



## **V7 Automation Manual**

© Copyright GML Inc., 1996 - 2002

Manual Revision 7.7.1  
July 24<sup>th</sup>, 2002

## How to update the software

Before installing the new software, be sure to burn the current software version in to the GML Node's EEPROM!!! See step 4 if you have not already done this, then follow these instructions.

1. Do NOT delete the old version of the Automation software until you've finished this sequence.
2. Install the new software into a separate folder.
3. Launch the Automation software by double-clicking on the "old" version of the software.
4. After the application has booted up, open the **System Hardware Preferences** dialog.  
Under the **Edit** menu, select **Preferences** and then **System Hardware Preferences**.

5. Click on the **Update GML Node EEPROM** button.

This will send the "new" version of the gal\_EEPROM file to the GML Node. This will be burned into the GML Node's EEPROM. This will take about 10 seconds. During this time you will not be able to perform any actions on the Macintosh.

6. Quit the application.
7. Turn the GML Node off for 30 seconds.
8. Turn the GML Node on.
9. Launch the Automation software by double-clicking on the "new" version of the software.  
The application should boot up without any problems. Newer versions may not be able to read your preference file due to software changes, so any preferences will need to be re done. Make sure that you do not double-click on the alias for the "older" version. Running the old Macintosh software with the new GML Node software may cause both computers to crash.
10. You may now delete the "old" version of the software.  
Be sure to delete the alias for the "old" version if one exists.

# 1. Introduction

## 1.1 Description

The GML Automation System Version 7 is a complex system comprising both hardware and software finely tuned to the task of professional sound mixing for music, film, and video. The GML Automation System uses a Macintosh computer for a Graphical User Interface.

The GML Automation System application program and its associated software are compressed on three disks. You must "install" these files in order to decompress them and place them in the correct folders.

- *Refer to section 1.5 **Installing The GML Automation Software** for more information .*

The major differences between GML Automation Version 7 system and all previous GML Systems are:

- the control interface is now graphical and runs on the Macintosh.
- all program and mix files are now stored and supported on the Macintosh file system.
- the Macintosh and the GML "Node" computer communicate through an Ethernet cable. All editing takes place in the GML computer. The GML automation system creates a list of events called a "mix". The mix consists of fader moves and the setting of switches. The mix, until saved, only exists in the GML computer's memory. Should the user quit the application without saving the mix, or if either computer is reset without saving the mix, the mix will be erased. When a file is saved, it is sent from the GML Node computer to the Macintosh where it is saved to an internal/external hard disk or a floppy disk.

## 1.2 System Requirements

- Power Macintoshes are now required with the current distribution of the GML Automation System, 7.7.0d4..
- 64 megabytes of RAM is recommended. The modern Macintosh operating system software takes about 32 megabytes, and the GML Automation System application uses about 6 megabytes. If you want to run other applications simultaneously you will need more memory.
- A hard disk drive and a drive on which to archive mixes (Zip drives are recommended).
- A 17" color monitor is highly recommended.
- A full size keyboard is highly recommended. A full size keyboard consists of a built in keypad and 15 function keys. Smaller keyboards may be used, but some functionality will be lost.
- System software version 9.1 or higher.

### **Recommendation To Upgrade To System 9.1**

We recommend that all Power Macintosh users upgrade their Macintosh Operating Software to System 9.1. Besides fixing numerous bugs in previous operating system software releases. Open Transport is Apple's current network interface; MacTCP is no longer supported as of this writing. As of this writing, 02/21/01, Power Macs are being shipped with version 9.1.

Any Power Macintosh shipped from GML will be updated to 9.1. However should you need to re-build your hard disk, you will need to receive an updated software distribution from your Apple dealer, or download the software from various Internet sites, or from Compuserve or America On Line.

## 1.3 GML Customer Support

GML is committed to providing it's customers with reliable products and excellent technical support. If you have any questions, concerns, or suggestions, please contact us by telephone, fax, mail, or e-mail at:

GML, LLC.  
P.O. Box 1366  
Franklin, TN 37064  
(615) 790-1016 (voice)  
(615) 794-4802 (fax)  
gmlinc@ix.netcom.com (Internet)

### 1.3.1 In case of problems

For answers to questions that you may have about the GML Automation software, look in this manual first. If you can't find the answer in the manual, then contact GML.

