example 99 represents an IQBAXR, 142 would represent an IQDAMDD, 255 a TBS100D etc. Inserting this number in the RollTrack address ensures that only the correct type of unit (in this example an IQBAXR) will respond to the RollTrack command; any other unit will ignore the command.
If this number was set to 00 **any type** of unit at this location would respond to the RollTrack command, possibly causing unpredictable results.

RollTrack Source

This allows the source of information that triggers the transmission of data to be selected.

Options are:

Unused (off)
Audio Delay
AES 1 Lost
AES 1 PCM
AES 1 NPCM
AES 2 Lost
AES 2 PCM
AES 2 NPCM
GPI 1 Low
GPI 1 High
GPI 1 Inactive

RollTrack (continued)

RollTrack Command

The full **RollTrack** command has two sets of numbers

For example: 84*156

The first set (84) is the **RollTrack** command number

Note that only command numbers 14,15,16 and 17 should be used for audio delay

The second set (156) is the value sent with the **RollTrack** command number

Note that when video delay is selected as the **RollTrack** *source the value sent with the* **RollTrack** *command is the video delay value not the value set.*

For details of the RollCall command values for specific units please contact your local Snell & Wilcox agent.

Disable All

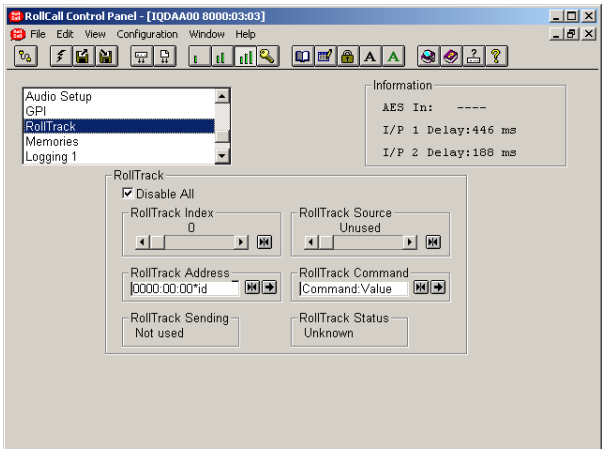
When this item is checked all RollTrack items will be disabled.
Note: To avoid incorrect RollTrack information being generated, it is advisable to select this control while setting up RollTrack functions.

RollTrack Sending

This item shows when the unit is actively sending the RollTrack command.

This may show:

String	A string value is always being sent.
Number	A number value is always being sent.
No	The message is not being sent.
Yes	The message is being sent.
Internal Type Error	Inconsistent behavior; please contact your local Snell & Wilcox agent.



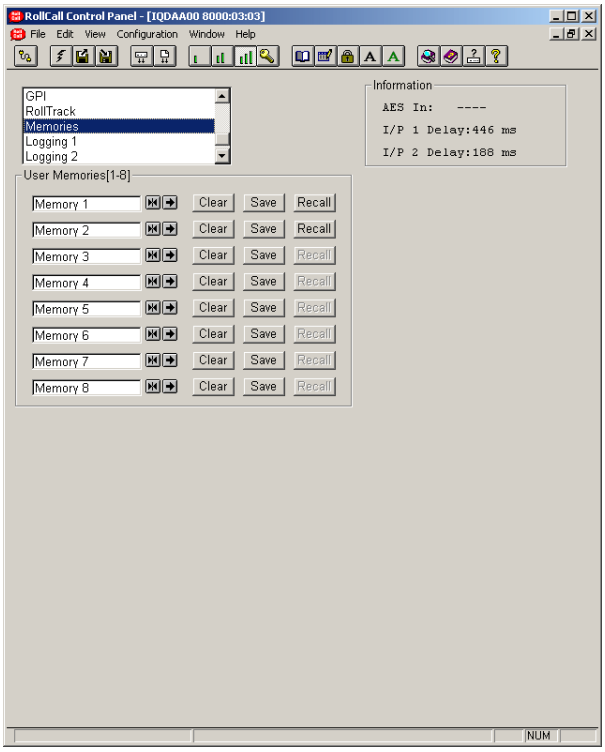
RollTrack Status

This item will show the status of the currently selected RollTrack index.

This may show:

OK	RollTrack message sent and received OK.
Unknown	Rolltrack message has been sent but it has not yet completed.
Timeout	RollTrack message sent but acknowledgement not received. This could be because the destination unit is not at the location specified.
Error	This indicates a broken RollCall state.
Bad	This indicates a broken RollCall packet.

Memories



This function allows a number of particular setups of the unit to be saved and recalled. There are 8 memory locations available.

To change the memory name, type the new name in the text area and then select  (return).

Selecting Preset  will return the text to the default name.

This item allows the memory location to be cleared and returned to the default (preset) setting. This empties the memory location and the Recall button will then appear grayed out.

This function allows the settings of all items to be saved at the memory location.

This function allows the settings saved at the memory location to be recalled. When this button appears grayed out it indicates that the memory location is empty and therefore cannot be recalled. This will occur when the memory is cleared.

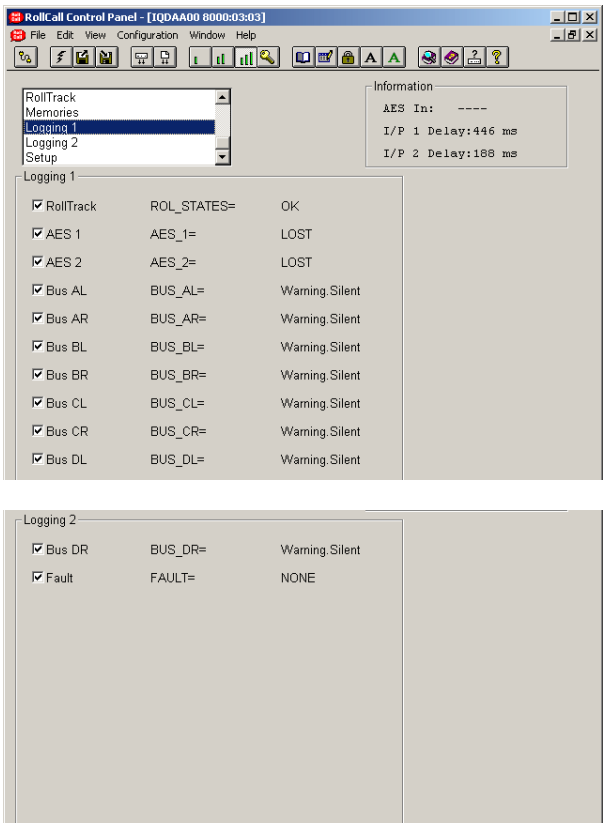
Note that all the above functions are a momentary action.

