

Soundwave

8-TRAK SEQUENCER
for ATARI ST Series Computers

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Check Hagen

SOUNDWAVE Eight Track Sequencer for the Atari ST
Personal Computer
First Edition.

By Chuck Hagen, Gord Amies, and Charles Guerin.

Manual by Charles Guerin, and Graham Wolfe.

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INTRODUCTION

Congratulations on your selection of the Soundwave Eight-Track sequencer. This is just one of a complete line of MIDI software for the Atari ST from Soundwave. We hope that this product gives you years of enjoyment and will help you turn your musical ideas into sonic reality.

The SW-8 was designed with the musician in mind. You may notice that many features and controls look and work very similarly to those found on a professional multi-track recorder. This has been done intentionally so that you might enter the exciting world of computer-aided composition with a minimum of effort. Everything that you may have learned about operating professional multi-track recorders will apply with the SW-8. In fact, you will find that we borrow much common recording studio terminology when speaking of the SW-8.

This version of the SW-8 can run on ATARI 520 ST and the ATARI 1040 ST with monochrome or color monitor, using any disk drive made for the ST series. This version will run with or without the ATARI TOS Operating System in ROM, though the memory space available will vary depending on how much memory space is available on your machine.

The SW-8 will allow you to record sequences and store them on disk. You may play them back as if they were played on a normal multi-track tape recorder, or you may alter your performance in a variety of ways that only a computer can accomplish. For instance, if you have problems with playing a musical melody with the correct rhythm, you might record the melody very slowly (one note at a time if you wish), then use AUTOCORRECT to make your rhythm "lock" perfectly, then playback at any speed from 3 to 400 Beats per Minute.

The SW-8 offers you a unique feature that is only found in the finest recording studios: Auto Punch-In and Punch-out. With this feature you may selectively overwrite a section of your sequence and allow the computer to operate the "transport control" of the recorder.

The SW-8 can control or be controlled by a wide variety of MIDI instruments. You may use an external MIDI drum machine to control the transport functions of the SW-8 or you might control drum machines or other sequencers and arpeggiators from the SW-8.

The SW-8 also has a special MIDI echo mode that allows you to select one keyboard in your stack as a "MASTER" and allowing it to control all other MIDI synths as "SLAVES" (figuratively speaking of course).

Your comments and suggestions are welcomed by SOUNDWAVE. If you have any ideas about present or future SOUNDWAVE projects, write to us at:

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Welcome to the world of Soundwave Software.

Charles Guérin
Chief of Design
SOUNDWAVE SOFTWARE

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GETTING STARTED

Making a Backup-Copy

We highly recommend that you make a backup copy of the SW-8 immediately after receiving it. When you use the backup, the original disk must be in Drive A. After the SW-8 has loaded, you may eject your Master disk and insert your backup.

Turning on the Atari 520 ST and Loading the SW-8

FOLLOW THIS PROCEDURE ONLY IF YOU HAVE YOUR TOS OPERATING SYSTEM IN ROM (the 1040ST HAS TOS IN ROM):

Make sure that your disk drive is plugged in correctly, that your monitor is connected, and that all power supply connections have been made. Also connect any MIDI equipment that you will be using to the MIDI Port (see "The MIDI SETUP"). Place your Soundwave 8-Track Sequencer Disk into Drive A: of your Atari ST. Turn on the ST. After a short wait, you should see the GEM Desktop display of two disk drive icons and a trash can icon on the screen. Double-click on the "Drive A" icon. When the all the files are shown as icons, look for the file called "SW8.PRG" and double-click on that icon. The program will boot and the program should be up on your screen in a matter of seconds. You should see a cluster of buttons in the center of the screen. The program is now ready to use.

FOLLOW THIS PROCEDURE IF YOU DO NOT HAVE YOUR TOS OPERATING SYSTEM IN ROM (EARLIER 520 ST):

Make sure that your disk drive is plugged in correctly, that your monitor is connected and that all power supply connections have been made. Also connect any MIDI equipment that you will be using to the MIDI Port (see "The MIDI SETUP"). Place your TOS disk (that comes with the ST) into drive A:. Turn on the ST. After a short wait, you should see the GEM Desktop display of two disk drive icons and a trash can icon on the screen. Now, Place your Soundwave 8-Track Sequencer Disk into Drive A: of your Atari ST. Double-click on the "Drive A" icon and a directory should appear. Look for an icon with the label SW8.PRG. Double click on this and in a few seconds, you should see a cluster of buttons in the center of the screen. The program is now ready to use.

FOLLOW THIS PROCEDURE IF YOU DO NOT HAVE YOUR TOS OPERATING SYSTEM IN ROM (EARLIER 520 ST):

We would assume that the first thing you'd like to do when you get the SW-8 is record something with it, so here's how to record a quick multi-trak sequence:

If you are using only one synth, take a MIDI cable and connect the MIDI IN jack on the ST to the MIDI OUT on your synth. Also connect the MIDI OUT from the ST to the MIDI IN on your synth. If you are using more than one synth, refer to the section on Setting Up a Multiple Synth MIDI System in the HINTS & TIPS chapter. Set your synth's OMNI select to OFF. Also, set the MIDI channel select to channel 1.

GETTING GOING RIGHT AWAY!

In order to use a disk as a data disk, you must first format it using the procedures described in the Atari ST Owners Manual. Remember to label it as a data disk and don't confuse it with your Master 8-Trak Sequencer Disk.

The MIDI Setup:

If you are using only one synth, take a MIDI cable and connect the MIDI IN jack on the ST to the MIDI OUT on your synth. Also connect the MIDI OUT from the ST to the MIDI IN on your synth. If you are using more than one synth, refer to the section on Setting Up a Multiple Synth MIDI System in the HINTS & TIPS chapter. Set your synth's OMNI select to OFF. Also, set the MIDI channel select to channel 1.

GETTING GOING RIGHT AWAY!

We would assume that the first thing you'd like to do when you get the SW-8 is record something with it, so here's how to record a quick multi-trak sequence:

Click once on the RECORD button. A check mark will appear on Trak 1 signifying that Trak one will be recorded. Click once more and you will hear the metronome start ticking (and locking). You are now recording, so play to your hearts content. When you're ready to stop, just click the mouse button on STOP.

In order to get back to the beginning of the sequence, Click and hold down the REW button. You can watch the BAR indicator in the box on the right going down until it hits BAR # 1.

To hear what you have recorded, just hit PLAY.

To record another trak on top of that one, Click on RECORD. Now, a checkmark will appear on Trak 2. Click again and you will hear the previous trak being played. Go ahead and jam with the first trak as long as you want. After to hear them both, rewind to the beginning and hit PLAY.

Simple, huh? It's just like using a tape recorder.

One handy hint- if you feel that rewinding is too slow for you taste, try clicking on the LOC button. Now move the mouse RIGHT and LEFT and watch the BAR display. When it indicates the bar you desire, click and you'll hear the Bell sound. You can use this to instantly jump to any bar in your sequence.

