

IQBAI 4 AES/EBU Audio Inserter



Module Description

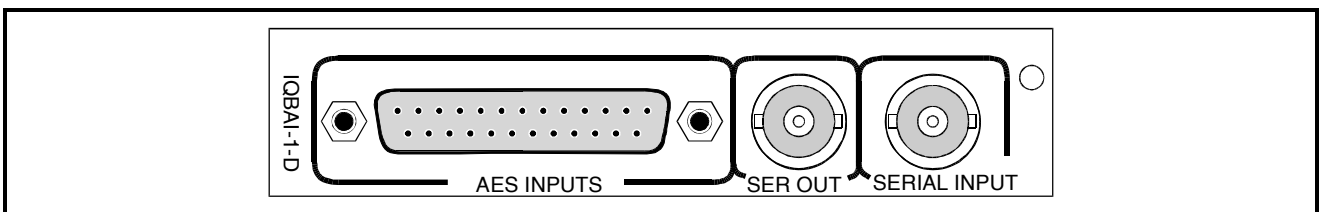
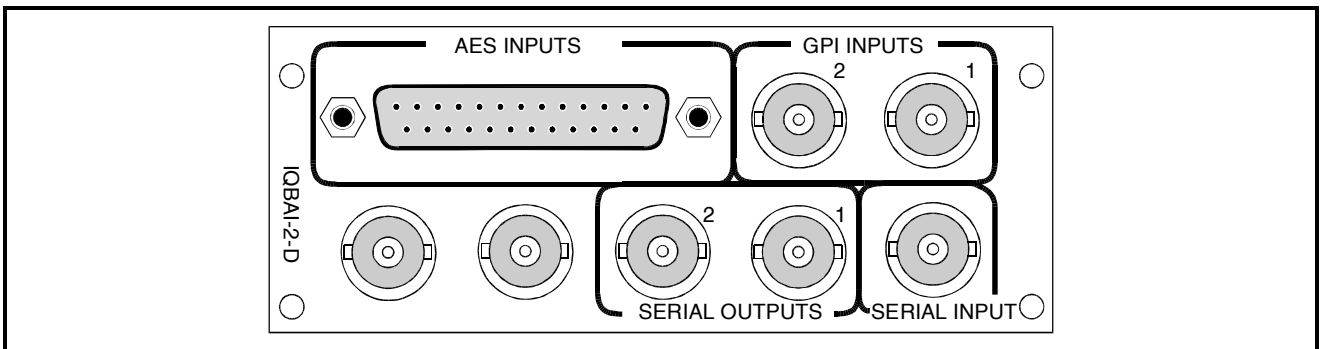
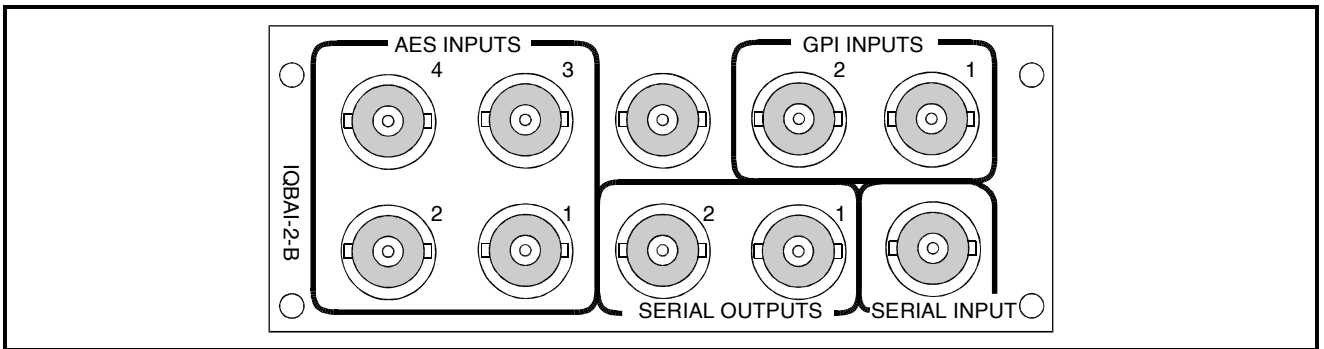
The IQBAI embeds four AES/EBU digital audio pairs into a SDI (4:2:2, 270MBit) video stream. The polarities of all input channels are reversible. Embedding may be set to any of the eight possible pair addresses independently for each stereo pair. Existing embedded audio data groups may be renamed or deleted. If there is insufficient ancillary data space remaining for new embedding, the existing data may be stripped out. Embedding

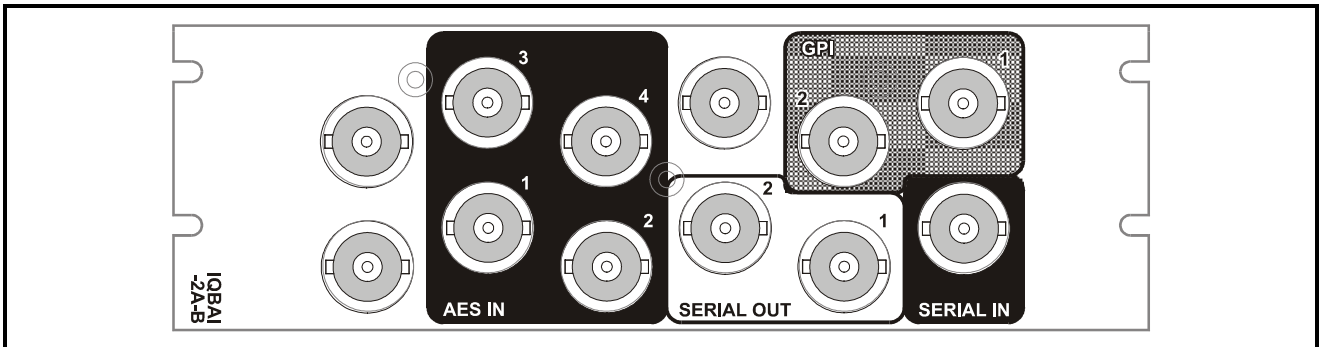
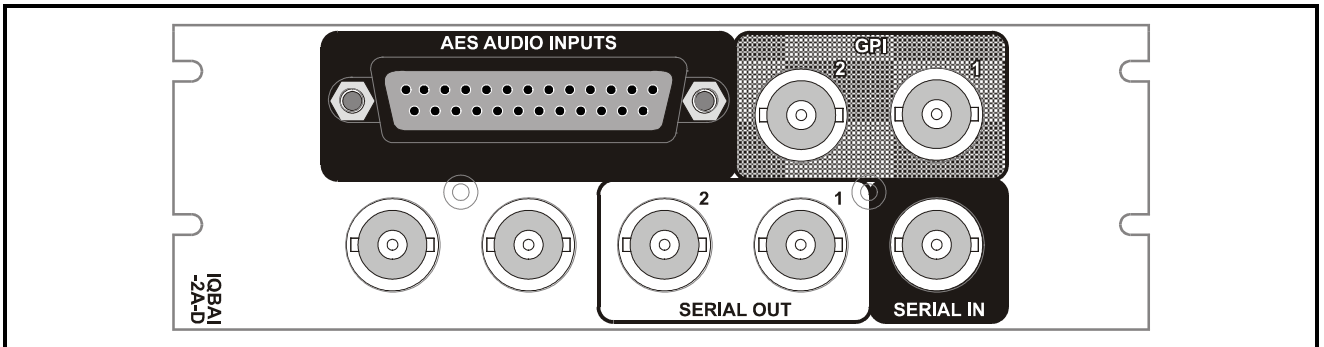
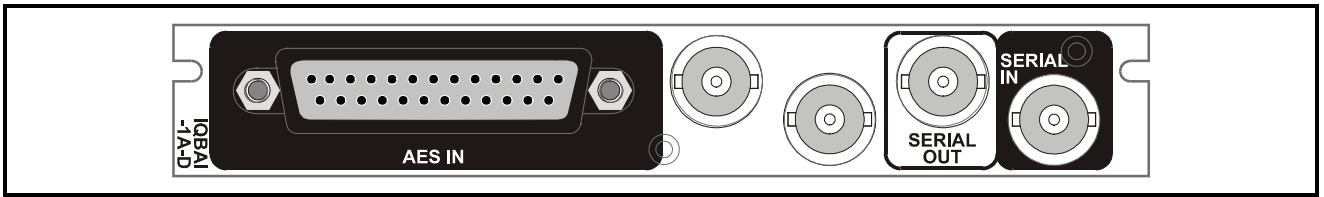
is fully compliant with SMPTE291M and SMPTE272M-A.

The SDI input is equalized to >200m of cable and two SDI outputs are provided. Full EDH monitoring and re-insertion is included.

This product range includes balanced (-D) and unbalanced (-B) digital audio versions.

REAR PANEL VIEWS





Versions of the module cards available are:

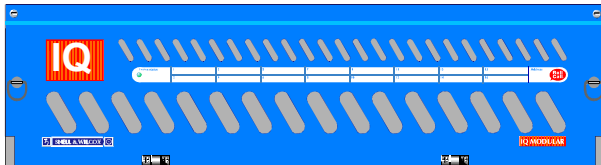
IQBAI-2-D	AES Audio Inserter Balanced AES inputs	Double width module
IQBAI-2-B	AES Audio Inserter Unbalanced AES inputs	Double width module
IQBAI-1-D	AES Audio Inserter Balanced AES inputs	Single width module
IQBAI-2A-D	AES Audio Inserter Balanced AES inputs	Double width module
IQBAI-2A-B	AES Audio Inserter Unbalanced AES inputs	Double width module
IQBAI-1A-D	AES Audio Inserter Balanced AES inputs	Single width module

Note that this product will not be available after February 2005. Please contact your local Snell & Wilcox dealer or visit their web site at www.snellwilcox.com for details of alternatives.

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

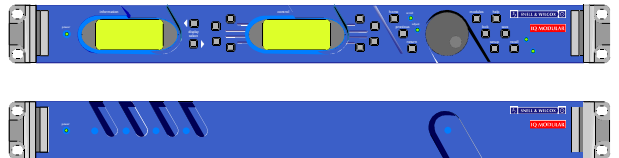
Rear panels **with** the suffix A may only be fitted into the 'A' style enclosure shown below.