If you call, it would be *far* more helpful if you are sitting in front of the computer with the software running. Please be prepared to provide the following information:

#### 1. The version number of the Macintosh System Software.

To find the version number of the Macintosh System Software, switch to the Finder and choose **About This Macintosh...** from the Apple ( ) menu.

#### 2. The version number of the GML Automation Software for the Macintosh.

To find the version number of the GML Automation Software for the Macintosh, click once on the GML Application icon and not an alias, and select the **Get Info** menu item from the **File** menu. The version number will be displayed next to the Version Info in the window. Or run the GML Application and choose **About GML Automation...** from the Apple ( ) menu.

#### 3. The version number of the GML Node Software.

To find the version number of the GML Node Software, run the application and open the **Command Line** window. Type "version <return>". The version number of the software used by the GML Node will be displayed. Note that the network between the GML Node and the Macintosh needs to operate for this to work. An alternative method for finding the version of the GML Node software is to locate the "gal" and "gal\_EEPROM" files in the TFTPd folder and select each file and then select the **Get Info** menu item from the **File** menu. The version number will be displayed next to the Version Info in the window.

#### 4. A description of the sequence of events that led to the problem.

#### 5. Any messages that appeared on your screen, and the exact wording of those messages.

**For problems related to data corruption, such as unanticipated changes in the automated mix data, please save copies of all of the mixes (before and after corruption) to a floppy, and make notes as to which mix(es) the problem(s) started to appear.**

## 1.4 The GML Manual

### Symbols and Conventions

#### Text

In the examples given throughout this manual, the text you are to type is shown in the `Courier` font style. For example, if the manual says to type “`cl 1 <return>`”, you type the lowercase letters “`cl`” followed by a space, followed by the number 1, followed by pressing the `<return>` key on the keyboard. Pressing the `<return>` key executes the text command.

File names that you must supply yourself are shown in *italic*. For example, when the manual says to type *file name*, you would type in a name that you have chosen for the file.

Menus, menu items, screen buttons, and dialog names are shown in the **Chicago** font.

The names of the buttons on the Master Control Panel are displayed with all capitals in the Helvetica font. For example, “Press the ALTERNATE button on the Master Control Panel.”

#### The Keyboard

Specific keys on your Macintosh keyboard may not be labeled exactly as they appear in this manual. All key names are shown using capital letters. For example, the key with the `and/or` symbol are shown as the COMMAND key.

A full size keyboard is recommended, however a smaller keyboard or a PowerBook keyboard may be used with some functionality sacrificed. For example, if your keyboard does not have function keys, you will not be able to control a tape machine or send switch configurations to the console. If your keyboard does not have a keypad, you will not be able to store the current SMPTE time in a Time Register.

Keys can be used in combinations. For example, COMMAND-T means to hold down the COMMAND key while pressing the “T” key. Some menu items can be selected via key combinations. The key combinations are shown next to the menu item. For example, you can open the Trim window by choosing **Trim** from the **Edit** menu or by pressing COMMAND-T.

Arrow keys are referred to as UP arrow, DOWN arrow, LEFT arrow, and RIGHT arrow.

The following keyboard commands are applicable to dialogs and windows:

- Pressing the `<return>` or `<enter>` key is usually the same as clicking on a default button in any given dialog. A default button has a thick border drawn around it.
- Pressing the ESC key or COMMAND-PERIOD ( `.` ), is the same as clicking on the **Cancel** button.
- Pressing the TAB key will move the cursor to the next edit field in any given dialog and highlight the text in that field.

#### The Mouse (or Trackball)

To *click*, position the cursor on the desired object, then press and release the mouse button. Single clicks are used to select an item or to press a ‘button’.

To *double-click*, position the cursor on the desired object, then click the mouse button twice in quick succession. The interval between two mouse clicks can be set via the Mouse Control Panel.

