

MachineControl™

Guide

Version 2.0 for Pro Tools TDM on Macintosh and Windows

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chapter 1

Introduction

MachineControl™ is special purpose software for Pro Tools that enables serial communication with remote audio and video machines. MachineControl lets you integrate a TDM-equipped Pro Tools system with external 9-pin or V-LAN machines.

This guide provides installation and operational instructions for MachineControl version 2.0 only (for Pro Tools 6.0 and higher on Macintosh OS X). If you are using a prior version of Pro Tools (5.3.1 or earlier) see the MachineControl 1.1 Guide included with your MachineControl package.

MachineControl Components

Your MachineControl package includes:

- ◆ MachineControl Installer CD-ROM
- ◆ One serial to 9-pin Serial Control Cable (male 9-pin)
- ◆ One Remote Mode cable (female 9-pin)
- ◆ MachineControl iLok License Card

MachineControl Capabilities

On all supported Pro Tools systems, MachineControl provides the following features:

Pro Tools Transport Master The Pro Tools Transport lets you select Pro Tools or a machine as the *transport master*. When Transport = Pro Tools, the machine play start point is determined by the current Pro Tools timeline location or selection. The Machine Pre-Roll setting is applied, to help assure Pro Tools is seeing time code in time to lock up at the insertion/selection. When Transport = Machine, the machine play start is determined by the machine location. Machine pre-roll and timeline selection do not affect machine location in this mode.

Cueing, Scrubbing, and Pre-Roll Numerous settings let you optimize MachineControl operation. Adjustable machine pre-roll, selectable edit and memory location chasing, and other preference settings are provided.



With Pro Tools|HD, a SYNC I/O is required for frame edge accurate synchronization. With Pro Tools|24 MIX, either a SYNC I/O or USD is required for frame edge accuracy.

Modes of Operation

MachineControl supports two machine communication modes, Serial Control mode and Remote 9-Pin Deck Emulation mode. These modes require a SYNC I/O (or USD).

Serial Control Mode

When used with a SYNC I/O or USD, Serial Control mode provides the following features:

Track Arming Lets you arm tracks of external machines from within Pro Tools, for layback and transfer configuration. Features include individual record enables for up to 48 external tracks, with selectable record protocol and Edit-mode. Machine profiles preconfigure track arming for most machine types.

Serial Time Code Lets Pro Tools not only control an external machine, but also receive time code position using only the serial cable. (This mode requires that the 9-pin device be capable of transmitting serial time code.)

Remote 9-Pin Deck Emulation Mode

Remote 9-Pin Deck Emulation mode enables Pro Tools to operate in a type of VTR emulation mode. This lets a 9-pin master machine control Pro Tools playback, cueing, and record-arming of tracks. Remote mode requires a Digidesign SYNC I/O (for HD systems) or Universal Slave Driver (USD), and use of the special Remote Mode cable.

System Requirements

Macintosh

- A Digidesign Pro Tools|HD-series, Pro Tools|24 MIX-series, or Pro Tools|24-series system.
- Digidesign SYNC I/O (for Pro Tools|HD, Pro Tools|24 MIX, or Pro Tools|24), or a USD (for Pro Tools|24 MIX or Pro Tools|24)
- For Remote 9-Pin Deck Emulation mode, a serial port is required for the Remote 9-Pin Deck Emulation cable. On USB-only CPUs (such as the G4 and the Blue & White G3), a supported USB-to-serial adaptor, or modem adaptor, may be required. (All other MachineControl features are supported through both of the 9-pin ports on the SYNC I/O.)



We recommend a Keyspan 28x USB to serial adapter for best performance. Check the Digidesign Web site for more information.

- Macintosh OS X v10.2.3

Power Macintosh G4 and G3 If you are using a G4 or a Blue & White G3 with a Pro Tools|24 MIX or Pro Tools|24 system, and you are *not* using a USD, MachineControl can be connected to the DigiSerial Port. See “When to use the DigiSerial Port” on page 7 for more information.

Windows

- Digidesign Pro Tools|HD-series, Pro Tools|24 MIX-series, or Pro Tools|24 seriessystem.
- Digidesign SYNC I/O (for Pro Tools|HD, Pro Tools|24 MIX, or Pro Tools|24), or a USD (for Pro Tools|24 MIX or Pro Tools|24)
- A serial port (COM port) must be available for the included MachineControl cable. If you are not using a USD with Pro Tools, MachineControl can be connected to the DigiSerial Port.

For the latest compatibility information, and a list of qualified computers and hard drives, contact your Digidesign dealer or visit the Digidesign Web site (www.digidesign.com).

Hardware Requirements

Cables

MachineControl comes with the following two cables included:

- Remote Mode 9-Pin Cable, required for VTR emulation. This cable has a female 9-pin connector (D9) at one end and a male 8-pin mini-DIN connector at the other end. Use this cable to connect your 9-pin machine to a serial port on your computer.
- Standard male 8-pin mini-DIN cable to 9-pin cable, for serial time code and all other MachineControl functions (some features require a SYNC I/O or USD).

Machine Requirements

- Video or audio machines that are Sony® 9-pin or Videomedia® V-LAN™ compatible devices. Certain V-LAN machines may not require a time code reader card. Refer to your machine's documentation for more information. For Remote 9-Pin Deck Emulation mode, a controller compatible with the Sony “P2” 9-Pin specification is required.

Synchronization Requirements

The following are required for Serial Control mode and Remote 9-Pin Deck Emulation mode.

Pro Tools|HD A Digidesign SYNC I/O

Pro Tools|24 MIX or Pro Tools|24 A Digidesign SYNC I/O, or Universal Slave Driver™ (USD)

With Pro Tools|24 MIX or Pro Tools|24 systems, the following can be substituted for a SYNC I/O or USD (some limitations apply, as noted):

- A Digidesign Video Slave Driver™ (VSD), plus a standard MIDI interface capable of converting Linear Time Code (LTC) to MIDI Time Code (MTC). This configuration does not support Remote 9-Pin Deck Emulation mode or serial time code.
– or –
- A compatible third-party synchronization device, capable of generating SuperClock (256x clock), and LTC-to-MTC conversion (along with an available serial port for it—do not use the DigiSerial Port for any device other than a SYNC I/O or USD). This type of configuration does not support Remote 9-Pin Deck Emulation mode or serial time code.

About This Guide


This guide assumes:


- You have installed Pro Tools and verified that it works properly.
- You have a thorough understanding of your video deck, external 9-pin decks, mixer, and other equipment.
- ◆ You have an understanding of your synchronization equipment and requirements.


This guide uses the following conventions to indicate menu choices and key commands:

Convention	Action
File > Save Session	Choose Save Session from the File menu
Control+n	Hold down the Control key and press the <i>n</i> key
Option-click	Hold down the Option key and click the mouse button
Right-click (Windows)	Click with the right mouse button

The following symbols are used to highlight important information:

 *User Tips are helpful hints for getting the most from your system.*

 *Important Notices include information that could affect your Pro Tools session data or the performance of your Pro Tools system.*

 *Cross References point to related sections in the Pro Tools Guides.*

MachineControl and Pro Tools Versions

This guide documents features available in Pro Tools version 6.0. Though MachineControl can be used with some earlier software releases of Pro Tools, not all features are available in each version.

The following table lists the versions of Pro Tools supported by MachineControl, along with the major features contained in each MachineControl release.

History of MachineControl Features in Pro Tools

Machine-Control	Pro Tools	Features Introduced
2.0	6.0 only, for Macintosh OS X	Remote Mode Chase LTC, Redefine Current Time Code Location, Track Arming Profiles
1.1	5.3.1	Support for Pro Tools HD and the SYNC I/O
1.0	5.1 or higher	9-pin Remote mode
1.0	5.0 or higher	Support for Serial Time Code as positional reference
1.0	4.3 or higher	Track Arming of Remote Decks
1.0	4.1.1 or higher	Original release

chapter 2

Installation

This chapter shows how to connect your hardware, install MachineControl software, and configure Pro Tools for MachineControl.

Before you Begin

Before you install MachineControl, you must install Pro Tools and confirm that it is operating correctly. Make sure that Pro Tools and your SYNC I/O or other synchronization equipment are already installed and working properly.

Synchronization Requirements

Make sure that you have already connected and verified communication and operation of all your synchronization peripherals.

If you are using a SYNC I/O or USD, use the instructions included in their guides to make sure your equipment is installed correctly.

If you are using a third party synchronization peripheral, refer to its documentation for the proper connections and software settings. Confirm operation and synchronization in Pro Tools.

Register MachineControl

Make sure to complete and return the registration card included with MachineControl. Registered users will receive periodic software update and upgrade notices. Please refer to the registration card for information on technical support.

9-pin Connections and Cables

MachineControl requires its own connections between Pro Tools (or its host computer) and the machine.

Connections differ depending on your Pro Tools hardware and software version, and on which of the two MachineControl operational modes you want to make available.