FOLLOW THIS PROCEDURE IF YOUR ST IS ALREADY ON AND YOU HAVE THE GEM DESKTOP ON THE SCREEN:

Connect any MIDI equipment that you will be using to the MIDI Port (see "The MIDI SETUP"). Place your Soundwave 8-Track Sequencer Disk into Drive A: of your Atari ST. Double-click on the "Drive A" icon and a directory should appear. Look for an icon with the label "SW8.PRG". Double click on this and in a few seconds, you should see a cluster of buttons in the center of the screen. The program is now ready to use.

GLOSSARY OF TERMS USED IN THIS MANUAL

AUTO CORRECT	A function of the SW8 that causes all notes to be accurate to a certain rhythmic value.	DISABLE	Turn off a function.
BAR	A bar is a liquor-vending establishment. It is also a musical measure of time. We use the terms "measure" and "bar" interchangeably in our documentation.	DURATION	The length of a note.
BOOT	To turn on a computer.	ENABLE	Turn on a function.
BOUNCE	A common recording studio term used to describe a technique where a number of recorded music tracks are merged together on a single track. This is usually done to make room on a multi-track tape for more music. On the SW8, you may use the BOUNCE function to achieve this and "free up" some tracks. You can also use this as a general "COPY" function to copy the information on one track to another.	FILTER	The SW8 has a MIDI "filtering" ability and can selectively accept or not accept Midi data being sent to it.
BYTE	The basic unit of data storage on the ST. One musical note may use between 4 and 8 bytes of memory.	FORMATTING	Make a new blank disk suitable for use with the ATARI ST.
CHANNEL	Midi channels are similar to CB radio channels. Synthesizers "listening" to particular Midi channel will only play data that arrives on that channel. Synthesizers and sequencers transmitting on a certain Midi channel will only be "heard" by a synth listening to that channel.	INCREMENT	Add, increase by a given amount.
CLOCK	A pulse that keeps the SW8 in sync with itself and any device plugged into it.	MASTER SYNTH	The "Master" synth is the synth whose Midi out is plugged into the ST's MIDI In. All recording will be accomplished using this synth's keyboard. (see SLAVE SYNTH)
DECREMENT	Subtract, decrease by a certain amount.	MEASURE	(see BAR)
DIALOG BOX	Dialog boxes appear in the center of the SW8 Screen whenever the program needs you to enter information. In most cases, you may choose to either save the data you've entered (by clicking the mouse on [OK]) or you may choose to ignore your entry and exit (by clicking on either [EXIT] or [CANCEL]).	PUNCH IN/OUT	Insert a new part into an existing track.
RAM	The part of the Atari ST that holds the SW8 Program and all the musical information that you are recording.	PHRASE	A PHRASE is the same as a "musical" phrase. The SW8 handles phrases that begin and end on a measure.
		RAM	

REAL TIME

In computer terminology "real-time" implies that the program will respond to your input instantly without a lag in time. In the SW8 we use it to imply that a musical performance will be recorded and played back exactly as played (see STEP TIME).

SEQUENCER

A sequence is any song or musical fantasy that you have created on the SW8. Technically, a "sequence" is a series of MIDI events that appear one after the other in a "sequential" order.

SLAVE SYNTH

The "Slave Synths" are the synthesizers, voice modules and drum machines that you connect to the MIDI OUT of the ST. They will be used to playback the sequences you have recorded.

STEP TIME

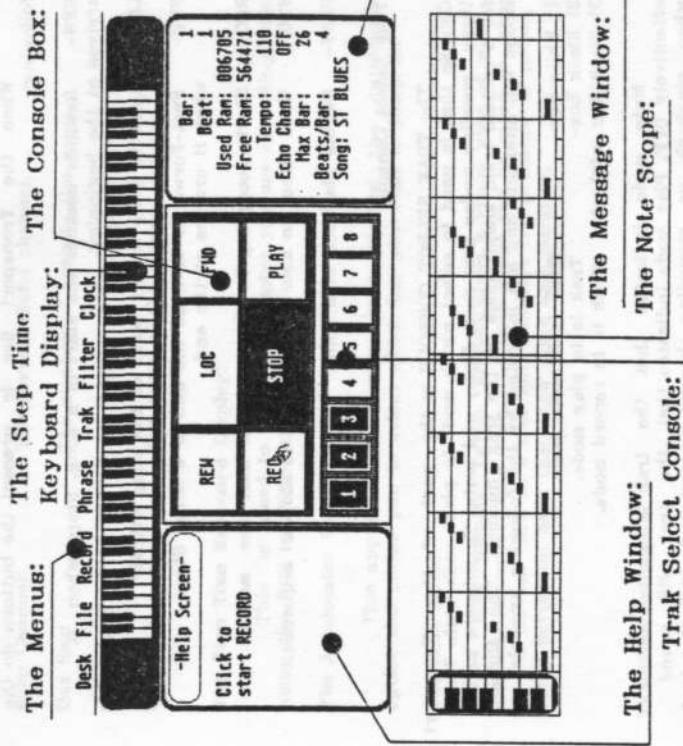
In the SW8, "step-time" is a method of entering a musical composition "step-by-step" as opposed to playing in "real-time". (see REAL TIME)

TRAK

A term devised by Soundwave's Programmers to differentiate between a multi-track tape recorder's "track" and a "track" of Midi data on a sequencer. Specifically, a "Trak" is a recording of a digital Midi data stream on a Soundwave Product.

The SW-8 Screen

There are six main areas of the SW-8 Screen: The Menus, the Help Window, the Console Box, the Trak Select Console, the Message Window, the Step-Time Keyboard Display, the Autolocator Ruler and the Note Scope.



The Menus:

The Help Window:

Trak Select Console:

The Message Window:

These are found at the top of the screen and may be viewed by pointing the mouse at each word on the line at the top of the screen. The menus are used to access all the "invisible" features of the SW8 that are not displayed on the SW8 screen.

The Note Scope:

As you use the SW8 you will find messages that may aid you in using the SW8. As you move the mouse across the buttons in the Console box you will see messages in the Help Window that explain what each button does and how to use it. Many editing functions also use the Help Window to help you familiarize yourself with the SW8's amazing features.

The Console Box:

This Box has many functions. Normally, it contains the Transport Controls: REW, LOC, FWD, REC, STOP and PLAY, which are analogous to the controls on a tape recorder, however at times this Console is replaced with the Step Console and the Note Scope console.

When the Transport Box is present the buttons do the following:

REW- Rewinds towards the start of a song. Stops when it arrives at the beginning.

LOC- Used to jump to any point of the song quickly.

FWD- Fast-Forwards towards the end of a song. Stops when it arrives at the end.

REC- Starts recording in either Step or Real time mode.

STOP- Used either to abort a record or to stop a sequence.

PLAY- Begins playback of a song.

Trak Select Console:

The TRAK SELECT CONSOLE is the part of the Transport Console that is used to select which mode to place each trak. The three possible modes are: record, play and mute. To select a mode for a certain trak, simply click on the trak number. The three modes will alternate and are indicated by the following symbols:

- 1) White Box- Trak is in mute mode.
- 2) Black box- Trak is in play mode.
- 3) Black Box w/check- Trak is in record mode.

