



## ADAT HD24 24 Track Hard Disk Recorder Frequently Asked Questions

#### **Questions**

#### I. The New ADAT/FST Recording Format

- 1. What's the difference between the HD24's disk format (ADAT/FST) and other formats?
- 2. What are the main advantages of ADAT/FST?
- 3. What is the sample rate and bit width?
- 4. This is a proprietary format. How can I get files into my computer?
- 5. Are there any other manufacturers using this type of format?
- 6. Does the drive need to be de-fragmented?
- 7. What type of drives can be used?
- 8. Is there a size limit for hard drives in HD24?
- 9. How long does it take to format the hard drive?
- 10. Is there any editing on board?
- 11. What's the average seek time?
- 12. Will Alesis offer empty caddies for additional drives?
- 13. How many removeable drives can be installed simultaneously in HD24?
- 14. How can I backup my data?
- 15. Can I eject a drive while the other drive is playing/recording?
- 16. Can I record on both drives simultaneously (mirroring)?
- 17. Does the HD24 record its 24 tracks across two hard drives?
- 18. Is there going to be a DVD-RAM drive module available in the future?
- 19. How long does it take to backup a 10GB drive?
- 20. How long will it take to transfer audio between the HD24 and a computer via the Ethernet port?
- 21. Are the caddies safe enough for shipping drives via mail?

#### II. Editing

- 22. What kind of editing does the HD24 have on board?
- 23. Can I copy a stereo backing vocal part to different locations? Can I repeat an eight-bar section of a song across all 24 tracks?
- 24. How can I insert 8 or 16 bars in the middle of a song, across all 24 tracks?
- 25. How many undo levels are there?
- 26. Can I UNDO a recording or overdub?
- 27. Can I use locate points as reference for editing points?
- 28. Can I use bars and beats instead of ABS time?



The First Hard Disk Recorder Worthy of the Name ADAT

- 29. Is there ABS and relative time?
- 30. How many locate points are there in memory?
- 31. Can I set locate points on the fly?
- 32. Can I assign names to locate points so I can find my way around?
- 33. Is there a scrub function to fine-tune locate points?
- 34. Can I punch in/out across all 24 tracks?
- 35. Can I punch in/out on the fly using the track arming buttons?
- 36. How many different songs can exist on a drive at a time?
- 37. Does ADAT HD24 have a screen option for displaying waveforms and doing advanced editing?

#### III. Computer editing and the Ethernet port

- 38. Which options do I have to transfer audio to a computer and back?
- 39. How is the Ethernet port used? How do I connect the HD24 to an Ethernet network?
- 40. What kind of software do I need to transfer files to a PC/Mac?
- 41. What file formats does it support?
- 42. Can I share files/machines over the Internet?
- 43. How long does it take to transfer a track via Ethernet or the Internet?

#### IV. Inputs and Outputs

- 44. What type of converters does it use?
- 45. What's the dynamic range of the A/D and D/A converters?
- 46. Can I connect both balanced and unbalanced signals to the analog I/O?
- 47. Does it have an ELCO connector?
- 48. How can I use the ADAT HD24 with an eight-bus console?
- 49. What formats/resolution does the ADAT Optical Interface on HD24 support?

#### V. High-resolution recording

- 50. How many tracks can I record in 88.2/96 kHz?
- 51. Can I record in 24/96 from a digital source?
- 52. Can I record in 24/96 from an analog source?
- 53. Can two or more HD24's be synchronized together to make a 48 or 72-track recorder?

#### **VI. Synchronization**

- 54. Can the HD24 sync to external word clock?
- 55. How can I sync my MIDI sequencer to the HD24?
- 56. Can the HD24 be controlled via MIDI Machine Control?
- 57. Can the HD24 slave to MIDI Timecode (MTC)?
- 58. Can I slave the HD24 to SMPTE and/or video sync? Can the BRC act as a SMPTE/Video synchronizer for HD24?
- 59. How does the HD24 work in an ADAT system with a BRC? How does a BRC "see" an HD24?
- 60. Can I connect a CADI to the Ethernet port?
- 61. Which other synchronizers can be used with HD24?
- 62. Is there a tempo track for MIDI sequencers?