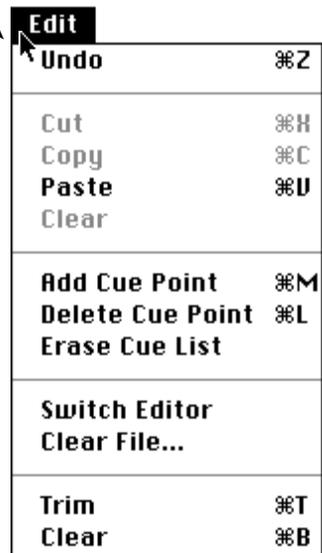
- Refer to your *Macintosh’s Users Guide* for more information on Control Panels.

To *drag*, position the cursor on the desired object, press the mouse button, and while holding it down, move the mouse in the desired direction. This is used to increase the size of certain windows (such as the Cue List Editor) and to select multiple channels in the Channel Selection field.

To *scroll*, press or click on the arrows on the top or bottom of the scroll bar. Scrolling can also be done by clicking on the scroll box in the scroll bar.

To *select* a menu item, point to the menu name at the top of the screen, and press and hold the mouse button down, then drag the selection bar to the appropriate menu item and release the mouse. For example, to open the Trim window, the manual says to select **Trim** from the **Edit** menu.

Point to the Edit menu and press the mouse button down...



The screenshot shows the 'Edit' menu with the title 'Edit' highlighted in a dark bar. An arrow points to the top-left corner of the menu. The menu items are listed as follows:

Undo	⌘Z
Cut	⌘H
Copy	⌘C
Paste	⌘U
Clear	
Add Cue Point	⌘M
Delete Cue Point	⌘L
Erase Cue List	
Switch Editor	
Clear File...	
Trim	⌘T
Clear	⌘B

...then drag the selection bar to Trim and release the mouse button.



The screenshot shows the 'Edit' menu with the title 'Edit' highlighted in a dark bar. An arrow points to the 'Trim' item, which is also highlighted in a dark bar. The menu items are listed as follows:

Undo	⌘Z
Cut	⌘H
Copy	⌘C
Paste	⌘U
Clear	
Add Cue Point	⌘M
Delete Cue Point	⌘L
Erase Cue List	
Switch Editor	
Clear File...	
Trim	⌘T
Clear	⌘B

- Refer to your *Macintosh User's Guide* to learn more about mouse actions.

### Keyboard and Mouse (or Trackball) Actions

Some actions require the mouse and keyboard to work together.

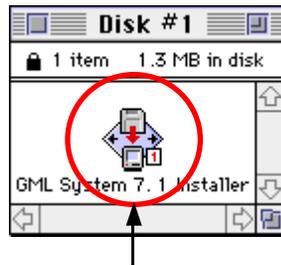
To *Shift-click*, hold down the SHIFT key, move the mouse to the desired screen location and press the mouse button. Shift-clicking is used selecting non-contiguous items, like aliases in the Alias Table.

## 1.5 Installing The GML Automation Software

### 1.5.1 Insert the Installer CD.

Double-click on the disk icon so you can see the Installer icon.

