dataMaster
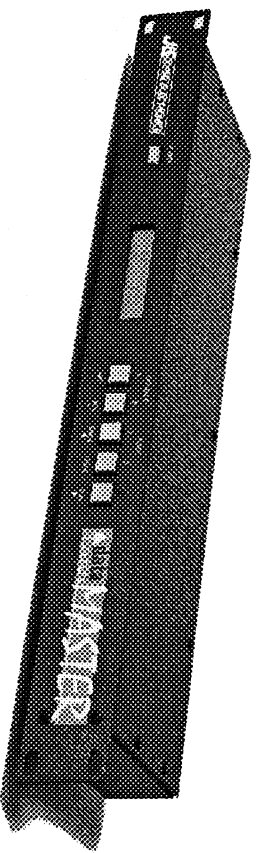
Professional Synchronizer for the Alesis adat

Owners Manual

Fifth Edition, April 1996
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JLCooper ELECTRONICS

Greetings

Thank you for purchasing the JLCooper dataMASTER, the SMPTE Synchronizer for the Alesis adat.

The dataMASTER allows you to lock your Alesis adat to SMPTE, to create, for example, a hybrid analogue and digital studio, with the adat chase-locking to video or audio tape.

With dataMASTER, the adat can be either the master or the slave. That is, your adat can chase lock to incoming SMPTE, or, your adat can generate SMPTE. You can send that SMPTE into a machine synchronizer, so that analogue tape recorders can lock to it. Or, use the SMPTE to drive a mixing console automation system.

MIDI Time Code (MTC) and MIDI Machine Control (MMC) are also fully supported. That means that your adat can be either the master or slave to digital audio workstations and sequencers that read and generate MTC.

Before you begin, please do two things. *First, check the revision number of your Alesis adat*. Adat versions 3.06 or 4.03 (or higher), or XT versions 1.04 (or higher) are required to work with JLCooper's dataMASTER. Check it by pressing **Set Locate** and **Fast FWD** at the same time. If you need to update your adats, contact Alesis technical support.

Then, please fill out and send in your registration card so that we can notify you of any software updates or related products as they become available.

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Hooking it Up

Connecting dataMASTER to one adat

For a single adat system, connect the two sync cables as shown.

One cable goes from the dataMASTER connector labeled "TO ADAT'S SYNC IN" to the adat's SYNC IN connector.

The other cable goes from the dataMASTER connector labeled "TO ADAT'S SYNC OUT" to the adat's SYNC OUT connector.
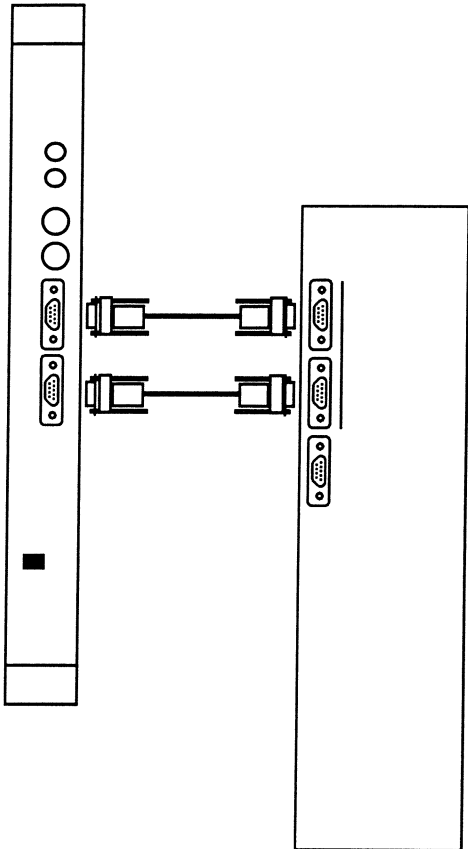
Connecting dataMASTER to more than one adat

For multiple adat systems, connect the sync cables as shown. The adats are chained together by connecting the SYNC OUT of the first adat to the SYNC IN of the next adat.

The SYNC OUT of the last adat in the chain connects to the dataMASTER "TO ADAT'S SYNC OUT". The dataMASTER's "TO ADAT'S SYNC IN" connects to the SYNC IN on the first adat.

Up to 16 adats may be chained in this manner.

Hooking It Up

MIDI Connections

MIDI Out

If you intend to slave a sequencer or digital recorder to MIDI Time Code, connect the MIDI Out of dataMASTER to the MIDI in of the computer MIDI interface.

MIDI In

If you intend to slave the adat to MIDI Time Code, connect the MIDI Out of the computer's MIDI interface to the MIDI In of dataMASTER.

