The Apogee AD-8000 8-channel, 24-bit converter...

APOGEE

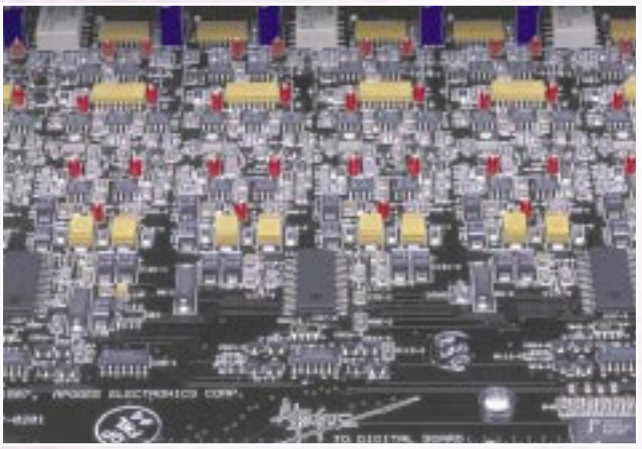
The digital masters.

...It's not an option. It's a necessity.

FOR OVER A DECADE, *the name Apogee has meant the highest quality digital audio equipment available. From our very first filters, retrofitted into digital stereo and multitrack machines the world over, to our award-winning stereo digital conversion systems, Apogee Electronics leads the field.*

Along the way, we've introduced significant new developments, contributing to the acceptance and possibilities of the digital medium. Our patented Low Jitter Clock cleans up digital signals, audibly improving the sound. Our unique UV22® Super CD Encoding process takes high resolution digital signals and translates them flawlessly into the 16-bit & 20-bit domains, without compromise, for Compact Disc and other formats. Today, UV22 is used by nine out of ten major US mastering studios and appears on almost 90% of all hit records mastered in the United States. It's recognized as the best-sounding word-length reduction system available.

At the same time, Apogee has built an enviable reputation for digital media products, including DAT and CD-R.



At Apogee, we know that the layout of a converter is as important as the circuitry. As a result, we take special care with board design, materials and manufacture to ensure the very highest levels of build quality — maximizing the AD-8000's audio quality, performance and reliability at every stage.

WHY OUTBOARD CONVERTERS?

At Apogee, better digital audio is all we do. We ensure that our converters deliver the best-sounding digital signals possible with today's technology. In most equipment, however, the converter is just another component. No built-in converter can match the superb quality and detail of an Apogee. And now, with all the features of the new *AD-8000*, an outboard converter is no longer an option – it's an essential.

THE NEXT STEP

The *AD-8000* 24-bit conversion system is undoubtedly the highest quality converter Apogee has ever produced. We believe it to be the best-sounding converter on the market. With the *AD-8000*, Apogee takes the next step.

The *AD-8000* out-performs the competition in any of today's most demanding audio environments. It's ideal in the project studio or post-production suite paired with a modular digital multitrack or digital audio workstation, and equally at home in the world's top recording studios and production facilities, interfaced with the most sophisticated digital 48-track recorders and digital mixing consoles.

THE BETTER THE CONVERTER, THE BETTER THE SOUND

There's no more important link in the digital recording chain than the A/D converter that takes your original analog input signal and converts it into digital information. The higher the quality of the A/D converter, the better the sound. It's as simple as that.

The *Apogee AD-8000* takes digital conversion to a whole new level. It's a true 24-bit converter, with 114 dB dynamic range and all the features you need for truly outstanding, great-sounding, world-class recordings, whether you own the biggest studio in town, a leading post-production facility, or simply have a project setup in your back room.

The *AD-8000* incorporates Apogee's acclaimed *UV22* process for translating high-resolution digital audio to 16 or 20 bits without quality loss; and *Soft Limit*® to add extra level to your recordings without overs. Both are selectable on a per-channel basis. The *AD-8000* includes flexible, accurate *bar-graph metering* with six different modes,

Powerful features that put the AD-8000 ahead of the field.

