

CARDINAL Forensic Examiner

*Next Generation Forensic
Audio Processor*

Key Benefits

- *Intuitive design*
- *Seamless integration*
- *Powerful digital filters*
- *Spectrum analysis*
- *Maximum flexibility*
- *Advanced filtering precision*
- *ASCLD reporting*

Best Uses

- *Forensic audio labs*
- *Multiple reference cancellation*
- *Real time noise reduction*
- *High profile casework*

Ideal Users

- *Forensic audio examiners*
- *Technical investigators*
- *Intelligence and CI operators*
- *IG offices*
- *Prosecutors*
- *Accredited lab facilities*



GSA Advantage

Federal Supply Schedule

#GS-03F-4062B

For more information or to receive a price quote, visit the DAC website at www.dacaudio.com or send us an email at sales@dacaudio.com.



Digital Audio Corporation



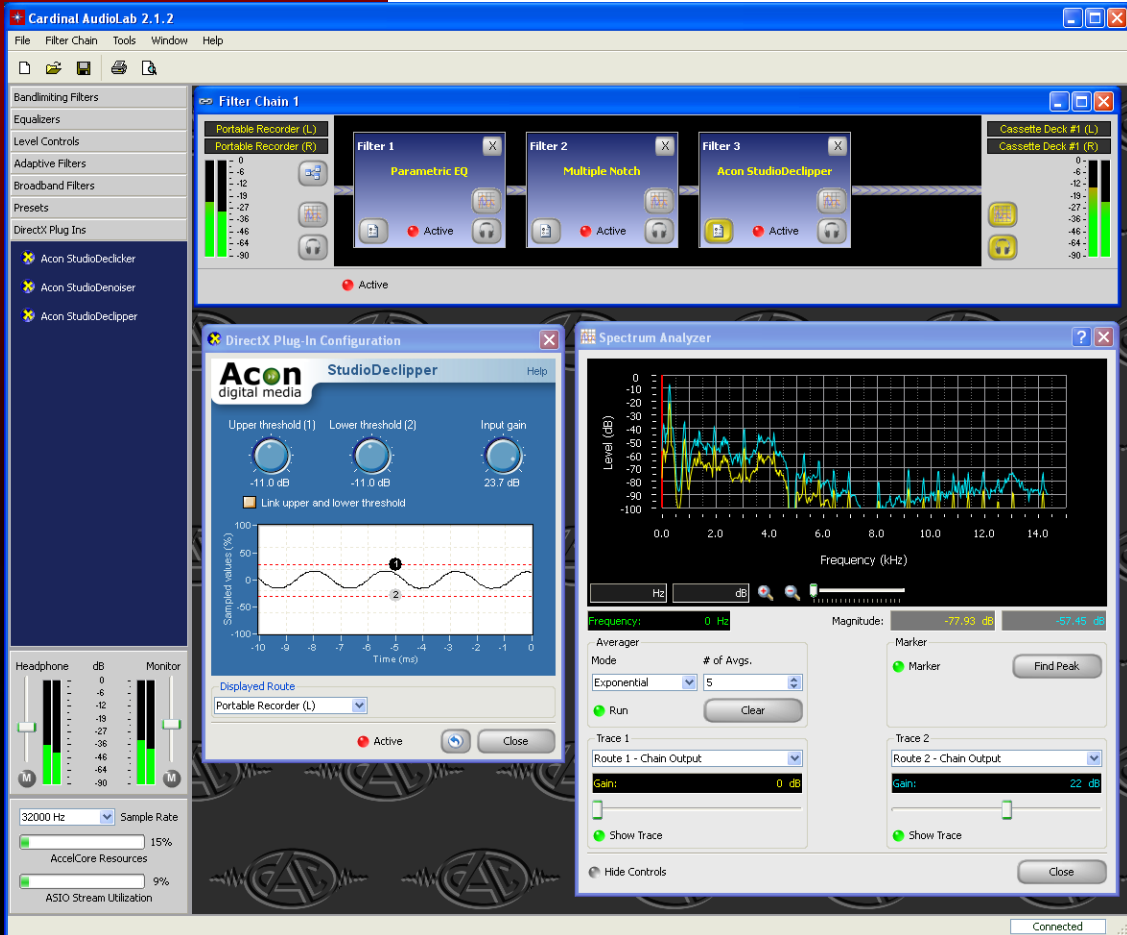
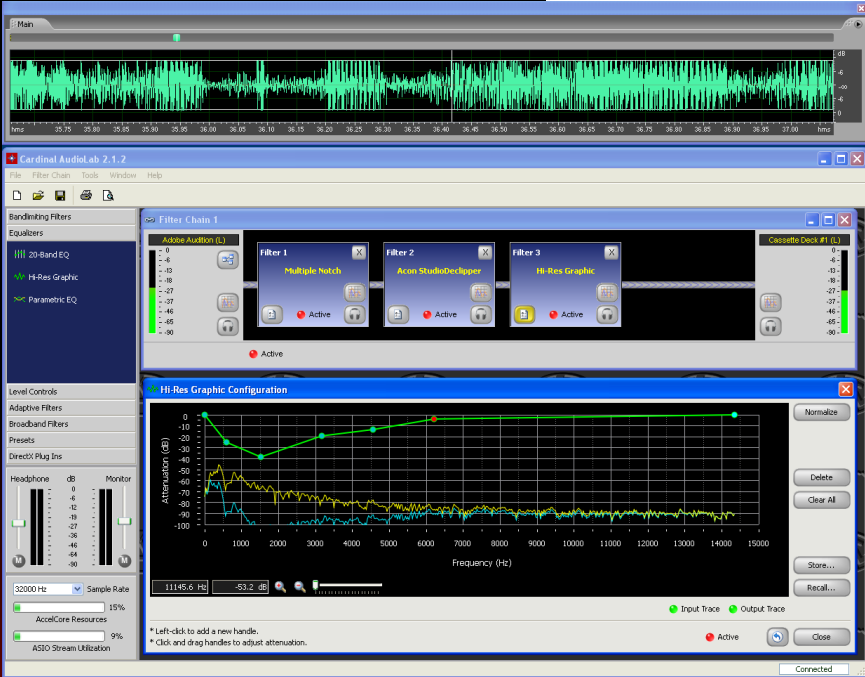
CARDINAL takes forensic audio processing and analysis to the next level. Fully integrating the capabilities of both hardware and software, CARDINAL seamlessly handles forensic analysis and processing of all analog and digital media. CARDINAL provides productivity enhancement through a seamlessly integrated audio workstation environment capable of blending the merits of superb audio filtering with comprehensive speech and signal processing.

