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REVISION HISTORY

REVISION	DESCRIPTION	DATE
0.1	Preliminary Version	Feb 2011

1. OVERVIEW

The 400ADA-AUD Analog Audio Distribution Amplifier is a general-purpose 1x9 amplifier for distributing balanced analog audio signals. It can be operated with either differential or single ended inputs and offers a wide range of gain adjustment to handle a wide variety of input signals.

The 400ADA-AUD is housed in the 3RU 400FR frame that will hold up to 16 modules.

Features:

- Differential and single ended input (automatic single ended to differential conversion)
- High impedance inputs
- Low impedance outputs
- Wide gain adjustment range
- High common mode range and common mode rejection ratio
- Very high SNR
- Very low THD+N

Card Edge LEDs:

- Module status/Local Fault
- Power supply status

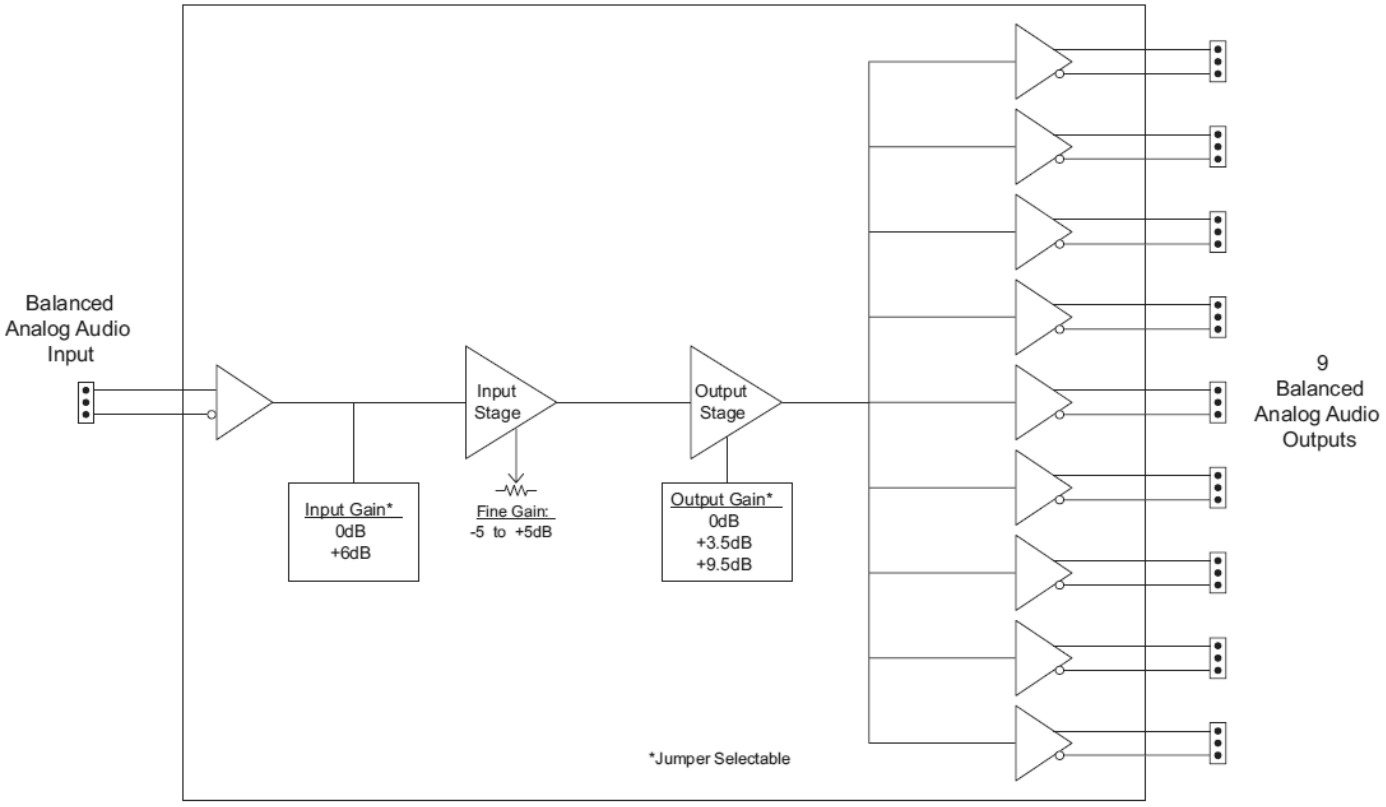

Figure 1-1: 400ADA-AUD Block Diagram

2. SPECIFICATIONS

2.1. ANALOG AUDIO INPUT

Standards:	Any analog audio signal
Number of Inputs:	1 (Balanced or Single ended)
Connector:	3-pin removable terminal strips
Input Step Gain:	0dB or +6dB (configurable with jumpers)
Fine Gain Control:	-5 to +5dB (card edge pot adjustable)
Maximum Input Level:	
0dB Input Gain:	+34dBu
+6dB Input Gain:	+28dBu
Common Mode Rejection:	> 105dB @ 60Hz
Common Mode Range:	
0dB Input Gain:	> ±22V
+6dB Input Gain:	> ±7V
Input Impedance:	
0dB Input Gain:	44 Ω
+6dB Input Gain:	26 Ω

2.2. ANALOG AUDIO OUTPUTS

Number of Outputs:	9
