

"The Clearest Path to Digital!"



The AD-1000 20-bit A/D Converter from Apogee Electronics Corporation

- Supports common digital audio formats including AES/EBU, S/PDIF and ADAT®
- Ultra low-noise mic amps with phantom power
- Exclusive UV22® encoding for flawless conversion to 16-bit
- Soft Limit™ processing for "analog-like" performance
- New *Platinum Edition* includes digital pass-through; DA-88 interfacing (with stand-alone FC-8 format converter); PaqRat™-compatible 20-bit recording.

Apogee's AD-1000 20-bit resolution analog to digital conversion system is the combination of years of design expertise with the practical "real world" requirements of thousands of Apogee users. Descended from the industry standard AD-500E, the AD-1000 adds 20-bit resolution with selectable UV22® encoding, ADAT® optical output, digital oscillator and transparent microphone preamps.

Portable 12 volt operation and dual stage, triple servo, direct coupled microphone preamps with phantom power let you take reference standard conversion wherever you go. Effective input peak metering and "Over" indication ease the adjustment of separate mic gain and multi-turn CAL controls. Select the acclaimed *SoftLimit™* function to position your recordings above the competition.

A special version of Apogee's UV22 process captures 20 bit resolution and detail into 16-bit formats such as CD, DAT and ADAT. UV22 encoding is the overwhelming choice of mastering engineers world wide for condensing high resolution sources onto CDs.

Outputs can be ADAT optical or simultaneous AES and S/PDIF to support multiple recorders. Optional outputs include SDIF, SDIF-II and Tascam TDIF™. With the input selector set to DIGITAL, AES or S/PDIF inputs are converted to all outputs. A built-in digital oscillator outputs all popular "0" reference levels for precise headroom setting. Patented Apogee Low Jitter Clock technology



Apogee Electronics:
ten years of
dedication to
better digital audio.

assures all digital outputs are free of the negative effects of clock jitter.

The AD-1000 can operate as a Sync Master or lock to external AES, S/PDIF or Word Clock. Film and Video are supported by NTSC color, monochrome and PAL inputs. Transfer and repair operations are further enhanced with Apogee's "1.001" circuit, allowing pull-up and pull-down.

Don't settle for shortcuts to digital. Your projects deserve the best. The clearest path from analog to digital is through Apogee's AD-1000. Listen to the results for yourself at your nearest Apogee authorized dealer.



The digital masters.

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AD-1000 Specifications and Features

SPECIFICATIONS

QUANTIZATION	20 Bits/Sample
FREQUENCY RESPONSE	20Hz–10kHz ± 0.025 dB 10kHz–20kHz $+0.025 / -0.1$ dB
TOTAL HARMONIC DISTORTION PLUS NOISE (THD+N) Full Amplitude	Typically –100dB @ 48kHz sampling; 0.5dB below full scale
–20dB scaled to Fs	Typically –103dB@ 48kHz sampling; 0.5dB below full scale
SIGNAL TO NOISE RATIO	Typically –104dB Unweighted, –109dB A weighted
CROSSTALK	Typically better than –110dB @ 1kHz
SOFT LIMIT THRESHOLD	–1.5dB below digital output full scale (adjustable)
METERING THRESHOLDS	Amber indicates 2dB below full scale (includes peak hold function and SoftLimit Threshold). Green indicates 12dB below full scale (adjustable) (includes peak hold function). Red indicates three full-scale samples in a row (Includes peak hold function)
COMMON MODE REJECTION	Typically better than 110dB@100Hz Typically better than 75dB @10kHz
EXTERNAL SAMPLING RATE RANGE	Any frequency from 32kHz to 54kHz via External Sync Input
INTERNAL SAMPLING RATE	32kHz, 44.056kHz, 44.1kHz, 44.144kHz, 47.952 kHz, 48kHz or 48.048kHz
SAMPLING RATE ACCURACY	± 10 PPM
SAMPLING RATE INDICATOR	Amber LEDs indicate output sampling rate range for 32kHz, 44kHz, and 48kHz
INTERNAL CLOCK JITTER	Typically 30 picoseconds RMS
NOMINAL DC POWER INPUT	12vdc @ 1150-1300mA dependent upon function
INPUT VOLTAGE	+11.5 to +15 Volts DC (well regulated)
INPUT DROPOUT	10.4 Volts DC
LOW VOLTAGE IND.	Power LED Flashes at <11.5vdc Power Input
WEIGHT	1.3Kg (2 lbs 14 oz)
DIMENSIONS	L=273.0 x W=141.2 x H=39.6 mm (L=10.75 x W=5.56 x H=1.56 in)
OPERATING TEMPERATURE	0°C to 40°C (32°F to 104°F)

Note: The AD-1000 will work with any well regulated 12V DC Power source with an output current of 1300 mA or greater. We recommend using linear type power supplies. Direct connection to external 12V DC lead acid or NiCad batteries will provide convenient portable operation.

INPUTS

ANALOG INPUTS (two 3 pin female XLR connectors on rear panel).

Line Level: +4 dBu (Professional) nominal input level @ 10 k Ω balanced (>5 k Ω unbalanced). CAL +4 Maximum input peak level (front panel gain controls at minimum, fully counterclockwise) +28dBu balanced, +24dBu unbalanced. –10 dBu (consumer) nominal input level. *Microphone Level:*

Minimum input peak level (Input Selector at Mic 40 and front gain controls at max): –54dBu Balanced, –50 dB Unbalanced (up to 54dB of gain is available).

Phantom Power: Available in Mic Positions when Phantom Power Selector is enabled. (≈ 7 mA available per channel to power condenser microphones.)

SYNC INPUTS (Two male BNC connectors on rear panel).