Mute mode indicates that the trak is inactive and is effectively OFF. Play mode indicates that the trak will sound when playback or recording begins. Record mode indicates that this trak will be the current record trak (NOTE: ONLY ONE TRAK MAY RECORD AT A TIME.)

Used Ram:

The Number of Bytes that you have recorded.

Free Ram:

The Number of Bytes available for recording.

Tempo:

The current tempo setting in beats per minute.

Echo Channel:

The current Echo channel.

Max Bar:

The number of bars in the song.

Beats/Bar:

The number of Beats per Measure.

Song:

The name of the current song.

The Step Time Keyboard Display:

This is used to show which notes you are recording when using the SW8 in STEP-TIME MODE.

The Autolocator Ruler:

This appears only when you have selected the Autolocate option and allows you to select which bar you wish to jump to.

The Note Scope:

This display (when active) gives a visual view of what has been recorded on a trak. The Note Scope can be sized to show up to sixteen bars at a time and indicates the presence of notes using horizontal bars that show pitch and duration.

The Function Keys

You may press the [HELP] Key at any time when the recorder is stopped to get a list of the options controlled by the Function Keys.

Following is a list of those options:

F1-

Decrements Tempo by 10 Beats per Minute
Decrements Tempo by 1 Beat per Minute

F2-

Increments Tempo by 1 Beat per Minute
Increments Tempo by 10 Beats per Minute

F3-

Midi Channel Assign and Name Trak

F4-

Turn Metronome On and Off
Set Cue Point
Bounce

F5-

Auto-Punch
Erase a Trak

The Message Window:

This area of the screen indicates the current status of the SW8:

Display

Function

The present measure number.

Beat:
The present beat in the present measure.

Measure:

The Cursor Keys

For those people who prefer to use real buttons instead of mouse buttons, we have assigned the cursor keys to mimic the operation of the Transport Console buttons. The Keys are assigned as follows:

Insert-	Rewind one bar
Up Arrow-	Turn Autolocator on
Clr Home-	Forward one bar
Left Arrow-	Record
Down Arrow-	Slop
Right Arrow-	Play

In addition, the [HELP] button displays a list of the function keys, and [UNDO] acts as another [STOP] button (its bigger).

RECORDING & PLAYBACK

RECORDING IN REAL TIME

When you record in "Real-time" mode, the SW8 will accurately reproduce every musical nuance you play as if it was recorded on tape. You may decide later to change the tempo or the key signature of whatever you record to achieve effects that are impossible to do using any other recording medium.

In order to record in Real Time Mode, you must first make sure that the menu item "Real Time Mode" has a check next to it. (See the section on selecting menu items) If it does, click once on the REC button in the Transport Console. The Help Message "Use default REC Trak, select a new Trak or Click again to start RECORD" should appear in the Help Window.

You should see a checkmark appearing in one of the Trak buttons (if there are any empty Traks). This is to indicate that the SW8 will begin recording on this Trak when recording commences. The SW8 automatically looks for the first free track to record on when you record.

If you do not wish to use the track that the SW8 has chosen, you may click on any other un-recorded track box and the checkmark will move. If you decide you didn't want to record in the first place, hit the STOP button and recording will be aborted.

Click on the REC button again and recording will begin.

To stop recording you may either click the mouse button (and hold it down for a second) or you may hit the [UNDO] key in the ST's cursor key section.

To record another track, use either the REW button or the Autolocator (see the section on using REWIND and LOC) to get to the beginning of your song. You may use the REW and FWD buttons to advance your BAR indicator (in the Message window) to any measure in your song and begin recording at that point.

PLAYBACK OF A SEQUENCER

When you have finished recording a Trak, use either the REW button or the Autolocator (see the section on using REWIND and LOC) to get to the beginning of your song and click twice on the PLAY button.

You should hear your song played back exactly as you recorded it (unless you used auto-correct).

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USING LEAD-IN

If you select the LEAD-IN option from the Record menu, the metronome will give you a one bar "lead-in" before record or playback begins. This is to allow you to get used to the tempo before you play.

USING THE METRONOME

If you select the metronome option from the Record menu, you will hear a metronome sound (Ping-Tick-Tick-Ding etc...) when you are recording and playing back. The volume level of the metronome can be set by adjusting the volume level on your ST's video monitor. The number of "ticks" in a bar can be adjusted using the BEATS/BAR option in the Record Menu (see the section on using BEATS/BAR).

RECORDING IN STEP TIME

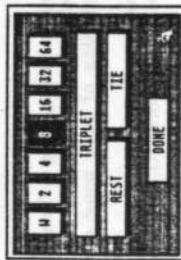
When you record something in "Step-time", the notes you play on your Midi keyboard are given a duration value by the SW8. This means that you may play as slow or as fast as you wish, but the SW8 will set the duration of each note. This is particularly useful in recording complex rhythmic patterns which would normally be impossible to play.

To record in Step Time, first make sure that there is a checkmark next to the STEP TIME option in the Record menu (See the section on selecting menu items). If it does, click once on the REC button in the Transport Console. The Help Message "Use RECORD" should appear in the Help Window. You may record from the beginning of your song or from any previously recorded measure by using REW and FWD.

You should see a checkmark appearing in one of the Trak buttons (if there are any empty Traks). This is to indicate that the SW8 will begin recording on this Trak when step-time recording commences. The SW8 automatically looks for the first free trak to record on when you record.

If you do not wish to use the trak that the SW8 has chosen, you may click on any other un-recorded trak box and the checkmark will move. If you decide you didn't want to record in the first place, hit the STOP button and recording will be aborted.

Click on the REC button again and the Transport Console will be replaced by the Step-Time Entry Console.



The top row of buttons indicate the present NOTE-DURATION setting. If you play a note on your Midi Keyboard, it will be recorded with a time duration equivalent to this setting. Underneath this row of buttons is a TRIPLET-TOGGLE. If you click on this, a checkmark will appear to indicate that the duration of the notes will now be in triplet values. Here is a chart to explain the NOTE DURATION setting scheme:

NOTE DURATION	TRIPLET-TOGGLE	ACTUAL NOTE VALUE
W		Whole
2		Half
4		Quarter
8		Eighth
16		Sixteenth
32		Thirty-Second
64		Sixty-Fourth
W	ON	Whole Triplet
2	ON	Half Triplet
4	ON	Quarter Triplet
8	ON	Eighth Triplet
16	ON	Sixteenth Triplet
32	ON	Thirty-Second Triplet
64	ON	Sixty-Fourth Triplet

You may change these settings at any time. Clicking on a new NOTE DURATION setting causes all subsequent notes to have that duration. Step time will work with single notes or even chords up to 128 notes (Cecil Taylor would like this).

When you play notes on your MIDI keyboard you will see the notes that you are presently holding down displayed on the keyboard at the top of the screen. When you release a note (or in the case of a chord, the last note of the chord) the SW8 will increment its Bar and Beat indicators to indicate the NOTE DURATION that has been played and the note or chord that you played will be memorized.

