DA-3000

High-definition audio recorder / AD/DA converter

Thoroughly designed in every aspect

Designed as the successor to the well-known DV-RA1000HD – a high-resolution PCM/DSD master recorder introduced in 2006 that used a harddisk or DVD media for audio recording – the DA-3000 is Tascam's new flagship for high-definition audio recording and AD/DA conversion.

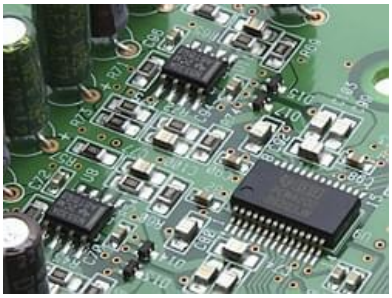
The sleek, modern DA-3000 fits in any recording studio, professional or home, for recording, mastering, broadcast, replacing a DAT machine or for audiophiles wanting to take the next step to perfection. It records to highly reliable solid-state SD or CompactFlash media, offers widely respected Burr-Brown converters and sophisticated preamplifiers built from selected components for outstanding sound quality. And its zero-noise design means no cooling fans or other mechanical noise sources as well as improved operational reliability and freedom of maintenance.

The unit supports high sampling rates up to PCM 192 kHz and DSD 5.6 MHz. High-precision Temperature Compensated Crystal Oscillators (TCXO) and dual monaural converters for each channel ensure pristine audio quality with sample accuracy at both recording and playback. Multiple DA-3000 units can be linked easily for simultaneous multi-channel/multi-track recording and a host of connectors is available on the rear panel to fit the unit in virtually any environment. There are also large, bright LED level meters and an OLED display to provide wide viewing angle and high visibility even under poor lighting conditions.

The DA-3000 comes with a wireless remote control and the ability to connect a computer keyboard for easy titling and control.

Details

Low noise with fully-balanced circuitry and high-quality A/D converters



The internal audio circuit uses a fully-balanced structure that is completely resistant to noise from the inputs and outputs. This has a great effect on the output and input stage and the resulting audio quality. The input audio passes through the analogue input stage and is then digitalized by a BurrBrown PCM4202 A/D converter.

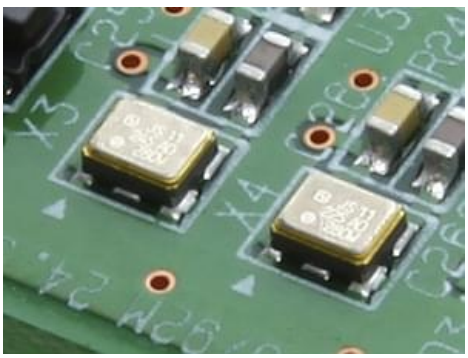
Separate output circuits to eliminate interference

The dual mono output circuitry prevents left and right channels from interfering with each other, improving sound quality over other designs by taking full advantage of component performance. Each channel uses one highly-acclaimed BurrBrown PCM1795 D/A converter chip that supports DSD and is characterised by a particularly high signal-to-noise ratio and very low distortion. This all combines to make the DA-3000 also a portable high-quality monitoring system.

High-quality components selected after months of evaluation tests

Integrated circuits like operational amplifiers have a great impact on audio quality, so we carefully chose the NJM2114 and NE5532 which have proven themselves in sophisticated audio devices. In addition, we use low-impedance capacitors featuring low resistance, low noise, and high precision to achieve the best possible sound quality.

Carefully designed details from power supply to clock generation



In order to assure high audio quality throughout the product, a stable power supply is indispensable. The EI-core transformer incorporated into the DA-3000 has separate coils: one for all digital circuits and control panels and

one for the analogue signal path, making it possible to capture even higher-quality signals by suppressing noise. In addition, for the clock generator, we use a temperature-compensated crystal oscillator (TCXO) that boasts 1-ppm precision.

Fanless design for a quiet listening environment

Cooling fans inside equipment generate noise and can cause loss of accuracy when monitoring at low volume levels. With the DA-3000, we achieve high performance in a fanless design, allowing you to maintain a comfortable monitoring environment that is free of fan noise. As a side effect, the unit is maintainance-free as it doesn’t require regular cleaning.

Additional features through firmware updates

Firmware version 2.0

- The DA-3000 is now compatible with high-capacity SDXC cards. This means the maximum recording time with a 256-GB card increases to more than 234 hours at 44.1 kHz PCM, 55 hours at 192 kHz PCM and nearly 47 hours at 5.6 MHz DSD.
- A new erase function (ERASE FORMAT) has been added for SD cards that ensures writing speed is reset to highest values after prolonged use.
- The DA-3000’s firmware can now be updated also from SD and USB media.

