Professional 24-bit Multitrack Recorder DA-98HR

TASCAM

The 24-bit TASCAM DA-98HR represents the pinnacle of DTRS evolution

Since its introduction in 1993, TASCAM's DTRS modular digital multitrack recorders have become a worldwide standard for all facets of the recording industry. With a rare combination of the finest audio quality and a practical recording medium, DTRS recorders can be found everywhere from personal and project studios to post-production suites and scoring stages around the globe.

The DA-98HR represents the pinnacle of evolution for DTRS recorders. Its 24-bit audio bit depth, sample rates of up to 192kHz, confidence monitoring capability and a new simplified operating system with one-touch commands and clear status displays make the DA-98HR the new standard for professional audio production.

DTRS DIGITAL TAPE RECORDING SYSTEM

Professional 24-bit Multitrack Recorder DA-98HR

highlights

Selectable 16 bit or 24 bit recording format

Selectable sampling frequency mode, 44.1/48kHz 8 track, 88.2/96kHz 4 track, 176.4/192kHz 2 track

Backwards compatibility with existing DTRS recordings

Synchronisation up to 16 units (synchronise with DA-38, DA-88, DA-98 and DA-78HR)

Comprehensive LCD Display

Function keys for software control for each setting

Direct access keys to the main menu

Individual track input monitor select switch

Confidence monitoring

Selectable reference level (with optional IF-AN98HR)

Jog Shuttle wheel for accurate search

Onboard 2-track mix function

On-tape data memory for set-up information

Advanced internal electronic patchbay

4U rackmountable

Optional 44.1/48/88.2/96kHz switchable analogue I/O board IF-AN98HR

The DA-98HR records 24-bit audio with sample rates up to 192kHz

System integration in music and video systems is simple - the DA-98HR provides all standard industry connections. The two expansion slots for the optional IF-AN98HR 48/96kHz fs analogue I/O boards

At the head of the TASCAM DTRS range, the DA-98HR is both the ultimate modular multitrack recorder and the perfect master-controller for system-users. With a built-in chase-synchroniser and enhanced menu-driven control software to ease complex tracking and synchronisation, the TASCAM DA-98HR is optimised to command modular digital multitrack systems comprising any combination of other DTRS recorders. The addition of a DA-98HR to an existing system introduces the latest control ideas and enhancements to the entire system.

HIGH RESOLUTION BIT DEPTH AND SAMPLE RATES

The DA-98HR will record and playback with the stunning audio quality found in 24-bit resolution. It is also capable of working with higher sampling frequencies. In addition to its standard operating mode of eight tracks at 44.1 or 48kHz rates, the DA-98HR can also function as a four-track recorder for 96kHz rates, or even as a stereo master deck for 192kHz frequencies. This flexibility allows you to

choose the type of digital recording quality that fully meets your needs without any loss of recording time.

For compatibility with other DTRS machines, the DA-98HR will also recognize and work with 16-bit data as well. In a mixed system that uses both high resolution and 16-bit machines, the DA-98HR will output 16-bit data from the TDIF interface to older decks.

CONFIDENCE MONITORING ENSURES ACCURACY

The DA-98HR offers Confidence Monitoring, a system that verifies the integrity of the material you print to tape during the mastering and playback process. The audio you are hearing is exactly what is being recorded on tape. This important function virtually eliminates the possibility of encountering mistakes after the fact. You can trust that your master recordings and archive copies are completely free of glitches or dropouts of any kind.

INTERFACING FOR PROFESSIONAL FACILITIES

The DA-98HR offers both serial (RS-422, P2) and parallel control I/O, so integrating it into systems that require transport automation in both music and post production recording is easily accomplished. A SMPTE time code reader/generator is built in as standard equipment, as are MIDI jacks for MMC and MTC. Time-code generation is enhanced with the ability to sync. time code to ABS time, making searching and frame-matching accurate and instinctive. A video sync jack is added for locking to blackburst, and a digital audio interface for AES/EBU transmission is also included in addition to the DA-98's standard 8-channel TDIF interface.

