IQBDACD-N Dual AES/EBU to Analog Audio Converter (No Delay)

CE

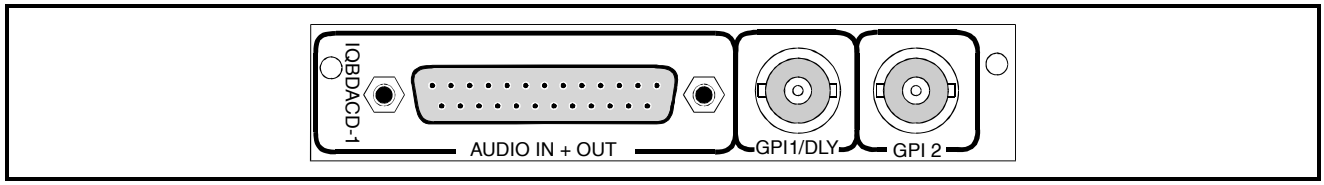
Module Description

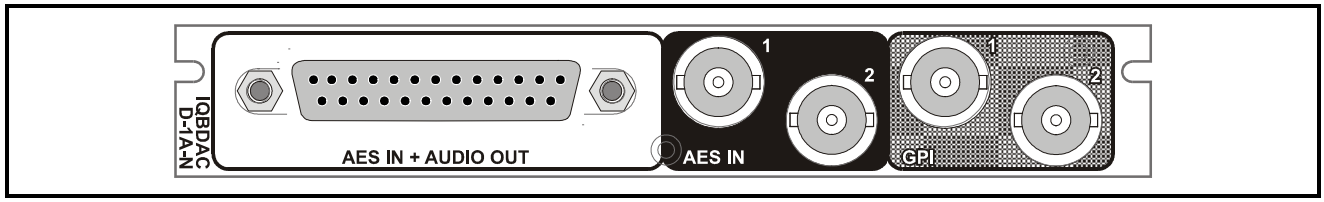
The IQBDACD converts two AES/EBU digital streams into four analog audio channels. The digital streams may be at 48kHz, 44.1kHz or 32kHz and are converted to analog with 20-bit resolution. The analog output is factory set to give +24dBu, variable range +18dBu to +24dBu (+12dBu to +18dBu with link fitted) for a full-scale digital input. In addition a digital gain control permits up to -12dB of fine level adjustment. To ensure a low jitter level the regenerated digital clock is crystal locked before feeding the digital to analog converters. When an input is removed that channels output will be muted.

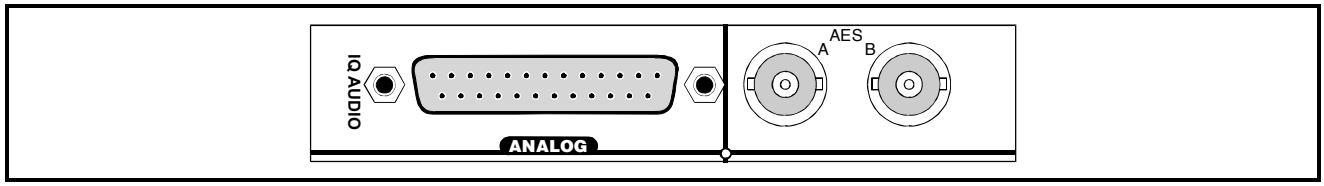
Full remote control and monitoring is available via RollCall. Monitoring functions include input presence and format indication, and overflow warning. Two GPI inputs may be attached to any control function.

