

IQBADCS 2 Channel Audio A to D Converter with Delay

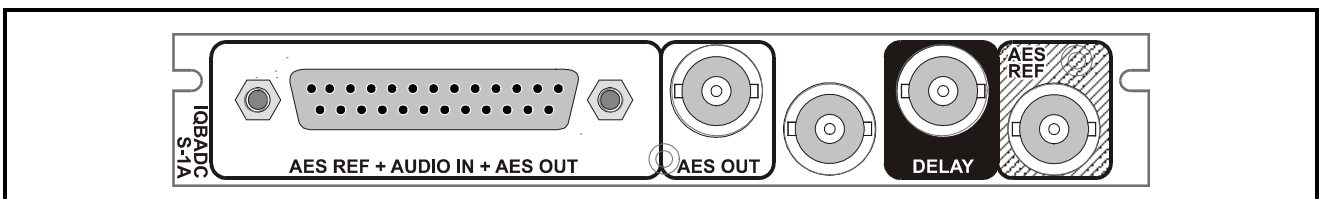
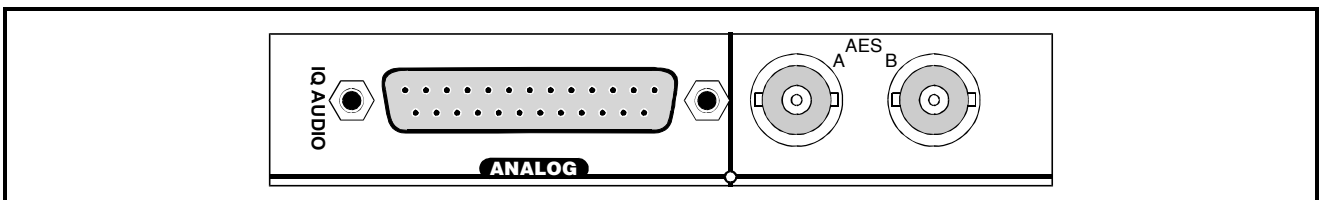
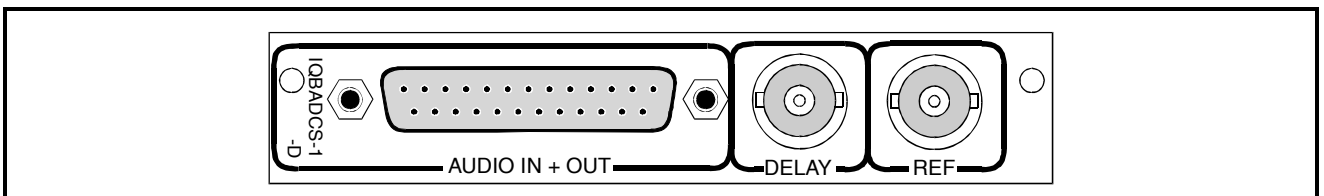
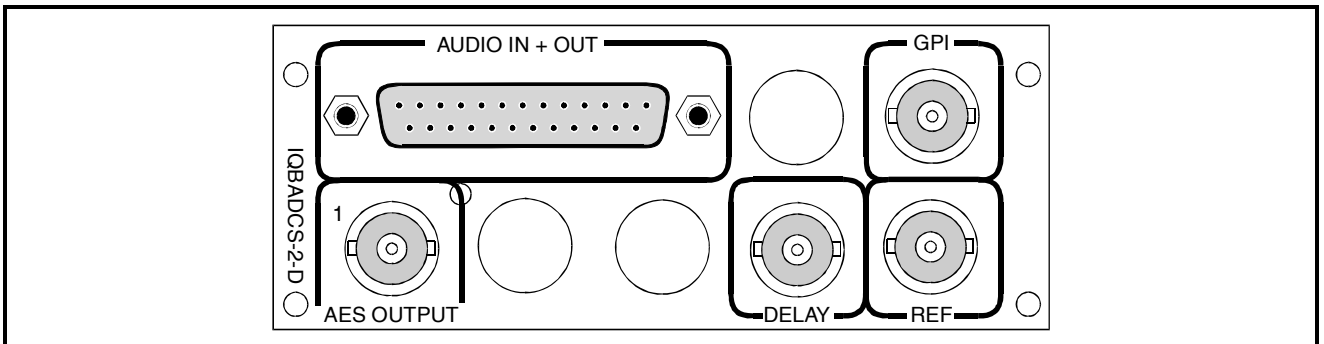


Module Description

The IQBADCS converts one analog stereo pair, or two analog mono channels into one AES/EBU digital audio streams. Each analog input is sampled at 48 kHz only with 24-bit resolution. The analog input may be set to terminate at 600 R or >10k Ohms and is factory set to accept +24 dBu It has a variable range of +18 dBu to +24 dBu (+12 dBu to +18 dBu with link fitted) for a full-scale digital output. In addition a digital gain control permits up to +12 dB in steps of 0.25 dB. Sampling

can be free-running or clock and audio frame locked to a reference AES/EBU reference. A delay of up to 450 ms may be inserted. Full remote control and monitoring is available via RollCall. Monitoring functions include reference presence indication, reference format and overflow warning. The GPI input may be attached to any control function. All analog audio connections are via a 25 D connector.

REAR PANEL VIEWS



This manual covers the following versions of the IQBADCS:

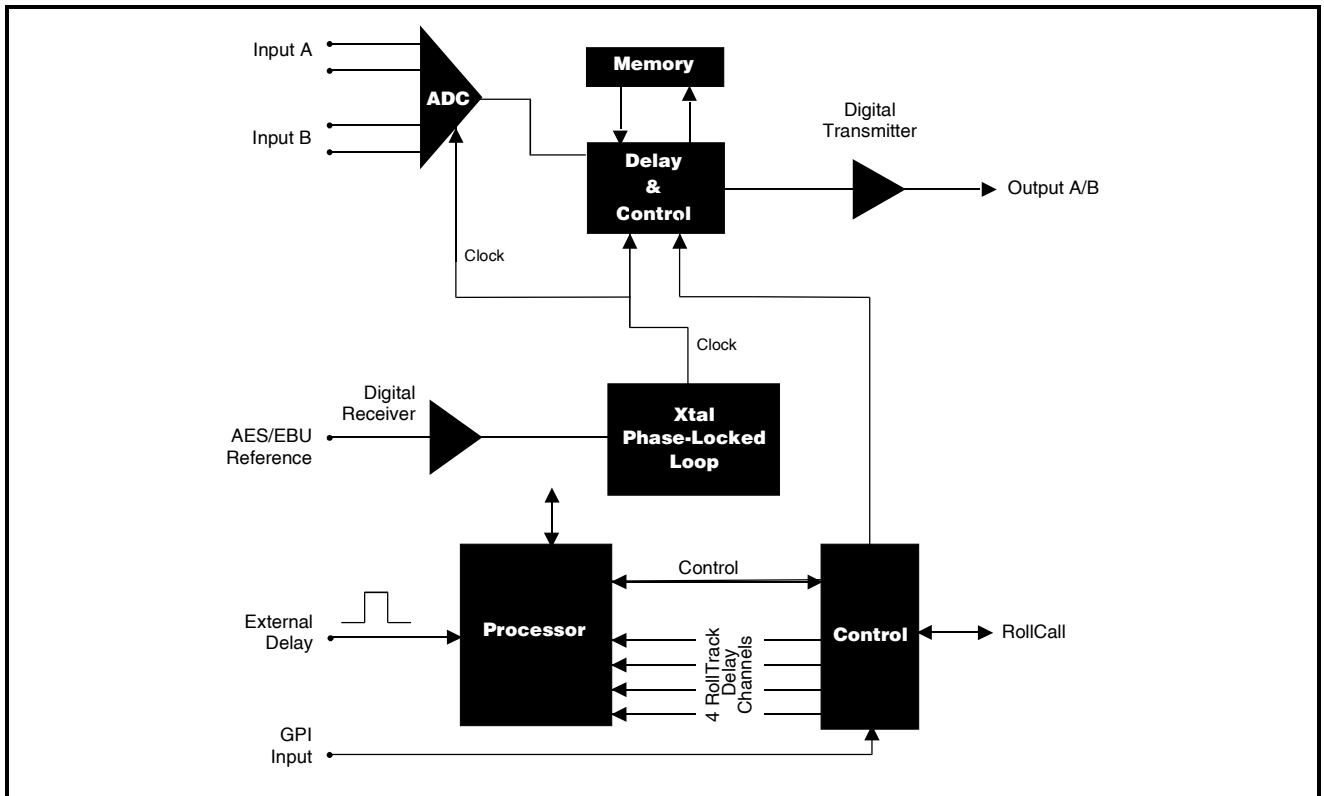
IQBADCS-1A-D Audio ADC with variable Gain Control & Delay. 1 x balanced & 1 x unbalanced AES/EBU outputs.

IQBADCS-1-D Audio ADC with variable Gain Control & Delay. 1 x balanced AES/EBU output.

IQBADCS-1K-D Audio ADC with variable Gain Control & Delay. 1 x balanced & 1 x unbalanced AES/EBU outputs.

IQBADCS-2-D Audio ADC with variable Gain Control & Delay. 1 x balanced & 1 x unbalanced AES/EBU outputs.