#### The First Hard Disk Recorder Worthy of the Name ADAT

#### VII. Remote controls

- 63. Does the HD24 ship with a remote control?
- 64. What functions are on the LRC?
- 65. Will there be a custom remote control for the ADAT HD24?
- 66. How will the new remote be connected to the HD24?
- 67. Will it support all transport, locate and editing functions?
- 68. When will this amazing new remote be available? How much will it cost?
- 69. How many ADAT HD24s can be controlled from the remote?
- 70. Can larger sets be controlled from a central remote controller? How about track arming in that case?







#### **ADAT HD24 Frequently Asked Questions**

#### I. The new ADAT/FST Recording Format

#### 1. What's the difference between the HD24's disk format and other formats?

The Alesis ADAT File Streaming Technology, or ADAT/FST, records onto hard drives in a unique way designed from the ground up for multitrack audio. Many other hard disk recorders use the Microsoft-designed FAT32 or Apple's HFS+ file format. Since these were originally designed for the relatively small data files used in personal computers, not for real-time multitrack recording and playback, they break up audio into many small files scattered across the disk. Alesis ADAT/FST keeps all the tracks of a song in large associated clusters on the hard disk, so the disk doesn't have to "hunt" all over during recording and playback.

#### 2. What are the main advantages of ADAT/FST?

- A. It allows the use of inexpensive IDE drives. This type of hard drive has become so affordable that you can leave the drives themselves on the shelf as the permanent storage medium—you don't have to backup to tape or optical media just so you can reuse the drive. ADAT/FST is so efficient that it can accept any IDE drive made today, including 5400 RPM drives, and UDMA-33/66 is not required. The drives required for compet ing systems cost more because they require exceptionally fast seek times to keep up with the demands of multitrack audio recording in real time on a FAT32 or HFS+ formated hard disk.
- B. Virtually instantaneous access time to any given point within a song, or between songs. Locate to the start, end, middle or wherever in the song that you like without hesitation.
- C. Longer drive life and less maintenance. ADAT/FST's audio-optimized recording scheme is less likely to trash your drive. Traditional recording systems have been known to wear out high performance hard drives in a matter of months. With ADAT/FST, your low-cost drives can last for years.
- D. No defragmenting required. Because data is written to the disk in such an audiooptimized, reliable manner, the ADAT/FST never requires your drive to be defragmented. Even after editing, a track appears as a whole piece, not dozens of fragments.



#### 3. What is the sample rate and bit width?

HD24 records at 24bit and sample rates of 44.1k and 48k (88.1k and 96K when using the optical inputs and any third party A/D converters that support 96K sampling rates).

#### 4. This is a proprietary format. How can I get files into my computer?

You can transfer standard .AIF or .WAV files from the ADAT HD24 to a computer or even to the Internet using its built-in Ethernet port. In fact, as you'll learn later in this document, you can set up HD24 to act is it's own FTP server and access files from your web browser. You can even make files available on the internet directly from the unit.

#### 5. Are there any other manufacturers using this type of format?

Currently, ADAT/FST is used only by Alesis. However, like other Alesis standards (such as ADAT Optical and ADAT Sync), we anticipate other companies will support this advanced format.

#### 6. Does the drive need to be de-fragmented?

No. The HD24's file system essentially de-fragments itself as it records. The "cluster size" of the Alesis file system is much larger than other disk file systems, so files are easier to find. In addition, all tracks for a given song are saved in adjacent sectors, not scattered in 24 different locations. The end result? No matter how many songs you load on a disk, or how many overdubs and edits you make, the drive never gets fragmented enough to affect performance.

It's important to note that the ADAT HD24's file system is NOT the same as "tape mode" in some other hard disk recorders, which may erase songs following it on the drive. The ADAT/FST does not permanently assign a given length of time in a particular song to any sector of the drive. It is still random-access; it's just not as scattered as other disk formats.

#### 7. What type of drives can be used?

Most currently-manufactured IDE drives (note that all "IDE" drives are actually "EIDE" now) with a spindle rate of 5400 rpm or higher will work with the ADAT HD24. Higher-speed IDE drives are acceptable as well. The only requirement is that it be ATA-4 compatible. Almost all drives currently sold meet this requirement, and most exceed it by a significant margin. And costs are low: 20 GB drives are available for under \$100, which makes them as inexpensive per megabyte as tape. As an aid to our customers, Alesis plans to maintain an approved drive list on the Alesis web site. HD24 does not use SCSI or SCSI-2 drives.