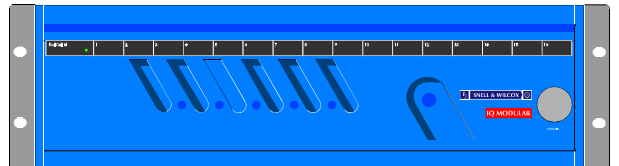
(Enclosure order codes IQH3A-E-O, IQH3A-E-P, IQH3A-N-O, IQH3A-N-P)

'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-O, IQH1S-RC-AP, IQH1U-RC-O, IQH1U-RC-AP, Kudos Plus Products)

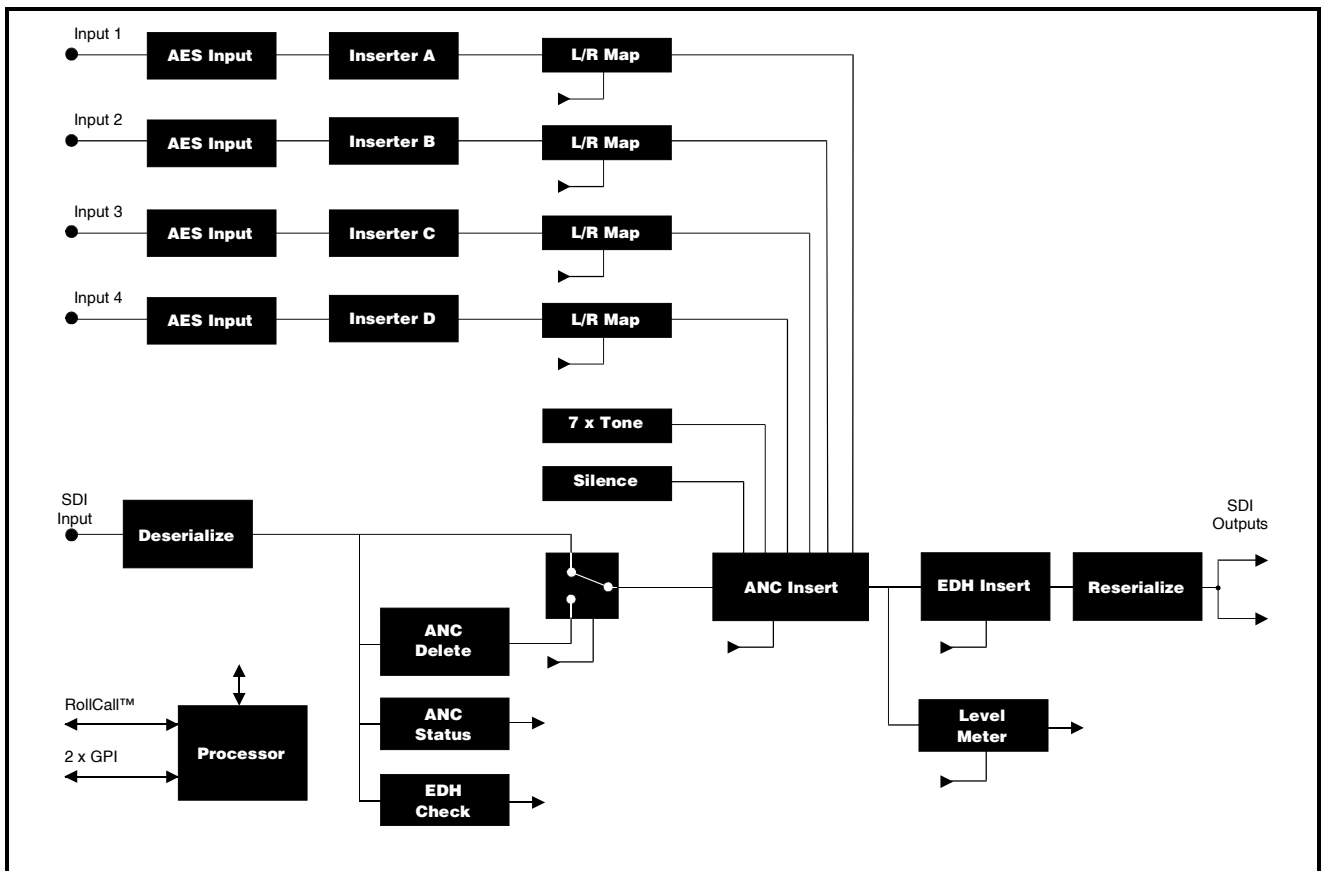


(Enclosure order codes IQH3N-O, IQH3N-P)



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

BLOCK DIAGRAM



Features

- Embeds up to four AES/EBU streams into a serial 4:2:2 video stream
- 20 bit, 48 kHz synchronous operation
- Embedding address selectable 1 to 8 independently for each pair input
- Independent input channel polarity invert selectable
- Channel 1/2 (left/right) mapping
- Optional stripping of all ancillary data prior to insertion
- Existing data may be moved or tagged for deletion, or globally stripped
- Seven selectable internal test tones plus 'silence'
- Ancillary data space full indication
- Embedded audio presence indication
- EDH monitoring and Insertion
- Automatic 525 and 625 line operation
- RollCall™ control
- Two general purpose control inputs (GPI) -2 versions only
- Balanced (D-type) or Unbalanced (BNC) AES versions

TECHNICAL PROFILE

Features

Signal Inputs

AES Audio 4 Balanced (-D) / Unbalanced (-B)
 Digital Video..... 1 x Serial Digital Input
 GPI 2 x General Purpose Inputs
 (-2 versions only)
 Standards SMPTE 259M-C-1997, SMPTE
 272M-A-1994, AES3-1992

Signal Outputs

Digital Video..... 2 x (x 1) Serial Digital
 Standards SMPTE 259M-C-1997, SMPTE
 272M-A-1994

Card Edge Controls (also available via RollCall)

Input Assign Assign to Pair, Test Tone or
 Silence
 Strip ANC Data Remove all ancillary data before
 insertion
 Select Tone/Silence Insertion
 Select Test Tone or Silence for
 Insertion
 Local/Remote Control Select
 Local operation or via RollCall™
 remote control

Specifications

Serial Input Return Loss..... Better than 15 dB to 270 MHz
 Serial Output Return Loss.. Better than 15 dB to 270 MHz
 AES Audio Inputs..... 110 ohms balanced 7 V p-p to
 0.35 V p-p (Transformer Coupled)
 via 25 way `D` connector
 Inputs equalized and reclocked for
 >> 100 m twisted pair AES/EBU
 cable 75 ohms unbalanced via
 BNC connectors.
 Inputs equalized and reclocked for
 >500 m of good quality coaxial
 cable.

Indicators

EDH Error History Presence/Minute/Hour
 No D1..... Loss of SDI D1 Input
 ANC Error Checksum Errors in Embedded
 Ancillary Data
 ANC Full No Space Left for Embedding
 Embedder Status Operational Status of Embedded
 streams

Functions Available via RollCall™ Only

Re-assign Re-assign Existing Embedded
 Audio
 Reporting Audio Data Channels Present
 Map Channels 1/2 Map 1/2 of Selected Pair
 (1/2, 2/1, 1/1, 2/2)
 Polarity Invert Invert Polarity of Selected Input
 Channel
 Tone Selection 7 Internally Generated + Silence
 Attempted Insertion Failure Reporting
 Report Failure
 EDH Error History Errors & time since last reset.
 Monitoring Output Audio Level
 Line Standard Reporting Report 525 or 625
 Naming Naming of Each Audio Channel
 (User reference only)

Audio Delay..... 1.4 ms
 Video Delay..... 0.75 µs
 Sampling 24-bit, 48 kHz synchronous to D1 video stream (20
 MSBs inserted)

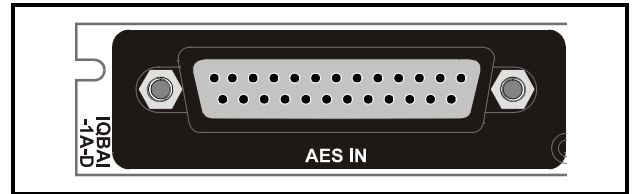
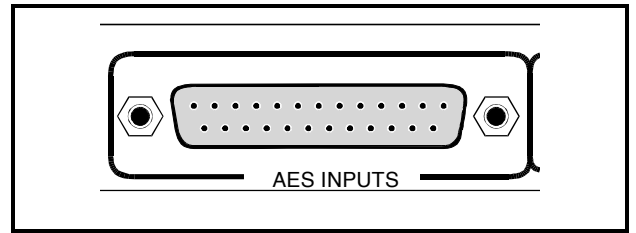
Power Consumption

Module Power Consumption
 6.7 W max

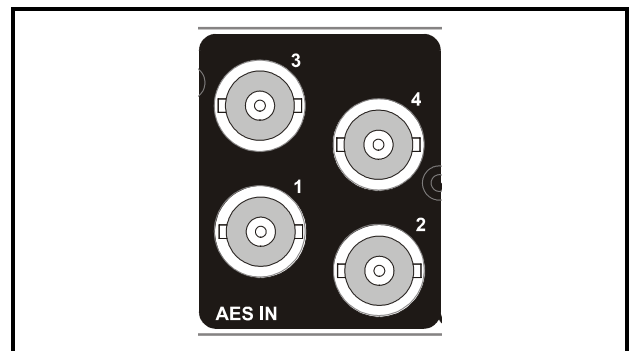
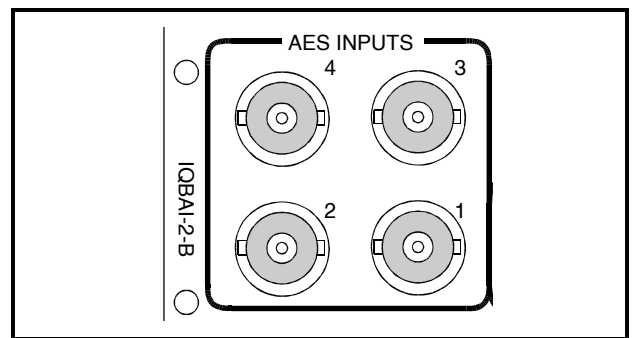
INPUTS

Balanced AES audio input connections are made via this 25 way female D-type connector. (-2-D and -1-D versions)

For connection data consult the tables on page 6.

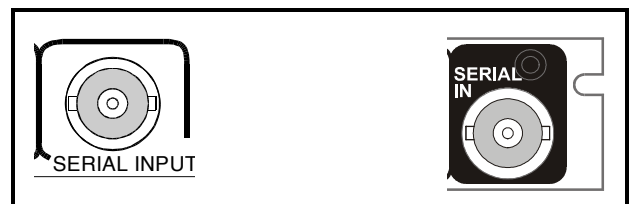


Unbalanced AES inputs are made via these BNC connectors. (-2-B versions)



Serial Digital Video Input

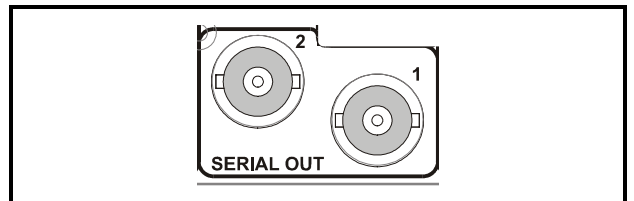
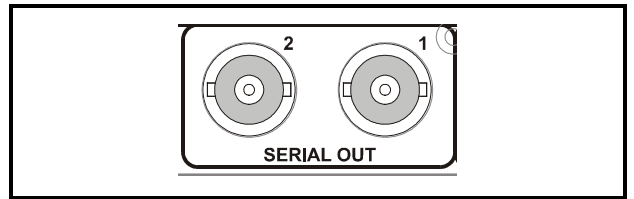
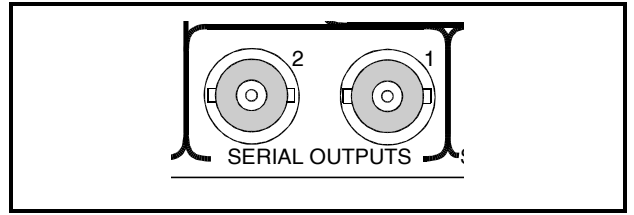
The serial digital input to the unit is made via this BNC connector which terminates in 75 Ohms.