Serial Control Mode This mode supports bi-directional, serial 9-pin communication between Pro Tools and a machine. Features include the ability to synchronize to serialized time code, arm tracks on the machine remotely, control multiple transports from Pro Tools, and configure other machine settings and options.

Remote 9-Pin Deck Emulation Mode This mode enables a form of *VTR emulation* in Pro Tools. When the Remote Mode cable is used on a supported system, Pro Tools can respond to record-arming, transport, and other standard 9-pin commands.

To determine your connection and cable requirements, use the instructions appropriate for your Pro Tools system and MachineControl operating mode in the following sections.

Pro Tools|HD

Serial Control Mode 9-pin to 9-pin connection(s). When using Pro Tools|HD with a SYNC I/O, as many as two machines can be connected simultaneously using the two 9-pin Out ports on the SYNC I/O. You can control one machine at a time, and switch between them from within Pro Tools. These ports support all MachineControl modes except Remote 9-Pin Deck Emulation mode.

As an alternative, you can utilize the included Serial Control cable connected to a supported serial adaptor. See “System Requirements” on page 2

Remote 9-Pin Deck Emulation mode Serial to 9-pin. This mode requires a CPU serial port or equivalent, and use of the included Remote Mode cable. See Chapter 4, “Remote 9-Pin Deck Emulation Mode” for details on this mode.

Pro Tools|24 MIX or Pro Tools|24

Serial Control Mode Serial to 9-pin (male). Using the Serial Control cable supports bi-directional, serial 9-pin communication between Pro Tools and a machine. Serial Control mode lets you synchronize to serialized time code, arm tracks on the machine remotely, control multiple transports from Pro Tools, as well as other machine settings and options. See “Connecting Machines” on page 8 for connection instructions.

Remote 9-Pin Deck Emulation Mode Serial to 9-pin (female). Using the Remote Mode cable enables a form of *VTR emulation* in Pro Tools. When this cable is installed, Pro Tools can respond to record-arming, transport, and other standard 9-pin commands. See “Connecting Machines” on page 8 for instructions.

⚠ *Do not attempt to substitute 9-pin or serial adaptors for either MachineControl cable. Each cable is specifically wired for one operation mode.*

Serial Ports and MachineControl

Serial port requirements vary depending on whether or not you are using a SYNC I/O, USD, a DigiSerial Port, or other synchronization devices. Before you install MachineControl, you must determine the ports you will use for your system's connections.

When to use the DigiSerial Port

Pro Tools HD Core, MIX Core, and d24 audio cards feature the DigiSerial Port, a special-purpose serial connector.

▲ *If your HD Core card has two DigiSerial Ports (some of the first production units do) always use the DigiSerial Port closest to the DigiLink port. The second port is not active and should never be used.*

Though this port is identical in appearance to the serial ports on some CPUs, it is designed to only be used according to the following rules:

When using a SYNC I/O or USD

◆ If you are using a SYNC I/O (or a USD), the SYNC I/O (or USD) should always be connected to the DigiSerial Port of your HD Core or MIX Core card.

Without a SYNC I/O or USD

◆ If you are using MachineControl, but *not* a SYNC I/O or USD, then the DigiSerial Port can be used for MachineControl. (Not all MachineControl features are supported without a SYNC I/O or USD.)

▲ *The DigiSerial Port should not be used for MIDI interfaces or any other serial device.*

G3 and G4 Computers

Power Macintosh G3 and G4 computers do not have a conventional serial port, so use of a supported serial port adaptor is required.

Currently supported devices include:

- Keyspan USA-28X dual-port high-speed USB-to-Serial adapter (with Printer emulation not enabled).
- GeeThree.com Stealth serial port for G4/AGP
- Griffin Technology G4Port serial port for G4/AGP

For the most current list of supported peripherals, including serial port devices, check the Digidesign Web site (www.digidesign.com).

Connecting Machines

The following provide separate installation instructions for Pro Tools|HD, and Pro Tools|24 MIX. Use the instructions appropriate for your system.

Pro Tools|HD with SYNC I/O

SYNC I/O provides two 9-pin machine ports, to support direct 9-pin connection for MachineControl-enabled Pro Tools systems. Both ports can be connected simultaneously. In this configuration, MachineControl and SYNC I/O provide all connections required for Serial modes, remote track arming, and all MachineControl features except Remote 9-Pin Deck Emulation mode.

Serial Mode

To connect a machine or machines for MachineControl Serial mode:

- Connect a 9-pin cable from either SYNC I/O 9-pin Out port to the 9-pin port of the machine. You can connect two machines, one to each port, and control either one of them at any time.

Remote Mode

To connect a machine for Pro Tools Remote 9-Pin Deck Emulation mode:

- Connect the Remote Mode 9-Pin cable (male 8-pin mini-DIN to female D9) to the 9-pin output of the machine.

Do not use the DigiSerial Port on your HD Core card. This port should only be used for SYNC I/O connection using a DigiSerial cable.

Pro Tools|24 MIX

MachineControl serial connections must be made using the proper 8-pin mini-DIN to 9-pin cable, depending on whether you plan to use Serial mode, or Remote 9-Pin Deck Emulation mode.

Serial Mode

To connect a machine for standard Serial Control mode

- For all MachineControl modes and features (except 9-Pin Deck Emulation), connect the Serial Control Cable (male 9-pin) to the 9-pin input on the machine.

Remote 9-Pin Deck Emulation

To connect to a Macintosh G3 or G4:

- 1 Connect the serial end of your MachineControl cable to the computer, or Pro Tools card:
 - If the DigiSerial Port is being used for a SYNC I/O or USD, connect the MachineControl cable to an available port on a supported serial port adaptor. (See “G3 and G4 Computers” on page 7 for more information.)
 - If you are not using a SYNC I/O or USD, connect the other end to the DigiSerial Port on your Pro Tools MIX Core or d24 card.

To connect to a Macintosh 9500 or 9600:

1 Connect the serial end of your Machine-Control cable to the computer, or to Pro Tools card:

- If you are using a SYNC I/O or USD, use the computer Modem or Printer port or equivalent, whichever is available.
- If you are not using a SYNC I/O or USD, connect the other end to the DigiSerial Port on your Pro Tools MIX Core or d24 card.

To connect to a Windows computer:

1 Connect the serial end of your Machine-Control cable to the computer, or Pro Tools card:

- If you are using a SYNC I/O or USD, use an available COM port for MachineControl connection.
- If you are not using a SYNC I/O or USD, connect the other end to the DigiSerial Port on your MIX Core or d24 card.

Starting Up Your System

You should start up (power) your system in a specific order.

Start your equipment in this order:

- 1** External hard drives. Wait approximately ten seconds for them to come up to speed.
- 2** External machine (VTR, ATR, or synchronizer, and monitors).
- 3** Pro Tools audio interfaces.
- 4** MIDI interfaces and equipment.
- 5** Computer.
- 6** Speakers or monitor system.

Machine Local and Remote Mode

Be sure to set your machine-controllable device to “remote” or “ext” mode to receive the 9-pin or V-LAN information (not “local” or front-panel mode). If all other Pro Tools machine communication is established and the machine is not in remote mode, Pro Tools will indicate machine “local” mode.

Installing MachineControl Software

To install MachineControl, use the Pro Tools Installer CD-ROM, the MachineControl Installer CD-ROM, or download the installer from the Digidesign Web site. There are two install options:

MachineControl for Pro Tools|HD Select this option if you are currently using Pro Tools|HD.

MachineControl for Pro Tools 24|MIX and Pro Tools|24 Systems Select this option if you are currently using Pro Tools 24|MIX or Pro Tools|24.

To install MachineControl:


- 1** Insert the Installer CD-ROM in your DVD or CD-ROM drive and double-click the Installer.
- 2** Select the desired install option.
- 3** Click Install.
- 4** When installation is complete, click Restart.

Authorizing MachineControl

When you launch Pro Tools the first time after installing MachineControl, you will be prompted to authorize it.

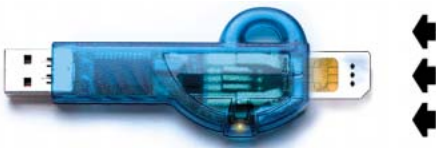
One iLok hardware key is included with your Pro Tools|HD system. This key can hold over 100 authorizations for all of your iLok-enabled software. Once iLok is authorized for a given piece of software, use iLok to authorize that software on any computer.

The iLok is authorized using the License Card included with MachineControl 2.0.

 *If you are upgrading MachineControl, you can purchase an empty iLok hardware key from Digidesign's online store at: www.digidesign.com*

To authorize MachineControl using iLok:

- 1 Insert the iLok into an available USB port on your computer.
- 2 Launch Pro Tools.
- 3 Separate the License Card—the smaller GSM cutout—from the larger protective card by pulling the cutout up and out with your thumb. Do not force your finger downward.
- 4 Insert the MachineControl License Card into the iLok. Visually verify that the License Card makes contact with the iLok's metal card reader.



iLok with License Card

- 5 After authorizing, remove the License Card.

