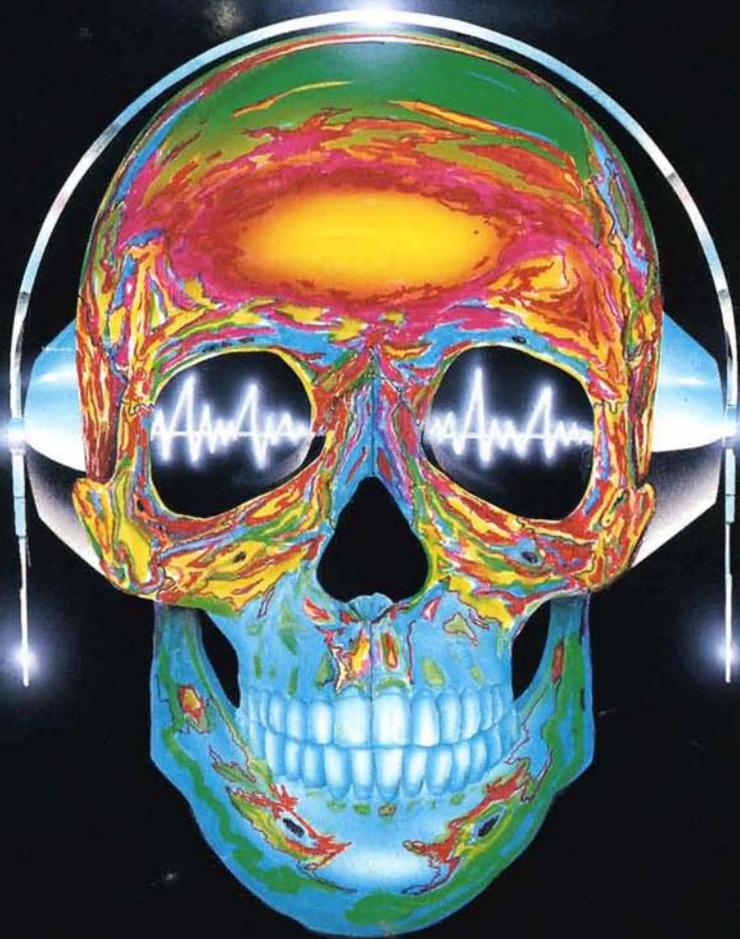


stereo MASTER



ATARI ST STEREO MASTER Operation Manual

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1.0 INTRODUCTION

Stereo Master represents a breakthrough in the cost of high performance sampling systems from the company that knows better than anybody what the customer is looking for. Stereo Master features revolutionary programmable Real Time digital Sound Effects to transform your voice as you speak. The powerful MIDI facilities allow the user to play different samples back out under the control of an externally connected MIDI keyboard. All of these features were previously unavailable before at this affordable price level.

Please note that with improvements in the package, there may be modifications to the software. Please examine your system disk thoroughly. Any notices from Microdeal will be posted in the READ.ME file on the disc. This may be printed to the screen by 'Double Clicking' the left mouse button on the ICON or File name shown in the disk directory window. Please refer to your computer users manual for further details.

Stereo Master is a superb value for money product and is immense fun to use, we hope that you enjoy your new system. Don't forget, Stereo Master is capable of producing high quality samples which may also be used with Microdeal's 'QUARTET' music system and also most Sound Tracker programs (MONO samples only). Owners of the 'STE' range of computers can take advantage of the Stereo output connectors to the REAR of the machine, with a suitable amplifier. Users of NON-STE compatible machines, DO NOT DESPAIR. Although you can play the sampled sounds out of your Monitor speaker in the usual fashion, Microdeal also produce a Stereo Sampled Sound adaptor called 'PLAYBACK' which will enable you to get the most out of your new system.

2.0 Specifications

The Hardware

- Input:** 3.5 MM Stereo jack socket.
- Sampling:** Maximum frequency 40 kHz (approx.)
- Sensitivity:** 2.5 volts (peak to peak)
- Connection:** Plugs into computers 'ROM' Cartridge port.

The Software

- Sampling:** Record, Auto Record trigger, Play and Monitor input.
Real Time digital sound effects.
- Memory:** Utilises full RAM of any ST range computer upto 4 Mbytes.
- Analysis:** Dual Digital oscilloscopes, 3D Fast Fourier Transform display and Real Time Spectrum analyser.
- Frequency:** Play frequencies from 3.0 to 28 KHz in 'ST' mode and 6, 12 and 25 kHz in 'STE' mode.
- Editing:** Cut, copy, insert, paste, delete, overlay, swap channels, copy between channels, fade in/out, filter, shrink volume up/down, stereo bounce, reverse.
- File:** Load and Save samples in RAW and AVR sample formats.
- MIDI:** Up to 10 samples can be assigned and split across a MIDI keyboard.

3.0 Installing STEREO MASTER.

Many of the technical enquiries which we receive at our office are concerned with the initial setting up of the system. If your sampler is not correctly installed it is unlikely that you will be able to obtain the most from it. Please read this section THOROUGHLY before starting to tear your hair out in frustration. We realise that there is nothing more frustrating than buying something new and not being able to get started with it straightaway, but a couple of minutes spent here will hopefully pay off later. The installation procedures are really quite straightforward so please do not be daunted by the lengthy descriptions.

3.1 Installing the Cartridge.

Firstly, switch off your computer, NEVER connect or remove the Stereo Master cartridge from your system with the power on.

Place your sampler cartridge, label side up, on the left hand side of your ST. Place the unit so that the input socket is facing outwards from the computer, and the open end is facing in, towards the computer. Now locate the CARTRIDGE PORT on the left hand side of the ST. Gently slide the sampler into the open slot of the computer and feel the cartridge engage the computers socket. When you are sure that the cartridge is in position, apply gentle pressure to the cartridge to slide it into the machine by about 8-10 mm.

The above operation may require some force if the cartridge is new, but should become easier with use. The unit should always produce a firm fit, NEVER switch your computer on if the cartridge is not fully inserted or if it feels loose. A catastrophic electrical failure may occur in either the sampler or the computer (or both) if the cartridge is not inserted properly. When in place, install the Interface lead as directed in section 3.3 and switch on the computer, it should autoboot in the usual manner. If the disk light fails to appear, or the screen displays an unusual pattern and refuses to clear, switch the computer off IMMEDIATELY; recheck the computer connections and most important, recheck the boot disk and ensure that it is correctly installed (I.E. LABEL SIDE UP AND FULLY PRESSED IN). If the fault persists, consult your dealer for help.

3.2 Connecting an input

Next, connect an input signal to the socket of your sampler with a suitable lead. The sampler was designed to accept inputs from most forms of portable audio equipment such as battery operated cassette players, radios and compact disc players fitted with a volume controlled headphone output. The signal is usually taken from the headphone/earpiece socket. Instruments such as guitars and electronic keyboards may be used if fitted with suitable amplification.

It is important to set the input level to the correct value (approx. 2.5V peak to peak). This can be achieved accurately with the use of the Oscilloscopes. Refer to section 3.4 of this chapter for further details on how to use the scopes. Failure to correctly set the input level will result in poor quality samples due to bad use of the available sample range or to distortion because the input signal is simply too loud.

WARNING: NEVER connect Stereo Master to the MAINS electricity supply. NEVER connect Stereo Master to the speaker leads of a power or HI-FI amplifier since these voltages are too high. The warranty CANNOT protect the user from this form of electrical abuse.

3.3 Running the STEREO MASTER editor software.

Simply insert the Stereo Master disk into the disk drive and turn on your ST. After a few moments, the computers desktop will appear. For the Stereo Master software to run correctly, it will be necessary to ensure that the computer is running in Low-Resolution mode. This mode should be selected automatically, however, a bug in certain versions of the STE computers operation code may force the screen into Medium-Resolution. Stereo Master will complain if the setting is incorrect. Please refer to your computer users manual if you are in any doubt as to how to change the screen mode.

If all has gone well you will see a program file on the screen called 'STEREO_M.PRG'. Locate this with the mouse pointer and click the Left mouse button twice in quick succession. The program will begin to load. After a few seconds a title screen should appear, clicking the left button on the mouse again will cause the display to be replaced with that of the STEREO MASTER editor and should look similar to the picture in section 4.0.

3.4 Setting the correct input volume.

To obtain the optimum sample quality, it is most important that the input level of the signal to be sampled is neither too low nor too high. The oscilloscopes, visible on the left and right sides of the screen, are provided for just this purpose. The left and right scopes represent the volume of the left and right channels respectively. With NO input connected, they should display a solid line across the centre of each display, if the displays are not centralised (The line appears hard against the top or bottom of the display) then there is a chance that the sampler is either incorrectly installed or it is simply not working properly. In this case, please re-check the installation procedure very carefully. Apply a signal source to the sampler input. Please examine the following diagram carefully and ensure that your signal is set at an appropriate level.