Logging 1and 2

Information about various parameters can be made available to a logging device that is attached to the RollCall™ network by checking the appropriate box.

The status is shown to the right of the item.

Any of the items may be selected from the list.



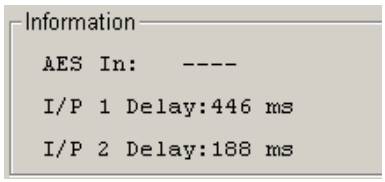
ROLLCALL LOG FIELDS

Log Field	Log Value	Description
ROL_STATES=	OK FAIL	RollTrack message sent and received OK RollTrack message not acknowledged
AES_1=	NONPCM OK LOST	Non-PCM signal present on AES input 1 Valid PCM signal present on AES input 1 Signal not present at AES input 1
AES_2=	NONPCM OK LOST	Non-PCM signal present on AES input 2 Valid PCM signal present on AES input 2 Signal not present at AES input 2
BUS_AL=	OK WARNING.SILENT WARNING.NON_PCM WARNING.QUIET WARNING.HIGH WARNING.OVERLOAD	Router BUS A Left channel has valid signal selected Router BUS A Left channel is receiving silence Router BUS A Left channel is receiving Non-PCM signal Router BUS A Left channel is receiving low level signal Router BUS A Left channel is receiving high level signal Router BUS A Left channel is receiving overload signal
BUS_AR=	OK WARNING.SILENT WARNING.QUIET WARNING.HIGH WARNING.OVERLOAD	Router BUS A Right channel has valid signal selected Router BUS A Right channel is receiving silence Router BUS A Right channel is receiving low level signal Router BUS A Right channel is receiving high level signal Router BUS A Right channel is receiving overload signal
BUS_BL=	OK WARNING.SILENTWAR NING.QUIET WARNING.HIGH WARNING.OVERLOAD	Router BUS B Left channel has valid signal selected Router BUS B Left channel is receiving silence Router BUS B Left channel is receiving low level signal Router BUS B Left channel is receiving high level signal Router BUS B Left channel is receiving overload signal
BUS_BR=	OK WARNING.SILENTWAR NING.QUIET WARNING.HIGH WARNING.OVERLOAD	Router BUS B Right channel has valid signal selected Router BUS B Right channel is receiving silenceRouter BUS B Right channel is receiving low level signal Router BUS B Right channel is receiving high level signal Router BUS B Right channel is receiving overload signal
BUS_CL=	OK WARNING.SILENT WARNING.QUIET WARNING.HIGH WARNING.OVERLOAD	Router BUS C Left channel has valid signal selected Router BUS C Left channel is receiving silence Router BUS C Left channel is receiving low level signal Router BUS C Left channel is receiving high level signal Router BUS C Left channel is receiving overload signal
BUS_CR=	OK WARNING.SILENT WARNING.QUIET WARNING.HIGH WARNING.OVERLOAD	Router BUS C Right channel has valid signal selected Router BUS C Right channel is receiving silence Router BUS C Right channel is receiving low level signal Router BUS C Right channel is receiving high level signal Router BUS C Right channel is receiving overload signal
BUS_DL=	OK WARNING.SILENT WARNING.QUIET WARNING.HIGH WARNING.OVERLOAD	Router BUS D Left channel has valid signal selected Router BUS D Left channel is receiving silence Router BUS D Left channel is receiving low level signal Router BUS D Left channel is receiving high level signal Router BUS D Left channel is receiving overload signal
BUS_DR=	OK WARNING.SILENT WARNING.QUIET WARNING.HIGH WARNING.OVERLOAD	Router BUS D Right channel has valid signal selected Router BUS D Right channel is receiving silence Router BUS D Right channel is receiving low level signal Router BUS D Right channel is receiving high level signal Router BUS D Right channel is receiving overload signal
FAULT=	NONE FAIL.FPGA_LOAD	No Internal errors detected Internal error detected
SN=	Runtime string	Serial number of unit

Setup

Information Window

This will display information about the status of the input signals.



AES In: This shows the status of the selected audio input

I/P 1 Delay, I/P 2 Delay:

This will display the total delay of the input signal through the unit in milliseconds.
This figure is the sum of the delay set up using the **Audio Input Delay** screen (see page 11) plus the delay set up using the **Audio Delay Setup** screen (see page 15)

Selecting this item sets all adjustment functions that include a preset facility, to their preset values.

Note that this is a momentary action.

This will reboot the unit simulating a power-down power-up cycle restoring power-up settings.

Software version

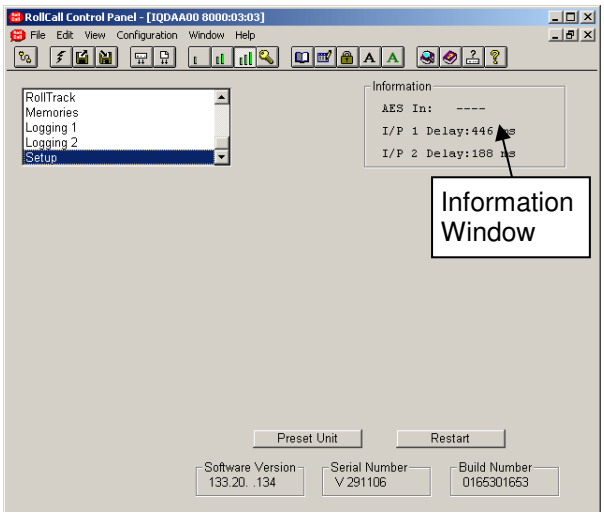
This item shows the version of the software fitted in the module.