The DA-98HR's front panel combines familiar transport controls with a wide variety of dedicated buttons that ensure quick and efficient operation. A comprehensive LCD display and data/jog wheel allow fast entry of numeric values.

CONTROL MENUS

The group of fifteen advanced control menus give you access to all system functions and options at the front panel. Navigation is simple: a 'top menu' lists the menu groups and as you scroll through with the cursor keys, a summary of each group's contents is shown for easy identification. In addition, there are direct access keys to main menu functions.

Input Monitor switches positioned directly under each track's record select switch allow easy toggling between Source/Tape levels, simplifying the process of comparing the two signals.

REFERENCE LEVELS

The DA-98HR (with optional IF-AN98HR) has a switchable reference level for quickly establishing compatibility with the prevailing reference level in your recording environment. This features is supported by an internal tone generator to allow settings to be checked.

ELECTRONIC PATCHBAY

The more machines and tracks you are using, the better this feature gets. You can route any input to any track - without touching the connectors. Patching and re-patching are unnecessary.

For the acquisition and delivery of audio for picture, high-end music recording and special applications like surround encoding, the DA-98HR offers a peerless solution for engineers and studio owners who prefer the advantages of working with tape-based digital audio.

SOLID DESIGN

The DA-98HR is designed for demanding, 24-hour use. It is encased in a sturdy all-metal chassis made to withstand working on location.

P2 protocol, Front Panel access to all machine set-up parameters, a menu-driven control environment, a comprehensive LCD display screen, self-illuminated transport control, individual input monitor switches, switchable reference levels and more.

By adding a PLL circuit to both the DAC and ADC, use of OS-CON (OS-CON is well-known for huge capacitance, low Equivalent Serial Resistance, long life, as well as excellent high-frequency and temperature characteristics) and a switchable Low Pass Filter at either Hi-Fs or Standard Fs, the optional Analog to Digital and Digital to Analog boards promise to give the DA-98HR incredible sound quality.

Designed to take the music recording and post production world into the next millenium, the DA-98HR is the finest modular digital multitrack recorder ever made.

DTRS - the common currency for professional multitrack recording since 1993

The first DTRS recorder, the DA-88, was introduced in 1993. Still in use around the world today, the DA-88's performance improved with the release of Version 4 operating system in 1997. That same year, TASCAM released the DA-38, an economical DTRS recorder designed for music project recording. The next DTRS machine was the DA-98 which introduced the Confidence Monitoring feature, allowing it to be used in the most professional environments. In 2000, TASCAM premiered its two newest additions to the DTRS series: the DA-78HR and the DA-98HR. Both recorders keep all the great features which made their predecessors some of the most popular recording devices in history, and added the benefit of high-resolution 24-bit audio quality.

16-bit | 24-bit

DA-38   DA-88 with Version 4   DA-78HR

DA-88   DA-98   DA-98HR

PROGRESS WITHOUT OBSOLESCENCE

The DA-98HR continues TASCAM's track record of delivering dynamic progression and innovation while at the same time avoiding obsolescence of earlier DTRS machines. Each new product advance has enabled system refreshment rather than system replacement. In the realm of competitive and fast-moving technology, such security of your investment is a rare virtue indeed. The DA-98HR, when used as a system 'master' controller, is able to apply the very latest control ideas and enhancements to an entire system of existing DTRS machines.

UNIVERSAL MEDIA

Worldwide commitment to the 'common currency' of Hi8 tape in multitrack digital audio is now very high. The evolution to 24-bit high resolution recording, with backward compatibility to 16-bit archives, using a proven and universally available media, will ensure that industry-standard DTRS maintains its lead as the optimum multitrack format. Hi8 tape is a readily available, compact and economical media - a PAL 90 tape provides 113 minutes of recording time, and fits in your pocket. Archiving is easy because you can store more work on a tape and the transport can locate accurately and quickly for retrieval.