Computer MIDI Interface

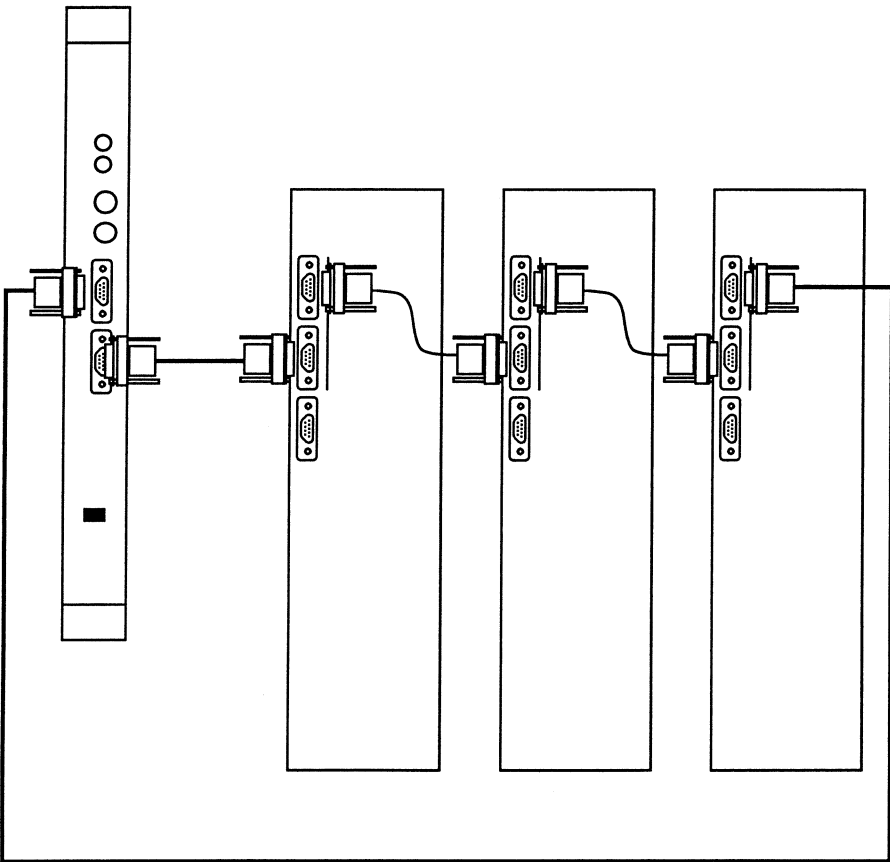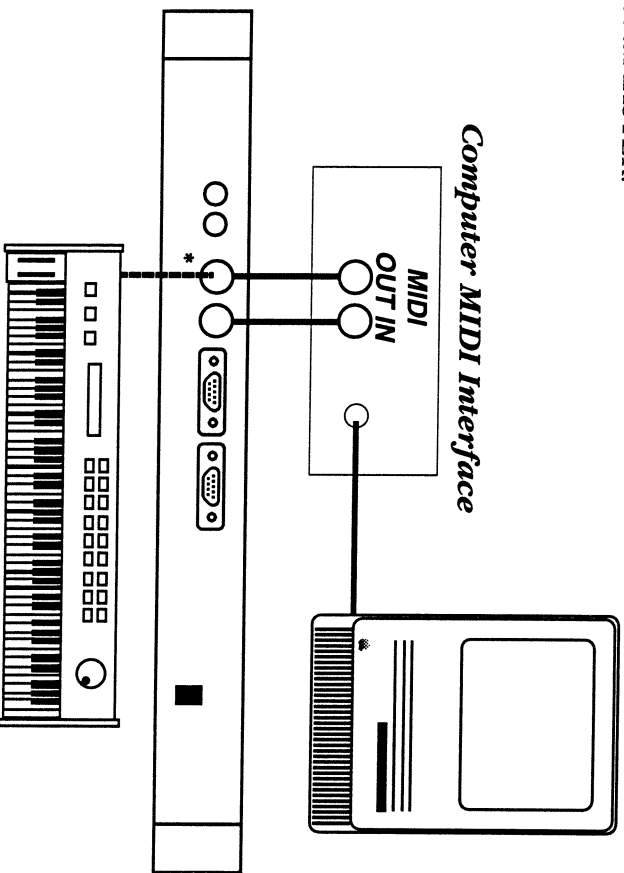To record additional MIDI tracks on an MTC-based sequencer, connect the MIDI out of the keyboard controller or fader controller to the MIDI In of the dataMASTER. dataMASTER's MERGE feature should be enabled in this case. (See page 27).

*If your application requires slaving the adat to MTC *and* recording additional MIDI tracks, connect the system using an outboard MIDI merger or switcher.

SMPTE Time Code Connections

Hook up the dataMASTER to your analogue tape recorder or machine synchronizer using two quarter-inch audio cables.

Connect the Sync Out to a line input of your analogue tape recorder or machine synchronizer. Usually the highest track is used for striping SMPTE, e.g., track 24 on a 24-track.

Connect the sync track output of your tape recorder to the dataMASTER's Sync In. Refer to illustration.
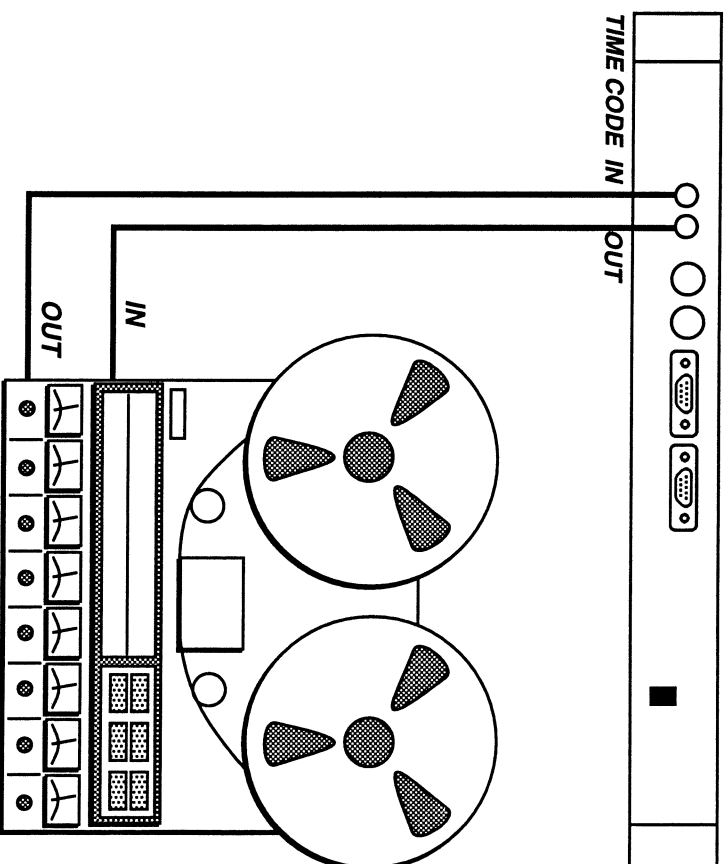
Multi Track Tape Recorder
Connect Time Code to Last Track

Quick Start: adat as Slave to SMPTE

This is the "OK, lets get on with it" chapter. These instructions proceed from the assumption that the most common application for the JLCooper dataMASTER is to use it to make the adat a slave to incoming SMPTE time code.

First, connect the cables to the dataMASTER according to the diagrams on the preceding pages.

Turn the adat(s) on first. Wait about 5 seconds for the adats to initialize. Then, turn on the dataMASTER and observe the display.

You should momentarily see the dataMASTER version number. If the everything is connected correctly, you should also see a brief message about the number of adat(s) found in the system.

Your SMPTE time code is most likely coming from an analogue tape recorder or a SMPTE generator of some kind. There are two things you need to know about the SMPTE time code that you are sending into the dataMASTER. You must know its **Frame Rate** and **Starting Time**.

It is not uncommon for audio tape to have time code that starts at 00:00:00:00, at 30 frames per second. If this is the case, you are ready to go right now, with absolutely nothing to setup on either the dataMASTER or the adat.

Simply press play on your analogue tape recorder. Regardless of where you start the tape, the adat will chase and lock. The adat's time indicator will agree with the SMPTE time of your analogue tape or synchronizer after the chase.

When the SMPTE time on your the master is 00:00:00:00, then your adat(s) will be at 00:00.

If your start time is something other then 00:00:00:00, or if your frame rate is other than 30, then follow the instructions on the next two pages.

Quick Start: adat as Slave to SMPTE

Setting The Offset Time

The offset time is what allows you to chose how the adat will "line up" with the SMPTE source. In other words, at what location in your SMPTE source should the adat read 00:00?

For example, say you are locking to a video tape which has one analogue track striped with SMPTE starting at 01:00:00:00 (that is, one hour.)