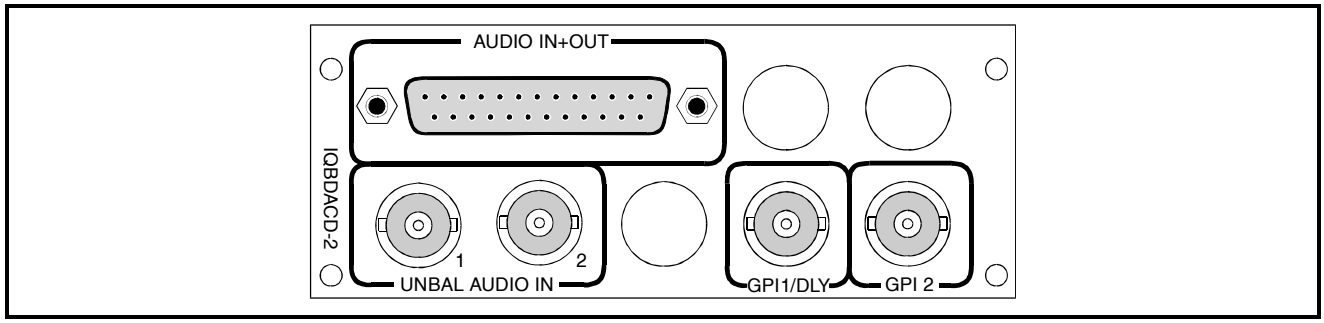
All analog audio connections are via a 25D connector. The single width card has balanced AES/EBU inputs; the double width card also has unbalanced AES/EBU inputs

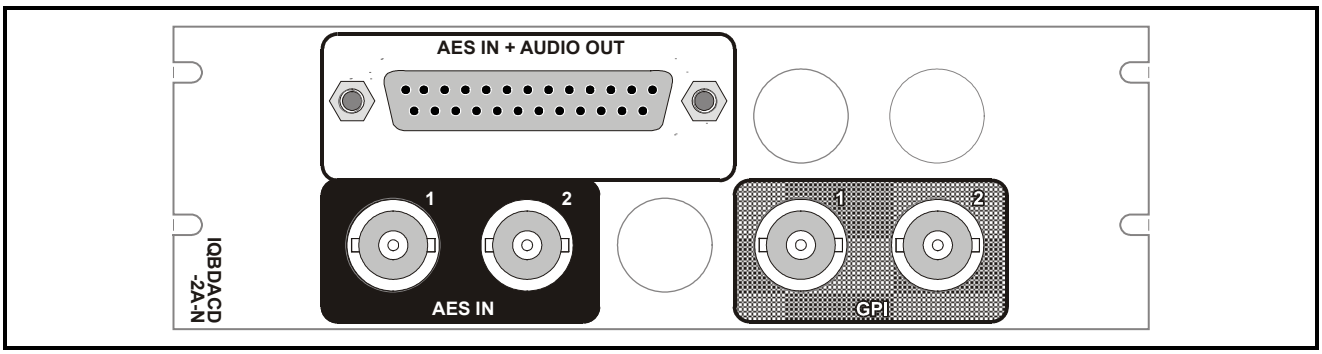
REAR PANEL VIEWS











This manual covers the following versions of the IQBDACD-N

IQBDACD-2A-N Dual Audio DAC. Balanced & Unbalanced inputs 4 analog Balanced outputs.

IQBDACD-1A-N Dual Audio DAC Balanced 4 analog outputs.

IQBDACD-1-N Dual Audio DAC Balanced 4 analog outputs.

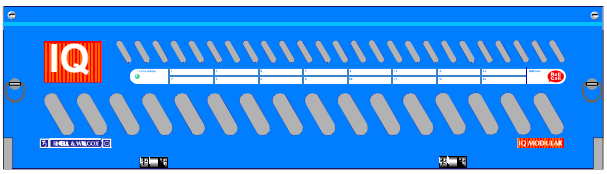
IQBDACD-1K-N Dual Audio DAC. Balanced & Unbalanced inputs. 4 analog Balanced outputs.

IQBDACD-2-N Dual Audio DAC. Balanced & Unbalanced inputs 4 analog Balanced outputs.

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

'A' Style Enclosure

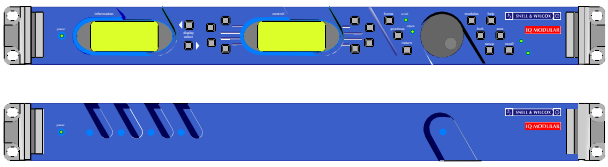
Rear panels ***with*** the suffix A may only be fitted into the 'A' style enclosure shown below.



