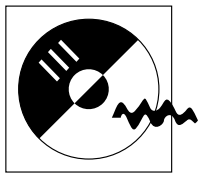


SONIC SOLUTIONS

SonicStudio 5

Machine Control Option

(SS-516)

SonicStudio 5, Machine Control (SS-516)

Written and designed at Sonic Solutions, 101 Rowland Blvd., Novato, CA. 94945, USA

Printed in the USA

Sonic Part Number 820009B (12/96)

Contents

Machine Control Option

The SS-516 Machine Control option for SonicStudio™ provides hardware and software connections for controlling external audio and video recorders via 9-pin serial protocol. Machine Control can be used for the following:

- Automate the process of loading audio material into the system
- Transfer the output to a final delivery medium or archive
- Slave the Video Tape Recorder (VTR) to SonicStudio's Edit Decision List (EDL)
- Slave SonicStudio to the transport.

Installation and Checkout

For operation, the Machine Control option requires both hardware, to connect the serial ports on the SSP-3 to the target audio or video transports, and software to send the proper commands and read the state of each controlled transport.

Hardware (SSP-3)

The hardware component of the Machine Control option consists of a single connecting cable. The Serial Machine Control cable is a Y cable with an 8-pin, mini-DIN plug on one end, and male 9-pin D-sub miniature connectors on the other two ends. This cable plugs into the connector on the I/O Connector board (the board that carries the SCSI connector that goes to the system's Sound Disks). The I/O Connector board must be connected via ribbon cable to the SSP-3 board for Machine Control to function.

To use SonicStudio's machine control features, the Serial Machine Control cable must be connected from the I/O connector board's mini-DIN output to one or two machines that accept control in standard 9-pin serial format.

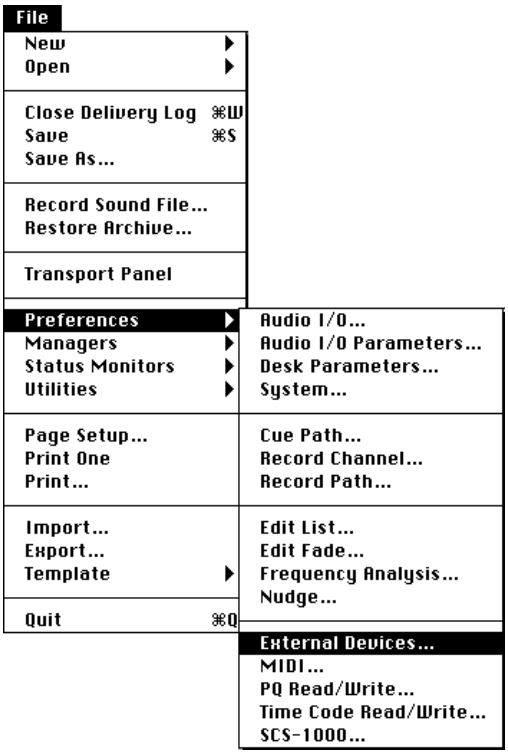
Software

Machine Control software is included on the system diskettes that come with the package. Follow the instructions in SonicStudio Installation and Maintenance manual to install the software. When the system starts, Machine Control software is automatically loaded.

Software Configuration

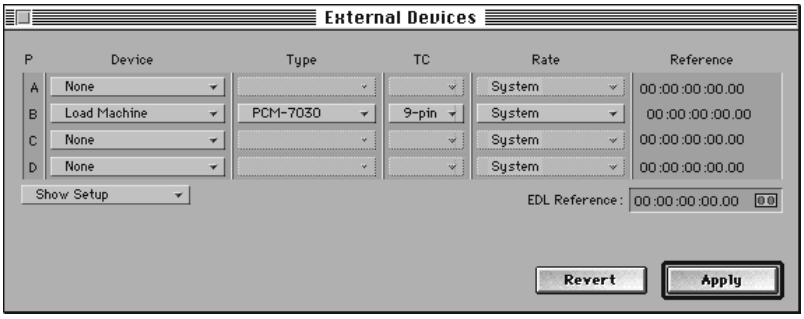
One device is designated as the load machine and the other is the dump machine. These terms refer to loading and dumping from the system's Project Manager functions. Either machine can also be interlocked slaved to playback from the EDL.

