SOUNDCHASER®
COMPUTER MUSIC SYSTEMS

TURBO-TRAKS

SYNC TO DRUM OPTION

A hardware and software option for TURBO-TRAKS that allows
use of a external drum machine for rhythm tracks.

REQUIRES TURBO-TRAKS 16 Track Performance Software

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THE SYNC TO DRUM OPTION

The Sync to Drum Option is an enhanced version of the original Turbo-Traks performance software for the Soundchaser computer music system. This software allows you to synchronize your Soundchaser to an external drum machine through the use of a simple cable. This software will let you generate drum tracks with one of the popular drum machines that are synchronized with the 16 track recorder in Turbo-Traks.

In addition to the drum sync, the program has also been enhanced to correct some minor problems with the origional release and to make the system easier to use. This software provides a link from Soundchaser to external drum machines, sequencers, and tape equipment. It makes Turbo-Traks even more fun to use and increases the possibilities for composers and the "one-man-band".

COPY PROTECTION

CREATING A SYSTEM DISK

The diskette supplied with the Sync To Drum Option is a master diskette that contains the programs necessary to create a system diskette for Turbo-Traks with Sync. You use the master diskette to add several Turbo-Traks files to the Sync To Drum Option diskette. In order to use the Sync To Drum software, you must already have Turbo-Traks.

You can copy this master diskette using COPYA or most other copy programs. Boot your Apple System Master diskette and type "RUN COPYA" and press RETURN. Follow the instructions and you will get an exact copy of the master diskette. We recommend that you make a backup copy of this disk.

To create your own system diskette for Turbo-Traks with Sync to Drum, boot the Sync To Drum disk **OR** type "RUN HELLO". Get out one of your existing Turbo-Traks diskettes and follow the prompts that the computer gives you. Its easy. You will end up with a working Turbo-Traks with Sync diskette on the Sync To Drum Option diskette itself.

The Sync to Drum master diskette contains a modified version of the origional Turbo-Traks program. Specifically, the following Turbo-Traks filenames have been modified and recompiled:

    HELLO
    TURBO
    SYN.SYNC   (replaces syn)

The program MAKE SYNC, is used to add Turbo-Traks to a Sync To Drum Option diskette.

WITH DISKETTES, ALWAYS WORK WITH A COPY, NEVER THE ORIGIONAL.

CABLE INSTALLATION

This software works by generating the Clock and Start/Stop signals for the drum machine. The Soundchaser clocks the drum machine. All timing signals are generated by the computer and not the drum machine. You must make sure that your drum machine can accept clock signals from an external source.

There are two cables included with the Sync to Drum option. These cables are used to connect the game I/O socket of the computer to the SYNC inputs of the drum machine. These cables will carry the sync signals from the computer to the drum machine.

One cable connects the game I/O socket of the computer to a five pin male DIN connector. This cable, Cable 1, is used for all drum machines. It lets you directly connect the computer to a Roland or Korg drum machine. It has a sixteen pin connector on one end and a five pin DIN connector on the other end.

16 PIN   DIN

CABLE 1

The second cable is used for Linn, Oberheim, Drumulator, and other drum machines that do not have a DIN sync connector. This cable, Cable 2, has a five pin female DIN connector on one end and two 1/4" phono plugs on the other. Notice that one phono plug is straight and the other is at a right angle.

DIN

CLOCK

START/STOP
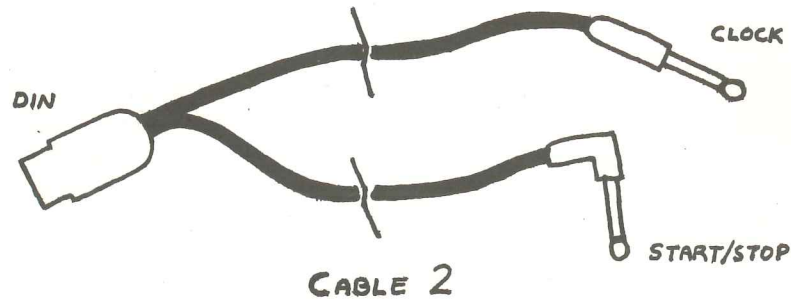
CABLE 2

To connect your Soundchaser to a drum machine, insert the sixteen pin connector on Cable 1 into the game I/O socket on your computer. This is the socket that you normally use for the game paddles or joystick. Be sure to insert the connector so that the cable is headed out the back of your computer and pin 1 matches the notch on your game socket. You can still plug in game paddles or a joystick "piggy-back" style on top of this drum cable connector.

If you are using a Korg or Roland drum machine, plug the five pin male DIN connector on the other end of Cable 1 directly into the SYNC input connector on the back panel of the drum machine. You must also set the SYNC INPUT/OUTPUT control switch on the drum machine to INPUT.

