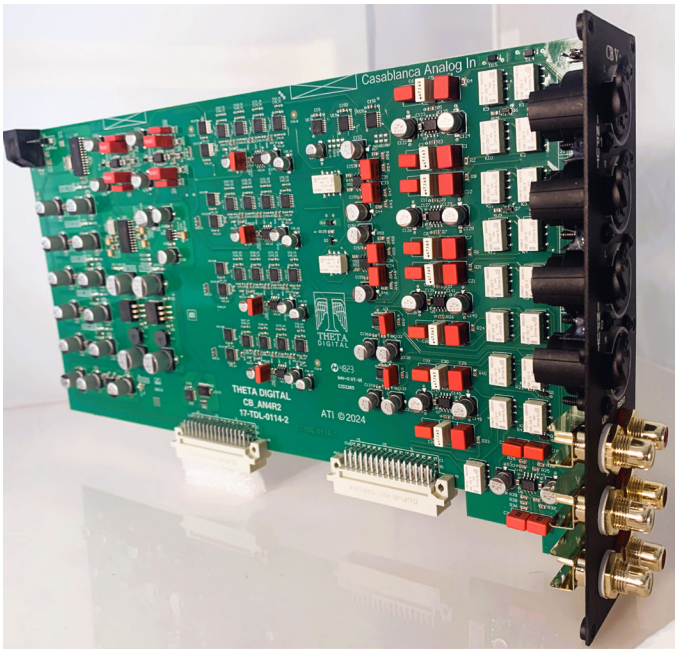
THETA DIGITAL

New Product Release
June 1, 2024

NEW: REFERENCE BALANCED ANALOG INPUT BOARD

Theta Digital proudly introduces the new Reference Balanced Analog Input Board for the Casablanca processor. The Reference Balanced Analog Input Board will be a standard part of all Casablanca V new units and Casablanca V upgrades. The new card is compatible with all Casablanca units from the III HD to the V. This card will significantly advance the level of analog performance of the Casablanca processors.

The Reference Balanced Analog Input Board has an MSRP of $1,995.00.



Inputs & Outputs
To get the performance improvement Theta wanted, the existing RCA connectors had to be replaced by higher-grade XLR and RCA connectors. The XLR connectors make a significant difference in low-level resolution and noise compared to an RCA connector. The new analog card adds four XLR jacks for Analog Inputs 1 & 2 making these inputs balanced. Analog Inputs 3 & 4 are on RCA jacks. This gives a total of four stereo analog inputs. There is one stereo analog output on RCA jacks.

For a little flair, we are using the Neutrik® Halo XLR connectors. These color-coded, balanced XLR input jacks are illuminated when selected.

Internal Improvements
The internal improvements begin with independent regulation of all required voltage rails. There are six independent 5 volt rails for different digital sub-circuits. There are +15 volt & -15 volt rails for the analog sections. Each of these rails is inductor-isolated, then fully regulated. This card has 5.5A of current exclusively available to provide power to the circuitry.

The analog circuitry has been primarily improved in two ways. The first is the signal path is now fully balanced; there are identical circuits for the positive and negative signal components of each channel. The second is with the selection of op-amps specific to the analog function performed from input buffers to balanced line drivers to the ADC buffer.

For the fully balanced signal path, component selection is critical. All of the selected components must be accurate and consistent between positive and negative signal paths, or errors will be introduced. All of the selected op-amps are ultra-high performance parts that have low distortion, low noise, and low offset specifications. These op-amps, along with the addition of ultra-low noise passive components, precision thin film <0.5% SMT resistors and discrete film capacitors, maintain accurate and consistent operation between the complimentary signal paths.

Theta also looked at the function each op-amp would perform to select the proper device for each analog sub-circuit. The input buffers additionally have a low input bias current so as not to damage the audio signal by pulling operating current from the signal. The RCA inputs required an op-amp to perform the signal balancing to mix into the fully balanced signal path. The analog volume control circuit needed consistency between four identical circuits, so an op-amp with “zero-drift” was selected. The Analog to Digital Converter requires a buffer to integrate a ground referenced signal path with its input that needs a voltage offset. And the “Analog Direct” mode of the Casablanca needs a fully-differential op-amp to drive the signal from this PCB to the output PCB in slot 1. Each op-amp is chosen for a specific operation.

The new “Analog Direct” circuitry isolates and bypasses all digital signal processing from the analog signal path; turning the Casablanca into an ultra-low distortion and noise 2 Channel Stereo Analog Pre-Amp that only per-

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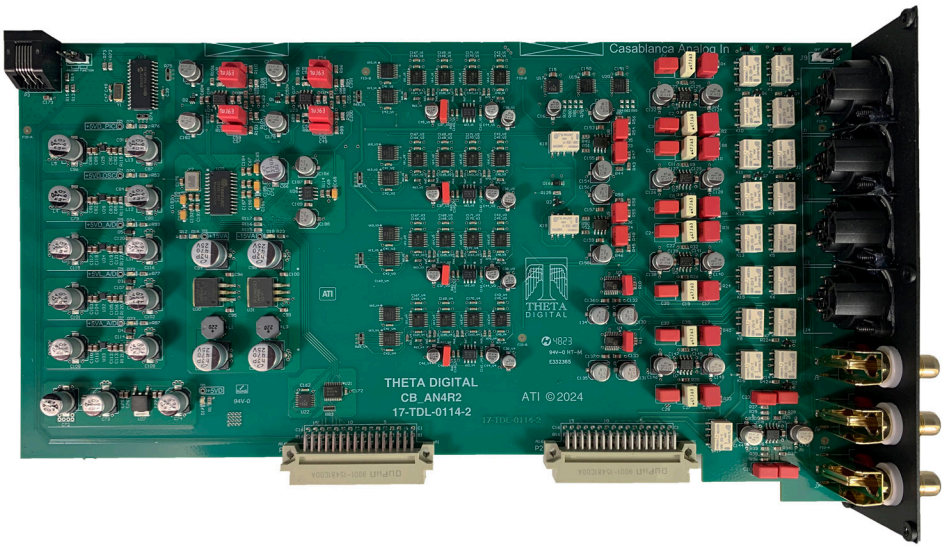

forms source selection and level control. The outputs for this circuit are directed to the main output channels 1 and 2 on the DAC card installed in DAC Slot 1.

Finally we have Theta's proprietary "digitally controlled – analog switched" volume control for input levels of each input. These provide infinite headroom, noiseless switching, and very low distortion and noise. The level is adjustable to ±15dB, in 1dB increments.

Specifications - Subject to change without notice		
	XLR	RCA
Inputs / Outputs	2 Stereo Pair / 0	2 Stereo Pair / 1 Stereo Pair
ADC Bits/Sample Rate - Operational	24/96k	
Crosstalk	>105dB (AD-DA), >120dB (Direct)	
Signal to Noise	>95dB (AD-DA), >105dB (Direct)	
THD+N Ratio	<0.003% (AD-DA), <0.0008% (Direct)	<0.002% (AD-DA), <0.0007% (Direct)
Residual Noise	<40uV (AD-DA), <20uV (Direct)	<50uV (AD-DA), <30uV (Direct)
Maximum Input Level (0dB)	5.5 Vrms	3 Vrms
Maximum Input Level (-22dB)	18 Vrms	8.6 Vrms