Key Features

- **Multi-tasking:** Productivity-enhancing features allow multiple jobs to be handled simultaneously.
- **Power, Power, Power:** The powerful AccelCore™ external processor hardware, based on the Analog Devices TigerSHARC® floating-point DSP, provides all audio I/O and performs lightning fast regardless of workload.
- **Handles All Media:** Common analog and digital media formats, including file-based media, can be handled directly.
- **Seamless Integration:** Both Direct-X and VST plug-ins are supported within the AudioLab environment. AudioLab replaces the Master Control Panel found on previous products and allows software-based tools to be mixed and matched with others that are AccelCore-based. Further, the entire setup can be preserved in a single file for easy recall and repeatability at a later date.
- **Flexible and Intuitive Interface:** The redesigned graphical user interface is easy to navigate, allowing for quick filter setup, recall, and adjustment.
- **More Science - Better Results:** DAC's proven methodology and built-in scientific approach helps produce results that win cases and survive legal challenges.

www.dacaudio.com

*Welcome to the next generation in forensic audio processing capability! The **CARDINAL FE** system seamlessly guides audio analysts through a structured, forensic problem solving methodology - without limiting flexibility. No other tool or process ensures the highest quality audio processing for maximum noise reduction and speech intelligibility!*



Integrated Direct-X Plug-in (Acon StudioDeclipper) in CARDINAL Processing Environment

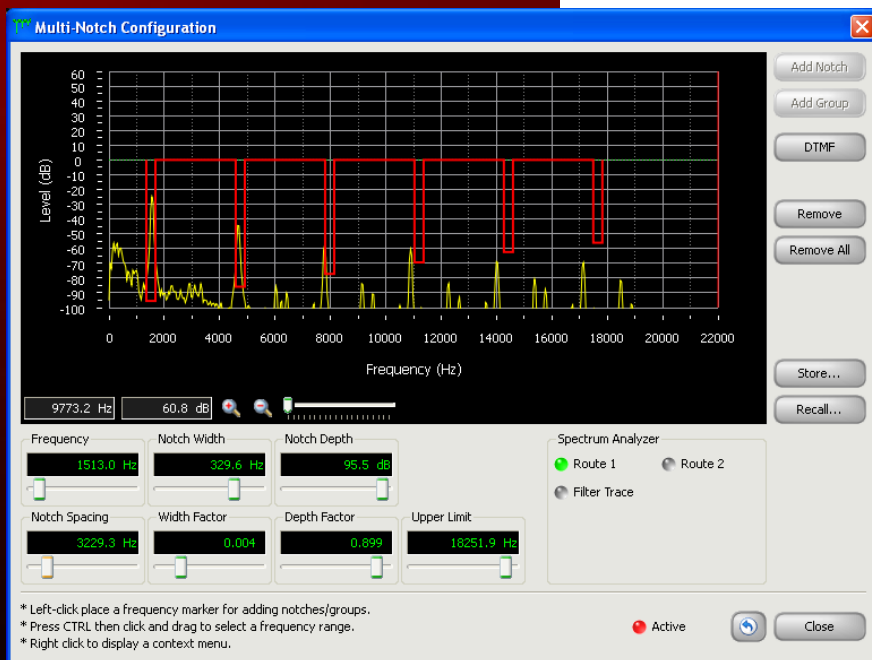
www.dacaudio.com

CARDINAL Rear Panel View



CARDINAL employs both a hardware and software component for processing audio material in the highest quality. The powerful “AccelCore™” external hardware component is connected via “Firewire” to an intuitive software interface inside the PC. The “AudioLab” software provides a flexible and efficient foundation for maximizing forensic audio analysis work.