- Eight channels of Apogee's exclusive true 24-bit A/D conversion with 114 dB dynamic range
- Apogee Soft Limit® on each channel helps you get more level on tape without overs
- Apogee UV22® Encoding optionally translates the 24-bit signal to 20 or 16 bits without quality loss
- Advanced multi-mode 8-channel LED bar metering
- Built-in level calibration to within ±0.05 dB and 5-level digital oscillator
- Flexible over detection and tracking
- Headphone monitor for any channel pair
- Full Source/Destination monitoring
- Powerful track-bouncing capability
- Switchable analog and digital DC Offset removal
- AES/EBU distribution amplifier capability
- Balanced or unbalanced inputs
- "Smart" sync capabilities: sync to crystal, word clock, video (optional) or any digital input
- Patching of channel pairs from digital sources
- Standard XLR jacks for analog in and digital out
- RCA jacks for S/PDIF in and out
- AES XLR input (8-channel AES input card also available)
- Additional interfacing via up to four different digital I/O AMBus cards with format conversion and re-clocking
- Proprietary low jitter master clock
- Non-volatile storage of front panel settings
- Optional 24-bit stereo and 8-channel D/A converters
- Optional video sync module with 0.1% pull up/down
- Remote-controlled microphone pre-amp option

OPTIONAL AMBUS CARDS*

- *ADAT interface with Bit-Splitting*
- *TDIF (Tascam DTRS) i/f with Bit-Splitting*
- *Digidesign interface*
- *8-channel Glass Fiber i/f with Bit-Splitting*
- *AES 8-channel Input*
- *Sonic Solutions i/f*
- *S/PDIF optical (TosLink) interface*
- *MADI interface*
- *24-bit Sample Rate Converter*

Future cards may include:*

- *SSL HiWay interface*
- *Yamaha interface*
- *Dolby® AC-3 encoder*
- *DTS® encoder*
- *SDIF-2 interface*
- *Audio networking card*

*List subject to revision: some cards described may not be available immediately. Ask your dealer for prices and availability.

Upgrade to the Apogee AD-8000.

The AD-8000 features accurate multi-mode light-bar metering with unique calibration features.

including simultaneous peak and average reading and 2-second or infinite peak hold. ***Numeric "over" indication*** can be configured to trigger at 1, 2, 3 or 4 consecutive full-scale digital samples, and to reset the over count automatically after 15 seconds. The metering system also incorporates a calibration mode accurate to within ±0.05 dB.

The ***AD-8000*** incorporates eight channels of AES/EBU output, selectable S/PDIF output, and stereo AES/EBU and S/PDIF inputs. In addition, a four-card backplane, featuring our exclusive ***AMBUS (Apogee Multimedia Bus)*** technology, allows you to add the digital interfaces of your choice, such as ADAT, TDIF (Tascam), and Pro Tools (with an AES/EBU input card and a Pro Tools interface card, the AD-8000 is all you need to connect to a Pro Tools-equipped computer). And there are more interfaces to come*. ***AMBUS*** cards will also provide other features such as sample rate conversion. Use the ***AD-8000*** as a multiple format conversion system and transfer between all available interfaces simultaneously. It can also be used as a multi-output AES/EBU distribution system.