FAST AND RELIABLE

Nothing comes close to the speed and ease of operation of TASCAM DTRS. The precision tape transport has been designed, manufactured and refined by TASCAM specifically for this application. It offers flawless tape handling, error-free reproduction, reliable operation - and it is exceptionally fast. Location is frame accurate to memorised points while fast, precise manual searching is optimised by the variable speed shuttle wheel in conjunction with standard transport controls.

COUNT ON THE RELIABILITY

The advanced technology employed makes TASCAM DTRS a particularly robust format because tracking data is combined with the audio data. This means you can be sure that playback and recording are securely taking place as each type of data cannot be read without the other. Any threat to this condition is dynamically monitored by an error-checking system which displays the rate of error and identifies the affected heads.

MODULAR. HARDWARE OR SOFTWARE?

DTRS provides the choice of using machine hardware or tape software to build up tracks. Up to 16 DTRS units can be connected together to give 128 synchronised tracks. Alternatively, because of the sample accurate sync capability, an infinite number of tracks can be generated

Space for two IF-AN98HR 8-channel analogue I/O cards

Input Monitor switches positioned directly under each track's record select switch allow easy toggling between Source/Tape levels, simplifying the process of comparing the two signals.

Self-illuminated transport controls

using as few as two DTRS machines. When one machine is synchronised with another, 14 tracks can be used for recording while the remaining pair carry synchronised guide tracks mixed down from the original 14.

By dubbing this guide track onto a third tape in digital sync, overdubs on a third and in turn fourth tape (and so on) will be perfectly synchronised with the original 14 tracks. There is, therefore, no limit to how many synchronised first-generation tracks you can create for a given song. A vast choice of material can be gathered, from which you can select only the very best of every instrument or performance. Even if the best passages of a particular instrument exist on different tracks and tapes, the seamless drop-ins, internal digital copy and patchbay facilities will allow you to create the perfect performance for mastering. DTRS users do not compromise - they do not need to.

main features

Selectable 16-bit or 24-bit recording format

Selectable sampling frequency modes 44.1/48kHz (8-track), 88.2/96kHz (4-track), 176.4/192kHz (2-track)

Backwards compatibility with existing DTRS recordings

Synchronisation up to 16 units (Synchronise with DA-38, DA-88, DA-98 and DA-78HR)

RS-422 (SONY P-2)

Parallel control IN/OUT (D-sub 37pin)

MIDI IN/OUT/THRU

Supports MMC

Time code In/Out with on-board SMPTE synchronizer

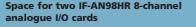TDIF-1 digital audio interface (D-sub 25 pin)

8 ch AES/EBU digital audio interface (D-sub 25 pin)

Word Sync IN/OUT/THRU

Video Sync IN/THRU

Comprehensive LCD Display

Self-illuminated transport control keys

10-point direct locate memory plus MEMO 1 and 2

Repeat function between two MEMO points

Function keys for software control for each setting

Direct access keys to the main menu

10 locate point keys

Numeric keys

Individual track input monitor select switch

Confidence Monitoring

Selectable reference level (with IF-AN98HR)