### 1.5.2 Double-click on the Installer icon to launch the Installation program.

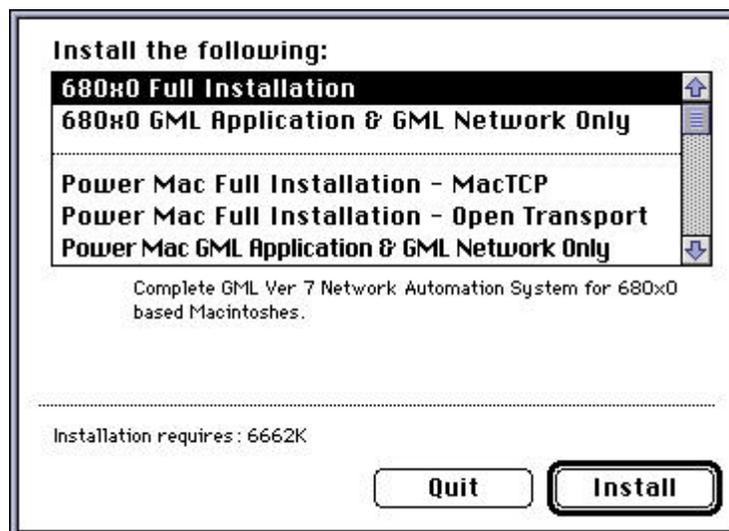


Double click on this icon to launch the Installer

The GML logo will be displayed on the initial screen. Click on the **Continue** button. The next screen displayed will contain a list of upgrades and bug fixes for the software. Read through this list then click on the **Continue** button. The Installer dialog will appear.

### 1.5.3 Select an Installation type and click on the Install button.

• Refer to Appendix J for information regarding the different **Installation Options**.



### 1.5.4 Select where to install the software.

A dialog will be displayed, in which you choose where to install the software. Once you moved to where you want to install the software, click on the **Install** button. A progress bar will be displayed showing the progress of the installation.

### 1.5.5 If the installation was successful, the following dialog is displayed:



Click on the **Quit** button to quit the Installer program.

• Refer to Appendix E - **Location of Installed Files** and Appendix F - **Description of Installed Files** for information about the installed files.

## 2. Making My First Mix

### 2.1 Make sure that the Macintosh and the GML Node are up and running properly.

- Refer to Appendix A - **Guidelines for Correct Network Operation** for the initial installation procedures.
- Refer to Appendix B - **Booting The GML Node**. This will acquaint you with the specifics about initializing the GML Node.

### 2.2 Run the GML Application on the Macintosh by double-clicking on its icon.

The GML Application icon can be found in the folder created during installation.



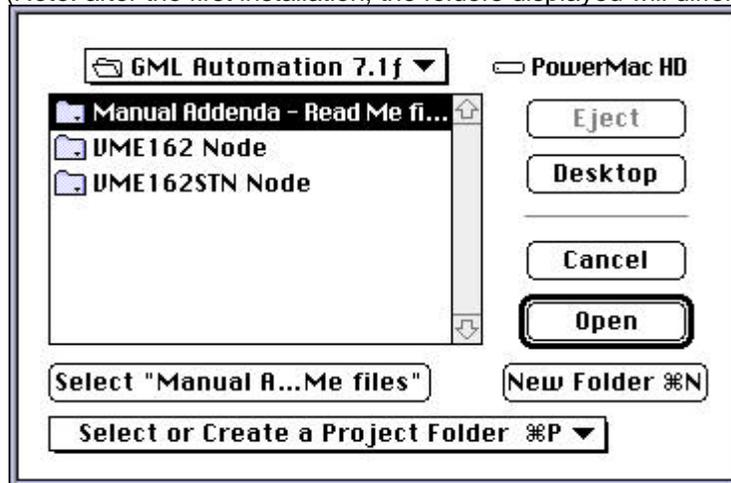
GML System 7.1

Double click on this icon to run the application.

### 2.3 Create a Project and Title Folder for the mix.

A Project Folder and Title Folder need to be established prior to saving a mix. The Project Folder is often the “artist’s name” or “production name”. The Title Folder is often a “song name” or “reel number”. If the application has just completed the boot-up process, you should see the Project Dialog:

(Note: after the first installation, the folders displayed will differ)



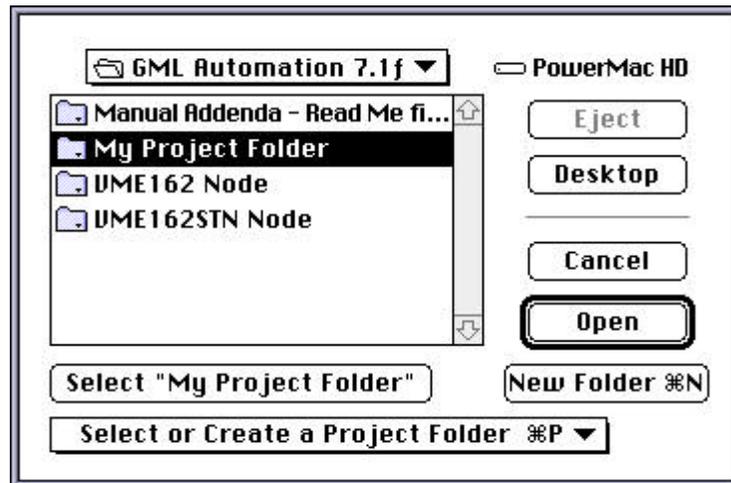
If you do not see this dialog, an error may have occurred on either the Macintosh or the GML Node and you should refer to section 14.1.2 of the **Guidelines for Correct Network Operation** in Appendix A.