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Too low...

Correct level...

Too high.

Please note that if the level is set too low, then an element of background noise is likely to be present due to an effect known as aliasing. Setting the correct volume will ensure that the noise remains a significantly lower proportion of the audible tone. Setting the input too high will cause undesirable distortion and clipping which will be heard as a variety of clicks and crackles which are not actually part of the incoming audio signal. The Stereo Master sampler can produce some very high quality samples when set up correctly. A little care in this aspect of the set-up procedure can reward you with stunning results.

3.5 STE - Connection to an Amplifier

Under normal operation of the Stereo Master package, all sounds are played out from the computer monitor speaker. However, all STE range computers are fitted with STEREO outputs on the rear of the machine. These new hardware facilities can be used by selecting and setting the 'STE' control display situated on the control panel (See section 6.3.8). To make the most of Stereo Master's sampling facilities and gain the full effect of the STEREO image recorded, it is suggested that the computer is connected to a suitable amplifier with the speakers situated on either side of the computers monitor. Please refer to the Atari computer users manual for further information. Please note that it is not wise to place powerful speakers too close to the computer monitor or any Hard or Floppy disk drives as the magnetic fields created by the speaker coils can lead to distortion of the displayed picture or to the erasure of stored information.

3.6 Other ST's - Connection of PLAYBACK Stereo Adaptor

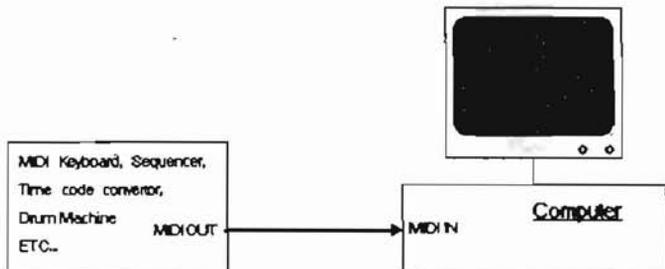
Stereo Master provides some very powerful and unique facilities. Under normal circumstances, all sounds are played back to the user through the computer Monitor speaker in MONO, despite the fact that the system might have both recorded and stored STEREO sounds. If the computer in use is of the most recent 'STE' variety, then it will be possible to play the sounds back in STEREO if the procedures outline in sections 3.5 and 6.3.8 have been followed. For users of ST, STF and STFM machines, it will only be possible to play these sounds back in MONO in the usual fashion.

Once sounds have been recorded and saved to disk however, it is possible to switch off the computer, remove the Stereo Master cartridge and replace it with a PLAYBACK adaptor (available from MICRODEAL) and then re-boot the machine. Please ensure that the cartridge has been fitted in accordance with the description outlined in the PLAYBACK manual.

When 'PLAYBACK' has been connected to a stereo amplifier by suitable leads, selecting the 'HIFI' button on the control panel will play the sounds in glorious stereo, just as they were recorded! Please refer to section 6.3.8 for further details.

3.7 Connection to a MIDI keyboard.

One of the advanced features of Stereo Master is its ability to play samples out of the computer under the control of a MIDI keyboard. Connection of a keyboard to the computer is very straightforward but it does require the purchase of a further lead. MIDI leads can be purchased from most good music shops or by mail order from computer or music magazines. Connect the MIDI OUT socket to the MIDI IN socket using the lead. Avoid connecting IN to IN and OUT to OUT, this WILL NOT WORK. Correct connection should look something like this:



5.0 Getting started.

Before anything else, please make sure that you have installed Stereo Master into the cartridge port, connected a suitable sound source and have the EDITOR program up and running on your ST, as described in section 3.

If you look at the twin oscilloscopes either side of screen, you should be able to see the sound waves dancing about in each (or if you have only a mono sound source, only one). If not, please refer to section 3 again. Stereo Master is, of course, a sound sampler and that is exactly what we are going to do - sample some sounds into your ST ! To do this, locate the button marked 'REC'.



You will find it in the bottom right hand corner of the control panel located in the centre of the screen. This is the RECord button, and it starts Stereo Master recording sound. Move the mouse pointer over it and click the left mouse button. The button text will highlight in red, and straightaway you should be able to hear your sound source coming out of the ST sound output. Stereo Master will stay in record mode until either the end of memory is reached, or until you stop it by pressing the left mouse button. As soon as recording stops, the sample displays at the top of the screen should update to display a picture of the newly recorded sound.



The display should look something like the picture above, with a good mix of peaks and troughs - loud sounds are represented as high peaks, whilst quiet passages will only be a thin line. If you missed recording a good piece of sound, just repeat the above steps - pressing record again will simply go over the old recording.

Now that we have some sounds in the computer, we will want to hear them played back. To do this, locate the VCR-style PLAY button - this is the long thin button in the centre of the screen with a right-facing arrow on it. Click it with the mouse - the sound will be played from the ST's sound output. Hey presto ! You have now captured some sound inside the computer.

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Now the fun starts - we can change and edit the sound with Stereo Masters' powerful editing facilities. By the way, you may have noticed a white marker tracing across the screen when PLAY was selected - this is the playback ghost pointer and it lets you know which part of the sample is currently playing.

Press the play button a few more times, and see if you can spot an interesting loud passage of sound, preferably in the centre of the display. Now move your mouse pointer to the extreme left of the sample display, press and hold down the left mouse button. With the button still pressed, move the mouse to the right slowly - the mouse will grab the vertical lines at the left of the display. This is the START CURSOR, and this is the point from which Stereo Master will start to play and record sounds. Move it to the start of an interesting looking part of the sample display and release the mouse button. Now press the play button again - the sound will now start at the position of the start cursor! Now move the mouse to the extreme right side of the sample display, press the left mouse button and drag the mouse towards the left. The mouse should have grabbed another blue vertical line - this is the END CURSOR, and sets the point at which playback and recording will stop. Move it to the end of that interesting passage of sound and release the mouse button. If you now press the play button, only the sounds between the two cursors will be played. In this way you may isolate parts of the sample and edit them without affecting the rest of the sample outside the two cursors.



Now let's examine that piece of sample in more detail. Stereo Master can magnify parts of the sample display to let you edit with more precision. To do this, locate the magnifying glass icon. You will find it at the bottom of the screen, in the centre. Click it now - the sample display will change to show the piece of sample between the cursors magnified so that it fills the whole width of the screen and the cursors will be reset to the ends of the display again. If you now press PLAY, you should notice that the ghost cursor travels across the whole screen faster, as we are now looking at a smaller section of sample in greater detail.



Now for a remarkable new feature in Stereo Master - the real-time special effects! Locate and click the button on the main control panel marked 'EFFECT'. Stereo Master will now switch to special effects mode. A new control panel will appear in the centre of the screen showing a list of types of effects, two control displays and two buttons marked 'PLAY' and 'EXIT'. Move the mouse pointer onto the button to the top left of the display marked 'ECHO' and click on it so that it becomes the selected button. Next, move the pointer onto and select the button marked 'PLAY'. Now it should be possible to once again hear the sound source, but with added echo! Click on the left mouse button to stop. Now click on 'PHASER', and then click PLAY again. You will now hear your sound source but the sound will appear to wash in and out! Try some of the other effects, pressing PLAY each time, and when finished, press the key marked 'EXIT' to return you to the main editing screen.



Let us now try a few of the editing functions of Stereo Master. Click the button in the bottom right corner of the screen; just to the left of the button marked 'LOAD'. This is the reverse button, and will turn your sample back to front ! After clicking it, and selecting OK in the requester, try playing your sample now - it is playing backwards ! If you now reverse it again and play it, the sound will be back to normal.



Perhaps your sample starts too abruptly - we can make it fade in more gradually with the fade in button. Click it now, and the requester will appear. In the middle of the requester is a number 256, with an arrow button either side. You can control how fast the sound is made to fade in with these controls - click the mouse on the left arrow and the number will decrease all the way to 000. Also, in the sample display blue lines will show the maximum volume shape that the sound can have. Click OK, and the display will update to show the faded sample. If you now play the sample again, you should notice how the sample starts much more gradually than before.



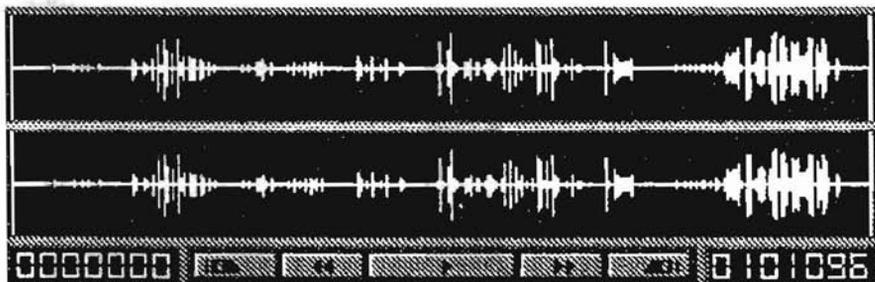
Now for something really spectacular ! Ever wondered what sound might look like ? No problem - just click the 3D FFT display button. (The screen will fade out and a three dimensional display of the frequencies of the sound with time will be plotted. (this takes a little bit of time due to the enormous number of calculations the computer has to perform). If you now click the mouse, you will be returned to the main editing screen again.