BLOCK DIAGRAM



Features

- Converts one stereo audio pair into one digital audio stream
- 24-bit sampling resolution
- 48 kHz sampling frequency
- Sampling can be free-running, or locked to an AES/EBU reference
- Input headroom adjustable +12 to +24 dBu
- Output gain adjustable 0 to +12 dB
- Delay of up to 450 ms, adjustable in 1 ms steps
- Overflow indication
- Balanced and Unbalanced AES/EBU versions
- GPI input programmable to any control function
- RollCall control and monitoring

TECHNICAL PROFILE

Features

Signal Inputs

Analog Input..... 2 Channels (1 Pair)
 Digital Audio Reference 48 kHz AES/ EBU Balanced via 25 way D
 Digital Audio Reference 48 kHz AES/ EBU Unbalanced via BNC
 Delay TTL Signal via BNC
 GPI TTL Signal via BNC (-2 Version)

Signal Outputs

Digital Audio..... 1 x AES/EBU output Balanced via 25 way D
 1 x AES/EBU output Unbalanced via BNC (-1A/-2 Versions)
 Standards AES3-1992

Card Edge Controls (also available via RollCall)

Headroom +24dBu to +18dBu or +18dBu to +12dBu by pot and link.
 Mute..... Mute either Output Pair On/Off
 Locking Free Run or lock to AES/EBU reference
 Delay Time..... ±450 ms in steps of 10 ms
 Gain 0, +3 dB, +6 dB, +9 dB
 Control Select Local or Remote

Specifications

Analog Input Level +12 dBu to +24 dBu
 Analog Input Impedance 10 k ohms selectable 600 ohm termination
 Digital Reference Balanced Input Standard AES/EBU
 Digital Reference Balanced Input Level 0.2 V to 7 V pk to pk into 110 ohms via 25 way D Maximum Cable Length 150 m
 Digital Reference Input Standard AES/EBU
 Digital Reference Unbalanced Input Level 0.03 V to 5 V pk to pk into 75 ohms Maximum Cable Length 1000 m
 Digital Balanced Output Level Typically 4 V pk to pk into 110 ohms
 Digital Unbalanced Output Level Typically 1 V pk to pk into 75 ohms
 Digital Path 48 kHz 20-bit
 Total Harmonic Distortion + Noise Better than -95 dB at 700 Hz and -1 dBFs

Indicators

Overflow..... >99.5% of output FS (Channels 1 & 2)

Functions Available via RollCall™ Only

Delay Time..... 0ms to 450ms in steps of 1 ms
 Gain 0 to +12 dB in steps of 0.25 dB
 Logging Reference Loss
 Phase Invert
 Channel Status Editor Channel Status original and destination names can be edited. Channel Status bytes 0, 1, 2 and 4 are all editable or can be automatically generated

Noise Floor..... Better than -106 dBFs (20 Hz to 20 kHz)
 Channel Separation Better than -100 dBFs at 10 kHz
 Flatness Better than +0.1 dBu to -0.3 dBu (20 Hz to 20 kHz with reference to 1 kHz)
 Transport Delay..... 4 ms
 Time to Change Delay 450 ms in 120 seconds (about 4 ms per second)
 Output Level Accuracy better than -0.3 dB
 Channel Amplitude Matching Better than ±0.05 dB
 Digital Reference Input Frequency Pull-In Range +2 Hz to -1 Hz
 Sampling..... 48 kHz Free Running
 48 kHz frame locked to AES/EBU reference

Power Consumption

Module Power Consumption 4.8 W max

INPUTS AND OUTPUTS

All analog input and output connections plus the AES reference are made via this 25 way female D-type connector (-2-D and -1-D versions).

For connection data consult the tables on page 5.

Reference Input

A digital audio reference signal may be connected to this BNC connector. The signal is terminated internally at 75 Ohms.

Delay Input

The input/output signal delay time may be set manually using the card edge control, via RollCall™ or may be set by a signal applied to this connector which should be TTL compatible.

The audio will be delayed for a period equal to the duration of the last active region of this signal. Either active positive or negative may be selected from the menu system.

Note that if no pulse is detected the delay will be set to 0 ms.

To activate audio delay control from this input it should be selected directly via the ◀ **External Delay** RollCall™ item.

For more information see Appendix on page 30.

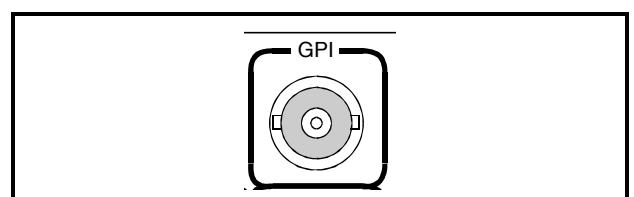
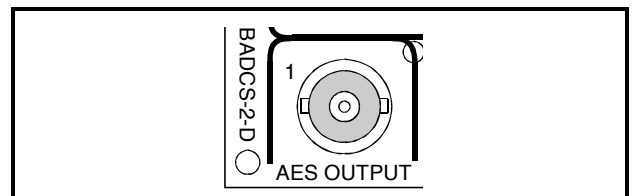
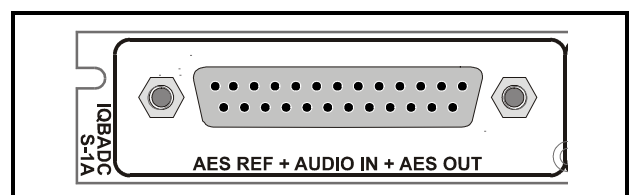
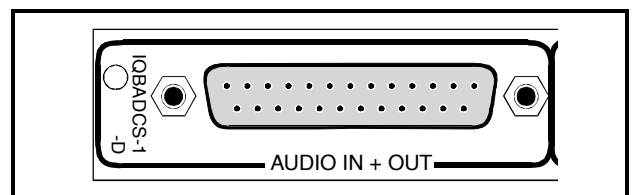
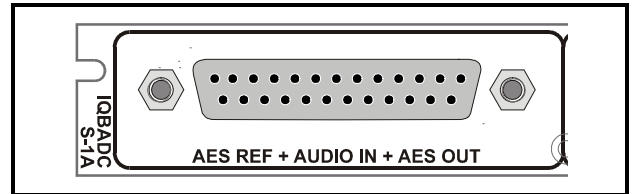
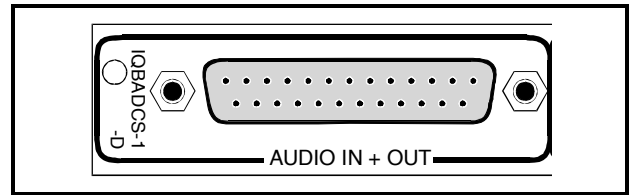
Digital Output

Digital outputs are made via this 25 way female D-type connector (-1-D)
For connection data consult the tables on page 6.

An unbalanced output is available from this BNC connector.

GPI Connection

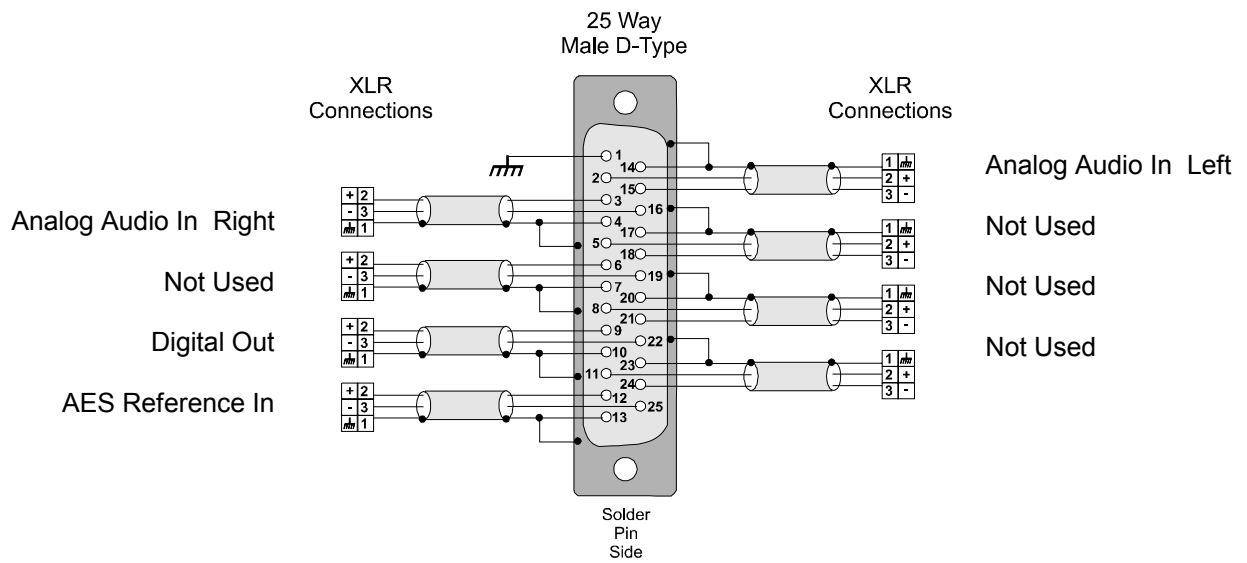
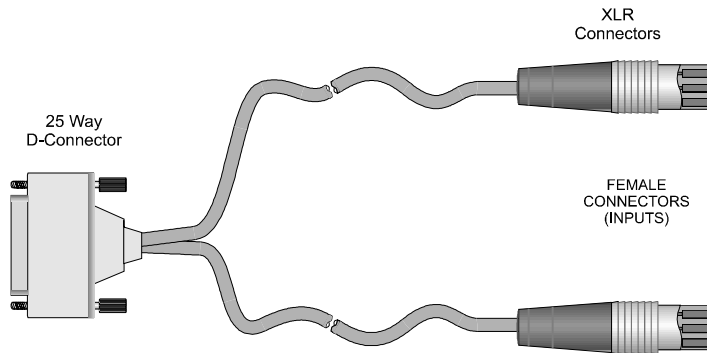
This is used for accepting GPI information (from mechanical switch contacts, relay contacts etc.) The resulting action that the unit takes may be programmed via RollCall. Operation is such that when the contact is closed the function is activated; when the contact is open, the function is de-activated.