Firmware version 1.10

- The maximum search speed can be set to 10× or 100×.
- Peak Hold can now be set for a time of 1 to 10 seconds (in 1-second increments).
- When the current media has only 10 minutes of remaining recording time, the INFO indicator now lights red as a warning.
- The DA-3000 can now be set to play all tracks on the medium (CONTINUOUS) or only one track at once (SINGLE).
- Mark information now appears in a pop-up whenever a mark is moved to or passed when searching.

Features at a glance

- High-performance audio master recorder capable of PCM/DSD recording
- High-quality audio circuits enable utilization as an AD/DA converter
- Zero-noise design: no cooling fans or other mechanical noise sources
- Latest circuit design with Burr-Brown converters and selected components for outstanding sound quality
- Dual monaural D/A converters for reduced interference between channels
- Separate transformer coils for digital and analogue circuits to ensure extremely clean supply voltages
- Sampling rate up to PCM 192 kHz, DSD 5.6 MHz
- High-precision clock synchronization with sample-accuracy at both recording and playback
- Recording to SD/SDHC/SDXC or CompactFlash media

- Playback from SD/SDHC/SDXC, CompactFlash or USB flash drive media
- DD mode divides audio material into tracks automatically by detecting DAT IDs
- XLR analogue balanced I/O
- RCA analogue unbalanced I/O
- Coaxial digital I/O (SPDIF)
- XLR digital I/O (AES/EBU / SPDIF)
- BNC digital I/O (SDIF-3 / DSD-raw)
- Wordclock I/O (output switchable to Thru)
- Remote control with computer keyboard or keypad via USB port (same ten-key assignment as ProTools)
- Multiple units can be cascaded for multi-track synchronized recording and playback
- Easy-to-read LED level meters (24 dots)
- OLED display (128 x 64 dots) provides wide viewing angle and high visibility
- 1U compact size

Related products

Hi-Res Editor: High-resolution DSD/PCM audio editor

CG-1000/CG-1800/CG-2000: Master Clock Generators

DA-6400: 64-track Audio Recorder

Specifications

Recording media

SD cards	512 MB – 2 GB SD 4–32 GB SDHC 48–256 GB SDXC
CF cards	1–64 GB Type I
USB flash drives	2–64 GB

Recording and playback formats

PCM mode	
Fs (sampling frequency)	44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz and 192 kHz
Resolution	16-bit and 24-bit
Playback	BWF (.wav extension)
Recording	BWF and WAV (both .wav extension)
DSD mode	
Fs (sampling frequency)	2.8224 MHz and 5.6448 MHz
Playback/Recording	DSDIFF (.dff extension) DSF (.dsf extension)
Number of channels	2 mono/1 stereo

Analogue audio inputs

Unbalanced	
Connector	RCA
Nominal input level	−10 dBV
Maximum input level	+6 dBV
Input impedance	22 kΩ or more
Minimum input level	−22 dBV
Balanced	
Connector	XLR-3-32 (1: GND, 2: HOT, 3: COLD)
Nominal input level	+4 dBu (+6 dBu at maximum input level of +15 dBu)
Maximum input level	+24 dBu, +22 dBu, +20 dBu, +18 dBu or +15 dBu (set in menu)
Input impedance	10 kΩ or higher
Minimum input level	−8 dBu (−6 dBu at maximum input level of +15 dBu)

Analogue audio outputs

Unbalanced	
Connector	RCA
Nominal output level	−10 dBV
Maximum output level	+6 dBV
Output impedance	200 Ω or less
Balanced	
Connector	XLR-3-32 (1: GND, 2: HOT, 3: COLD)
Nominal output level	+4 dBu (+6 dBu at maximum input level of +15 dBu)
Maximum output level	+24 dBu, +22 dBu, +20 dBu, +18 dBu or +15 dBu (set in menu)
Output impedance	100 Ω or less
Headphones output	
Connector	6.3-mm standard stereo jack
Maximum output power	45 mW + 45 mW (32 Ω load, 0.1% distortion)

Digital inputs

S/PDIF / CASCADE (unbalanced)	
Connector	RCA
Format	IEC60958-3 (S/PDIF)

Supported sampling frequencies	44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz or 192 kHz (SRC off) 32–216 kHz (SRC on)
Allowable frequency deviation	±100 ppm (SRC off)
AES/EBU (balanced)	
Connector	XLR-3-32 (1: GND, 2: HOT, 3: COLD)
Format	AES3-2003/IEC60958-4 (AES/EBU)
Supported sampling frequencies	44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz or 192 kHz (SRC off) 32–216 kHz (SRC on)
Allowable frequency deviation	±100 ppm (SRC off)
SDIF-3 (unbalanced)	
Connector	BNC × 2 (L, R)
Format	SONY SDIF-3/DSD-raw
Clock frequency	44.1 kHz (at 2.8 MHz or 5.6 MHz)