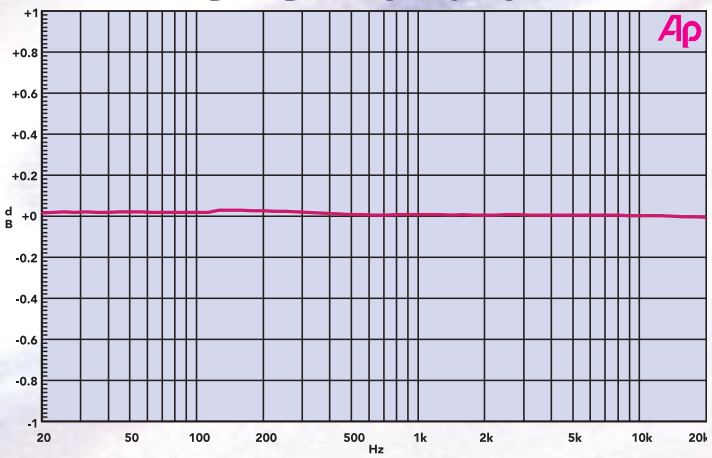
With the available ***24-bit stereo or 8-channel D/A expansion cards***, the ***AD-8000*** becomes a complete conversion system with everything you need for digital recording — except the recorder! Full ***source/destination monitoring*** is built in, along with powerful digital ***track-bouncing*** capabilities and signal routing functions. Front-panel settings are memorized automatically for hassle-free configuration.

In addition to standard 44.1 and 48 kHz sampling rates, the AD-8000 locks intelligently to word clock or to any digital input — including video with the optional video sync card. Input signals are re-clocked with the patented Apogee ***Low-Jitter Clock*** for maximum quality.

A ***headphone monitor*** socket provides the ability to monitor any pair of channels, via its own high-resolution stereo D/A converter.

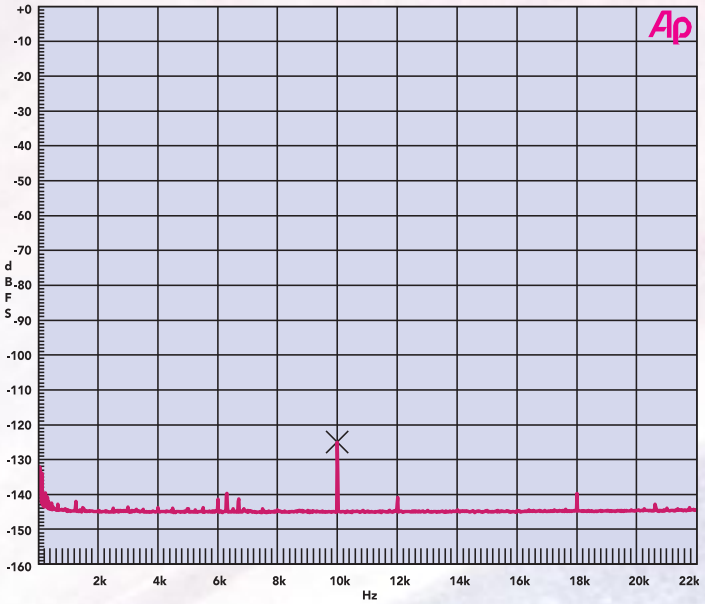
The ***AD-8000*** includes balanced and unbalanced line inputs. In addition, the optional remote multi-channel microphone preamp can be controlled from the AD-8000 front panel.

Analog to digital frequency response



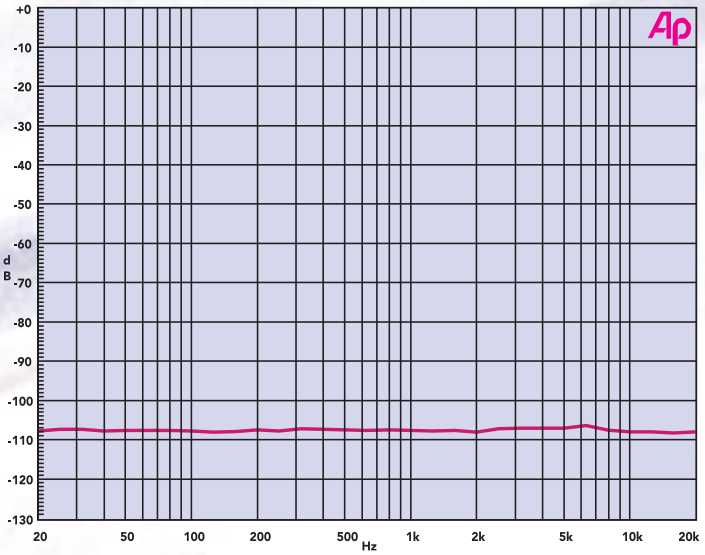
This frequency response curve demonstrates the superb engineering of the AD-8000 converter, with a response flat within 0.025 dB across the entire audio band... we leave signal coloration up to you!