GAME I/O
CONNECTOR
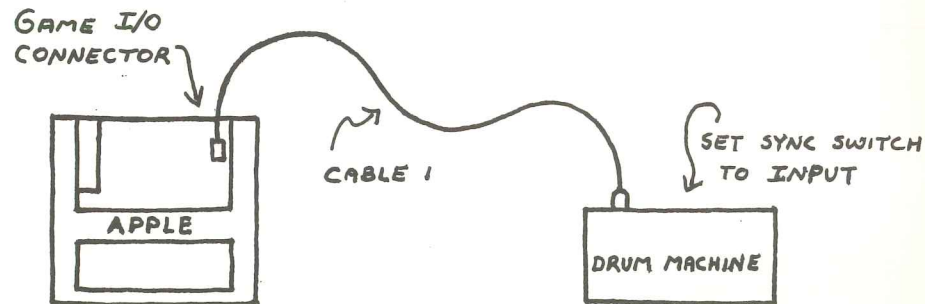
CABLE 1

SET SYNC SWITCH
TO INPUT

APPLE

DRUM MACHINE

If you are using a Linn, Oberheim, or Drumulator drum machine, you will have to use both cables. Connect Cable 2 to Cable 1 by plugging the two DIN connectors together. Plug the STRAIGHT phono plug into the CLOCK input of the drum machine. Plug the RIGHT ANGLE phono plug into the START/STOP input (usually for a footswitch) of the drum machine. Again be sure that the drum machine is set to accept external clock signals.

CABLE 1

CABLE 2

START/STOP

CLOCK

APPLE
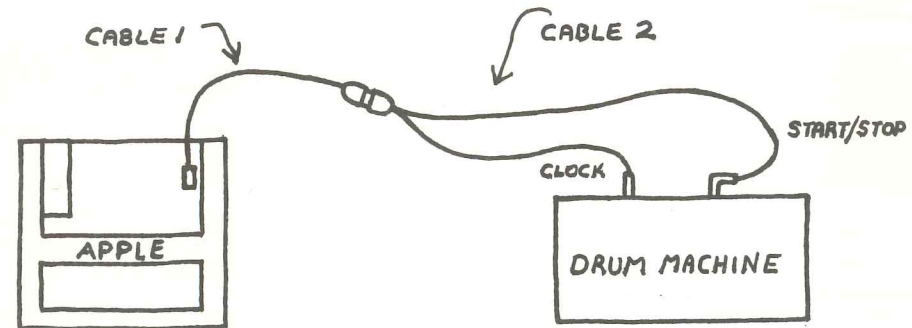
DRUM MACHINE

Alternatively, you can use just the CLOCK signal (straight plug) alone, without the START/STOP connection. (See page 9).

That's about all there is to it. Be sure that all of your connectors are properly seated and that your drum machine gets turned on.

USING THIS PROGRAM

Boot a copy of the Sync to Drum diskette and make sure that your drum machine and complete audio system is turned on at low volume. As with the original Turbo-Traks, the software will automatically look for a Language Card and will use the extra 16K for sequence storage. The software will also expect to find a Soundchaser Keyboard Card in Slot 7 and a Music System in Slots 4 and 5.

Press the "ESC" key to get to the Sequencer screen. Notice the DRUM TEMPO parameter at the bottom of the screen:

DRUM TEMPO= 6

This is the relative tempo of the drum machine and is quite independent from the sequencer's "TEMPO" parameter that you change with the Arrow Keys. 6 is a FAST Drum Tempo and 1 is a SLOW Drum Tempo. Assuming 24 beats per quarter note, these Drum Tempo numbers are roughly equivalent to the following metronome markings:

Drum Tempo	Beats Per Minute
6	156
5	104
4	78
3	62
2	52
1	45

To change the DRUM TEMPO, press the "S" key repeatedly. (Since the "D" key was already used to specify a track number (0-F), the "S" key was selected to allow changes in the DRUM or "SYNC" Tempo.)

Normally, the drum machine will be started with the sequencer every time you press the "SPACE" key. To start the drum machine, press the SPACE key. To stop it, press the SPACE key again. You would usually pre-select the Drum Tempo and work out the basic drum tracks before recording on Turbo-Traks. Use the SPACE key to Start and Stop the drum machine. You can turn down the Volume on Soundchaser or Erase the tracks (CTRL E), so that only the drum machine will be heard.

If you are using a Linn, Oberheim, or Drumulator without the START/STOP line plugged in, you will have to press the drum machine's Play/Stop or Start/Stop key before hitting the Space key on the computer. The Clock signal is only sent when the sequencer is running. This way you can set the drum machine so it is ready to play back, and when you press the computer's Space key, it receives the clock signal from the computer and will begin to play back in sync with the sequencer. You will however, have to reset the drum machine (turn it off, then on again) everytime you wish to restart the song.

Your current recordings will be compatible with this software although the playback tempo may be changed. It is very difficult to sync up a drum track to previously recorded material, so you will usually have to begin recording new tracks with the drum machine.