Digital outputs

S/PDIF / CASCADE (unbalanced)	
Connector	RCA
Format	IEC60958-3 (S/PDIF)
AES/EBU (balanced)	
Connector	XLR-3-32 (1: GND, 2: HOT, 3: COLD)
Format	AES3-2003/IEC60958-4 (AES/EBU)
SDIF-3 (unbalanced)	
Connector	BNC × 2 (L, R)
Format	SONY SDIF-3/DSD-raw
Clock frequency	44.1 kHz (at 2.8 MHz or 5.6 MHz)

Other connectors

WORD SYNC IN	
Connector	BNC
Input level	TTL level (5 V)
Input impedance	75 Ω ±10 % (includes switchable termination)
Supported sampling frequencies	44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz or 192 kHz
Allowable frequency deviation	±100 ppm
WORD SYNC THRU/OUT	
Connector	BNC
Output level	TTL level (5 V)
Output impedance	75 Ω ±10%
Supported output sampling frequencies	44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz or 192 kHz (includes switchable THRU/OUT)
Frequency stability	±1 ppm or less (ta = 25 ºC)
USB (DEVICE)	
Connector	USB A-type 4-pin
Protocol	USB 2.0 HIGH SPEED (480 Mbps)
Power supply	DC 5 V, 0.5 A
USB (KEYBOARD)	
Connector	USB A-type 4-pin
Protocol	USB 1.1 FULL SPEED (12 Mbps)
Power supply	DC 5 V, 0.2 A

Audio performance

Recording	
Distortion, PCM 24-bit and DSD mode (THD+N, 24kHz)	0.003% or less (−16 dB, BALANCED, JEITA) 0.005% or less (UNBALANCED, JEITA)

S/N ratio, PCM 24-bit	113 dB or higher (−20 dB, BALANCED, JEITA) 111 dB or higher (UNBALANCED, JEITA)
S/N ratio, DSD mode	106 dB or higher (–20 dB, BALANCED, AES-17 20 kHz LPF) 104 dB of higher (UNBALANCED, AES-17 20 kHz LPF)
Frequency response, PCM 24-bit	Fs = 44.1 kHz or 48 kHz: 20 Hz – 20 kHz (+0,1 dB, −0,5 dB (JEITA)) Fs = 88.2 kHz or 96 kHz: 20 Hz – 40 kHz (+0,1 dB, −1 dB (JEITA)) Fs = 176.4 kHz or 192 kHz: 20 Hz – 80 kHz (+0,1 dB, −6 dB (JEITA))
Frequency response, DSD mode	20 Hz – 50 kHz (+0,1 dB, −3 dB (JEITA)) 20 Hz – 100 kHz (+0,1 dB, −12 dB (JEITA))
Crosstalk, PCM 24-bit and DSD mode (1 kHz)	105 dB or higher (JEITA)
Playback	
Distortion, PCM 24-bit and DSD mode (THD+N, 1 kHz)	0.003% or less (BALANCED, JEITA) 0.001% or less (UNBALANCED, JEITA)
S/N ratio, PCM 24-bit	118 dB or higher (−20 dB, BALANCED, JEITA) 116 dB or higher (UNBALANCED, JEITA)
S/N ratio, DSD mode	116 dB or higher (–20 dB, BALANCED, AES-17 20 kHz LPF) 114 dB or higher (UNBALANCED, AES-17 20 kHz LPF)
Frequency response, PCM 24-bit	Fs = 44.1 kHz or 48 kHz: 20 Hz – 20 kHz (+0,1 dB (JEITA) Fs = 88.2 kHz or 96 kHz: 20 Hz – 40 kHz (+0,1 dB, −0.3 dB (JEITA)) Fs = 176.4 kHz or 192 kHz 20 Hz – 80 kHz (+0,1 dB, −3 dB (JEITA))
Frequency response, DSD mode	20 Hz – 50 kHz (+0,1 dB, −3 dB (JEITA)) 20 Hz – 100 kHz (+0,1 dB, −12 dB (JEITA))

Power supply and other specifications

Mains power requirements	AC 120 V, 60 Hz (U.S.A./Canada) AC 220–240 V, 50–60 Hz (U.K./Europe/Australia)
Power consumption	24 W
Dimensions(W × H × D)	483 mm × 45 mm × 305 mm
Weight	4.2 kg
Operating temperature range	0–40 °C

Design and specifications subject to change without notice.

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