10 kHz sine wave at -125 dB full-scale—A/D FFT



This A/D plot shows the true 24-bit conversion of the Apogee AD-8000. The sine wave is cleanly and accurately resolved right down to the 24-bit, -144 dB noise floor. Distortion products are better than 140 dB below full-scale. No wonder the AD-8000 has been hailed as a major advance in digital audio conversion quality and performance.

AD-8000 A/D: THD + Noise versus frequency



The AD-8000's A/D conversion system exhibits a superb THD + Noise response, from 20 Hz to 20 kHz.

And finally, of course, every ***AD-8000*** comes with Apogee's award-winning reputation for audio quality, performance and innovation.

The Apogee AD-8000 is available from Apogee authorized dealers and distributors worldwide. For the location of your nearest supplier, please contact Apogee Electronics: check our Web site, at http://www.apogeedigital.com/; call +1 310-915-1000; fax +1 310-391-6262, or email info@apogeedigital.com.

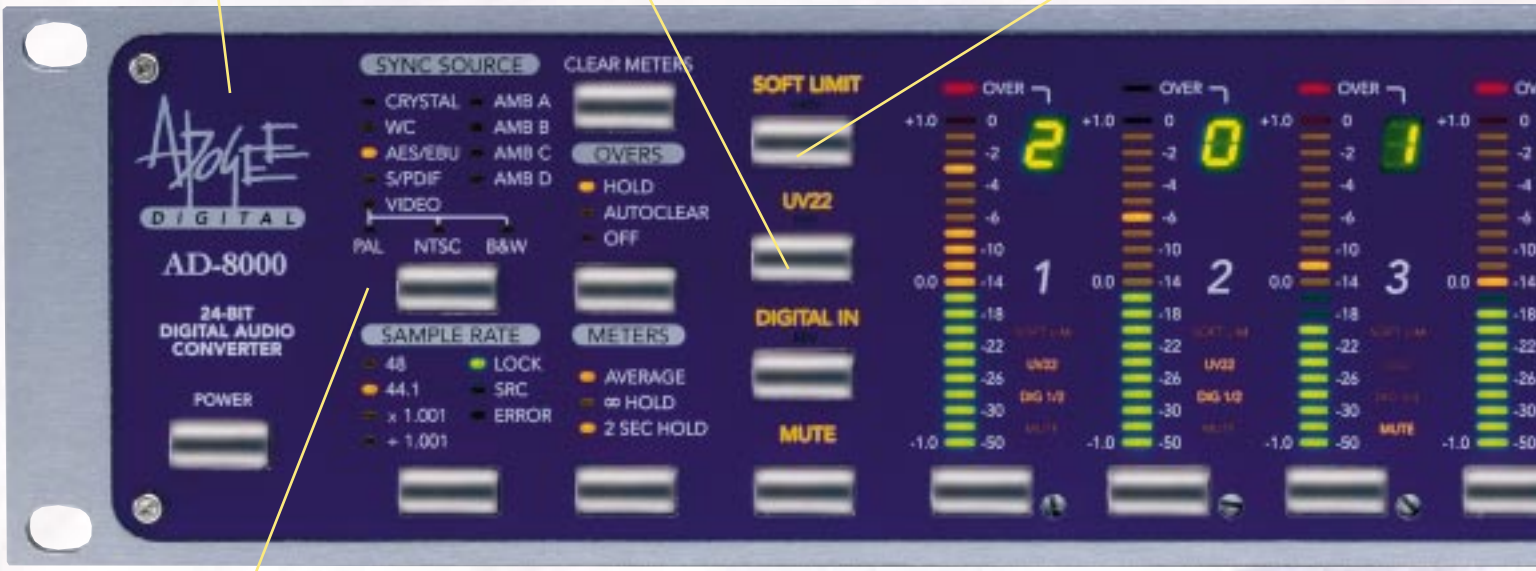
Experience the AD-8000. You'll soon realize why an Apogee converter is no longer an option: it's a necessity.

