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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First version	Nov 06

1. OVERVIEW

The 7700ADA-AUD-MM Balanced Analog Audio Distribution Amplifier with Mono Mix is a general purpose amplifier for distributing analog audio signals and providing a mono mix output of the stereo inputs.

The 7700ADA-AUD-MM 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 7700ADA-AUD-MM occupies one card slot and can be housed in either a 1RU frame, which will hold up to three modules, or a 3 RU frame, which will hold up to 15 modules.

Features:

- Differential and single ended inputs (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 and very low THD+N
- Mono Mix of the stereo input

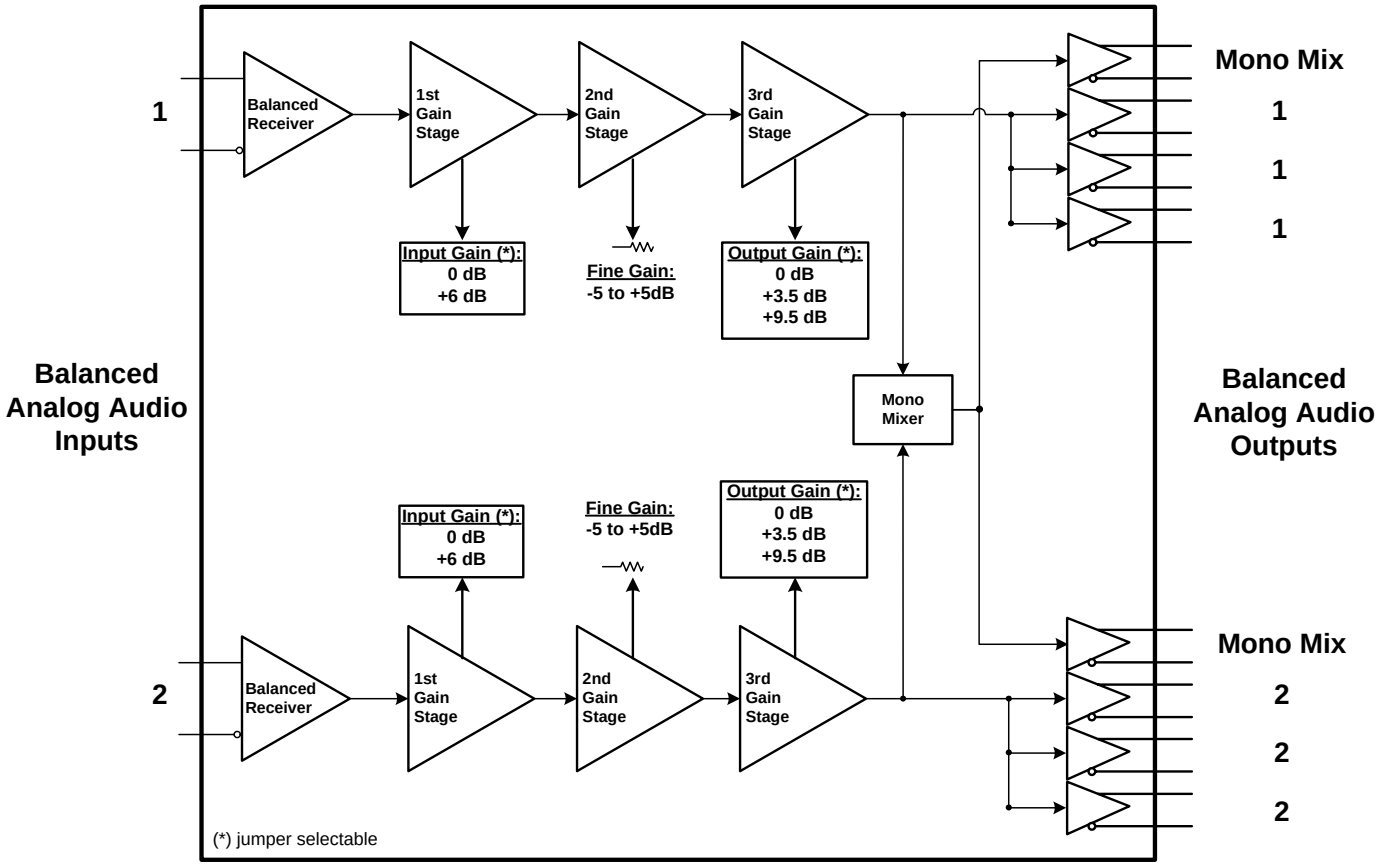

Figure 1-1: 7700ADA-AUD-MM Functional Block Diagram

2. INSTALLATION

The 7700ADA-AUD-MM comes with a companion rear plate that has ten 3 pin removable terminal strips. For information on mounting the rear plate and inserting the module into the frame see the 7700FR chapter section 3.

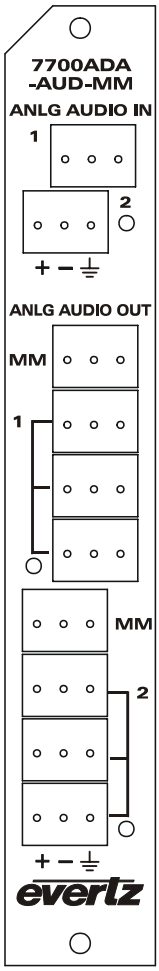

Figure 2-1: 7700ADA-AUD-MM Rear IO Modules

2.1. AUDIO CONNECTIONS

The balanced audio cables can be secured into the removable portion of the terminal strips using a small screwdriver. The removable part of the terminal strip is then inserted into the terminal strips on the rear panel.

ANALOG AUDIO INPUTS Balanced analog audio inputs for two channels. Each input (+, -, GND) is on a 3 pin removable terminal strip connector. When wiring for single ended analog audio inputs, connect the GND of the audio source to both the GND and the negative terminal pins.

