

DIGITAL INPUT BOARD DAC-60



Accuphase Laboratory, Inc.

The DAC-60 is the 6th generation dedicated digital input board that can input digital signals directly into amplifier units when installed in Accuphase preamplifiers and integrated amplifiers.

Digital inputs

- Balanced, Coaxial: 192kHz/24bit
- Optical: 96kHz/24bit
- USB2.0: 384kHz/32bit, 11.2896MHz/1bit
 - Supporting Markerless DSD



Markerless DSD: DSD signal transmission developed by Melco Syncretis Inc.

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DAC-60 has 3 digital inputs, Coaxial, Optical and USB Type-B.

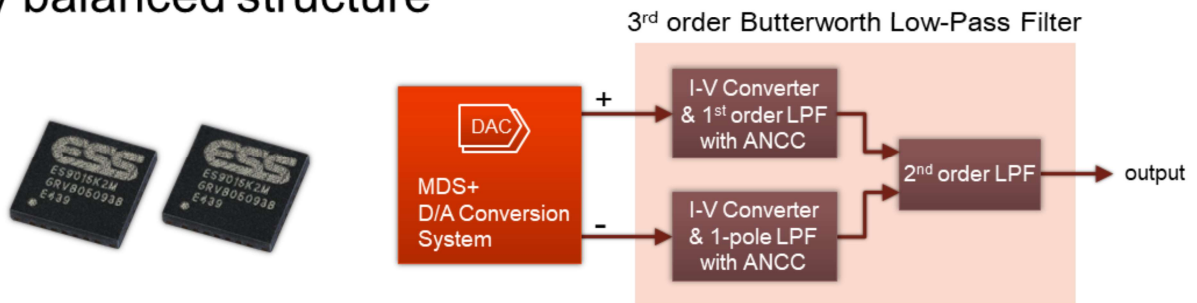
USB Type-B Input accepts up to 384kHz/32bit-PCM and 11.2896MHz-DSD.

DSD data can be received both DoP (DSD over PCM, up to 5.6448MHz) and ASIO2.1 (up to 11.2896MHz).

DAC-60 also supports Melco's Markerless DSD playback.

Circuit configuration

- MDS+(Multiple Delta Sigma +) D/A conversion system
 - ES9016K2M 32bit HyperStream DAC
 - 2 DACs in Parallel per channel
- Fully balanced structure



ANCC: Accuphase Noise and distortion Canceling Circuit

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For D/A converter section, Accuphase updates the DAC chip to ESS Technology's 32bit Hyper Stream DAC ES9016K2M.

** DAC-50 uses Asahi Kasei Micro Electronics AK4490EQ.

ES9016K2M has 2 DACs inside, and DAC-60 uses 2 DACs connected in parallel per channel with Accuphase's unique technology, Multiple Delta Sigma + conversion system.

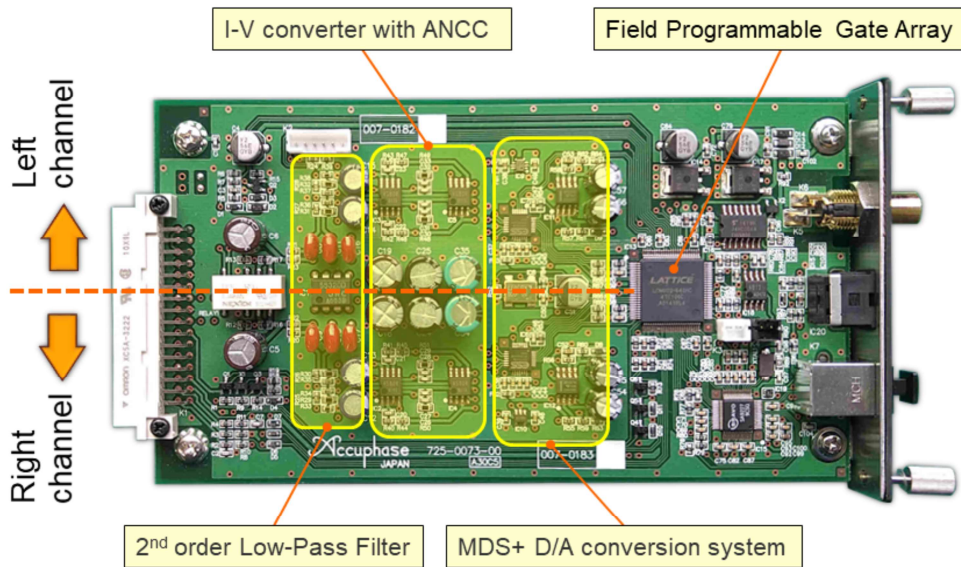
The fully balanced post-filter eliminates the image noise in high frequency of D/A converter output.