All the time we have been working in zoom mode, so let's now zoom out so that we can view the whole sample again. To do this, click the 'ZOOM OUT' icon (the spectacles) on the bottom row of the screen. The sample display will now be updated to show the whole sample again. To move the cursors to the edges of the screen again for maximum recording space, click on the six digit numbers at the left and right sides of the screen to reset the left and right cursors respectively.

6.0 FUNCTION REFERENCE GUIDE.

6.1 Sample display & control.



The above diagram shows the sample edit windows, playback control panel & the 2 cursor position displays. The top sample window represents the left channel, and the bottom, the right. When first running the software, the sample edit window will show 2 blue vertical lines which are the editors cursors (one at each end of the display) and a horizontal BLUE line in each of the sample windows which represents the samples themselves. These should be blank at present (refer to the picture in 4.0). In the above picture, the edit windows are showing a typical waveform display, which may be expected after having recorded, or loaded a sample from disc, more on that later. To move the cursors, simply move the mouse pointer onto one of the blue lines and press and hold the left mouse button. Moving the mouse left and right will DRAG the cursor. When the cursor is at the desired screen position, release the mouse button. This will cause the cursor to be dropped on the screen. Please note also how the values change in the relevant cursor display window as you move that cursor back and forth. These values reflect the distance the cursor is into the sample, and may be noted for future reference or relocation of the cursors to an old position or sample.

6.1.1 Instant END location

 The 2 numbers at either end of the panel shown above provide an instant ability to locate either the start or end of the sample edit window. Pressing on one of these with the mouse will promptly cause the left or right cursor to be positioned in the edge of the sample display.

6.1.2 Ghost Pointer location

 A very useful feature of Stereo Master is the Ghost Pointer. Every time you press the Play button it will be possible to see a special pointer trace across the sample window (Between the left and right channels) to indicate precisely which part of the sample is currently being played.

This is the Ghost Pointer. While it is not possible to see, Stereo Master also keeps an invisible note of the current GHOST position while Recording too. When playback or recording stops, either at the end of the sample display or by being stopped prematurely by the mouse button, the position of the ghost pointer is saved. You may now quickly set either the start or end cursors to the current ghost pointer position by using the Ghost Pointer locate buttons.

Pressing the left button will set the start cursor to the ghost pointer position, and pressing the right button will set the end cursor to the ghost pointer position. The ghost pointer position is still remembered if you scroll the sample and even if you zoom in or out.

6.1.4 DISPLAY REWIND.

 When a portion of the sample display has been magnified to occupy the full size of the screen, it is normally impossible to move the cursors to the left or right of the screen. Using the rewind facility will cause the sample display to slide to the right moving the cursors and the screen back toward the start of the sample.

6.1.5 PLAY sample.

 To play the sample shown between the cursors, click on the PLAY button. This is the VCR-style button with a single right-facing arrow on it. The sample will be played out through the ST audio output. The play will finish automatically when the end of the sample is reached unless LOOP mode is on. To stop playback in LOOP mode, simply press the mouse button (see section 6.3.8 for details of LOOP mode).

6.1.6 DISPLAY FORWARD.

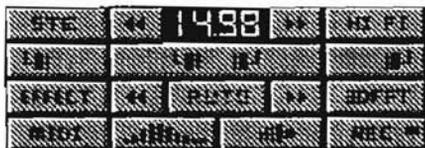
 This performs exactly the same function as the REWIND button except that the display is moved toward the END of the sample.

6.2 Important details.

Whenever an operation is being made, it is assumed that the operation is being performed upon the sample area contained between the two pink cursors. Anything outside of this area will NOT be affected. Whenever a sample is saved or loaded to or from disk, only the area BETWEEN the cursors is used. After any operation which affects the status of a sample, the sample window will be redrawn.

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6.3 The Main control panel,



This control panel allows you to select the speed of recording and playback both with the frequency up/down arrow keys and with the fast action slider, and to control which of the stereo channels is to be used for recording and playback.

You may monitor incoming sound quality and start to Record from this panel. It also houses the auto record trigger function, and allows you to switch to Special Effects mode and MIDI Modes.

6.3.1 CHANNEL CONTROL



Stereo Master is of course capable of recording and playing back two (stereo) channels sound simultaneously. For your convenience however, you may select either the left or right channel for recording or playback rather than both. Clicking the left channel button will cause only the left channel to be active. All loading and saving operations, editing and playback will be limited to this channel. Also, any recording done in this mode will leave the right channel unaffected, regardless of any incoming signal on the right channel. Similarly, selecting the right channel will cause all subsequent operations to affect only the right channel. To return to stereo mode, simply select the stereo button in the centre. In this way, you may make up a stereo sample by recording the left and right channels at different times. Also notice that in either left or right mode, both the start and end cursors and the ghost pointer will only be present for the channel in use.

6.3.2 FREQUENCY SELECT DISPLAY



Clicking on one of these buttons changes the record and playback speed for the system. Please note that the higher the sample frequency, the higher the quality of the recorded sound, but the larger the size of the sample produced. Stereo Master is capable of playing a very wide range of sample frequencies, from 3.0 to 27.8 KHz. Clicking the left and right arrows increase or decrease both the record and playback rates. Please note that if 'STE' mode has been activated, then only 3 speeds will be available.

6.3.3 LISTEN TO INPUT



As soon as this function is selected, the input signal to the cartridge should become audible via the monitor in the usual fashion. This mode is useful for cueing up a tape recorder or simply for checking the level of input for distortion or aliasing, facilitating input level adjustment. Simply press the mouse button to exit the Listen mode.

6.3.4 RECORD SAMPLE.

 RECORD is the button which causes the system to start sampling. Sampling will start immediately unless AUTO record is set ON (section 6.3.5). Sampling will stop when the sample space is full or when the user stops sampling by pressing the left mouse button. Once sampling has been terminated, the editor readjusts the edit window to display the new display.

6.3.5 AUTO RECORD TRIGGER

 AUTO record function is enabled by clicking the AUTO button. It will then become highlighted, and two horizontal blue lines will appear in each scope window. The sensitivity of the AUTO record function is adjusted with the arrow buttons. Selecting one or the other will cause the horizontal blue lines in the scopes to move up or down. This is the trigger limit. If you now press RECORD, Stereo Master will display a BUSY BEE pointer and wait until the level in the scopes reaches the trigger limit. Recording will then start. This helps to skip silent passages before sampling starts, and can be used as a sort of remote control feature. To stop Stereo Master waiting to auto record, press the mouse button. To cancel auto trigger mode, simply click the AUTO button again.

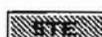
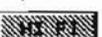
6.3.6 MIDI MODE

 Clicking on this button will cause the editor to replace the lower part of the screen with a new panel for the MIDI software. Please read chapter 7 for more information on this powerful mode.

6.3.7 SPECIAL EFFECTS MODE

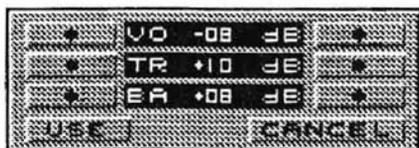
 Clicking this button will cause the real-time special effects display to appear. Please refer to chapter 8 for more information on this exciting feature.

6.3.8 Output MODE controls

  The sounds played from Stereo Master are normally played out through the computers monitor speaker. This mode is strictly MONO though. This is fine for most uses but sometimes it would be nice to take full advantage of the Stereo recordings which Stereo Master can make. Two alternatives exist.

STE MODE

For users of the ATARI STE range of computers, selecting the STE button from the control panel will confront them with the following display :-



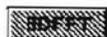
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Using these controls it is possible to control the overall sound volume and tone. When the 'USE' button is selected, the panel will disappear and the STE button will be seen to be lit. All SAMPLING and PLAYBACK will now become audible through an amplifier connected to the rear of the machine (Section 3.5). Please note that not all functions have stereo or STE mode capability, such as the EFFECTS which only work in MONO through the MONITOR speaker in the usual way.

