

IQAAD00
4 Channel Audio Analog to Digital Converter

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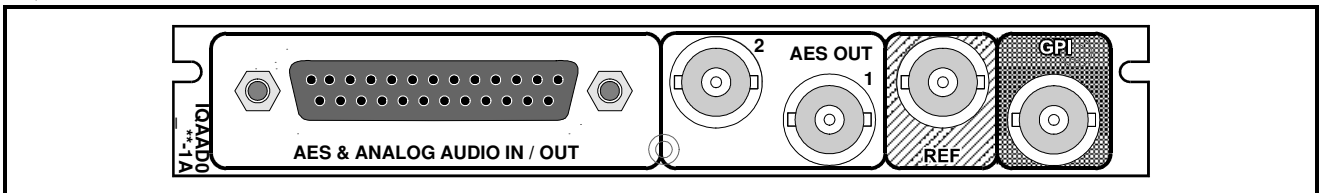
Module Description

The IQAAD00 converts two analog stereo pairs, or four analog mono channels into two AES/EBU digital audio streams. Each analog input is sampled at 48 kHz with 20-bit resolution. Sampling can be free-running, locked to a reference video signal or 48KHz AES/EBU digital audio stream.

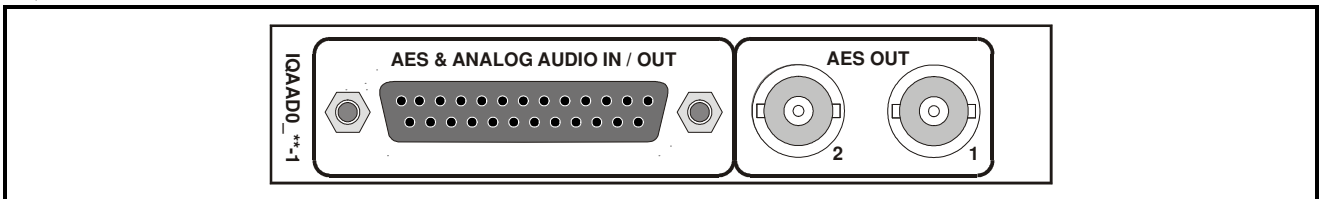
Video standard is automatically determined. The IQAAD00 also provides proc. amp control, channel routing and mixing, up to 0.5 s of tracking audio delay and additional fixed delay of up to 3 s adjustable in 1 ms steps.

Rear Panel Views

IQAAD0015-1A



IQAAD0014-1



This manual covers the following products:

IQAAD0015-1A Analog Audio ADC. 4 balanced analog audio inputs, 2 balanced and unbalanced AES/EBU outputs, 1 GPI

IQAAD0014-1 Analog Audio ADC. 4 balanced analog audio inputs, 2 balanced and unbalanced AES/EBU outputs

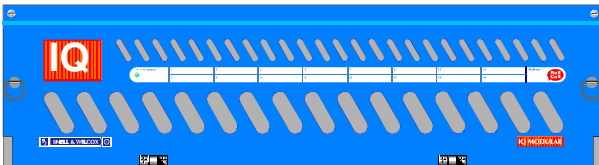
Product Comparison

Product	Analog Inputs		AES/EBU Outputs		GPI	Reference Input	Width & Style
	Number	Type	Channel	Type			
IQAAD0015-1A	4	BAL	1	1 UNBAL	1	1	Single A
				1 BAL			
			2	1 UNBAL			
				1 BAL			
IQAAD0014-1	4	BAL	1	1 UNBAL	No	No	Single O
				1 BAL			
			2	1 UNBAL			
				1 BAL			

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.



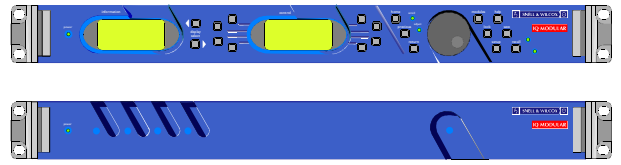
(Enclosure order codes IQH3A-E-0, IQH3A-E-P, IQH3A-0-0, IQH3A-0-P)



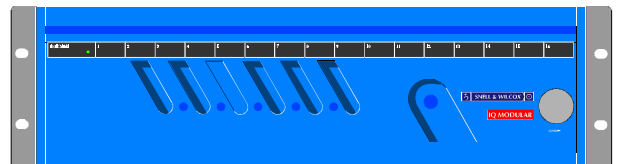
(Enclosure order codes IQH3A-S-0, IQH3A-S-P)

‘O’ Style Enclosures

Rear panels **without** the suffix A may only be fitted into the ‘O’ style enclosures shown below.



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

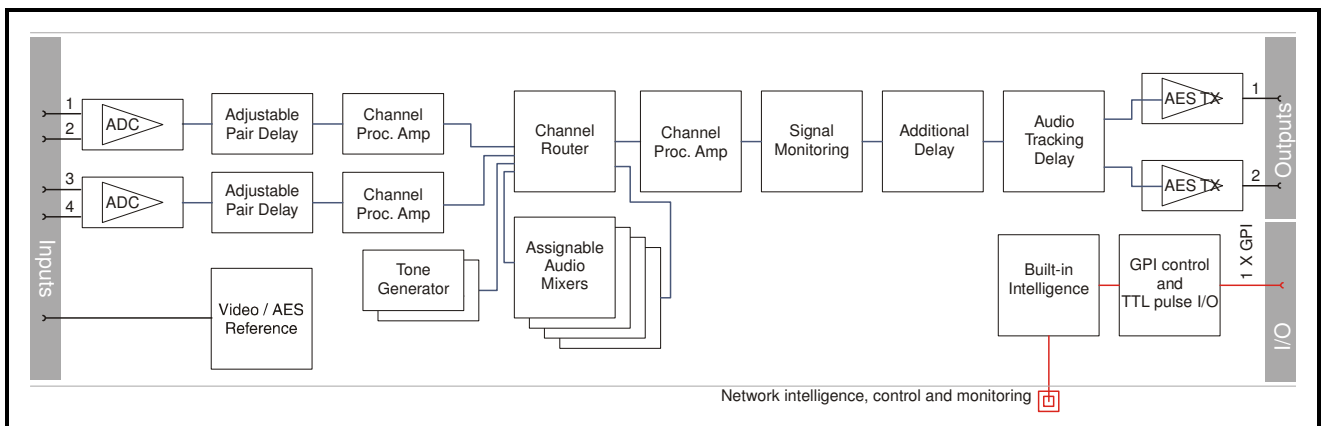


(Enclosure order codes IQH3N-0, IQH3N-P)



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

Block Diagram



Features

- Converts four analog audio channels into two AES/EBU digital audio streams
- Firewall for processed PCM audio to provide a continuous output
- 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 inputs
- Audio proc-amp (gain, mute, polarity))
- RollCall control and monitoring compatible

Technical Profile

Signal Inputs

Analog Audio4 Channels (2 Stereo Pairs)
 Video / AES ReferenceComposite video / AES/EBU (BNC)

Signal Outputs

Unbalanced digital audio.....2 x AES/EBU (BNC)
 Balanced digital audio2 x AES/EBU (25 Way D-Type)
 StandardsAES3 - 1992

Control Interface

GPI 1x Closing contact I/O interface (BNC)

Card Edge Controls

NONE

Card Edge Indicators

Reference Present
 CPU running / PowerOne green LED, flashing = OK

RollCall Functions

Audio Controls

Set line up level+20 to -20 dBu in 1 dB steps
 Set headroom4 to 24 dB in 1 dB steps
 Set audio detector thresholds
 High/low levels, silence, overload, time delay
 Audio input delayUp 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 routingOutput channels routed from analog 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
 Reference Select Free Run, AES/EBU or Video PAL/NTSC

Reporting (* also Logged)

Audio Silence, High Level, Low Level, Overflow
 For processed audio channels only
 No reference..... *No reference present
 Reference error..... AES reference sample rate not 48 kHz

RollTrack Input

Delay RollTrack + fixed

RollTrack Output

Delay Current audio delay
 Reference state Ref Lost, Ref Present, Ref error [error: AES reference sample rate not 48 kHz]
 GPI High, Low, Inactive

Technical Profile (continued)**Specifications****Analog Audio Input (Balanced)**

Analog Input Impedance.....10 k ohms
Frequency Response.....20 Hz to 20 kHz (± 0.1 dB)
Distortion (THD+N)Better than -95 dB, 1kHz@ -
1 dBFS
Dynamic range> 106 dB
Max input level.....+24 dBu

Digital Audio Output (Balanced)

Connector/Format.....25 W D
Level.....3 V p-p typical into 110 Ohms

Digital Audio Output (Unbalanced)

Connector/Format.....BNC
Level.....1 V p-p typical into 75 Ohms

Reference

Reference Return Loss..... Better than -35 dB to 5.8 MHz
Reference Input Level..... 1 V p-p ± 3 dB
Analog Reference Input Standard
48 kHz AES/EBU, 625/525 line

Power Consumption

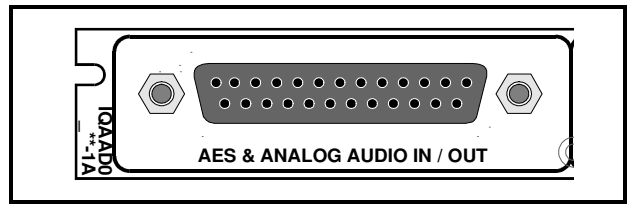
Module Power Consumption
6 W max.