OUTPUTS

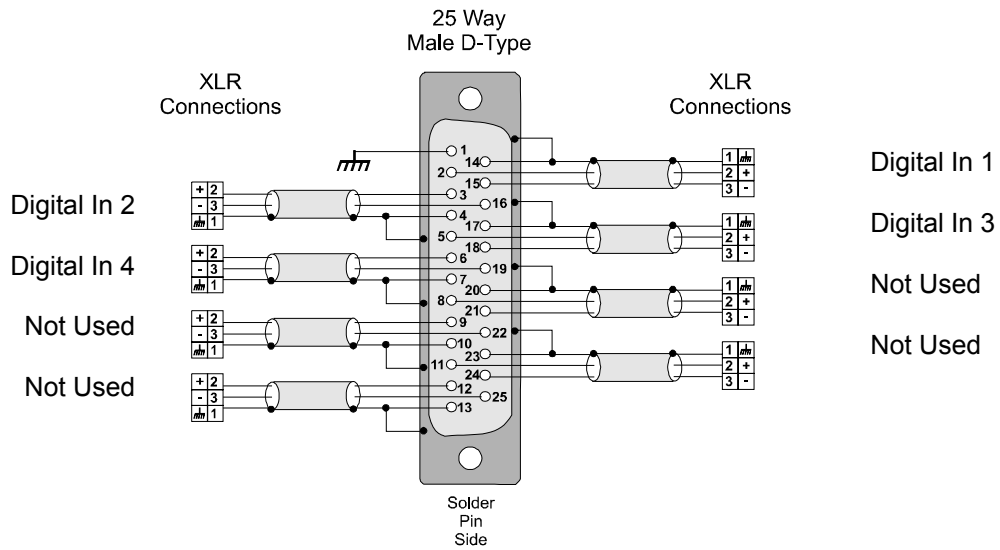
Serial Digital Video Outputs

These are the two (-2-D) or one (-1-D) isolated Serial Digital outputs of the unit via BNC connectors for 75 Ohms.

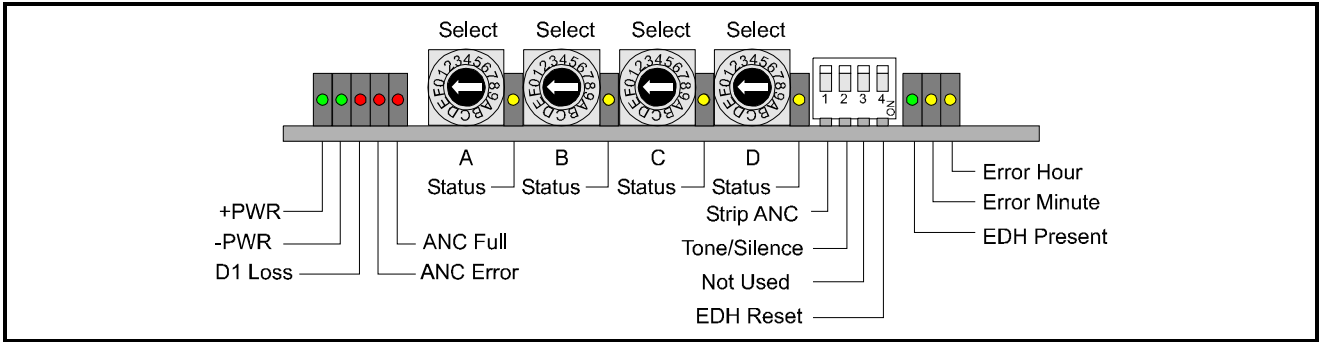


Connection Details to XLR Female Connectors (for Balanced AES input versions)

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

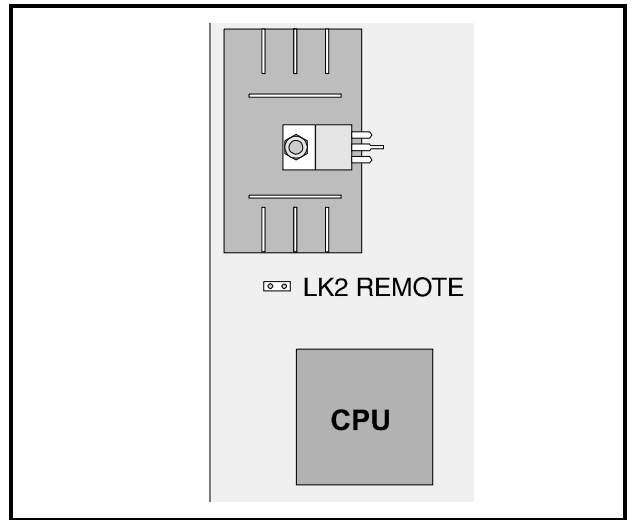


CARD EDGE CONTROLS



Note that the unit will respond to both local and remote control, one system overriding the settings of the other. For cards using the RollCall™ remote control system, activating these switches will override the remote control settings. The RollCall™ control panel will then follow these settings.

Note that in Mainframes where RollCall™ is not available the link LK2 (Remote) located near the CPU at the front of the card, should be set to the OFF (unconnected) position. This ensures that when the unit is powered-up the factory default settings of parameters not available as card edge adjustments, are loaded. With the link in the ON (connected) position card will power-up with the last settings sent by the remote control panel.



LED INDICATORS

Power

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

D1 (Serial Video) Loss

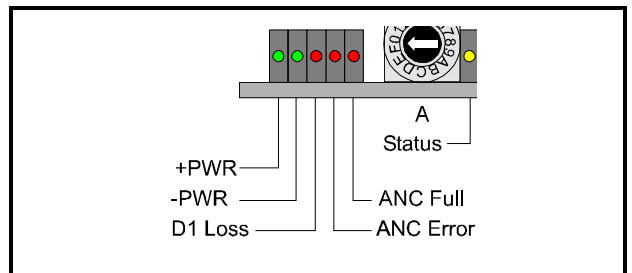
This LED will become illuminated when there is no 4:2:2 input.

ANC ERROR

This LED will become illuminated for a short interval each time a checksum error is detected in the embedded ancillary data packets.

ANC FULL

This LED will flash when insufficient ancillary data space for audio insertion remains or for attempted insertion over existing audio.

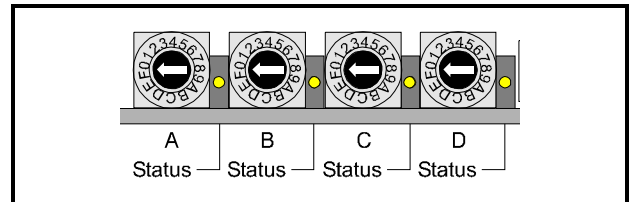


HEX SELECT SWITCHES

These switches assign embedding addresses to the inserter channels, and enable tone or silence insertion.

Settings are as follows:

1 to 8	Channel-Pair Assign
1	Pair 1
2	Pair 2
3	Pair 3
4	Pair 4
5	Pair 5
6	Pair 6
7	Pair 7
8	Pair 8
9 to 0	insert test-tone or silence, assignments as for 1 to 8 above



INSERTER PRIORITIES

In the event of channel-pair assignments clashing with each other and/or existing embedded data the conflicts will be resolved based on the following priorities:

Highest Priority: Embedded Data

- Inserter D
- Inserter C
- Inserter B

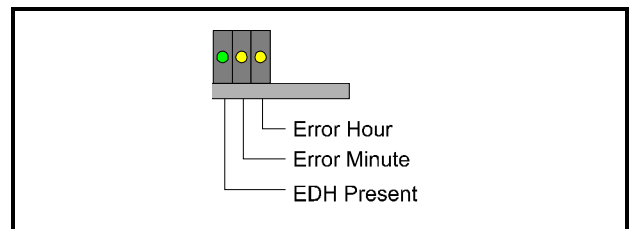
Lowest Priority: Inserter A

If an inserter is disabled the associated status LED will flash.

STATUS LED's

These LED's will

1. **Become illuminated** when tone/silence is embedded at selected destinations (9....0)
2. **Flash** if (1...8) has no input AES (inserter disabled, digital inputs only)
 - or
 - selected destination is already occupied (inserter disabled)
 - or
 - insufficient ANC space left (inserter disabled)
3. **Will not be illuminated** if the inserter channel is embedding at selected destinations (1....8)



EDH PRESENT / ERROR

This LED will become illuminated if the input D1 video has embedded EDH data.

This LED will also briefly blink off whenever EDH errors are detected.

EDH MIN / HOUR

These LED's provide the EDH error minute & hour history, indicating occurrence of errors within their respective time periods.

These LED's will remain OFF if no errors have occurred within their time period, or if the incoming D1 video does not contain EDH data.

4-WAY DIP SWITCH

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

STRIP ANCILLARY DATA

Removes all ANC data prior to insertion

TONE / SILENCE

Selects tone (down) or silence (up) for insertion.
(9 to 0 on the Hex switches)

EDH RESET

When enabled this will clear EDH error history.