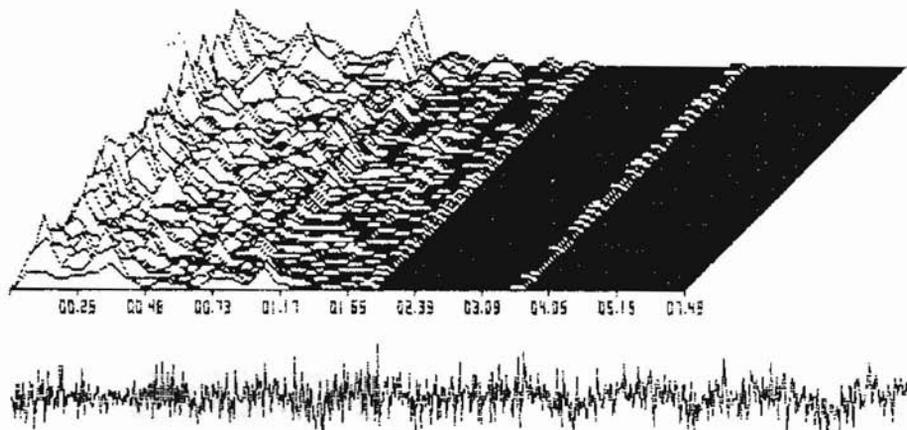
HIFI MODE

The standard range ST, STF, STFM or MEGA computers do not have a Stereo facility at all and are only capable of playing sounds in MONO, despite that all recording and editing of samples can be made and saved in STEREO. MICRODEAL manufacture an optional stereo output interface called PLAYBACK. This plugs into the ROM port of the ST, as does Stereo Master, so they clearly can't be installed at the same time, however, connection of the PLAYBACK cartridge to an amplifier brings those sounds to life. With the PLAYBACK connected to the computer, it is necessary to select 'HIFI' to re-direct the PLAY output to the adaptor.

6.3.9 Sample FREQUENCY analysis



If you have ever wondered how those really flashy displays that are sometimes seen on computer screens on pop groups computers are generated, press this button for the answer!



SIZE 0058976

0001.96 SECONDS AT 14.98 Khz

BOTH CHANNELS

As you may know, your ears pick up sound waves or shock waves which travel through the air. Some waves generate low frequencies and others are high. With this form of graphical display, it is possible to see what sound waves exist in a sample and how loud they are. The frequency of the sample runs from left to right across the display and the volume runs up the left hand side of the display.

6.4 SCOPE CONTROLS AND LOOP MODE



The oscilloscopes enable you to accurately check the level of the incoming signal for distortion. There are two oscilloscopes, one on either side of the screen which correspond to the left and right stereo channels. Please ensure that you fully read the section on setting up the input signal strength (SECTION 3.4). Each of the oscilloscopes may be turned on or off independently. You may also put them on pause to examine the waveform in more detail. Clicking on either of the scopes' LOOP button will cause loop mode to be enabled. When you next play a sample instead of stopping when the end is reached, playback will restart at the beginning of the sample. To exit loop mode simply press either of the LOOP buttons again.

6.5 SAMPLE EDITING FUNCTIONS

At the bottom of the screen are two rows of control buttons that facilitate the loading, saving and editing of samples.

6.5.1 EXIT



Return to the computers Desktop. Please ensure that any important work is saved to disk first!

6.5.2 CUT



Remove the sample between the two cursors by closing the gap. A dialogue box will appear and ask if the piece of sample to be cut from the display is to be saved into the EDIT BUFFER or not. Select CUT if the sample is to be saved for later use, or DEL if the sample is to be lost forever. Either way, the ultimate result of 'CUT' is to remove the sample from between the start and end cursors and to close the resulting gap between them.

6.5.3 COMPRESS 1/2,1/3



This function will shrink the area bound by the START and END cursors to be HALF or a THIRD of its present length. Please note that performing a compression upon a sample will require the playback speed of the sample to be adjusted accordingly. For example, a sample recorded at, say, 15 kHz and then shrunk by '1/3' will need to be reset to 5 kHz.

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Upon selecting the compression option, a dialogue box will request 'DRAG' or 'WIPE'. This tells the editor if you wish to move all of the sample located to the right of the END cursor to stay at the end of the compressed sample, or if you require the program to fill the space between the end of the compressed sample and the END cursor with a blank space.

6.5.4 VOLUME DOWN,UP



The relative volume of an area of sample can be adjusted with the appropriate dialogue box setting. Any attempt to make the sample too loud will cause distortion. Any attempt to make it too quiet will lose information and will ultimately disappear into a sea of noise or hiss.

6.5.5 INSERT



This will cause the Editor to copy the contents of the EDIT BUFFER into the sample at the position marked by the START cursor. The rest of the sample will be moved up by the appropriate amount to make room for the insertion and may result in the loss of sample at the very end, so beware!

6.5.6 OVERLAY



Selecting OVERLAY will place a dialogue box in the centre of the screen. When the 'OK' button is selected, a BLUE box will appear around the area of the sample held between the two cursors. The contents of this box will also be inverted on the screen to show the SOURCE area of the operation. It will now be possible to pick up the box by moving the mouse pointer onto either the START or END cursor and pressing and holding the left mouse button. Moving the mouse from left to right will cause the box (or boxes) to slide across the computer screen to a position over which the sample is to be added or super-imposed. When the DESTINATION has been reached, release the mouse button and click once more on the OVERLAY button which is now glowing.

When the central display dialogue first appears on the screen, it will be seen to feature two buttons marked 'HALF' and 'FULL'. The setting here will determine what happens when the source and destination samples are added to one another. The HALF option prevents the two samples from becoming distorted if both of the samples are quite loud, however; as its name suggests, the resulting sounds will be at half of their original volume. The FULL button will prevent this from happening, however as it has already been hinted, if two loud passages come together, then the resulting sample may sound less than pleasant. Some experimentation will show which setting will prove to be the most useful.

6.5.7 COPY TO SAMPLE



Selecting the COPY button will cause a BLUE box to appear around the selected sample and the area of the screen surrounded by the box will be inverted. It will be possible to drag the box back and forth across the screen by 'Picking' up either the START or END cursors. To perform the COPY operation, simply click on the glowing button again when the transfer box is suitably positioned. The area of the screen which is high-lighted will also appear at the new position and any sample which was there before will be lost.

6.5.8 Copy to BUFFER



If an area of sample is required for INSERTion elsewhere, then selecting the BUFFER button will take a copy of the sample which is surrounded by the cursors and place it in the EDIT BUFFER for later use (Section 6.6). If the size of the sample to be transferred is too big to fit into the buffer in its entirety, then the dialogue box in the centre of the screen will show '(TRUNCATED)'. In this case, if the box is confirmed, then only as much of the sample as can be fitted into the EDIT BUFFER will be transferred, otherwise it will be necessary to cancel the operation.

6.5.9 BOUNCE STEREO



Using BOUNCE, it is possible to cause the left (top) channel to appear to glide smoothly across into the right channel. Upon pressing this button, a dialogue box will appear over the RECORD CONTROL PANEL and the sample window(s) will be surrounded by a BLUE box. By clicking the mouse on the arrows in the dialogue box, it will be possible to cause the start and end of this box to slide from one channel to the other. The relative position of the sliding edges of the box between the two windows indicates the proportion of the left channel which is to be transferred to the right. If a sample is required to glide from RIGHT to LEFT, it is necessary to use the CHANNEL swap function both before and after the bounce operation.

6.5.10 INFO



Displays the programmers ego (Please don't encourage him)!

6.5.11 SWAP CHANNELS



This will swap the area between the two cursors between the Left and Right channels.

6.5.12 WIPE SAMPLE



This function will erase the area of the sample between the START and END cursors. This is useful for clearing the sample windows or for removing hiss on quiet pieces of music or LOOPS.

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6.5.13 FADE IN,OUT



Using these functions it is easy to produce a seamless join between two different samples. Upon selection of one or other button, the area of the sample between the two cursors will be bounded by a BLUE box and the RECORD control panel will be replaced by a dialogue box. Using the arrows it is possible to control the INTRO or EXIT volume of the sample. Upon selecting the 'OK' button, the length of the sample will fade from one end to the other by the amounts dictated by the BLUE box around it. The idea is to produce a gradual fade in or out or to be able to match the relative volumes of two dissimilar samples with relative ease.

6.5.14 COPY BETWEEN CHANNELS



A portion of a sample can be copied from one window to the other. Unlike channel SWAP, the transfer will only work one way.

6.5.15 ZOOM IN,OUT



This enables the user to 'BLOW UP' or back out from the current waveform display positions. ZOOM IN will enhance the detail of a sample on screen, each time ZOOM IN is selected the previous screen settings are remembered. ZOOM OUT will back the display out to the previous screen setting before the ZOOM IN.

6.5.16 FILTER



The options HARD and SOFT will be presented in the dialogue box. The frequencies will be about 1/2 and 3/4 of the recorded speed of the sample.

6.5.17 REVERSE



This function flips the sample from end to end. Any attempt to play the sound will now appear backwards (useful for trying to figure out what those subliminal messages on records are)!