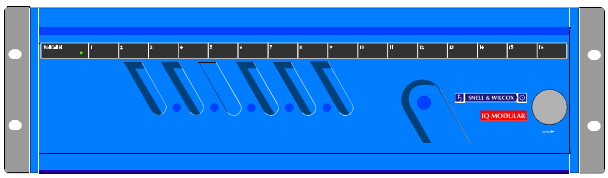
(Enclosure order codes IQH3A-E-0, IQH3A-E-P, IQH3A-0-0, IQH3A-0-P)

'O' Style Enclosures

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



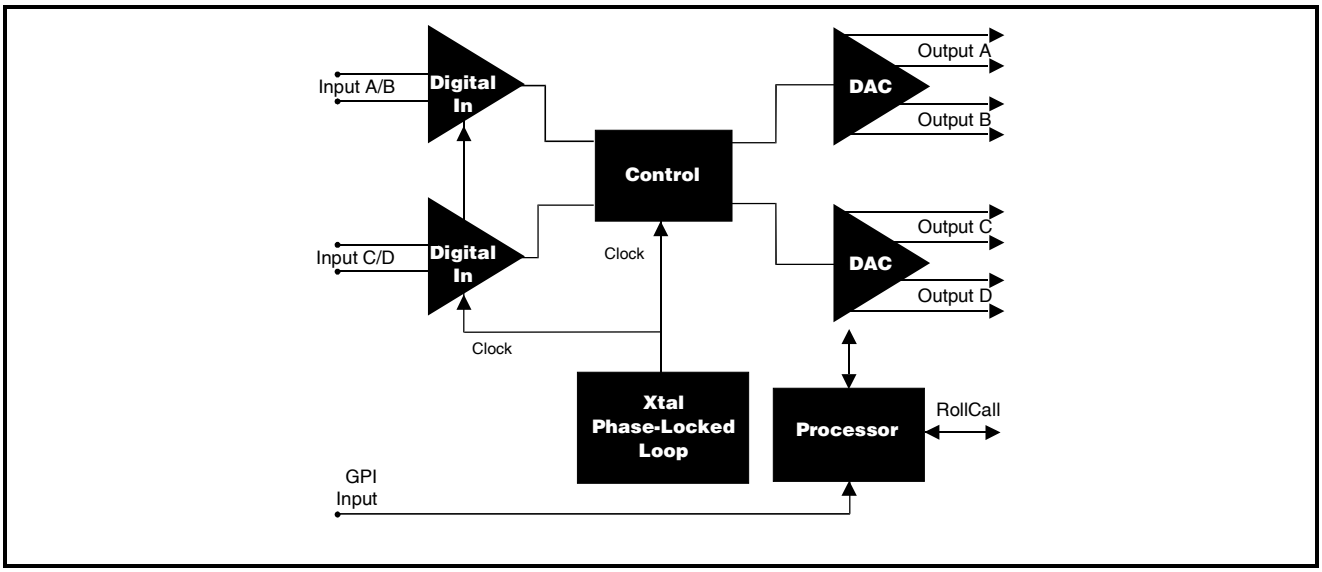
(Enclosure order codes IQH1S-RC-0, IQH1S-RC-AP, IQH1U-RC-0, IQH1U-RC-AP, Kudos Plus Products)



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

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

BLOCK DIAGRAM



Features

Converts two digital audio pairs into four analog channels

- 20-bit sampling resolution
- 48 kHz, 44.1 kHz and 32 kHz sampling frequencies
- Output level adjustable +12 to +24 dBu
- Output gain adjustable -12 dB to +0 dB
- Overflow indication
- Dual PLL design for low jitter
- RollCall control and monitoring

TECHNICAL PROFILE

Features

Signal Inputs

Digital Audio Balanced..... 2 Channels via 25 way D
Digital Audio Unbalanced... 2 Channels via BNC (-2 Versions)
GPI Control Input ..... 2 x Closing contacts
Standards AES3–1992

Signal Outputs

Analog ..... 4 Channels via 25 way D

Board Adjustments

Output Level ..... 18 to 24 dBu (12 to 18 dBu with link fitted).