Clicking on the REST button causes a rest to be inserted into the piece using whichever NOTE DURATION has been currently selected.

If you are holding down a note and you have the dexterity to reach over and click the mouse on the TIE button, you may hold a note for an extended duration. This is useful for achieving odd durations such as a dotted quarter note.

To play a dotted quarter note, Select a Quarter Note NOTE DURATION, then play the note. Hit the TIE button, then change the NOTE DURATION to an eighth. When you hear the sequence played back, the note duration of the note you have played will be equivalent to one and a half quarter notes.

When you are thru recording a trak in Step Mode, click on the DONE button, and the Transport Console will return. Playback is the same as with Real-Time recording.

There are two ways to adjust the tempo of your SW8. If you are in your SW8 is stopped and you are neither recording nor playing back a song, you can call up the TEMPO option from the Record menu and adjust it (as described in the Record Menu section). Another way is to use the function keys F1 through F4. F1 lowers your tempo by 10 beats per second while F4 raises it by ten. F2 lowers it by 10 beats per second and F3 raises it by one.

The function keys may be used "on the fly". This means that while recording or playing back you may adjust the tempo using these keys. An externally-connected drum machine should follow

USING THE BEW AND EWD BUTTONS

The REW and FWD keys act in the same manner as the rewind and fast-forward keys on any tape recorder. In fact, the speed of rewind and fast-forward even speeds up as you hold the button down as if a real tape were moving.

To use Fast Forward, click on the FWD button and hold it down. The BARS Indicator in the Message Window will increase in value first slowly, then rapidly until you either release the mouse button or the end of the sequence is reached.

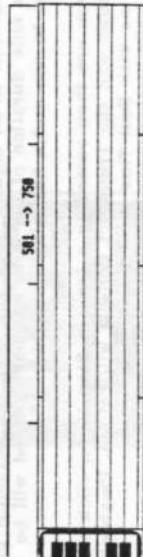
To use Rewind, click on the REW button and hold it down. The BARS indicator in the Message Window will decrease in value first slowly, then rapidly until you either release the mouse button or the beginning of the sequence is reached.

If you have the Note Scope turned on, you will see Scope indicate which notes are at the bar you have just reached.

USING THE AUTOLOCATOR

If you wish to simply jump to a measure in your song very quickly without waiting for rewind or fast-forward to find a measure, you may use the SW8's AUTOCLOCATOR. This feature (is lots of fun), is selected by clicking once on the LOC button. A "ruler" will appear just below the Transport Controls that is

The Autoloctor is an intelligent device, and it first checks to see how many bars you have recorded in your song. If you have recorded more than 32 bars, it will indicate that you must choose a "range" to autolocte in (see diagram below).



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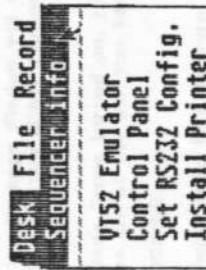
The DESK Menu

The FILE Menu

Many of the SW-8's features are selected from Menus. The Menu headings are: Desk, File, Record, Phrase, Trak, Filler and Clock. They are found at the top of the SW-8 screen. Each heading has its own menu. To access a menu, simply point the mouse at one of the headings and the menu will pop-down underneath it. To select an option in a menu, just move the dark bar down until the option becomes shaded and then click the mouse button. If you don't want any of the option in the menu, just move the mouse anywhere else on the screen and click and the menu will disappear. Options that appear in light-intensity are not selectable until they are needed by the SW-8 program.

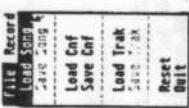
DESK MENU

The Desk menu contains options that are available from SW-8 and from most other programs that run on the ST. If you click on "Sequencer Info", information about the authors of the SW-8 will appear on the screen. Other options in this menu will change depending on which Desk Accessories your system has resident. (For a detailed description of what Desk Accessories are and how to use them, consult your ST Owner's Manual in Chapter 5).

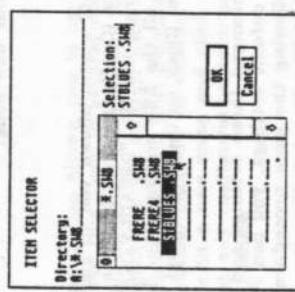


The File menu contains options that allow you to read and write your musical sequences (and your current SW-8 configuration) to and from the disk.

Load Song:



This option reads a sequence of up to 8 Traks from the disk as well as all information pertaining to the performance of that sequence (Tempo, Trak status, clock settings etc). Select the 'Load Song' Option and the following Dialog Box is displayed.



To load a song with this box - The Item Selector Box - point at a song name and double-click the mouse button. You can also select the song by clicking once on an item and then clicking the [OK] button.

The SWB normally looks for a Song on the A Drive of your ST. If you would prefer to load a file from your B Drive or perhaps from another file folder, you can change the 'directory'. To do this, click on the directory heading and use the [Backspace] key to erase the Directory name. To change to a different disk type: B:\SWB and then click on the anywhere in the Directory Window. Your B drive will spin and a list of the Songs contained on that drive will appear.

If you decide not to load the song you have selected, or if you can't find the file you want, just select the [CANCEL] button and you will return to the SW-8 control screen.

Save Song:

The "Save Song" option is used when you wish to save a sequence of up to 8 Traks to disk. Whenever you select the "Save Song" Option, the Item Selector Box will appear and you may choose which file to save to in a similar way as with "Load Song".

To save a new song to disk, type in the name of the song followed by a ".SW8" suffix. You may name files using any letter or numeral on the keyboard (i.e. the letters A-Z and the numbers 0-9). You may not use a punctuation mark in a song name. Here are some possible Song names:

ROCKROLL.SW8
DW8000.SW8
ASDF123.SW8

If you are replacing an existing song, you can double-click on the song name in the Directory window the same as with "Load".

One point: When you save a song, the ST first checks to see if the Song already exists on disk. If it does, it will replace that file (i.e. Delete, Kill, Vaporize) the previous song and replace it with your new song.

Load Cnf:

The "Load Cnf" option allows you to load a completely new set of System Settings (Configuration File) from disk. When you startup the SW8 program, the file "DEFAULT.CNF" is automatically loaded. This file hold all the SW8 settings (i.e. Tempo, Beats per Bar, Velocity Save, Clock settings, etc) that will be used at startup.

If you have changed these settings and would like to reset the SW8 to the default settings, you can reload the file "DEFAULT.CNF" by following the same procedure as with "Load Song". When you select The "Load Cnf" option, An Item Selector Box appears. To load the default settings, double-click on DEFAULT.CNF or any other .CNF file that you would like to load.