MONO MIX ANALOG AUDIO OUT There are two indentical balanced analog audio outputs created by adding together half of each input. Assuming that the two inputs represent a stereo pair, this output will contain its mono mix.

DISTRIBUTION AMPLIFIED ANALOG AUDIO OUT There are three balanced analog audio outputs for each of the two input channels. Each output (+, -, GND) is on a 3 pin removable terminal strip connector.

3. SPECIFICATIONS

3.1. ANALOG AUDIO INPUTS

Standard:	Any analog audio signal
Number of Inputs:	2 (Balanced or Single ended)
Connector:	3 pin removable terminal strips
Maximum Input Level:	
0 dB Input Gain	+33 dBu
+6 dB Input Gain	+28 dBu
Noise Floor:	-87 dBu (0 dB input gain), -91 dBu (+6 dB input gain jumper setup)
Common Mode Rejection:	> 90 dB @ 60 Hz, 60 dB @ 20 kHz (tested with +28 dBu CM input)
Common Mode Range:	
0 dB Input Gain	> ±22 V
+6 dB Input Gain	> ±7 V
Input Impedance:	
0 dB Input Gain	33 kΩ
+6 dB Input Gain	15 kΩ

3.2. ANALOG AUDIO OUTPUTS

Number of Outputs:	
Distribution Amplified Outputs:	3 outputs each of left and right channels
Mono Mix Outputs:	2 outputs total
Connectors:	3 pin removable terminal strips
Maximum Output Level:	+28 dBu across hi-impedance load +24 dBm into 600 ohm load
Output Impedance:	66 Ω
Frequency Response:	+/-0.02 dB 20 Hz to 20 kHz
Stereo Phase Mismatch:	< 1° @ 20 kHz
SNR:	
0 dB Input Gain	115 dB
+6 dB Input Gain	119 dB
THD+ Noise:	0.001% 20 Hz to 20 kHz @ 28 dBu, unweighted RMS
Intermodulation Distortion:	0.001% - SMPTE @ 18 dBu
Stereo Crosstalk:	>115 dB @ 1 kHz, >93 dB @ 20 kHz