Card Edge Controls (also available via RollCall)

Mute..... On/Off Either Output Pair

Digital Gain ..... -9 dB, -6 dB, -3 dB, and 0 dB
Control Select ..... Local/Remote
Input Select..... Balanced/Unbalanced for each Channel

Indicators

Overflow..... 0 dBu (i.e. full scale input) on both left and right for both channels

Functions Available via RollCall™ Only

Digital Gain ..... Adjustable from –12 dB to 0 dB in 0.25 dB Steps
Logging..... Input Format
L/R Swap ..... On both channels 1 + 2
Phase Invert..... On both channels 1 + 2

Specifications

Digital Input (Balanced)..... Level 0.2 V to 7 V pk to pk into 110 ohms
Cable length greater than 150 m
Using 110 ohm AES/EBU recommended cable
Digital Input (Unbalanced).. Level 0.03 V to 5 V pk to pk into 75 ohms Cable length greater than 1 km of RG59 or equivalent
Transport Delay ..... 0.6 ms
Digital Reference Pull-In Range
+2 Hz to –1 Hz at 48 kHz
Sampling..... 32 kHz, 44.1 kHz and 48 kHz clock and frame locked to AES/EBU Input
Analog Output Level ..... +24 dBu with Full Scale Input and Gain = 0 dB

Analog Output Impedance.. <50 ohms
Total Harmonic Distortion + Noise
Less than 0.004% at 700 Hz and –1 dBFs
Noise Floor..... Better than -101 dBFs (20 Hz to 20 kHz)
Channel Amplitude Matching
Better than ±0.1 dBu
Channel Separation ..... Better than –100 dBFs at 48 kHz
Output Level Accuracy..... Better than ±0.15 dBu
Flatness ..... Better than +0.1 dBu to -0.2 dBu (20 Hz to 20 kHz with reference to 1 kHz)

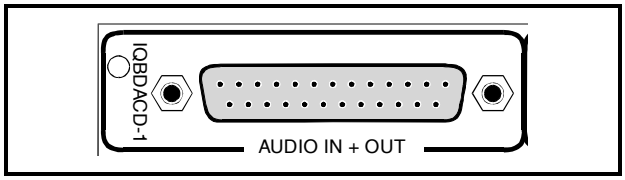
Power Consumption
Module Power Consumption.... 6 W max

INPUT AND OUTPUTS

-1-D Version

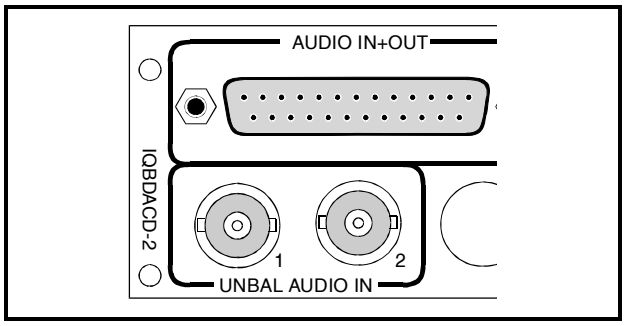
All digital and analogue input and output connections are made via this 25 way female D-type connector.

For connection data consult the tables on page 5.



Audio Inputs 1 and 2 (-2-D Version)

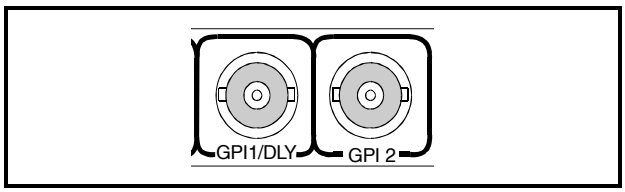
These BNC connectors accept unbalanced AES audio inputs.