Tracks files recorded with the original Turbo-Traks software will sometimes show a wierd Drum Tempo (such as a negative number) when used with the Drum Sync Option update. To correct this problem :

```
Press "RESET"
Type "POKE 27446,1"  <RETURN>
Type "RUN"  <RETURN>
```

Notes On Recording With a Drum Machine

The drum machine adds a great deal to the kind of music that can be performed using Soundchaser. It is a much better time keeper than our little Click Track program, and you can program in fills and breaks to make the music flow better. You no longer need to use tracks on the Soundchaser to produce drum or click tracks.

One way to record with the drum machine is to program it for a simple beat and let it go. You can then record tracks on Soundchaser, using the drum machine to keep time. This is a great way to work out different sections of music and can also be used to impress your friends.

Another way to record with the drum machine is to figure out how many measures you want to play with the basic rhythm changes, and program the drum machine for those measures. You can then begin recording with Soundchaser just as you would with tape.

The sequencer program has been changed to automatically shut itself off and stop playback at the end of the piece as long as the program is not in the LOOP mode. This will also automatically turn off the drum machine at the end of the piece and is convenient when performing with the sequencer.

Looping With a Drum Machine

When you record your first track on Turbo-Traks, you define the length of the entire recording, for all sixteen tracks (see TURBO-TRAKS SYSTEM MANUAL pages 32, 36). The length of this first recorded track is used to mark the ending point for all the tracks. The tracks you record next will only be saved up to the

end of the first track. This technique is used to let you set a precise ending point for the tracks with the first track you record. You do this in order to produce looping structures that repeat on the first beat.

To use the LOOP feature with a drum machine you must carefully mark the <u>last note</u> of the <u>first recorded track</u> so it occurs exactly on the first beat of a measure. This way when your track loops, it will stay in sync with the measures being played by the drum machine. This is not as easy as it sounds.

Record a track and carefully mark the end of the first track, then try it with the drum machine. Let it loop and make sure that you have it in sync with the drum machine over all the measures of the piece. The sequencer can drift against the drum machine when in LOOP mode because of errors made in accurately marking the end of the first recorded track.

In general, the longer the loop you record is, the better in sync it will stay during playback. For example, you might record 16 bars on the sequencer over a single bar repeating drum track. This way, the sequencer will only loop every sixteen measures and you will be more likely to stay in sync over the entire piece. It is a good idea to check this first track out by letting it loop for a while before going on to record the second, third, etc.

Always mark the end of a track whenever you record any track by playing one <u>extra last note</u>. Don't play chords here, play a single note. This last note will be deleted and will not be played when the track plays back. It is always necessary to mark the last note of <u>any track</u>, not just the first track. Always play a single extra note to mark the end of each track.

DRUM SYNC FEATURES

The sync to drum option adds several new features to the Turbo-Traks 16 track sequencer. One is Automatic Shutoff at the end of the piece. The program will turn itself and the drum machine off at the end of the recorded piece, unless of course, you are in the LOOP mode.

The drum synchronization is accomplished through the use of the game I/O connector on the computer. Two signals are sent out of the computer to the drum machine. Any device that accepts these kinds of signals as Clock and Start/Stop inputs can be synchronized to the software.

One signal is a five volt Clock that is sent out at a rate of 24 clocks per quarter note. This drum sync Clock will be generated whenever the sequencer is on (either recording or playing back tracks). This clock is sent out the first time you press the Space key (sequencer on), and is stopped the next time you press the Space key (sequencer off).

The other signal is a Start/Stop signal that turns the drum machine on and off. This signal is turned on by pressing the SPACE key from the Preset or Sequencer screens. The signal can be turned off by pressing the SPACE key again, or will automatically turn off at the end of the piece.

The DRUM TEMPO parameter determines the speed of the drum sync Clock. You select the DRUM TEMPO parameter on the bottom of the sequencer screen by simply pressing "S" (for Sync). The DRUM TEMPO parameter can range from 1 (slow) to 6 (fast) and is described more fully on page 8 of this manual.

SYSTEM IMPROVEMENTS

Aside from the drum sync features added to Turbo-Traks, a number of minor enhancements have been made that will make the system more useful.

A new log table is being used for the envelopes that gives the envelopes more punch in some cases and is a better approximation of the log envelopes on a traditional analog synthesizer. Your log envelopes will also now turn completely off which was a problem with some earlier versions of Turbo-Traks.

More error handling has been added to the disk screen. These additional messages will give you more information about disk errors and other problems.

The Wavemaker has also been changed to automatically display waveforms immediately after their creation or smoothing. Communication between the Wavemaker screen and the Preset screen has also been enhanced. The Oscillator data displayed on the Preset screen will change along with the waveform you are working on in the Wavemaker. The Preset screen will no longer always display Oscillator 0 when returning from the Wavemaker.

The new program does not automatically erase the Wavemaker window every time you enter the Wavemaker section. This way you can go back and forth between the Preset screen and Wavemaker without getting confusing information, and without always having to redraw the waveform. If you are going from Sequencer screen to Preset screen to Wavemaker, you may get some very different Wavemaker window displays. This is because the program uses the Hires screen to also store sequencer track information. Simply erase the waveform window by hitting RETURN and redraw the waveform.