The I-V converter works as the 1st order low-pass filter as well, and the signal passes through 2nd order filter, so it is composed of 3rd order low-pass filter in total.

Furthermore, in I-V converters, the ANCC which is an Accuphase original technology for reducing noise and distortion is installed.

**Refer to the Appendix for the details of ANCC

Whole image



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To demonstrate the superior performance, all circuit blocks are orderly placed along with the flow of signal.

Backward compatibility

- Available model

- C-2150, E-800, E-650, E-480, E-380, E-280
- C-2120, E-600, E-470, E-370, E-270 *1
- C-2110, C-2000, E-560, E-550, E-530, E-460, E-450, E-408, E-360, E-350, E-260, E-250, E-213 *2
- C-245, CX-260, E-308, E-307 *2, *3



E-530 in 2002

*1: The display will show the sampling frequencies less than PCM 192kHz.

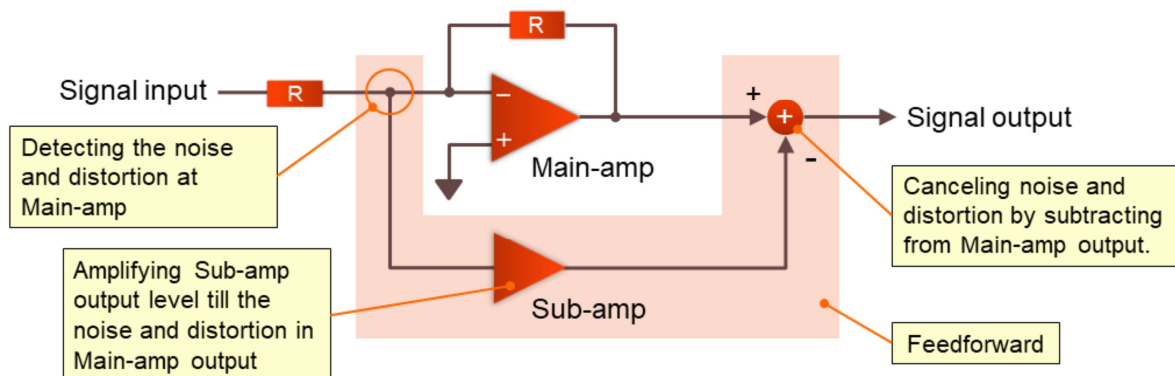
**2: Only the automatic switchover is available for input selection, and the display does not show the sampling frequency.

***3: Two DAC-XX digital input boards cannot be installed.

DAC-60 has a wide backward compatibility, it can be used with not only the current models but lots of legendary amplifiers.

Appendix “ANCC”

- ANCC: Accuphase Noise and distortion Canceling Circuit
 - Detecting the noise and distortion with Sub-amp, and canceling them by Main-amp output.



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ANCC: “Accuphase Noise and distortion Canceling Circuit” is Accuphase unique technology to cancel the noise and distortion generated in the amplifiers with feedforward technique.

Output noise and distortion reduced to $1/\text{gain}$ come up at the input terminal which is applied with negative feedback.

ANCC detects the noise and distortion at the main-amp input terminal with sub-amp, and cancels them by subtracting from main-amp output.