The Most Important Link In

True 24-bit A/D conversion: The AD-8000 features true 24-bit accuracy and simply stunning technical specifications. Like -110 dB THD+Noise. 114 dB dynamic range. A frequency response that's flat from 20 Hz to 20 kHz ±0.025dB. No wonder the AD-8000 sounds so good—and it's already been chosen for several top projects, such as the Rolling Stones, Jimi Hendrix and major motion picture soundtracks.

UV22 Encoding: There's nothing like Apogee's exclusive UV22 encoding process—taking your 24-bit digital signals and translating them flawlessly into the 20- or 16-bit domains. UV22 is standard in the vast majority of US mastering houses: over 90% of hit records have been made with UV22. Now any facility can enjoy the audible improvements offered by this unique process.

Soft Limit: Apogee's proprietary Soft Limit circuitry, available on every channel of the AD-8000, behaves like classic "tape compression" to get more level on to tape without risking digital "overs". Indicator shows when a signal is activating the Soft Limit circuit.



Sample Rate & Sync Options: 44.1 and 48 kHz crystal-locked sample frequencies, plus "pull-up" and "pull-down" settings for video/film transfers. The AD-8000 "smart syncs" to any digital input signal, via Apogee's proprietary Low Jitter Clock, in the range 32 to 54 kHz—including video with the optional video sync card.

Option Card Slot: Install the optional 24-bit stereo D/A or the full 24-bit, 8-channel D/A converter, engineered to the same exacting standards as the rest of the unit, and you can dramatically increase the functionality of your system. With both A/D and D/A functions in the same unit, the AD-8000 may be all the converter you'll need!

Built-in Functionality: On-board AES/EBU and S/PDIF inputs and outputs, plus Word Clock I/O. The rear-panel DIP switch sets pin 2/3 hot, analog & digital DC removal, "Over" definition, UV22 resolution (16/20 bit output), line levels (–10dBV or +4dBu, balanced or unbalanced) and other features. (An optional AMBUS card provides eight AES inputs.)