6.5.18 LOAD SAMPLE



Selecting this option will cause the computer to place the file requester on the screen. Any sample loaded onto the wave-form display will be positioned onto the screen at the point shown by the START cursor.

6.5.19 SAVE SAMPLE

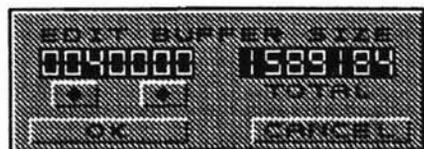


When the SAVE option is selected a dialogue will appear on the screen asking for you to select the format of the sample on disk. The choices are 'AVR' or 'RAW' formats. In practice it is recommended that 'AVR' format is used since this is a good general format for mixed MONO and STEREO samples. 'RAW' format should be reserved for MONO samples since 'RAW' samples have no TYPE information saved with them. As with most editing facilities, the portion of the sample to be saved to disk is that which is between the START and END cursors.

6.6 KEYBOARD COMMANDS

There is a small set of editor functions which can only be accessed by pressing keys on the computer keyboard, often in conjunction with the 'CONTROL' key on the left hand side of the keyboard. To access such functions it is necessary to press and hold the CONTROL key both BEFORE and WHILE pressing the other key which will always be an alphabetic key.

CONTROL-E - EDIT BUFFER SIZE



Pressing the CTRL-E combination will cause a computer dialogue box to appear on the screen. The two digital displays show the current Edit Buffer size and the TOTAL amount of RAM which is available within the computer. This memory is shared between the EDIT BUFFER and

the TWO sample display windows, therefore any attempt to make the BUFFER larger will reduce the sample space accordingly. To change the buffer size, simply point the mouse onto one of the two control arrows and press the left mouse button. When the value has reached the desired size, release the mouse button. Select 'OK' to confirm the new setting or 'CANCEL' to exit the control panel and return to the old settings without change. Please note also that selecting the 'OK' function will cause any samples in the sample display windows or the previous contents of the Buffer to be lost. Refer to section 6.6 for further information on the sample edit buffer.

CONTROL-N - INVERT SAMPLE

The Stereo Master editor will record samples in a format known to some as 'SIGNED' sample format. This means that its values vary between -128 and +127. Some sample formats such as the popular '.SPL' format, as used by earlier versions of ST-REPLAY and MASTER SOUND, will be stored as 'UN-SIGNED' samples, or values between 0 and 255. Such UN-SIGNED samples will not be compatible with STEREO MASTER unless they are inverted immediately after they have been loaded into the computer. To do this, place the START and END cursors around the sample which has just been loaded into the computer and ZOOM IN on the sample. Next, ensure that the cursors are accurately located about the sample before pressing the CTRL-N key combination. The sample display will be re-drawn with new sample data. Pressing the PLAY button will confirm if the sample is now correct.

It stands to reason that Stereo Master will also save SIGNED format samples out onto the computers floppy disk. Again this is not always convenient for other software such as many of the SOUND TRACKER programs on the Public Domain, almost all of which use UN-SIGNED format data. Again, use of the CTRL-N function before saving the data to disk will work, but it must be noted that ONLY the 'RAW' option from SAVE may be used after inverting the sample.

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Stereo Master will save 'AVR' format samples to disk in SIGNED format only, the program can not know that the piece of sound data which is to be saved is SIGNED or not, so it always assumes that it is. Any attempt to save UN-SIGNED data in 'AVR' format will cause problems when loaded back into Stereo Master or any other 'AVR' compatible software, since all compatible software will look into the sample header and will see that as far as it is concerned, the data is signed and will ALWAYS convert it into a format which is more useful to it and this is NOT always what the user might expect, since this process is automatic and is invisible to the user.

CONTROL-S - SAVE PROGRAM SETTINGS

During the initialisation process, Stereo Master will attempt to find a file within the boot folder called 'STEREO_M.INF'. This file contains certain working information about the default settings of the program such as the 'STE' volume and tone information, Working EDIT BUFFER size etc. Pressing CTRL-S will cause the program to save the present settings out onto the disk. These will automatically be re-loaded into the machine the next time it is run.

CURSOR PAD LEFT & RIGHT - DIM/BRIGHT DISPLAY

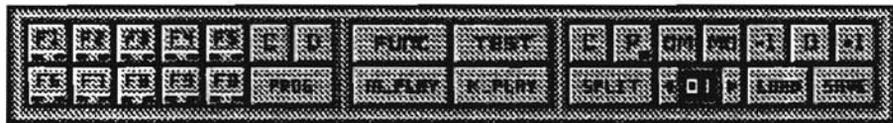
Pressing the Left and Right arrow keys on the cursor pad will cause the computer to Dim or Brighten the colour of the sample waveform display.

6.7 The edit BUFFER

The Edit Buffer is a temporary store used to hold samples which are placed into it when the 'COPY TO BUFFER' or 'CUT' button is selected (Sections 6.5.2 and 6.5.8). The reason for this storage space is that when the INSERT command is used, it is this area which acts as the source for the function. Any attempt to copy a sample into the buffer which is too large will be notified with the message '(TRUNCATED)'. To avoid this message in future it will be necessary to adjust the EDIT BUFFER size (Section 6.6). Please note that when selecting 'PLAY' on the effects page, any sample which has been stored in this buffer will be erased.

7.0 The MIDI control page.

Upon selecting the MIDI button from the central control panel with the mouse, the familiar editor control buttons will be replaced by the following display:



It is not entirely necessary to have a MIDI keyboard connected to the computer to use all of these facilities, but to make the most of them it is recommended that the details shown in section 3.7 are followed.

The MIDI functions impose a top limit of 14.98 kHz as the frequency setting when in use. If samples which were recorded at higher rates are used, then they will appear to play too slowly. In fact, samples which are to form part of a bank of presets should all be recorded or compressed down to the same basic frequency, otherwise the samples will sound out of tune relative to one another. All samples are assumed to take their tuning relative to the note of 'MIDDLE C' when played from MIDI or computer keyboards (pressing the note of 'MIDDLE C' will play the sample at its natural speed, anything else will shift the pitch up or down accordingly).

7.1 Programming the MIDI samples

The MIDI page sports 10 programmable function keys, each of which can be assigned to represent a unique sample. This is necessary so that when playing from a MIDI keyboard, it is not necessary to have to muck about with the cursor and magnification buttons to relocate a sound, instead it can be instantly recalled from the computers memory.

7.1.1 Function presets F1 - F10

The function of these buttons is to allow quick recall of a PRESET sample which can be assigned to it. At least one of these buttons is illuminated Red to indicate that IT is the selected sample, even if nothing has been assigned to it.

Each button features a pair of small lights underneath it's legend. When one or more of these lights are illuminated, it is an indication that a sample has been assigned to that button. The light which is lit shows that the sample which has been assigned to it is either a LEFT channel or RIGHT channel sample. In the case of both lights being visible, then a stereo sample is assigned to it.

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If the SPLIT function is in-operative, then the currently selected ACTIVE sample is the first to be played when entering the K_PLAY and M_PLAY modes. The active sample may be changed at any time by pressing the relevant function key on the computers keyboard.

7.1.2 PROGRAM a preset

To program a Function key, it is first necessary to use the cursors along with the sample ZOOM facilities to manipulate the sample onto the computers screen. Use the PLAY function to judge when the editing is complete. If necessary, use the TEST function to be sure (Section 7.2.2). Then select the MIDI button, the editor controls will be replaced by those of the MIDI control page. Next press the 'PROG' button which will illuminate, finally select the function button to which the sample is to be assigned, using the mouse. To show that the process is complete, the function key will blink and then illuminate, as will the image indicator lights within it.

7.1.3 Display a preset

To bring an assigned sample back onto the computers windows, select the 'D' button which will illuminate. Next select the desired function button which will immediately display the sample in the appropriate sample display window or windows.

7.1.4 Clear a preset

To De-allocate a sample from a preset simply select the 'C' button followed by the desired function key, from which the IMAGE lights will be extinguished.

7.2 PLAY mode

Stereo Master supports a variety of modes from which samples can be played. Once a PLAY mode has been selected, it can only be aborted by pressing the 'ESCAPE' key at the top left hand side of the screen.

7.2.1 FUNC

This mode of operation will play the samples under the control of the user from the computers function keys. The MIDI port is ignored and a sample will only play when the appropriate function key is pressed from the computers keyboard. This mode is particularly useful for playing DRUM or Percussive sounds or for playing spot sound effects.

7.2.2 TEST

The TEST mode will IGNORE all function key settings and any attempt to play a MIDI keyboard will result in the sample currently held between the cursors being played. Any attempt to change sample by pressing a function key will be ignored. This mode is useful for pre-viewing a sample for clicks and general editing before programming it into a PRESET.