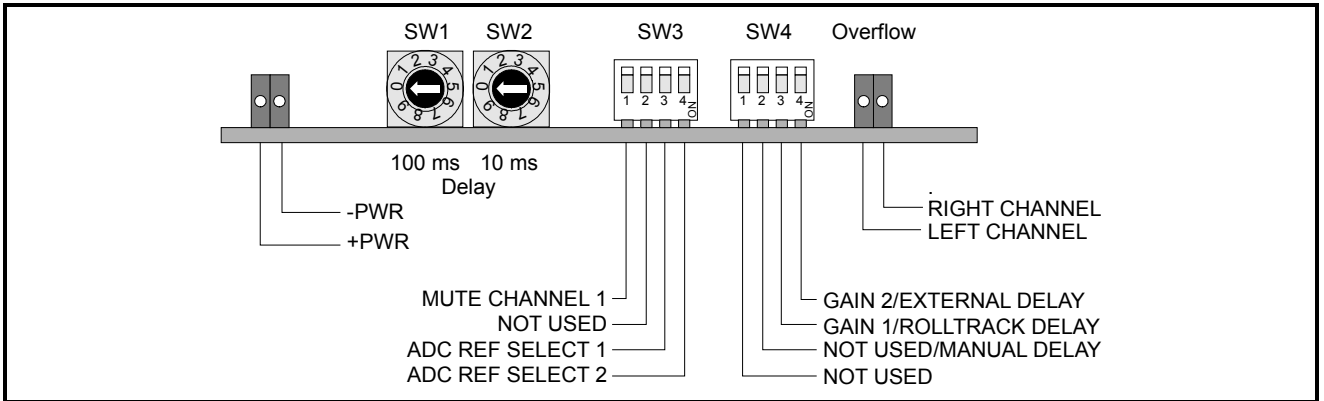
25 Way D Connection Details

25 Way D Connector Pin Number	Description	Ribbon Cable Strand Number	Standard Pin Assignment
1		1	CHASSIS
14	ANALOG AUDIO IN 1 LEFT GND	2	GND1
2	ANALOG AUDIO IN 1+ LEFT	3	1+
15	ANALOG AUDIO IN 1- LEFT	4	1-
3	ANALOG AUDIO IN 1+RIGHT	5	2+
16	ANALOG AUDIO IN 1- RIGHT	6	2-
4	ANALOG AUDIO IN 1 RIGHT GND	7	GND2
17		8	GND3
5		9	3+
18		10	3-
6		11	4+
19		12	4-
7		13	GND4 (CH)
20		14	GND5
8		15	5+
21		16	5-
9	AES AUDIO OUT 1 +	17	6+
22	AES AUDIO OUT 1 -	18	6-
10	AES AUDIO OUT 1 GND	19	GND6
23		20	GND7
11		21	7+
24		22	7-
12	AES AUDIO REF IN +	23	8+
25	AES AUDIO REF IN -	24	8-
13	AES AUDIO REF GND	25	GND8

Connection Details to XLR Connectors



CARD EDGE CONTROLS



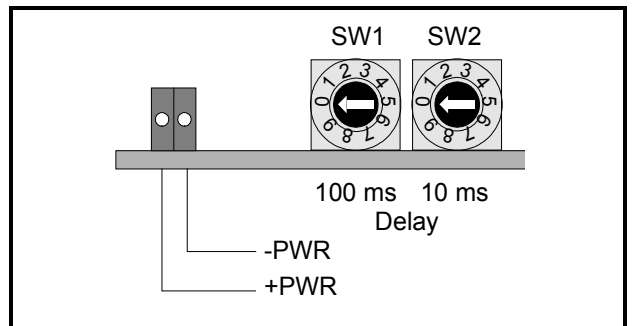
Adjustment of the settings of the **IQBADCS** is available either via card edge controls and/or via a more comprehensive remote control system using **RollCall™**

Note that the availability of some of the card edge controls will depend on the card version; see feature table for variations.

LED INDICATORS

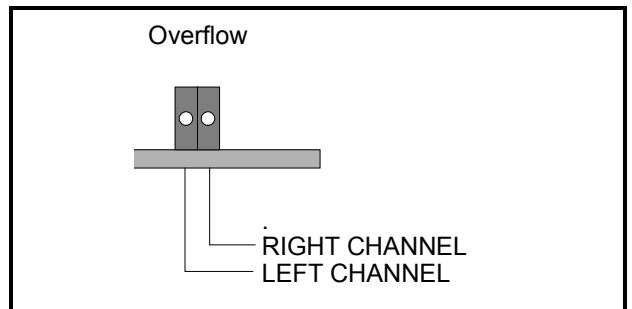
Power

These two indicators are illuminated when the positive and negative supplies are present.



Overflow

These indicators become illuminated when overflow is detected on either of the 2 channels.



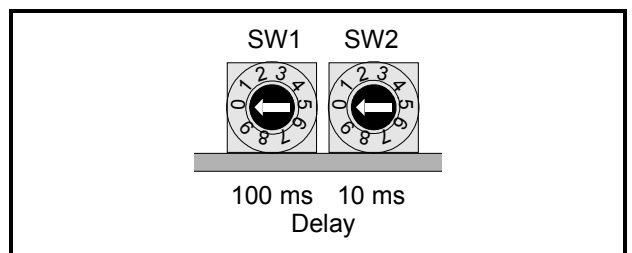
Delay

These two switches, SW1 and SW2 allow the delay period to be manually set. One switch adjusts the time in increments of 100 ms and the other in increments of 10 ms.

The time to change the delay is approximately 4 ms per second, e.g. 450 ms takes about 120 seconds.

Note that a negative delay may only be introduced using the RollCall delay control. See page 10 for details.

Also see `Delay Function` in the Appendix page 30

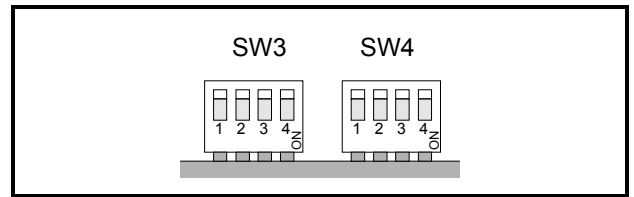


SW3

Setting to the down (ON) position enables the function.

- Position 1 Enables the Mute function
- Position 2 This position has no function
- Positions 3 & 4 ADC Reference Select (see below where 1 = ON)

ADC Reference	Pos 3	Pos 4
Internal	0	0
AES/EBU	0	1
Internal	1	0
Internal	1	1



Channel Status

Currently the AES “...standard implementation..” is adopted. Status bytes 0 to 2 are configured to AES specifications. The standard implementation provides a fundamental level of implementation that is sufficient for general applications in professional audio or broadcasting.

SW4

This switch has 2 modes of operation depending on the delay time setting of SW1 and SW2.

1. When SW1 and SW2 are set to give a delay of less than 900 ms function is as follows:

Setting to the down (ON) position enables the function.

Positions 1 & 2 These positions have no function

Positions 3 & 4

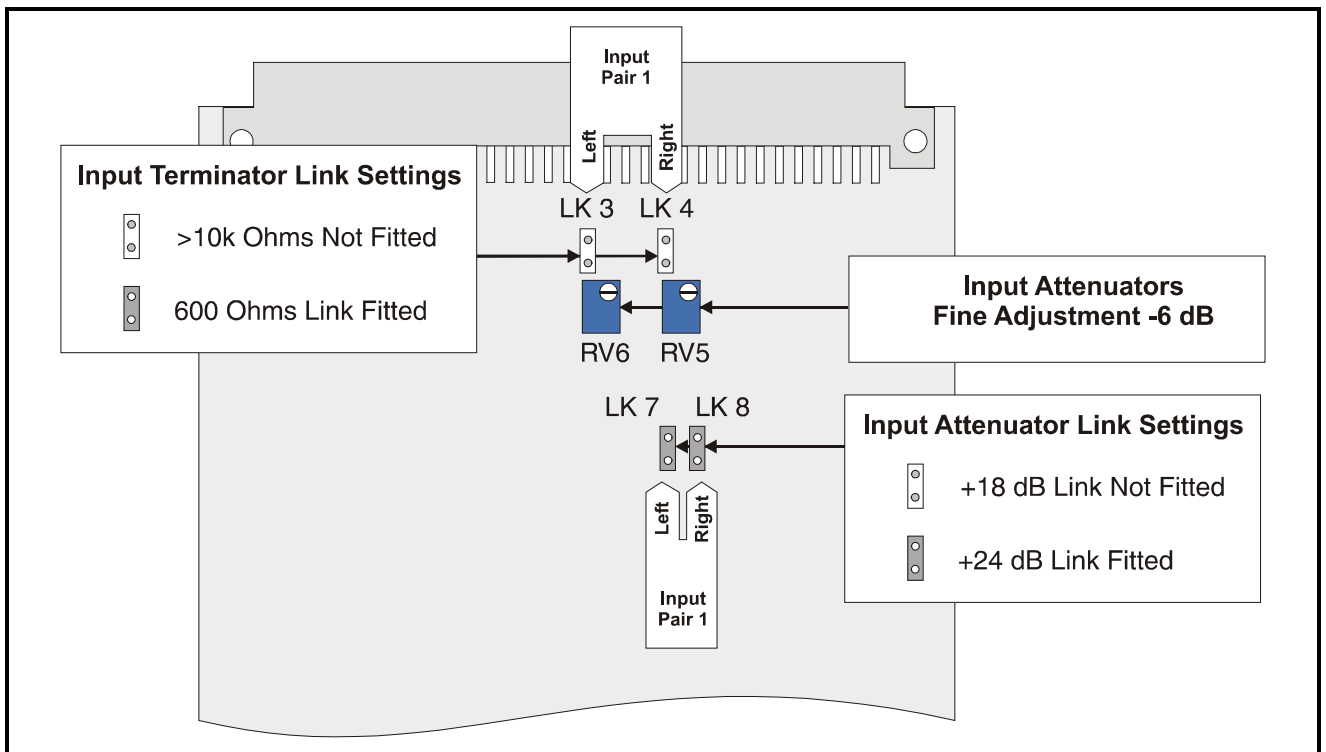
Gain	Pos 3	Pos 4
0 dB	0	0
+6 dB	0	1
+3 dB	1	0
+9 dB	1	1

2. When SW1 and SW2 are set to give a delay of greater than or equal to 900 ms SW4 function is as follows:

- Position 1 Not used
- Position 2 Selects Manual Delay
- Position 3 Selects RollTrack Delay
- Position 4 Selects External Delay

Also see Appendix on page 30

GAIN AND INPUT TERMINATION ADJUSTMENT



Gain Adjustment

The overall gain of a channel may be adjusted using links and a variable potentiometer.

The link provides a coarse adjustment of +18 dB (link not fitted) or +24 dB (link fitted).

The card is supplied with the link fitted as shown above, in the +24 dB position.

Adjusting the 10-turn potentiometer provides fine adjustment of -6 dB.

The card is supplied with the control set to the 0 dB position.

Input Termination Setting

The input impedance for the input channel may be set to HIGH (10,000 Ohms) or LOW (600 Ohms) by means of a link.

When the link is fitted the input impedance is 600 Ohms.

When the link is not fitted the input impedance is 10,000 Ohms.

The card is supplied in the HIGH (link not fitted) condition.



RollCall PC Control Panel Screens for the IQBADCS


Control

Mute

When checked this function will mute the output and the output will become silence.

Note that for this and other screens the following applies to the scroll bars:

The  and  symbols at the ends of the scroll bar allow the value to be adjusted in discrete steps.

The numerical value will be shown above the scroll bars and selecting Preset  will return the setting to the calibrated value for that item.

Mute

When checked this function will mute the output and the output will become silence.