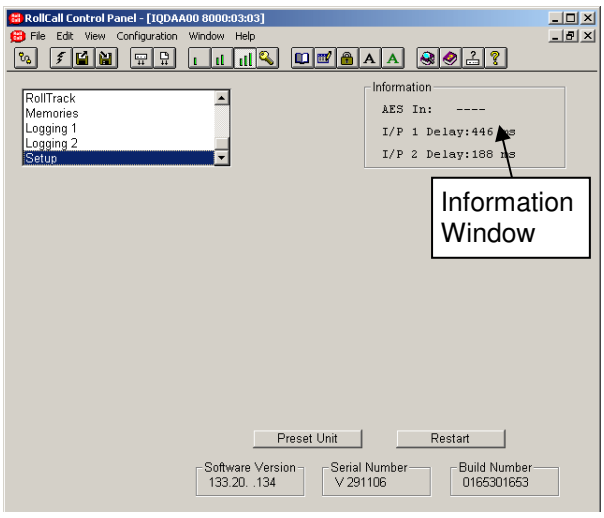
Serial Number

This item shows the serial number of the module

Build Number

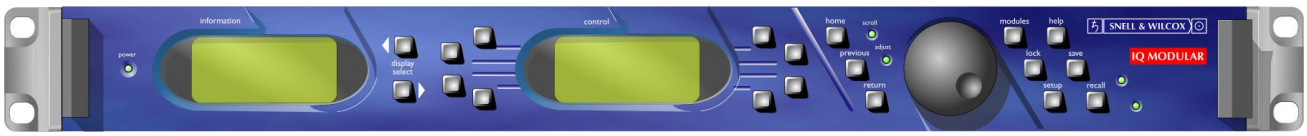
This will indicate the factory build number. This number defines all parameters of the unit (software versions, build level etc.) for identification purposes.





Operation from an Active Control Panel

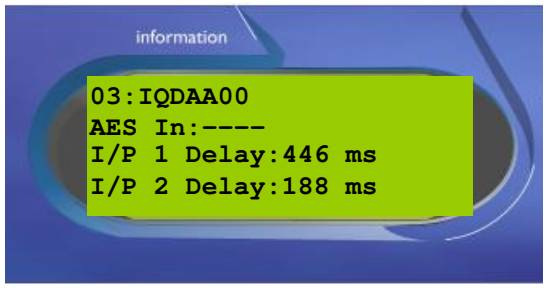
The card may be operated from an active control panel via the RollCall™ network.



All operational parameters and selections are made using a system of menus displayed in two LCD windows.
Operational details for the remote control panel can be found in the Modular System Operator's Manual.

Information Window

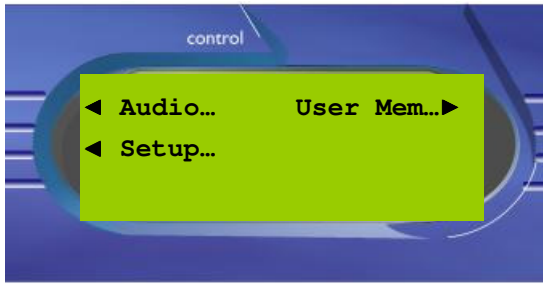
The Information window has four lines of text indicating the current state of the unit.



Control Window

The **Control** window displays all Selection Menus and sub-menus.

The selection is made by pressing the button adjacent to the required item.