GPI Connections

These are 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.

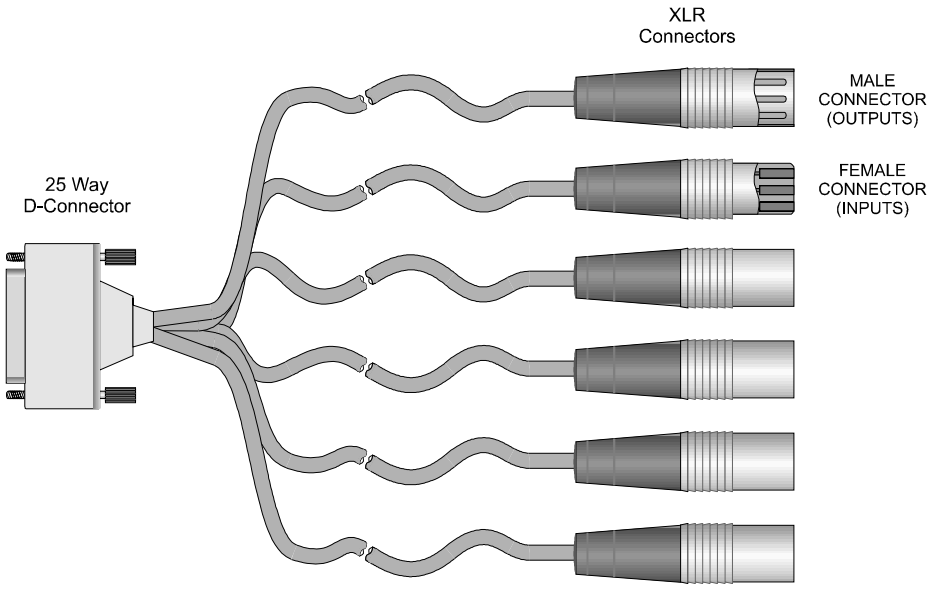


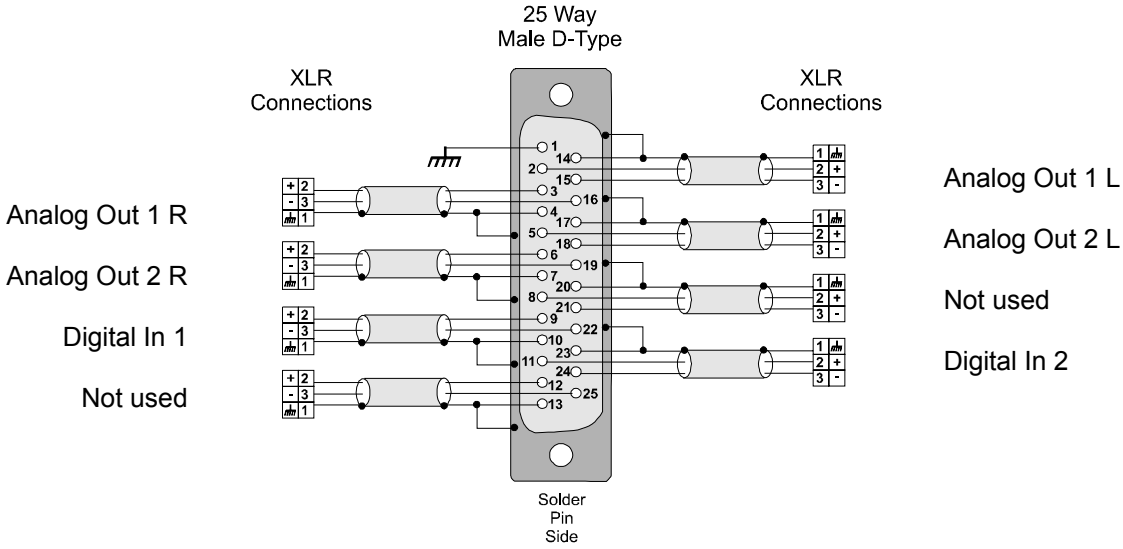
Connection Details

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

Note: When assembling cables connect pin 13 of the D-Type to pin 7 of the D-Type to ensure the signal ground and chassis ground are connected.