The control of external devices is activated and configured using the External Devices dialog box, accessed from the Preferences submenu of the File menu.



The External Devices dialog box displays in response to this command. External Devices determines how the system interacts with devices under control.

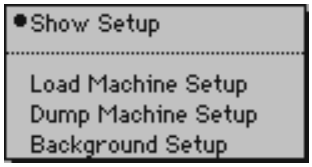
After all options are selected, click the Apply button to record these preferences. Use the Revert button to return to the previous setting.



P refers to serial ports. The four ports are labeled A, B, C, and D.

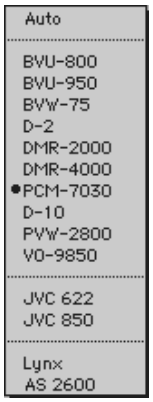
To select a serial port:

1. Click the Device button next to the port you prefer. This displays a dialog box allowing you to choose Load Machine, Dump Machine, Both or None for that port.



It is also necessary to designate the type of device being controlled.

2. Click the Type button next to the selected Device to engage a menu of several devices that are commonly used in professional applications.



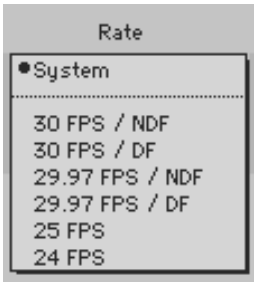
It is not feasible to provide a separate selection for every model of device that might be connected to the system. Note that the majority of devices on the market with serial control capability adhere to the protocol used by Sony Corporation in their professional video and digital audio equipment.

The DMR-4000 selection matches this implementation for the special transport that Sony provides for use with their PCM-1630 digital audio mastering system. This is exactly the same as Sony's popular BVU-800 video transport.

If the model in use is not included in the list of selections, it is likely that the setting for DMR-4000 will work. The control protocol of some devices can be set in the unit's software. If this is the case, set that device to Sony, or BVU-800 protocol, and set the Machine Type to DMR-4000. This covers the majority of devices on the market. If there are questions about the protocol used by the device, contact the unit’s manufacturer.

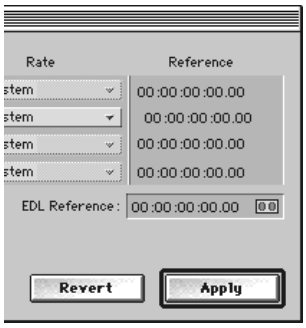
Most devices use the 9-pin serial link to carry time code as well as control commands. When using a device that does not communicate time code in this way, it is necessary to connect a Linear Time Code (LTC) output from the device to the system's time code reader, then to select LTC as the time code source by clicking the TC button for the appropriate serial port. Note that activated serial ports default to the 9-pin setting unless LTC is chosen.

For virtually all SonicStudio applications, it is best to set the system's time code rate with the System Preferences dialog box. In this case, all external devices should then be set to run at the default System time code setting. In the event that a time code rate different from that of SonicStudio is required, click the Rate button for that device's serial port then select the desired format.



The Reference dialog box allows you to alter the playback offset for an external device. For example, if an EDL begins at 00:00:00:00 but the corresponding videotape begins at 02:00:00:00, you can set an offset of 02:00:00:00. Thus when the EDL is at 01:03:53:18, the slaved machine would be at 03:03:53:18. Change the defaults by clicking the appropriate number then either typing or click-dragging the desired offset.

The numerical difference between the reference number for the external device and the reference for the EDL is taken as the appropriate offset. This is particularly helpful when working with Foot-Frames (35mm Film, for example) in the EDL and 29.97 time code on the tape machine. In this way, both the EDL and tape machine can be synchronized perfectly without having to mentally perform a conversion to arrive at an offset.



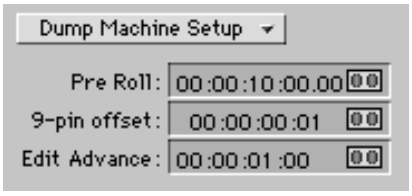
3. Click the Show Setup button to display a menu which allows you to access a range of display options.