You will want to set the dataMASTER's offset time so that when you start the VTR, the adat will chase and lock. If you do not set an offset time, then the adat will think you want it to fast forward to one hour. Since the adat tape itself is only 40 minutes, you would see the dataMASTER display an EOT (End of Tape) error message. Set the Offset to **minus** 1 hour:
The LCD shows:

```
┌─────────────────┐
│   dataMaster    │
│  adt as slave   │
└─────────────────┘
```

If it does not, press **CLEAR**.
Then, press **ENTER**.

```
┌─────────────────┐
│   Set Offset?   │
│      (Y/N)      │
└─────────────────┘
```

Press **YES**.

```
┌─────────────────┐
│    Offset is    │
│  +00:00:00:00   │
└─────────────────┘
```

- The ENTER button moves the cursor in the LCD.
- The YES (+) button increments the number above the cursor.
- The NO (-) button decrements the number above the cursor.

The "+" flashes. Press **NO** to change it to "-".
Press **ENTER** twice until the hours digit is flashing.
Press **YES** (+) once to place a 1 in the hours digit.

Press **ENTER** to scroll across all the digits and exit the Offset function.

```
┌─────────────────┐
│    Offset is    │
│  -01:00:00:00   │
└─────────────────┘
```

Now, when you press play on your VTR transport controls, the adat will chase and lock. When the SMPTE time on your video tape is at 1 hour, the adat display will read 00:00

Quick Start: adat as Slave to SMPTE

Setting The Frame Rate

The dataMASTER needs to know the frame rate of the SMPTE time code coming into it.

The frame rate choices are
- 24   • 29.97 non-drop   • 30 non-drop
- 25   • 29.97 drop-frame   • 30 drop-frame

24 is used for film work, 25 is used in European and Australian video. 29.97 nd, 29.97 df, and 30 df are all used in video. 30 non-drop is often used in audio-only applications.

If you generated the code yourself, then of course you know its frame rate. Otherwise, you must ask the person who gave you the tape. To set the frame rate,
The LCD shows:

```
┌─────────────────┐
│   dataMaster    │
│  adt as slave   │
└─────────────────┘
```

If it does not, press **CLEAR**.
Then, press **ENTER 4 times**.

```
┌─────────────────┐
│ Frame rate=30 nd │
└─────────────────┘
```

Press **NO**, until desired frame rate is shown.

- The NO (-) button cycles through a menu of frame rates.

For example, to select 29.97 non-drop, Press **NO** four times until the LCD indicates:

```
┌─────────────────┐
│ Frame rate=29 nd │
└─────────────────┘
```

Press **CLEAR** once to exit the Offset function.

Now, dataMASTER is set to respond to 29.97 non-drop. Be sure that you choose the correct frame rate whenever starting a new project, and that you do not change the frame rate in the middle of a project.

The Front Panel Display and Controls

The dataMASTER has an LCD (liquid crystal display), which most of you are fairly familiar with. There is only one simple main menu, so you are not likely to get lost in too many devious side chains.

The four buttons are labeled

NO   YES   ENTER   CLEAR

Pressing *only* **ENTER** repeatedly will scroll you down through the one menu.

The first item in the menu is **adat as slave** or **adat as master.**

One or two other messages are displayed briefly on power up.

If you get lost at any time, you can press **CLEAR** once to return you to the top of the menu.

When you are presented with a choice to alter or activate some function, you may skip the item by pressing ENTER, or answer the question asked with a YES (+) or NO (-) push.

If a parameter or function can be changed, there is a cursor displayed beneath it and the character flashes. ENTER advances the cursor.

Press YES (+) or NO (-) to increment or decrement the number above the cursor. To accept the current setting, and move the cursor to the next selection, press ENTER.

To summarize:

Use YES (+) or NO (-) to answer questions, turn on or off functions, change number values above cursor.

Use ENTER to accept the current settings, advance the cursor, and to view the next item in the menu.

Version of internal firmware. This is only displayed momentarily after power-up.

Number of adats connected. This is only displayed momentarily after power-up, when the adat is the slave.

Top of menu. Pressing the CLEAR button always returns you to here.

JLCooper Elect.
Rev [x]

JLCooper Elect.
1 adat(s) found

dataMaster
adat as slave

dataMaster
adat as master

Set Offset?
(Y/N)

Set Lead / Lag?
(Y/N)

Merge=enabled

Frame rate=30 nd

LCD Contrast
Psh NO to change

MWC=enabled

Generate Time Code
(Y/N)

Do you want?
adat as slave

Do you want?
adat as master

Sync Source =
SMPTE

NO or ENTER

NO
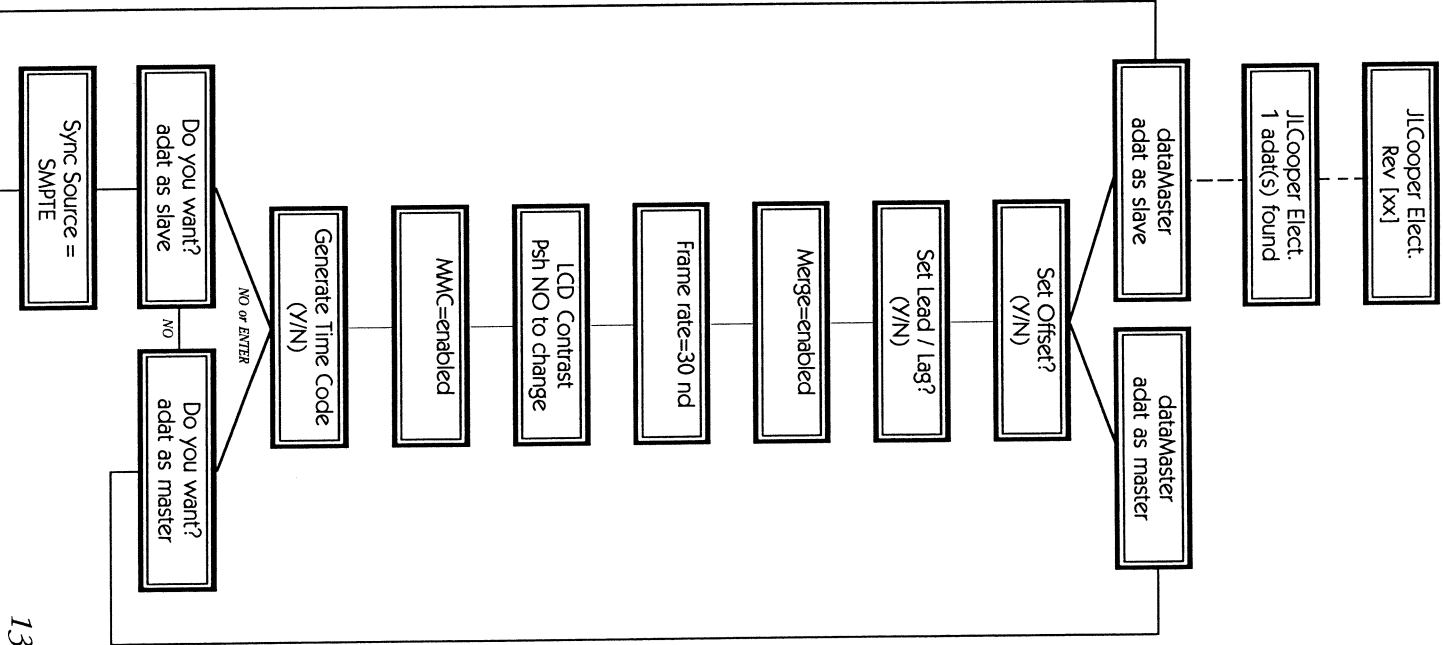
adat as Master or adat as Slave

The JLCooper dataMASTER allows your adat to be the master or the slave.

adat as slave applications

When the adat is the slave, the adat will chase and lock to SMPTE coming into the dataMASTER. The device producing SMPTE time code is the master. Usually, this is an analogue tape recorder with SMPTE time code recorded on one track, or some other source of SMPTE.