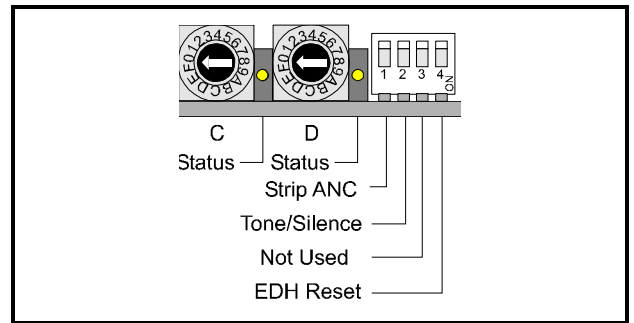
SMPTE 272M SUPPORT

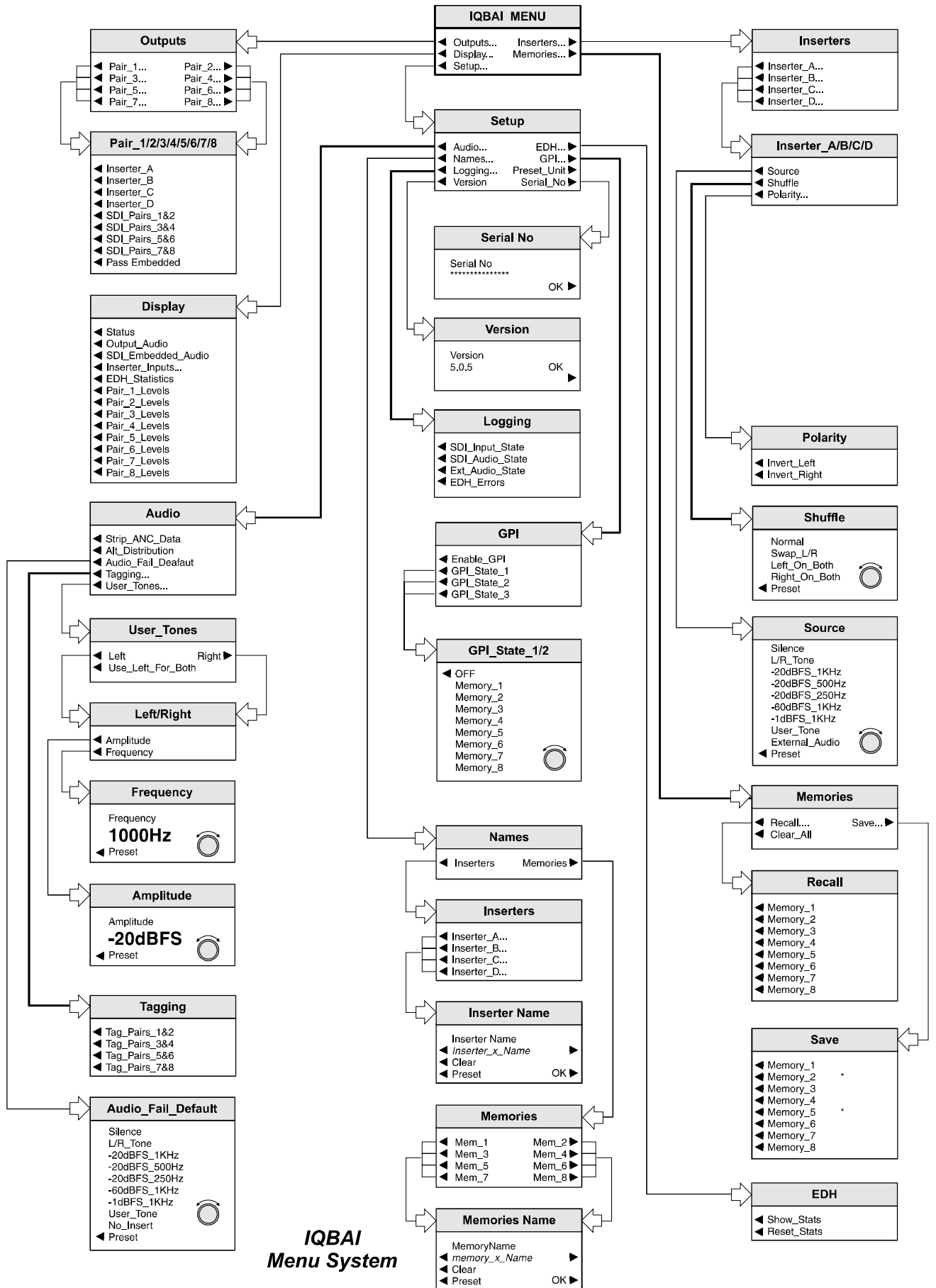
The cards conform to SMPTE 272M-A

A synchronous audio at 48 kHz; 20-bit audio data packets

The cards do not support
SMPTE 272M-B, C, D, E, F, G, H, I, J

- B synchronous audio for composite video
- C 48 kHz synchronous, with audio & extended data packets
- D asynchronous audio
- E 44.1 kHz audio
- F 32 kHz audio
- G 32 kHz to 48 kHz continuous sampling rate range
- H audio frame sequence
- I time delay tracking (monitor only)
- J non-coincident 'Z' bits in a channel pair





IQBAI 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 page opposite and will appear in the Control display window.

Operational details for the remote control panel will be found in SECTION 1 of the Modular System Operator's Manual.

MENU DETAILS

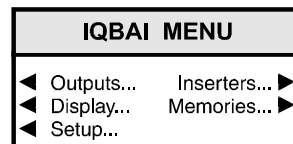
(see IQ Menu System Opposite)

MAIN MENU

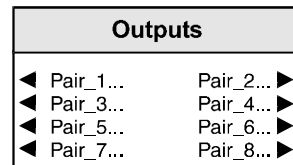
The main or top level menu allows various sub-menus to be selected by pressing the button adjacent to the required text line.

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

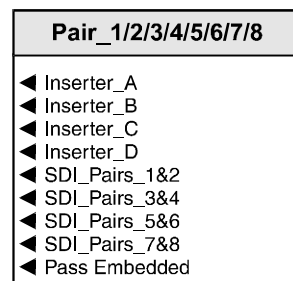
Whenever a menu item is selected the parameters of that selection will be displayed in the Information window of the front panel. Where the selection is purely a mode selection and does not enable a sub-menu, the text will become reversed (white-on-black) indicating that the mode is active. If the mode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

MAIN MENU**◀ Outputs...**

This will reveal a sub-menu that will allow the assignment of any of the eight output pairs.



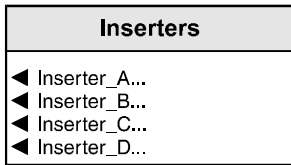
The pair should be selected and then the function chosen from the next menu.

◀ Pair_1/2/3/4/5/6/7/8

*Note that if an inserter is assigned to an output where audio data is already present on the SDI stream the inserter **will not** be enabled until that data has been moved or tagged.*

Inserters... ▶

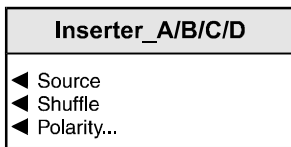
The inserters may be independently selected and configured.



Either ◀ **Inserter_A, B, C or D** may be selected.

Note that the inserter names may be renamed via the **Setup/Names/Inserters** function.

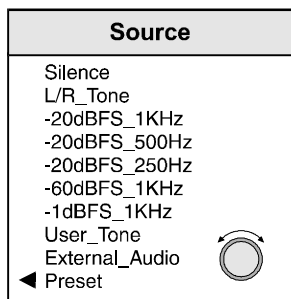
◀ Inserter_A/B/C/D



The resulting sub-menu will then allow the following options to be enabled:

◀ Source

The selected inserter may be set to the one of the signals from the following menu:



The **User_Tone** is setup via the **Setup/Audio/User_Tones** menu function.

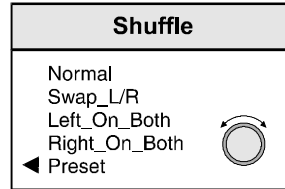
Pressing the **Return** button on the front panel will select the value that is displayed in the window.

L/R_Tone
 Left = -20 dBFS at 1 kHz
 Right = -20 dBFS at 500 Hz+2 kHz mixed

Preset selects external audio.

◀ Shuffle

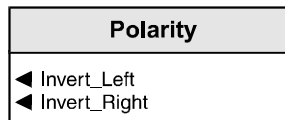
This function reveals a sub-menu that allows the left/right channels of the selected inserter to be changed from normal to a different function.



Preset is to Normal.

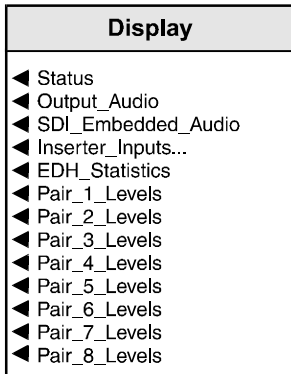
◀ Polarity

This allows the inversion of left and right signals of the selected inserter. (phase swapping of 180°).



◀ **Display...**

This menu allows information about the selected item to be displayed in the Information LCD window.



Abbreviations used in the display

General

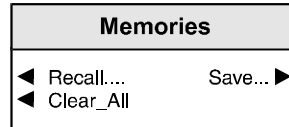
SAD	Strip ANC Data
AFE	Ancillary Full Error
STD	Standard Distribution
ALT	Alternative Distribution

Inserters A B C D

(E)	External Audio
(T)	Tone
(S)	Silence
(P)	Pass Through
(t)	Tagged

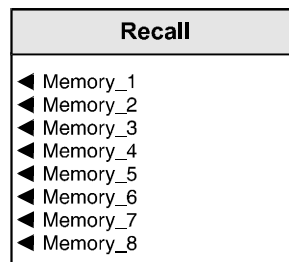
Memories... ▶

This function reveals a sub-menu that allows 8 different settings of all items to be recalled from the 8 memory locations as saved in the Save function.



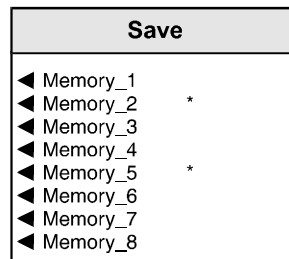
◀ **Recall...**

This function reveals a sub-menu that allows 8 different settings of all items to be recalled from the 8 memory locations as saved in the **Save** function.



Save ▶

This function reveals a sub-menu that allows the settings of all items to be saved. Up to 8 different set-ups may be saved in the 8 memory locations



Note that if a memory location already contains saved data, an asterisk * will appear to the right of the memory location number.

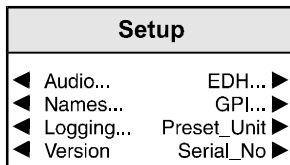
◀ **Clear_All**

This selection allows all memory locations to be cleared and returned to their default (preset) settings.

*Note that the memory locations may be renamed via the **Setup/Names/Memories** function.*

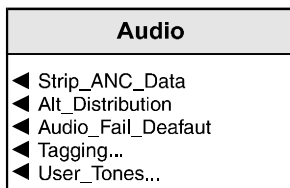
◀ Setup...

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



◀ Audio...

This allows audio functions to be set.



◀ Strip_ANC_Data

When set (text highlighted) this 'toggle' function will result in the stripping of all embedded ancillary data on the input D1 stream.

◀ Alt_Distribution (Sample packing)

When highlighted the Alternative distribution scheme is enabled; when normal the Standard distribution scheme is enabled.

Embedded digital audio shares the SDI-D1 horizontal ancillary data space with other data packets.

Generally the positions of ancillary packets follow SMPTE-272 and can appear on any line, but there

are industry-standard specifications and recommendations for some types.

The EDH packet, for example, must be on specific lines (5 & 318 for 625-lines, 9 & 272 for 525-lines) at specific positions within the data space.

Lines 6 & 319 (625, 10 & 273 for 525) are designated positions for SDI routers to switch streams.

Doing so will render the following ancillary space (next line) unusable due to the receiving SDI de-serialisers having to resynchronise to the new stream.

Lines 8 & 321 (625, 12 & 275 for 525) are the designated locations for the 'Audio Control' data packets, required if the embedded audio sample rate is anything other than video clock-synchronous

48 kpsps. While these are quite small they do consume valuable ancillary space on these lines.

Embedders must avoid using the ancillary space following the SDI switch point. The presence of EDH data in a non-SMPTE272 standard position and the possible 'audio control' packets can also prove problematic for embedders since additional precautions have to be taken to avoid the possibility of corrupting horizontal ancillary space or even destroying the SDI-D1 format.

The IQBAI module has two packet distribution schemes, selectable via RollCall.