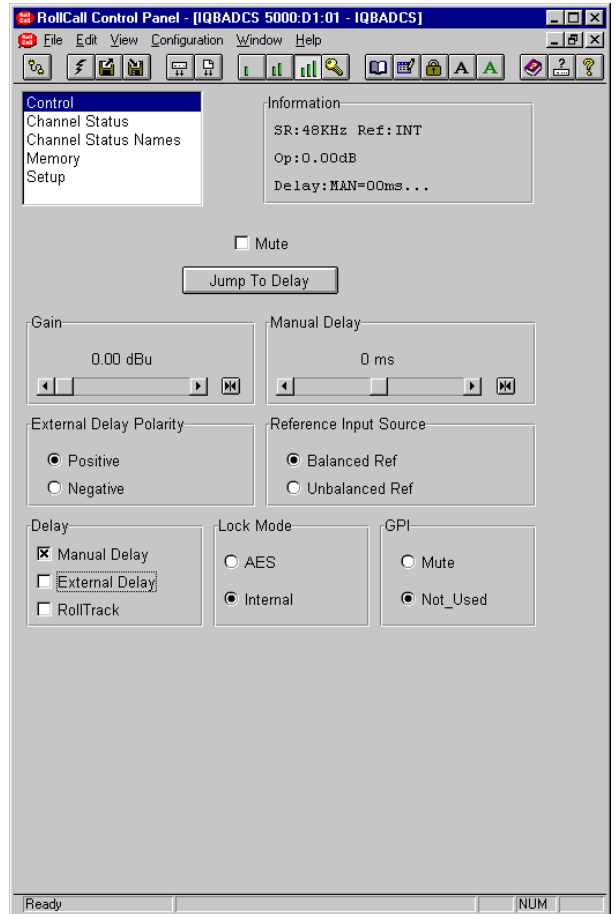
Normally the time to change to a new delay value is approximately 4 ms per second; however when the **Jump To Delay** item is selected any new delay settings will be immediately applied to the unit. *Note that this may cause a disturbance to the output signal.*

Gain

This allows the gain of the unit to be adjusted.

The overall range of adjustment is 0.00 dBu to +12 dBu in steps of 0.25 dB.

Selecting Preset returns the setting to the calibrated value of 0.00 dBu.



Control (continued)

Manual Delay

This is used to adjust the delay time when the **Delay/Manual Delay** function is checked.

Note that when the audio delay is being controlled remotely this will indicate the current delay setting.

The range of adjustment is ± 450 ms in steps of 1 ms. The preset value is 0 ms.

The reason for the negative manual delay is so that delay can be removed from the total board delay if the manual delay is added to the external or the RollTrack delays.

Examples of positive and negative manual delay settings.

Manual	External	RollTrack	Total delay implemented
10ms	10ms	10ms	30ms
0	10ms	10ms	20ms
-5ms	10ms	10ms	15ms
-40ms	10ms	10ms	0ms*
<i>*Note that a negative overall delay is not allowed</i>			

*Note that the total delay of the card is the transport delay (4 ms) added to the selected variable delays (Manual, RollTrack, External) This 4 ms transport delay will **not** be included in the delay time shown in the information display.*

External Delay Polarity

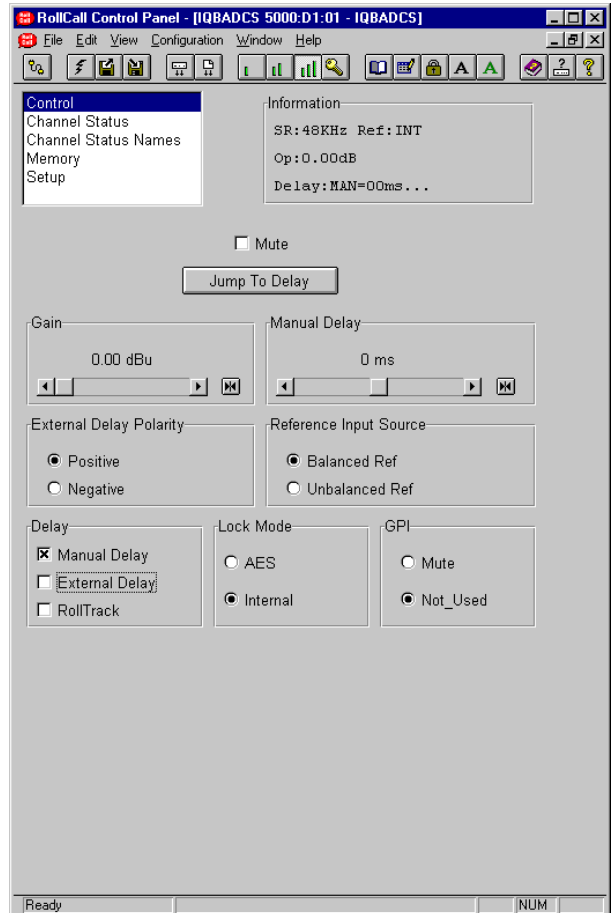
When the **Delay/External Delay** item is checked (allowing the length of an external TTL signal connected to the 'Delay' BNC to be added to the total delay) this function allows the unit to respond to either a positive (active high) or negative (active low) pulse.

Reference Input Source

This allows the type of locking source to be set.

If **Balanced Ref** is selected the reference will be taken from the 25 way D connector.

If **Unbalanced Ref** is selected the reference will be taken from the BNC Ref connector.



Delay

This item allows the delay source and the delay between the input signal and the output signal to be set.

The total delay time will be the sum of the *enabled delay functions*.

Any of the following may be selected, by means of checking or un-checking the boxes:

1. No delay
2. Manual delay only
3. RollTrack delay only
4. External delay only
5. Manual delay+RollTrack delay
6. Manual delay+External delay
7. RollTrack delay+External delay
8. Manual delay+RollTrack delay+External delay

The time to change the delay is approximately 4 ms per second, e.g. 450 ms takes about 120 seconds.

Control (continued)

Lock Mode

This allows the standard and mode of the locking source to be set.

Selections are:

AES

If Balanced_Ref is selected from the Input_Source menu the reference will be taken from the 25 way D connector.

If Unbalanced_Ref is selected from the Input_Source menu the reference will be taken from the BNC Ref connector.

Internal

The unit will not be locked to any external source

GPI

The GPI connector is used for accepting GPI information (from mechanical switch contacts, relay contacts etc.) The resulting action that the unit takes may be selected from this menu.

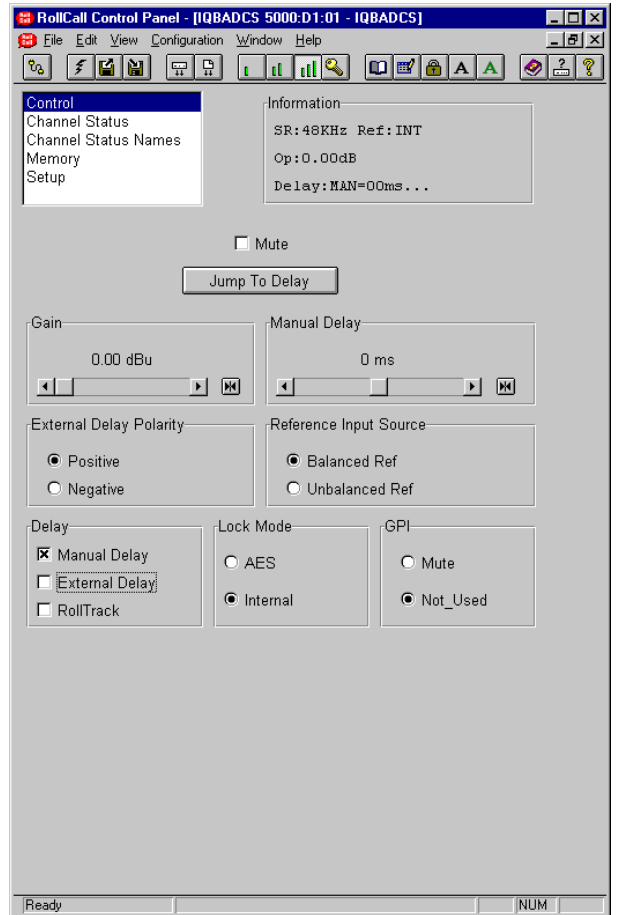
Mute

The GPI signal will mute the output.

Not_Used

When selected the GPI input connection will be disabled.

Default is to Not_Used



Channel Status

This function allows channel status information to be added using the following sub-menus. Channel status for the audio channel carries information associated with that audio signal.

Format follows that specified in the EBU document “Specification of the Digital Audio Interface (The AES/EBU Interface) Tech. 3250-E, second edition August 1992.



This item will return all settings to their default values.

Use

This sub-menu allows the level of use to be set.

Consumer

The signal will be identified as for “consumer use” conforming to IEC 958.

Professional

The signal will be identified as for “professional use” conforming to IEC 958. Default is to Professional

Audio

This allows the mode to be set to either **Audio** or **Non-Audio**. Default is to **Audio**.

Emphasis

This allows the audio emphasis characteristic to be set. Selections available are:

None

No Emphasis applied

50/15 μ s

Emphasis characteristic set to 50/15 μ s

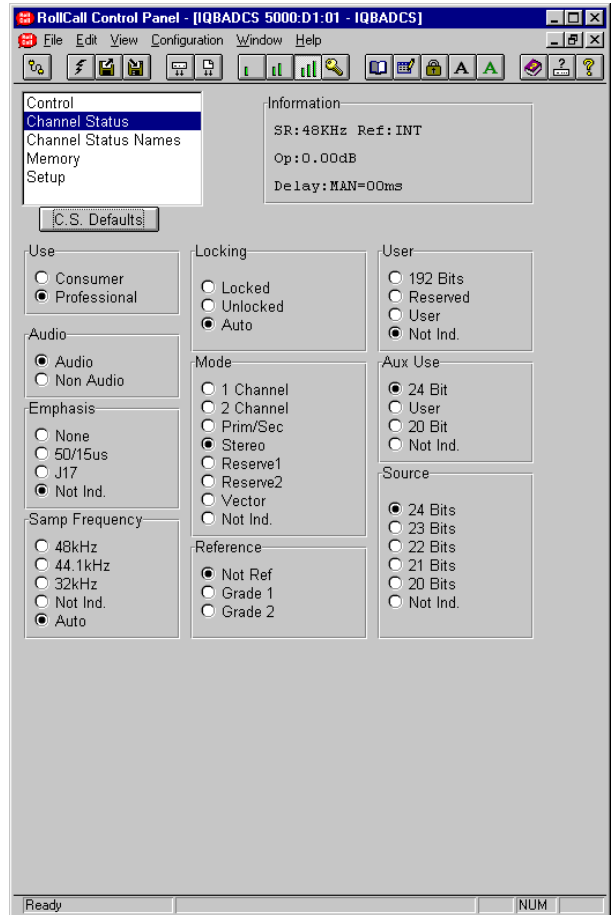
J17

Emphasis set to CITT J.17 (with 6.5 dB insertion loss at 800 Hz)

Not_Indicated

Emphasis characteristic not indicated.

