TASCAM®

DA-45HR
Technical Documentation

PRODUCT OVERVIEW

The DA-45HR is the world's first 24 bit DAT recorder, providing a cost effective high resolution mastering solution. The DA-45HR can also operate in a standard 16 bit DAT resolution, providing seamless backwards compatibility with other DAT recorders. A full audio I/O complement and word sync in/thru provide all the tools to integrate into any analog or digital studio of any size. Perfect for studios and mastering houses, the DA-45HR bridges the gap between the 16 bit and 24 bit worlds with a familiar interface you already know.

- 3-U Rack Mount Design
- Records 16 or 24 bit High Resolution Mode
- 24 bit A/D, 20 bit D/A
- Analog Unbalanced RCA I/O
- Analog Balanced XLR I/O with Output Attenuation
- AES/EBU (XLR) and SPDIF (Coaxial) Digital I/O
- Word Sync In/Thru
- Supports Track Names in DAT Subcode

- Two Memory Locate Points
- Single Play and Loop Play Functions
- Margin Counter with Reset Function
- Large Jog/Shuttle Wheel
- Selectable SCMS Status
- Headphone Output w/ Level Control
- Parallel Control I/O for Custom Remotes & Tallies
- Optional Wired Remote (RC-D45)

APPLICATIONS

The DA-45HR combines offers all the advantages of a studio grade DAT recorder, and adds the additional capabilities of 24 bit high resolution audio.

Project Studio - Production Studio

While 16 bit is still the common delivery method in the consumer channel, mass distribution at 24 bit resolution is being promised in the near future. Mixing your projects down on 24 bit masters now will help you capitalize on higher resolution re-releases down the road without having to go back to the studio to remix the tracks. In fact, a number of mix engineers have specified the 24 bit DAT format as their delivery method, and many mastering houses are equipped with DA-45HRs to accept the 24 bit maters.

With the proliferation of high resolution multitrack recorders like the DA-78HR and DA-98HR and 24 bit digital audio workstations, the need for high resolution mastering recorders is all the more obvious.

Since DATs are already standardized as the method of delivery in studios everywhere, the ability for the DA-45HR to double as a standard 16 bit DAT with total backwards compatibility offers a cost effective solution to bring the best of both worlds into the studio.

For studios that keep the audio totally in the digital domain, the DA-45HR offers AES/EBU and SPDIF coaxial ports, as well as word sync in/thru for locking to external word clock sources. These advanced features will provide all the amenities to integrate into any digital or analog studio of any size.

Radio Broadcast - Show Control

For broadcast and show control applications, the DA-45HR offers a parallel I/O on the back panel for custom remote control. The DA-45HR offers full compatibility with DAT tapes recorded in long play, standard modes, or 24 bit high resolution. Plus, when creating your sound cues, the DA-45HR is the best sounding, most flexible recordable 24 bit format available. This means you can customize your shows as time goes on, without having to re-press DVDs or some other locked, closed end format.

SPECIFICATIONS

Performance Specifications:

Tape Speed:	SP - 8.15mm/s; HR - 16.3mm/s
Recording Time (120 DAT):	SP - 120 minutes; HR - 60 minutes
Recording Resolution:	SP - 16 bit; HR - 24 bit
Recording Sample Rate:	44.1kHz, 48kHz
Frequency Response:	20Hz-20kHz ±0.5dB (SP & HR modes)
Signal to Noise Ratio:	>105dB Playback (SP)
	>112dB Recording, 105dB Overall (HR)
Total Harmonic Distortion:	<0.005% Playback (SP)
	<0.002% Recording, <0.004 Overall (HR)
Wow and Flutter:	Unmeasurable (<0.001%)
Channel Separation:	>95dB (1kHz @ Full Scale)
Input RCA:	-10dBV, 50kOhm
	+6dBV Maximum (2Vrms)
Input XLR:	+4dBu, 10kOhm (-16dB, -18dB, -20dB Full Scale)
	+20dBV, +22dBV, +24dBV Maximum
Output RCA:	-10dBV, <700 Ohm
	+6dBV Maximum (2Vrms)
Output XLR:	+4dBu, 27 Ohm (-16dB, -18dB, -20dB Full Scale)
	+20dBu, +22dBu, +24dBu Maximum
AES/EBU I/O:	XLR-type, IEC60958 Type I (AES/EBU)
SPDIF Coaxial I/O:	RCA pin, IEC60958 Type II (SPDIF
Headphone Output:	2x50mW into 32 Ohms
Word Sync IN/THRU:	75 Ohms (auto-terminating)
Control Ports:	1/8" mini plug accepts RC-D45 remote
	DB15 Parallel I/O