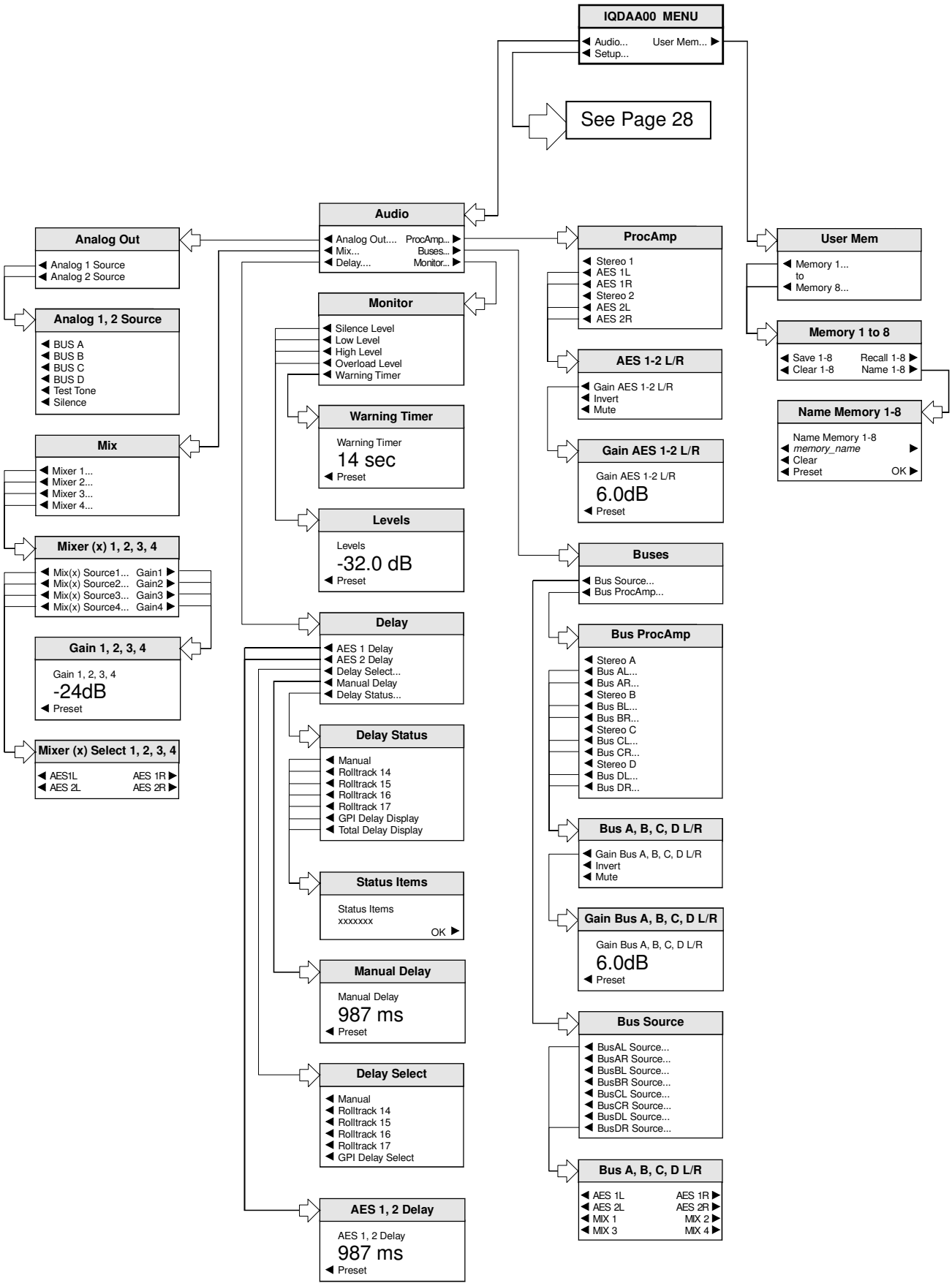
Menu Structure

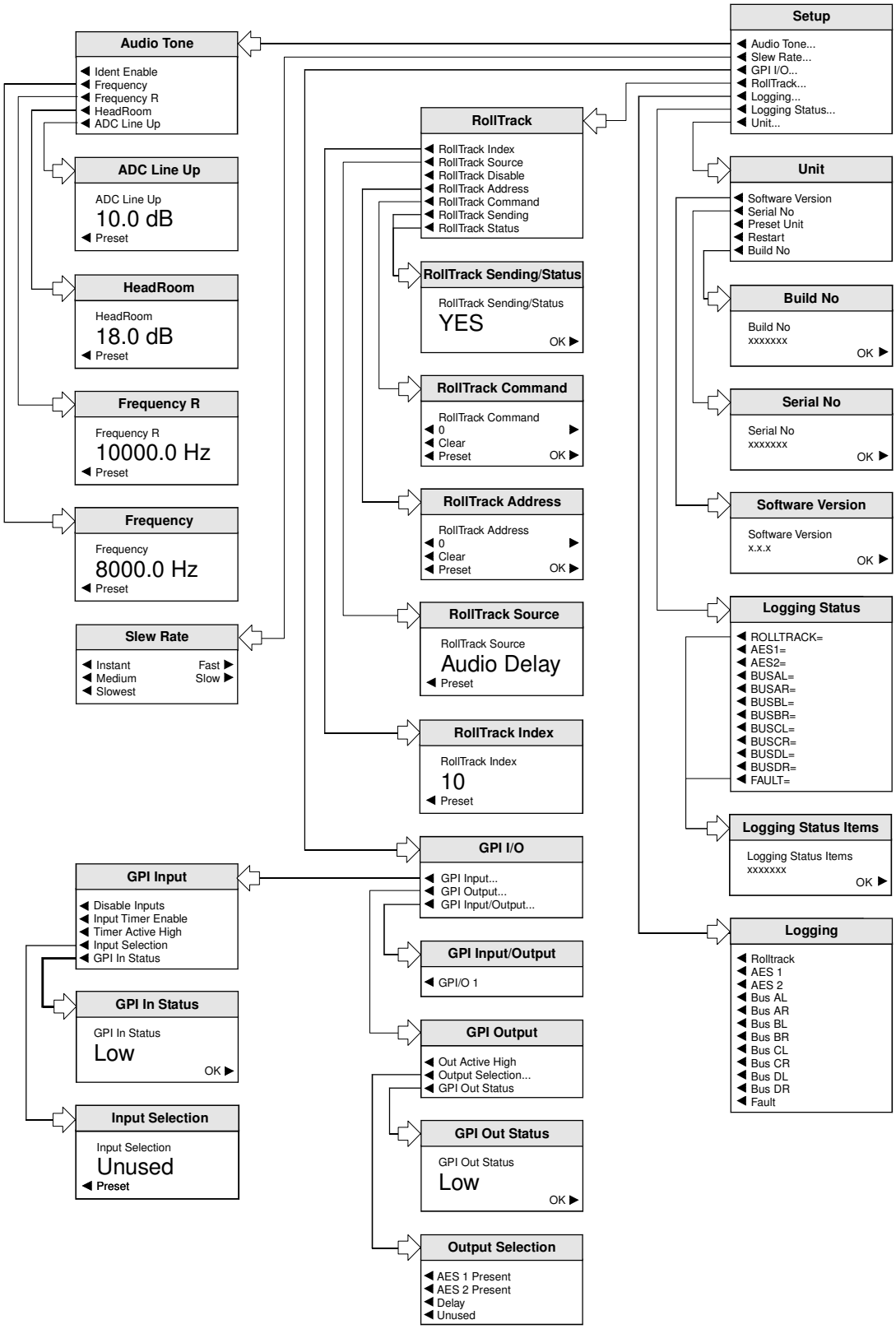
The menu structure is detailed in the following pages.

The main or top level menu allows various sub-menus to be selected by pressing the button adjacent to the required text line.

Note that where a menu item is followed by three dots (...) this indicates that a further sub-menu may be selected.

Whenever a menu item is selected the parameters of that selection will be displayed in the Information window of the front panel. Where the selection is purely a mode selection and does not enable a sub-menu, the text will become reversed (white-on-black) indicating that the mode is active. If the mode is not available for selection the text will remain normal.


IQDAA00 MENU
Audio...
User Mem...
Setup...
See Page 28
Audio
Analog Out.... ProcAmp...
Mix... Buses...
Delay.... Monitor...
Analog Out
Analog 1 Source
Analog 2 Source
Analog 1, 2 Source
BUS A
BUS B
BUS C
BUS D
Test Tone
Silence
Mix
Mixer 1...
Mixer 2...
Mixer 3...
Mixer 4...
Mixer (x) 1, 2, 3, 4
Mix(x) Source1... Gain1
Mix(x) Source2... Gain2
Mix(x) Source3... Gain3
Mix(x) Source4... Gain4
Gain 1, 2, 3, 4
Gain 1, 2, 3, 4
-24dB
Preset
Mixer (x) Select 1, 2, 3, 4
AES1L AES 1R
AES 2L AES 2R
Monitor
Silence Level
Low Level
High Level
Overload Level
Warning Timer
Warning Timer
Warning Timer
14 sec
Preset
Levels
Levels
-32.0 dB
Preset
Delay
AES 1 Delay
AES 2 Delay
Delay Select...
Manual Delay
Delay Status...
Delay Status
Manual
Rolltrack 14
Rolltrack 15
Rolltrack 16
Rolltrack 17
GPI Delay Display
Total Delay Display
Status Items
Status Items
xxxxxxx
OK
Manual Delay
Manual Delay
987 ms
Preset
Delay Select
Manual
Rolltrack 14
Rolltrack 15
Rolltrack 16
Rolltrack 17
GPI Delay Select
AES 1, 2 Delay
AES 1, 2 Delay
987 ms
Preset
ProcAmp
Stereo 1
AES 1L
AES 1R
Stereo 2
AES 2L
AES 2R
AES 1-2 L/R
Gain AES 1-2 L/R
Invert
Mute
Gain AES 1-2 L/R
Gain AES 1-2 L/R
6.0dB
Preset
Buses
Bus Source...
Bus ProcAmp...
Bus ProcAmp
Stereo A
Bus AL...
Bus AR...
Stereo B
Bus BL...
Bus BR...
Stereo C
Bus CL...
Bus CR...
Stereo D
Bus DL...
Bus DR...
Bus A, B, C, D L/R
Gain Bus A, B, C, D L/R
Invert
Mute
Gain Bus A, B, C, D L/R
Gain Bus A, B, C, D L/R
6.0dB
Preset
Bus Source
BusAL Source...
BusAR Source...
BusBL Source...
BusBR Source...
BusCL Source...
BusCR Source...
BusDL Source...
BusDR Source...
Bus A, B, C, D L/R
AES 1L AES 1R
AES 2L AES 2R
MIX 1 MIX 2
MIX 3 MIX 4
User Mem
Memory 1...
to
Memory 8...
Memory 1 to 8
Save 1-8 Recall 1-8
Clear 1-8 Name 1-8
Name Memory 1-8
Name Memory 1-8
memory_name
Clear
Preset OK