#### 8. Is there a size limit for hard drives in HD24?

The current ATA specification for the maximum size of IDE drives is 137GB, but this is likely to change soon. The ADAT/FST file system could support drives up to 2.2TB (2200 GB), and a firmware upgrade would make larger sizes available to the HD24. Common limitations on hard drive sizes for FAT32, HFS, etc. are not applicable. So, in the future, as long as the drive



physically fits in a 3.5" disk caddy, the disk space could be almost as many gigabytes as you want.

Having said that, consider that an 80 GB drive (available today for around \$250) holds 6 hours of 24-track audio (that's 8,640 track minutes), the equivalent of 24 forty minute 8 Track ADAT tapes (actually more expensive at around \$350).

#### 9. How long does it take to format the hard drive?

The HD24 offers two format operations. A normal format, which is called a "quick" format on the HD24, completes in less than 10 seconds. Another option for drive formatting is called a "long" format. The long format writes zeros to every location on the drive in order to ensure that data is erased. A long format of a 10GB drive will take approximately 15 minutes.

#### 10. Is there any editing on board?

Yes, the HD24 comes fully equipped with built-in editing. The user can take advantage of the HD24's scrubbing feature to hear any or all tracks scrubbing at the same time. Scrub to your edit in and edit out points, and perform a cut, copy or paste to duplicate regions or whole tracks in a song. Tracks can be individually selected for editing on the front panel as well. See the editing section for more on, uh, editing.

#### 11. What's the average seek time?

If you're talking about locate time, the response from when you hit PLAY, is incredibly fast. Since the ADAT HD24 puts all tracks for a song in one place on the disk, you'll hear audio in less than 1/10th of a second. (Competing recorders may take over 2 seconds to locate the track on disk before you hear audio.)

For advanced users looking for the "seek time" specification for the hard drives the HD24 uses, this will vary on a drive to drive basis. Many hard drives have a seek time of about 9mS. Seek time variance of currently-available hard drives will not have an affect on HD24 performance.

#### 12. Will Alesis offer empty caddies for additional drives?

Yes. Empty caddies will be sold through your local Alesis dealer or through the Alesis web site and will cost under \$25 retail (U.S.). It's quick and easy to install a raw drive in a caddy—just a few screws to attach it and two plugs to connect it.

#### 13. How many removeable drives can be installed simultaneously in HD24?

While other hard disk recorders only offer one or no removeable drives, the HD24 has two. This allows for much more flexibility when it comes to managing your projects.



#### 14. How can I backup my data?

First of all, unlike most HD recorders, you don't have to backup just to clear space on the drive for a new song. You can simply insert a new drive, same as tape. But, it's easy to make a backup safety copy in several different ways:

A. Backup onto another hard drive in the other drive bay of the HD24. This method is fast, foolproof, inexpensive, and (unlike other HD backup methods) allows you to immediately remount the project in seconds without waiting for an upload. Unlike other recorders, 2 machines are not required to make a backup of your work.

B. Backup onto a computer using the Ethernet port connecting the HD24 to a computer or computer network. Any computer software that has FTP (File Transfer Protocol) capability (such as Netscape Navigator or Windows Explorer) can "see" each Song on the HD24 as a file folder, and when you open the file folders you'll see the tracks of each song as individual files (both AIFF or WAV are available). Once there, you can drag them onto any storage media on your network (such as CD-R, DVD-RAM, Jaz drives, etc.) or onto the hard drive of the computer. You could even have a friend in another country download files from your HD24 over the Internet...after you give him or her your FTP address and a password, of course.

C. Backup onto any ADAT-compatible recorder. The HD24 has 3 sets of ADAT Optical jacks in addition to ADAT Sync in and out ports, so you can transfer 24 tracks at a time with sample accuracy to any ADAT tape system, computer interface, digital mixer, or other hard disk recorder in real time, with no degradation in sound quality (the ADAT system will automatically dither down to 20bits from the 24 bit HD24 recording). Also, the ADAT/EDIT system will allow you to transfer back and forth in sample-accurate sync to any Mac or PC with a PCI card slot.