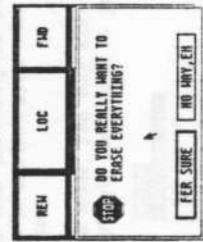
Save Cnf:

The "Save Cnf" option allows you to save your own DEFAULT.CNF file (to be loaded each you start up SW8) or any other CNF file. First make sure all the SW8 settings suit your needs then select the Save CNF option, An Item Selector Box will appear and you may either double-click on the DEFAULT.CNF file or type in a new file name that has a .CNF suffix. typical filenames include:

DRUMSYNC.CNF
VELOC.CNF
CLOCK24.CNF
CLOCK48.CNF

Load Trak:

The "Load Trak" option allows you to load an individual Trak from disk. Select the Load trak option and a Trak Select Dialog box will appear:



Choose an empty Trak to load, then click on [OK]. An Item Selector Box will appear. Select a .TRK file that you would like to load and double-click on it. The trak will be read from disk. When you return to the SW8 screen, you will notice that that trak is now active and can be played.

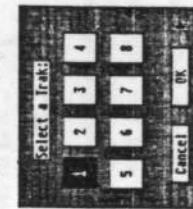
Loading individual Traks is a useful feature of the SW8. Use it to load common drum patterns and motifs that you had previously saved.

Save Trak:

The Save Trak Option allows you to save a single Trak to disk. You may then use this Trak in several different sequences without having to load an entire song. Select the "Save Trak" option and a Trak Select Box will appear. Select the Trak you wish to save and click on [OK]. An Item Selector Box will appear and you may either double-click on an existing .TRK file (to write over it) or type in a new name and click on [OK]. The Trak will be saved (without any configuration information) and may be loaded whenever its needed.

Reset:

The "Reset" option will clear all tracks, set your tempo to 120 beats-per-minute, your beats-per-measure to 4 and erase all your track comments. Select the "Reset" option and the following warning message will appear:



If you want to go ahead and reset, click on [FFER SURE], if not, select [NO WAY, EH] (A bit of Canadian slang don't hurt — eh?).

Quit:

When you are finished with the SW8, selecting the "Quit" option will exit SW8 and return you to the GEM desktop.

The RECORD Menu

The Record Menu allows you to configure the SW8's Recording functions. You may use record a sequence in one of two modes on the SW8: Real Time and Step Time. In Real Time Mode, the SW8 works very similarly to a tape recorder and will faithfully reproduce your synthesizer performances note for note with all rhythmic nuances. In Step Mode, the SW8 allows you to enter each note independent of time (as slowly as you like) and will play back your sequence in perfect sync with the metronome or an external drum machine.

In Real Time Mode, you may also use "Autocorrect" which will correct any rhythmic deviations in your performance automatically.

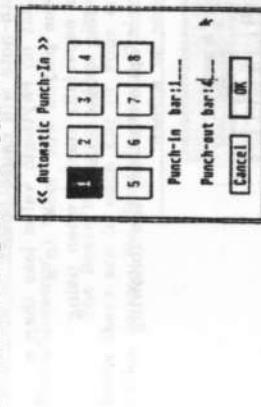


Real-Time Mode:

The "Real-time" option is used to place the SW-8 recorder in Real-Time Mode (see above). Selecting this option will cause a check-mark to be drawn next to the "Real-time" menu item and will remove any checkmark that is next to the "Step-time" menu entry.

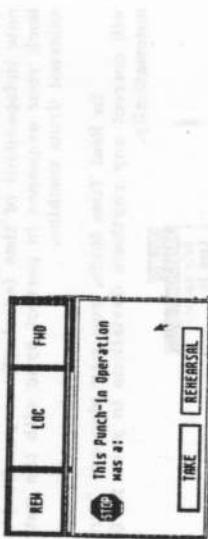
Auto Punch-In:

The "Auto Punch-In" option allows you insert new parts into any Trak, anywhere in the sequence without having to re-record the entire Trak. Selecting this option causes the Punch-in Dialog Box to appear:



First, choose the Trak that you want to punch-in on. Next, click the mouse on the PUNCH-IN BAR line. A line-cursor will appear at this point and you may type in the Bar number at which to begin a punch-in. Now click the mouse on the PUNCH-OUT BAR and type in the bar on which to punch-out. Click on the [OK]. The Punch-in feature is now "armed".

When you hit the PLAY button after "arming" a punch-in, you will hear the Trak playback. You may play along with the sequence, but nothing will be recorded on the Trak until the PUNCH-IN BAR is reached. When the PUNCH-IN BAR is reached, you will no longer hear the selected trak, and the SW8 will start recording whatever you play to that trak. When the PUNCH-OUT Bar is reached, the Trak will be heard again and you will no longer be recording. If you hit the STOP button or the sequence ends, the following box will appear:



If you select [REHEARSAL] the part that you just played will be ignored and the Trak will still contain the previously recorded part. If, however, you select [TAKE], then the sequence part will be overwritten with the new part.

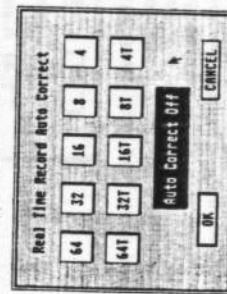
Lead-In:

The "Lead-In" option gives you a number of count-down clicks (equivalent to the present number of beats-per-measure) before the sequence begins on record and playback. Selecting this option will cause a checkmark to appear next to the "Lead-in" item. Selecting this option again will cause the checkmark to disappear and the Lead-in option will be disengaged.

Auto-Correct:

The "Auto-Correct" option allows you to correct your rhythm as you play a sequence. For instance, selecting an auto-correct value of a sixteenth-note will cause your performance to be refined so that no rhythmic value less than a sixteenth will sound and all notes played will "lock" to a sixteenth note duration. This is especially useful when using drum machines and when recording dance-music.

Selecting the Auto-correct option causes the following Auto-Correct Select Box to appear on screen:

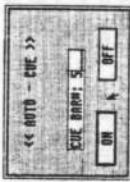


Auto-correct normally defaults to "OFF" and can be turned "ON" by selecting the auto-correct value that you desire. To select an A.C. value of an 8th note, click on the [8]. For 8th note triplets, click on [8T]. For a sixteenth note A.C. value, click on [16] and so on....

Finally, click on the [OK]. From now on, whenever you record, your rhythmic performance will be Auto-corrected to the value you have chosen.

Auto-Cue:

The "Auto-cue" option allows you to set a "Cue-point" in the sequence that the sequence will return to each time a Trak is recorded or played. This works in the same way as the "Zero Return" option found on many studio multi-track recorders. Selecting this option will cause the following Auto-Cue Dialog Box to appear:



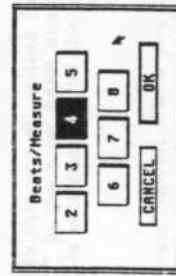
Type in the bar wish you would like to use as your "CUE" and hit [ON]. From now on, after a record or play operation, the sequencer will autorelocate to this location. To turn the Set-Cue function off, select the Auto-cue option and click [OFF].

Step-Time:

The "Step-Time" option places the SW8 recorder into Step-Time mode (surprise, surprise!). Selecting this option will cause a checkmark to appear next to it, will cause the checkmark to disappear from the "Real-Time" menu item, and will cause the SW8 to enter Step-Time mode. For more information on Step-Time read the Section (in the Recording and Playback chapter) entitled Recording in Step-Time

Beats/Measure:

The "Beats/Measure" option allows you to select how many beats there are in each bar of your sequence. Selecting this option causes the Beats/measure Dialog to appear:



The Beats per Measure option defaults to 4 beats per bar but may be set to any value from two to eight beat per bar. To setup in 4/4 time select the [4], for 3/4 time, select the [3], etc...