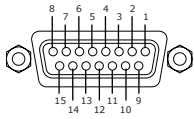**General Specifications:**

Power Requirements:	120V AC, 60Hz (USA/Canada Model)
	230V AC, 50Hz (UK/Europe Model)
	240V AC, 50Hz (Australia Model)
Power Consumption:	40W
Dimensions:	482 x 140.5 x 368 mm
	19" x 5.5" x 14.5"
Weight:	8.3Kg, 18.25 lbs.
Optional Accessories:	Wired Remote (RC-D45)

The DA-45HR is available at:

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7733 Telegraph Road • Montebello, CA 90640 • (323) 726-0303 • http://www.tascam.com

All features and specifications are subject to change without notice. Contact your local TASCAM representative for the latest information.

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CONTROL I/O

Pin	Function
1	STOP in
2	PLAY in
3	FFWD in
4	REW in
5	PAUSE in
6	REC PLAY in
7	SERIAL in
8	GND
9	PLAY tally out
10	FFWD tally out
11	REW tally out
12	STOP tally out
13	REC PLAY tally out
14	PAUSE tally out
15	TAPE END tally out

Control I/O Legend

Control I/O Notes:

All command controls are labeled "in" on the chart at left. Commands are active when brought to ground for 30 msec or more.

Tally signals are open collector, with a maximum 15V, 80mA.

SERIAL in (7) offers an access to RS-232 type communication standards.

24 BIT DAT FAQ

How does the 24 bit DAT format work?
The 24 bit format DAT uses the same DAT tape that is used in standard DAT recorders. In order to store the extra data generated by higher resolution recording, the tape speed is doubled in HR (High Resolution) mode. So, when you're recording in 24 bit HR mode, a standard 120 minute tape will last 60 minutes. Obviously, 24 bit DAT tapes will only play back on a 24 bit DAT recorder like the DA-45HR.

How can I work with other users who don't have a 24 bit DAT?
The DA-45HR can also run just like a standard 16 bit DAT recorder, running normal speed and writing 16 bits to the tape. Reading and writing is fully supported, so you won't have to dig out a different DAT recorder for anything else.

How can I make duplicates of a 24 bit DAT?
This all depends on what you've got in your studio. If you have a 24 bit DAW or multitrack, you can dump tracks back and forth that way, however these devices may not support track IDs, track names, and other subcode data. Obviously, you can use two DA-45HRs to make real time copies to duplicate everything on the tape. The other choice is to use a TASCAM DA-302 dual well DAT recorder. While the DA-302 is not equipped to record or play back 24 bit DAT tapes, it can duplicate them as a straight data transfer between tapes.

HELPFUL FUNCTIONS

Track Names
The DA-45HR fully supports program titles, allowing each track to have its own name. This information is stored in the tape's subcode, and does not affect the audio quality or cause conflicts with other machines. The name can be spelled out with upper and lower case letters, numbers, and some basic punctuation.

Two Memo Locate Points
When working on mixes, or even running live shows, a pair of memo points comes in handy. These are separate locate points that can be used for cueing the tape to a particular location, or they can be used for looping a part for rehearsal or critical listening passes.

Single Play
If you are using the DA-45HR in a live production, the single play function allows you to play the DAT one track at a time. The DA-45HR will automatically stop at the next track ID, ready for the next cue.

Margin Counter
This is one of those features you typically never think about until you don't have it. The margin counter is very useful when performing transfers. You can walk away from the unit, and know if the level ever peaked out, or if the recording could have been made louder.

Drum Time (Head Time) Counter
For maintenance purposes, it helps to know if it is time to clean the heads. Maintenance records can be kept just like taking the odometer reading on car.

Selectable Reference Level, Attenuation on Outputs
Most professional gear operates with -20dB as the 0dB analog reference level, and most semi-pro gear operates at -16dB reference level. The DA-45HR offers the ability to properly match your system to the gear you are working with. There are also attenuation pots on the balanced outputs for fine adjustment of these levels.

ARCHITECT'S SPECIFICATIONS

The DAT recorder shall be able to record audio DAT tapes at the standard 16 bit, 44.1kHz and 48kHz modes. Playback capabilities shall include these sample rates, as well as 32kHz long play format.

A 24 bit, High Resolution mode shall offer true 24 bit writing to the standard DAT tape. This high resolution mode shall support both 44.1kHz and 48kHz sample rates.

The recorded SCMS code status shall be selectable in a menu. Available options shall include Prohibit, One Generation, and Free. Other menus shall provide customization of the Auto ID parameters, controlling the threshold and times required for triggering an auto ID writing.