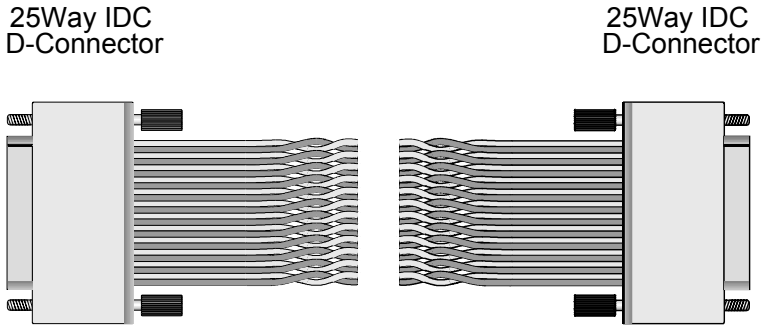
Connection Details to XLR Connectors



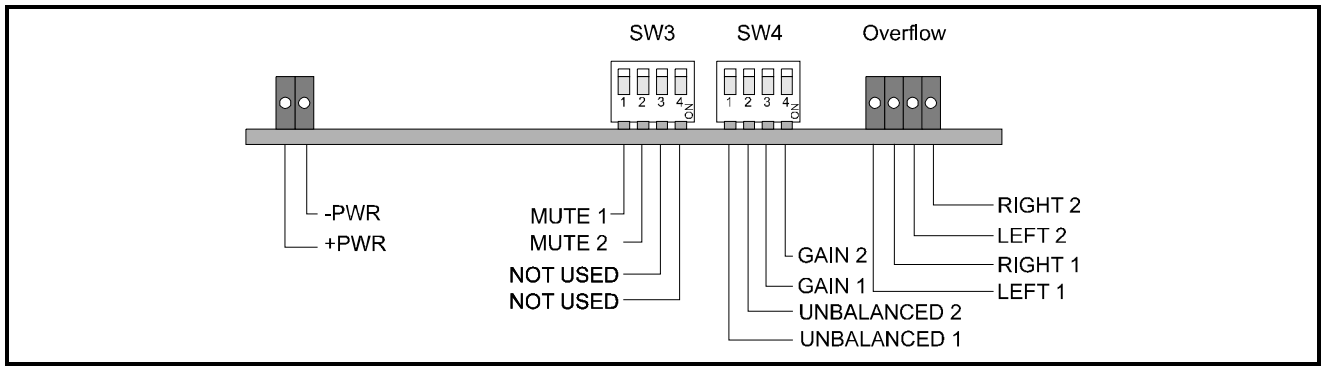


Note: When assembling cables connect pin 13 of the D-Type to pin 7 of the D-Type to ensure the signal ground and chassis ground are connected.

Connection Details via IDC connectors



CARD EDGE CONTROLS



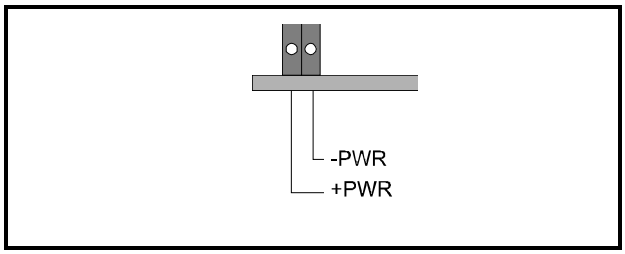
*Adjustment of the settings of the **IQBDACD** is available either via card edge controls and/or via a more comprehensive remote control system using RollCall™*