Default is to Not_Indicated



Samp Frequency

This allows the sampling frequency to be set.

Auto (Automatic Selection)

This inserts the actual sampling frequency of the IQBADCS into the channel status. Default is to Auto.

Locking

This allows the lock state of the sampling frequency to be set. Selections are:

Locked

Sampling frequency locked

Unlocked

Sampling frequency unlocked

Auto

Automatic selection; i.e. the locking status of the IQBADCS is inserted into the channel status.

Default is to Auto

Channel Status (continued)

Mode

The encoded channel mode may be set with this sub-menu.

1 Channel

Single channel mode (monophonic)

2 Channel

Two channel mode

Prim/Sec

Primary/ secondary mode (sub-frame 1 is primary)

Stereo

Stereophonic mode (channel 1 is left channel)

Reserve1

Reserved for user-defined applications

Reserve2

Reserved for user-defined applications

Vector

Vector to byte 3. Reserved for future applications

Not Ind

Mode not indicated

Reference

This item indicates the source of sample frequency reference.

Not Ref

Sample frequency not referenced to a fixed source.

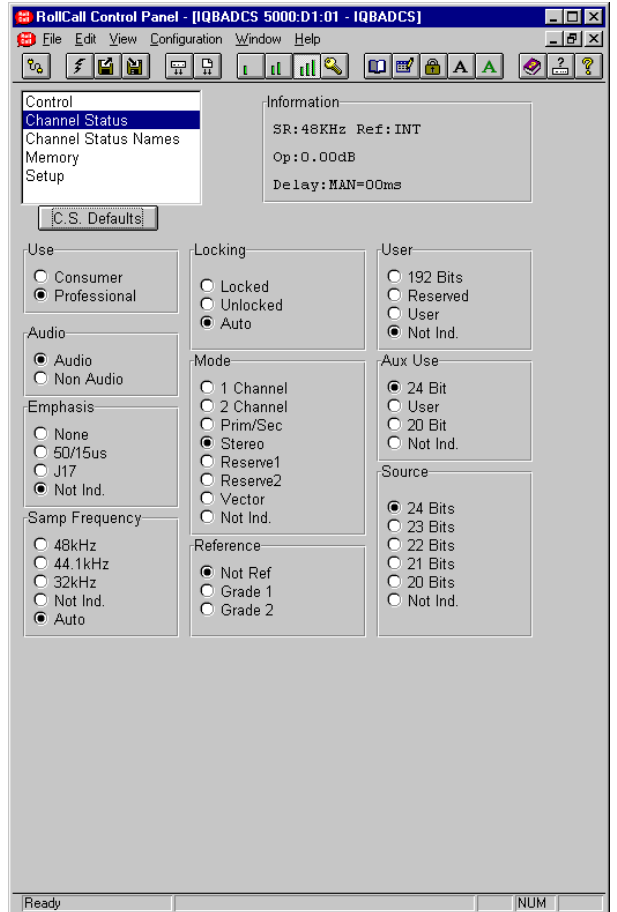
Grade 1

Sample frequency is referenced to a grade 1 source.

Grade 2

Sample frequency is referenced to a grade 2 source.

Default is to Not Ref



User

This item defines the encoded user bits.

192 Bits

192-bit structure. Preamble "Z" indicates the start of a block

Reserved

User bits are reserved

User

User defined

Not Ind

No user information indicated

Default is to Not Indicated.

Channel Status (continued)

Aux Use

This item defines the use of auxiliary sample bits.

24 Bit

Auxiliary bits used for main audio sample data. Maximum audio sample word length is 24 bits.

20 Bit

Auxiliary bits used for main audio sample data. Maximum audio sample word length is 20 bits.

User

Auxiliary bits are for user-defined applications.

Not Ind.

Use of auxiliary sample bits not defined. Maximum audio sample word length is 20 bits.

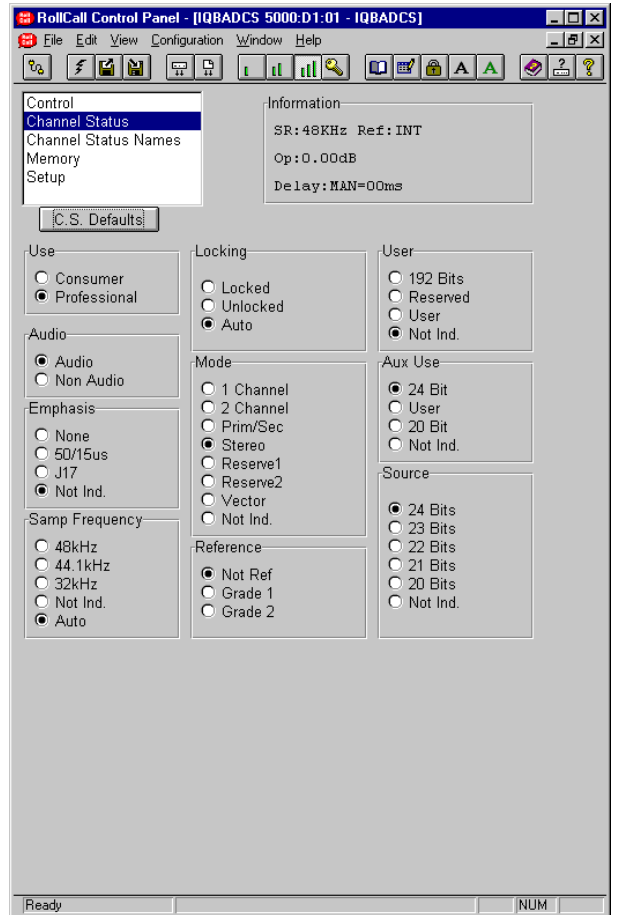
Default is to 24_Bits

Source

This item indicates the encoded audio sample word length of the transmitted (source) signal.


Not Ind.


No user information indicated

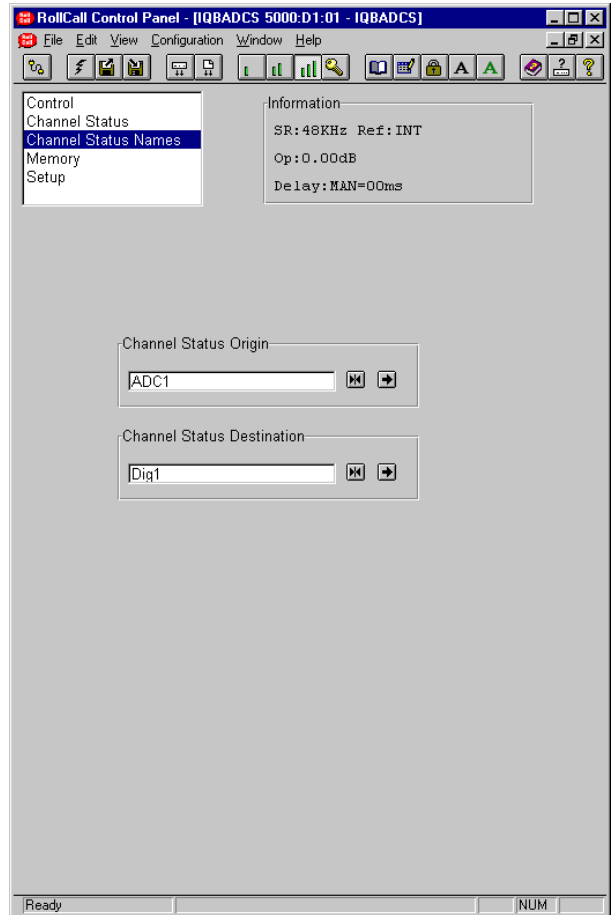


Channel Status Names

This screen allows the Channel Status Origin and Destination names to be changed.

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

Selecting Preset  will return the text to the default name.



Memory

All settings of the unit may be stored in any of 4 non-volatile memory locations. These locations may be read, saved, given a name or cleared to the preset names.

Read User Memory

When a particular location is checked, settings will be changed to the values contained in that memory location.

Save User Memory


When a particular location is checked, current settings will be saved in that memory location.


Preset User Memory

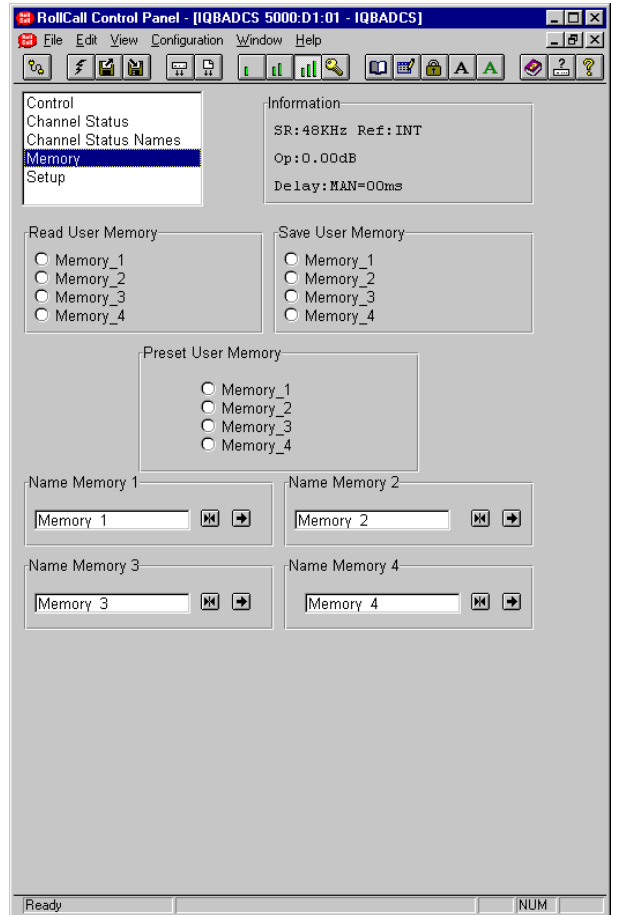
When a particular location is checked that memory location will be returned to the preset (default) condition.

Name Memory 1 to 4

This allows the name of the memory location to be changed.

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.



Setup

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.

Fast Delay Changing

When checked the time to change to new delay settings will be faster than normal (and will not cause a disturbance) than when the **Jump To Delay** function is enabled.