For example, press play on the analogue tape recorder, and the adat automatically finds out where the analogue tape recorder is, and then fast forwards or rewinds to that location. The adat then plays, locked into sync with the analogue deck.

When the adat is the slave, the adat will also chase and lock to MIDI Time Code (MTC) coming into the dataMASTER. The device that produces MTC is the master. Usually, this is a MIDI sequencer that can send MTC, or a digital audio workstation.

For example, click the play button in the transport window of some software application. The adat automatically finds out where the sequence or audio file is, and then fast forwards or rewinds to that location. The adat then plays, locked into sync with the computer software, be it sequencer or digital audio recorder.

Alternately, with the Sony 9 pin option installed, the adat will also chase and lock to a composite video signal. The device sending the commands is the master, usually an edit controller or professional VTR.

adat as master applications

When the adat is the master, you use the transport controls on the adat or LRC.

The dataMASTER then produces both SMPTE and MTC.

The SMPTE tone that comes out of the dataMASTER may be used to drive a machine synchronizer that is controlling an analogue tape recorder.

For example, press play on the adat, and SMPTE comes out of the dataMASTER. An analogue tape recorder reads the SMPTE and finds out where the adat is. The analogue tape recorder then either fast forwards or rewinds to that location. The analogue tape recorder then plays, locked into sync with the adat.

When the adat is the master, the dataMASTER also generates MTC. The MTC is used to drive typically either a MIDI sequencer or digital audio workstation, or a mixing console automation system.

For example, press play on the adat, and MTC comes out of the dataMASTER. A MIDI interface on a computer reads the MTC. The software then knows where the adat is. The software finds that location, and then plays in sync.

All you really have to do

After connecting the dataMASTER to the adat, there are 3 things to do

(1) *choose if the adat is the master or slave*
(2) *set the offset time*
(3) *set the frame rate*

The procedures for doing these things are given in the next pages.

Basic Operation

Selecting Master or Slave modes

First of all, it adat is the slave, you don't need to do anything if this is the first time that you've used the unit. It comes out of the box ready act as the slave. Simply follow the Quick start chapter.

If the adat is to be the master, press the **ENTER** key 8 times to scroll to the bottom of the menu.

When the display prompts:

```
Do you want?
adat as slave
```

, Press **NO** (-).

The display changes to the prompt:

```
Do you want?
adat as master
```

, Press **YES** (+).

That returns you to the top of the main menu, which now should read:

```
dataMaster
adat as master
```

Now, to be certain everything in the system initializes correctly, re-boot (turn off and on) all the adats and the dataMASTER.

Very Important

Always turn the adats on first, wait for them to initialize, which takes about 5 seconds. Then, turn the dataMASTER on.

Whenever you want to change the basic operating mode of the dataMASTER, from **adat as master** to **adat as slave**, or from **adat as slave** to **adat as master**, *you should re-boot the system.*

Setting Offset time.

After choosing whether the adat is the master or the slave, you then must enter an Offset Time. If you've already read the Quick Start chapter, the some of the same ground is covered here, with more detail.

Critically Important, the key to everything.

If you are unfamiliar with SMPTE, you should know that setting the Offset Time is critical. Because SMPTE doesn't just "line up" by itself. Your analogue tape may have a SMPTE tone on it, sure. And we know that SMPTE "counts up" in time throughout the length of the tape. But the tone itself, even if it starts at the beginning of the tape, can represent any "time of day" . The tone on tape could have a SMPTE time that starts at 1 hour and counts up from there. Or it could start at 0, or 30 minutes, etc. The dataMASTER must be told at what SMPTE or MTC time the adat should be started. If you don't tell it, it cannot not possibly know how to locate to an analogue tape or sequence.

When the adat is slave, the Offset Time is *added to* or *subtracted from* the incoming SMPTE time. The SMPTE time coming into dataMASTER, plus or minus the Offset Time, equals the adat's counter time.

When the adat is master, the Offset Time is *added to* or *subtracted from* the adat's counter time to determine the SMPTE and MTC time coming out of dataMASTER.

When the adat is master, there is **a built-in offset of 1 hour.** Thus, when the adat's counter reads 00:00, the SMPTE and MTC coming out of dataMASTER starts at **01:00:00:00**.

This is an important feature, to prevent dataMASTER from putting out time code near 23:59:00:00 while the tape is in the dAtA region. If you want dataMASTER to send out SMPTE and MTC that starts at 00:00:00:00, enter an offset of -01:00:00:00.

Setting Offset

From the top of the menu, press **ENTER** once. The display prompts: Set Offset? (Y/N), Press **YES** (+).

First select the "+" or "-" sign.

Enter the SMPTE time in hours minutes second and frames. The left most hours digit flashes and a cursor appears under it. To change the number, use the YES (+) or NO (-) buttons. To go on to the next digit, press ENTER once.

The cursor will advance through all the digits as you press **ENTER**. Then, after the last digit press **ENTER** to return to the top of the menu.

Setting Frame Rate

If you've already read the Quick Start chapter, the same ground is basically covered here.

The frame rate must match your source of time code. If you generated the code yourself, then you already know. If the tape came from someone else, ask them the frame rate.

It is important that it be set correctly, and not changed during the project. If it is not set correctly, the adat may still accurately and consistently sync up, until you take your project to another facility.

In general, the rules for frame rate selection are as follows:

24   Film
25   European and Australian video
29.97 drop   video
29.97 non-drop video
30 drop   video (infrequently used)
30 (non-drop) often used in audio work when no video is involved.

To change the frame rate

The LCD shows either:

```
┌─────────────────┐        ┌─────────────────┐
│ dataMaster      │   or   │ dataMaster      │
│ adt as slave    │        │ adt as master   │
└─────────────────┘        └─────────────────┘
```

If it does not, press **CLEAR**. Then, press **ENTER 4 times**.

```
┌─────────────────┐
│ Frame rate=30 nd │
└─────────────────┘
```
Press **NO**, until desired frame rate is shown.

```
┌─────────────────┐
│ Frame rate=29 nd │
└─────────────────┘
```
(The NO (-) button cycles through a menu of available frame rates.)