◀ Standard

The Standard packet distribution does not use lines 5,6,7,8,318,319,320 and 321 for 625-lines and 9,10,11,12,272,273,274 and 275 for 525-lines. In this way it avoids problems with SDI switching, EDH packets, and audio control packets. However, the lack of audio samples for four consecutive lines each field does require that any subsequent de-embedders have sufficient FIFO buffer memory. For the 'standard' IQBAI distribution scheme a de-embedder must buffer a minimum of 14 samples. The SMPTE-272 recommendation is for de-embedders to have a buffer of 40 samples but many designs will have less. Some may even not have enough buffer space for this sample distribution so an alternative scheme is available.

◀ Alternative

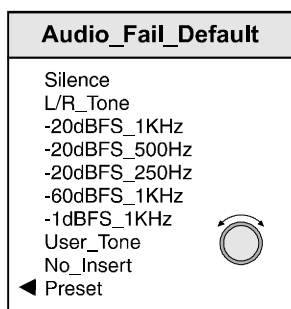
The Alternative distribution scheme is less secure in that it uses the lines defined as the locations for the audio control packets.

While the integrity of ancillary space and the SDI format will not be compromised there will be less space for audio data packets on these lines if the control packets are present

If the horizontal ancillary space is heavily loaded the embedder may not have enough space to insert all of its data. The 'alternative' scheme does not use lines 5,7,318,320 for 625-lines (9,11,272,274 for 525-lines). For this packing distribution a de-embedder must buffer a minimum of 6 samples.

Standard distribution is the default setting

◀ Audio_Fail_Default



When the AES input is absent the output is set to this default signal. This menu function defines the default signal to be inserted. It can be an internally generated signal, a user tone, an external audio signal or to disable the inserter (No_Insert).

L/R_Tone
 Left = -20 dBFS at 1 kHz
 Right = -20 dBFS at 500 Hz+2 kHz mixed

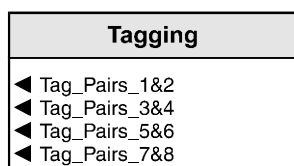
As soon as the particular value is displayed that value will be enabled.

Pressing the **Return** button on the front panel will return to the Audio menu.

The factory preset is to
 No Insert In non-RollCall mode (Link OFF)
 No Insert In RollCall mode (Link ON)

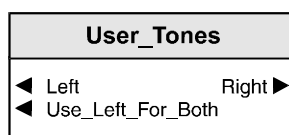
◀ Tagging...

Normally the embedded audio is passed through the unit.



This function allows the data already present on a selected pair (text highlighted) to be disabled. For more details see page 29 **Inserter Operation**.

◀ User_Tones...



An audio tone may be selected for the inserters. The frequency and amplitude may be set for the left and right channels separately or the left settings used for both channels.

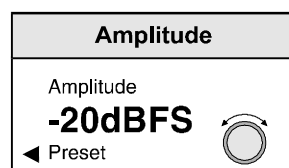
Selecting

◀ Left or Right ▶

will reveal a menu to allow the amplitude or frequency of the signal to be set.



◀ Amplitude

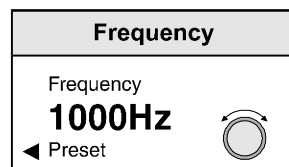


The amplitude may set from -100 dBFS to 0 dBFS in steps of 1 dBFS

Pressing the **Return** button on the front panel will select the value that is displayed in the window.

Preset value is -20 dBFS

◀ Frequency

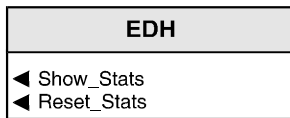


The frequency may set from 250 Hz to 20 kHz in steps of 250 Hz.

Pressing the **Return** button on the front panel will select the value that is displayed in the window.

Preset value is 1000 Hz

◀ EDH



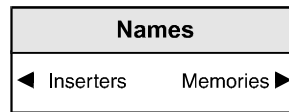
The input 4:2:2 stream is continuously monitored for EDH errors. Basic information on this can be monitored and/or reset here.

The following functions may be selected:

- ◀ Show_Stats The information will be displayed in the LCD window
- ◀ Reset_Stats Data will be reset

A regenerated EDH packet is inserted on the output 4:2:2 stream.

◀ Names

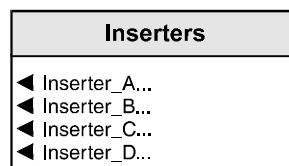


The inserters and the memories have default names. For convenience they can be given specific names.

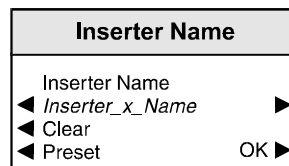
To edit an Inserter name, select

◀ Inserters

This will reveal a menu that allows the inserter to be selected.



Select the desired inserter (this will reveal an editing window) and edit the name using the spinwheel/push buttons.



To compile/edit the text the right ▶ and left ◀ buttons adjacent to the upper text line in the menu should be used to select the character position in the text and the spinwheel used to select the character.

The ◀ **Clear** function blanks out the selected character.

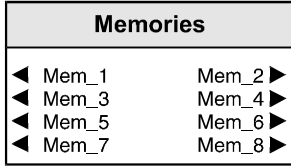
The ◀ **Preset** function loads the default text.

O.K. ▶ saves the caption text and returns to the main menu.

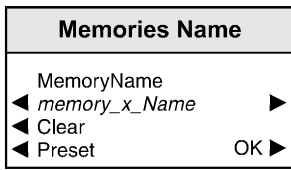
To edit a memory location name, select

Memories ►

This will reveal a menu that allows a memory location to be selected.



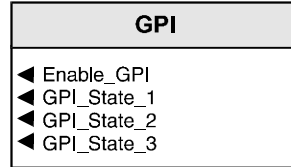
Select the desired memory location (this will reveal an editing window)



and edit the name using the same method as for naming inserters.

◀ GPI...

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



◀ Enable_GPI

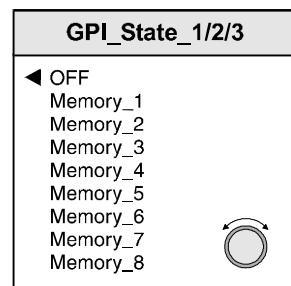
When highlighted this will make all GPI functions active.

◀ GPI_State_1/2/3

The two GPI inputs form a 2-bit binary coded signal producing the following action:

GPI 1	GPI 2	GPI State
Open	Open	Not valid
Closed	Open	GPI_State_1
Open	Closed	GPI_State_2
Closed	Closed	GPI_State_3

The three GPI states can be used to configure the unit to settings stored in a memory location. The desired GPI state should be selected from the GPI menu and then the memory location selected from the GPI_State menu.



When the selected GPI state is activated the unit will be configured to the settings located in the memory location chosen from this menu. Pressing the Return button on the front panel will select the location that is displayed in the window. Alternatively, the function may be set to OFF and the unit will have no response to the GPI inputs.

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. (See Section 1, The RCIF Menu System)

The logging sub-menu allows the following information to be made available for logging:

Logging
◀ SDI_Input_State
◀ SDI_Audio_State
◀ Ext_Audio_State
◀ EDH_Errors

Factory preset is nothing enabled

◀ 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

◀ Version

Selecting this item reveals a display showing the version of the software fitted in the module. Select OK to return to the Setup Menu.

◀ Serial Number

Selecting this item reveals a display showing the serial number of the module. Select OK to return to the Setup Menu.

RollCall CONTROL VIA a PC

For full details please see the operator's manual for the IQSPCR, RollCall™ Software Installation Guide & Operational Overview

IQSPCR is a PC application that runs under Windows 3.1x or 95. It allows full remote control of RollCall for this and other compatible units.

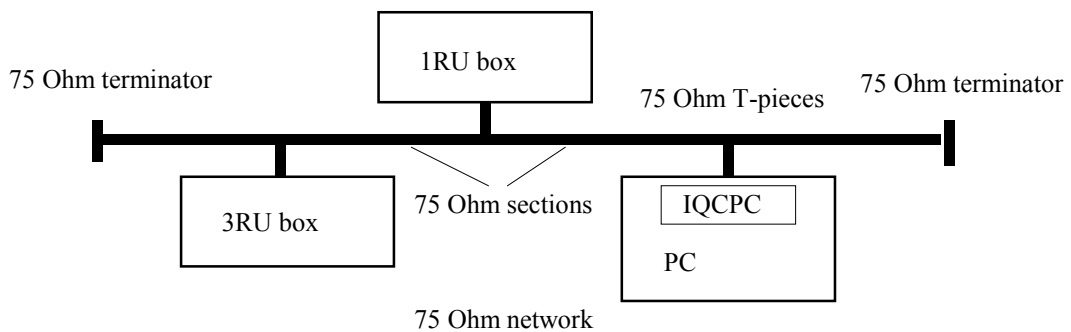
SOFTWARE INSTALLATION GUIDE

System Requirements

- The minimum requirement for installing the RollCall software is:
- RollCall PC Control Software (IQSPCR).
- IQ Modular 1RU or 3RU rack with Gateway card installed.
- PC running Microsoft Windows 3.1x or Windows '95 .
- Either a RollCall PC card (IQPC) or a RS232 to RS422 9 way converter fitted to the PC.

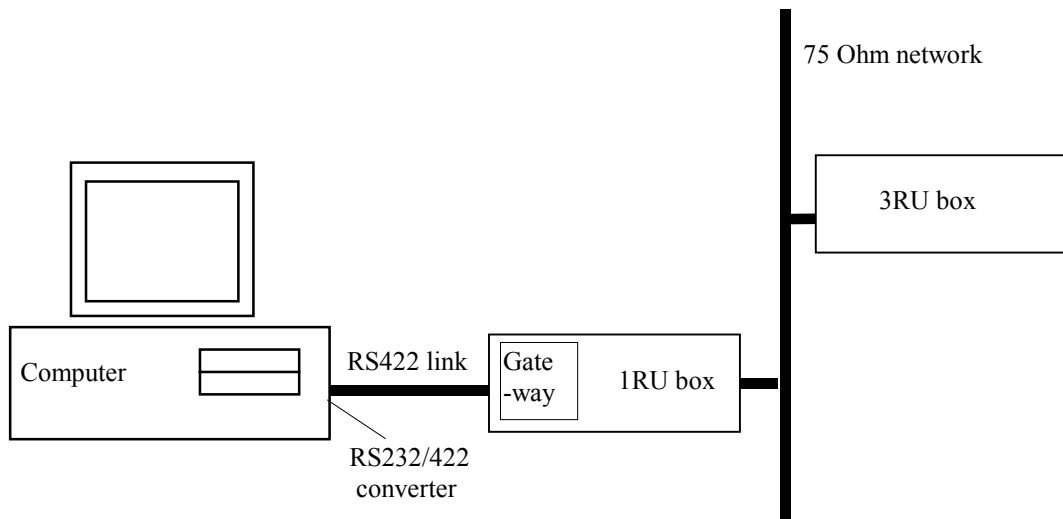
Connecting the hardware:

There are two choices for connecting the PC to the Modular IQ System:
 75 Ohm co-axial cable BNC for box-to-box connections running at 2.5 Mbs:



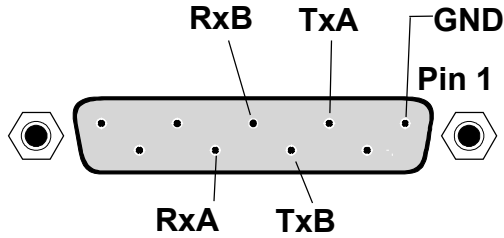
Each unit is physically joined via a T-piece connector. Each T-piece is connected by 75 Ohm co-ax cable to create a section. Each section of cable can be up to 400m. Each end of the network is terminated by a 75 Ohm terminator.