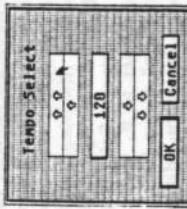
To obtain odd time signatures such as 3/8, simply select [3] and double your tempo setting. When you have selected your beats-per-measure, click on the [OK] box.

Metronome On :

This option turns the metronome on and off. To turn the metronome on, select the metronome on option. Select it again to turn the metronome off. The metronome will only be heard during record and playback.

Tempo:

This option is used to set the current tempo of the metronome. It also sets your recording "resolution". What's that? Well the SW8 can reproduce your performance accurate to a 96th note. Doubling the tempo will double the SW8's resolution (and accuracy). Don't get too carried away with this and set the tempo at 400 just to get the extra accuracy. At high tempo -- say, around 260 -- you will actually start losing accuracy because you are taxing the microprocessor within the ST! To set your tempo, select the "tempo" option and the tempo change dialog box will appear:



Select the trak(s) which you want edit and type in the START BAR and # of MEASURES. Click on [OK] and the phrase you have indicated will now be gone.

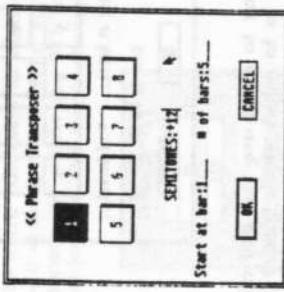
Insert



First select the Trak(s) that you wish to Duplicate, (following the same procedure as with Copy Phrase) and select the Start Bar and # (number) of Bars to Duplicate. Click on [OK] and the duplicate operation will be performed.

Transpose

The "Transpose" function is one of the most unique features of the SW-8 system. It allows you to transpose any measure, phrase, trak, or entire sequence independently. Select the Transpose option and the Transpose Dialog box will appear:



Select the trak(s) that you wish to transpose. Next click on the SEMITONES line and select a transpose interval. You can transpose any measure up or down 64 semitones. To transpose down, just type a negative sign "-" before the number of semitones. To transpose up, type a "+" (or simply don't indicate a sign) followed by the number of semitones. Now click on the START BAR line and type in the number of bars to transpose. Then click on # OF BARS and type in the number of bars to transpose. Click on the [OK] and all measures in the trak(s) that you have selected will be transposed.

Blank

The "Blank" option "blanks out" a phrase in a trak, thus erasing it from the sequence, leaving rests in its place. Select Blank and the Phrase Editor Dialog Box will appear:

The "Insert" option inserts a bar of rests into your trak wherever you may want one. This is very useful for adding a few measures of silence to the beginning of a trak, and in doing what is called "trak sliding" where you can move a trak around in time to create canons, fugues, etc. Select Insert and the Phrase Editor Dialog Box will appear.

Select the trak(s) which you want edit and type in the START BAR and # of MEASURES. Click on [OK] and you will have added some bars of rest to the piece.

Delete

The "Delete" option is the "Cut" utility of the SW8. Like a pair of musical scissors, you can snip away a phrase here and there and trim unwanted passages from your masterpiece. Unlike Blank, Delete works like a splice -- intervening "tape" (on the selected trak(s)) is actually removed, rather than just blanked out.

Select Delete and the Phrase-editor Dialog Box will appear. Select the trak(s) which you want edit and type in the START BAR and # of MEASURES. Click on [OK] and you will have removed the phrase from your sequence.

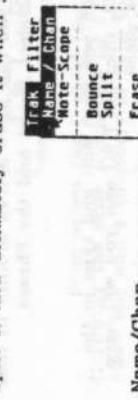
Unhang

The "Unhang" option (not implemented in Rev 1.0, but will appear in Rev 1.2) is designed to aid you when things go wrong in your editing. Sometimes, although one tries to be very careful when editing, occasionally you may find that you've accidentally deleted a Midi NOTEOFF event and the note is hanging. The Unhang option will put the NOTEOFF back in its place at the end of the last bar which you specify. Select Unhang and the Phrase Editor Dialog Box will appear.

Select which trak(s) you want to edit and type in the START BAR and # of MEASURES. Click on [OK] and the NOTEOFF will be appended to the end of the last bar.

The TRAK Menu

particular trak. The little keyboard on the left provides a vertical scale for you to figure out which note is being played. (The octave of all notes is ignored and only note names are indicated by this notation) and the "rulers" at the top and bottom of the Note Scope (calibrated in Beats) indicate how long the note is held. Select the "Note-Scope" option and a Note Scope Console will replace the Transport Controls.



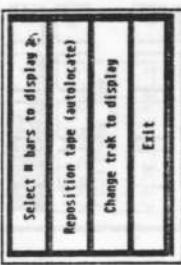
The "Name/Chan" option allows you to set the Midi Output channel on each trak, name the trak and store any comments you have concerning what synth is playing it, or whatever info you'd like to store. In addition, you can name the sequence whatever you'd like and the name of the song will appear in the Message Window whenever you use the sequence. Select NAME/CHAN and the Trak Assign Table Dialog will appear:

Trak Assign Table for Song: FREEJAMUS			
#	Name	Channel	Trak Comments
1;	VOICE 1	0 1 0	BOUNCE 1 to 2, then... INSERT 1 bars AT... measure one. Then...
2;	VOICE 2	0 1 0	BOUNCE 2 bars AT...
3;	VOICE 3	0 1 0	another insert, do the same on each track and you get...
4;	VOICE 4	0 1 0	this sequence!
5;			
6;			
7;			
8;			

To name your song, click on the TRAK ASSIGN TABLE FOR SONG line and type in it's name (add spaces at the end of it until you hit the end of the dialog for neatness). To name the trak, click on the trak# that you would like and type in that information. To add comments, do the same on the Trak Comments line for that trak. To assign a MIDI CHANNEL, click on the arrow buttons on the trak's line until you reach the midi channel you desire. Click on [OK] when you're done and the information you have entered will be saved. If you click on [CANCEL], the information you have typed will be ignored.

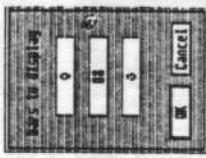
Note-Scope

The Notescope is a little tool we've added to the SW8 to make editing a little easier. The Note Scope is the area of the SW8 screen underneath the Transport Controls. When you use the Note Scope, black horizontal bars will appear across the Note Scope that indicate the note and duration of each note of a



The controls are as follows:

Select # of Bars to Display - Indicates how many measures will be shown on the screen at once (between 1 and 16). When you click on this, a Bars to Display Box appears:



Use the Up and Down arrows to select the number of bars you want to show. Selecting zero bars turns the Notescope OFF. Hit [OK] when done.

Autorelocate - (same as autorelocate function)

Select Trak to Display - A Trak Select Box appears and you select which trak to display. Hit [OK] when done.
Exit - Causes the Note Scope Console to disappear and if # of bars is greater than zero) the trak to be displayed.