For example, to select 29.97 non-drop, Press **NO** until the LCD indicates: Frame rate = 29 nd

Press **CLEAR** once to exit the Frame Rate menu item.

adat as slave Operation Notes

Locking To SMPTE

When the adat is acting as the slave, the master will be a source of SMPTE time code such as an analogue tape recorder. Thus, the analogue tape recorder's transport controls will also control the adat. Likewise anything remotely controlling the analogue tape recorder will control the adat, such as an autolocator.

Based on the time of the incoming SMPTE, and the current position of the adat tape, the adat will either go into Fast FWD or Rewind, until the two line up. Then the adat will go into PLAY.

Chase Times to expect

The dataMASTER quickly acquires sync and then translates the sync into commands that the adat understands. The time it takes for the adat to locate will vary, depending on a number of factors. The most significant factor, of course, is how far apart in time the adat tape is in relation to the analog tape.

If the times of the two tape recorders are fairly closely related, allow about 12 to 15 seconds for lock up to occur. But this can vary depending on the stability and speed of the SMPTE source.

If the times are not closely related, your adat internally makes a decision whether or not to disengage the tape.

The maximum lock up time from the time the analogue tape recorder is played and the adat locks occurs when the one tape is started near the beginning and the other is near the end.

It takes about two minutes to fully rewind an adat tape.

Tracking Code that Varies in Speed

The dataMASTER will follow SMPTE that varies in speed approximately +6% to -18%. The adat cannot immediately track gross time code speed variations. For example, if you suddenly drop the speed of your SMPTE source by 10%, it could take as long as 15 seconds for the adat to regain perfect lock up.

Locking to MTC operation Notes

When the dataMASTER is in "adat as slave" mode, your sync source can be either SMPTE or MIDI Time Code (MTC).

MTC would usually come from a digital audio workstation, or a MIDI sequencer.

To set the dataMASTER to respond to MTC, first return to the top of the menu by pressing CLEAR.

| dataMaster |
| adat as slave |

From the top of the menu, press **ENTER** 9 times.

The LCD indicates:

| Sync Source = |
| SMPTE |

Press **NO.**

| Sync Source = |
| MTC |

Press **ENTER** once and the LCD returns to the top of the menu.

(The **Sync Source =** menu item does not appear when you are in **adat as master** mode.)

Be sure that your source of MTC, usually a computer MIDI Interface, is connected to the MIDI IN of dataMASTER. Check also that your software is set to send out MTC. This is very important. Most sequencers *cannot* send MTC. They send out MIDI Clock (sometimes called "Beat Clock"), and dataMASTER cannot do anything with MIDI Clock.

The cable carrying MIDI Time Code ideally should not also be carrying a MIDI sequence at the same time. This is because timing errors could result when the MIDI bandwidth becomes full.

adat as master Operation Notes

Sending SMPTE into something

When the dataMASTER is in adat as master mode, it always generates a reference tone, whether or not the adat is playing. This is useful for verifying your connections.

You should certainly set the desired frame rate. Setting the Offset is not usually critical, since the device receiving SMPTE (machine synchronizer, console automation system, etc.) probably has its own Offset adjustment.

SMPTE is generated when the adat is in PLAY. SMPTE and MTC are always generated simultaneously.

Sending MTC into something

Setting software start time

A sequencer of hard disk recorder that receives MTC must be told at what SMPTE time to start. This is usually called MTC offset time, though it is sometimes called start time, or, in the case of Mark of the Unicorn's Performer, "Chunk Start".

Once again, agreement between the dataMASTER and the sequencer is what is important. But you now have the added variable of not only being able to change the dataMASTER's offset, but also being able to change the sequencer's offset.

Be sure to set them to agree. If the dataMASTER has been left at 00:00:00:00, and if the sequencer has been set to 01:00:00:00, then the sequence will not start because it is waiting for an hour of code to go by first.

Likewise, if the dataMASTER has been set to 01:00:00:00, and if the sequencer has been left at 00:00:00:00, then the sequence will immediately chase to some very high measure number (like bar 900) because it thinks that you are starting the tape at a point 1 hour into the song.

If the sequencer always does short chase near the beginning of the tape, then its offset time is too close to the offset time of the dataMASTER.

The choice of offset times is **entirely up to you**. There is not one that is recommended or better than another,

If you don't have any special purpose for a specific Offset time, leave the dataMASTER set to 00:00:00:00. Set the sequencer offset to 00:00:30:00.

MTC is generated when the adat is in PLAY. SMPTE and MTC are always generated simultaneously.

Additional dataMASTER Features

Lead / Lag

The adat can lead (be ahead of) or lag (be behind) whatever equipment you have synchronized using the dataMASTER.

Lead / Lag applies when the adat is the slave.

Lead and Lag are consistent, it does *not* mean that the adat gets increasingly farther ahead or behind.

It is useful for correcting timing errors that may occur in complicated projects with multiple transfers using more than one kind of synchronizer. Or, you may just want to be able to adjust the feel of some tracks.

Lead and Lag times are entered in either ***milliseconds*** or ***samples***. (A sample is 1/48,000th of a second).

The range is from 00 to 99 milliseconds, or 0-99 samples.

To change the Lead / Lag, from the top of the menu press **ENTER** twice. The LCD indicates:

Set Lead/Lag?
(Y/N)

, Press **YES**.

The LCD indicates:

lead/lag in
samples

Press **NO** to change the interval from milliseconds to samples.

lead/lag in
milliseconds

When the desired time interval is displayed, press **ENTER**.

The display indicates:

```
+----------------+
|   adat lags    |
|     (Y/N)      |
+----------------+
```

If you want the adat to lead instead press **NO**. The display indicates:

```
+----------------+
|   adat leads   |
|     (Y/N)      |
+----------------+
```

Press **YES**. When the desired lead or lag is displayed, enter the time interval. Use the YES (-) or NO (-) buttons to change the flashing number. Press **ENTER** once to go to the next digit.

```
+----------------+
|  adat leads by |
|    02  msec    |
+----------------+
```

Press **ENTER** to advance through both digits, until the display returns to the top of the menu.

Merge Enabled / Disabled

You can choose whether MIDI data coming into dataMASTER will or will not pass through and come out of the MIDI output.

The application which calls for it

The usual application for this is when the adat is the Master, and you are using MTC to drive a sequencer. Specifically, you press play on the adat, and the sequencer chases and locks.

But in order for the sequencer to chase and lock, there must be a MIDI cable connected from the dataMASTER to the sequencer. Since some sequencers and computer MIDI interfaces only have one input, this presents a problem when you want to record additional MIDI tracks. The sequencer's one MIDI input is being occupied by the cable from dataMASTER, so there is no place to plug in a keyboard controller.