Connectors:	3-pin removable terminal strips
Output Step Gain:	0, 3.5 or 9.5dB (configurable with jumpers)
Max. Output Level:	+28dBu across hi-impedance load +24dBu into 600Ω load
Output Impedance:	66Ω
Freq. Response:	±0.03dB 20Hz to 20kHz
THD+N:	0.001% 20Hz to 20kHz @ 28dBu, unweighted RMS
Output Isolation:	> 100dB @ 1kHz, 100dB @ 20kHz

2.3. ELECTRICAL

Voltage:	+12V DC
Power:	3.6W
EMI/RFI:	Complies with FCC Part 15, Class A EU EMC Directive

2.4. PHYSICAL

Number of Slots:	1

3. STATUS LEDS

The 400ADA-AUD has four LED Status indicators on the front card edge to show operational status of the card at a glance. Figure 4-1 shows the location of the LEDs.

Two large LEDs on the front of the board indicate the general health of the module.

LOCAL FAULT: This Red LED indicates poor module health and will be On if a local input power fault exists (i.e.: a blown fuse) or the PS OVERCURRENT LED is On indicating a possible short on one of the audio outputs. The LOCAL FAULT indication can also be reported to the frame through the FRAME STATUS jumper.

MODULE OK: This Green LED indicates good module health. It will be On when the board power is good.

One small LED on the front of the board indicates the status of the module power supply.

PS OVERCURRENT: This Red LED indicates that there is too much current being drawn from the module power supply. This condition is most common when there is a short on one of the outputs. This condition will also cause the LOCAL FAULT LED to come On.