INPUTS

Analog Audio In

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

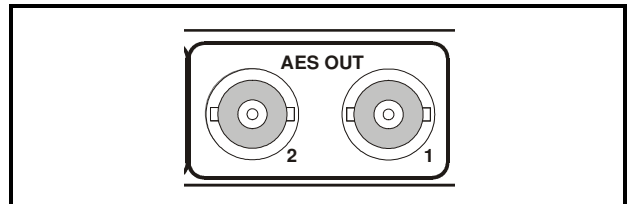
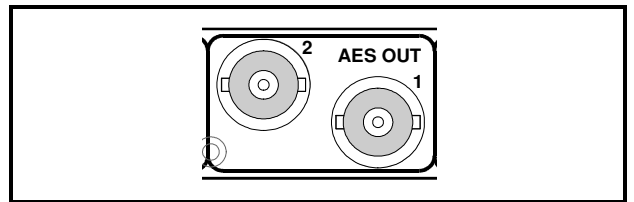
For connection details please see page 9.



OUTPUTS

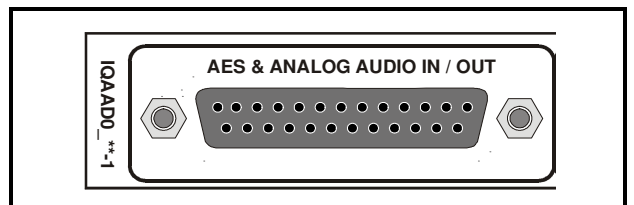
AES Audio Out

All unbalanced AES outputs are available via BNC connectors for 75 Ohms.



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

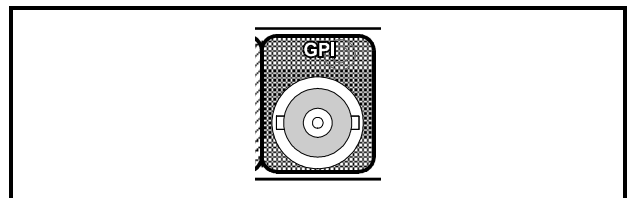
For connection details please see page 9.



GPI (-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.

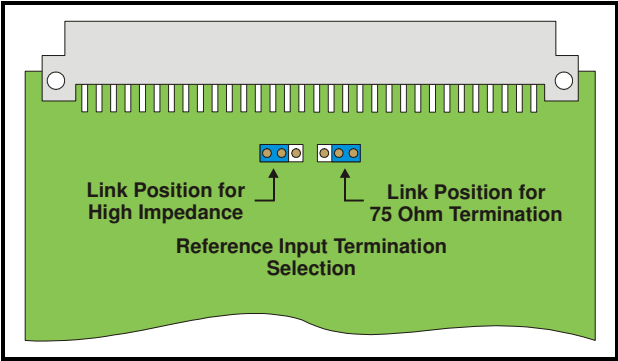
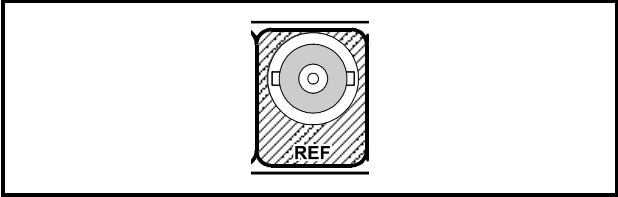
It may also be configured as an output.



Ref(erence) Input (-1A only)

This connector is used to connect a reference signal to the unit via a BNC connector. This may be an analog composite signal or a digital AES/EBU audio stream. The input level can be 1V ±3 dB pk to pk into 75 ohms.

Note that this reference signal input is normally terminated in 75 ohms. It may be converted into a high impedance input by setting the link to the high impedance position as shown opposite.



25 Way D Type Connection Details

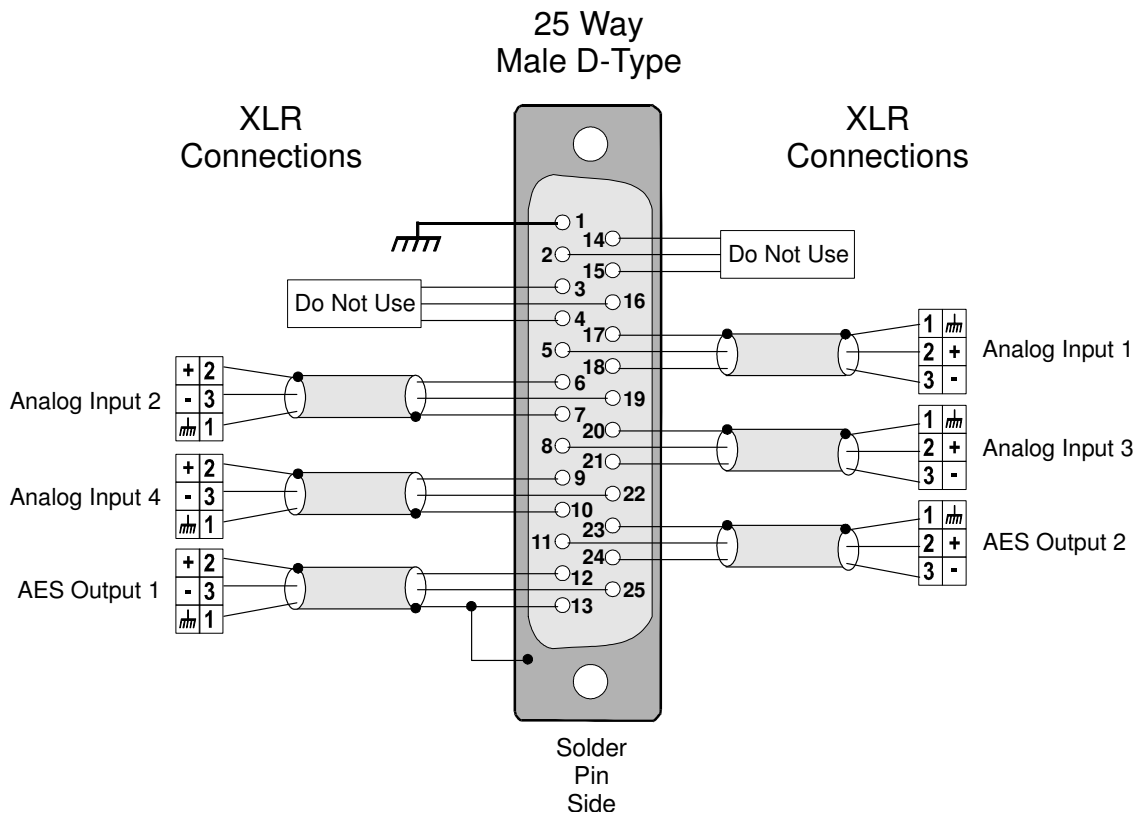
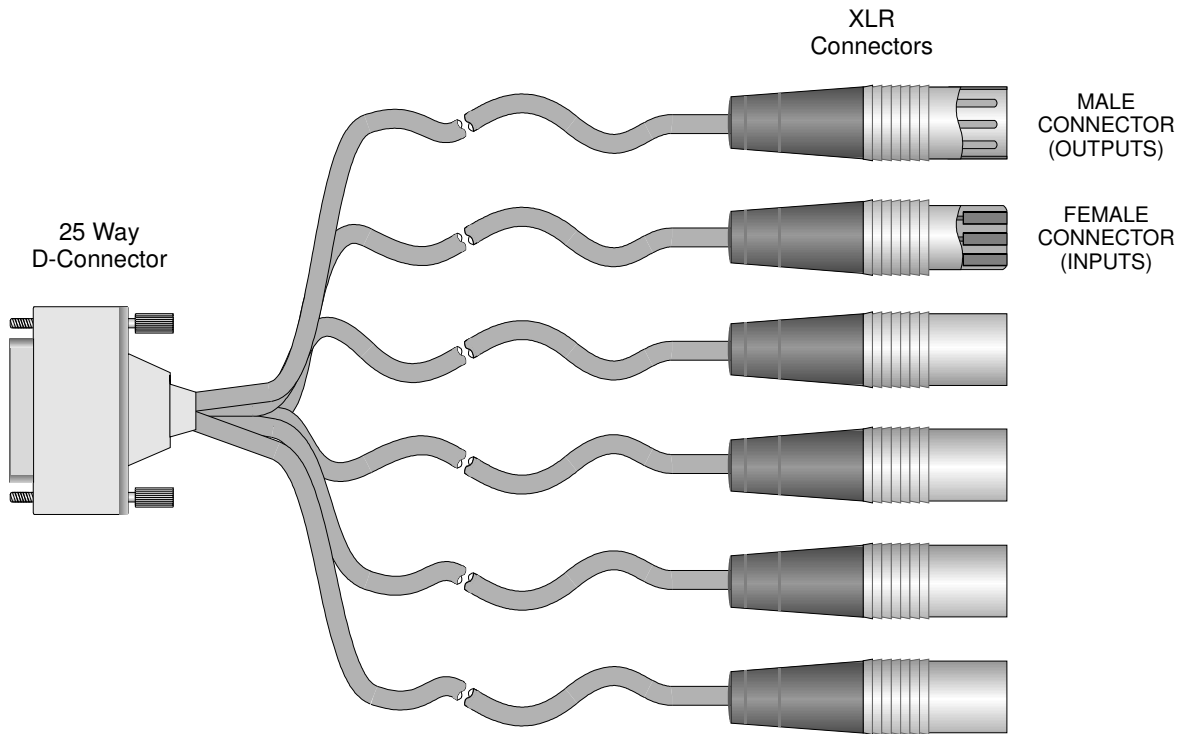
By Pin Number

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

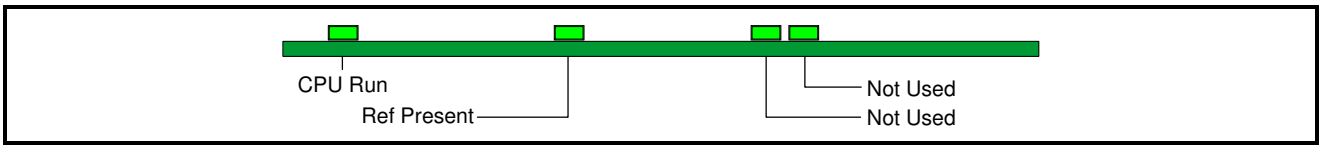
By Function

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

Ref Present (Green)

When illuminated this will indicate that a valid reference signal is present.