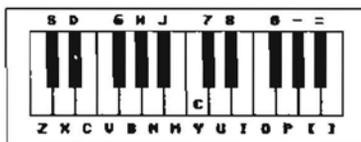
7.2.3 M_PLAY

Selecting M_PLAY will cause the computer to transfer control to a connected MIDI keyboard. With SPLIT mode switched off, the ACTIVE preset will be played under control of the MIDI keyboard. Pressing any function key will instantly change the ACTIVE preset and therefore the sample being played.

With SPLIT mode enabled, the active preset is largely ignored. When pressing MIDI keys, the samples which have been assigned to them will be audible instead. Now, only the area above the highest mapped SPLIT will play the ACTIVE sample and this may be above the range of the MIDI keys.

7.2.4 K_PLAY

Using the K_PLAY function, it is possible to play samples from the computers keyboard, rather than from an externally connected MIDI keyboard. Please note that any keyboard split will be ignored, it is possible to control only one sample at a time with this mode of operation, the default sample being the one which is selected from the function keys. The keys to press and the relative scale of notes obtained are as follows:



By pressing one of the Function keys while in this mode of operation, it is possible to change the current sample. The K_PLAY function is not influenced by the setting of the SPLIT mode setting.

7.3 KEYBOARD SPLIT

It is possible to assign samples to different areas of a MIDI keyboard. To do this it is necessary to 'SPLIT' the keyboard up amongst the presets, each sample occupying its own unique area.

7.3.1 Programming the SPLITS

A MIDI keyboard map is made by assigning each sample, one at a time, starting from the left hand side of the MIDI keyboard to the closest MIDI key pressed to its immediate right. The next sample to be allocated therefore assumes the next key on the immediate right of the last allocated, confused? Try it, its simpler than it sounds!

To create a single keyboard split, select the SPLIT button to switch the SPLIT mode on. Next, click on the 'P' button immediately above, the 'P' will begin to glow. Now, using the computers function keys, press the function key which is to occupy the area of the keyboard that is about to be assigned, the 'P' will be extinguished and the little light to its right will begin to glow instead, this indicates that it is now waiting for a valid (un-allocated) MIDI key to be pressed.

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The MIDI key which is eventually selected represents the right most key for the sample to be played. All further SPLITS are made in the same way, gradually making progress across the keyboard to the right hand side. Stereo Master can cope with up to ten different samples mapped or SPLIT across the keyboard.

7.3.2 Clear SPLITS

To erase all splits which are currently programmed, ensure that SPLIT is selected and then click on the 'C' button immediately above. A dialogue will appear asking you to confirm the erasure.

7.4 MIDI CHANNEL CONTROL

The MIDI channel controls define the way in which the program responds to MIDI commands which it is receiving from the MIDI input port.

7.4.1 SETTING THE MIDI CHANNEL

Using the controls on either side of the MIDI channel setting, it is possible to change the MIDI channel from between MIDI channel 1 to 16.

7.4.2 OMNI/MONO

With OMni mode selected, Stereo Master will attempt to play samples under the control of any piece of MIDI equipment which is transmitting. With MONo mode selected, it is necessary for any equipment transmitting into the MIDI port to be assigned to the same MIDI channel, otherwise Stereo Master will ignore its commands entirely.

7.4 OCTAVE SETTING -1,0,+1

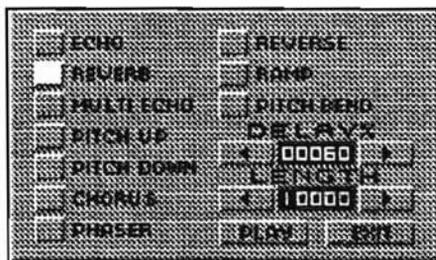
By selecting one of these buttons, the octave of the samples being played will be transposed by the appropriate amount relative to the key being pressed on the MIDI keyboard.

7.5 LOAD/SAVE MIDI SETTINGS

Preset collections of samples can be saved to disk or loaded from disk as a single command. This saves the repetitive re-allocation of samples using the editor. Upon selecting either button, the computers file selector will be displayed. It will then be possible to direct the computer in a LOAD or SAVE operation in the usual fashion.

8.0 SPECIAL EFFECTS

Upon selecting the EFFECTS button from the central control panel with the mouse, the usual set of control buttons will be replaced by the following display:



This exciting feature of Stereo Master allows you to digitally alter sounds the instant they happen ! Stereo Master provides ten types of effects most of which can be adjusted to suit your own taste. With the equivalent of each one of these effects for an electric guitar costing at least the price of Stereo Master alone, this is great value as well as very entertaining !

8.1 THE EFFECTS

Many of the effects can be changed using the LENGTH and DELAY controls. Some effects will only respond to changes to one setting, some will respond to both. It can be immense fun playing about with them so, go on, let your hair down and have a laugh!

8.1.1 ECHO

This is a single echo that repeats only once, rather like a parrot ! You may set the LENGTH with the control, to alter the delay speed and length simultaneously.

8.1.2 REVERB

This adds a depth to sound, rather like being in a cathedral, without actually echoing. You may control the reverb DELAY and LENGTH with the controls.

8.1.3 MULTI ECHO

Multi Echo is a repeated echo effect that will give any sound a new dramatic gravity ! This effect is equally suited to speech as well as music. The lunchtime news becomes a thundering sermon ! Use the DELAY slider to set how fast the sound echoes, and the LENGTH to set how long each echo lasts.

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8.1.4 PITCH UP

This will increase the frequency of sounds. This effect is very good with speech - you can make people sound like Pinky and Perky! or helium breathers.

8.1.5 PITCH DOWN

Use this effect on speech to turn yourself into a baritone - even if you are female!

8.1.6 CHORUS

Chorus blends a pitch up, a pitch down and normal sound to create a harmony effect.

8.1.7 PHASER

Phaser mixes a sound with itself to create a subtle, whooshing timbre especially with trebbly sounds and music. The DELAY control sets the speed of the phasing, while the LENGTH control sets the duration for each phase.

8.1.8 REVERSE

This is a real-time reverse effect: A short section of sound is recorded and then played backwards while the next recording is made, causing speech to be translated to somewhere between Russian, Swedish and gibberish ! Very good for livening up sports commentary, but equally effective on guitar sounds - now you can play 60's style reverse guitar solos in real time ! The LENGTH control sets the amount of sample that is recorded and then reversed. Larger settings give a smoother reverse but introduce some delay. Smaller settings allow you to reverse just parts of words but keep sentence structure the same for some very strange effects...

8.1.9 RAMP

Ramp changes the volume of the sound rapidly to create a sort of tremolo effect. This is especially effective when a fast rate is used with guitar chords !

8.1.10 PITCH BEND

This very versatile effect lets you raise and lower the pitch of sounds with time to create vibrato effects. Slow rates and small shifts can make speech sound rather inebriated ! You can also use this effect to create a Dalek sound - EXTERMINATE ... EXTERMINATE ...

8.2 LEAVING THE EFFECTS MODE

To return to Stereo Master's main screen, select the EXIT button.

9.0 HELP !!

What follows is an attempt to answer some of the more straightforward questions which have been commonly asked in the past. Usually, questions directed towards us are simple questions which, if the manual were read thoroughly, could have been avoided. Please be certain to have read any appropriate sections of the manual before contacting MICRODEAL.

9.1 I can't record anything / I can't get an input

This problem probably confuses more people than all the other problems put together. Before you get onto the phone and start getting all upset or start sending the sampler back for replacement, please read and check the following very carefully.

Yes, occasionally somebody gets a genuinely faulty cartridge, but this really is quite rare. Every single unit is hand assembled and 100% functionally tested before it leaves us - THATS A PROMISE. This gives us a high degree of confidence that your cartridge is probably O.K. It really is more likely to be something else causing the problem.

First, Stereo Master has a Stereo 3.5mm jack plug on its input. This is 100% compatible with the type of headphone socket found on any current portable 'WALKMAN' tape or C.D. player. Therefore, please check the leads which are used to plug into the sampler and the sound source, are they compatible? If in doubt, check at your local electronics or HIFI shop. They will probably be able to advise you on the correct choice of lead.

Is the sound source switched on ? Is the volume UP ? To check this, is there any movement on the oscilloscope displays? if so, then the leads are probably O.K.

Are the lines in the scope windows across the middle? If so, the cartridge is probably working. If not (They are hard against the top or bottom of the window), then please check the installation of the cartridge carefully (Section 3.1). If the problem still persists, please consult your dealer.

Have you switched the scopes off (Section 6.3.8) ?

Do you have the correct Recording mode set (Section 6.3.1) ?

Have you accidentally left AUTO record mode on (Section 6.3.5) ?

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9.2 I have a sample on the screen but I can't hear it on playback.