#### 15. Can I eject a drive while the other drive is playing/recording?

The hard drives in the HD24 are hot-swappable (unlike SCSI drives on many other systems), which means that you can insert or take out a drive without turning the HD24's power off first. A hard drive can be installed at any time. However, there is a procedure to follow before pulling a drive out. Each drive bay has a small light next to it showing the drive's status. As long as a drive's light is OFF, you can pull it out. However, if the light is green (ready) or red (active), a disk must be dismounted and spun down before pulling it out. Using the Drive 1/Drive 2 buttons, you may dismount and remove either drive at any time except during recording. The system will not allow the user to dismount a drive from the front panel drive buttons while it is currently in record. If a drive is installed during recording, the system will wait until the unit is stopped before powering up the drive.



#### 16. Can I record on both drives simultaneously (mirroring)?

No. If a backup of song data is required, then the user can copy the song from drive to drive after it is recorded, or use a second ADAT HD24 connected to the first with three ADAT Optical cables and a Sync cable to record a mirror copy in real time.

#### 17. Does the HD24 record its 24 tracks across two hard drives?

No, every single drive allows full 24 track recording. The second drive is simply for backup purposes and extra flexibility.

#### 18. Is there going to be a DVD-RAM drive module available in the future?

No. DVD-RAM drives aren't even close to being fast enough to deal with 24 track, 24-bit audio being simultaneously recorded and played back in real time as is necessary for this application. Only hard disks can handle this, and it's likely to stay this way for many years to come. To use a DVD for storage or backup, simply attach one to a computer, and transfer files from the ADAT HD24 to the computer.

#### 19. How long does it take to backup a 10GB drive?

From drive to drive of the HD24, about 20 minutes. To back up individual songs depends on the length of the song—a full-size 24-track recording 5 minutes long will take about 2.5 minutes to back up to the other drive.

20. How long will it take to transfer audio between the HD24 and a computer via the Ethernet port?

Transfer speed will vary depending on the speed of the computer and the software used. The HD24 transfer speed itself is over 4 times realtime so transferring a vocal track to a workstation for some more in depth tweaking will only take a few moments. However, moving a full 24-track song using Ethernet can take longer than realtime because the format does not transfer all 24 tracks at once. In any case, it will vary depending on the speed of the computer or network receiving the files, and upon the FTP software of the computer. Specialized FTP transfer software (like Transmit, available as shareware from Panic Software, or WSFTP (PC), or Fetch (Mac)) does the job in 1/6th the time of some web browser software. Transferring a 24-track 4-minute song takes about 16 minutes to a Mac using Transmit. Once in the Mac or PC, you can drop the tracks into any digital audio editor (such as Logic Audio by Emagic, the company who designed the ADAT/EDIT software) and perform waveform editing, mixing and DSP.

#### 21. Are the caddies safe enough for shipping drives via mail?

Additional padded packaging is necessary for reliable transportation/shipping. Shock-resistant caddy carriers will be available which will help to protect the drives during handling.



#### II. Editing

#### 22. What kind of editing does the HD24 have on board?

The HD24 comes fully equipped with built-in editing. The user can take advantage of the HD24 scrubbing to hear any or all channels scrubbing at the same time. Scrub to your edit in and edit out points, and perform a cut, copy or paste to copy regions or whole tracks in a song.

### 23. Can I copy a stereo backing vocal part to different locations? Can I repeat an eight-bar section of a song across all 24 tracks?

Yes. Any portion of any song can be copied and then pasted to the new location. The 25 locate points for each song make this surprisingly simple.

#### 24. How can I insert 8 or 16 bars in the middle of a song, across all 24 tracks?

The HD24 allows the user to copy and paste data into different songs or hard drives. Inserting of material is possible by creating a new song and editing the sections together. Mark the point at which you wish to insert the new material. The start of the song to the "mark point" is the Start edit region. The "mark point" to the end of the song is the End edit region. Select the Start edit region, paste it into the new song. Second, select the 8 or 16 bars that should be added, and paste at the end of the new song. Next, select the End edit region, and again paste at the end of the new song. Future versions of the firmware may allow for directly inserting material in a song.