3.3. GAIN CONTROLS

Input Step Gain:	0 dB or +6 dB (configurable with jumpers)
Fine Gain Control:	-5 to +5 dB (card edge pot adjustable)
Output Step Gain:	0, 3.5 or 9.5 dB (configurable with jumpers)

3.4. ELECTRICAL

Voltage: +12VDC
Power: 12 Watts.
EMI/RFI: Complies with FCC regulations for class A devices.
Complies with EU EMC directive.

3.5. PHYSICAL

Number of slots: 1

4. STATUS INDICATORS

The 7700ADA-AUD-MM modules have 2 status LED indicators on the card edge of the circuit board to show operational status of the card at a glance (refer to Figure 4-1).

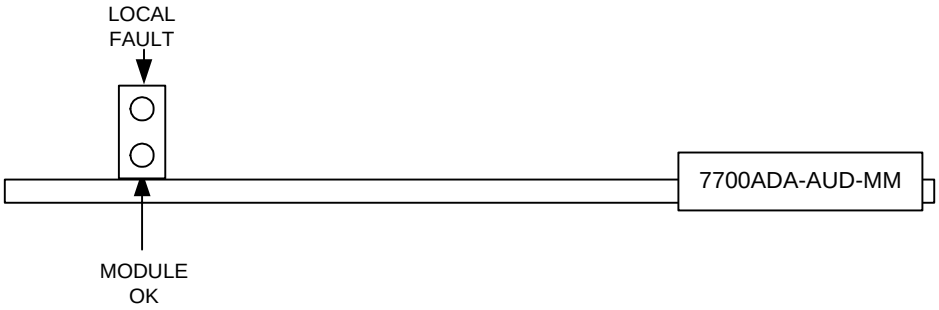

Figure 4-1: LED Status Indicators

Two large LEDs on the front of the circuit 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 if or there are too many outputs in a shorted condition. The **LOCAL FAULT** indication can also be reported to the frame through the **FRAME STATUS** jumper J1 (refer to Figure 7-1).

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

5. CARD EDGE CONTROLS

The 7700ADA-AUD-MM modules are equipped with two trim potentiometers located on the card edge. They are used to set the gain for each of the amplified channels (refer to Figure 5-1).

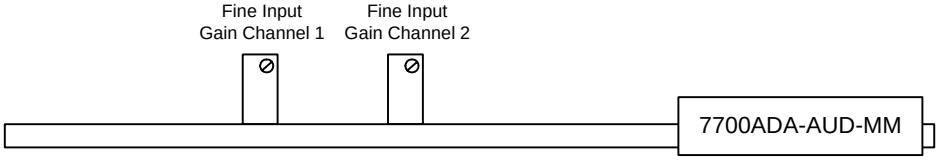

Figure 5-1: Card Edge Controls

6. OPERATION

The adjustable gain control on the 7700ADA-AUD-MM modules are configured using a combination of on-board jumpers and trim potentiometers.

6.1. SETTING THE AMPLIFIER GAINS

The overall gain of the 7700ADA-AUD-MM 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 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 … +5 dB
0 dB	+3.5 dB	-1.5 dB … +8.5 dB
+6 dB	0 dB	+1 dB … +11 dB
0 dB	+9.5 dB	+4.5 dB … +14.5 dB
+6 dB	+3.5 dB	+4.5 dB … +14.5 dB
+6 dB	+9.5 dB	+10.5 dB … +20.5 dB

Table 6-1: Amplifier Gain Levels

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.