By selecting Load Machine you gain access to the Pre Roll and 9-pin offset displays. Selecting Dump Machine brings up both Pre Roll and 9-pin as well as the Edit Advance settings.

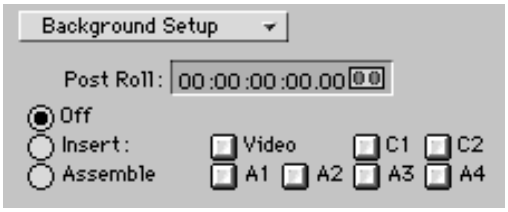
Pre Roll determines the amount of time by which the deck will precede playback of the Sonic's EDL. It is generally recommended that the Pre Roll be set to five seconds for playbacks and a minimum of 10 seconds for layback (recording) to the Video Tape Recorder (VTR.)

The 9-pin offset is an additional location to adjust for inconsistencies in time code synchronization. Historically, it is set to one frame due to the fact that many tape machines will read the LTC of a tape using an internal time code reader and then broadcast the time code across the 9-pin roughly one frame late. Most new tape machines can compensate for this delay.

The Edit Advance option, available under the Dump settings, compensates for the recording punch-in delay introduced by the distance between a tape machine's record head and playback head. Each tape machine has a slightly different value for this and the External Devices dialog box takes most cases into account. The value can be adjusted if your tape machine differs.

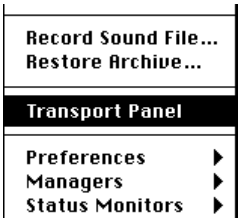


Background Setup dialog box in the Show Setup menu provides choices for machine control recording. In Insert mode, you can select video or six channels of audio for punch-in. In Assemble mode, one video and two audio channels are utilized for punch-in. During Assemble mode, the tape machine records time code sent by SonicStudio.

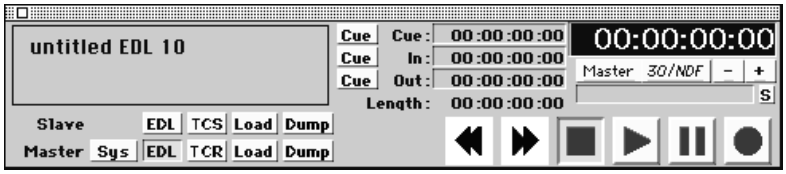


Testing Machine Control

SonicStudio software provides a Transport Panel that can be used for controlling playback and recording on external machines, as well as the system's own Sound Disks. This panel displays after you select the command Transport Panel from the File menu.



The Transport Panel floats in front of all other dialog boxes. If the Macintosh video display is large enough to allow it, place the Transport Panel to one side of the screen so that it doesn't cover other display dialog boxes.



In the lower-left section of the Transport Panel is a group of buttons that determine which system elements are being controlled, as well as which elements (if any) behave as slaves. The external transports appear here as Load and Dump.

To test the control of external transports:

1. Make sure that the target device(s) are set to Remote (9-pin).
2. Load each transport with a tape that has been appropriately striped with time code or control track.
   From the File menu select Transport Panel. The Transport Panel dialog box displays.
3. From the Transport Panel, click the Load or Dump button in the Master row.
   When the corresponding button on the Transport Panel highlights, the external transport can respond to the buttons in the lower right of the Transport Panel. These buttons correspond to standard functions: Play, Stop, Fast-Forward, Rewind, etc.
4. Verify that the external transport responds to control from the Transport Panel, and that the correct location appears in the Transport Panel's Location window.
5. If both Load and Dump devices are available, test the other transport by selecting the corresponding button as Master and operating the transport from the on-screen Transport Panel.
   If the external transports respond to control from the Transport Panel, then it is nearly certain that they will operate for auto load, dump, and interlock. It is possible that parameters for pre-roll, etc. may require adjustment later.

If you encounter any problems, verify the following:

- The cables are properly connected from the I/O Connector board mini-DIN connector to the transport's 9-pin serial input(s).
- The external transports are powered ON and set for Remote control.
- The devices' control protocols correspond to the Machine Type selected in External Devices.
- The correct serial ports are selected for each device.
- The transport is loaded with a tape that has been striped in advance with appropriate time information.