Note that in this mode a slight variation in pitch will occur during the change.

Phase Inversion

Checking the **Phase Invert** box allows the inversion of the output channels (phase swapping of 180°).

Logging

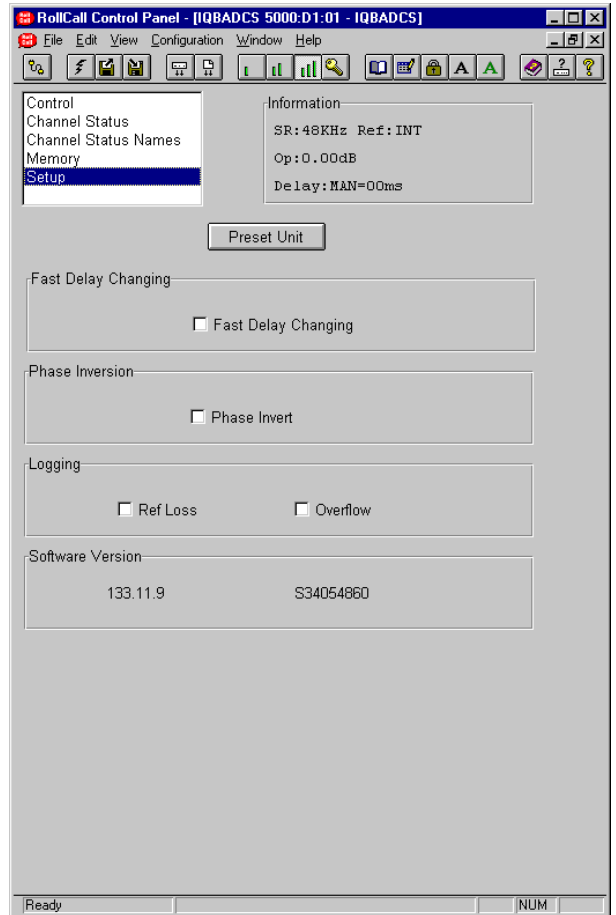
If a logging device is attached to the RollCall™ network, information about various parameters will be reported to the logging device assigned in the Remote Control Interface system.

The parameters that may be selected for logging are as follows:

- Overflow
- Ref (Reference) Loss

Software Version

This item shows the version of the software fitted in the module followed by the serial number of the unit.

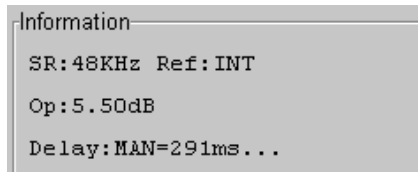


Setup (continued)

Information Window

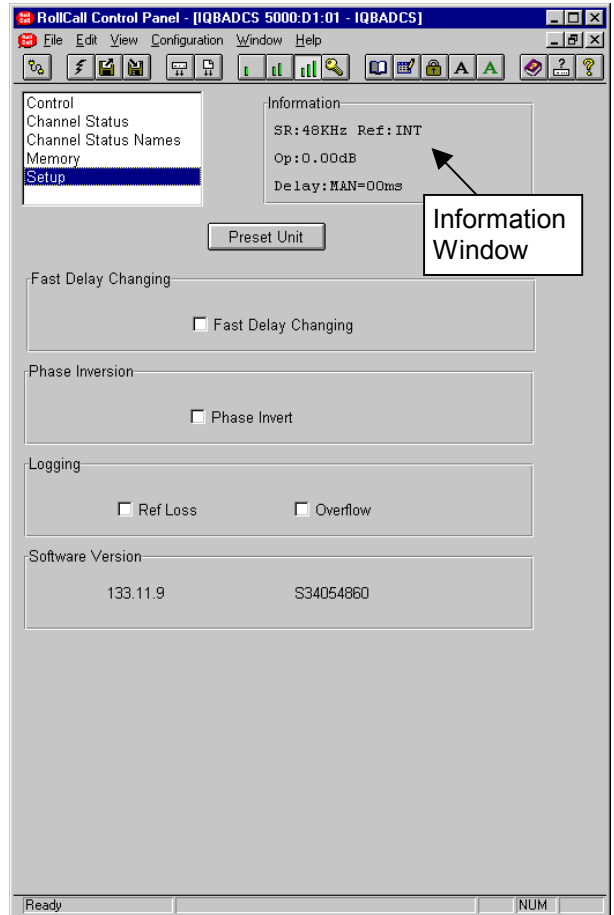
The following data will be displayed in the Information window of the screen.

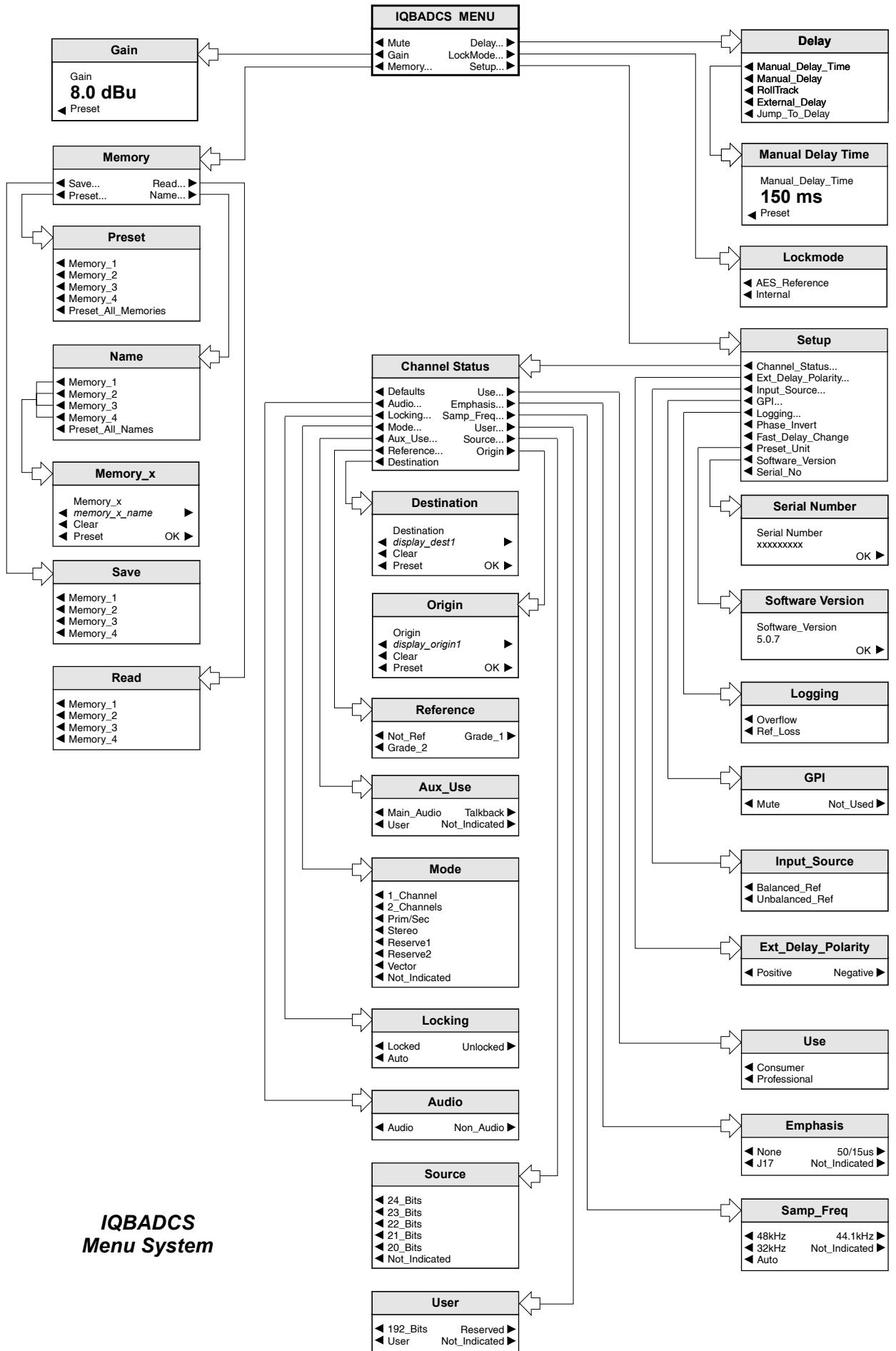
- Sampling Rate
- Reference Status
- Output Level
- Delay



- SR:** This shows the current sampling rate
- Ref:** This will show the status of the reference signal.
- Op:** This shows the output level.
- Delay:** This shows the type of delay(s) selected and the total value of the delay in milliseconds. It may show combinations of the following abbreviations:

MAN and M = Manual delay setting
 EXT and E = External delay applied
 RTK and R = RollTrack delay applied
 ALL = Manual + External + RollTrack
 or No Delay = No delay applied





***IQBADCS
Menu System***

OPERATION FROM AN ACTIVE CONTROL PANEL

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

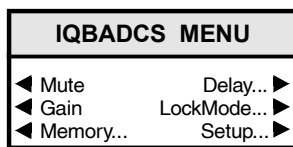
The menus available for this card are shown on the previous page and will appear in the Control display window.

MENU DETAILS

(see Menu System Diagram on previous page)

MAIN MENU

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.

◀ Mute

When enabled this toggle function will mute the output and the output will become silence.

◀ **Delay**

This selection enables a sub-menu that allows the delay source and the delay between the input signal and the output signal to be set.

Delay
◀ Manual_Delay_Time
◀ Manual_Delay
◀ RollTrack
◀ External_Delay
◀ Jump_To_Delay

The total delay time will be the sum of the *enabled delay functions*. Any of the following may be selected, by means of checkboxes:

1. No delay
2. Manual delay only
3. RollTrack delay only
4. External delay only
5. Manual delay+RollTrack delay
6. Manual delay+External delay
7. RollTrack delay+External delay
8. Manual delay+RollTrack delay+External delay

◀ **Manual_Delay_Time**

The spinwheel is used to adjust the delay time when this function is enabled. The time will be shown as a numerical value and by the bargraph display.

Manual Delay Time
Manual_Delay_Time 150 ms
◀ Preset

Note that when the audio delay is being controlled remotely the bargraph will indicate the current delay setting.

The range of adjustment is ±450 ms in increments of 1 ms. The preset value is 0 ms.

The reason for the negative manual delay is so that delay can be removed from the total board delay if the manual delay is added to the external or the RollTrack delays.

Examples of positive and negative manual delay settings.