Setup
Audio Tone...
Slew Rate...
GPI I/O...
RollTrack...
Logging...
Logging Status...
Unit...
Audio Tone
Ident Enable
Frequency
Frequency R
HeadRoom
ADC Line Up
ADC Line Up
ADC Line Up
10.0 dB
Preset
HeadRoom
HeadRoom
18.0 dB
Preset
Frequency R
Frequency R
10000.0 Hz
Preset
Frequency
Frequency
8000.0 Hz
Preset
Slew Rate
Instant
Medium
Slowest
Fast
Slow
RollTrack
RollTrack Index
RollTrack Source
RollTrack Disable
RollTrack Address
RollTrack Command
RollTrack Sending
RollTrack Status
RollTrack Sending/Status
RollTrack Sending/Status
YES
OK
RollTrack Command
RollTrack Command
0
Clear
Preset
OK
RollTrack Address
RollTrack Address
0
Clear
Preset
OK
RollTrack Source
RollTrack Source
Audio Delay
Preset
RollTrack Index
RollTrack Index
10
Preset
Unit
Software Version
Serial No
Preset Unit
Restart
Build No
Build No
Build No
xxxxxxx
OK
Serial No
Serial No
xxxxxxx
OK
Software Version
Software Version
x.x.x
OK
Logging Status
ROLLTRACK=
AES1=
AES2=
BUSAL=
BUSAR=
BUSBL=
BUSBR=
BUSCL=
BUSCR=
BUSDL=
BUSDR=
FAULT=
Logging Status Items
Logging Status Items
xxxxxxx
OK
Logging
Rolltrack
AES 1
AES 2
Bus AL
Bus AR
Bus BL
Bus BR
Bus CL
Bus CR
Bus DL
Bus DR
Fault
GPI Input
Disable Inputs
Input Timer Enable
Timer Active High
Input Selection
GPI In Status
GPI In Status
GPI In Status
Low
OK
Input Selection
Input Selection
Unused
Preset
GPI I/O
GPI Input...
GPI Output...
GPI Input/Output...
GPI Input/Output
GPI/O 1
GPI Output
Out Active High
Output Selection...
GPI Out Status
GPI Out Status
GPI Out Status
Low
OK
Output Selection
AES 1 Present
AES 2 Present
Delay
Unused

RollTrack Audio Delay Tracking

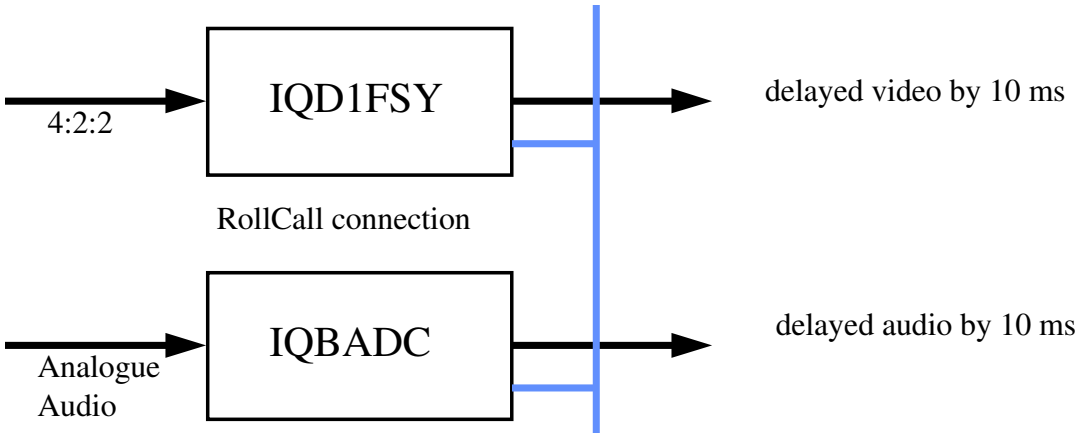
RollTrack is a feature of RollCall™ (Snell & Wilcox's proprietary remote control system), that allows devices to communicate across the RollCall network with no direct user intervention.

RollTrack Audio Delay Tracking enables Snell & Wilcox RollCall™ compatible audio delay products to track delay introduced by RollCall™ compatible video processing products.

The current products that implement RollTrack Audio Delay Tracking are:

Audio Delay Modules	Video Modules	Other Products	
IQBAAD	IQD1FSY	ALCHEMIST	MDD3000
IQBADC	IQDMSDS	CPP100	MDD550
IQBDAC	IQDAFS	CPP200	MDD560
IQBDAD	IQDMSDS	NRS500	MDD570
IQBSYN	IQDMSDP	HD5050	MDD2000
IQBADCD	IQDSYN		

The simplest configuration is a single video unit and a single audio delay in a RollCall™ system. The audio delay will have the same delay as through the video path. If the delay changes the audio delay will track.