Adjustable peak hold and release time level meter

Jog Shuttle wheel for accurate search

On-board 2-track mix function

Machine offset in sub-frame or sample rate accuracy

Auto Punch I/O in sub-frame or sample rate accuracy

On-tape data memory for set-up information

Track slip from -200 to +7200 samples

±6% pitch control

Seamless punch I/O with digital cross fade

Built-in digital tone oscillator

Advanced internal electronic patchbay

A/B head playback error rate display function

4U rack mountable

Optional 44.1/48/88.2/96kHz switchable analogue I/O board

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Specifications

Recording format: . . . . .DTRS/DTRS-HR format, 4-rotary head digital recorder
Tape: . . . . .Hi-8 ME or MP
Tracking system: . . . . .ATF (Automatic Track Finding)
Erasure system: . . . . .Overwrite
Maximum recording time: . . . . .108 minutes with NTSC standard "120" tape
                113 minutes with PAL/SECAM standard "90" tape
Fast winding: . . . . .80 seconds (100 times play speed, using P6 120 tape)
Shuttle speed: . . . . .1/4 to 8 times play speed
Positioning accuracy: . . . . .within a sample
Number of recording channels: . . . . .8 plus sub-code area
Sub-code: . . . . .Set up information, ABS time and SMPTE Time code
Quantization: . . . . .16-bit or 24-bit linear
Sampling frequency: . . . . .44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4 kHz, 192kHz
Error correction: . . . . .Double-encoded, Reed-Solomon code
Modulation system: . . . . .8-10/1-7 (DTRS/DTRS-HR)
Pitch control: . . . .±6%
Emphasis: . . . . .50/15µs (playback only)
Cross-fade time: . . . . .10 to 200ms (in 10 ms steps)
Track delay: . . . . .Can be set in samples or ms (switchable)
            -200 to 7,200 samples in (1 sample steps) / -4 to 150ms. (1ms steps)
Sync clock: . . . . .Internal, Word In, Video In, AES/EBU
Offset: . . . .±2 hours (in sub-frame or sample accuracy)

A/D Converter (Optional): . . . . .24 bit 128 times Delta-Sigma over-sampling
D/A Converter (Optional): . . . . .24 bit 128 times Delta-Sigma over-sampling
Digital inputs/outputs: . . . . .D-sub 25-pin x 1
    Format: TDIF-1
Digital inputs/outputs . . . . .D-sub 25-pin x 1
    Format: . . . . .PRO AES3-1992 (AES/EBU)
Time code input: . . . . .XLR-3 Balanced (female)
    Impedance: 10kΩ
    Level: . . . . .0.5Vp-p to 10.0Vp-p
Time code output: . . . . .XLR-3 Balanced (male)
    Impedance: 100Ω
    Level: 2.0Vp-p
Remote sync in/sync out: . . . . .D-sub 15-pin (female)
Word sync input/thru: . . . . .BNC, 75Ω (THRU auto terminated)
Word sync output: . . . . .BNC, 75Ω at TTL level
Video input/thru: . . . . .BNC, 75Ω (THRU auto terminated)
MIDI in/out/thru . . . . .DIN connector, 5-pin
RS-422: . . . . .D-sub 9-pin x 1
Control inputs/outputs: . . . . .D-sub 37-pin x 1
Level meter outputs: . . . . .D-sub, 15-pin x 1

Power requirements: AC100V/50-60Hz, AC120V/60Hz, AC230V/50Hz
Power consumption: . . . . .Main unit: 30W
Main unit with IF-AN98HR: 46W
Dimensions (W x H x D): . . . . .482 x 176 (or 187 including feet) x 356mm

Audio specification with IF-AN98HR

Sampling frequency: 44.1kHz, 48kHz, 88.2kHz, 96kHz
Frequency response
    Fs=44.1kHz, 48kHz: . . . . .20Hz to 20kHz ±0.5dB
    Fs=88.2kHz, 96kHz: . . . . .20Hz to 40kHz ±1.0dB
Dynamic range: . . . . .Better than 110dB
(1kHz, Fs=48kHz, Input level=full scale -60dB)
Signal-to-Noise ratio: . . . . .Better than 110dB
(1kHz, Fs=48kHz, Input level=full scale -60dB)
Total harmonic distortion: . . . . .Less than 0.004%
                (1kHz, Fs=48kHz, Input level=full scale -60dB)
Channel separation: . . . . .Better than 95dB (1kHz)

Analog inputs: . . . . .D-sub 25-pin, balanced
    Nominal input level: . . . .+4dBu
    Impedance: 10kΩ
    Maximum input level: .20dBu, 22dBu, 24dBu, selectable
Analog outputs: . . . . .D-sub 25-pin, balanced
    Nominal output level: . . . .+4dBu
    Impedance: 100Ω
    Maximum output level: . . . . .20dBu, 22dBu, 24dBu, selectable

Design and specifications subject to change without notice.

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