RollCall PC Control Panel Screens

Analog Input

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

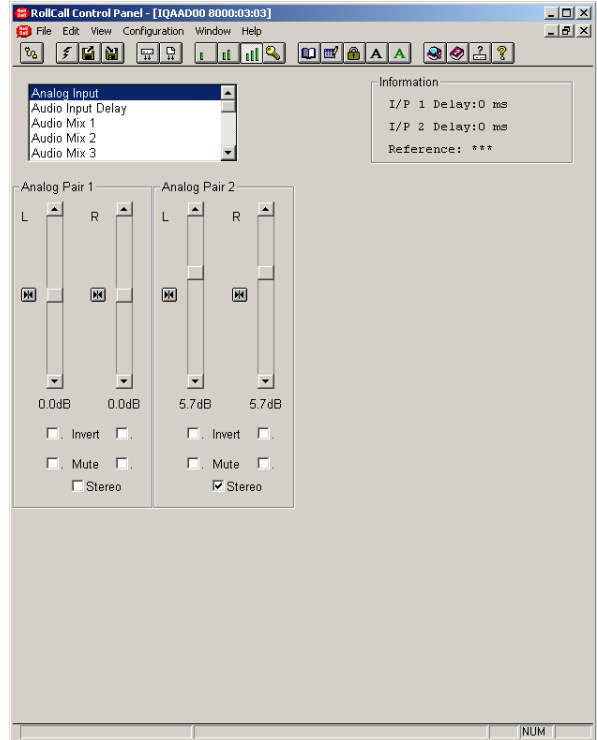
When checked the signal polarity will be inverted.

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.



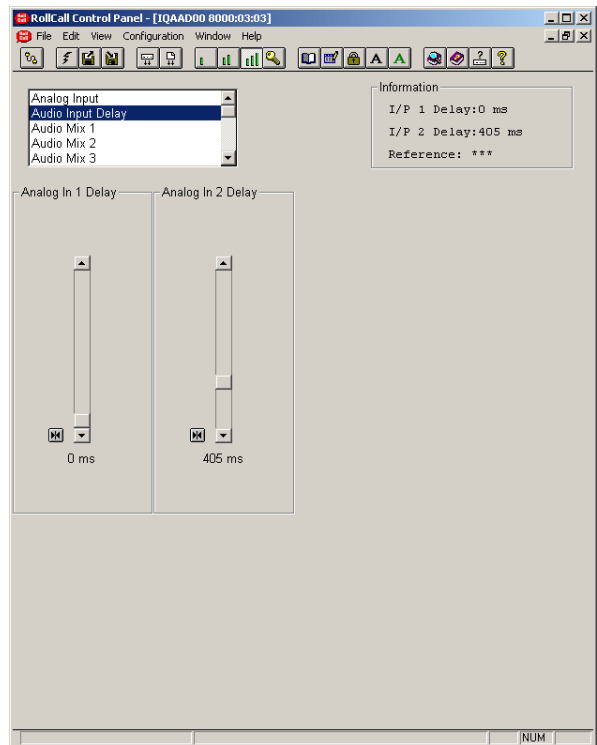
Audio Input Delay

This allows Analog inputs to be delayed.

Analog In 1/2 Delay

These scrollbars allow the delay to be adjusted 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 or in the Total Delay measurement displayed on the **Audio Delay Setup** screen.*



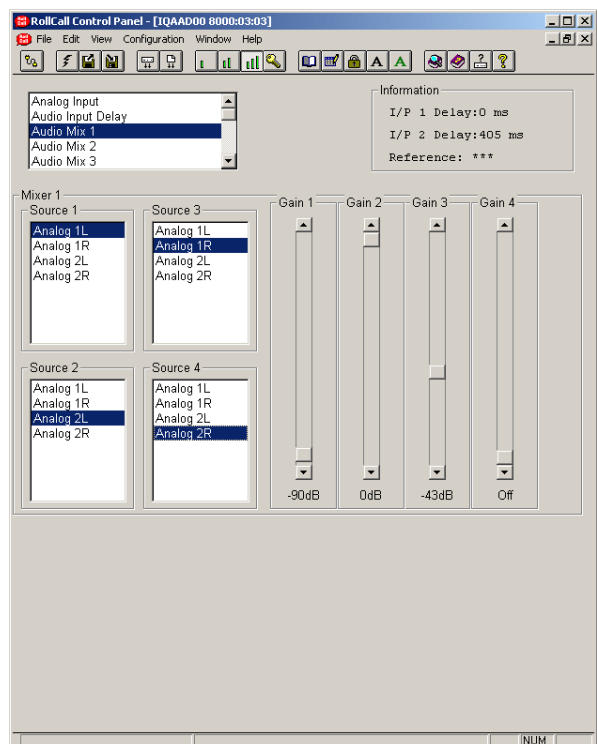
Audio Mix 1, 2, 3 and 4

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

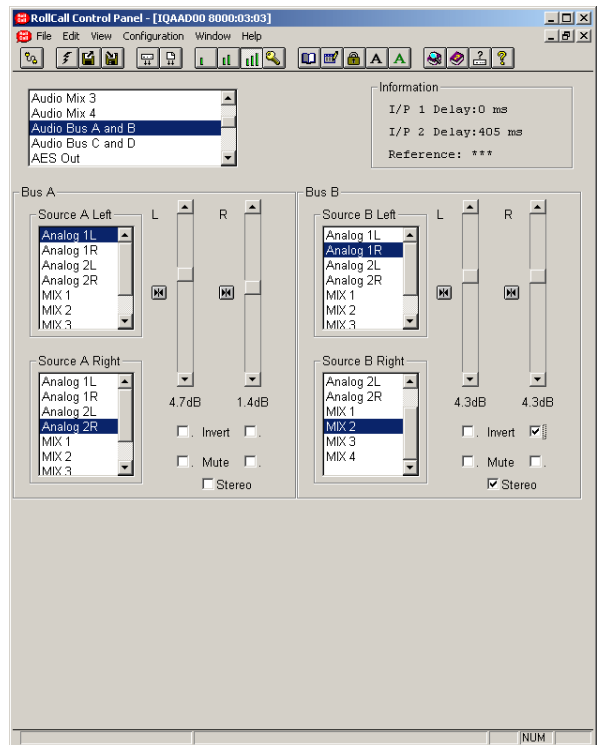
When checked the signal polarity will be inverted.

Mute

When checked the signal will be muted.

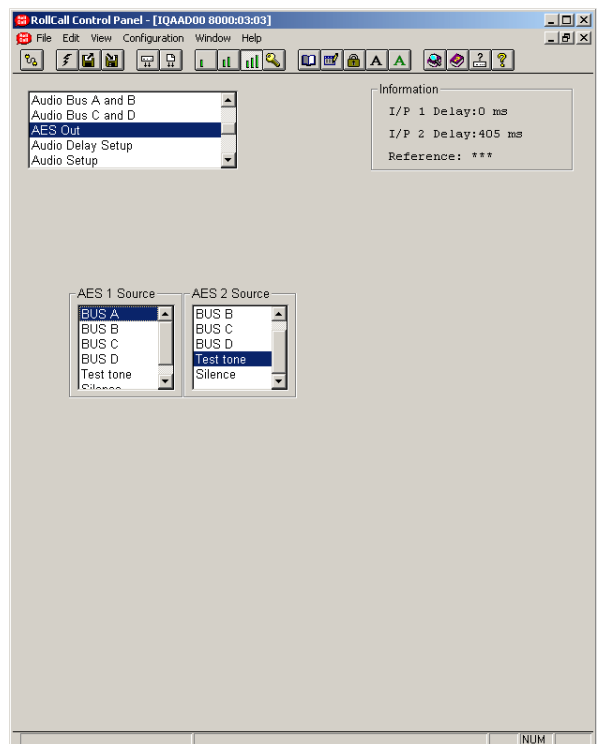
Stereo

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.



AES Out

This allows the signal source for the AES output to be selected from the list of items for the two AES 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 slider may be set for a delay of up to +1500 ms in 1 ms 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.*

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.

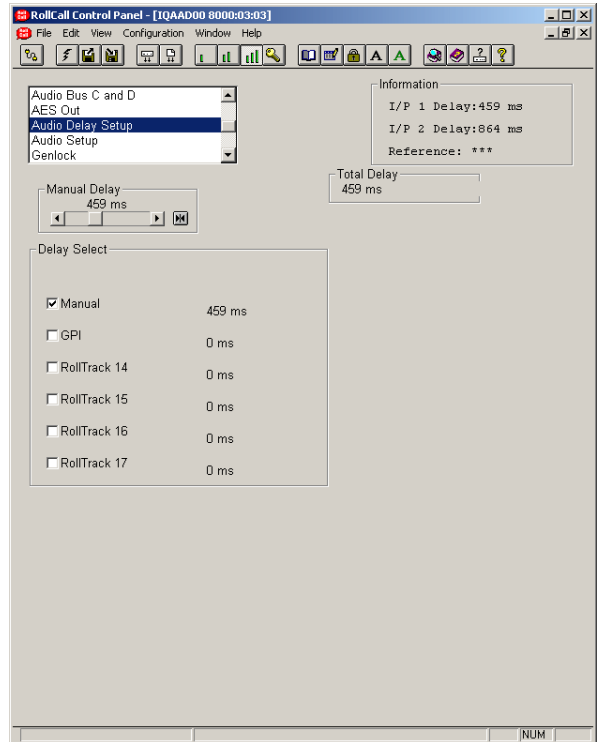
Note that the GPI must be configured correctly for this function to operate. Please see page 20 for details.