#### 25. How many undo levels are there?

Depending on the size of the edits, the HD24 can support as many as 99 levels of UNDO. The HD24 uses a reserved space on the hard drive to perform editing operations. If editing operations are large, then the number of UNDO operations will be reduced.

#### 26. Can I UNDO a recording or overdub?

No. UNDO applies only to editing functions. However, you can always save a Song as a different Song, or copy a track, before overdubbing onto it to preserve an original version.

#### 27. Can I use locate points as reference for editing points?

Locate points 23 and 24 of each Song are predefined as Edit In/Edit Out points.

#### 28. Can I use bars and beats instead of ABS time?

Not at this time, because the ADAT HD24 doesn't have a tempo map feature. Future releases of the firmware may support bars and beats.



#### 29. Is there ABS and relative time?

ABS and relative times do exist on the HD24. ABS time is always 0 for the start of a song, but this is user definable (for example, to match a location on tape-based ADATs in the same system). All locate, punch and edit points will be automatically recalculated from the ABS time to display the new relative time (i.e., the points stay in the same place relative to audio...they're just numbered differently).

#### 30. How many locate points are there in memory?

Each song has 25 locate points associated with it (zero, plus 20 standard points, 2 punch points, and 2 edit points). Seven of these may be accessed directly from the front panel. And, there can be 64 songs available on a drive, for a total of 1600 location points. All of these are automatically stored and retrieved with the song.

#### 31. Can I set locate points on the fly?

You bet. Locate points may be set "on the fly" by pressing the Set Locate button. As on the BRC, the new locate point will automatically be written to the next locate point.

#### 32. Can I assign names to locate points so I can find my way around?

Yes. This works just like the Alesis BRC: each locate point has an 8-character name you can enter yourself, or simply choose from a list of preset names ("Verse 1", "Chorus 1", "Solo" etc.) with a single button push.

#### 33. Is there a scrub function to fine-tune locate points?

The HD24 can scrub all tracks of audio for a given song. When stopped, the user can press and hold the Stop button, followed by the FastFwd or Rewind keys to scrub any or all tracks. (Other remote scrubbing from wheels on a MIDI controller or the M20/CADI, is not supported.) Or, you can trim a point numerically in the display, second by second, frame by frame, until it sounds right.

#### 34. Can I punch in/out across all 24 tracks?

Yes, the HD24 can support punching in on all 24 tracks simultaneously.

#### 35. Can I punch in/out on the fly using the track arming buttons?

The HD24 does not currently allow the user to punch in/out using the track arming buttons. All tracks that the user desires to punch in on must be set prior to pressing Rec+Play.

#### 36. How many different songs can exist on a drive at a time?



Each hard drive in the HD24 can handle up to 64 different songs.

## 37. Does ADAT HD24 have a screen option for displaying waveforms and doing advanced editing?

No, there is no VGA jack on the HD24's rear panel. But yes, you can see waveforms...by transferring the audio to any computer and using your favorite editing software. While some competing recorders feature built-in computers and VGA display options, you could buy a complete computer based editing system (including computer, monitor and software) and an HD24 for the same cost as these recoders. And you'll be working on industry standard editing systems, not learning a whole new version of editing developed specifically for one recorder. It just makes more sense to use an external computer for waveform editing, instead of forcing people to pay for a computer within a recorder. There are several different ways to transfer standard audio files from the ADAT HD24 to a PC or Mac, where you can use the many fine (and sometimes free) multitrack editing programs available from many different vendors, including Alesis' own ADAT/EDIT featuring software from Emagic.

#### III. Computer editing and the Ethernet port

#### 38. Which options do I have to transfer audio to a computer and back?

The HD24 comes standard with an Ethernet port which can be used to move files to and from your computer. Your HD24 files can be read as either AIFF or WAV files. In addition, you can stream audio to a computer via the ADAT optical connectors: an ADAT/EDIT card in your PC or Mac transfers audio in sync, eight tracks at a time. Many other computer interfaces with multiple ADAT Optical ports are available from other manufacturers—if it works with an existing ADAT, it will work with an ADAT HD24.