RS422 running at 38.4 kbs asynchronous:

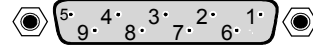


Connect the RS232/RS422 converter to COM1 or COM2 of the PC and connect this via RS422 cable to the 9 pin 'D' on the IQ modular unit. This interface is specifically designed for third party connections into the system. This allows PC's or any other serial device access to any of the units within the system. Every active 1RU or 3RU box has one of these ports.

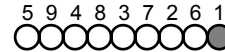
Physical Interface - RS422



N.B.: Connector is a socket, viewed from mating face. Equivalently, this is a plug, viewed from the rear, cable face.



9-way ribbon

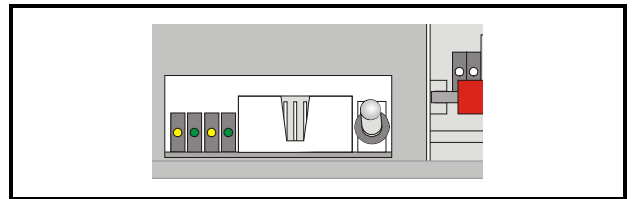


For reference, the A signal is at 0 V at line idle, and the B signal at 5V.

Standard Connections

9-way Connector	FUNCTION
1	Frame Ground
2	Transmit A (Tx-)
3	Receive B (Rx+)
4	Receive Common
5	[No connection]
6	Transmit Common
7	Transmit B (Tx+)
8	Receive A (Rx-)
9	Frame Ground

N.B. The D connector on the Gateway card could also be configured as RS485. Selection of the interface format is by a switch on the card that must be DOWN i.e. towards the PCB.



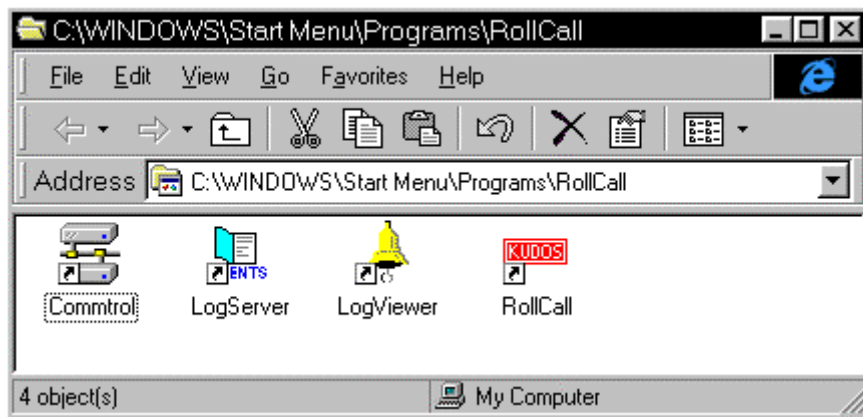
Switch set to RS422

Software Installation

Run SETUP.EXE from the installation diskette to install the suite of Rollcall programs. Product code IQSPCR contains the Rollcall Remote Control (rollcall.exe) and communications driver (commtrol.exe) programs. Product code IQSPCD contains the Rollcall Remote Control (rollcall.exe), communications driver (commtrol.exe), logserver (rolllog.exe) and logviewer (rollview.exe) programs.

On startup, the setup program prompts for an installation directory. The default installation directory is C:\ROLLCALL. The set-up procedure will copy all the necessary files to this directory. Set-up will also create a Windows Group called RollCall.

Depending on the product code of the diskette, Either two icons (RollCall and Commtrol for IQSPCR) or four icons (RollCall, Commtrol, LogServer and LogViewer for IQSPCD) will appear in the group.



Overview

ROLLCALL.EXE:

This program allows control of RollCall compatible units. (IQ Modules, Supervisor, other S&W units with RollCall gateway). Each unit has a 'control template' window for control of that device. The user can configure the program for USER, ENGINEER or SUPERVISOR access levels with password protection. It can install "template" files from new units automatically or by user request.

ROLLLOG.EXE:

This is the Log Server application that collects logging information from units on the network. Keeps a running log file of every event received. Writes a current status file for configured units and allows the LogViewer program to display the information.

ROLLVIEW.EXE:

This program displays the current status file written by ROLLLOG.EXE in a tabulated form. Coloured conditions highlight warning and failure states. Can be configured for network access for remote monitoring using share information from the LogServer program.

COMMTROL.EXE:

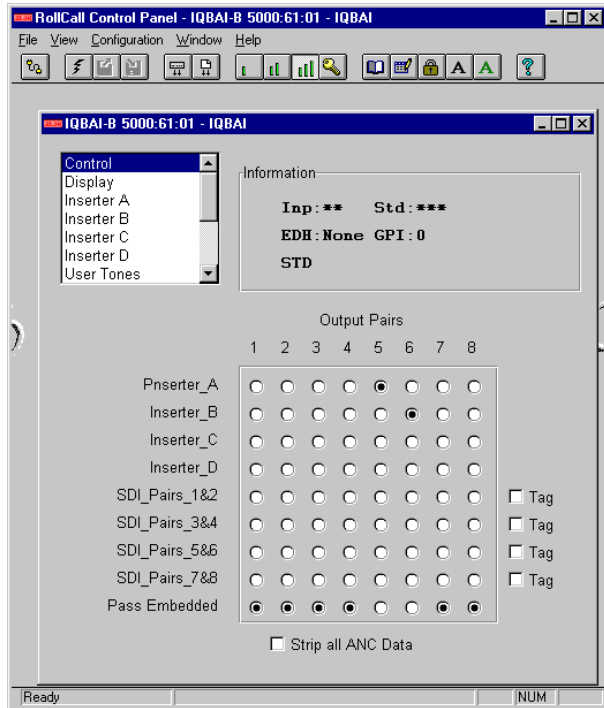
This program is called automatically by ROLLCALL.EXE or ROLLLOG.EXE and normally runs minimized. Usually, there is no need to run this program by itself. This program provides the basic communications with the PC card, serial comms ports or TCP/IP protocols. It also has monitoring facilities for data analysis.

For more details see the operator's manual for the IQSPCR Section 3

RollCall Control Templates for the IQBAI

The first item in the menu is

Control



This allows the output pairs to be assigned various functions.

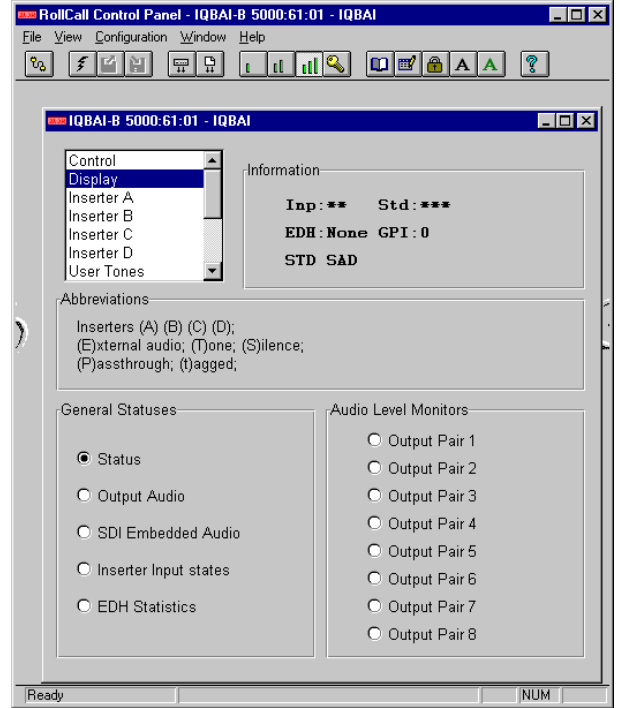
By clicking on the intersecting location in the matrix the function shown on the left of the matrix will be assigned to the output pair shown above the matrix.

The SDI pairs may also be tagged by enabling the **Tag** box (this function allows the data already present on a selected pair to be disabled)

Checking the **Strip all ANC Data** box will result in the stripping of all embedded ancillary data on the input D1 stream.

The **Information** area will show basic details of the operational status of the unit and will appear on all of the windows.

Display

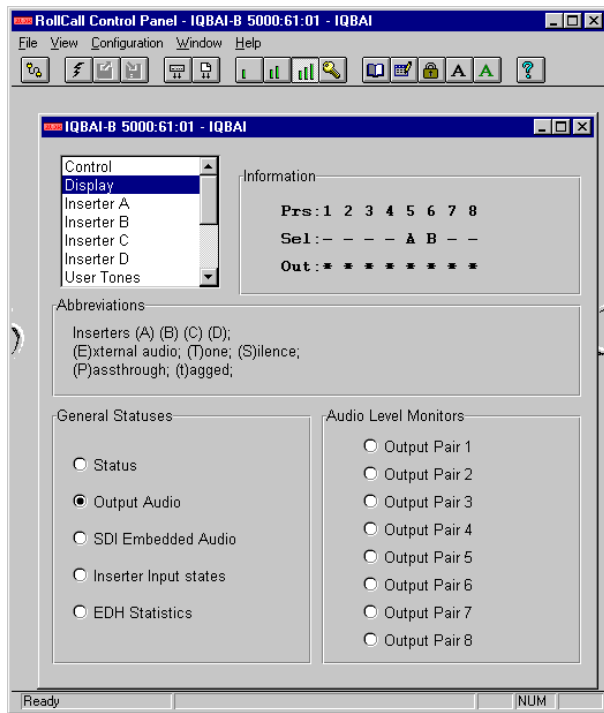


This allows information about the selected item to be displayed in the Information area.

Status

This will show basic details of the operational status of the unit.

Output Audio

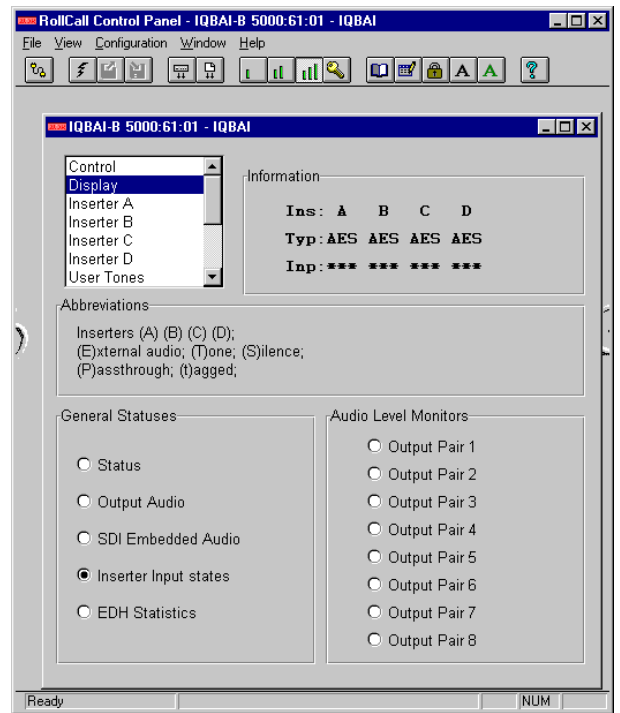


This function will present information about the output pairs 1 to 8, the selected inserters A to D and the type of output signal. The abbreviations used for this purpose are explained in this window.