RollTrack 14, 15, 16 and 17

When 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 selected 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

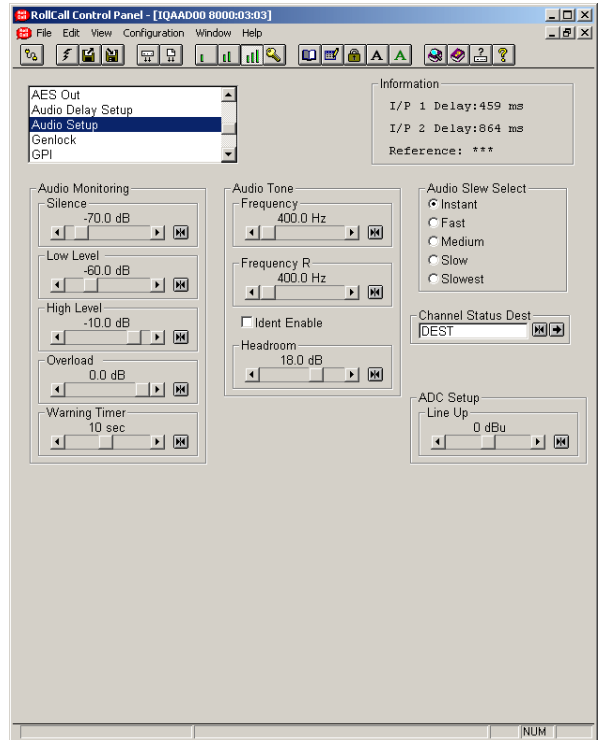
All the above monitoring facilities will only operate after a time interval set by this control. A valid signal is reported immediately. The range is from 1 to 20 seconds. Preset is to 10 seconds.

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)

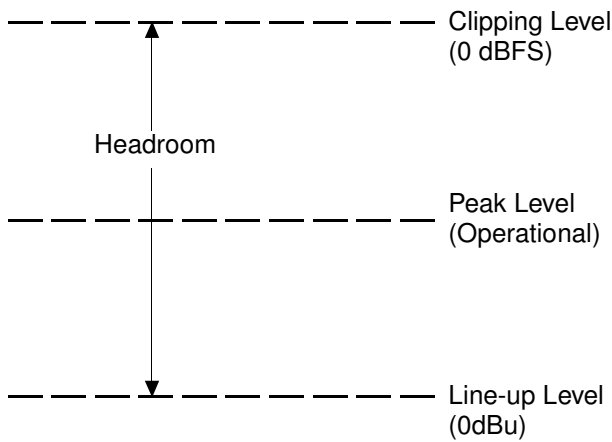
Ident Enable

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:



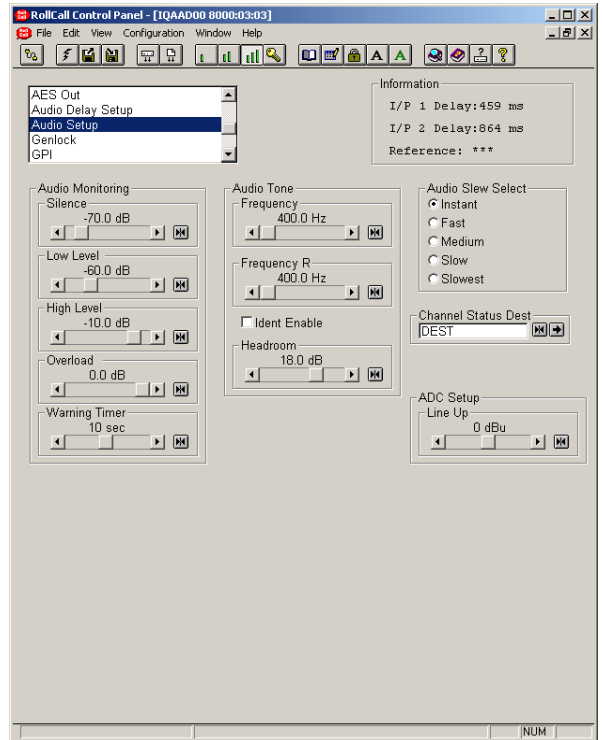
Headroom = Clipping Level – Line-up level

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
- SlowChange 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 AAD00 and cannot be changed.

ADC Setup

Line Up

This allows the Line-up level to be set. The range of adjustment is ±20 dBu and preset is to 0 dBu.

Genlock

This allows the genlock options to be selected.

Lock to Reference

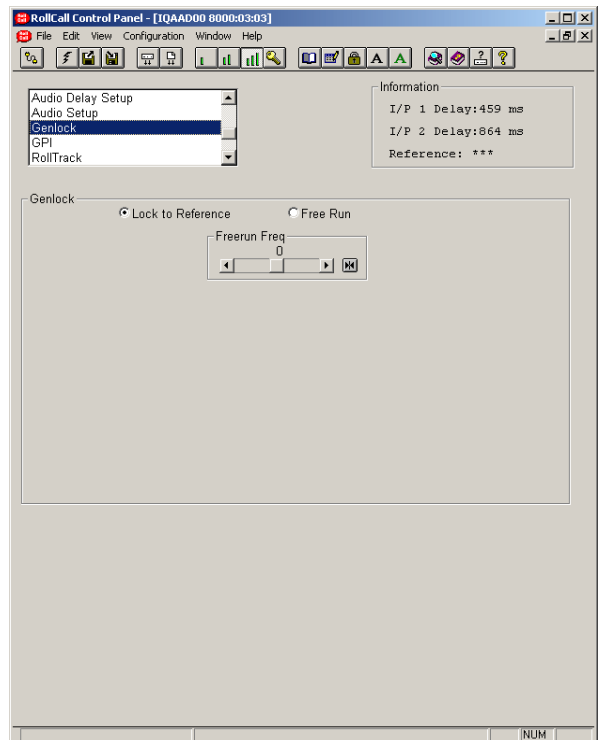
When selected the unit will lock to the external Video / AES reference signal.

Free Run

When selected the unit will not be locked to any external reference signals and the unit will free run.

Freerun Freq(uency)

This allows the freerun frequency of the internal sync generator to be adjusted by ± 60 steps of arbitrary units. Preset is to 0.



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.

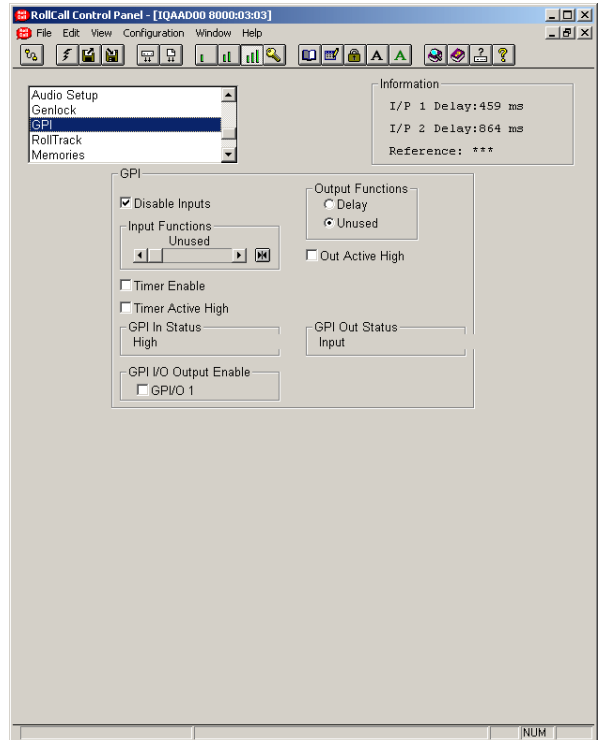
The GPI input functions that may be selected are as follows:

- 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, Low or the delay time derived from the **Timer Enable** function. 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:

- 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 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. Note also that this is the total delay set up using the **Audio Delay Setup** screen (see page 15).*

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

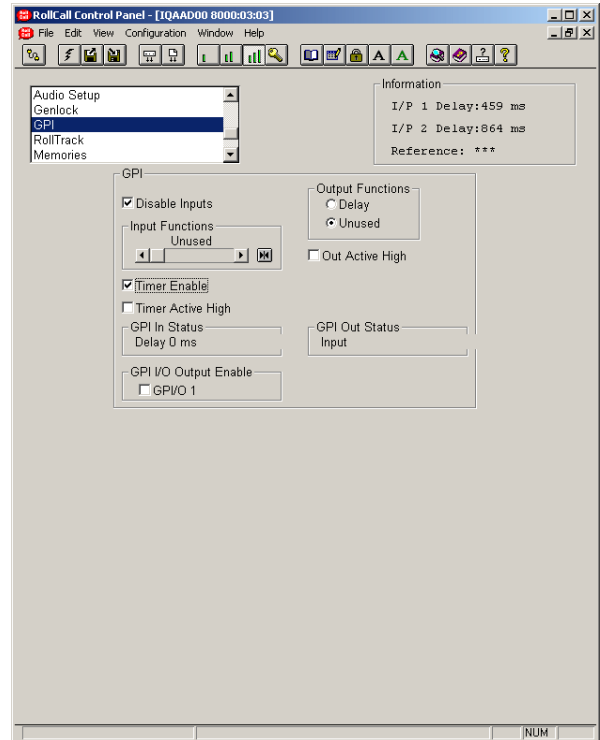
When checked the GPI will measure the positive going pulse. When unchecked the negative pulse is measured.