Are you playing the correct channel ? Perhaps you have recorded a sample on the left channel but have the channel controls set to right. Check your input lead & connection, are they correct ? Can you obtain a scope waveform or a VU meter response ? If so, then the signal should be audible from the 'Listen' facility (See section 6.3.3). Finally, check that the output mode set is correct for the output device being used.

9.3 Background noise on samples.

A low level of background noise is inevitable. However, its effects can be reduced to a minimum by ensuring that the input signal is as high as possible. Use of a poor signal source such as a low quality tape player is a classic cause of 'HISSY' samples, try always to keep the tape player well serviced. Clean the tape head and capstan roller regularly. Finally, the environment in which Stereo Master itself is placed can be a cause of low level noise. Try and keep your computer/sampler as far away from the VDU as possible. Any device which contains a power transformer or an electric motor is a potential source of noise, including some disk drives! The computer itself should not pose too much of a problem as it is quite well shielded.

9.4 The Special Effects aren't making any sounds

Clicking on each special effect button will select that effect. To activate the effect, you must click the PLAY button.

The EFFECTS take their input from only one channel. If your channel control is set to LEFT or STEREO, they will read the LEFT channel. If your channel control is set to RIGHT, they will read the RIGHT channel. So if you have a mono input, be sure to set the correct channel before you enter the special effects mode.

9.5 The MIDI isn't working

MIDI systems are very easy to set up, however the novice can easily fall into a number of traps.

First, ensure that the lead connecting the instrument to the keyboard is a PROPER MIDI lead, do not try to substitute a 5 pin DIN plug audio lead, this will usually end in tears.

Next, ensure that the MIDI IN on the computer runs to the MIDI OUT on the instrument. NEVER connect IN to IN or OUT to OUT!

Make sure that the instrument is set to transmit on the same MIDI CHANNEL as the software is set to receive on. If these are different, then the machines will simply ignore each other and will refuse to make a peep.

Finally, please do not get confused with AUDIO equipment fitted with 5 pin DIN sockets which look like MIDI sockets, THEY ARE NOT THE SAME. Any attempt to connect an amplifier (for example) to a MIDI interface will do nothing useful, infact the only thing it might do is damage something !

9.6 Disappearing samples

It is a common mistake to load or record a sample into the computer, and then to try to do the same thing again without moving the START CURSOR. This is a BIG mistake. The sample display windows are the only storage space which the computer has. Each time a sample is loaded or recorded into the computer, it is taking the place of whatever was on the screen before. There is no magic involved and no secret storage space which is likely to recover a lost sample (Except the EDIT BUFFER). If you wish to store more than one sample in the machine at a time, it is necessary to move the START CURSOR to the end of the first sample before doing so. Otherwise the first sample will be over-written!!

9.7 I can't SAVE my samples to disk

It is strongly recommended that samples are saved onto a different disk to that on which Stereo Master is found (And always use a backup of this). The most common problem is that somebody with a 1 megabyte computer will try to save loads of 500 or 600 Kbyte samples onto the same floppy disk. This is a big mistake since such a disk can only hold one sample of this size. The worst case is when a 2 or 4 Mbyte user tries to save a huge sample onto a 720 kbyte floppy. Sorry, it just won't go ! Try to use the compress functions to make the sample a more manageable size.

Finally, a common mistake is to save samples out with common file names,

**** BEWARE **** All samples must have a unique name, duplications will over-write the previous file of the same name.

10.0 Hints and tips.

Digital sampling can be exciting. The possibilities offered by it open a whole new world of digital recording and mixing. However, some experience is often needed to get the most out of such packages. Here are a few simple ideas that we have picked up and use ourselves :-

10.1 Sample Quality.

It cannot be stressed enough about the importance of setting up the input of the sampler correctly. The two factors which affect the sample quality most are the volume of the input and the speed at which it is sampled. It is advised that sampling should be carried out at the highest possible frequency and that samples should be compressed for low frequency playback, superior results will be obtained this way. If necessary, a graphic equaliser or filter box can be placed between the sample source and the cartridge in an attempt to remove the aliasing noises which are obtained when sampling at low frequencies. If an equaliser is not to hand, then sometimes the source equipment itself might be fitted with a BASS or TREBLE or some other form of tone control.

10.2 Effects of looping.

Looping can sound strange if care is not taken to match up two important aspects of the sample volume. The first is that both ends of the sample start & end are roughly the same. Ideally, the sample should start and end with zero volume. This ensures that there is not a large, sudden change of volume which would be audible as a click or pop. Judicious use of the magnify facility at its highest level is invaluable here since it is possible to locate the pointers exactly on the desired volume. The FADE functions can be used to good effect here.

The second aspect to be wary of is that the general 'ENVELOPE' of the sample should also start and end at roughly the same level. If not, then the sample will appear to modulate every time the sample is looped. A little patience and lot of practice with positioning the cursors helps a great deal in obtaining the most professional results.

10.3 Clicks on spliced samples.

Appending one sample onto the end of another can often produce clicks similar to those obtained with looping (see 10.3 above). The same precautions regarding sample volume changes should be observed. However, unlike looping, there is one last trick that can be employed to ease the end of one sample into the start of another. The trick is to place the second sample close to the end of the first. Next, locate the meeting point of the samples by placing it somewhere in the centre of the display. Now we can use the magnify function to zoom into the area of the joint of the samples.

Locate the cursors at one part of each sample that have approximately the same level on the display (preferably close to the centre line) and use the CUT function to bring the two sections of sample together. By returning to the original display mode we should now see the two spliced samples, which, when played, should have a more natural transition from one to the other (and hopefully does not click).

Clicks between samples can sometimes be avoided by OVERLAYing the start of one sample over the end of the previous one. This ensures that they blend together more naturally.

10.4 Sample length.

It is recommended that close attention is paid to the lengths of the samples. Try not to save any blank space at the start and end of a sample, especially when a sample is to be saved to disk or assigned to a MIDI function key. This helps to optimise the computers memory for extra sampling space and disk space for more or other larger samples.

Another useful tip to help keep MIDI sets smaller is to ensure that all samples are loaded into the computer end to end with as little gap between them as possible. Also, try to spread MONO samples evenly between the LEFT and RIGHT channels and assign them to the function keys accordingly. This helps because the program saves the samples out as a single block of data between the highest and lowest addresses, saving both channels even if they are not both used. The more compact this block is, the better, since it is more likely to fit on the disk!

APPENDIX i

Programming for STEREO-MASTER

STEREO-MASTER is equipped with a high performance, Multiplexed 8-BIT A-D convertor. For the enthusiastic programmer, access is freely provided to this Stereo input port. All data that is read into the cartridge is initially in UN-SIGNED or 'BYTE EXCESS' format. This can provide an extra problem to the programmer from the point of view of routine speed since data should be signed before writing it into RAM. It is necessary to do this so that the samples are in a format compatible with the STE/TT DMA hardware which can only accept signed DATA. The simplest way to SIGN and UN-SIGN this data is to 'EOR.B \$80' onto the value read in from the port.

In the case of STEREO samples, the Left and Right hand channel BYTES are interleaved with one another, Left BYTE first. To maintain the flexibility of the software which is to play these samples, it can be seen that a useful file format such as the '.AVR' format is necessary (I.E. to be able to decode signed/un-signed and MONO/STEREO samples is most important). Please refer to the next section of the APPENDIX to see how closely the file format follows the form of the sample as it is held in memory.

Sample INPUT

STEREO-MASTER has its input addresses mapped directly onto the 68000 DATA BUS and can only be accessed while the microprocessor is being used in SUPERVISOR mode.

The Stereo Master cartridge features 3 important addresses which control its actions. The first is the actual INPUT address which is located at \$FB0001. Any attempt to read this address will provide the last piece of data read by the cartridge, from the last selected channel (left or Right) and automatically trigger the next sample from the currently selected channel.

The other two addresses are the Left and Right channel select addresses which are located at \$FA0002 and \$FA0000 respectively. Reading a dummy value from either of these two locations will cause the sampler to take its next input request from the chosen address and it will continue to do so until it is either changed or switched off!

The following piece of machine code demonstrates exactly how to read a STEREO sample from the ports into Memory. A6 is assumed to hold the RAM storage address. D1 is assumed to contain the mask value of \$80 :-

ATARI ST - STEREO MASTER

INPUT	EQU	\$FB0001	
LEFT	EQU	\$FA0002	
RIGHT	EQU	\$FA0000	
SAMPLE	TST.W	RIGHT	SET TO RIGHT CHANNEL
	MOVE.B	INPUT,D0	READ LEFT CHANNEL
	EOR.B	D1,D0	SIGN THE DATA
	MOVE.B	D0,(A6)+	AND SAVE IT (LEFT FIRST)
	DELAY	10_uS	MINIMUM DELAY BETWEEN READS
	TST.W	LEFT	SET TO LEFT CHANNEL
	MOVE.B	INPUT,D0	READ RIGHT CHANNEL
	EOR.B	D1,D0	SIGN THE DATA
	MOVE.B	D0,(A6)+	AND SAVE IT (RIGHT SECOND)

NOTES ON AUTO-TRIGGERING

A read from the INPUT address will always provide the LAST converted value and will trigger the next one which will typically be available within the next 10 micro seconds. Please note that, if the port has not been read for some time, the value being read from the port may be STALE DATA because of the AUTO trigger of the next sample. As a result of this, STALE data may need to be 'flushed' periodically, before any new data is requested.