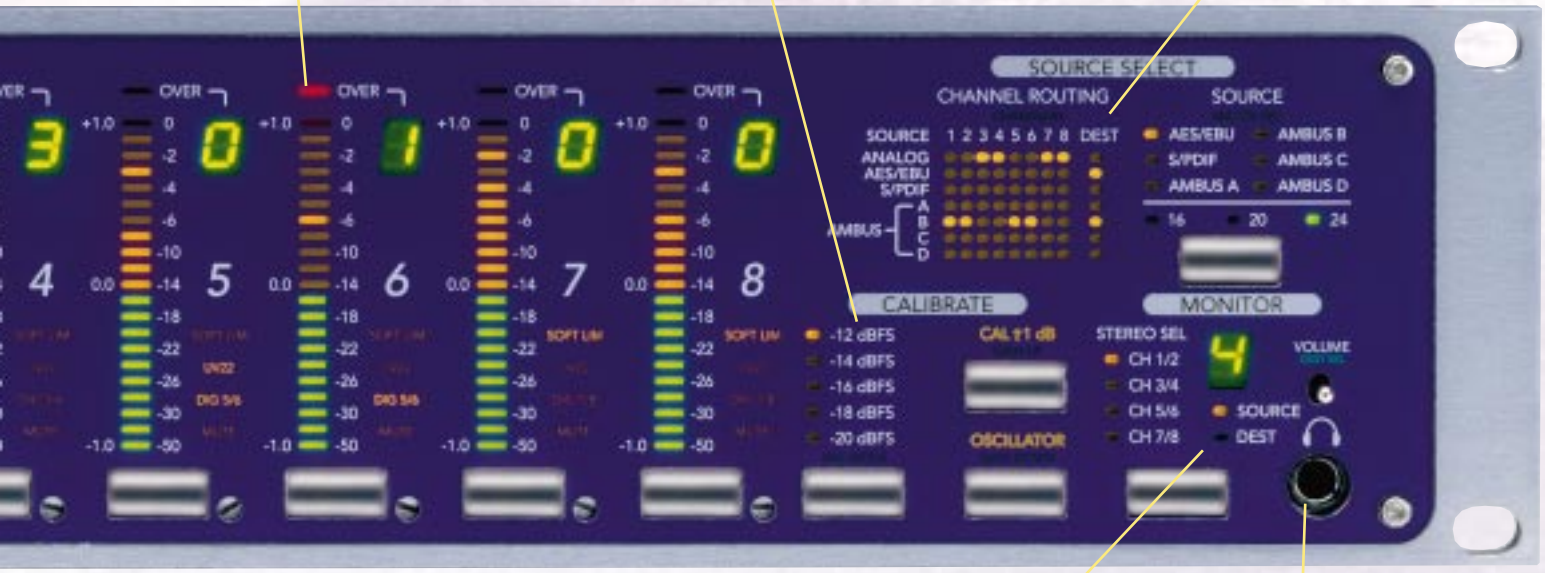
The AD-8000 8-channel 24-b

The Digital Recording Chain.

Advanced Metering System: The AD-8000 incorporates no less than six highly accurate light-bar metering modes offering simultaneous average and peak ballistics, with 2-second and infinite peak hold. The number of digital "overs" is indicated by a 7-segment display, and can be set to clear automatically.

Calibration and Diagnostics: The AD-8000 is straightforward to set up and use. With comprehensive power-on diagnostics, non-volatile setup memory, a digital oscillator and a full range of calibration options accurate to within ±0.05 dB, the AD-8000 is ready to use from the moment you power it up.

Digital Routing: With the AD-8000's unique digital routing matrix, choose sources and destinations for all your signals at the push of a silver button. AMBUS slots with cards installed are identified for instant access. Combinations of analog and digital inputs may be selected simultaneously. Comprehensive track-bouncing capabilities are ideal for multi-track environments.

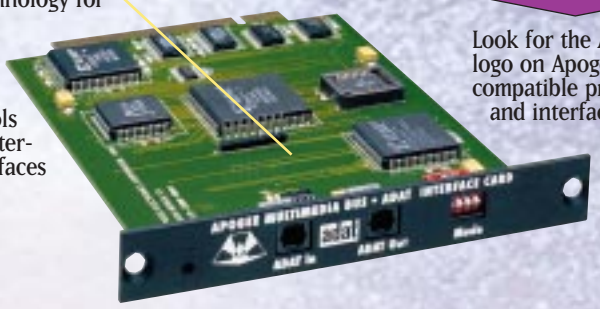


Format Conversion: All interfaces are available at all times, enabling you to use the AD-8000 as a powerful multi-channel digital format converter or AES/EBU distribution unit—a feature worth thousands on its own. Convert from any interface to *all others* simultaneously, whether they are built-in or on AMBUS cards.

Overdub (Destination) Mode: Any device connected to an AMBUS card can be monitored while it is the output destination of the AD-8000, to permit overdubbing and confidence monitoring. The output of the selected card is also available at all other interfaces and any installed D/A card.

Built-in headphone monitor: Hear what's going to tape—and what's coming back!—via the on-board headphone amplifier with multi-step volume control, fed by its own high-resolution D/A converter. Monitoring is selectable to allow the auditioning of pairs of channels at a time.

AMBUS Expansion Cards: Available Apogee Multimedia Bus (AMBUS) cards provide additional interfaces including ADAT Optical (shown here) and TDIF (Tascam DA-88), with "Apogee bit-splitting" technology for recording 20/24-bit signals on multiple 16-bit tracks. Other available interfaces include AES input and Pro Tools cards that provide complete Pro Tools compatibility with no other external hardware. Additional interfaces to follow*.