Out Active High

This determines the sense of the asserted GPI output signal. When checked the GPI is active and 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

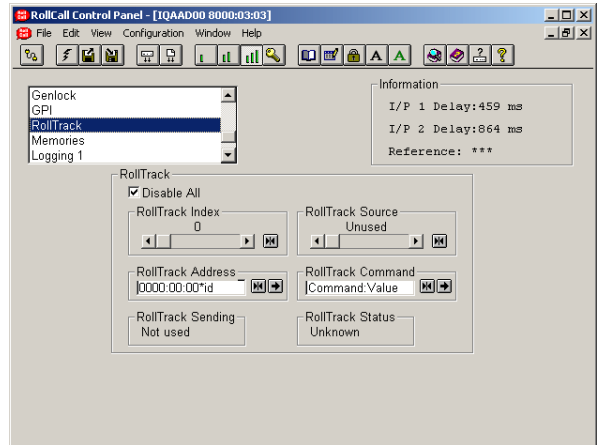
This item allows up to 70 destinations to be selected.

RollTrack Source

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

The options are:


Unused (off)
Audio Delay
Ref Lost
Ref Present
Ref Error
GPI Low
GPI High
GPI Inactive



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

Network Address

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 (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.

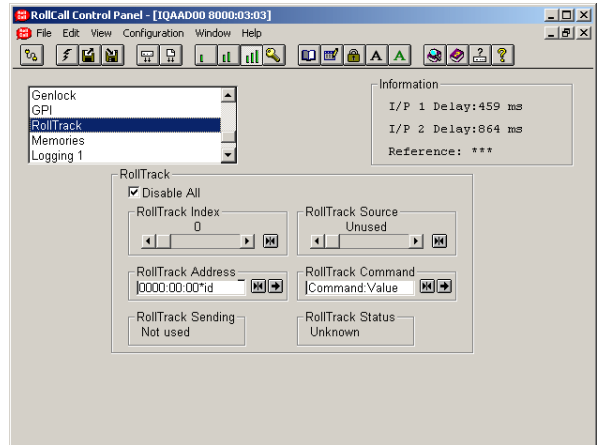
Note: To avoid incorrect RollTrack information being generated, it is advisable to select this control while setting up RollTrack functions.

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.



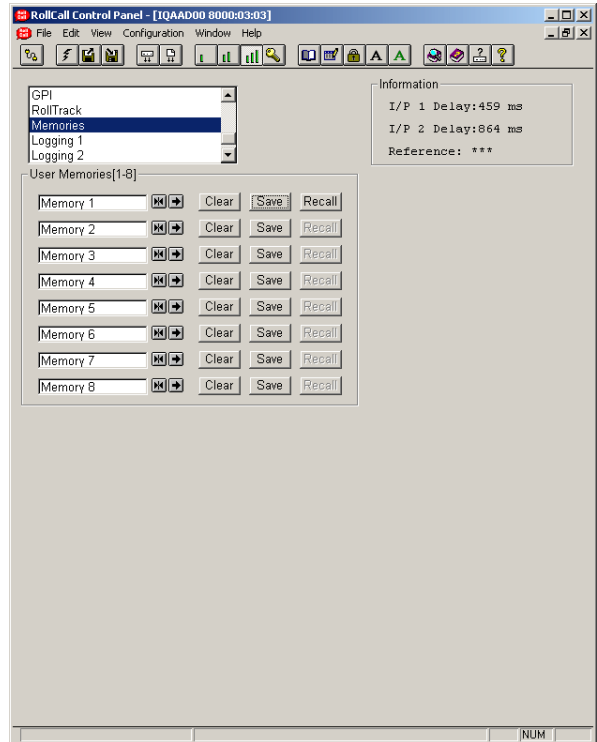
This item allows the memory location to be cleared and returned to the default (preset) setting. This empties the memory location and the Recall button will then appear grayed out.



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.

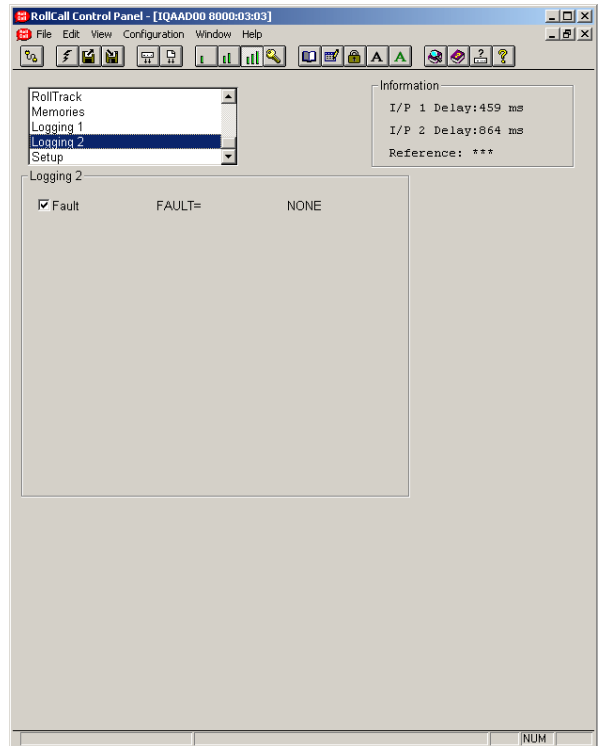
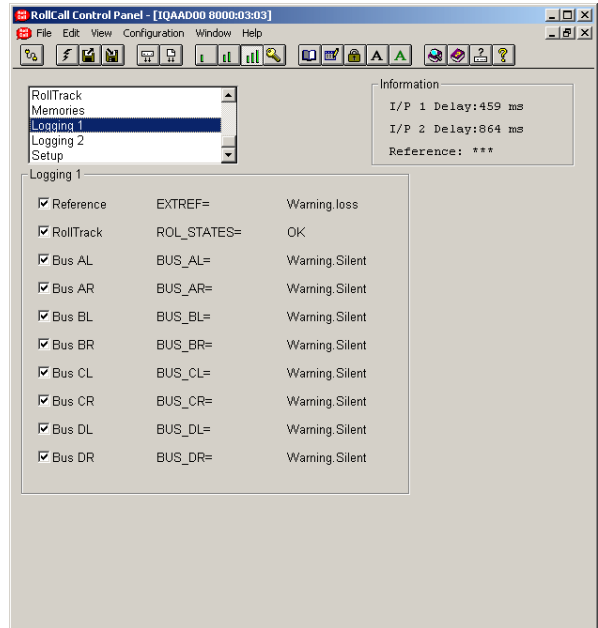


Logging 1 and 2

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.



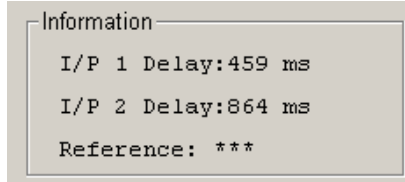
ROLLCALL LOG FIELDS

Log Field	Log Value	Description
EXTREF=	525 625 WARNING.LOSS WARNING.525_N/A WARNING.625_N/A WARNING.AES_N/A ERROR.AES AES NONE	525 reference 625 reference Reference lost, trying to lock to reference 525 reference, not trying to lock to reference 625 reference, not trying to lock to reference AES reference, not trying to lock to reference AES reference trying to lock to reference AES reference AES reference, not trying to lock to reference
ROL_STATES=	OK FAIL	RollTrack message sent and received OK RollTrack message not acknowledged
BUS_AL=	OK WARNING.SILENT 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 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.SILENT WARNING.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.SILENT WARNING.QUIET WARNING.HIGH WARNING.OVERLOAD	Router BUS B Right channel has valid signal selected Router BUS B Right channel is receiving silence Router 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 inputs and the reference signal.



I/P 1, I/P 2 Delay:

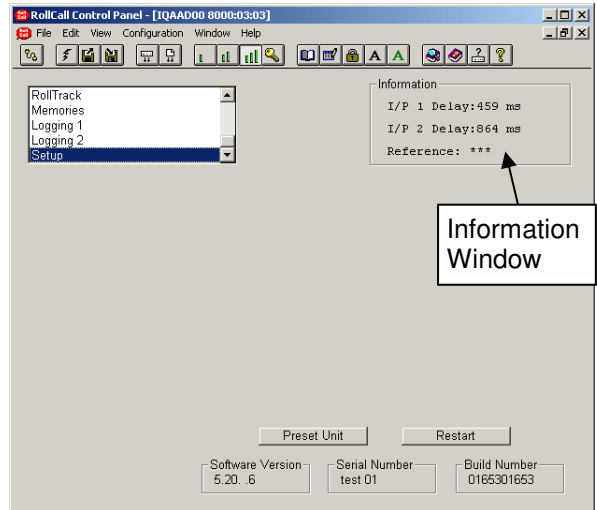
This will display the total delay of the input signal through the unit in milliseconds.

This figure is the sum of the delay set up using the **Audio Input Delay** screen (see page 13) plus the delay set up using the **Audio Delay Setup** screen (see page 15)

Reference:

This will show the status of the genlock signal.

- * * * No reference signal detected
- None Free Run mode selected
- 625 OK Valid 625 video reference signal detected
- 525 OK Valid 525 video reference signal detected
- AES OK Valid AES reference signal detected
- 625 N/A 625 video reference signal detected but Free Run mode selected
- 525 N/A 525 video reference signal detected but Free Run mode selected
- AES N/A AES reference signal detected but Free Run mode selected



Setup (continued)

Preset Unit

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

Note that this is a momentary action.