Manual	External	RollTrack	Total delay implemented
10ms	10ms	10ms	30ms
0	10ms	10ms	20ms
-5ms	10ms	10ms	15ms
-40ms	10ms	10ms	0ms*

**Note that a negative overall delay is not allowed*

*Note that the total delay of the card is the transport delay (4 ms) added to the selected variable delays (Manual, RollTrack, External) This 4 ms transport delay will **not** be included in the delay time shown in the information display.*

◀ **Manual Delay**

When this function is selected the manual delay is added to the total delay.

The time to change the delay is approximately 4 ms per second, e.g. 450 ms takes about 120 seconds.

◀ **RollTrack**

When this function is selected the value received via the RollTrack system on channels 14+15+16+17 is added to the total delay.

Data is transmitted at regular intervals from a RollTrack compatible device but if data is not received by this unit from a channel within 60 seconds, the delay time for that channel will assume a value of zero.

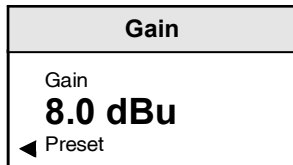
◀ **External Delay**

This selection allows an external TTL signal connected to the 'Delay' BNC to be added to the total delay.

This function can be set to respond to either a positive (active high) or negative (active low) pulse. Use the Ext Delay Polarity function in the Setup menu to select polarity.

◀ Gain

This selection reveals a numerical readout display for the digital gain of the unit.

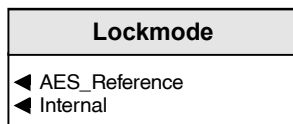


The overall range of adjustment is 0 to +12 dBu in steps of 0.25 dB.

Selecting Preset returns the setting to the calibrated value of 0.0 dBu.

Lockmode ▶

This selection reveals a sub-menu that allows the standard and mode of the locking source to be set.



Selections are:

◀ AES Reference

If Balanced_Ref is selected from the Input_Source menu the reference will be taken from the 25 way D connector.

If Unbalanced_Ref is selected from the Input_Source menu the reference will be taken from the BNC Ref connector.

◀ Internal

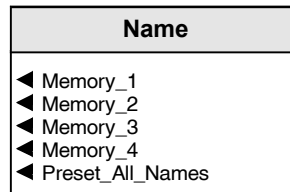
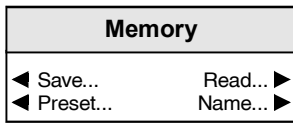
Not locked to any external source

◀ **Memory**

Name ▶

All settings of the unit may be stored in any of 4 non-volatile memory locations.

This will reveal a list of the 4 memory locations that may be given a specific name.

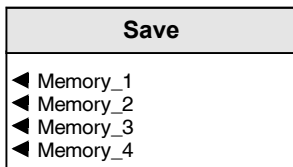
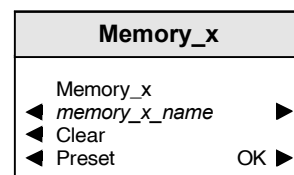


These locations may be read, saved, given a name or cleared to the preset names by selecting this function to reveal the sub-menus.

Select the memory location and use the adjacent buttons to select the cursor position and the spinwheel to select the alphanumeric character.

◀ **Save**

This will reveal a list of 4 memory locations.



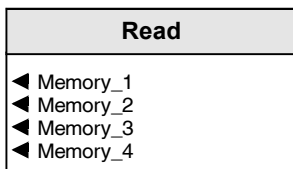
When a particular location is enabled, current settings will be saved in that memory location.

Clear will clear the character underneath the cursor and OK will save the name; Preset will return the name to the preset or default name.

Read ▶

This will reveal a list of 4 memory locations.

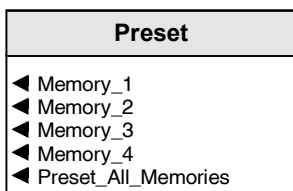
Selecting **Preset_All_Names** will return all memory locations names to their preset values.



When a particular location is enabled, settings will be changed to the values contained in that memory location.

◀ **Preset**

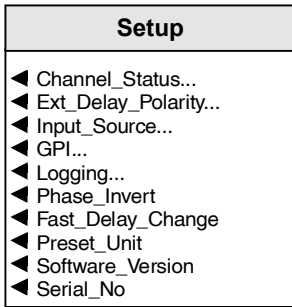
This will reveal a list of 4 memory locations.



When a particular location is enabled that memory location will be returned to the preset (default) condition.

Selecting **Preset_All_Memories** will return all memory locations to their preset values.

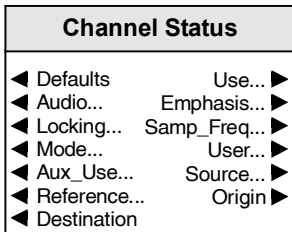
Setup ▶



This selection reveals a sub-menu that allows various functions to be set.

◀ Channel_Status

This function allows channel status information to be added using the following sub-menus.



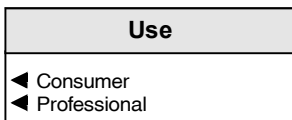
Channel status for the audio channel carries information associated with that audio signal.

Format follows that specified in the EBU document "Specification of the Digital Audio Interface (The AES/EBU Interface) Tech. 3250-E, second edition August 1992.

◀ Defaults

This item will return all settings to their default values.

Use ▶



This sub-menu allows the level of use to be set.

◀ Consumer

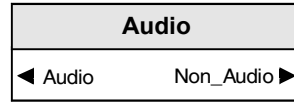
The signal will be identified as for "consumer use" conforming to IEC 958

◀ Professional

The signal will be identified as for "professional use" conforming to IEC 958

Default is to Professional

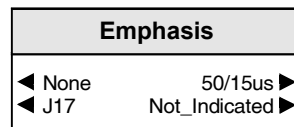
◀ Audio



This sub-menu allows the mode to be set to either **Audio** or **Non-Audio**.

Default is to **Audio**.

Emphasis ▶



This allows the audio emphasis characteristic to be set. Selections available are:

◀ None

No Emphasis applied

50/15 μs ▶

Emphasis characteristic set to 50/15 μs

◀ J17

Emphasis set to CITT J.17 (with 6.5 dB insertion loss at 800 Hz)

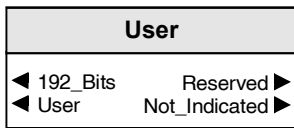
Not_Indicated ▶

Emphasis characteristic not indicated

Default is to Not_Indicated

User ▶

This item defines the encoded user bits.



◀ 192_Bits
192-bit structure. Preamble “Z” indicates the start of a block

Reserved ▶

User bits are reserved

◀ User
User defined

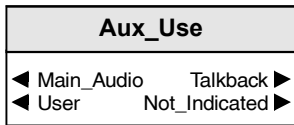
Not_Indicated ▶

No user information indicated

Default is to Not_Indicated

◀ Aux_Use

This item defines the use of auxiliary sample bits.



◀ Main_Audio
Auxiliary bits used for main audio sample data. Maximum audio sample word length is 24 bits.

Talkback ▶

Auxiliary bits used for talkback (a single co-ordination signal)
Maximum audio sample word length is 20 bits.

◀ User
Auxiliary bits are for user-defined applications.

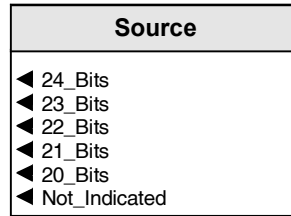
Not_Indicated ▶

Use of auxiliary sample bits not defined. Maximum audio sample word length is 20 bits.

Default is to Not_Indicated

Source ▶

This item indicates the encoded audio sample word length of the transmitted (source) signal.



◀ 24_Bits

◀ 23_Bits

◀ 22_Bits

◀ 21_Bits

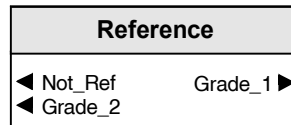
◀ 20_Bits

◀ Not_Indicated

Default is to 24_Bits

◀ Reference

This item indicates the source of sample frequency reference.



◀ Not_Ref

Sample frequency not referenced to a fixed source.

Grade_1 ▶

Sample frequency is referenced to a grade 1 source.

◀ Grade_2

Sample frequency is referenced to a grade 2 source.

Default is to Not_Indicated

Origin ►

This allows the originating channel status information to be changed.

Origin	
Origin	
◀ <i>display_origin1</i> ▶	
◀ Clear	
◀ Preset	OK ▶

The text may be edited by using the push buttons to select the position in the text and the spinwheel to select the new text character.

Select ◀ OK to save the text, ◀ Clear to clear the text or ◀ Preset to return to the default text.

◀ Destination

This allows the destination channel status information to be changed.

Destination	
Destination	
◀ <i>display_dest1</i> ▶	
◀ Clear	
◀ Preset	OK ▶

The text may be edited by using the push buttons to select the position in the text and the spinwheel to select the new text character.

Select ◀ OK to save the text, ◀ Clear to clear the text or ◀ Preset to return to the default text.

◀ Ext Delay Polarity

Ext_Delay_Polarity	
◀ Positive	Negative ▶

This selection allows the polarity of the external TTL signal connected to the 'Delay' BNC to be selected as responding to either a ◀ **Positive** (active high) or **Negative** ▶ (active low) pulse. Default is to Positive

◀ Input_Source

Input_Source	
◀ Balanced_Ref	
◀ Unbalanced_Ref	

The reference source may be selected from either the following:

- ◀ Balanced_Ref (via 25 way connector)
- ◀ Unbalanced_Ref (via BNC connector)

Default is to Balanced_Ref

◀ GPI

The GPI connector is used for accepting GPI information (from mechanical switch contacts, relay contacts etc.) The resulting action that the unit takes may be selected from this menu.

GPI	
◀ Mute	Not_Used ▶

◀ Mute

The GPI signal will mute the output.

◀ Not_Used

When selected the GPI input connection will be disabled.

Default is to Not_Used

◀ Logging

If a logging device is attached to the RollCall™ network, information about various parameters will be reported to the logging device assigned in the Remote Control Interface system.

Logging	
◀ Overflow	
◀ Ref_Loss	

The parameters that may be selected for logging are as follows:

- ◀ Overflow
- ◀ Ref (Reference) Loss

◀ Phase_Invert

This toggle function allows the inversion of the output channels (phase swapping of 180°).

◀ Fast Delay Change

When selected the time to change to new delay settings will be faster than normal but slower (and will not cause a disturbance) than when the **Jump To Delay** function is enabled.

Note that in this mode a slight variation in pitch will occur during the change.