Look for the **AMBUS** logo on Apogee-compatible products and interface cards

bit converter. From Apogee.

The Apogee AD-8000 — Specifications

ANALOG AND A/D CONVERTER

Parameter	Value	Units
Resolution	24	bits
Sample Rate	32–54	kHz
Input Impedance		
Pro	9K	Ω
Consumer	15K	Ω
Relative THD+N		
–0.1 dBFS	–108	dB (unweighted)
	–110	dB (A-weighted)
–20 dBFS	–88	dB (unweighted)
	–91	dB (A-weighted)
–60 dBFS	–52	dB (unweighted)
	–54	dB (A-weighted)
Dynamic range		
–60 dB, Unweighted	112	dB
–60 dB, A-weighted	114	dB
Peak Spurious Component	–120	dB (max)
Group Delay (in passband)	38.7/Fs	seconds
Passband Ripple	±0.001	dB
Digital Filter Stopband	26.232	kHz
Stop-band Attenuation	110	dB
Channel Separation		
Left/right	113	dB (worst case)
Between pairs	113	dB (worst case)
Frequency Response (20 Hz–20 kHz)		
Gain	±0.025	dB
Phase	< 2	degrees
Common-Mode Rejection Ratio		
60 Hz	> 100	dB
1 kHz	> 80	dB
Input Level, maximum (no gain)		
Professional, balanced	27	dBu
Professional, unbalanced	23	dBu
Consumer, balanced	16	dBu
Consumer, unbalanced	15	dBu
Input Level, adjustment range	20	dBu
Crystal Oscillator accuracy	±25	ppm
Clock Jitter, 32kHz–54 kHz	<< 50	psec

Specifications and other information provided in this brochure is subject to change without notice. Apogee Electronics Corporation reserves the right to make design changes without prior warning.

HEADPHONE D/A AND AMPLIFIER

Parameter	Value	Units
Resolution	18	bits
Sample Rate	32–54	kHz
Relative THD+N, S/(N+D)		
–0.5 dBFS input	–88	dB
Dynamic range		
–60 dB, Unweighted	–94.6	dB
–60 dB, A-weighted (EIAJ), typ	–96	dB
Group Delay (in passband)	22.25/Fs	sec
Passband Ripple	±0.17	dB
Stop-Band Attenuation	35	dB
Channel Separation		
DAC	97	dB
Amplifier	65	dB
Frequency Response (20Hz–20 kHz)		
Gain	±0.05	dB
Phase	< 2.5	degrees
Output Level (max)	8	Vp-p
Output Power (max)		
8 Ω load	1	W/channel
150 Ω load	50	mW/channel
600 Ω load	20	mW/channel

DIGITAL SIGNAL PROCESSOR

Processing Delay	16/Fs	seconds
DC High-Pass Filter Corner Freq.	1.0	Hz
UV22 Amplitude		
Normal, 16 bits	–84	dB
Low, 16 bits	–90	dB
Normal, 20 bits	–108	dB
Low, 20 bits	–114	dB
Metering		
Accuracy	± 0.05	dB
Over Detection	1–4 consecutive 0 dBFS readings	(user-definable)

SYSTEM

AC line voltage	100, 120, 220, 240 vac (set internally)	
Fusing	0.75 A slow-blow	
Power	60	Watts
Size (w, h, d)	19 in, 3.5 in (2U), 14.25 in	
Weight	20 lb (9.1 kg)	

The digital masters.

APOGEE ELECTRONICS CORPORATION, 3145 Donald Douglas Loop South, Santa Monica, California 90405-3210, USA.
Telephone: +1 310/915-1000. Fax: +1 310/391-6262. Email: info@apogeedigital.com
For full details and application notes on all Apogee Electronics products, visit our Web site at http://www.apogeedigital.com/

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