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

LED INDICATORS

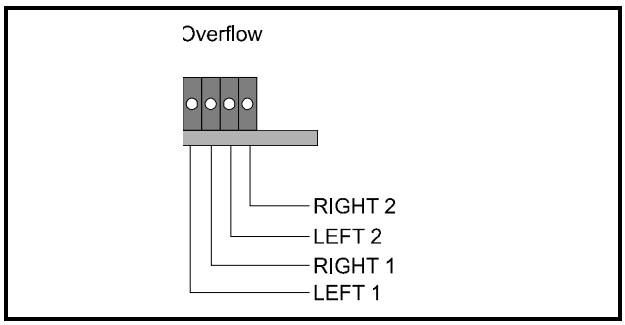
Power

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



Overflow

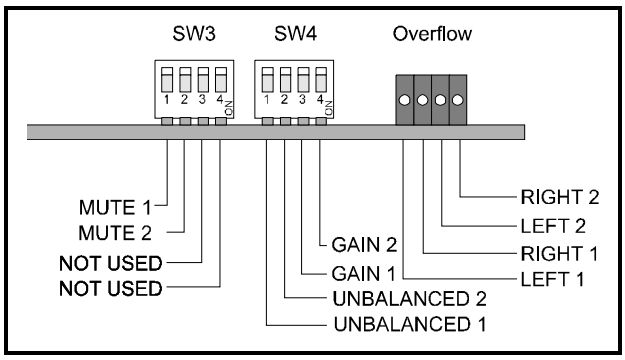
These indicators will become illuminated when bit overflow is detected on channel 1 and channel 2 Right and Left channels.



SW3

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

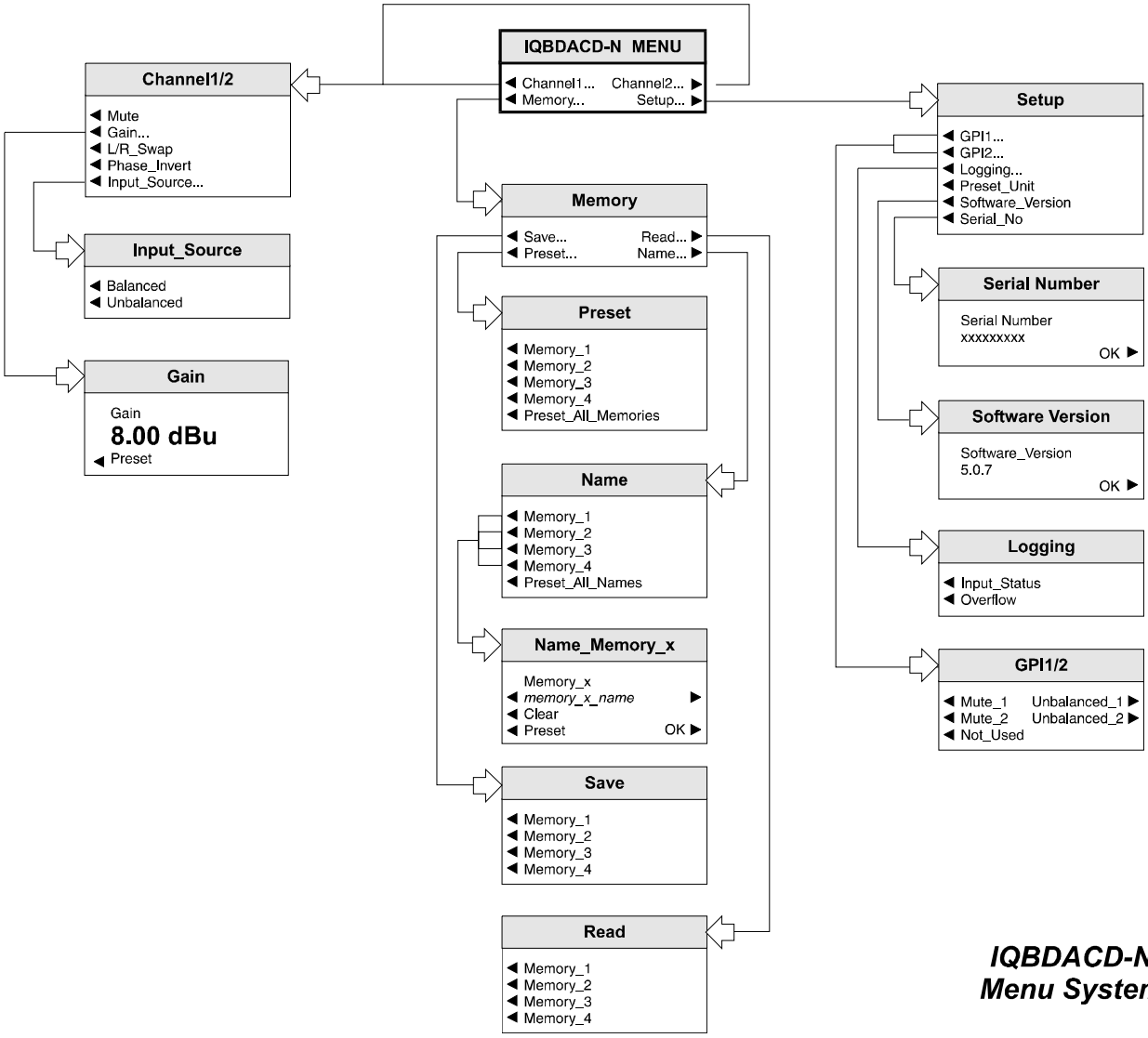
Position 1 Enables the Mute 1 function
Position 2 Enables the Mute 2 function
Position 3 Not used
Position 4 Not used