How to do it:

The solution is to connect the MIDI output of the keyboard controller to the MIDI input of dataMASTER. Then, set Merge = enabled in the following manner.

From the top of the menu, press **ENTER** three times. The display indicates:

```
+----------------+
|  Merge=disabled |
+----------------+
```

Press **NO** to change the state.

The display indicates:

```
+----------------+
|  Merge=enabled |
+----------------+
```

Press **ENTER** to accept the state, then **CLEAR** to return to the top of the menu.

Merge Warning:

Never set Merge=enabled when you have both dataMASTER's MIDI In and MIDI Out connected to a computer / sequencer. This would cause a loop back to the computer, which would probably cause it to behave erratically.

LCD Contrast

From the top of the menu, press **ENTER** five times. The display indicates:

```
 LCD Contrast
 Psh NO to change
```

To change the contrast of the display, press the **NO** button repeatedly. The contrast will change with each press, making the display easier to see when you are "off axis", that is to say, looking at it from an angle.

The display steps through 16 gradations, and then starts over again, as you continue to press **NO**. When you are satisfied with the contrast, press **CLEAR** to return to the top of the menu.

MIDI Machine Control (MMC)

MMC permits a computer sequencer or other device that supports MMC to not only start and shuttle the adat, but also to arm tracks, set punch in and out points, loops, etc.

The Alesis adat already has the built-in ability to respond to MIDI Machine Control commands. But you have probably noticed that there are no MIDI jacks on an adat. There are actually MIDI Ins and Outs "hidden" in the 9 pin sync connectors on the adat.

The JLCooper dataMASTER can receive the MMC commands and pass them along into the adat's sync connectors.

Also, MMC commands generated by the adat can come out of the dataMASTER's MIDI Out.

MMC is enabled on dataMASTER from the factory. To turn it on or off:

From the top of the menu, press **ENTER** 6 times. The display indicates:

MMC=enabled

Press **NO** once and the display indicates:

MMC = disabled

Press **CLEAR** to return to the top of the menu.

MMC is a relatively recent addition to the MIDI specification. Thus it is possible that it might confuse certain brands of sequencers that are not prepared to respond to MMC. When you are in **adat as master** mode and you are sending MTC into a sequencer, you should probably turn MMC off unless you know for a fact that the sequencer can respond to it.

dataMASTER's SMPTE generator

If your analogue tape had no SMPTE, you will need to record SMPTE on one track.

You may use the dataMASTER, or some other SMPTE generator (such a JLCooper PPS unit) to accomplish this.

Recording the SMPTE is known as striping the tape (not stripping the tape). To stripe a tape with SMPTE, first connect the Sync out of the dataMASTER to a line input of your tape recorder.

The dataMASTER's output level is around -8 dBm. A good record level for time code is somewhere between -10 and -3. But this isn't too critical. You just mainly don't want to clip the code by overdriving it, or bury the code in noise by setting the level too low.

Usually, a sync tone will survive dbx™ and Dolby™ C, but we do not guarantee it. Also, if you are routing the SMPTE through a mixing console channel, be certain that E.Q. is bypassed.

To initiate the stripe, select SMPTE generator from the menu, press **ENTER** 7 times. Press YES. Use the + and - buttons to change the time, and the **ENTER** key to advance the cursor. When the cursor is advanced past the last digit, SMPTE generation begins.

Put tape recorder into record. Be sure to monitor the input level. Always stripe SMPTE the length of the whole tape, as it is impossible to go back later and add a little extra stripe. At the end of the tape, press either **YES**, or **NO**, or **CLEAR** to stop SMPTE generation.

Technical Information

Memory and System Exclusive

All the settings in the dataMASTER are automatically stored in a special battery-free non-volatile memory.

To Backup the Memory of the dataMASTER

To backup the memory of the dataMASTER requires a computer running a MIDI System Exclusive librarian program, or a MIDI data disk with the ability to send a dump request.

If you have the necessary equipment, backup is recommend for several reasons. For one thing, you can only program one set of parameters into the dataMASTER. You may have to change the offset time every time you want to work with a new tape. Thus it is useful to have an "archive" copy of the internal parameters in case you want to remix a project in the future. A backup also protects you against data loss in case of equipment failure or power surges.

To backup the memory, connect the MIDI input and output of the data storage device to the dataMASTER.

The data storage device must then send the following MIDI System Exclusive command into the dataMASTER:

$F0 $15 $21 $00 $F7

This is the "dump request" command. The numbers are given in hexadecimal notation, as indicated by the "$" before each number.

The dataMASTER will reply with:

$F0 $15 $21 $01 <data> $F7

The <data> is in the following form:

byte 0   Low bits of LCD contrast value

byte 1   Bits 0 and 1 are bits 4 and 5 of the LCD contrast value.
Bit 2 equals 1 when adat is slave
Bit 2 equals 0 when adat is the master
Bits 3 through 7 are set to 0.

byte 2   Bit 0 equals 1 for negative offset (adat behind SMPTE)
Bit 1 equals 0 for lead, 1 for lag.

byte 3   Frame rate:
0 = 24
1 = 25
2 = 29.97 df
3 = 29.97 nd
4 = 30 df
5 = 30 nd

byte 4   Offset frames

byte 5   Offset seconds

byte 6   Offset minutes

byte 7   Offset hours

byte 8   Lead / Lag mode. = 1 when in milliseconds

byte 9   Low 4 bits of Lead / Lag value

byte 10 High 4 bits of Lead / Lag value. Maximum is 99.

Troubleshooting and Servicing

Most sync problems can be traced to either an incorrect setting of offset time, frame rate, or accumulated errors resulting from the use of multiple brands of synchronizers on the same project.

Also, make sure that the adat is the latest revision. To determine the version of your adat, press **Set Locate** and **FAST FWD** at the same time. The adat must be 3.06, or 4.03 or higher.

When setting certain parameters within the dataMASTER, most notably anything involving a time, it is required that you continue to press the ENTER button until you have scrolled through all the digits. If you decide to change the offset time, and only change the hours digit and press clear, then the number might not "take". Be sure that you press ENTER until you've scrolled through all the digits.

This is true for Offset time, SMPTE generator start time and lead/lag time. Other parameters permit you to press clear to exit the menu item.

To allow all of the microprocessors to set up correctly, be sure that you turn the dataMASTER on after you turn on the adats. If using a JLCooper CuePoint, turn the CuePoint on last.

If you have a problem that you cannot resolve, call JLCooper Technical Support.

As you might expect, there are no user-serviceable parts inside the dataMASTER. Your dataMASTER is covered in the United States by a one year warranty. To obtain warranty service in the U.S., first call the JLCooper factory to obtain a Return Authorization number before returning the unit for service.