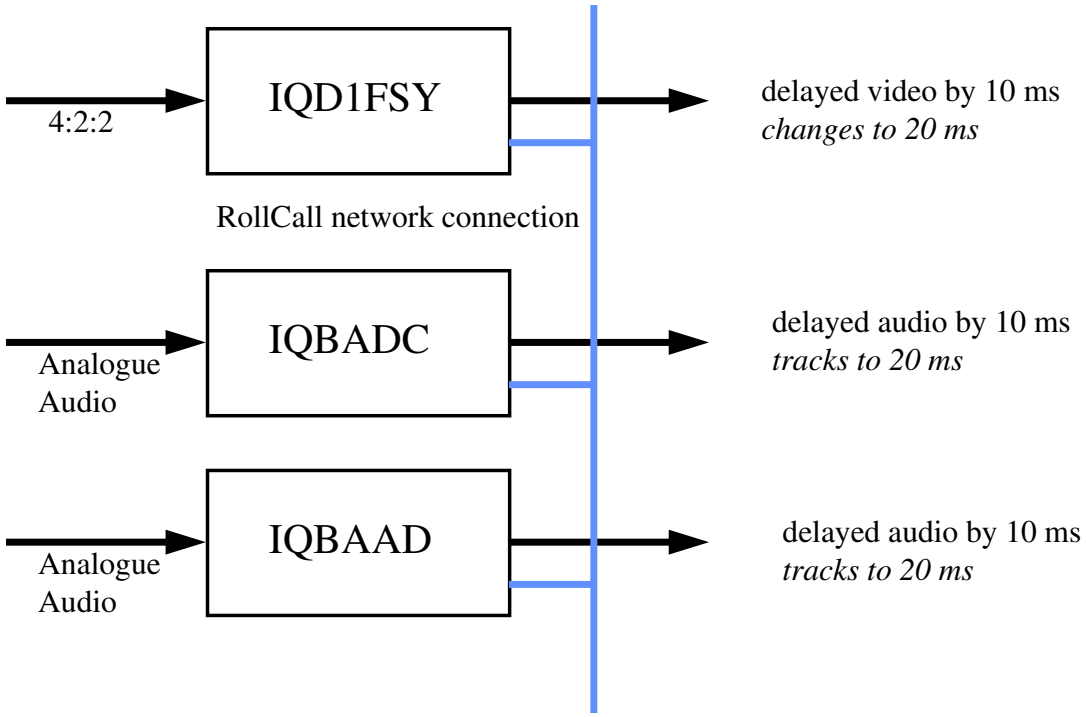
The next level of configuration is where there are multiple Frame Synchronizers (for example) each connected through RollCall™ to their own tracking Audio Delay. (It is worth stating that the synchronizers and audio delays do not have to be in the same enclosure; the addressing scheme, discussed later, allows for the units to be positioned anywhere in the RollCall™ domain.)

The maximum number of video units and audio delays in a RollCall™ system is set by the maximum limit of the number of modules in a RollCall™ network and is currently 3840 on a single network without bridges.

The unique identification of the destination unit (a decimal number) for various modules is as follows:

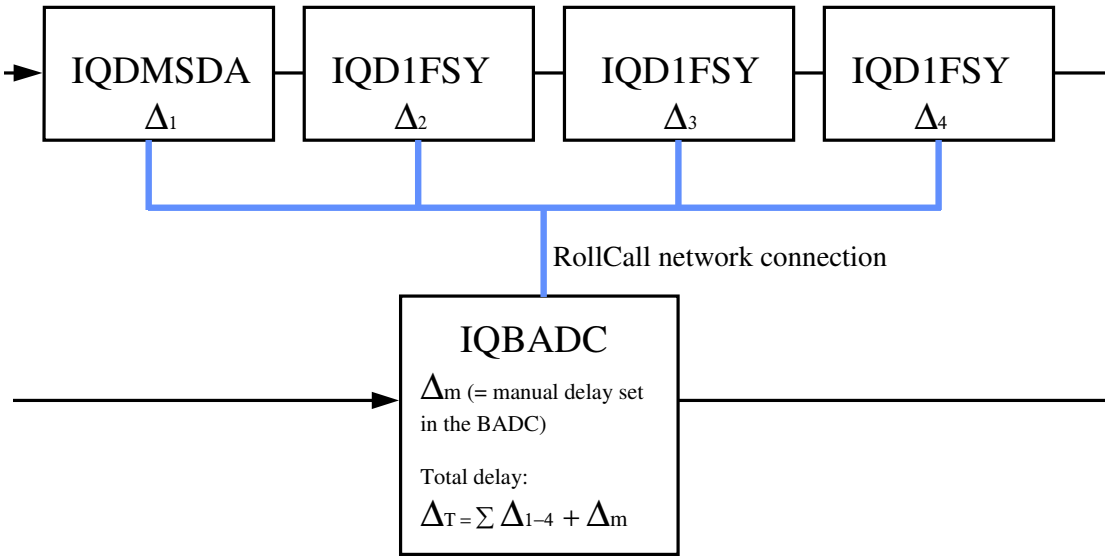
Module	**ID**
IQBADC	51
IQBDAC	52
IQBAAD	53
IQBDAD	54
IQBSYN	89
IQBADCD	107

The next level of complexity is *a vertical delay cluster* where a video unit can have up to eight audio delays tracking - of the same or different types.



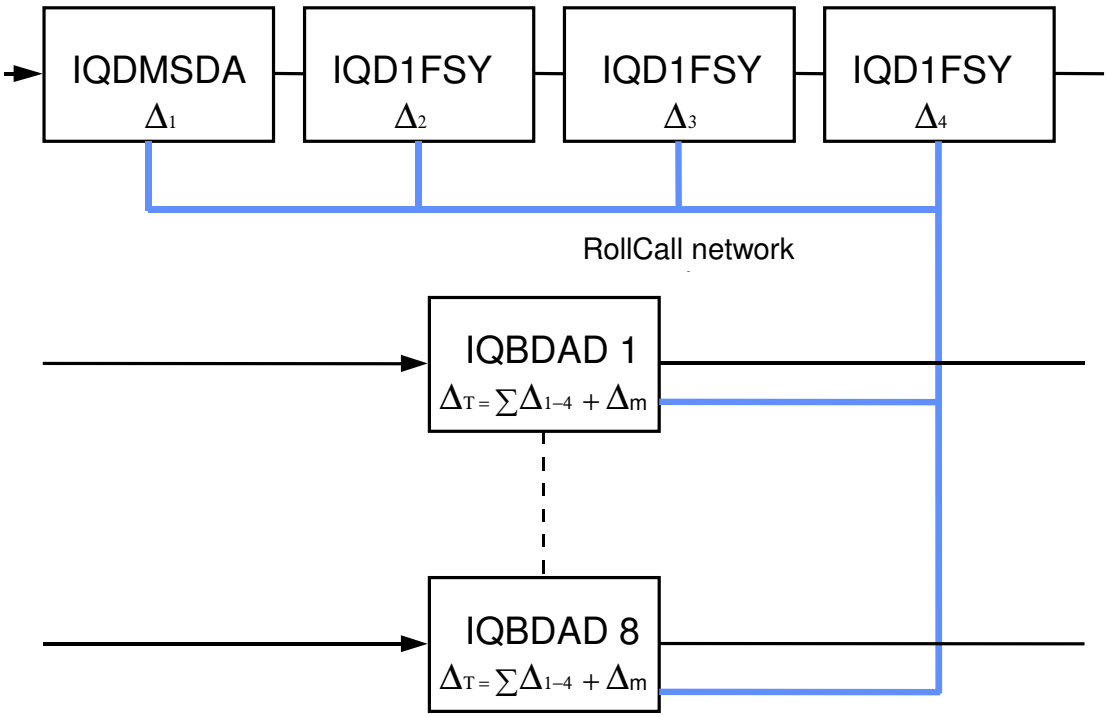
From one to eight audio delay products can be connected via RollCall™ to a single frame synchronizer, for example. If the synchronizer delay changes, then however many audio delays are connected will track the delay. The audio delays can also have a manual delay which will be added to the RollTrack delay.