Restart

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

Software version

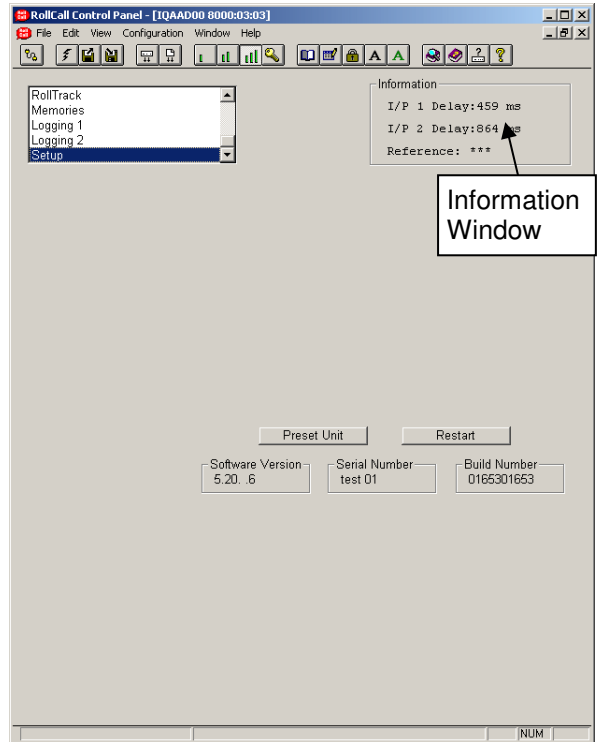
This item shows the version of the software fitted in the module.

Serial Number

This item shows the serial number of the module

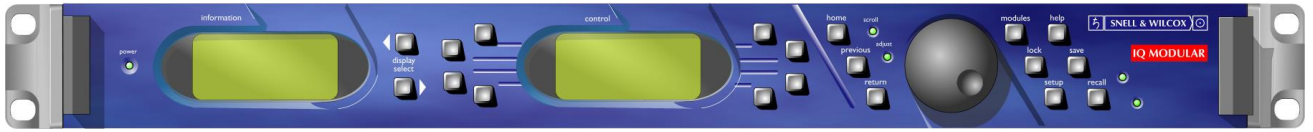
Build Number

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.

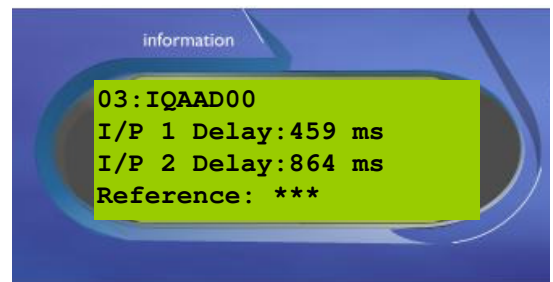


All operational parameters and selections are made using a system of menus displayed in two LCD windows.

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.

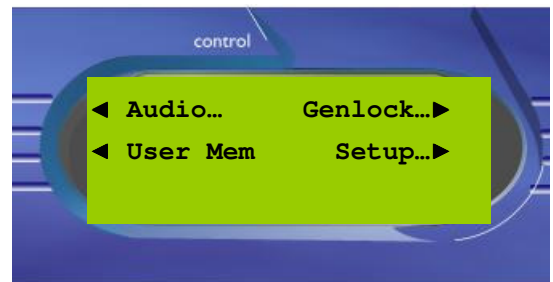


For details of the abbreviations used please see page 26.

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

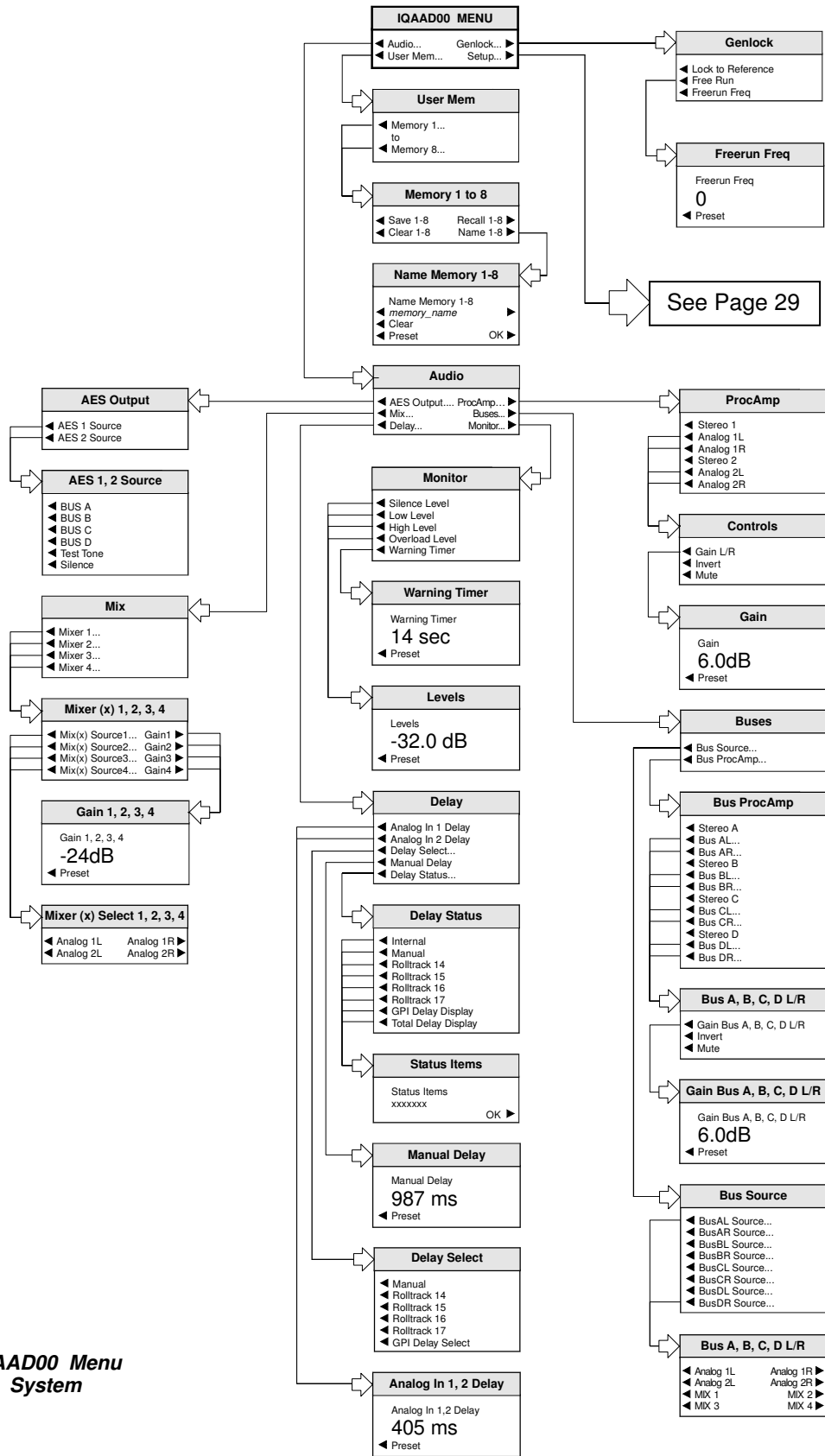
The menu structure is detailed in the following pages.

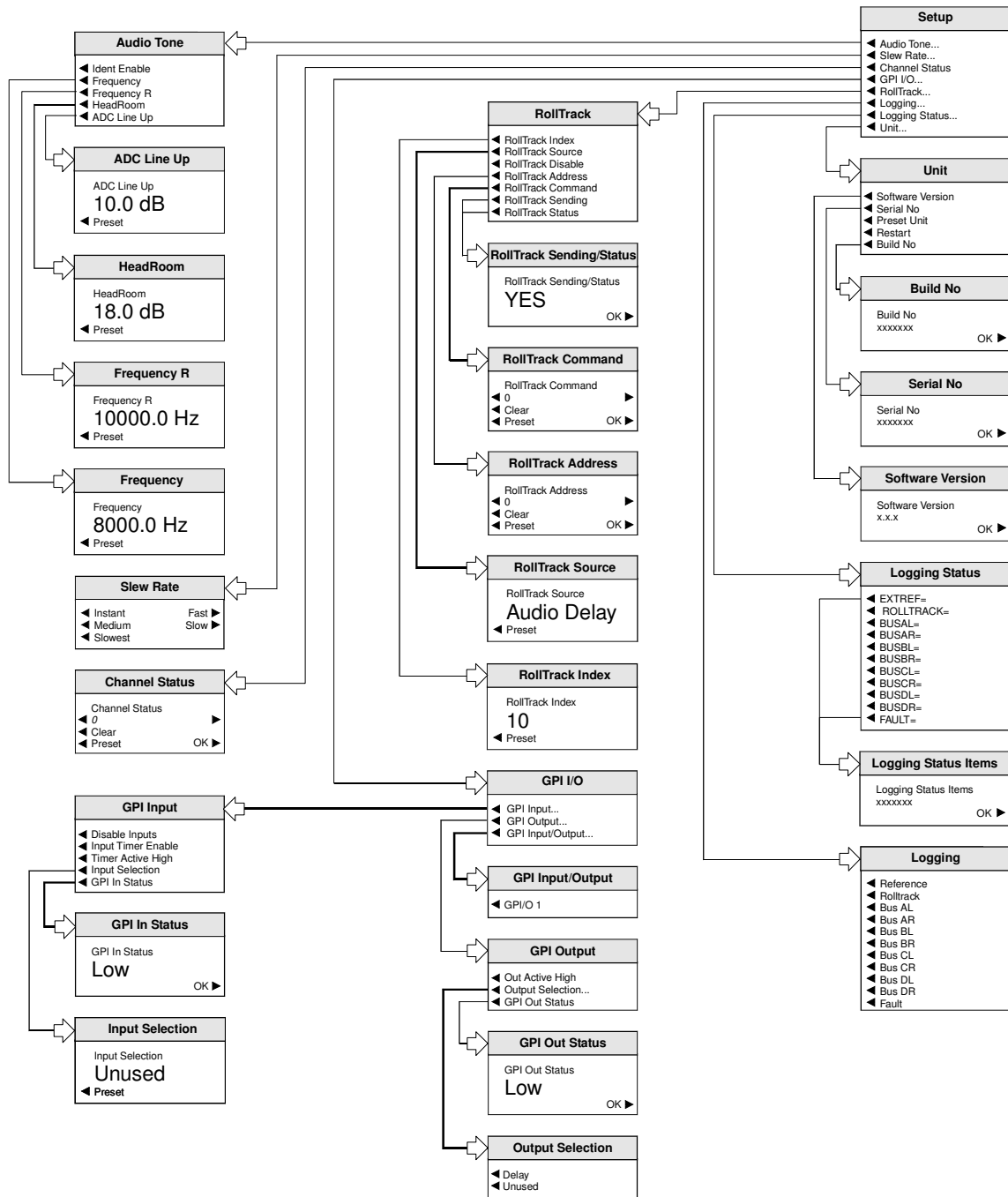
The main or top level menu allows various sub-menus to be selected by pressing the button adjacent to the required text line.