- 6 Follow the on-screen instructions to complete the authorization process.

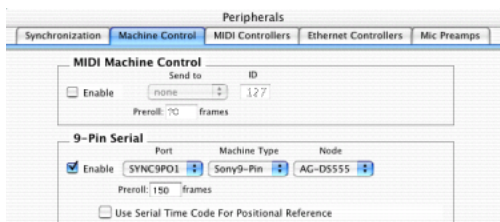
Configuring Pro Tools for MachineControl

To set up a MachineControl device:

- 1 Make sure your equipment is powered on, and launch Pro Tools.
- 2 Choose Setups > Peripherals, and click the Synchronization tab. Configure your synchronization peripheral as necessary. The SYNC I/O is automatically detected and configured by Pro Tools, if connected. (See the SYNC I/O Guide, or the manual that came with your peripheral, for more information.)
- 3 Click the Machine Control tab in the Peripherals window.
- 4 In the 9-pin Serial section, click Enable.
- 5 Use the Port pop-up to select the 9-pin or V-LAN MachineControl port/connection. The available choices will depend on your platform and configuration.
- 6 If necessary, select the appropriate machine type (Sony 9-pin or V-LAN) from the Machine Type pop-up menu.

7 If using a SYNC I/O with Pro Tools|HD, and if you have two machines connected to the two 9-pin ports, repeat the above steps for both devices and ports. This confirms communication, and is also the method to switch between the two machines in a session. See “Selecting Machines in Serial Control Mode” on page 19 for more information.

⚠ Do not use the designated machine port for any other function (such as time code or MIDI metronome). Make sure that 9-pin or V-LAN is the only communication on the selected port.



Configuring MachineControl for 9-pin Serial Control

8 Pro Tools automatically polls the port to see what kind of machine is connected. This process is referred to as *auto detection*. Pro Tools also lets you choose any profile from the Node menu. If your machine is not auto-detected, or if you want to use one of the generic profiles, you can choose it from this pop-up menu.

💡 Pro Tools also lets you define and save custom machine profiles. See Chapter 5, “Remote Track Arming” for more information.

- If the machine is recognized, Pro Tools loads the corresponding Machine Type and Node. This includes the corresponding track layout and automatically enters the name of that machine into the Pro Tools Machine Track Arming window.

– or –

- If the machine isn’t recognized, the generic1” personality is loaded. You can also choose the “generic2” personality.

💡 Pro Tools also lets you define and save custom machine profiles. See Chapter 5, “Remote Track Arming” for more information.

9 Set machine pre-roll, as desired (see “Machine Pre-Roll” on page 11 for more information).

10 Click OK to close the Peripherals dialog box.

To learn how to configure and use Machine-Control features in Pro Tools, see Chapter 3, “Serial Control Mode and Transport Control.”

Machine Pre-Roll

You can set a variable amount of Machine pre-roll to account for any time it may take the machine to achieve servo lock. Set this value low for non-linear machines. Longer pre-roll values may work better for some older tape transports.

The Machine pre-roll value is added to any per-roll specified in the Pro Tools Transport window.

To set MachineControl pre-roll:

- 1 In Pro Tools, choose Setups > Peripherals, and select Machine Control.
- 2 In the 9-pin Serial section, enter the desired number of frames of pre-roll.
- 3 Click OK to close this dialog. Pro Tools retains this Peripherals configuration unless you change or disconnect it.

Session Setup for MachineControl

The Session Setup window is a floating window that provides session time code settings and options, as well as session status displays.

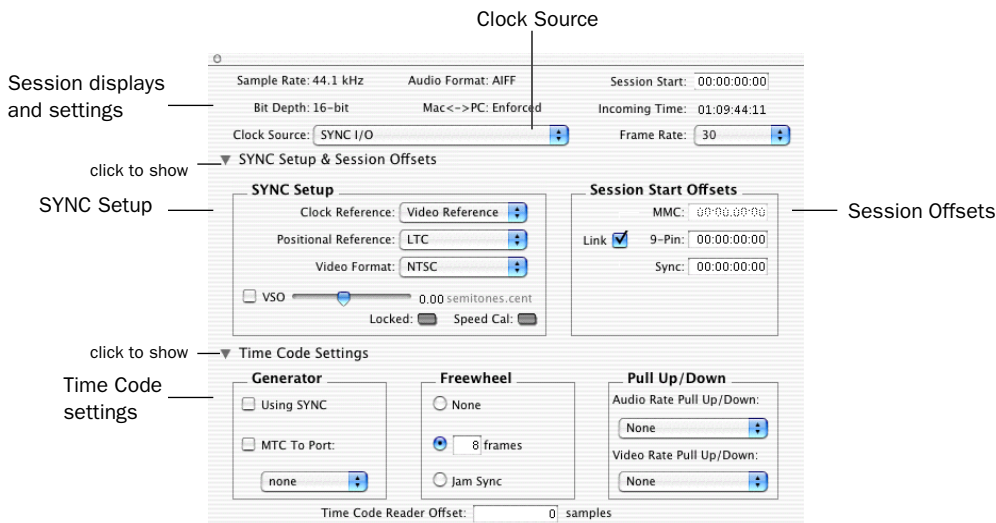


Figure 1. Session Setup window

Displays and controls are organized into three view sections. The Session displays and controls are always displayed at the top of the Session Setup window. The Synchronization and Session Offsets section, and the Time Code Settings section, can be shown or hidden using their show/hide icons.

SYNC (or USD) Setup Settings

To show SYNC or USD Setup Settings

- Click the SYNC Setup and Session Offsets icon.

The controls in this section configure parameters of the Digidesign SYNC I/O or USD. Settings are provided for Clock and Positional Reference, Video Format, and Variable Speed Override.

Session Settings and MachineControl

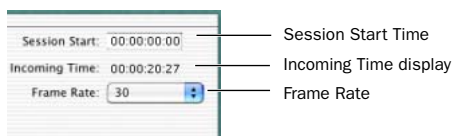
Use the steps in this section to quickly configure the basic session settings for MachineControl. These will include session settings (start time, frame rate, and video format), as well as synchronization settings for clock and positional reference. Additional options include multiple time code display offsets, generator, freewheel, and pull up and pull down settings.

Basic Session Settings

Confirm the following settings for every session.

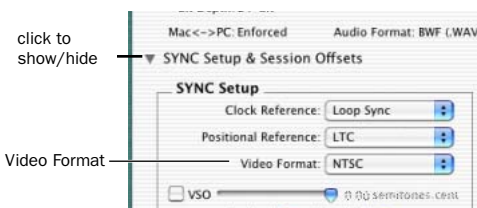
To configure the session for MachineControl:

- 1 Choose Windows > Show Session Setup.
- 2 In the Status and Display section, do the following:
 - ◆ Set a Session start time.
 - ◆ Set the appropriate session frame rate



Basic session settings in the Session Setup window

- 3 Click the show/hide icon to display the SYNC Setup section, if it is not already displayed.
- 4 In the SYNC Setup section, set the appropriate format for NTSC or PAL using the Frame Rate and Video Format selectors.



Video Format selector

Clock Source, Clock and Positional Reference

The Session Setup window provides selectors for the system Clock Source, as well as Clock and Positional Reference. These settings must be configured based on the signal connections between Pro Tools, the SYNC I/O, and external devices.

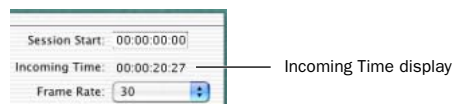
To configure these parameters, do one of the following as appropriate for your system:

Pro Tools|HD In Session Setup, choose an appropriate Clock Source (the SYNC I/O, or an HD-series audio interface). Configure the Clock Reference and Positional Reference menus as appropriate. See the *SYNC I/O Guide* for more information.

Pro Tools|24 MIX or Pro Tools|24 Set the Ch 1–2 Input and session Sync Mode as necessary. (Sync Mode must be set to analog for the SYNC I/O or USD to be clock master.)

System Test

To check your basic session and Machine-Control settings, place the machine in Local mode and manually start playback on the external machine. If Pro Tools is receiving time code, the current location will be shown in the Incoming Time display. Be sure to reset the machine to Remote mode when finished.



Incoming Time display (Pro Tools 6.0 or higher)

Session Start Offsets

To compensate for devices that are consistently offset by a relatively small number of frames (such as some color-corrected video masters), Pro Tools provides three different Session Start Time Code Offset settings. These offsets include:

- MMC (MIDI Machine Control)
- 9-Pin (Serial machine control)
- Synchronization peripherals such as the SYNC I/O, USD, or other (for example, MTC from MIDI interfaces). Individual display offsets can be set for any of these items as available on your system.