#### 39. How is the Ethernet port used? How do I connect the HD24 to an Ethernet network?

The Ethernet port is used by connecting your HD24 Ethernet jack to your computer either through a network hub, or directly to a single computer using a crossover type Ethernet network cable (NOT a standard pin-to-pin cable). Your PC must have a 10/100 Base-T network card installed; most Apple Macintosh computers provide this jack as standard equipment. If you don't have one, any local computer store will have one for about \$20.

#### 40. What kind of software do I need to transfer files to a PC/Mac?

Once a physical Ethernet connection is made, the user can access the HD24 using a Web Browser (such as Internet Explorer or Netscape Navigator), or any FTP client software. We've found that Web Browsers are much slower at transferring via FTP, so we recommend a stand-alone FTP client. Some free FTP client programs are WSFTP (PC) and Fetch (Mac) and there are dozens more shareware and freeware utilities available for FTP file transfer from services



like shareware.com.

#### 41. What file formats does it support?

When using Ethernet to transfer files, songs on the HD24 will be available as AIFF or WAV files.

#### 42. Can I share files/machines over the Internet?

The HD24 can be connected directly to the Internet. The networking setup pages in the utility menu allow the user to setup its IP address, Subnet Mask, and Gateway. If the HD24's Ethernet jack is attached directly to a cable modem/DSL line, its song files may be transferred over the Internet to any computer that has been given the correct IP address (and, if you wish, a password). Contact your Internet Service Provider to find out what IP address you should enter into the HD24's Utility menu. Note: you can't record or play back while the HD24 is in FTP Server mode.

#### 43. How long does it take to transfer a track via Ethernet or the Internet?

Transfer speeds will depend on the speed of the connection, and the number of tracks (see question # 20). But keep in mind: the result will be uncompressed, 24-bit linear digital audio, which is the "gold standard" of audio quality.

#### IV. Inputs and Outputs

## 44. Do I have to purchase digitial and analog input and output options in order to begin recording?

No. Unlike many higher priced competitors, the HD24 comes complete with 24 channels of analog, 1/4" balanced TRS I/O as well as 24 channels of digital ADAT Optical (allowing for sampling rates up to 96k). Yes, we're selling the car complete with tires.

#### 45. What type of converters does it use?

The HD24 uses 24-bit A/D and 24-bit D/A converters with 128x oversampling developed by Alesis Semiconductor.

#### 46. What's the dynamic range of the A/D and D/A converters?

The A/D and D/A converters have approximately 104dB total dynamic range.

#### 47. Can I connect both balanced and unbalanced signals to the analog I/O?

The HD24 supports the use of either unbalanced or balanced inputs and outputs, via the forty-eight 1/4" TRS jacks on the back panel. No external hardware is required. Any analog mixer will work with it.



#### 48. Does it have an ELCO connector?

No. Since it's a 24-track, it would require three ELCO connectors, and the cost of a typical cable set would be prohibitive.

#### 49. How can I use the ADAT HD24 with an eight-bus console?

Like earlier versions of ADAT, the HD24 features input normalling, so you can set it up so Input 1 will automatically "patch through" to Track 9 and 17 if desired. There are input normalling features for both the analog and digital inputs. You could even use it with a four-bus console like the Alesis Studio 32.

#### V. High-resolution recording

#### 50. What formats/resolution does the ADAT Optical Interface on HD24 support?

Each of the six optical connectors used on the HD24 supports 8-channel, 24-bit, (up to) 48kHz data. In addition, each connector can support 4-channel, 24-bit (up to) 96kHz data. The standard for implementing ADAT Optical at high sample rates has been established by Alesis, and third-party manufacturers are already building converters for this purpose (Panasonic, Swissonic, Agogee, Sonorus and Euphonix to name a few and many more are developing these devices)

#### 51. How many tracks can I record in 88.2/96 kHz?

Up to 12 tracks may be recorded at sample rates of 88.2k and 96k.

#### 52. Can I record in 24/96 from a digital source?

Right out of the box, the HD24 is capable of recording 12 tracks of 24-bit audio at the 96kHz sample rate, if it receives 96kHz digital signals at the ADAT Optical connectors on the rear panel.