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.

IQAAD00 Menu System





IQAAD00 Menu System

RollTrack Audio Delay Tracking

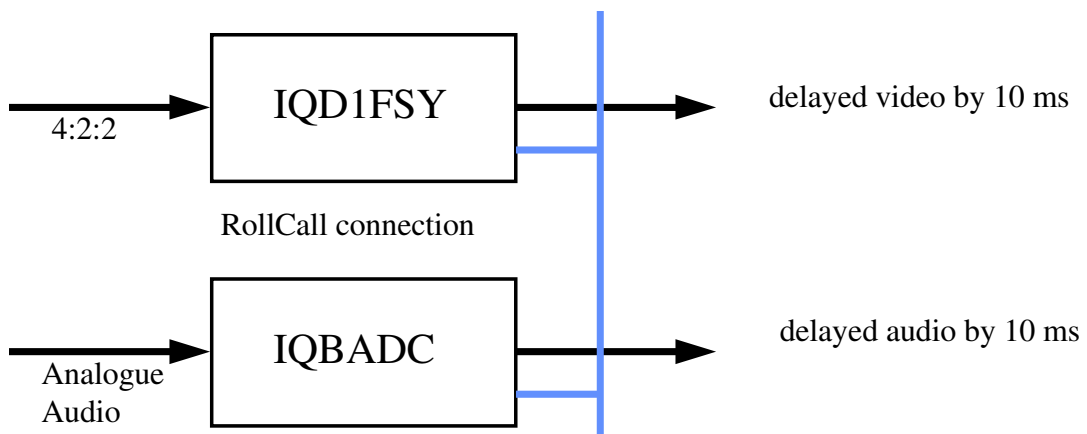
RollTrack is a feature of RollCall™ (Snell & Wilcox’s proprietary remote control system), that allows devices to communicate across the RollCall network with no direct user intervention.

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.



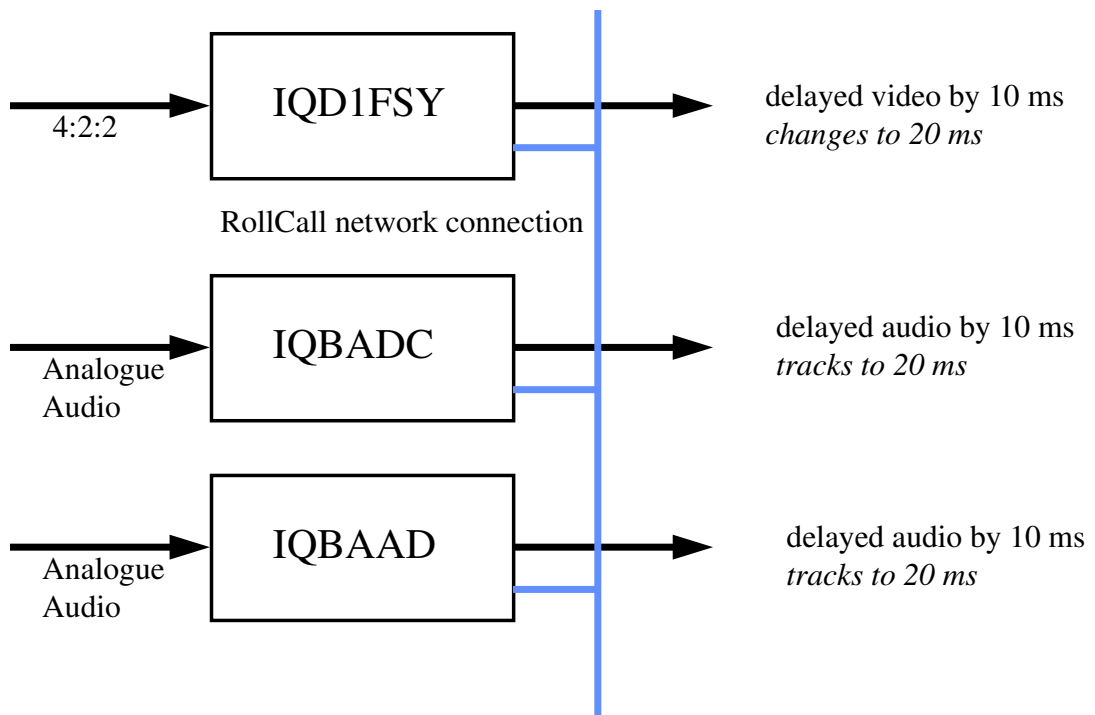
The next level of configuration is where there are multiple Frame Synchronizers (for example) each connected through RollCall™ to their own tracking Audio Delay. (It is worth stating that the synchronizers and audio delays do not have to be in the same enclosure; the addressing scheme, discussed later,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

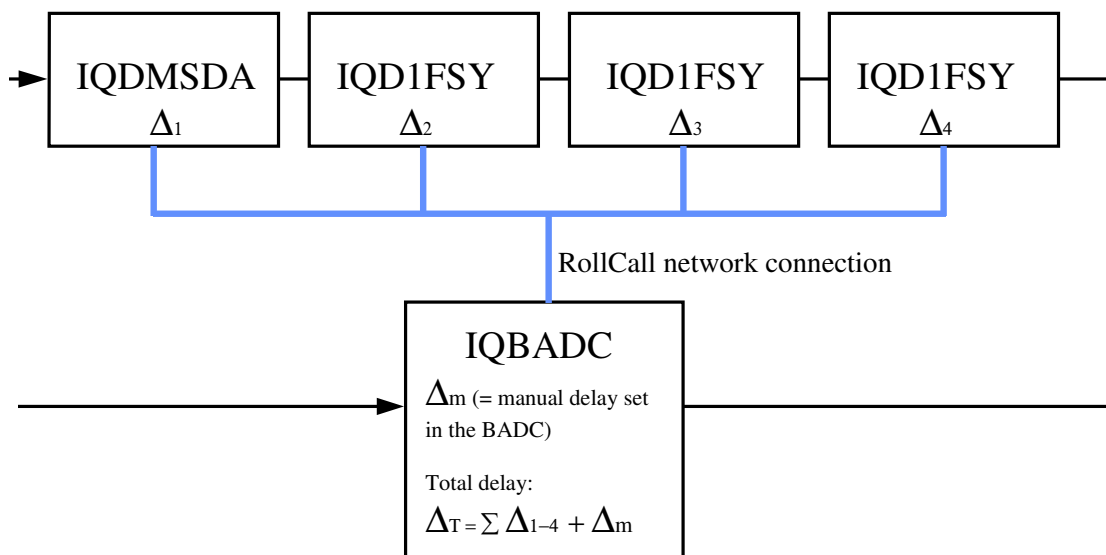
Module	ID
IQBADC	51
IQBDAC	52
IQBAAD	53
IQBDAD	54
IQBSYN	89
IQBADCD	107

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.