The next level of complexity is *a horizontal delay cluster* where an audio delay can track up to four video units.



The total delay time through the audio delay is then the sum of the individual delays introduced by the video units plus the manual delay of the audio unit. The manual delay can be set to compensate for any fixed propagation delay in the video path or may be set to zero.

The next level of complexity is a *matrix delay cluster* where each audio delay (up to eight) can track up to four video units. This configuration is in effect a four by eight matrix of video units and audio delay units. The total delay time through the audio delay units is then the sum of the individual delays introduced by the video units plus the manual delay of the audio unit.



As any of the delay times change in the video path so will the audio delay time track this delay.
A virtual connection is made between from, say, an IQD1FSY to an IQBDAD by:

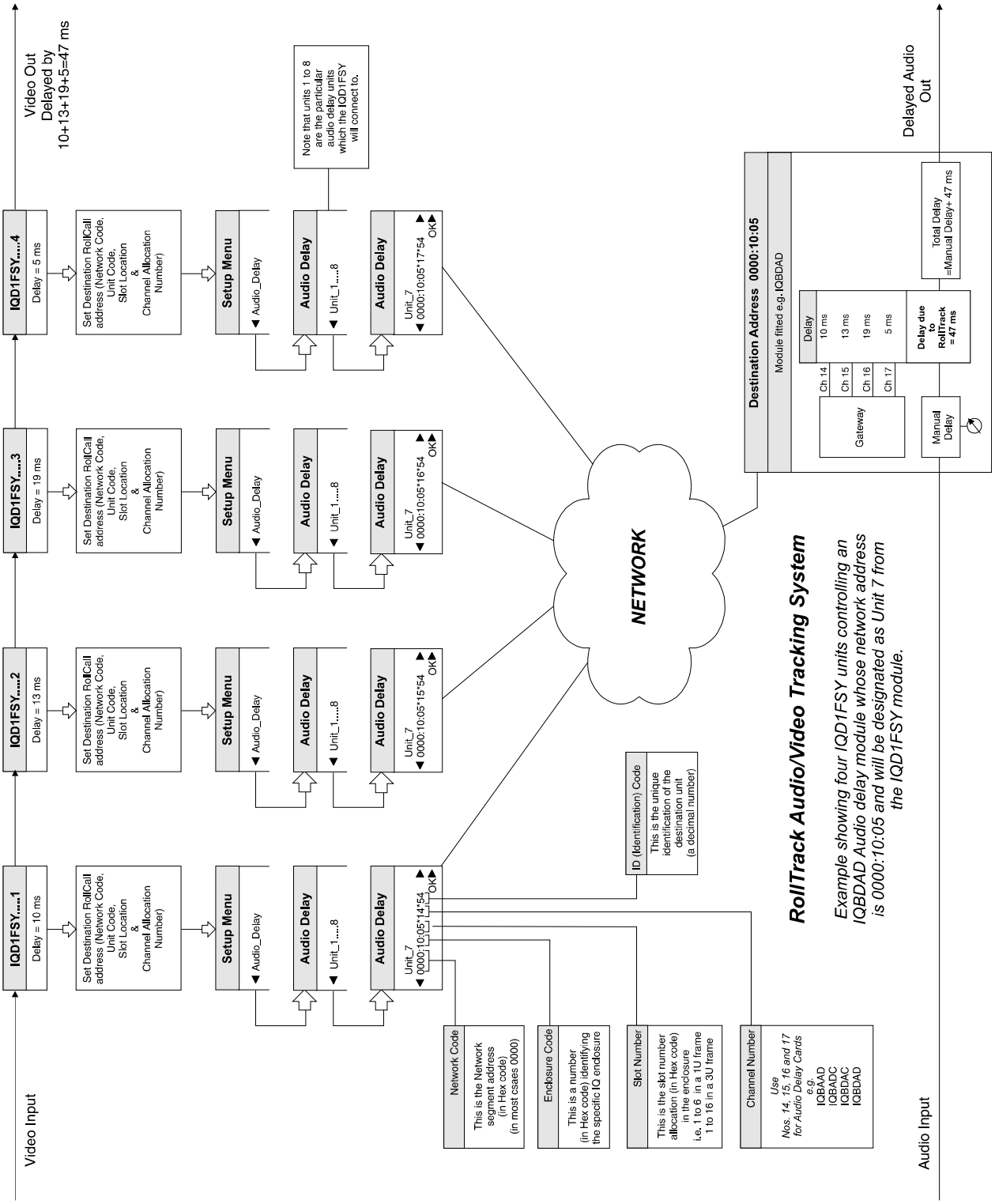
selecting the *Setup...* Menu of the IQD1FSY
then selecting the *Audio_Delay...* Menu
then choosing from *Unit_1* to *Unit_8*
then entering the unique network address of the IQBDAD in the form *nnnn:xx:yy*z*d*
where *nnnn* = network address and in most cases will be 0000(hex);
xx = IQ enclosure address (hex);
yy = slot address of the IQBDAD (hex)
z = the connection (or channel) number (decimal) - see table below.
d = the unique identification of the destination unit (decimal) The ID entered must match the receiving units own ID or else the command will be ignored. If the ID value is set to 00, the receiving unit does not perform an ID match and will always accept the incoming command