The memory inside the dataMASTER does not use a battery, so there is no need to ever have the dataMASTER serviced for battery replacement.
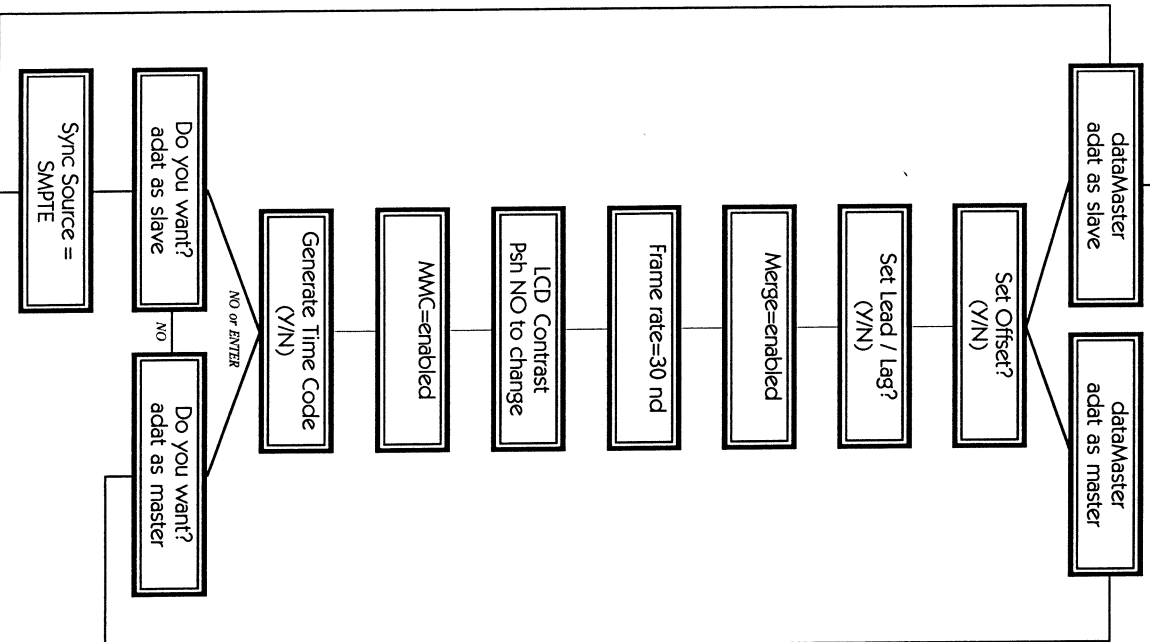
Menu Organization

Version of internal firmware.
This is only displayed momentarily after power-up.

Number of adats connected.
This is only displayed momentarily after power-up, when the adat is the slave.

Top of menu.
Pressing the CLEAR button always returns you to here.

```
JLCooper Elect.
Rev [xx]
        |
JLCooper Elect.
1 adat(s) found
        ¦
   (dashed)
        |
 dataMaster          dataMaster
 adat as slave       adat as master
        \                 /
         \               /
          Set Offset?
            (Y/N)
              |
         Set Lead / Lag?
            (Y/N)
              |
         Merge=enabled
              |
         Frame rate=30 nd
              |
         LCD Contrast
         Psh NO to change
              |
         MWC=enabled
              |
         Generate Time Code
            (Y/N)
          /         \
    NO or ENTER      NO
        /              \
  Do you want?      Do you want?
  adat as slave     adat as master
        |
   Sync Source =
      SMPTE
```

dataMASTER 2.0 Owners Manual Addendum

This dataMASTER contains the latest version 2.0 firmware from JLCooper Electronics.

Several new features have been added. This addendum covers the new features not discussed previously in the manual.

Please read the main Owners Manual first, as this addendum assumes that the user is already familiar with the dataMASTER.

New Features in ADAT as SLAVE Mode Include:

▶ User-Adjustable Flywheeling
Flywheeling protects against drop-outs from damaged code. You can select the amount of protection in terms of frames: 10, 30, 99, and Infinite.

▶ Capture Offset Feature
Capturing Offsets makes it easier to sync up two machines each with previously recorded material.

You play the ADAT and then capture its tape location by pressing ENTER on the dataMASTER. Then you play the master (such as an analogue tape recorder or video deck) and again capture its tape location by pressing ENTER on the dataMASTER.

dataMASTER automatically calculates the exact offset required to make the captured locations on the two machines exactly line up with each other.
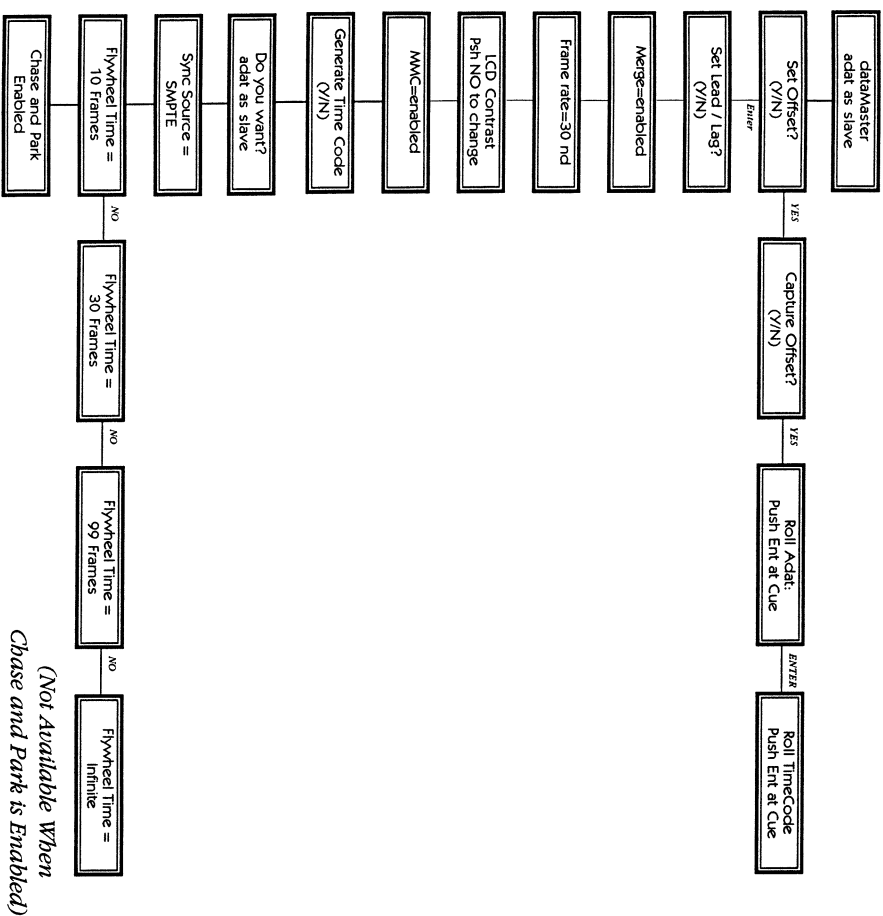
▶ Chase and Park Feature
Start and then stop the master, to send a short sample of time code into dataMASTER.