Positive and negative offset values can be entered to offset Pro Tools time code display later or earlier, respectively. Up to three unique offset values can be defined, or you can link all three to adjust in unison.

Offsets and Time Code Displays

The SYNC I/O (and USD) Time Code Display continue to display actual incoming time code, regardless of any Session Start Offset applied in Pro Tools.

To set a Session Start Time Offset:

- 1 In the Session Setup window, click the show/hide icon to show the SYNC Setup and Session Start Time Offset section.
- 2 To enter a single offset value for all three choices, click the chain icon to enable offset linking.

– or –

Unlink the settings to enter a unique offset for MMC, 9-Pin, or the current Synchronization peripheral.

Time Code Settings

The Time Code settings control time code generation, Freewheel, and session Pull Up and Pull Down options.

Configure these settings as appropriate for the current project and situation. For complete instructions, see the *SYNC I/O Guide*.)

Time Code Reader Offset

The Time Code Reader Offset lets you set a “trigger offset” for incoming MIDI Time Code, in samples.



In prior versions of Pro Tools, this feature was labelled Sync Offset.

Additional Commands and Features

The following commands are available in all MachineControl operating modes.

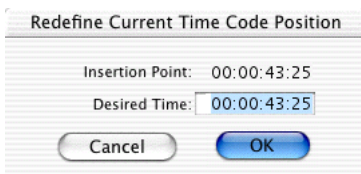
Redefine Current Time Code Position

The Redefine Current Time Code Position command lets you redefine the session start time. By creating an insertion point (or selection) and then entering the desired new time code position for that location, the session start time will be recalculated based on the new, relative time code location.

For example, place an insertion point at 01:02:04:11, select Edit > Redefine Current Time Code Position, and enter 01:00:08:00 to correspond to the first frame of film. This adjusts the session start time such that the insertion point’s location is now 01:00:08:00, and the session start time is correspondingly earlier (exactly how much earlier depends on the current location of the insertion point).

To redefine the current time code location:

- 1 Enable Link Edit/Timeline.
- 2 Locate Pro Tools to the beginning of the relevant material (usually the “first audio” of a scene, a 2 pop, or similar).
- 3 If appropriate, cue the external time code source to the appropriate location (this will be the location to which you want to align the current Pro Tools insertion point). Note the time code location, or copy it to the clipboard.
- 4 Choose Edit > Redefine Current Time Code Position.
- 5 Enter the desired time code position and click OK.



Redefining the current time code position

Create Machine Track Arming Profile


The Create Machine Track Arming Profile command lets you create and save machine descriptions as Machine Profiles. Profiles are provided for an ever-increasing list of common machines, or you can customize profiles for specific situations and requirements. Options include the ability to emulate a different machine type, remap and rename audio tracks, and choose to include or exclude the video and time code tracks, when available. For more information, see “Create Machine Track Arming Profile” on page 30.

chapter 3

Serial Control Mode and Transport Control

Serial Control mode is available whenever MachineControl is connected using the Serial Control cable. For more information about connecting and configuring Pro Tools for Serial Control mode, see Chapter 2, “Installation.” You must have MachineControl installed correctly before continuing with this chapter.

When connected for Serial Control mode, MachineControl enables all Pro Tools track arming, synchronization, and transport features, as available on your system. Serial Control mode also supports 9-Pin serial time code (see “Serial Time Code” on page 22 for more information). Some features require a SYNC I/O or USD, as noted throughout this chapter.

 *Track arming is explained in Chapter 4, “Remote 9-Pin Deck Emulation Mode.”*

Online and Offline Operation

Pro Tools can remotely control, or be controlled by, any enabled external source or device. That device is selected using the Transport Master selector in the Pro Tools Transport window.



Transport Master and machine On

Transport controls

In order to trigger Pro Tools playback or recording from an external source, or to generate time code, the Pro Tools Transport needs to be *online*.

There are four ways to put Pro Tools online:

- Click the Online button in the Transport window
- Choose Operations > Online
- Press Command-J (Macintosh) or Control-J (Windows)
- Press Option-Spacebar (Macintosh) or Alt-Spacebar (Windows)

The blue Online button in the Transport window indicates online status. It flashes while enabled but waiting for synchronization, and stays lit when lock is achieved.

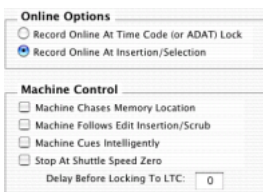
Preferences for Serial Control Mode

Preferences are available to specify the following aspects of MachineControl behavior.

Record and Chase Settings

The following Preferences select record and chase options available while working with external time code, including:

- ◆ Preferences for *Record Online at Time Code (or ADAT) Lock* and *Record Online at Insertion/Selection*.
- ◆ Preferences for *Machine Chases Memory Locations* and *Machine Follows Edit Insertion/Scrub*.



Machine preferences, in the Operations tab

To change Record or Chase Preferences:

- 1 Choose **Setups > Preferences**, and click the **Operations** tab.
- 2 Select one of the following options or controls:

Online Options

Record Online at Time Code (or ADAT) Lock Online recording begins as soon as Pro Tools receives and locks to time code.

Record Online at Edit Insertion/Selection Online recording begins at the current Edit selection start or playback location.

Machine Control

Machine Chases Memory Locations The machine chases Pro Tools memory location selections. The machine will not locate with pre-roll, but will instead park on the desired frame for Auto Spotting.

Machine Follows Edit Insertion/Scrub Pro Tools sends locate commands to the external deck whenever the timeline selection changes.

Machine Cues Intelligently When enabled, if you navigate to a cue point that is more than 10 seconds from the current location, Pro Tools will command a connected transport to shuttle to the desired location at full speed, to within 10 seconds of the cue point. Cueing will then slow to normal speed until the point is reached.

Stop At Shuttle Speed Zero When enabled, Pro Tools sends a Stop command when shuttle speed equals zero. While most machines automatically stop when shuttle speed is equal to zero (in other words, whenever you stop shuttling), some machines require an explicit stop command to park correctly. Consult the manufacturer of your machine if you need to determine its shuttle stop capability.

Delay before Locking to LTC Lets you enter a number of frames for Pro Tools to wait upon receiving incoming LTC, before attempting to lock to the incoming time code signal. This delay gives a variable amount of frames for the LTC source to stabilize. This lets Pro Tools lock more accurately to any fluctuations that can occur when some LTC sources are first engaged.



Other MachineControl Preferences are located in the Remote mode section of the Operations page. These settings are explained in Chapter 4, “Remote 9-Pin Deck Emulation Mode.”

Serial Control Mode

Selecting Machines in Serial Control Mode

When using the Digidesign SYNC I/O with two machines connected to its 9-pin ports, use the Peripherals dialog to choose the individual deck to control.

To choose machines for Serial Control mode:

- 1 In Pro Tools, choose Setup > Peripherals, and click to display the Machine Control page.
- 2 In the 9-Pin Serial section, click Enable to enable 9-pin Serial Control mode.
- 3 Select the port for your first machine, if necessary (9-pin #1 of the SYNC I/O). MachineControl will auto-detect and select the machine type it finds connected to the selected port.
- 4 If necessary, select a different Machine Type that better matches your device.
- 5 Repeat the above steps to auto-detect and select any machine connected to 9-pin #2 on the SYNC I/O (select 9-pin port #2 in the 9-Pin Serial Port selector).
- 6 When the appropriate machine is enabled and selected, enable Use Serial Time Code for Positional Reference.

Transport Controls

With MachineControl, the Pro Tools Transport window becomes a multi-function controller.

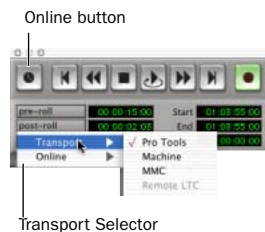
Counter Display

The Pro Tools Edit window counter displays the current machine (9-pin) or session time code location, depending on which device is the transport master, plus any current Session Start Time Offsets being applied. (See “Session Start Offsets” on page 14 for more information.)

The Incoming Time display in the Session Setup window always shows absolute incoming time code (no offsets).

To select a Transport master:

- 1 Click the Transport = Pro Tools selector (directly below the Online button in the Transport window) to display the Transport pop-up.



Selecting the MachineControl Transport

- 2 From the Transport pop-up, select Pro Tools, Machine, or Remote.



You can also press Control+backslash (\) to toggle between Pro Tools, the Machine, and Remote transport (or, on a Digidesign control surface, press EXT TRANS).

Transport = Pro Tools

In this mode, the controls in the Transport window are focussed on Pro Tools playback, recording, and so on. When Pro Tools is online and you begin playback the machine slaves to Pro Tools, cueing to a pre-roll time before the current insertion time and then beginning playback. The session locks to the machine's time code.

Additionally, when online, the machine will follow current Preferences for Machine Chase and Online Record (see "Record and Chase Settings" on page 18).