6.1.1. Setting The Input Gain Level (1st Gain Stage)

There is one set of jumpers, J8/J7 for channel input 1 and J10/J9 for channel input 2, that selects the gain for each of the input channels. Each set of jumpers consist of one 6 pin header. The dual shorting jumper provided can be placed in one of the two locations to select different input gain levels. For example, Figure 6-1 illustrates an input gain of +6dB applied to channel 1. When placing the jumper make sure that the brass contacts of the jumper are oriented as shown in Figure 6-1. For jumper locations, refer to Figure 7-1.

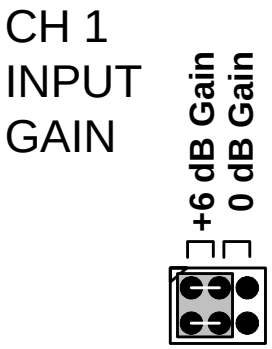

Figure 6-1: Setting the Input Gain Level

6.1.2. Fine-Tuning The Gain Level (2nd Gain Stage)

There are two trim potentiometers located at the front edge of the card that are used to fine-tune the input gain levels for channel 1 and 2. The gain increases when the pot is turned clockwise.

6.1.3. Setting The Output Gain Level (3rd Gain Stage)

There are two 8 pin headers, J27/J29 for channel 1 and J28/J30 for channel 2, that can be used to obtain additional gain for each bank of outputs. The dual shorting jumper provided can be placed in one of three locations to select different output gain levels. For example, Figure 6-2 illustrates an output gain of +9.5dB applied to channel 1. When placing the jumper make sure that the brass contacts of the jumper are oriented as shown in Figure 6-2. For jumper locations, refer to Figure 7-1.

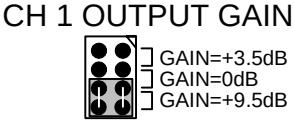

Figure 6-2: Setting the Output Gain Level

7. LOCATION OF JUMPERS

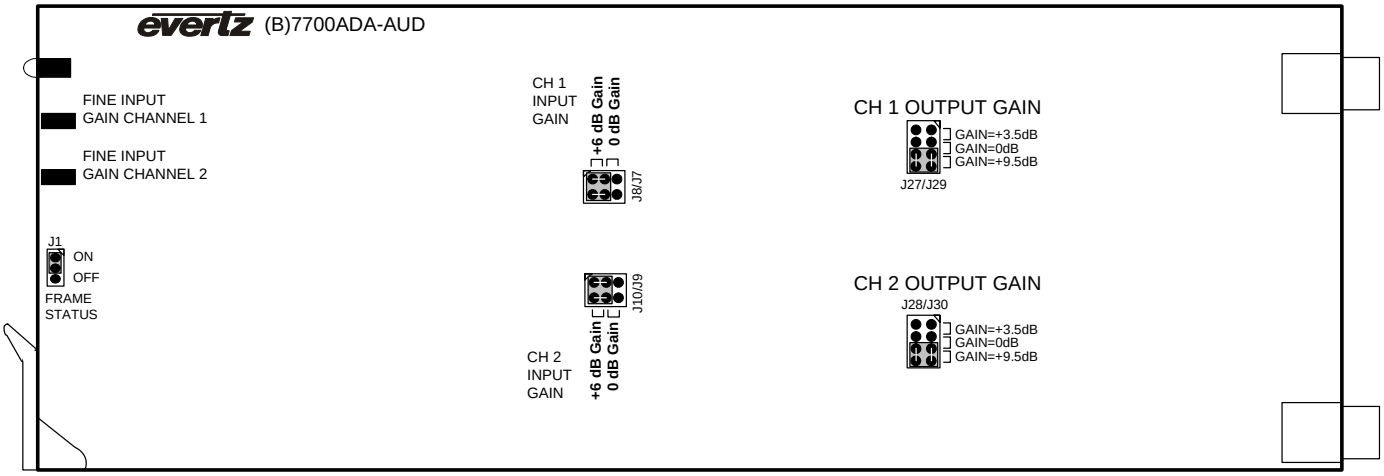

Figure 7-1: Jumper Locations

7.1. 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 7700FR 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 LEDs 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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