SDI Embedded Audio

This function presents information about the SDI Embedded Audio in a similar way to Output Audio above.

Inserter Input States

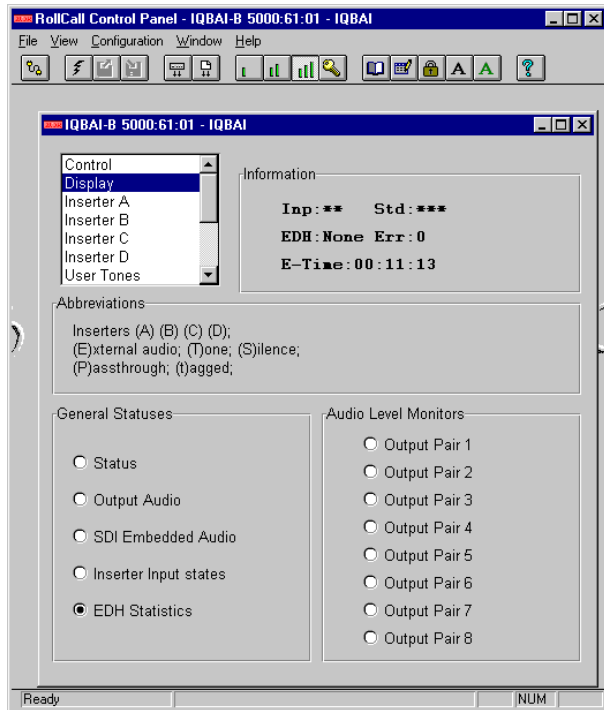


The Inserters A, B, C and D Input State are displayed with this function.

Abbreviations used for **Type** are as follows:

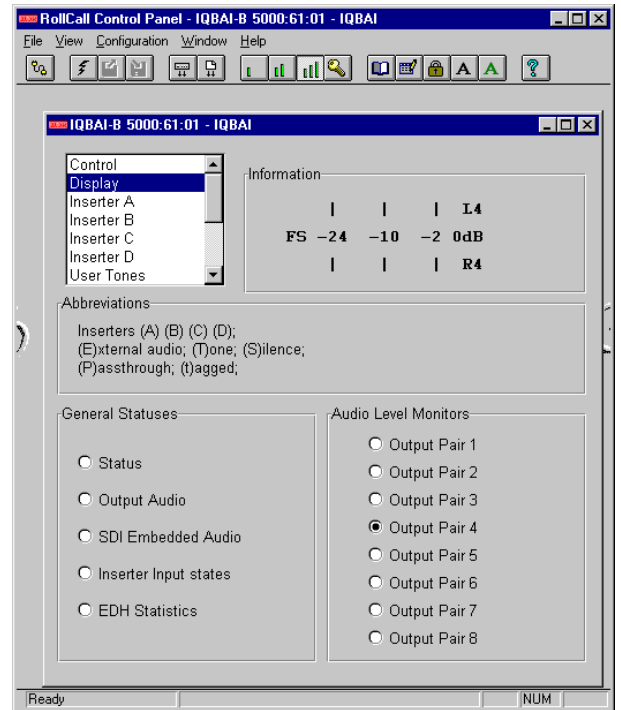
AES Digital Signals

EDH Statistics



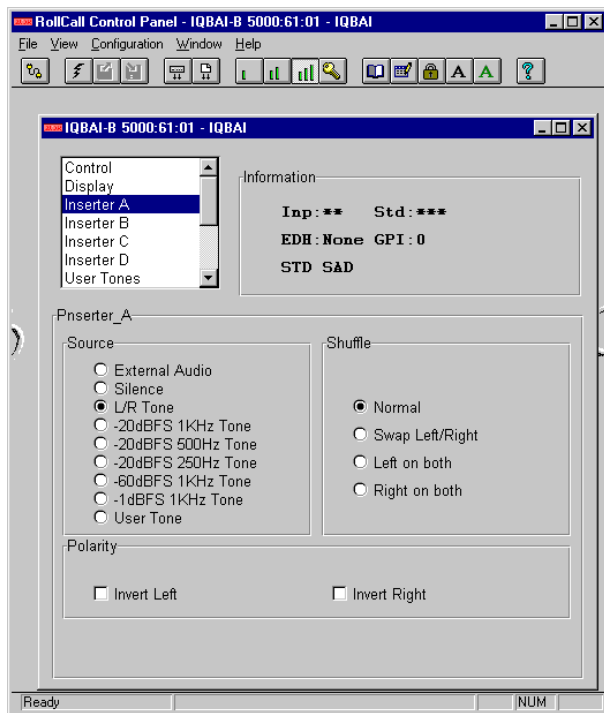
This function will display all EDH statistics including the presence of errors, the number of errors and the error time.

Audio Level Monitors



This function allows an output pair to be selected and the level in dB (for both left and right channels) to be displayed by a bargraph type display.

Inserters A, B C and D



The inserters may be independently selected and configured. Either Inserter A, B, C or D may be selected.

Source

The selected inserter may be set to the one of the signals from the list.

The User Tone is setup via the User Tones function.

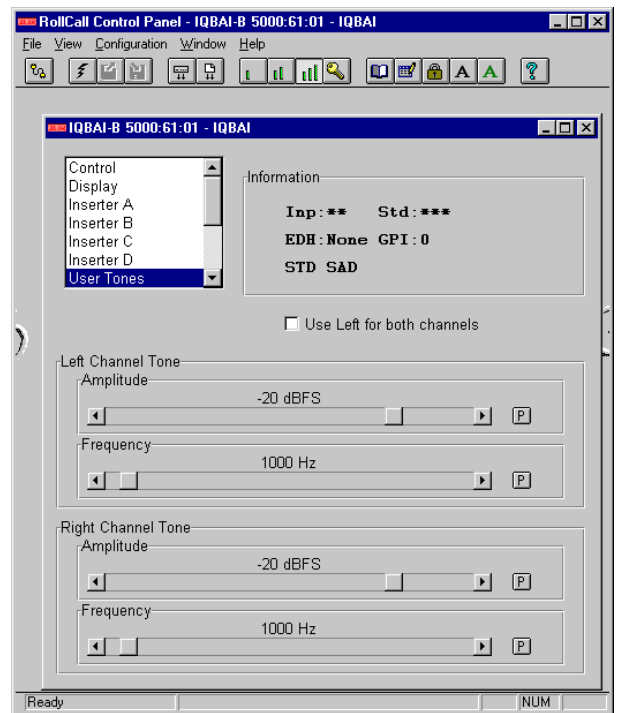
Shuffle

This function allows the left/right channels of the selected inserter to be changed from normal to a different function as shown in the list.

Polarity

This allows the inversion of left and right signals of the selected inserter.

User Tones



This allows an audio tone may be selected for the inserters. The frequency and amplitude may be set for the left and right channels separately or the left settings used for both channels (Check the 'Use Left for both channels' box)

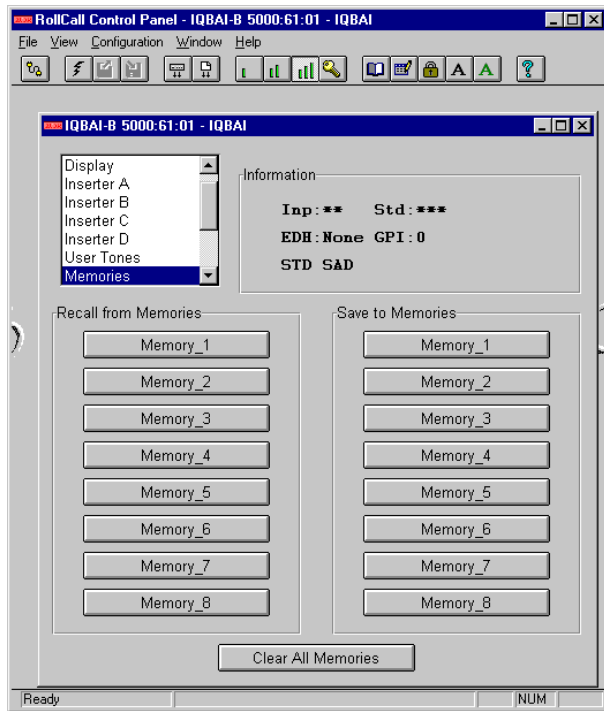
The amplitude may set from -100 dBFS to 0 dBFS in steps of 1 dB

Preset value is -20 dB

The frequency may set from 250 Hz to 20 kHz in steps of 250 Hz.

Preset value is 1000 Hz

Memories



Recall from Memories

This function allows 8 different settings of all items to be recalled from the 8 memory locations as saved in the **Save to Memories** function.

Save to Memories

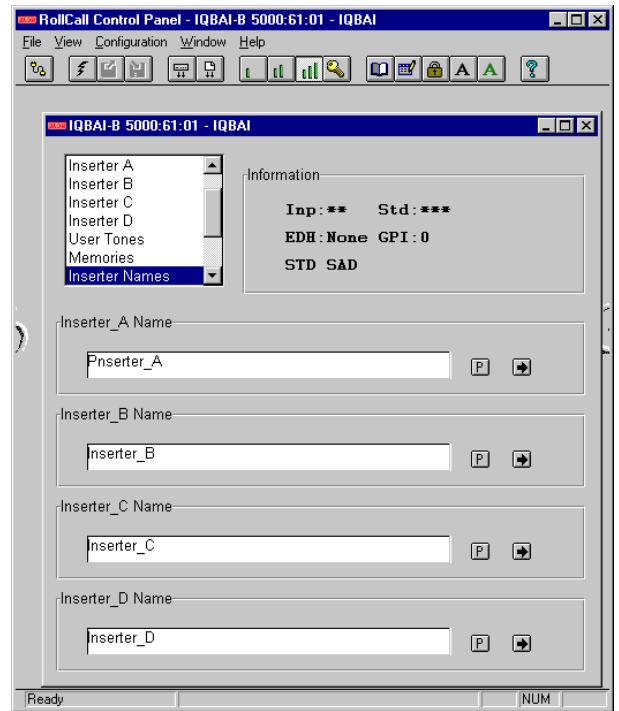
This function allows the settings of all items to be saved. Up to 8 different set-ups may be saved in the 8 memory locations

Note that if a memory location already contains saved data, an asterisk * will appear to the right of the memory location number.


Clear All Memories

This item allows all memory locations to be cleared and returned to their default (preset) settings.