◀ 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 and the text will not become reversed.

◀ Software Version

Selecting this item reveals a display showing the version of the software fitted in the module.

Software Version	
Software_Version 5.0.7	OK ▶

Select OK to return to the System Menu.

◀ Serial No.

Selecting this item reveals a display showing the serial number of the module.

Serial Number	
Serial Number xxxxxxxx	OK ▶

Select OK to return to the Setup Menu.

Appendix

Delay Function

In addition, by selecting a delay of 900 ms or greater using the delay controls SW1 and SW2, the card switch SW4 positions 2, 3 and 4 change their operation to become "Manual delay", "RollTrack delay" and "External delay" on/off selection respectively.

Only when any of these switches are moved are their settings latched into memory (so that accidentally cycling through a delay of 900ms will not change the delay selection).

When the delay is set back to a value of less than 900ms or less the switches resume their normal operation.

Note that when setting the delay greater than 450 ms with SW1 and SW2, the display will show a maximum value of 450 ms, not over 450 ms.

RollTrack Audio Delay Tracking

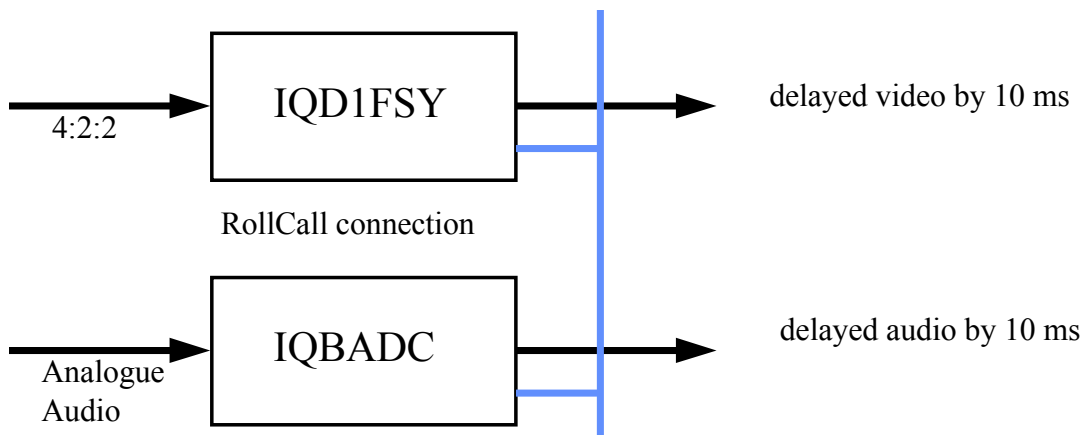
RollTrack is a feature of RollCall™ (Snell & Wilcox’s proprietary remote control system), that allows devices to communicate across the RollCall network with no direct user intervention.

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.



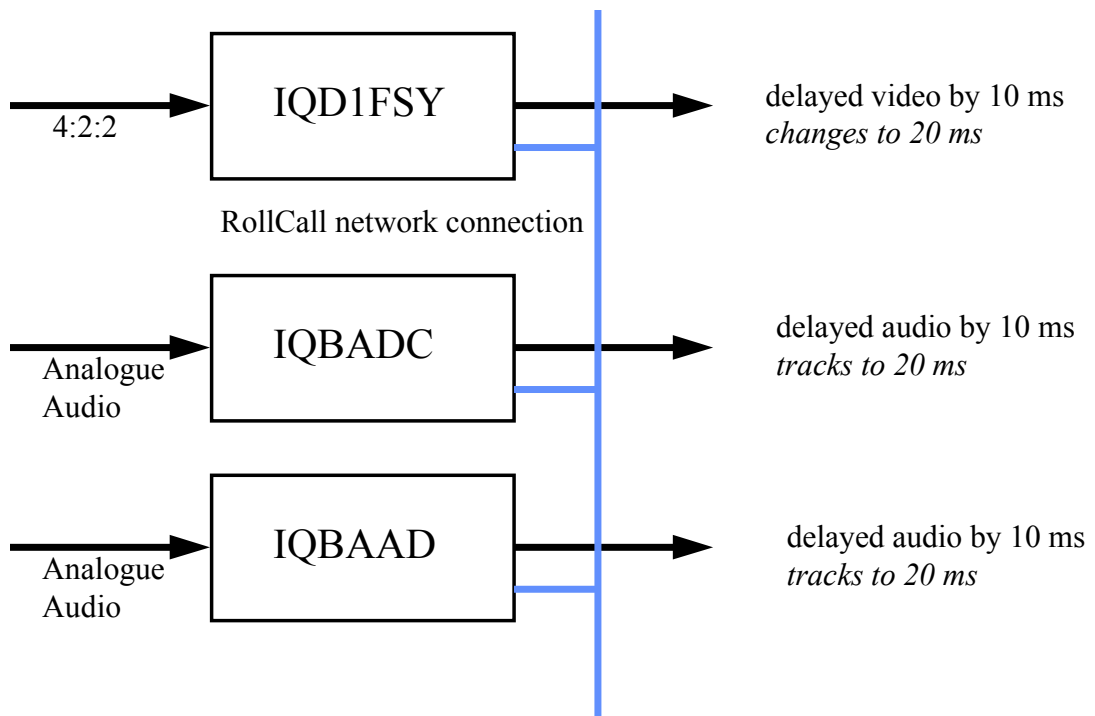
The next level of configuration is where there are multiple Frame Synchronizers (for example) each connected through RollCall™ to their own tracking Audio Delay. (It is worth stating that the synchronizers and audio delays do not have to be in the same enclosure; the addressing scheme, discussed later,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

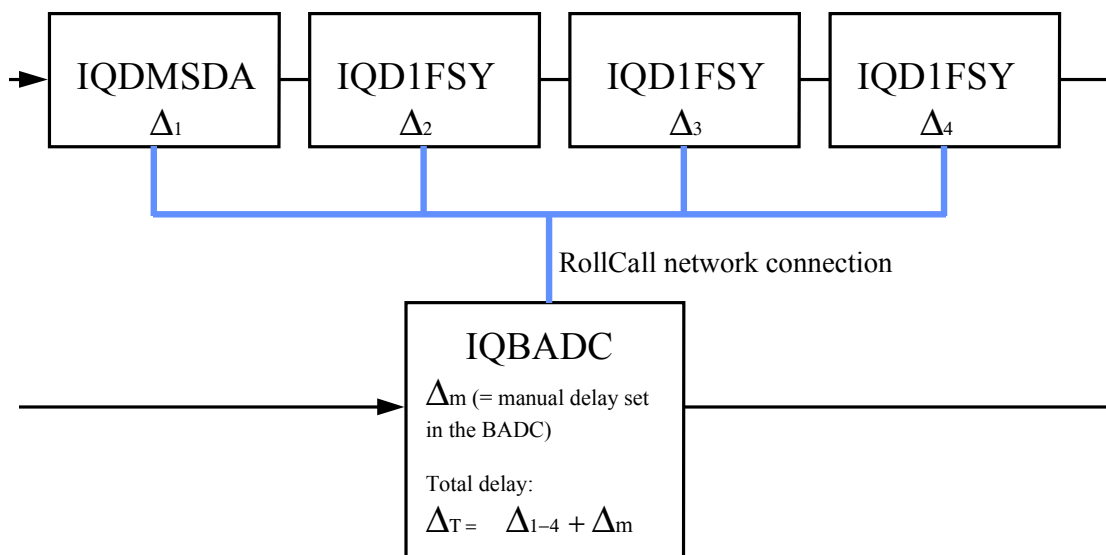
Module	ID
IQBADC	51
IQBDAC	52
IQBAAD	53
IQBDAD	54
IQBSYN	89
IQBADCD	107

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.



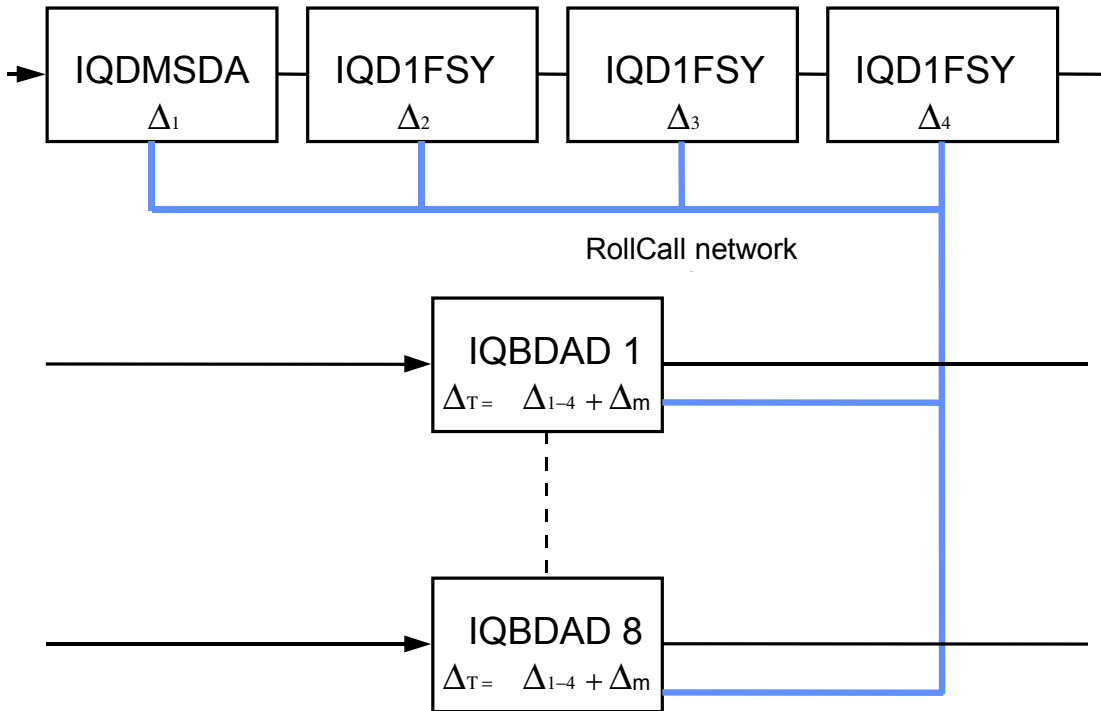
From one to eight audio delay products can be connected via RollCall™ to a single frame synchronizer, for example. If the synchronizer delay changes, then however many audio delays are connected will track the delay. The audio delays can also have a manual delay which will be added to the RollTrack delay.

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