One slightly confusing aspect of the AUTO trigger is that the switching of channels does not affect the input in any way. All this does is to tell the computer from where it should take its next reading after the value CURRENTLY held in the A-D convertor is read out.

SAMPLING IN MONO

When sampling from either the LEFT channel or the RIGHT, it is only necessary to perform one operation to set the channel. It is NOT necessary to reset the channel prior to each read. With a minimum delay of 10 uS between each read, MONO sampling can theoretically obtain a maximum sample rate of about 100 kHz.

SAMPLING IN STEREO

When sampling in stereo, it is always necessary to do two read and two channel swap operations. Unfortunately, this is made rather confusing by the auto triggering hardware. When setting the channel from which a sample is to be taken, the user is telling the cartridge which channel the NEXT conversion is to be taken from, but please remember that the cartridge will ALWAYS have a value waiting to be read out and this was taken from where ever the cartridge was set BEFORE the channel change operation.

ATARI ST - STEREO MASTER

30 - 33	4	LONG FIRST LOOP POINT (OFFSET IN DATA WORDS) FORCE \$0000 IF UNUSED
34 - 37	4	LONG END LOOP POINT (OFFSET IN DATA WORDS) FORCE TO SAMPLE LENGTH IF UNUSED
38 - 39	2	- DO NOT USE - RESERVED AREA - MIDI KEYBOARD SPLIT
40 - 41	2	- DO NOT USE - RESERVED AREA - SAMPLE COMPRESSION
42 - 43	2	- DO NOT USE - RESERVED AREA - FILL WITH \$00
44 - 63	20	FILE NAME EXTENSION. FILL WITH \$00 IF UNUSED
64 - 127	64	FREE AREA FOR DEFINITION BY USER. MAY HAVE ASCII MESSAGE OR OTHER USER DEFINED DATA.
128 - END		-SAMPLE- held in format described by header.

This format represents a useful header which can be used to describe, not only 16 BIT samples, but has the flexibility built into it to cater for MONO/STEREO and 8, 12, 14 and 16 BIT data sizes. 2-BIT SYSTEMS recommend that users DO NOT occupy the reserved space in the first 64 BYTES of the header, the last 64 BYTES have been provided for miscellaneous use and abuse.

If the user is developing software which uses the AVR format, please note the following :-

When reading samples

- i) Always check the first 4 BYTES of the sample file for '2BIT' before attempting to load in any sample in from disk. If this header is found, then it can be assumed that the sample is in AVR format, no matter what the file extension is. It is useful, though not important, to save AVR files out as XXXX.AVR.
- ii) After having established that the sample is indeed an AVR file, load the 128 BYTE header into a separate area of memory. Interpret this header before attempting to load the rest of the file. This is important for a number of reasons, the least of which is that if a Stereo or 16 BIT sample were just about to be loaded, the load address for the sample block should be made on a WORD boundary.
- iii) Do not take anything for granted about the sample. Ensure that all of the important parameters have been read and interpreted. E.G. SIGN status. If your program can only use BYTE EXCESS samples then ensure that the sample is not signed (and un-sign it if it is).

STEREO MASTER - ATARI ST

iv) When reading the FREQUENCY long word, mask off the top 8 BITS. These bits were used in ST-REPLAY, REPLAY PROFESSIONAL and the first version of the PRO-SERIES editors. This byte took the form of a value from 0 to 7 which was used to denote a fixed SYSTEM frequency (0 = 5 kHz, 7 = 48 kHz etc). If this value is read as \$FF then the editor assumes that the sample frequency is not immediately compatible with the choice which the cartridge and EDITOR support.

v) After reading the 8 byte ASCII file name, if the last byte is NULL (\$00) then this is the maximum name length. However, if this last digit is NOT zero, then a check should be made at the first byte of the file name extension. If this value is also not zero, then upto an extra 20 Characters can be added to the first 8, yielding a maximum filename of upto 28 characters.

When writing a file

i) ALWAYS wipe the entire header area with zero's when constructing a new header.

ii) ALWAYS force default values and never leave any RUBBISH in areas unused by the program in question, remember, another program may look for DATA which is nonsense otherwise.

iii) If looping is not used within a sample, always force the start loop to be zero and the end loop to match the sample length.

iv) When writing the sample record frequency long word into the header, ensure that the default of \$FF is placed into the top 8 BITS.

SIZES and POINTER OFFSETS

Please note the use of the phrase 'WORD size' when expressing the size of a sample or the offset of the loop pointers from the start of the sample. It is assumed that if the sample is an 8 BIT sample (or less), then this word size is BYTE. If the sample is greater than 8 BITS then the size is assumed to be a 16 BIT data WORD. Hence a 16 BIT file size of 10,000 words would actually be 20,000 BYTES in length. The value stored in the header should be 10,000.

STEREO SAMPLES

In the same way that 16 BIT format samples should be loaded into word boundary addresses, STEREO samples should also be WORD aligned on loading. This ensures that an 8 BIT stereo pair will be readable straight into the full word of a register without causing a BUS ERROR and that 16 BIT samples will again be properly aligned. The Stereo information will be stored in an interleaved fashion with the LEFT channel data being first, followed by the RIGHT channel second. As a result, all Left channel samples will be referenced with EVEN address offsets from the start of the sample beginning with 0 and continuing 2, 4, 6 ... etc.

All Right data will be ODD byte or word offset from the start of the sample, starting from 1 and continuing 3, 5, 7 etc. Upon loading a stereo sample it would be quite possible to split the sample into 2 distinct MONO sample blocks.

MIXED resolution samples

Upon loading a sample which has a resolution of 8 BITS, a simple routine could be written to re-format the sample into a signed 16 BIT format. Care must be taken to observe the status of the RESOLUTION and SIGN flags. Please bear in mind that it is totally possible to load in an unsigned 12 BIT sample, in which case the data is assumed to be RIGHT justified and that the most significant 4 BITS are blank. If this were true, then a suitably written routine could re-adjust the sample contents into a more suitable form, ready for direct output, rather than using a completely different output routine. It should be noted that both the AVR PRO series 12 and 16 samplers store their data in 16 BIT signed format, despite the fact that they are 12 BIT and 16 BIT samplers respectively. This ensures a wider range of software compatibility across products and provides a less torturous route to upgrading systems!

APPENDIX iii

Third party software / Sample Libraries

In the interest of supporting our customers, MICRODEAL wish to encourage the proliferation of Third party software which is compatible with their entire range of music related products. Developers can call for technical assistance in developing their software. It must be stated that MICRODEAL publish the following data purely as a service to its customers, under no circumstances can they take responsibility for any transactions which occur between customers who trade with individuals in the list, nor can they make any claims about the suitability, quality or merchantability of the products listed. It must be up to the individual to contact the suppliers and ascertain such information for themselves.

Sample Libraries

SUPPLIER : PREMIER MUSIC SERVICES LIMITED.

CONTACT : MERVYN STATON

ADDRESS : 18 FOYLE ROAD,
CHANDLERS FORD,
EASTLEIGH,
HANTS.
SO5 3QP

STEREO MASTER - ATARI ST

TELEPHONE : (0703) 260485

COMMENTS: A huge software base of samples converted from Professional 16 BIT sampling machines. There is no theme to the library, but the breadth of choice is enormous, ranging from classical and rock instruments through Human vocals to Rhythm, percussion and special effects. Phone for full details of catalogue or send a stamped, addressed envelope (A4/A5 size) with £1.00 to above address.

SUPPLIER : RIVERDENE P.D.L

CONTACT : ALASTAIR CRAIG

ADDRESS : 30a SCHOOL ROAD,
TILEHURST,
READING,
BERKSHIRE.
RG3 5AN

TELEPHONE : (0734) 452416

COMMENTS: This public domain library is best known for its wide range of low cost computer utilities but does offer a large range of 8 BIT samples at low prices. The addition of more samples to the Library will depend largely upon the submission of samples from users who wish to treat the library as a low cost dissemination network.

SUPPLIER : DESERT ISLAND

ADDRESS : 20 EDINGTON RD.
MILTON OF CULCABOCK
INVERNESS
SCOTLAND
IV2 3DB

TELEPHONE: (0463) 221488

COMMENTS: One of the largest libraries for cassette based samples, you name it and they've got it, everything from sound effects, house sounds and effects to complete keyboard sample sets.

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