Inserter Names



The inserters have default names of Inserter A, B, C and D. For convenience they can be given specific names.

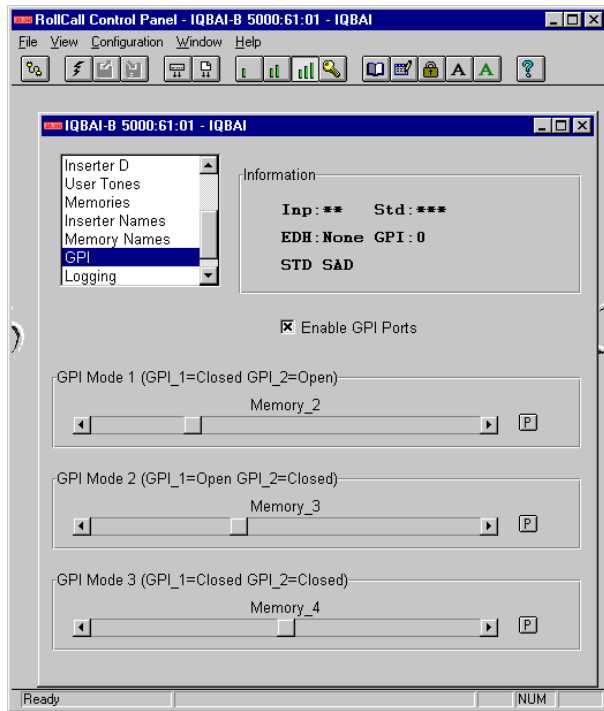
To change a name type the new name in the text area and select  (return)

Preset returns to the default names.

Memory Names

The 8 memory locations may be renamed in a similar way.

GPI



The two GPI connectors on the rear panel are used for accepting GPI information (from mechanical switch contacts, relay contacts etc.) The resulting action that the unit takes may be selected using this function.

Enable GPI Ports

When this box is checked this will make all GPI functions active.

GPI Modes

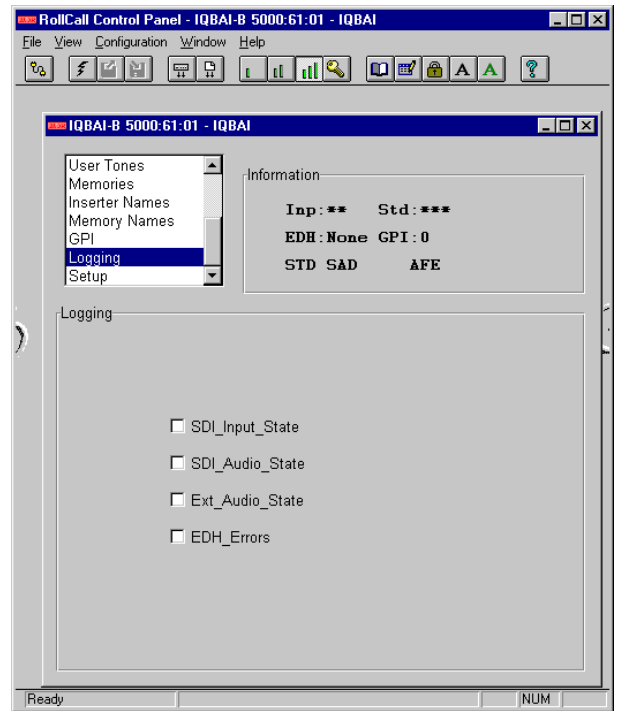
The two GPI inputs form a 2-bit binary coded signal producing the following action:

GPI 1	GPI 2	GPI Mode
Open	Open	Not valid
Closed	Open	GPI Mode 1
Open	Closed	GPI Mode 2
Closed	Closed	GPI Mode 3

The three GPI modes can be used to configure the unit to settings stored in a memory location. Each GPI mode scroll bar may be used to select a memory location.

When the selected GPI mode is activated the unit will be configured to the settings located in the memory location chosen from this menu. Preset for each of the GPI modes is to OFF; the unit will then have no response to the GPI inputs.

Logging

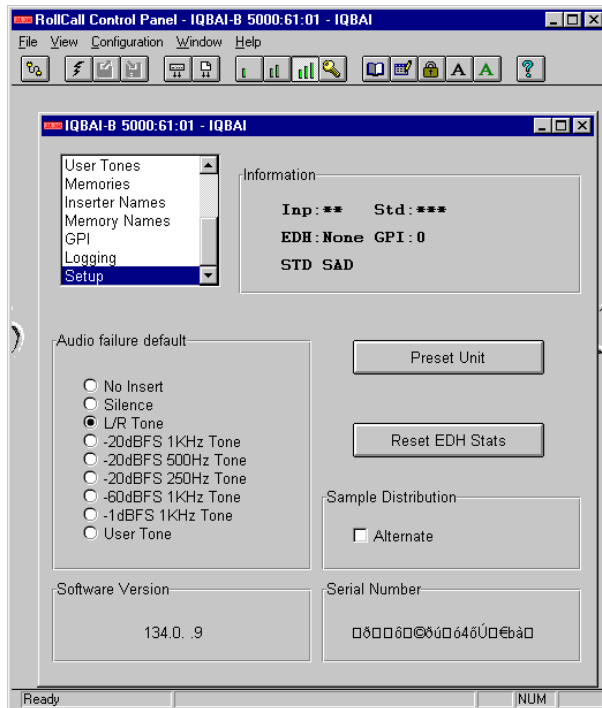


If a logging device is attached to the RollCall™ network, information about various parameters will be reported to the logging device assigned in the Remote Control Interface system. (See Section 1, The RCIF Menu System)

Checking the boxes will allow that information to be made available for logging.

Preset is nothing enabled.

Setup



Audio failure default

When the AES input is absent the output is set to this default signal.

This function defines the default signal to be inserted. By checking the appropriate box it can be set to an internally generated signal, a user tone, an external audio signal or to disable the inserter (No_Insert).

Preset is to No Insert

Preset Unit

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

Reset EDH Stats

The input 4:2:2 stream is continuously monitored for EDH errors. Enabling this function will reset all EDH statistics.

A regenerated EDH packet is inserted on the output 4:2:2 stream.

Alternate (see page 16 for more details)

When checked the Alternative distribution scheme is enabled; when unchecked the Standard distribution scheme is enabled.

The software version and serial number will also be displayed here.

Insertion Operation

The SMPTE 272M standard specification allows for up to four groups of AES/EBU digital audio to be embedded in a component D1 digital video stream. Each group consists of two stereo pairs (four channels), giving a total of sixteen audio channels for all four groups.

A single IQBAI module is capable of inserting two pairs of audio data (four channels). Two IQBAI cards are required to embed all sixteen possible channels.

The input AES audio data must be sampled at 48 kHz, clock-synchronous to the video stream. Asynchronous operation is not supported.

A total of exactly 1920 audio samples occur within one frame of 625-line video. For 525-line video the relationship is 8008 audio samples over five video frames.

The audio data is distributed evenly throughout each video frame, situated in the non-active picture regions between the end of one line and the start of the next. The majority of lines contain three audio samples, some four, and a couple of reserved lines contain no samples.

Audio Control and Extended Data packets as defined in SMPTE-272M are not inserted, but are handled correctly by the 'remapping' and 'tagging' functions.

Block numbering as defined in SMPTE-272M is not supported.

The IQBAI module contains four independent inserter streams that operate with either external AES digital audio inputs or internally generated tone or silence. They operate in sequence with stream A first and stream D last.

The inserter streams are given individual assignments for embedder and stereo pair address. Control software ensures that the addresses are mutually exclusive and do not clash with those of existing embedded audio data. In this way embedded data integrity is assured.

The SMPTE 291M standard defines the structure and space formatting for ancillary data within digital component or composite video streams. For D1 component data space ancillary packets follow immediately after the EAV (end of active video) and are contiguous with each other.

Complying with SMPTE 291M, the inserter control section looks for the first free space after EAV. Once found the embedding process is initiated with the first enabled inserter. However, before starting the embedding for any of the inserter streams the remaining data space is checked to ensure that there is enough room for the ancillary packet. If not, all inserters still waiting to be serviced are disabled to prevent corruption of the D1 video format or generation of invalid ancillary data packets. This situation is reported over the RollCall™ network and indicated on the card edge LEDs.

If desired, existing embedded ancillary data may be stripped off or 'renamed'. If stripped, the card inserters will embed data immediately following the EAV markers, otherwise the existing ancillary data will be appended to, provided that there is sufficient room remaining.

Each audio ancillary data packet contains an 'identity' word that indicates which group (1,2,3,4) the data belongs to. This address label can be altered for existing embedded audio data, thus 'renaming' the packets. For example, the group 1 audio data from a Digital Betacam VCR could become group 3 if the inserter assignments needed to be for group 1. Alternatively, the identity word can be changed to 'TAG'. This indicates that the ancillary packet is to be ignored by downstream equipment, or removed during a reformatting process. The packet cannot simply be blanked out because that would violate the SMPTE 291M requirement that ancillary packets be contiguous.

Embedded ancillary data which does not conform to the space formatting requirements of SMPTE 291M may not be recognised, and so could be destroyed by the IQBAI card. For example, if the data packets do not start immediately following the EAV marker the inserters will overwrite the packets. Similarly, if a data packet does start in the correct place but a second packet does not immediately follow the first one the second packet will be overwritten.

The first situation above applies to the embedded audio data from the Tektronix TSG-422 pattern generator, where the packets do not start until four words after the EAV marker.

The second situation can occur where an upstream embedder puts particular groups in to specific positions in the ancillary space.

Embedder Packet distribution (Standard)**D1 625:**

1 .. 4	4 lines	4 audio samples per packet
5 .. 8	4 lines	0 samples
9 .. 11	3 lines	4 samples
12 .. 308	297 lines	27 x [10 lines of 3 samples + 1 line of 4 samples]
309 .. 312	4 lines	3 samples
313 .. 317	5 lines	4 samples
318 .. 321	4 lines	0 samples
322 .. 324	3 lines	4 samples
325 .. 621	297 lines	27 x [10 lines of 3 samples + 1 line of 4 samples]
622 .. 625	4 lines	3 samples

Total samples = 1920 / frame

Max. buffer excursion = 13 samples

D1 525:

1 .. 3	3 lines	3 samples
4	1 line	4 samples on frames 1, 3, & 5 3 samples on frames 2 & 4 (5 frame sequence)
5 .. 8	4 lines	3 samples
9 .. 12	4 lines	0 samples
13 .. 21	9 lines	8 lines of 3 samples + 1 line of 4 samples
22 .. 261	240 lines	24 x [9 lines of 3 samples + 1 line of 4 samples]
262 .. 271	9 lines	3 samples
272 .. 275	4 lines	0 samples
276 .. 283	8 lines	7 lines of 3 samples + 1 line of 4 samples
284 .. 523	240 lines	24 x [9 lines of 3 samples + 1 line of 4 samples]
524 .. 525	2 lines	3 samples

Total samples = 8008 / 5 frames

Max. buffer excursion = 14 samples