The DAT recorder shall offer advanced tape subcode data writing and retrieval, including the ability to read and write program titles, program IDs, and markers for skip program and end of program.

Advanced cueing controls shall include single play, two memory location points, and looping between memory ID points.

Analog audio inputs and outputs shall be provided on balanced XLRs and unbalanced RCA connections. Digital audio inputs and output shall be provided on AES/EBU format on XLR connectors, and in SPDIF format on coaxial connectors. Word sync in and thru ports shall be provided for easier integration into larger digital environments.

The zero dB reference level of the balanced inputs and outputs shall be adjustable between -16dB, -18dB and -20dB. Additionally, the balanced outputs shall offer attenuation adjustment potentiometers.

The DAT recorder shall be controllable from a TASCAM RC-D45 remote control, and shall offer a Parallel I/O port for further remote control and tally functions.
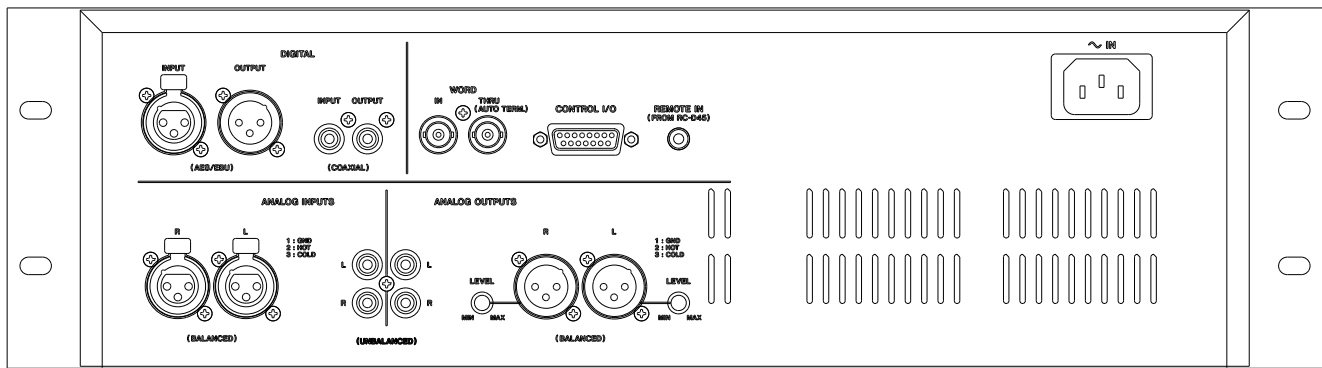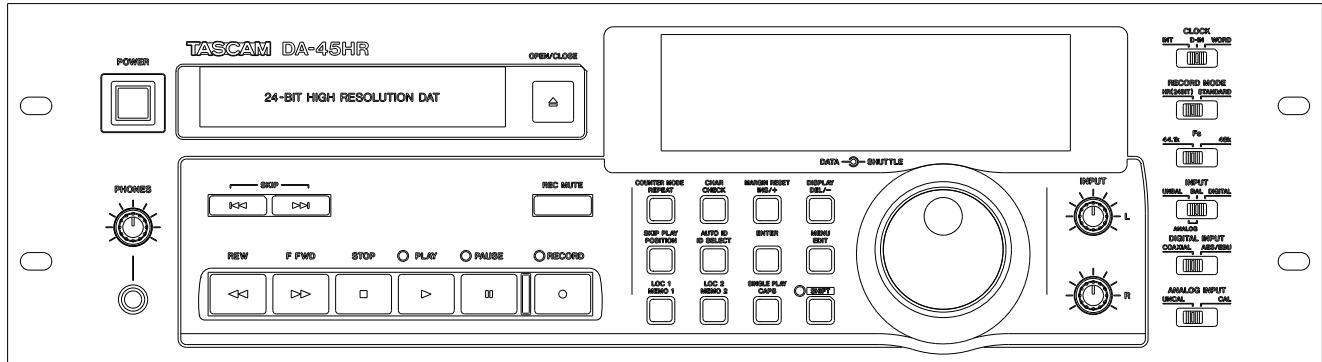
The DAT recorder shall be able to mount in a standard 19" rack mount, taking three spaces in height. Dimensions shall be 19" x 5.5" x 14.5" (W x H x D).

Metric measurements: 482x140.5x368mm

The DAT Recorder shall be a TASCAM DA-45HR.

NOTE: This text is available in a standard text file on TASCAM's Sound Contractor CD-ROM. Contact TASCAM for details.

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FRONT AND BACK PANELS

OPTIONAL REMOTE

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