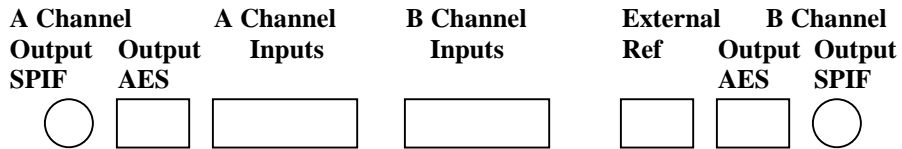


# Sierra Video Systems Digilinx Audio Analog to Digital Converter

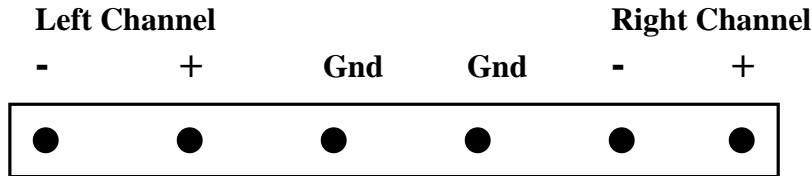
The Sierra Video Systems 507140 contains 2 identical stereo 24 bit Analog to Digital Converters. Each converter has full differential inputs and both AES and SPIF outputs are available. The converters can be locked to an external AES audio stream or used free running using an extremely stable internal oscillator with selectable sample rates of 32Khz, 44.1Khz, and 48Khz.

## Input and Output Connections:

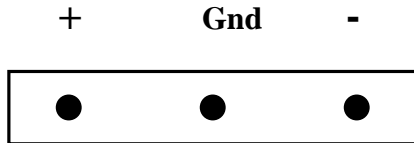
Looking at the back panel of the module, here are the electrical connectors for the card;



For each input connector, the pin outs are;




For each output terminal connector, and the external reference input, the pin outs are;




## Jumper Settings:

- Jumper Definitions:**

The Following Graphics are used to describe the jumper setting on the board.

 Indicates that a Suite Case Jumper is installed on the indicated header

 Indicates that there is *NO* jumper installed on the indicated header

- Sample Rate Adjustment:**

JP13 is used to change the internal Sample Rate Clock for this board. Both Channel A and Channel B use the same sample rate clock.

 48 KHz sample rate

 32 KHZ sample rate

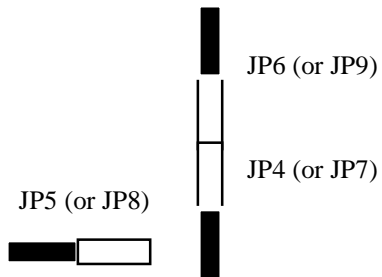
 44.1 KHz sample rate

 INVALID setting - do not use

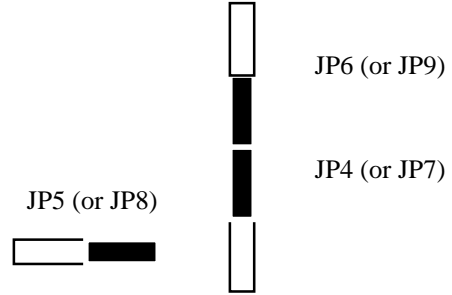
- **Output Impedance Adjustment:**

The Output impedance can be adjusted separately for the A Channel and the B Channel. JP4, JP5, and JP6 control the A Channel while JP7, JP8 and JP9 control the B Channel. Either output can be set to either a 110 ohm output @ 5 volts peak to peak or 75 ohms @ 1 volt peak to peak. The output signal is simultaneously available on both the BNC and terminal strip connectors, however when operating with a 110 ohm output impedance the signal on the BNC is 1/2 amplitude as compared with the terminal strip. JP4, JP5, and JP6 form the same pattern as JP7, JP8, and JP9 on the board and the suite case jumpers are set in the same pattern for each set of these connectors.

**110 ohm Output**



**75 ohm Output**



## Input Gain Adjustment:

JP3 controls the gain of the input stage for both the A Channel and the B Channel of the Board. The gain is adjustable in 5 dB steps with a range from a maximum input signal level of +29 dBu to a maximum input signal level of -1 dBu. 0 dBFs refers to the maximum digital signal level that can be transmitted out of the Analog to Digital converter. These levels refer to the *maximum* signal level. In order to avoid distortion it is recommended that the operating level used be significantly lower to allow headroom for peak signals to be passed without overloading the converter. In a typical application, the normal operating level should be set to be between 16 DB and 24 DB below the maximum input signal level (depending on the type of audio input being converted).



Not recommended - Amplifiers will clip Before 0 dBFs is reached



+29 dBu Max Input => 0 dBFs Output



+24 dBu Max Input => 0 dBFs Output



+19 dBu Max Input => 0 dBFs Output



+14 dBu Max Input => 0 dBFS Output



+9 dBu Max Input => 0 dBFs Output



+4 dBu Max Input => 0 dBFs Output



-1 dBu Max Input => 0 dBFs Output

- **External Reference:**

The converter can be set to a sample rate based on an external digital audio reference signal. The external reference **must** be a valid digital audio signal. An internal AES receiver will lock to the reference input signal and if present the sample rates of both channels of the converters can be switched to the clock derived from this input reference. One position on JP1 is use select the used of the external reference signal. Only the jumper closest to the JP1 silk screen markings is used. If a suite case jumper is installed the external reference is used as the conversion clock. If no jumper is installed the internal clock generator is used for the conversion clock.

The external reference can be set to be either 110 ohms input impedance or 75 ohm input impedance using JP2 and JP3 as indicated below;

**110 ohm Impedance**



**75 ohm Impedance**



- **Unused Jumpers:**

At the present time, Jumpers JP11 and JP12 are un-used by the circuitry and are reserved for use by possible future enhancements of the board.

- **Factory default settings:**

When the Analog to Digital converter is shipped from the factory, there board is set to use the internal clock for the conversion running at a 48Khz sampling rate, 110 ohms output impedance in differential mode (AES), and the maximum input signal is set to +24 dBu.

## Specifications:

### Input

|   |  |
|---|--|
| 4 analog audio inputs configured as 2 stereo pair |  |
| Impedance:  | > 20Kohm                                       |
| Common Mode Rejection                             | Better than -60 dB                             |
| Maximum Input Level                               | Adjustable in 5 dB step from -1 dBu to +29 dBu |

### Outputs

|             |                   |
|-------------|-------------------|
| AES output  | 110 ohm balanced  |
| SPIF output | 75 ohm unbalanced |
| Jitter      | < +/- 20 nsec     |

### Conversion

|                                     |  |
|-------------------------------------|--|
| 128xFs Digital over sampling filter |  |
| Sample rates                        | 32Khz, 44.1Khz, 48Khz or locked to an external reference |
| Signal to noise                     | -95 dB min (typical -105 dB) A-Weighted                  |
| THD                                 | 0.006% @ maximum input level                             |
|                                     | 0.01% @ -20dB from max input level                       |
| Frequency Response                  | 20Hz to 20Khz +/-0.2 dB (48Khz sampling rate)            |