BNCs are paralleled for convenient looping to other units or termination (selectable termination). BNCs accept either balanced or unbalanced inputs.

WORD SYNC (WC): 32kHz to 54kHz Input Sampling Rates. TTL or RS422 levels. (input bridged by > 5 k Ω . Needs to be externally terminated @ 75 Ω). **DIGITAL AUDIO SYNC:** 32kHz to 54kHz Input Sampling Rates. AES/EBU Format (termination selectable at SYNC SOURCE switch to 110 Ω or bridged by > 5 k Ω for looping to other devices). S/PDIF Format (input bridged by > 5 k Ω or 75 Ω terminated - switch selectable).

ANALOG VIDEO: Black burst/Composite Sync/Composite Video. NTSC (525line/59.94Hz); Monochrome (525line/60Hz); PAL (625line/50Hz). (input bridged by > 5 k Ω or 75 Ω terminated – dip switch selectable).

OPTICAL SYNC INPUT: (Optical input connector on rear panel)

32kHz to 54kHz Input Sampling Rates. S/P DIF or AES/EBU Optical Format. In addition to Analog to Digital Conversion, the AD-1000 offers many Digital format conversion options. Depending on the options installed, the following digital input options are available when the DIG position is selected on the INPUT SELECTOR.

DIGITAL AUDIO INPUT STANDARD (UV22 processing for digital inputs available as an option) 32kHz–54kHz input sampling rates. AES/EBU format (termination selectable at SYNC SOURCE switch to 110 Ω or bridged by > 5 k Ω). S/PDIF format (input bridged by > 5 k Ω or 75 Ω terminated – dip switch selectable).

S/PDIF DIGITAL OPTICAL INPUT (Optical input connector on rear panel) 32kHz to 54kHz Input Sampling Rates.

ADAT DIGITAL OPTICAL INPUT – available with special option AD1K-PRT

OUTPUTS

AES OUTPUT (Male XLR connector on rear panel) 32kHz to 54kHz Output Sampling Rate. AES/EBU Format when front panel NORM position selected. Audio Black when front panel ADAT position selected.

S/PDIF OUTPUT (15 Pin HD connector on rear panel) 32kHz to 54kHz Output Sampling Rate. S/PDIF Format when front panel NORM position selected.

OPTICAL OUTPUT (Toslink Optical output connector on rear) 32kHz to 54kHz Output Sampling Rate. S/PDIF or ADAT Format selectable on front panel power switch.

WORD SYNC OUTPUT (15 Pin HD connector on rear panel) 32kHz to 54kHz Output Sampling Rate.

Two types available: Balanced – RS422 Compatible.
Unbalanced – TTL/Sony Compatible.

256 fs OUTPUT (15 Pin HD sub connector on rear panel)

OPTIONAL DIGITAL OUTPUTS

SDIF-II OUTPUT (15 Pin HD connector on rear panel)

32kHz to 54kHz Output Sampling Rate. Balanced – RS422 Compatible or Unbalanced – TTL Compatible.

HI-RESOLUTION OPTION – AD1K-PRT (20 bit encoding and decoding across track pairs). Through a combination of enhancements to the AD-1000, a hi-resolution stereo output can be mapped to stereo pairs of ADAT (or TDIF with the FC-8 format converter) format tracks. This process is compatible with Rane's Paqrat™ format.

OPTIONAL ACCESSORIES

PS-1000E Rack mountable dual worldwide power source for the AD-1000 with selectable 100, 120, 220, and 240 Volts AC and 50/60Hz providing dual 12.0 Volts DC regulated outputs at 1500mA each. Unit is 1/3 rack size and matches style and finish of the AD-1000. Power is distributed by two 15 Pin HD connectors on the rear panel. This unit can power up to two Apogee converters (A/D or D/A).

PS-1000E / AD-1000 Cable Interconnect from PS-1000 to AD-1000 for S/PDIF and Word Clock output operation (cable with a breakout of two female BNC connectors – one for S/PDIF [red connector], the other for Word Clock output [white connector]). A male BNC to female adaptor is also provided.

AD-1000 SDIF Option Adds SDIF and SDIFII output capability Left Data, Right Data and Word Clock via 15 Pin HD connector.

RM-1000 Rack mountable carrier frame in Apogee purple, capable of holding up to three AD-1000, DA-1000E or PS-1000E in a 1U EIA space.

RM-2000 An alternative racking frame which holds three units in a 2U space where ventilation is a problem. (Available 1997).

"PLATINUM OPTIONS"

AD1K-UVD (firmware option) UV22 Digital Through option – allows a digital input signal to be UV22 processed (the standard unit only supports UV22 on signals generated by the A/D section of the analog inputs).

AD1K-PRT (firmware option) 20-bit bidirectional ADAT interface option – The standard AD-1000 provides an ADAT output. This upgrade adds ADAT input capability, plus the ability to record and play back two 20-bit signals by using two pairs of tracks on an ADAT machine. The 20-bit capability is compatible with Rane's PaqRat™ system.

FC-8 (Stand-alone unit) Bidirectional ADAT to TDIF converter – This unit allows ADAT format 8-channel signals to be converted into the TDIF format used by Tascam DA-88 machines and compatibles. It is a bidirectional, stand-alone unit with its own power supply, and may be used independently of the AD-1000. (FC-8 available 3rd quarter 1996.)

COMBINATION OPTIONS

The AD1K-ADT option provides UV22 Digital Through and 20-bit ADAT capability as described above. The AD1K-20FC option adds an FC-8 to provide all three "platinum options" described above. This option makes a standard AD-1000 equivalent to the "AD-1000 Platinum Edition".

AD-1000 "Platinum Edition". This is an AD-1000 system ordered with all three "platinum options" listed above.