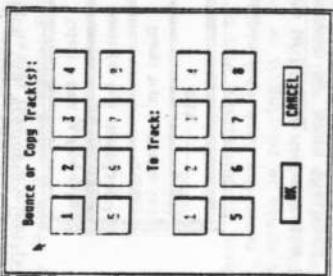
When the Note Scope is left on, every time reposition the sequence (using NEW, FWD, LOC etc...) the display will show the notes that have been recorded at that bar starting with the present bar (on the left). Also, after every record, the Note Scope will display the lastest recorded trak.

It is very useful to be able to see how your autocorrect has quantized your notes and to see whether you can expect a note to hang when you edit it using the phrase edit commands.

Bounce

The FILTER Menu

The "Bounce" option is a very easy to use, very powerful function of the SW8. With it you can copy an entire trak, or even Merge 7 traks into one. Select Bounce and the Bounce/Copy Dialog Box will appear:



The Top Trak Select Box is used to select which trak(s) you wish to Bounce or Copy. The Bottom Trak Select Box selects the destination trak where all the Traks to be bounced are sent.

Select one or many traks to be bounced, then select their destination trak and click on [OK]. In less than the shake of a virtuous lamb's tail, your trak(s) will be bounced.

This is terrific if you would like to clear up some space on several traks at once. If you have two or more traks going to the same MIDI channel, why not use BOUNCE to place them all on one trak, so that you can erase the Source traks and free them for another good use.

Split

Split is not currently implemented in REV1.0, but it will Split a Trak at a median point and divide it into two traks (for the few two-handed keyboardists left in this world).

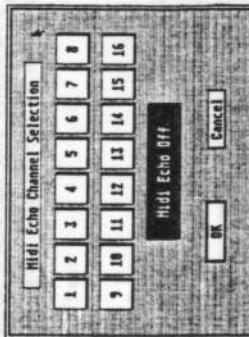
Erase

Erase is probably the function most commonly used after Play and Record (we don't make mistakes, but we've heard some people do). Select the Erase option and a Phrase Edit Dialog will appear (Please ignore the START BAR and END BAR lines) and select the Trak(s) you want erased. To erase everything, select all of them. Press [OK] and they're gone!

The Filter Menu contains is used to configure you ST's MIDI port to accept only the data you need and allows you to "echo" out whatever comes in on a specific MIDI channel.



This option is use to select MIDI Echo mode. If you turn the SW8's Echo facility on, anything played on your Master Keyboard will be sent out on the Echo Channel that you have selected. This way you may hear the sound of the synth that will be playing your sequence before while you record (many previous sequencers have lacked this option). Select the "Midi Thru Channel" option and the MIDI Echo Channel Selection Dialog Box will appear:



Echo mode defaults to OFF, but may be turned on by selecting a channel. When active, Echo mode takes any MIDI data coming into the ST, channelizes it and sends it back out the MIDI port where it may only be received by synthesizers "listening" to the echo channel.

MIDI MESSAGE FILTERING FUNCTIONS

The following entries in in the FILTER menu control message filtering.

Pitch Bend Save:	Pitch Bend Save
Program Change Save:	Program Change Save
Ctrl Change Save:	Control Change Save
(Damper Pedal, etc.)	(Damper Pedal, etc.)
Velocity Save:	Velocity Save
Aftertouch Save:	Aftertouch Save

These are all options that can be toggled ON or OFF (indicated by checkmarks). If OFF, The SW8 will ignore these MIDI messages when they are sent and there will be no checkmark next to the item.

Velocity has some very strict rules attached to it (If you want to ignore the rules, leave the Velocity Save on all the time).

- 1) When Velocity Save is OFF, you will increase your memory capacity for length of a sequence by (about) a third.
- 2) If you record a trak without Velocity Save, you will not be able to switch it ON again to record the next trak, (unless you erase the first trak).

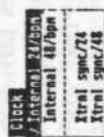
3) If you record a trak with Velocity Save, you will not be able to switch it OFF again to record the next trak (unless you erase the first trak).

4) If you try to load a Configuration File which has the Velocity Save Option toggled opposite to the way you have it set, the Configuration setting will be ignored and your original setting will prevail.

All these rules are to help you conserve your memory usage. Personally, I recommend you leave the damn thing ON!

The CLOCK Menu

The CLOCK Menu configures the SW8 to receive and send MIDI SYNC pulses to other sequencers, drum machines, tape sync devices and video sync equipment. There are two time standards used when Syncing MIDI instruments: the 24 Clock/Beat and the 48 Clock/beat standards. Most popular drum machines favor the 48 clock/beat standard but can be set to Twenty-Four if desired. We would recommend 48 clocks to anyone using our sequencer if you have a choice.



You may choose one setting from the choice of four settings in the menu:

Internal 24 clocks/beat
Internal 48 clocks/beat

With these two settings, you presume that any devices that will be synced will act as "SLAVES" with the SW8 as "MASTER". They will START/STOP and have their tempo control adjusted from the SW8. Check your owners' manual for each device and decide whether you need to use 24 or 48 clocks/beat.

External 24 clocks/beat
External 48 clocks/beat

With these two settings, you presume that any device synced to the SW8 will act as a "MASTER" to it and the SW8's START/STOP will be controlled externally as well as its tempo. Incidentally, the SW8 "tracks" the tempo of your drum machine or other sequencers in this mode. If you change the tempo extremely abruptly on the MASTER, the SW8 may go out of sync. The reason for this is that the SW8's internal clocks churn at 96 clocks/beat (for higher accuracy) and it has to "predict" how the tempo may vary on the "MASTER".

In External Sync Mode, to Start the SW8 from another Sequencer, hit "PLAY" on the SW8, and then on the external device, they should start together perfectly.

A BRIEF TUTORIAL IN USING THE EDITING FEATURES

To have some more fun, lets fool around with the Transpose feature. Go up to the Phrase Menu and select the Transpose option. When the Dialog Box appears, select all of the Traks by clicking on all the Trak numbers (only those that have been recorded will turn dark). Next, Point at the "SEMITONES:" line and type +12. At the "START BAR:" line type "1" and at the "# OF BARS:", type "9999". This signifies that we wish to raise all traks by 12 semitones (an octave). Click on [OK] and when you listen back to the sequence, you will hear that all traks have been raised an octave.

In this brief lesson on using some of the SW8's editing features, we will take the melody of an old French tune, "Frere Jacques" and fashion a canon out of it. A canon is a musical form where a melody is played with several voices, each playing the same melody, but each starting it at different times.

To start off, go to the "LOAD MENU" and select "Load Song". When the Item Selector Dialog Box appears, double click on the "FRERE.SWG" entry.

The song will be loaded. To hear it, simply make sure you're at bar# 1, then hit the PLAY button. You should hear a one track melody being played for about 8 bars.

Next, rewind using the REW button (or use the LOC if you're familiar with it) to the beginning. Point the mouse up at the "Trak Menu" and click on the "Bounce" entry. When the Bounce Dialog Box appears, select the 1st trak (under the "Bounce or Copy Tracks") and then the 2nd Trak (under the "To Trak" heading) and click on the [OK] button. This will cause all information on Trak 1 to be copied onto Trak 2.