Transport = Machine


In this mode, the controls in the Transport window are focussed on the machines connected and enabled for Serial Control mode (for Remote 9-Pin Deck Emulation mode, see "Transport = Remote and Transport = Remote LTC" on page 20).

When online, Pro Tools slaves to the machine. When offline, the Transport only controls the machine.

When Pro Tools is slaved to the machine, the Pro Tools Transport can be used as a machine remote control or a system master control. When online, the Transport still controls the machine, but Pro Tools chases and locks to the machine.

In addition:

- ◆ When Auto Spot is turned on, regions are spotted to the current machine time.
- ◆ When Auto Spot is turned on, the Trimmer tool trims to the current machine time.

 Refer to the Pro Tools Reference Guide for details on Auto Spotting.

Toggleing the Transport while Online

When online, toggling the transport control between Pro Tools and your machine will also toggle their master/slave relationship.

Transport = Remote and Transport = Remote LTC

When Pro Tools is online in Remote 9-Pin Deck Emulation mode, Pro Tools responds to commands sent by the master 9-Pin machine. Many Pro Tools commands, including transport controls, are inactive.

Pro Tools can generate time code, or chase LTC when online in Remote 9-Pin Deck Emulation mode.

When Pro Tools is offline, Pro Tools operates in Local mode and ignores commands from the 9-pin master. Pro Tools responds only to requests from the 9-pin master for machine type and status, and responds that it is in Local mode.

For more information, see Chapter 4, "Remote 9-Pin Deck Emulation Mode."

Using the Transport

To play or cue your machine independently of Pro Tools:

- 1 Select Transport > Machine in the Pro Tools Transport window.
- 2 Make sure Pro Tools is not online (the Online button in the Transport window is not highlighted).
- 3 Click any of the buttons in the Pro Tools Transport window to control your machine.

Pro Tools always displays incoming LTC or 9-pin time in the Current Time field during fastwind, and switches during playback to display the current positional reference.

To synchronize Pro Tools and machine playback from the Pro Tools Transport:

- 1 Select Transport > Pro Tools in the Pro Tools Transport window.
- 2 Put Pro Tools online.
- 3 Click Play in the Transport window.

If the tape in the machine is striped with time code that matches your Session time, the machine will locate to the position of the Pro Tools on-screen selection/insertion point or memory location (plus pre-roll), and begin playing back in sync.

Machine Remote Setting

If the Transport toggle will not stay in Machine mode, or if the toggle suddenly switches to Pro Tools mode from Machine mode, check your machine's Local/Remote setting. Pro Tools polls the connected machine periodically to check the status of the machine's Local/Remote setting and posts a message if a problem is detected.

Online Display Information

Several display elements of the Edit and Transport windows provide machine status information.

- ◆ When Pro Tools is online, the Transport online button flashes. "Waiting for Sync" will be displayed in the status box in the lower left corner of the Edit window.
- ◆ The online button continues to flash until you click Play and time code lockup occurs (all devices locked and responding in sync). The Time Code display in the Edit window shows the Machine Time when the machine is Master.
- ◆ Upon lockup, the display switches to show the session time. If your system doesn't lock up quickly enough, you may want to adjust your machine pre-roll. See "Machine Pre-Roll" on page 11 for more information.

Machine Cueing

MachineControl provides two Cue modes for remote machine operation: Search and Hi-speed.

- ◆ In *Search* mode, the tape remains laced during Fast Forward or Rewind.
- ◆ In *Hi-speed* mode, the tape is unlaced before fast-forward/rewind. The Pro Tools Transport window indicates the status of the tape as described below.

Search Mode

In Search mode, the tape is laced against the heads when the machine is paused or searching, and the Stop button stays lit (it does not flash) and the Play button flashes. When cueing in this mode, the Fast Forward or Rewind button also lights when searching in either direction.

⚠ *Some devices, including several popular VHS decks, do not support a shuttle mode in which the tape stays laced. These decks unlace the tape before shuttling. Refer to your tape machine's manual for more information.*

Hi-Speed Mode

In Hi-speed mode, the tape is unlaced, and all Transport buttons turn off (none light or flash). While cueing in this mode, only the selected Fast Forward or Rewind button lights.

To fast-forward and rewind in Search mode:

- 1 Select Transport > Machine in the Pro Tools Transport window.
- 2 Click Play in the Transport window or press the Spacebar to begin machine playback, then press the Spacebar again to pause the machine (this is to ensure that the tape is laced).
- 3 Click Fast Forward or Rewind in the Transport window to search the tape.

To fast-forward and rewind in Hi-speed mode:

- 1 Select Transport > Machine in the Pro Tools Transport window.
- 2 Press Command+period (.) or click Stop in the Transport window to unlace the tape.
- 3 Click Fast Forward or Rewind in the Transport window. The Pro Tools cursor indicates the current machine location.

- 4 Press the Spacebar to pause the machine.

⚠ *Some devices may not support a shuttle mode, and will not accept the above shuttle commands. In these cases, the Fast Forward and Rewind buttons in the Pro Tools Transport window blink, and clicking them places the device in true Fast Forward /Rewind mode.*

Spotting to the Machine

To spot regions to the machine's current location, use Pro Tools Spot mode and/or Auto Spot (if using VITC). Refer to the *Pro Tools Reference Guide* for information on using Spot and Auto Spot mode to spot regions to SMPTE locations.

⚠ *Auto Spot mode uses incoming VITC for location information. Therefore, Auto Spot mode will force the Region to be spotted to the current incoming machine time code location, not the current insertion cursor location. To spot your elements directly to the current cursor location, Control-drag (Macintosh) or Right-click and drag (Windows) the elements.*

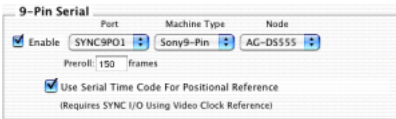
Serial Time Code

If you are using a Digidesign SYNC I/O or USD connected to your DigiSerial Port, and your machine has time code reader capability, you can take advantage of *serial time code* to achieve faster lockup times.

Serial time code can only be supplied by machines with built-in time code readers which can serialize the time code when Machine-Control requests it. Most professional machines have such readers (including DA88, D2, Digi-Beta, and most 3/4" decks).

To enable Serial Time Code:

- 1 In Pro Tools, choose Setups > Peripherals and click Synchronization.
- 2 Make sure the SYNC I/O (or USD) and DigiSerial Port are the selected device and port.
- 3 Ensure that the both the SYNC I/O (or USD) and the external machine are locked to the same video reference signal.
- 4 Click the Machine Control tab in the Peripherals window to open the Machine Control page.
- 5 Enable Use Serial Time Code for Positional Reference.



Serial Time Code enabled in the Peripherals dialog

Serial Time Code and SYNC I/O Settings

When Serial Time Code is enabled, the Pro Tools Clock Reference switches to Video Reference. Additionally, the Positional Reference pop-up is grayed out and displays Serial Time Code. (These controls are located in the SYNC I/O Settings section of the Session Setup window.)


Generate and Serial Time Code

Pro Tools automatically puts the SYNC I/O (or USD) in Generate mode and prohibits any changes to the Positional and Clock Reference settings. While Serial Time Code is being used, this Generate mode is engaged to calculate frame-edge accuracy in Pro Tools.

chapter 4

Remote 9-Pin Deck Emulation Mode

Remote 9-Pin Deck Emulation mode makes Pro Tools operate as a virtual tape deck, supporting most standard Sony P2 9-pin commands. For a list of supported commands, see “9-Pin Commands” on page 28. By default, Pro Tools emulates a Sony BVW-75 model video deck. You can also configure Pro Tools to emulate other machines. For more information, see “Alternate Machine Types” on page 26.

 For instructions on connecting Pro Tools for Remote 9-Pin Deck Emulation mode, see Chapter 2, “Installation.”

Generating Time Code in Remote 9-Pin Deck Emulation Mode

Pro Tools with MachineControl and the SYNC I/O can generate frame-edge aligned time code at 1x play speed while in Remote 9-Pin Deck Emulation mode.


Configuring Remote Mode

To configure Pro Tools for Remote 9-Pin Deck Emulation mode:

- 1 Choose Setups > Peripherals, and open the Synchronization tab.
- 2 Make sure the SYNC I/O (or USD) is the selected Synchronization device, enabled on the DigiSerial Port.
- 3 Click at the top of the Peripherals dialog to open the Machine Control tab.
- 4 In the Remote section, click Enable.
- 5 Choose the appropriate port from the Port menu.
- 6 Choose the appropriate machine profile from the Machine ID selector.
- 7 Enable Chase LTC to have Pro Tools chase the master time code source. Leave this choice off to have Pro Tools and the SYNC I/O provide the master time code signal.
- 8 Click OK when you are done.



Remote 9-Pin Deck Emulation mode settings

 In addition to the option to chase LTC, Remote mode also provides a preference setting to follow or ignore remote track arming commands. For more information, see “Ignore Track Arming Commands” on page 28.