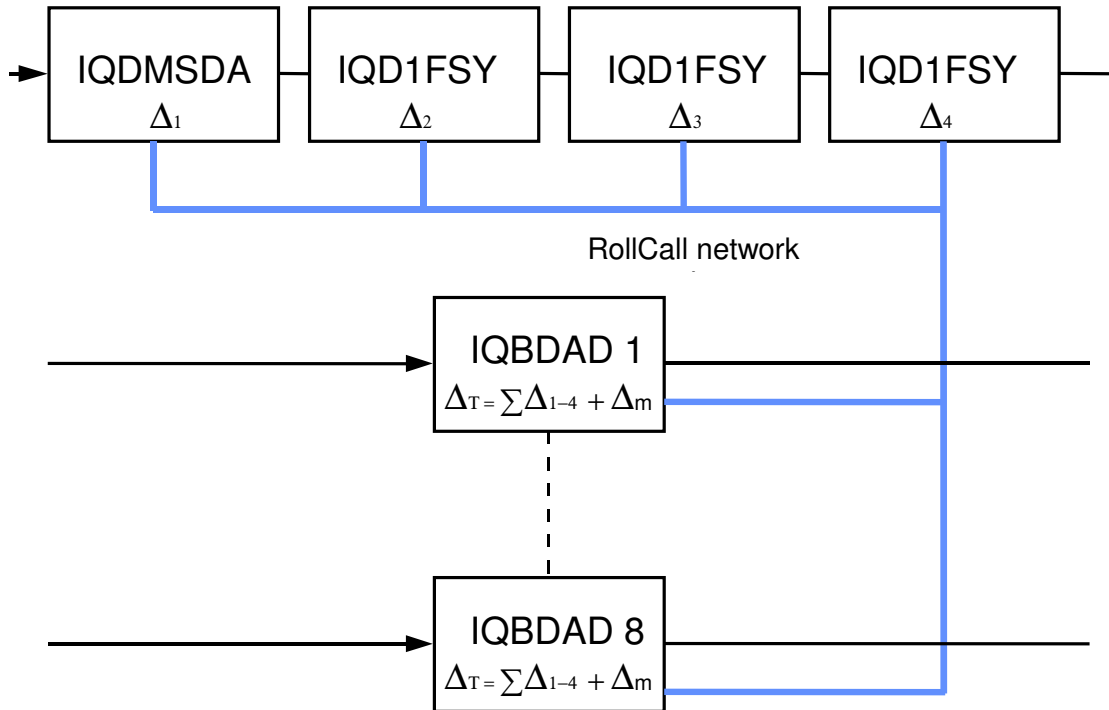
From one to eight audio delay products can be connected via RollCall™ to a single frame synchronizer, for example. If the synchronizer delay changes, then however many audio delays are connected will track the delay. The audio delays can also have a manual delay which will be added to the RollTrack delay.

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

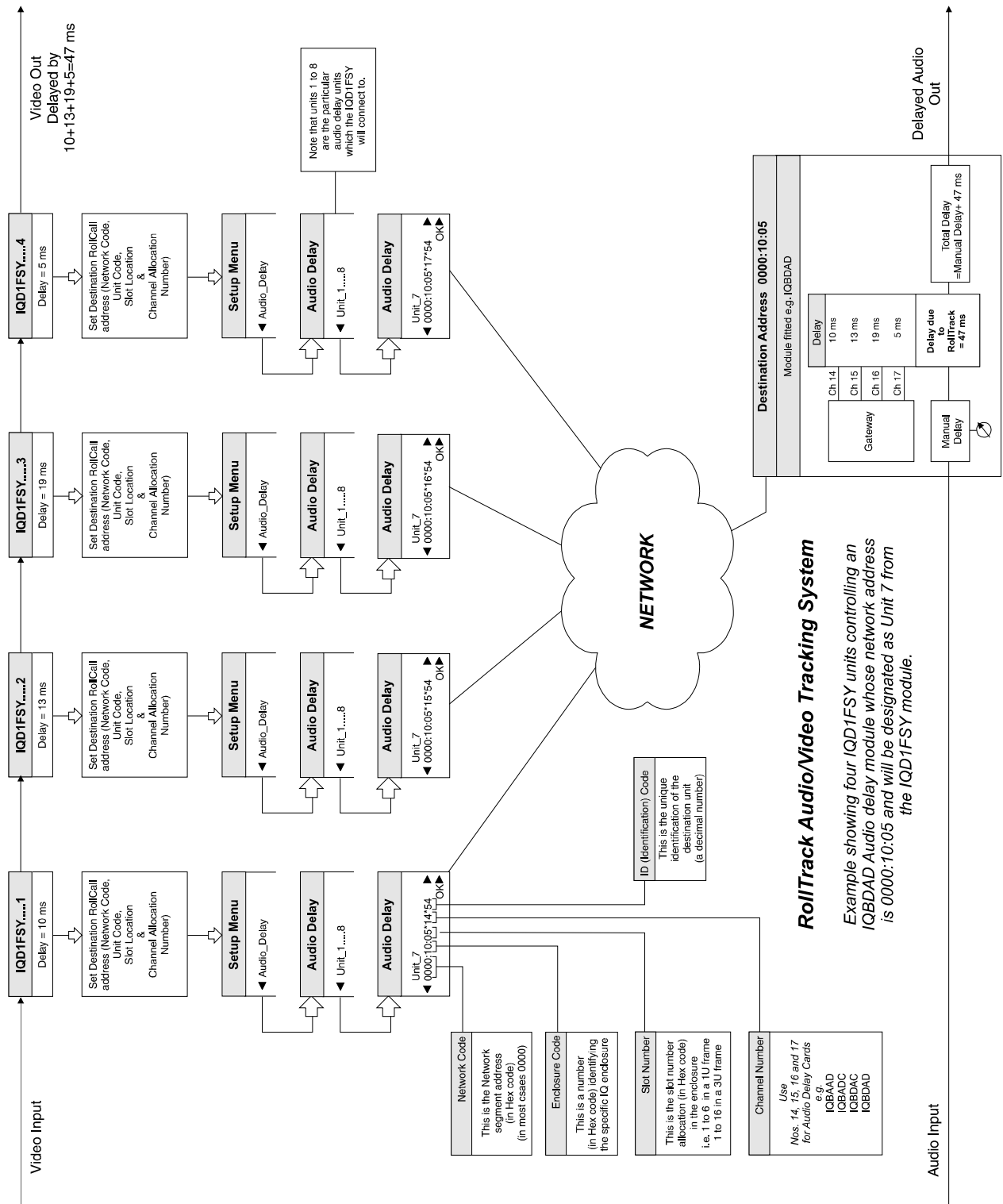
receiving units own ID or else the command will be ignored. If the ID value is set to 00, the receiving unit does not perform an ID match and will always accept the incoming command

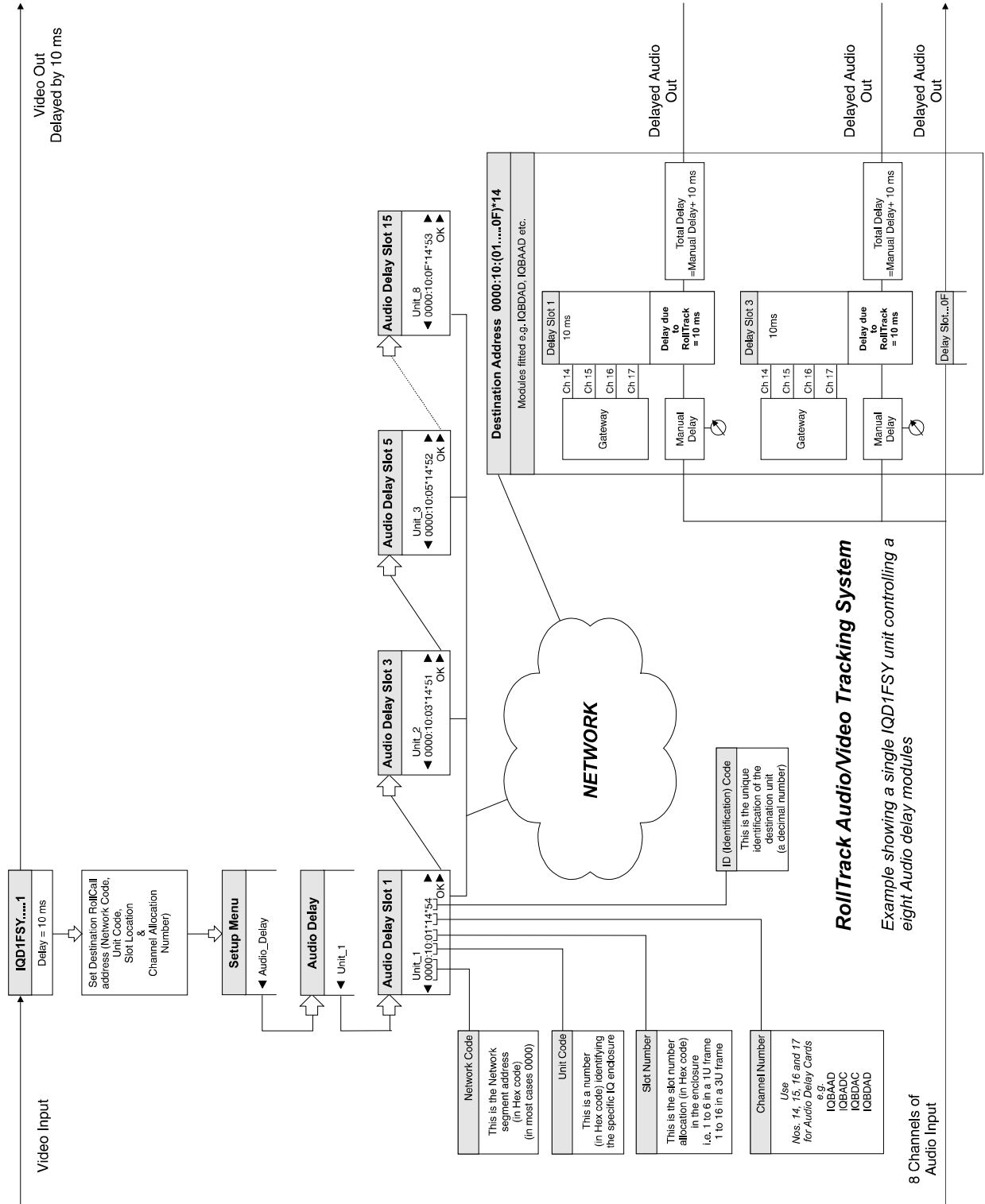
- then selecting the *Delay...* Menu of the IQBDAD
- then selecting *RollTrack*

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





Manual Revision Record

Date	Version No.	Issue No.	Change	Comments
300307	1	1		First issue released