- 2.3.1 Click on the **New Folder** button or press COMMAND-N (N) to display the **New Folder** dialog. The **New Folder** dialog is used to name the Project Folder.

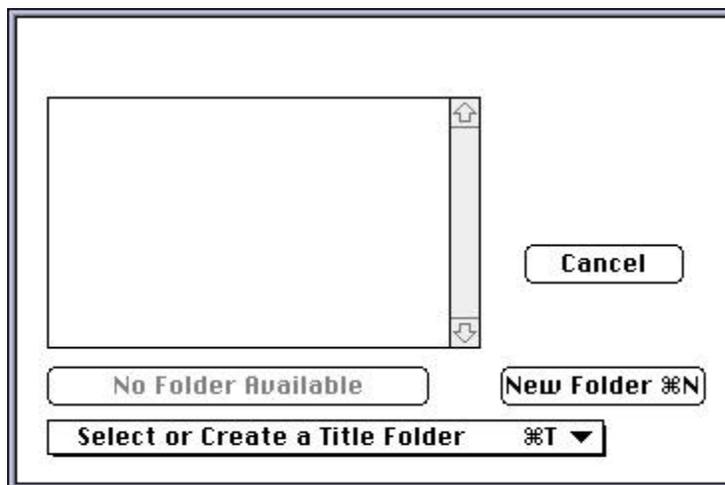


- 2.3.2 For this example, we'll name our Project Folder "My Project Folder". Enter the name and click on the **OK** button or press the <return> key to create the Project Folder. The Macintosh has a 31 character limit for files and folders. If more than 31 characters are entered, the computer will beep and the folder's name will be truncated to 31 characters. If a file or folder already exists with the same name, you will be prompted to re-name the Project Folder. If no text is entered and the **OK** button is clicked on, or the <return> key is pressed, the default name "Untitled Folder" will be used.

2.3.3 After the Project Folder has been created, it will be selected in the File List of the Project Dialog and its name will be displayed in the **Select** button. Click once on the **Select** button to make the selected folder the Project Folder.



2.3.4 After the Project Folder is selected, the Title Dialog is displayed:

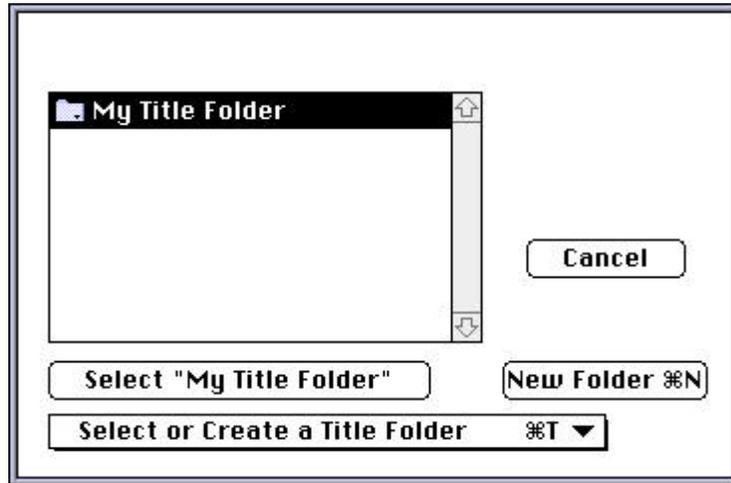


2.3.5 Note that the **Select** button is dimmed and says “No Folder Available”. This means there are no Title Folders located inside the selected Project Folder. Therefore, a new Title Folder must be created and then selected.