- 9 In the Session Setup window, Generate Using SYNC I/O (or, using USD) is automatically enabled. This is required for Pro Tools to lock to the video reference with frame edge accuracy.

10 Make sure Video Reference is selected as the SYNC I/O (or USD) clock reference.


11 In the Pro Tools Transport window, select Remote, or Remote LTC, as appropriate, as the Transport master.



Remote 9-Pin Deck Emulation mode settings

12 Put Pro Tools online.

13 Begin machine playback.

 See also “Optimizing Remote Mode Playback” on page 27.

Chase LTC

Remote 9-Pin Deck Emulation mode lets a master device control Pro Tools track and Transport arming. In standard Remote 9-Pin Deck Emulation mode, Pro Tools serves as the time code master device while simultaneously responding to 9-pin transport and track arming commands.

When Chase LTC is enabled, Pro Tools can still respond to 9-pin track arming and record commands but chase incoming LTC instead of being the time code master device. By slaving Pro Tools to the LTC source instead of slaving the machine to Pro Tools time code, you can avoid waiting (and tape wear) while a machine transport locates and bumps tape to the cue point.

When Chase LTC is enabled, the Transport master selector shows Transport = Remote LTC. Pro Tools also communicates record status to the machine.

Receiving Commands While Chase LTC is Enabled

When Chase LTC is enabled, and the system is online, Pro Tools waits until it receives only specific transport record and track record commands from the machine. When Chase LTC is not enabled, Pro Tools will listen to all transport commands arriving through the serial connection, including bump and crawl commands necessary for a tape machine to locate.

Scrubbing and Chase LTC

The Chase LTC option does not affect scrubbing. Pro Tools video playback will always respond to locate and scrubbing command, even if Chase LTC is enabled.

Alternate Machine Types

By default, MachineControl lets Pro Tools emulate a Sony BVW-75. If you use a machine that follows a different 9-pin command set, you can configure Pro Tools for its machine description by selecting it as the Remote mode device in the MachineControl page of the Peripherals dialog.

Remote Mode Preferences

Pro Tools provides the following preference settings to configure Remote mode options.



Remote 9-Pin Deck Emulation mode preferences in the Operations page

Punch In Frame Offset Sets an offset in frames to compensate for punch in timing advances or delays.

Punch Out Frame Offset Sets an offset in frames to compensate for punch out timing advances or delays.

Delay After Play Command Sets a number of frames of delay for Pro Tools to wait before attempting to lock, to compensate for the amount of time needed for the master machine to stabilize. This setting can be especially useful in a multi-machine environment.

Ignore Track Arming Allows Pro Tools to respond to all 9-pin remote commands except track arming.

Playback in Remote 9-Pin Deck Emulation Mode

Pro Tools will only play back audio when the received command requires audio play back at 1X speed in the forward direction. Reverse playback and varispeed playback are not supported in Pro Tools.

Online Status Display

When online in Remote mode, the Online button flashes until Pro Tools and the machine establish communication. When MachineControl and Remote mode are enabled and communication is established, the Online button will remain highlighted.

Optimizing Remote Mode Playback


Use the Delay After Play Command preference to optimize Pro Tools response in Remote 9-Pin Deck Emulation mode. (See “Remote Mode Preferences” on page 26 for instructions on how to configure this preference.) This setting lets you enter a number of frames for Pro Tools to wait, before responding to locate and play commands. A small delay before play allows the time code master device to stabilize before

Pro Tools attempts to achieve lock. By delaying play in this manner, Pro Tools can avoid multiple nudge and bump messages while attempting to lockup.

Recording in Remote 9-Pin Deck Emulation Mode

MachineControl lets Pro Tools support Auto Edit (selection-based) and Punch-in/Punch-Out (QuickPunch) commands.

Pro Tools must have QuickPunch enabled when recording in Remote mode with an edit controller.

 *Preview Edit and Record Rehearse modes are not supported by Pro Tools.*

Auto Edit Recording

When a machine sends Auto Edit commands to Pro Tools in Remote 9-Pin Deck Emulation mode, the edit in and out points are converted to a Pro Tools Timeline selection. This selection, with offsets options, will then be used to record on all armed tracks when Pro Tools receives the Perform Auto Edit Record command.

Punch In/Out Recording

Punch-In/Punch-Out Recording supports punch-on-the-fly, with Pro Tools in QuickPunch mode. In this mode, tracks are armed before the record pass, and recording begins and ends when Punch-In and Punch-Out commands are received from the master machine.

QuickPunch must be enabled and the required voices must be available in Pro Tools for Punch-In/Punch-Out recording commands to work. This mode must be set manually in Pro Tools.

Track Arming in Remote 9-Pin Deck Emulation Mode


In Remote 9-Pin Deck Emulation mode, Pro Tools can be configured to either respond to, or ignore, track arming (record enabling) commands. Pro Tools communicates track record status back to the control machine.

Ignore Track Arming Commands

You can set Pro Tools to ignore incoming track arming (record-enable) commands. Use this to record-safe Pro Tools if, for example, you are using a master 9-pin transport controller to arm tracks on several other machines, but not Pro Tools tracks. You can still manually arm Pro Tools audio tracks, as needed.

To have Pro Tools ignore remote track arming commands:

- 1 Choose Setups > Preferences, and select the Operations window.
- 2 Select (or, deselect) Ignore Track Arming.

 See Chapter 5, “Remote Track Arming” for more information.

9-Pin Commands

In Remote Mode, Pro Tools with Machine-Control can respond to the following 9-pin commands from compatible workstations, synchronizers, and other devices:

- Play
- Stop
- Pause
- Rewind
- Forward
- Cue To
- Poll Time Code
- Record Arm Track
- Set In/Out Point (for Auto Edit)
- Set Pre/Post Roll (for Auto Edit)
- Perform Auto Edit Record
- Perform Punch-In/Punch-Out Record (requires QuickPunch mode and voices)
- Return Status-Online, State, Tracks Armed
- Servo Lock
- Clear “In” Point

chapter 5

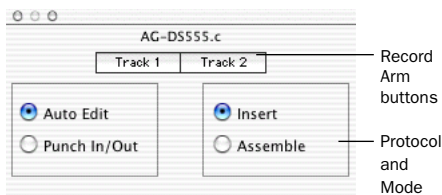
Remote Track Arming

Pro Tools with MachineControl provides the ability to arm audio, video, or time code tracks on external decks.

On MachineControl-equipped systems, the Show Machine Track Arming Window command is available in the Pro Tools Windows menu. The Track Arming window lets you configure track arming during sessions, using the settings appropriate for the current Track Arming Profile. (See “Identifying your Machine” on page 30.)

To display the Machine Track Arming window:

- Choose Windows > Show Machine Track Arming Window.



Track Arming in Pro Tools 6 and higher

Configuring Track Arming

Pro Tools provides automatic, direct support for track configuration of most common video decks. If your deck is supported, MachineControl will be able to identify and display your machine’s particular track layout. Even if your machine is not directly supported, the Track Arming window lets you arm tracks, set the Record Protocol and configure the Record mode for the machine.

You can also use the Create Track Arming Profile dialog box to define, save, and load customized device profiles. (See “Create Machine Track Arming Profile” on page 30 for more information.)



Not all machines support independent arming of their audio tracks locally or remotely. In addition, some machines require a separate utility menu selection. Pro Tools remote track arming cannot operate in these situations.

Identifying your Machine

As long as you have configured Pro Tools and MachineControl correctly, Track Arming will automatically load the track arming profile appropriate for the identified machines. For more information on basic Pro Tools settings for MachineControl, see “Configuring Pro Tools for MachineControl” on page 10.

If Pro Tools does not recognize your machine, or if you want your machine to emulate a different type of device (for a different track layout, perhaps), you can load a generic machine profile.

⚠ *If you are using the generic1 device personality, be sure to double-check record behavior using non-essential tapes before attempting to use MachineControl’s remote track arming modes.*

For maximum flexibility, utilize Track Arming Profiles to create, customize, and manage multiple machine descriptions (see “Create Machine Track Arming Profile” on page 30).

Requesting additional machine profiles for Track Arming

If you would like Digidesign to facilitate auto-detection of a specific machine in an upcoming release, you can e-mail a request, including the manufacturer and machine model to *post-prod@digidesign.com*.


Create Machine Track Arming Profile

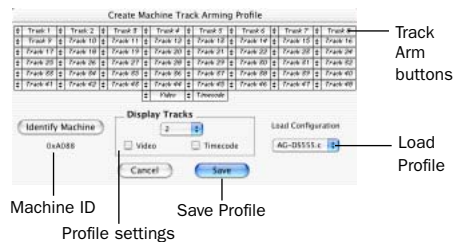
The Create Track Arming Profile window provides extensive control over Pro Tools Track Arming. You can customize arming, track naming, and mapping, and save configurations for different machines as Track Arming Profile files. These Profiles can be imported to quickly reconfigure Track Arming as needed for future projects. You can also test track mapping, and remap tracks if needed.