#### 53. Can I record in 24/96 from an analog source?

Analog recordings at 24-bit, 96kHz, 12 channels are already possible using external converters from third party manufacturers. Alesis is also planning an upgrade that will replace the internal A/D converters with 96k versions.





#### 54. Can two or more HD24's be synchronized together to make a 48 or 72-track recorder?

Yes, you can connect up to FIVE HD24s, for a total of 120 tracks. Just like ADAT, adding another machine to the chain requires only a single 9-pin cable connecting the SYNC OUT of one machine to the SYNC IN of the next. Unlike some other units on the market, this synchronization of multiple ADATs in a system is guaranteed to be sample-accurate every time.

#### 55. Can the HD24 sync to external word clock?

Yes, the HD24 comes standard with a 75-ohm terminated BNC connector for syncing to an external or house word clock. It will automatically sync to an incoming digital signal on its ADAT Optical connectors.

#### 56. How can I sync my MIDI sequencer to the HD24?

Any sequencer that can read MIDI Time Code can receive it from the ADAT HD24's rear-panel MIDI OUT jack. Configure your sequencer to synchronize to MIDI Time Code (MTC). (MIDI Clock and Song Position Pointer are not currently supported.) Configure the HD24 to transmit MTC at the proper frame rate (via its MIDI pages), and you will be all set. Don't forget to disable MIDI echo on the sequencer! Typically, you would also connect MIDI OUT from the sequencer to the MIDI IN of the HD24, and configure the sequencer to transmit MIDI Machine Control (MMC) commands.

#### 57. Can the HD24 be controlled via MIDI Machine Control?

The HD24 has complete support for MIDI Machine Control, so transport commands (such as Play, Stop, Rewind, Locate) may be sent to it via MIDI.

#### 58. Can I slave the HD24 to SMPTE and/or video sync?

Yes. The HD24 can be synchronized to SMTPE or Video with the use of a BRC, an M20 or products from third party manufacturers that feature ADAT Sync.

# 59. How does the HD24 work in an ADAT system with a BRC? How does a BRC "see" an HD24? The HD24 can be used to expand and update any tape-based ADAT/BRC system. Using the Alesis Sync In/Sync Out connectors, the HD24 appears as three 8-channel ADATs in your chain. Once a chain of machines are established, the HD24 will behave as extremely fast tape-based ADATs.

#### 60. Can I connect a CADI to the Ethernet port?

While the HD24's Ethernet port and the Alesis CADI use the same connectors, the two devices are not compatible.



#### 61. Which other synchronizers can be used with HD24?

Some other devices that can emulate the Alesis BRC, such as the MOTU Midi Timepiece A/V, can be used to control the HD24. The Alesis M20's synchronization capabilities are unparalleled, and it adds another eight tracks plus tape backup to the system.

#### 62. Is there a tempo track for MIDI sequencers?

The HD24 does not currently support a tempo track for Midi sequencers; MIDI Time Code is the way to synchronize a sequencer to the HD24.

#### VII. Remote controls

#### 63. Does the HD24 ship with a remote control?

The HD24 comes standard with a custom version of the LRC. As most ADAT owners know, the LRC is a wired remote control that connects directly to the rear of the HD24. Also, a PUNCH jack allows you to punch in and out using any standard momentary footpedal.

#### 64. What functions are on the LRC?

The functions that it supports are: Stop, Play, Record, Fast Forward, Rewind, Rehearse, Set Locate, Locate O, Locate Punch In, Locate Punch Out, Locate Loop Start, Locate Loop End and Auto Loop.

#### 65. Will there be a custom remote control for the ADAT HD24?

A new remote for the HD24 will be available for the HD24 at a later date.

#### 66. How will the new remote be connected to the HD24?

It will connect to the HD24 through the Sync In connector on the rear panel, just like a BRC to an ADAT.

#### 67. Will it support all transport, locate and editing functions?

The remote is designed to totally support the HD24, which includes all transport, locate and editing functions.

#### 68. When will this amazing new remote be available?

We're planning for delivery in the near future.

#### 69. How many ADAT HD24s can be controlled from the remote?

The new remote can control up to five HD24s (120 tracks).



## 70. Can larger sets be controlled from a central remote controller? How about track arming in that case?

Alesis has no current plans to support more than five HD24s from the remote or other controllers.

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