If no result is obtained, contact the device's manufacturer to verify its protocol, then contact your dealer or Sonic Solution’s customer support.

Machine-Controlled Dump and Load

SonicStudio's Project Manager module is used to create Logs that define the audio to be loaded into the system as well the elements that constitute a Delivery to the client. The delivery is SonicStudio's output to be transferred to tape or CD-R and provided to the client. An Archive can also be created that stores both audio source files and complete Edit Decision Lists (EDLs) for storage on digital audio tape.

The Project Manager can be used to transfer material to and from the system manually, but it reaches it full potential when used along with the machine control option. In this mode, the processes of transferring audio to and from the system can be automated to a high degree, and allowed to run in the[1] background, freeing the rest of the system for concurrent editing.

Audio equipment with serial control includes the Sony PCM-1620 / DMR-4000 system, a number of professional DAT machines, and some multi-track recorders. Though not controlled serially, the optional CD-200 CD Printer provides the equivalent function (for output only).

Machine-Controlled Loading

Once a Source Log has been created (see Project Manager in the Window Reference chapter of the *SonicStudio eference Manual*), the actual loading of audio can be turned over to the machine control software. You must simply make sure that the appropriate, time-coded tapes are loaded onto the load machine.

Loading with machine control is easy, because the system does the work of cueing the tapes, and starting and stopping recording. However, the system must be set up properly in order to operate the load machine and locate the correct points on each tape.

Configuring the Load Machine

For machine-controlled loading, each tape must be striped with appropriate time code or control information, and the External Devices dialog box set to use the correct type and format of code.

1. Open the External Devices dialog box and set a serial port for the load machine.

2. Select the appropriate machine type.

Most decks that can be controlled serially use the 9-pin connection to carry time code information as well as control commands. Normally, this is used for locating the deck during automatic loading. A few devices, however, do not carry this information serially, and the time code reader must be connected separately.

3. If the device used requires a separate time code connection, or if problems occur in using the time code from the serial link, select LTC with the TC button.

This tells the system to ignore the time code on the serial link and use the time code reader instead.

The Rate field defines the rate of time code which SonicStudio expects to see from the VTR. This rate should match the rate used on whatever tape is currently in the deck.

4. Click the Rate field. A dialog box displays.

5. Select the correct time code rate.

Note – Be sure to double check the tape's time code rate to avoid possible sync problems.

CAUTION It is important that the time code format selected in the Rate field in External Devices match the time code that is striped on the source tape.

Executing the Load

Once the External Devices have been set properly, the actual loading is simple.

1. Click the Load button in the Source Log dialog box.
2. Mount the first tape on the Source (Load) machine when prompted. The system can locate all the correct points on tape by itself, but it is not able to distinguish one tape from another. You must make sure that the correct tape is loaded.

3. Once the designated tape is loaded on the Source machine, click the OK button in the Warning dialog box to start the actual loading.

The system then proceeds to locate and load all of the Sound Files in the Source Log for that particular Tape. This process proceeds automatically and without intervention from you. If a fault is detected, such as no response from the Load machine or missing or mismatched time code, the system alerts you.

The loading process proceeds in the background, allowing you to use the system for other work while this takes place. Once the first Sound File has been loaded, you can open that file, and begin editing. In fact, a

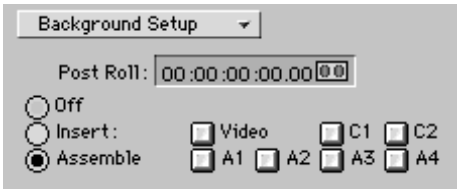
Sound File can be opened before it has finished loading. You will see the already-loaded part of the Sound File on the display, while the remainder of the allotted duration appears as random information.

When the system finishes loading the first Tape, it automatically prompts you to load the next Tape (if any) in the sequence. This load procedure repeats until all Sound Files from all Tapes in the Source Log have been loaded.

Machine-Controlled Dump

To execute a machine-controlled dump, the tape deck or other device must be loaded with a tape with appropriate time code information, and the External Devices dialog box must be set up for Dumping.