Use the Create Track Arming Profile feature to create profiles for machines that may not be included with Pro Tools today, and to manage multiple profiles.

To create a machine Track Arming Profile:

- 1 Choose Operations > Create Track Arming Profile.

 *A Stop command is sent to any connected machine, to protect elements on tape.*



Create Track Arming Profile

Choosing a Machine ID

To recognize your machine:

- Click Identify Machine.

MachineControl queries the connected machine for its machine ID, which is then displayed below the Identify Machine button.

You can edit or replace the ID manually if needed. See “Entering a New Byte Code” on page 32 for more information.

Configuring a Profile

The Create Track Arming window lets you specify track names and track mapping.

Customizing Names for Track Arming Buttons

You can rename the Track Arm buttons displayed in each Track Arming Profile to better describes the recording taking place. For example, an eight track profile might be easier to use with tracks named Dx-L, Dx-R, FX-L, FX-R, Mx-L, Mx-R, Lt, and Rt, for eight tracks comprised of stereo Dialog, stereo FX, stereo Music, and an LtRt mix. (Default names might be the generic Track 1, Track 2, Track 3, and so on.)

To edit the name of a track arming button:

- 1 Click the appropriate Track Arm button to display its sub-menu, and select Enter New Track Name, or double-click the appropriate Track Arm button.
- 2 Enter a new track name in the dialog, and click OK.



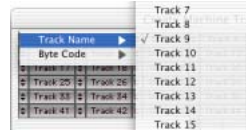
Entering a custom track name

Remapping Tracks

You can remap track buttons to target different tracks on the machine.

To remap tracks:

- 1 Click the Track button you want to remap to display its remap selector.
- 2 Choose a new target track.



Remapping a track arming button

– or –

- Choose a different machine profile from the Load Configuration selector.

Reassigning the Byte Value for a Track

Each record track on a remote machine has a unique hexadecimal byte code in their firmware that tells the machine which track should be armed when that command is received by a remote master. The standard profile (the default setup) corresponds to the Sony P-2 protocol, but many decks have their own unique mapping of byte codes to track numbers for a particular deck.

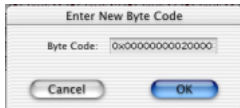
If an audio or video track, or the deck time code track do not arm when its corresponding track arming button is pressed, do the following:)

To select a different hex value for an individual track arm button:

- 1 Select another hex value byte code from the Byte Code sub-menu for the appropriate track arm button.

Entering a New Byte Code

As the Sony P2 protocol continues to expand, more manufacturers add specific byte code commands that may be listed in the current byte code list. Pro Tools lets you create entirely new, custom byte codes. This lets you enter additional byte commands as needed to support new features as they are added to decks.



Entering a new byte code

Choosing a Record Protocol

The following two choices are available for configuring the recording protocol to be utilized by the target deck:

Auto Edit

This mode is a highly accurate way to ensure that the target deck will record only within the boundaries of an on-screen selection. (If your deck does not support Auto Edit, use Punch In/Punch Out, as explained below.)

In Auto Edit mode, the record start/end times are downloaded to the target deck (along with any pre- or post-roll), and the deck is responsible for performing the insert punch in/out at the specified times (see “Rules for On-Screen Selections” on page 33 for details).

Because this protocol removes the vagaries of CPU timing from the remote recording process, Auto Edit is frame-accurate. It is also the best way to ensure that your machine will punch out correctly and avoid accidental erasure of audio, even in the event of a CPU error.

Punch In/Out

This mode uses Pro Tools to control the process of punch in/out. Instead of downloading the punch points (as in Auto Edit), Pro Tools actually performs them during the record pass. Because serial communication has inherent delays, timing with Punch In/Punch Out mode cannot guarantee frame-accuracy (though it will almost always be within 2 to 3 frames).

Choosing a Record Mode

The Remote Track Arming window provides two choices for Record mode:

Insert

This mode is used to perform insert editing (punching in individual tracks) where one or more audio tracks is replaced by new material and the video material is retained.

Assemble

Assemble mode should be used when you want to:

- ◆ Begin recording program onto a completely blank tape (unformatted)

– or –

- ◆ Append program to the remainder of a tape which already has program you wish to keep

Assemble mode is not appropriate for audio layoffs to video masters.

Assemble mode should be used carefully because it arms *all* tracks on the target deck for recording—including the video track, time code track and control track. When performing an Assemble edit, all material on all tracks after the

edit in point will be replaced. Because a break in the control track will result at the edit out point, any remaining program material after an Assemble edit may be unusable.

To avoid accidentally recording over program material, experiment with Assemble and Insert modes on a dispensable tape to familiarize yourself with the edit capabilities of your deck.

A *Assemble mode replaces all the elements on the target tape deck—audio, video and time code. Use this mode with caution.*

Rules for On-Screen Selections

The Record Protocol buttons allow you to choose between the two different record protocol choices described above (Auto Edit and Punch In/Punch Out). Regardless of which choice is used, however, Pro Tools follows these rules for record selection:

- ◆ If there is an on-screen selection, recording will take place over the period of the selection and punch out at the end of the selection.
- ◆ If pre- or post-roll is enabled, recording takes place only in the selection area, not during pre- or post-roll.
- ◆ If there is no selection (only a start location), recording will continue until it is manually stopped.
- ◆ If you make a selection in Pro Tools that crosses the “midnight” boundary (00:00:00:00), make sure your deck can handle this situation. Experiment with a dispensable tape to familiarize yourself with the crossover capabilities of your deck.

Using Remote Track Arming

The first step in using Remote Track Arming is to configure the parameters of the Track Arming window.

To configure Track Arming:

- 1 Make sure your machine is properly connected and configured to slave to Pro Tools as described in your MachineControl and Pro Tools Guides.
- 2 Make sure Transport = Machine.
- 3 Open the Track Arming window. If the entire window is not visible, click the Zoom box.
- 4 Select a Record Protocol (Auto Edit or Punch In/Out).
- 5 Select a Record mode (Insert or Assemble).



Once the Track Arming parameters are configured, you can change the Track Arming window to “small view” and still see the track arm buttons.

To perform a layback:

- 1 In Pro Tools, select the audio to layback, or place the playback cursor at a start point.
- 2 In the Remote Track Arming window, arm the appropriate tracks.
- 3 Select Transport > Machine in the Pro Tools Transport window.
- 4 Click Record in the Transport window to arm recording.
- 5 Click Play in the Transport window.

Your machine will cue to the selection start minus all relevant pre-roll, then begin to play back. Pro Tools will then sync to the deck, and the target deck will record as determined by your set-

tings for Record Protocol and Record mode. If you did not create an on-screen selection, deck recording will continue until you manually stop playback.

appendix a

Key Commands

Command	Macintosh	Windows
Rewind	Shift+<	Shift+<
Fast Forward	Shift+>	Shift+>
Shuttle Backward	Option+comma	Alt+comma
Shuttle Forward	Option+period	Alt+period
Toggle Transport Master	Command+\	Control+\
All Transport Buttons Off/Unthread Tape	Command+period	Control+period
Search Mode Toggle (Play-Pause/Stop)	Spacebar/Command+period	Spacebar/Ctrl+period

When Transport = Machine:

Locate to Selection Start	Command+Left Arrow	Control+Left Arrow
Locate to Selection End	Command+Right Arrow	Control+Right Arrow
Locate to Selection Start Minus Preroll	Option+Left Arrow	Alt+Left Arrow
Locate to Selection End Minus Preroll	Option+Right Arrow	Alt+Right Arrow

appendix b

Troubleshooting

Installation

Problem

MachineControl options are not available in Pro Tools.

Possible Solution

Make sure MachineControl is installed and authorized correctly (see Chapter 2, “Installation.”)

Machine Not Recognized

Problem:

The session was saved with MachineControl, but now opens without it being selected in the Transport window. When opening a session saved with MachineControl, a dialog warns that there were “problems initializing MachineControl.” When spotting a region, the “Capture Machine Time” button is grayed out.

Possible Solutions:

- ◆ Open Setup > Peripherals and choose the Machine Control tab (and confirm that the correct port is chosen for your MachineControl operating mode. Verify that the correct serial port is chosen in the Serial Port dialog (Setups menu). Make certain that all cables are fully connected at both ends.
- ◆ Verify that the machine and any V-LAN interfaces are powered on. Open the Machine Control tab in the Setup > Peripherals dialog, reset the Machine Port, and close the dialog; this causes Pro Tools to scan the serial port for V-LAN or 9-pin.

Pro Tools Transport Not Controlling Machine

Problem:

Though the MachineControl dialog indicates that Pro Tools recognizes the machine, nothing happens when you use the transport in Pro Tools (the machine doesn’t respond to commands). When spotting a region using the “Capture Machine Time” button, an incorrect time is entered.