Multiple Notch Filter Visualization



A culmination of user feedback, emergent technology, and proven methodology, DAC has designed the CARDINAL next generation forensic audio processor with you, the audio analyst, in mind. With a clean interface, and a powerful suite of real-time audio tools, CARDINAL provides a foundation upon which DAC will continue to build for years to come. Only DAC can provide such a comprehensive set of filters and processes to meet your technology needs today and in the future. Are you facing noise issues? Solve them with CARDINAL.

Technical Specifications

Digital Specification:

Audio Inputs (6)

- One rear-panel S/PDIF format RCA connector
- One rear-panel AES/EBU format XLR connector
- Two rear-panel TOSLINK format optical connectors
- One rear-panel ADAT format optical connector
- One front-panel TOSLINK format auxiliary optical connector

Audio Outputs (5)

- One rear-panel S/PDIF format RCA connector
- One rear-panel AES/EBU format XLR connector
- Two rear-panel TOSLINK format optical connectors
- One rear-panel ADAT format optical connector

Word Sync Jack (1)

- One rear-panel BNC jack; WORD SYNC OUTPUT
- TTL-compatible
- 75Ω output drive

Control Interface (2)

- Dual IEEE-1394a "Firewire" interface, 6-pin jacks

Analog Specification:

Line Inputs (10)

- Eight rear-panel 1/4" "TRS" balanced connectors
- Two front-panel RCA connectors
- $Z_{in} = 25k\Omega$, sensitivity -12 to +19 dBm

Line Outputs (8)

- Eight rear-panel 1/4" "TRS" balanced connectors
- $Z_{out} = 100\Omega$, full-scale output = +9 dBm

Monitor Outputs (2)

- Two rear-panel 1/4" "TRS" balanced connectors
- $Z_{out} = 100\Omega$, full-scale output = +9 dBm

Headphone Outputs (2)

- Dual front-panel 1/4" stereo jacks with volume control

Output Level Indicators

- Four 53-segment LED bar graphs

Bandwidth

- 20 kHz, maximum
- 35 Hz AC input coupling

Analog Conversion

- Five 24-bit stereo A/D converters; 128X oversampling, sigma-delta technology
- Six 24-bit stereo D/A converters; 128X oversampling, delta-sigma technology
- Supported sample rates of 16, 22.05, 32, 44.1, 48, and 96 kHz

Dynamic Range / SINAD

- >110 dB

Digital Processing:

Control Microprocessor

- One Wavefront Semiconductor DICE II, with ARM core operating at 50 MIPS, ASIC-based digital audio routing, and Firewire audio interface supporting up to 96 channels of audio streaming between CARDINAL and host PC. Includes Windows ASIO driver for intercommunication of digital audio data between CARDINAL and third-party software

DSP Farm

- Nine Analog Devices ADSP-TS201S TigerSHARC™ processors, each with 24Mbits of internal RAM and 491.52MHz clock speed
- Total processing throughput of 106K MIPS, or 26.5GFLOPS

Digital Filters

- Highpass, lowpass, bandpass, bandstop, comb, notch, multi-notch, multi-slot, and slot filters
- LMS 1CH, and Reference Canceller (2CH) adaptive filters
- Automatic Spectral Inverse, Spectral Subtraction, and NoiseEQ broadband noise reduction filters
- Graphic EQ, Parametric EQ, AGC
- Other special tools, including real-time clipped-peak restoration, multiband downward expander denoiser, and "de-clicker" modules

Digital Analysis

- Real-time spectrum analyzer, single- or dual-trace, 920-line resolution
- Adaptive filter coefficient display

Construction:

Packaging

- 5.25" H x 17.0" W x 12.0" D, 10 lbs.

Power

- 85 - 264 VAC, 47-63 Hz universal with IEC320 inlet, 100VA maximum

Host Computer Requirement

- Recommended Intel Pentium IV 2.0 GHz (or higher) desktop or laptop PC with mouse, 1024x768 SVGA monitor (dual monitors recommended), 1GB RAM, CD-ROM, 80 GB HD, Windows XP SP2, and at least one free IEEE-1394a "Firewire" interface port available. Active matrix LCD display recommended if notebook used

Streaming Interface

- Standard "ASIO" audio driver interface, supporting up to 16 channels of playback and record simultaneously. Provides capability to process WAV or other file-based data through the CARDINAL hardware via the Firewire connection. Compatible with Adobe Audition 3.0 and Sound Forge 8.0 software.