SW4

Position 1 Enables unbalanced 1
Position 2 Enables unbalanced 2
Position 3 Gain set 1
Position 4 Gain set 2

Gain	Position 3	Position 4
+0 dB	OFF	OFF
-3 dB	ON	OFF
-6 dB	OFF	ON
-9 dB	ON	ON



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

MENU DETAILS
(see IQBDACD Menu System Drawing)

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.

◄ Channel1 & Channel2

These selections allow settings for channel 1 and channel 2 to be set up.

◄ Mute

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

◄ Gain

When selected a numerical display will appear and by operating the spinwheel the gain may be adjusted. The range of adjustment is from 0 to 12 dBu in steps of 0.25 dB.
Preset is to 0 dB.

◄ L/R_Swap

This toggle function puts the left input signal data onto the right output and the right input signal data onto the left output.

◄ Phase_Invert

This toggle function reverses the polarity of the signal (phase inverted)

◄ Input_Source

The input source may be selected from either

◄ Balanced (via the 25 way connector)

or

◄ Unbalanced (via BNC connectors)

Default is to Balanced

◄ Memory

All settings of the unit may be stored in any of 4 non-volatile memory locations. These locations may be read, saved (write), given a name or cleared to the preset names by selecting this function and the sub-menus.

◄ 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.

◄ Read

This will reveal a list of 4 memory locations. 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, the preset values of that memory location will be loaded. ◄ Preset_All_Memories will return all memory locations to their preset values.
Note that memory names will not be changed.

◄ Name

This will reveal a list of the 4 memory locations that may be given a specific name. Use the adjacent buttons to select the cursor position and the spinwheel to select the alphanumeric character.
◄ Preset_All_Names will return all names to their preset names.

Setup ►

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

◄ GPI 1 & GPI2

The 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 from this menu.

◄ Mute 1 & 2

The GPI signal will mute the selected channel; either Channel 1 or channel 2.

◄ Not_Used

When selected the GPI input connection will be disabled.

Unbalanced_1 ►
Unbalanced_2 ►

The GPI signal will select either the unbalanced input 1 or 2.

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. (See Section 1, The RCIF Menu System)

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

◄ Input_Status
◄ Overflow

◄ 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.

Select OK to return to the System Menu.

◄ Serial No.

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

Select OK to return to the Setup Menu.

Manual Revision Record

Date	Version No.	Issue No.	Change	Comments
131198	1	1		First issue
280302	1	2	Now includes information for the 3A enclosure modules	New manual issued
020403	1	3	Power consumption added to techspec	New manual issued
080704	1	4	Rear panel drawings corrected and updated	New manual released