"Insert" option. We are now going to insert 2 bars of rest at the beginning of the tune. This will cause the melody on Trak 2 to be played two measures after the

When the Phrase Edit Dialog Box appears, select the 2nd Trak. Now click on the "START BAR:" line and type a "1" to signify that we will start inserting the rests at bar one, then click on the "# OF BARS:" line and type a "2" to indicate that we want to insert two bars of rest. Click on the [OK] box and the rests

Now listen back and you will hear the second voice entering two bars after the first, playing the

You may want to try Bouncing Trak 2 to Trak 3 on your own, then inserting another two bars into Trak 3. This will cause a third voice to be added that enters two bars after the second voice enters. In fact, if you check your SW8 disk, you will find a song called "FREEREA.SW8" in which we have used four voices in this canon form.

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HINTS & TIPS

USING THE ECHO MODE

SETTING UP A MULTI-SYNTH SYSTEM

The basic concept of a Multi-Synth Midi Sequencer System is to have all your synthesizers, drum machines and other Midi equipment, all "listening" to the MIDI data coming from your SW8 on different channels. This way, each machine can receive data from its own track or tracks that is unique to the Midi channel that its "listening" to.

Since there is only one MIDI OUT on your Atari ST and you may need to use up to 16 synthesizers, it is necessary for you to somehow "split" that cable into as many parts as you need. There are several different ways to do this.

Star Network

One way is called the "STAR NETWORK". To do a Star Network, you will need a MIDI Thru Box such as the KORG KMT-60, or similar. A Thru Box, simply splits the MIDI signal (after opto-isolating it) into several parts. You connect the MIDI OUT from your ST to the Thru Box MIDI IN, then connect each individual Thru Box MIDI OUT, to the MIDI IN on each of your synthesizers.

You will need a **MASTER KEYBOARD** to plug into the **MIDI IN** on the ST. This keyboard can either be a **MIDI Remote Keyboard**, or it may be one of the Synths that you've plugged into the **Thru Box**.

Gesammelte Schriften

Another way to set yourself up is using a "Ring Network". With this system, you will plug the MIDI OUT from your ST into the MIDI IN on the nearest synth, then connect the MIDI Thru from that synth (this only works if all your synths have a Midi Thru) to the MIDI IN of the next synth, and so on and so on.

Your MIDI MASTER KEYBOARD is also part of this "RING" and you connect it's MIDI OUT to the MIDI IN on your ST.

Some people claim that this "ring" method slows down your MIDI transmission speed which leads to a noticeable lag in the notes being played and in some cases, notes dropping off. Personally, I don't believe them, but if you want to be sure, use the "STAR NETWORK".

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Echo Mode in the SW8 is a useful feature. When you select

In a MIDI echo channel, your MASTER synth can directly communicate with synths that are "listening" to that channel. This way, while you record, you can hear the sound coming from the synth that will be playing that Trak when you are done.

I would suggest that you use this procedure when recording tracks:

channel, this trak will be sent to. Go into the "Trak Menu" and select the "NAME/CHAN" option. Now make sure that the trak you are about to record is on the correct MIDI channel. Exit the "NAME/CHAN" option.

Now, go up to the "Filter Menu" and select the "Midi Echo Channel!" option. Set the Midi echo channel to the same channel as the track.

Go through this process whenever you record a track. That way, the synth sound that you use to record will always be the same when you playback.

You will need a MASTER KEYBOARD to plug into the MIDI IN on the ST. This keyboard can either be a MIDI Remote Keyboard, or it may be one of the Synths that you've plugged into the Thru Box.

One warning though: If you are in Echo Mode, and the Echo channel is set to the Midi channel that your MASTER KEYBOARD is receiving, you may find that two notes sound for every key you play and your synthesizer's available voices will drop in half. This is a phenomenon known as a "Midi Feedback Loop".

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APPENDIX A

Midi Specifications for the SW8:

The following Midi data is received and Transmitted by the SW8.
All other data is ignored:

1000nnn	Okkkkkkk	-Note Off note number note velocity	1001nnn	Okkkkkkk	-Note On note number note velocity		
if velocity is zero, then its a Note Off				1010nnn		Okkkkkkk	-Key pressure note number pressure value
				1011nnn		Occcccc	-Control Change change number controller value (MSB)
				1100nnn		Oxxxxxx	-Program change Program number (0-127)
				1101nnn		Oxxxxxx	-Breath or channel pressure pressure value
				1110nnn		Oxxxxxxxx	-Pitch Bend Pitch wheel value (LSB) Pitch wheel value (MSB)
				1111000			-MIDI clock
				1111010			-START command
				1111011			-CONTINUE command
				1111100			-STOP command
				KEY:			
				nnnn	MIDI CHANNEL NUMBER (0000 - 1111)		
				kkkkkkk	KEY NUMBER		
				vvvvvvv	VELOCITY		
				ccccccc	CONTROL NUMBER		
				xxxxxxx	VALUE		
				ppppppp	PROGRAM NUMBER		

APPENDIX B

Appendix B- SW8 Specifications:

Number of Traks: 8.
Number of Notes: depending on your RAM space,
notes between 16,000 and 155,000

Clock resolution: 96 clocks to a quarter note.

MIDI Channels: 16.

SOUNDWAVE SOFTWARE UPGRADE REQUEST FORM

We, at Soundwave Software, most strongly urge you to fill
in this form and mail it to us. If you do, we will be able to
notify you of any upgrades that become available.

Name:

Street:

City:

Province:

Postal Code:

Your SW-8 Serial Number:

NOTE: You must include your correct serial number on this Form.

Send to:

Soundwave Software
378 Isabey St.
St. Laurent, Quebec
H4T 1W1

Topic	Definition	Example
Adverb	A word that describes a verb, adjective, or other adverb.	He ran fast .
Adjective	A word that describes a noun.	The big dog barked.
Antonym	A word that means the opposite of another word.	Hot and cold are antonyms.
Consonant	A letter that is not a vowel.	The letters b , c , and d are consonants.
Homophone	Two words that sound alike but have different meanings.	The words to , two , and too are homophones.
Homograph	Two words that are written the same way but have different meanings.	The words bank and bank are homographs.
Homonym	Two words that are written and sounded the same way but have different meanings.	The words bank , bank , and bank are homonyms.
Irregular past tense verb	A verb whose past tense form is not formed by adding -ed.	The irregular past tense verb walk is walked .
Noun	A word that names a person, place, thing, or idea.	The word dog is a noun.
Past tense verb	A verb that shows an action that happened in the past.	The past tense verb walk is walked .
Present continuous verb	A verb that shows an action that is happening right now.	The present continuous verb walk is is walking .
Singular and plural nouns	Names for one person, place, thing, or idea.	The singular noun dog becomes the plural noun dogs .
Synonym	Two words that mean the same thing.	The words big and large are synonyms.
Vowel	A letter that makes a sound like the sound of a vowel.	The letters a , e , i , o , and u are vowels.