In addition, the External Devices dialog box must be set to put the target device into the correct editing mode. Use Background Setup in the Show Setup menu to do so.



For most types of devices, the correct choice for the Record mode is Assemble. This ensures that the device will go into record when commanded by SonicStudio. However, this mode will overwrite time codes already existing on the tape. If this is not desired, Insert mode should be used.

With the Dump machine and External Devices dialog box set up properly, the dump itself is executed by pressing the Dump button on the Delivery Log dialog box. The system prompts you to make sure a properly striped tape is inserted in the drive, and then executes the dump without further intervention from you. The Background Manager can be used to monitor the progress of the operation.

Archive and Restore with Machine Control

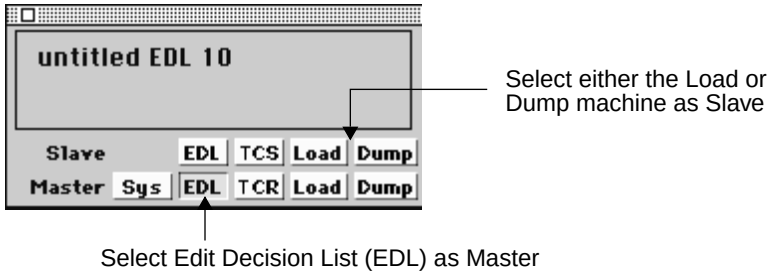
As with loading and dumping, you can create and restore Archives manually or automatically by using the Machine Control option. Refer to Project Manager in the Windows Reference chapter of the *Sonic Studio Reference Manual*.

When either creating the Archive Tape or specifying a Tape to be restored, the tape is specified as a Timed Tape. This tells the system to use its machine control features to control the transports, rather than prompting you to perform the necessary operations.

The actual dumping or restoring of the Archive proceeds normally, except that you need not be concerned with most of the actual manipulation of the tape machines. The system prompts you, however, to make sure that the correct tape is loaded before starting the dump or restore.

Interlock with External Transports

The machine-control, equipped SonicStudio can also slave the external device to playback the Edit Decision List. This is done by using the Master and Slave buttons on the Transport Panel.

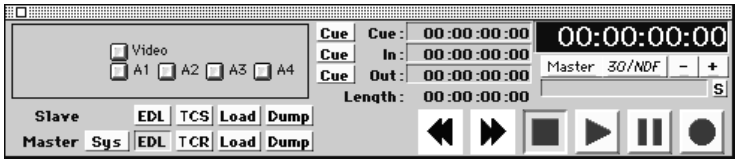


In order to perform the interlock, the external device must be connected via serial machine control, with time code, as described earlier. Then the device can be slaved to SonicStudio's playback simply by choosing either the Load or Dump machine as slave.

The slave transport then plays back in sync with the Edit Decision List.

Layback and Editing Modes

The external transport designated as the Dump machine is subject to control of its recording as well as playback functions. (The Load machine can only play under SonicStudio's control.)



When Dump is selected as the Master, you will be presented with several checkboxes in the upper left-hand section of the transport. The Insert section allows you to select any of four audio channels (corresponding to the D2 Video format's four audio tracks) for recording,

as well as the video track. If desired, you can select Assembly for recording to all channels. As these different modes are selected, the tape machine will show the corresponding selections on its editing panel.

If the Dump transport is controlled manually from the Transport Panel, it can be placed in recording mode by clicking the Transport Panel Record button during play. Only the channels that have been enabled in the editing mode checkboxes will go into record. If SonicStudio is slaved to time code (LTC) from the Dump transport, the output of SonicStudio can be transferred to the Dump machine's audio tracks.

If the Dump machine is slaved (interlocked) to playback of the SonicStudio EDL, the system will execute a timed punch-in, using the times entered into the In and Out Cue memories of the Transport Panel. If values are not entered, the system prompts you to enter times before proceeding.

This provides an easy way to transfer audio in sync with video to an analog or digital video tape for final output.

Summary

The SS-516 Machine Control option provides a powerful means of extending the operation of SonicStudio for greatest productivity and efficiency. It permits automation of the processes of loading and dumping audio from the system, as well as a way to slave external transports to SonicStudio for sound for picture applications.

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