The ADAT will chase to the location of the master, and then park. Now all your machines will be "ready to go" when you press Play.

New Menu Items

The ADAT as MASTER menu has not changed. You can now change between ADAT as MASTER and ADAT as SLAVE modes without resetting the system by toggling the power.

The ADAT as SLAVE menu now looks like this:

| dataMaster adat as slave |
| Set Offset? (Y/N) | *Enter* |
| Merge=enabled |
| Set Lead / Lag? (Y/N) |
| Frame rate=30 nd |
| LCD Contrast Psh NO to change |
| MWC=enabled |
| Generate Time Code (Y/N) |
| Do you want? adat as slave |
| Sync Source = SMPTE |
| Flywheel Time = 10 Frames |
| Chase and Park Enabled |

YES → Capture Offset? (Y/N) → *YES* → Roll Adat: Push Ent at Cue → *ENTER* → Roll TimeCode Push Ent at Cue

Flywheel Time = 10 Frames → *NO* → Flywheel Time = 30 Frames → *NO* → Flywheel Time = 99 Frames → *NO* → Flywheel Time = Infinite

(Not Available When Chase and Park is Enabled)

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Capture Offset Feature

Suppose you are creating a sound track for a video. The video hasn't been delivered to you yet. When the video arrives, there is time code recorded on one audio track. You need to enter an offset time into dataMASTER to make the two machines line up, that is, to make the ADAT start at the correct time with respect to the picture.

The Capture Offset feature lets you cue the ADAT tape to some point, and the dataMASTER will capture the time. Then, you play the master and again capture the time.

After you capture a point in time on the ADAT and a point in time on the master, dataMASTER automatically calculates the offset time required to make the two machines line up. If it is not exactly like as you require, you can still go in and manually edit the Offset time.

How to Do It:
When **Set Offset?** is displayed, press **YES**.
Display indicates **Capture Offset?**
Press **YES**.

(If you answer NO, you get **Offset is +00:00:00:00** and you may set the offset manually just as before.)

Display changes to **Roll Adat: Push ENT at Cue.**
Put your ADAT into play, either from the ADAT's own transport controls, or from a remote controller such as JLCooper's CuePoint Autolocator, or the LRC.

At the point that you wish to use as a cue, press **ENTER** on dataMASTER.

For example, if the point is the downbeat of some music, and you have a count-off, listen to the count off and press ENTER on the downbeat.

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The moment that you press ENTER the ADAT stops.

The dataMASTER display changes to **Roll Timecode Push ENT at Cue**.

Now roll your source of master time code. In the example given, say it is a video.

At the exact point in the video when the picture begins, press **ENTER** again on the dataMASTER. Stop the source of master time code.

dataMASTER automatically stored the two times, subtracted the master time from the ADAT's counter time, and stored the result as the Offset.

The next time that you start your source of master time code, the ADAT will locate to a position so that the captured ADAT tape location will line up with the captured master time code location.

User-Adjustable Flywheeling

Flywheeling protects against drop-outs from damaged code. Drop out can be caused by loss of magnetic oxide particles from the tape. Or, cross-talk from adjacent channels on an analogue tape recorder can occasionally punch through and damage the time code track.

dataMASTER's flywheeling feature allows the ADAT to continue to play even in the presence of damaged code. It will re-acquire and lock accurately as soon as good code is present.

You can select the amount of drop out protection in terms of frames: 10, 30, 99, and Infinite. Since there are up to thirty frames in a second, this translates to approximately one third of a second, 1 second, and three seconds.

The factory default is 10 frames.

When the display indicates

Flywheel Time = 10 Frames

Press NO to toggle through the possible flywheel times.

Keep in mind that if you choose 99 frames, then the ADAT will continue to play for 3 seconds after the incoming timecode is stopped. That is because when the sync is lost the ADAT doesn't know yet whether you've stopped the master or if the code is just damaged.

Infinite flywheeling is only available as a menu item when the Chase and Park feature is disabled. Since Chase and Park is enabled by default, you will not see Flywheel Time = Infinite.

To access **Flywheel Time = Infinite**, turn Chase and Park off (that is, disabled.) Then the next time that you scroll down through the menu to Flywheel Time, Infinite will be an available choice.

Infinite may be used in an emergency, when you have very poor master time code. When infinite is selected, the ADAT will lock to whatever is available. When no code is available, it will continue to free run until valid code is available. Keep in mind that the master and the ADAT will in that case drift out of sync over time, just as two metronomes set side by side and started at the same time will drift apart.

Chase and Park Feature

Suppose that the ADAT tape is near the end. The tape counter reads 39:00, for example.

You start your master time code, an analogue deck whose tape is at the beginning.

When dataMASTER sees the time code, the ADAT goes into a rewind.

Now that rewind can take up to 2 minutes, so that by the time the ADAT is in sync with the master, you are already 2 minutes into the tape.

With the Chase and Park feature enabled, however, you can "pre-cue" the ADAT.

Start and stop the master, and dataMASTER will grab the incoming time and store it. The ADAT will chase to that time and park.

So the next time that you start the master, you will have only a relatively shorter time to wait for the two machines to lock up.

Chase and Park defaults to Enabled.

To turn it off, press ENTER to scroll down through the menu until the display indicates:

Chase and Park Enabled

Press NO and the display changes to

Chase and Park Disabled

Press YES or ENTER.

Chase and Park should be *disabled* for fastest sync acquisition. The reason is as follows: When Chase and Park is enabled, the dataMASTER tells the ADAT to chase to location of the first time code received. So if you don't stop the master, but rather let it continue, the ADAT will first chase to the original location of the master, then it will do a *second* chase to the new location of the master.

For example, if the ADAT tape is near the end, and the master is near 00:00, when you start the master, the ADAT will first chase to 00:00. When the ADAT reaches 00:00, it will then do *another* short chase to catch up with the master, which would then be at around 02:00.

Additional Important Operation Notes

• The dataMASTER is engineered to operate only at a sample rate of 48K. Be aware that the ADAT XT will permit you to format a tape and operate at either 44.1K or 48K. *You must use the 48K rate for proper dataMASTER operation.*

• Chase and Park cannot be enabled at the same time as Infinite Flywheeling.

• With Infinite Flywheeling enabled, the ADAT will keep playing even after you stop the master. Press CLEAR to stop the ADAT.

• You can now quickly reset the offset time to 00:00:00:00. When the display says **Offset is**, press both **NO** and **YES** at the same time.

• When doing MIDI System Exclusive data transfers, set Merge = disabled.

• dataMASTER will no longer display "EOT Error". It will rather try to "work with" whatever the master is sending.