4. JUMPERS AND USER ADJUSTMENTS

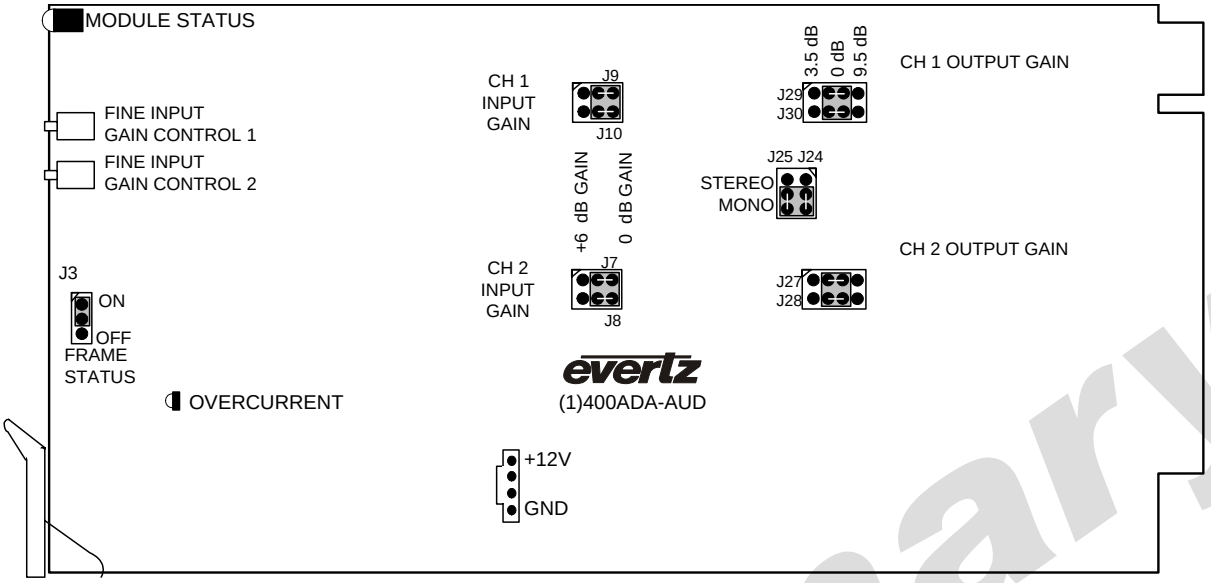

Figure 4-1: LED and Jumper Locations

4.1. SETTING THE OPERATING MODE

The 400ADA-AUD can only be operated in MONO or 1x9 mode. The Channel 2 gain jumpers have no effect.

4.2. SETTING THE AMPLIFIER GAIN

The overall gain of the 400ADA-AUD is set in three stages:

- Input gain control (2 levels of gain)
- Linear (fine-adjust) gain control
- Output gain control (3 levels of gain)

Depending on the setup of the input and output gain jumpers, the overall gain can be trimmed with the linear (fine-adjust) gain control within the following ranges:

INPUT GAIN JUMPER SETTING	OUTPUT GAIN JUMPER SETTING	OVERALL GAIN RANGE AVAILABLE WITH THE CARD-EDGE TRIM POT
0 dB	0 dB	-5 dB to +5 dB
0 dB	+3.5 dB	-1.5 dB to +8.5 dB
0 dB	+9.5 dB	+4.5 dB to +14.5 dB
+6 dB	0 dB	+1 dB to +11 dB
+6 dB	+3.5 dB	+4.5 dB to +14.5 dB
+6 dB	+9.5 dB	+10.5 dB to +20.5 dB

Table 4-1: Setting the Amplifier Gain

Note that the card achieves its lowest noise floor and harmonic distortion when the input is setup with its +6 dB gain. Use it in preference to other gain stages.

The following sections describe how to set each of the gain stages.

4.2.1. Setting the Input Gain Level

There is a 6 pin header used to set the input gain for the input channels. The dual shorting jumper provided can be placed in one of the two locations to select different input gain levels. When placing the jumper, make sure that the brass contacts of the jumper are oriented as shown in Figure 4-2.

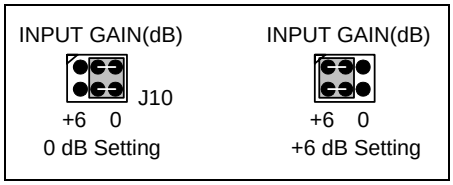

Figure 4-2: Setting the Input Gain Level

4.2.2. Setting the Output Gain Level

There is an 8 pin header used to set the output gain level for all four outputs. The dual shorting jumper provided can be placed in one of the three locations to select different output gain levels. When placing the jumper, make sure that the brass contacts of the jumper are oriented as shown in Figure 4-3.

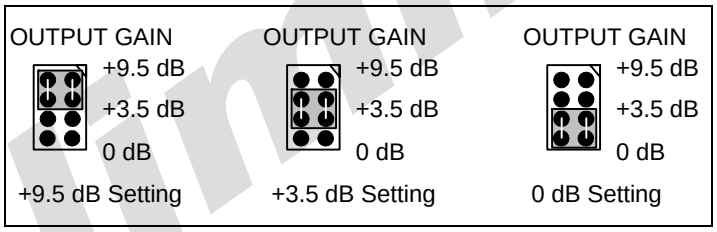

Figure 4-3: Setting the Output Gain Level

4.2.3. Fine-Tuning the Gain Level

A trim potentiometer located at the front edge of the card is used to fine-tune the input gain levels.

4.3. SELECTING WHETHER LOCAL FAULTS WILL BE MONITORED BY THE GLOBAL FRAME STATUS

The FRAME STATUS jumper J1, located at the front of the module determines whether local faults (as shown by the Local Fault indicator) will be connected to the 400FR frame's global status bus.

FRAME STATUS: To monitor faults on this module with the frame status indicators (on the power supply's FRAME STATUS LED's and on the Frame's Fault Tally output) install this jumper in the On position.

When this jumper is installed in the **Off** position, local faults on this module will not be monitored.

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