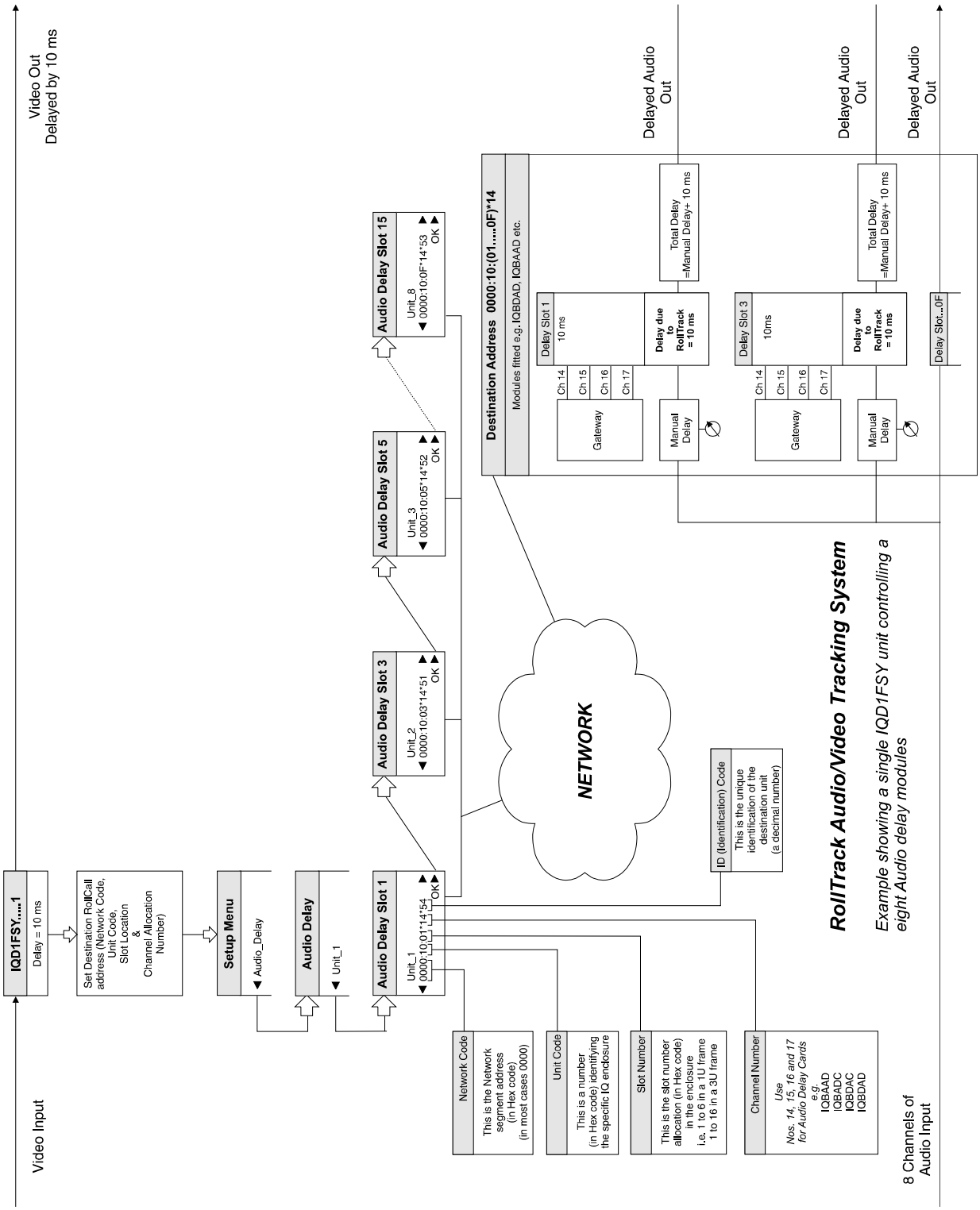
then selecting the *Delay...* Menu of the IQBDAD
then selecting *RollTrack*

Example of Network Addresses with Channel Numbers and ID Numbers

	D1FSY 1	**D1FSY 2**	**D1FSY 3**	**D1FSY 4**
Audio delay 1	0000:10:01*14*54	0000:10:01*15*54	0000:10:01*16*54	0000:10:01*17*54
Audio delay 2	0000:10:03*14*54	0000:10:03*15*54	0000:10:03*16*54	0000:10:03*17*54
Audio delay 3	0000:10:05*14*54	0000:10:05*15*54	0000:10:05*16*54	0000:10:05*17*54
Audio delay 4	0000:10:07*14*54	0000:10:07*15*54	0000:10:07*16*54	0000:10:07*17*54
Audio delay 5	0000:10:09*14*54	0000:10:09*15*54	0000:10:09*16*54	0000:10:09*17*54
Audio delay 6	0000:10:0B*14*54	0000:10:0B*15*54	0000:10:0B*16*54	0000:10:0B*17*54
Audio delay 7	0000:10:0D*14*54	0000:10:0D*15*54	0000:10:0D*16*54	0000:10:0D*17*54
Audio delay 8	0000:10:0F*14*54	0000:10:0F*15*54	0000:10:0F*16*54	0000:10:0F*17*54

The most complex system would be an array of matrix delay clusters




Video Out
Delayed by 10 ms
Video Input
IQD1FSY....1
Delay = 10 ms
Set Destination RollCall address (Network Code, Unit Code, Slot Location & Channel Allocation Number)
Setup Menu
Audio_Delay
Audio Delay
Unit_1
Audio Delay Slot 1
Unit_1
0000:10:01*14*54
OK
Audio Delay Slot 3
Unit_2
0000:10:03*14*51
OK
Audio Delay Slot 5
Unit_3
0000:10:05*14*52
OK
Audio Delay Slot 15
Unit_8
0000:10:0F*14*53
OK
NETWORK
Destination Address 0000:10:(01.....0F)*14
Modules fitted e.g.IQBDAD, IQBAAD etc.
Delay Slot 1
10 ms
Ch 14
Ch 15
Ch 16
Ch 17
Gateway
Delay due to RollTrack = 10 ms
Manual Delay
Total Delay =Manual Delay+ 10 ms
Delayed Audio Out
Delay Slot 3
10ms
Delay Slot..0F
ID (Identification) Code
This is the unique identification of the destination unit (a decimal number)
Network Code
This is the Network segment address (in Hex code) (in most cases 0000)
Unit Code
This is a number (in Hex code) identifying the specific IQ enclosure
Slot Number
This is the slot number allocation (in Hex code) in the enclosure I.e. 1 to 6 in a 1U frame 1 to 16 in a 3U frame
Channel Number
Use Nos. 14, 15, 16 and 17 for Audio Delay Cards e.g. IQBAAD IQBADC IQBDAC IQBDAD
8 Channels of Audio Input
RollTrack Audio/Video Tracking System
Example showing a single IQD1FSY unit controlling a eight Audio delay modules

Manual Revision Record

Date	Version No.	Issue No.	Change	Comments
300307	1	1		First issue released
120607	1	2	Page B16.2 Rear panel code numbers corrected	New issue released