Possible Solutions:

- ◆ Most machine controllable transports need to be placed in a “Remote” or “Ext” mode to allow them to be slaved to other devices. Verify that the device is in this mode. Refer to the documentation that came with your device for more information on Remote and Local modes.
- ◆ In the Transport window, check the status of the “Transport = Pro Tools” or “Transport = Machine” setting.
- ◆ If the machine protocol is V-LAN and there are multiple machines on the V-LAN network, choose Setups > Machine Setup and verify that the correct machine is selected in the pop-up menu.

Time Code Inaccuracy

Problem:

The time code locations shown in the Selection and Position Indicator boxes do not match machine time code.

Possible Solutions:

This problem can be caused by a number of things. Sometimes the Time Code times reported by machines are not in sync with the time code that gets played out of their time code ports. (One example of this is when the machine's time code reader is looking at VITC while Pro Tools is chasing LTC.)

- ◆ If the values get progressively farther and farther apart, check the frame rate. Make sure you have set Pro Tools to the same frame rate as the movie/machine frame rate. Also check the frame format (drop or non-drop).

- ◆ If the values differ by a significant margin (such as an hour or more), perhaps the Start Frame number isn't set correctly. Choose Setups > Machine Setup and check the Pro Tools Start Frame number.

Changing Session Start Time, and Dropped Frames

When you change the session frame rate from a non-drop to drop rate, or from drop to non-drop, the session start time and material in the timeline may be affected. Be aware of the following:

Non-drop changed to Drop: The Session Start Time is changed to the next possible supported frame if the current one is not supported in DF. For example, changing from non-drop to drop frame in a session that starts at 00:59:00:00 will change the session's start time to 00:59:00:02 (due to the methodology by which frames are dropped in each rate and format).

Every event in the timeline is moved back two frames, maintaining each event's relative time code location (relative to the start of the session).

Drop changed to Non-drop When going from drop to non-drop, no compensation is applied to the session start time. This is done because all frames in drop exist in a non-drop timeline (or, a drop rate timeline is a subset of its non-drop rate). So, when changing from a drop rate to a non-drop rate, Pro Tools will keep events at their current location relative to the start of the session.

appendix c

Machine IDs

The following table lists the machine profiles supported in MachineControl, by their Pro Tools hex ID.

For special IDs to support 48-track arming, see “48 Track Profiles” on page 40.

Machines and Hex ID Numbers

The first 0x signifies hex value. The next four numbers signify the machine ID. The name of the associated machine follows.

Machines, by ID number

ID number	Machine
0x0000	Generic
0x1000	BVU-800
0x101C	BVU-950
0x1019	BVU-920
0x1080	BVU-900
0x104C	VO-9850
0x1048	VO-9800
0x102C	SV0-9600
0x2000	BVW-10
0x2001	BVW-40
0x2002	BVW-11
0x2003	BVW-15
0x2010	BVW-35
0x2020	BVW-60

Machines, by ID number

ID number	Machine
0x2021	BVW-65
0x2022	BVW-95
0x2023	BVW-96
0x2024	BVW-70
0x2025	BVW-75
0x2125	BVW-75P
0x4000	DVR-10
0x4003	DVR-18
0x4002	DVRC-10
0x4020	DVR-20
0x4022	DVR-28
0xF019	AJ-D350 (D3)
0x3011	DVR-2100
0x3000	DVR-1000
0x0010	BVH-2000
0x0011	BVH-2000
0x0110	BVH-2000 PS
0x0111	BVH-2000 PS
0x0018	BVH-2180
0x0020	BVH-2500
0x0120	BVH-2500 PS
0x0030	BVH-2700
0x0040	BVH-2800

Machines, by ID number

ID number	Machine
0x0048	BVH-2830
0x0050	BVH-3000 (NTSC)
0x0060	BVH-3100 (NTSC)
0x0150	BVH-3000 PS
0x0160	BVH-3100 PS
0x2041	PVW-2800
0x1211	ASC Virtual Recorder
0x1011	Fostex D-10
0xF027	Otari R-DAT
0x7001	TASCAM DA-88
0xF01D	TASCAM DA-88
0x7003	PCM-800
0x7000	PCM-7000
0xA088	AG-DS555
0x2051	UVW-1800
0xB000	DVW-500
0xB010	DVW-500
0xA050	V1
0x2124	BCB-70
0x2101	BVW-40P
0x2141	PVW-2800P



Tascam DA-88 and other decks can be set to emulate other machines. If a deck is set to emulate another type of machine, the machine type being emulated will be displayed.

48 Track Profiles

The following are special IDs to support 48-track arming.

Pro Tools

IDs for 48-Track Capable Machines

ID	Machine
0xD0 E1	Pro Tools
0XD1 E1	Pro Tools
0XD2 E1	Pro Tools

Machines

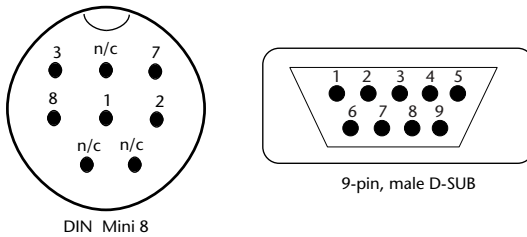
IDs for 48-Track Capable Machines

ID	Machine
0x6007	3348HR
0x6005	3348HRV
0x6003	3324

appendix d

9-Pin Cable Pinouts

Serial Control 9-Pin Cable



Serial Control Cable	
<u>Mini - 8</u>	<u>DB-9</u>
1	NC
2	NC
3	8
4	1
5	2
6	3
7	NC
8	7
Shield	NC
	Shield

V-Lan Pin Configuration	
<u>Mini - 8</u>	<u>DB-9</u>
1	NC
2	NC
3	2
4	1
5	8
6	7
7	NC
8	3
Shield	NC
	Shield

Figure 2. MachineControl Serial Control 9-Pin Cable pinout

Remote Mode 9-Pin Cable

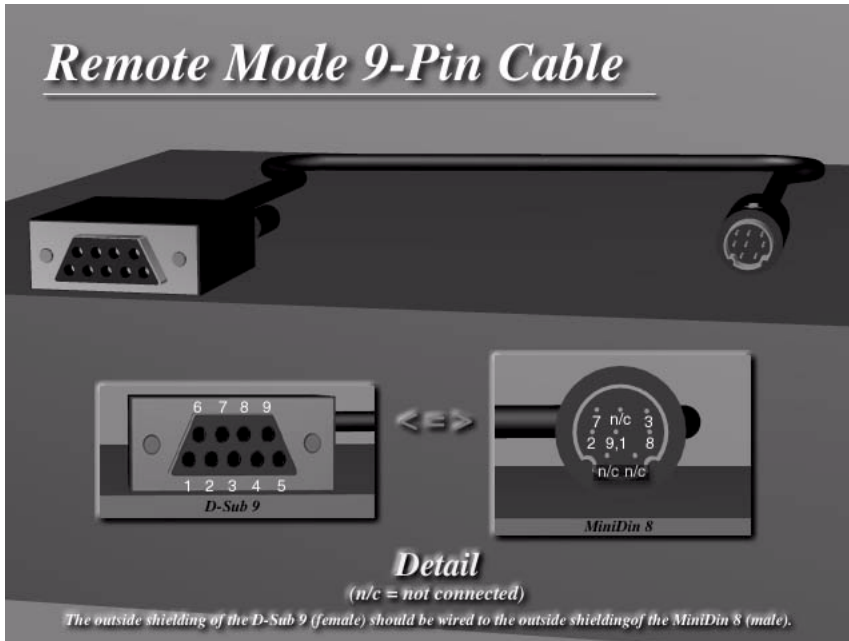


Figure 3. MachineControl Remote Mode 9-Pin cable pinout

Remote Mode 9-Pin Deck Emulation Mode cable

Mini - 8	DB - 9
1	NC
2	NC
3	2
4	9, 1
5	8
6	7
7	NC
8	3
Shield	NC Shield

Shielding

The outside shielding of the D-Sub 9 (female) should be wired to the outside shielding of the Mini DIN 8 (male).

9-Pin to 9-Pin

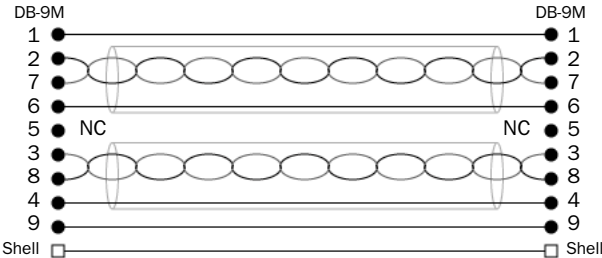


Figure 4. 9-pin to 9-pin cable

This is a standard ESBUS MachineControl Cable.

- All pins wired straight through.
- Pins 2 and 7 are a Twisted Pair with shield drain wire on Pin 6.
- Pins 3 and 8 are a Twisted Pair with shield drain wire on Pin 4.

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