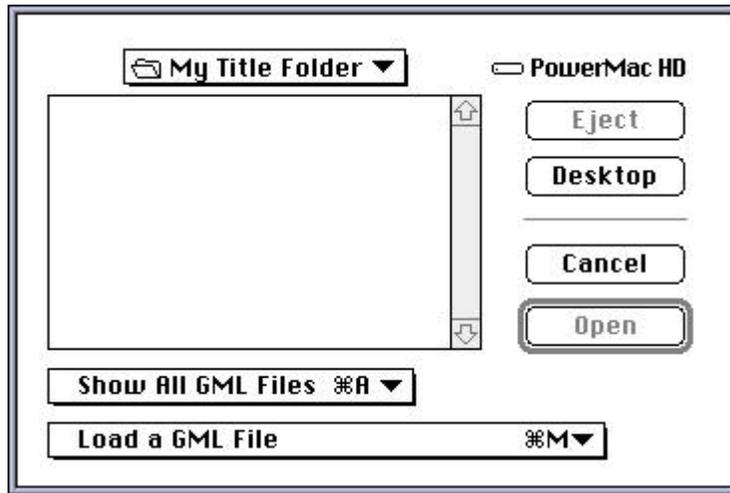
2.3.6 Click on the **New Folder** button or press COMMAND-N (N) to create a new Title Folder. The **New Folder** dialog will be displayed in which the Title Folder is named.

2.3.7 For this example, we'll name our Title Folder “*My Title Folder*”. Enter the name and click on the **OK** button or press the <return> key to create the Title Folder. The Macintosh has a 31 character limit for files and folders. If more than 31 characters are entered, the computer will beep and the folder's name will be truncated to 31 characters. If a file or folder already exists with the same name, you will be prompted to re-name the Title Folder. If no text is entered and the **OK** button is clicked on, or the <return> key is pressed, the default name, “Untitled Folder” will be used.

2.3.8 After the Title Folder has been created, it will be selected in the File List of the Title Dialog and its name will be displayed in the **Select** button. Click once on the **Select** button to make the selected folder the Title Folder.



2.3.9 After the Title Folder has been selected, the Mix Dialog will be displayed. This allows for saved mixes and other GML files to be loaded into the memory of the GML Node. Since no files exist in the Title Folder yet, click once on the **Cancel** button to exit this dialog.



2.3.10 The names of the selected Project and Title folders will be displayed on the GML Main Screen window next to Project and Title.



Selected Project and Title Folder names are displayed here.

## 2.4 Make a mix.

### 2.4.1 Get Time Code Working

2.4.1.1 Load a tape which has been striped with SMPTE in the tape machine.

- Refer to section 14.3.37 **How To Record SMPTE Time Code**.

2.4.1.2 Make sure the tape machine is connected to the Tape Control connector on the rear panel of the GML Node.

- Refer to Appendix G for **Tape Control cable Schematics**.

### 2.4.1.3 Play the tape.

Make sure the SMPTE is being read by the GML Node. The SMPTE indicator on the GML Main Screen will turn blue whenever the GML Node is receiving time code.

If, under the TIME DISPLAY on the GML Main Screen the message, "Init: waiting for SMPTE" appears, the GML Automation System needs to learn your code. For the GML Automation System to learn your code, play it continuously for about 1 minute at 30 FPS, somewhat longer at 24 FPS.

- Refer to section 14.3.6 **How To Initialize SMPTE** for more information.

If the tape is running and the SMPTE code is good, the TIME DISPLAY on the GML Main Screen will display the SMPTE time in Hours : Minutes : Seconds. Frames and Ticks are only displayed when the tape machine is NOT in play.

### 2.4.2 Turn On (ENABLE) the Automation

Dynamic console automation is 'turned on' either by clicking on the ENABLE button on the GML Main Screen or on the GML Master Control Panel. The ENABLE button on the GML Main Screen is green when on, and gray when off. The ENABLE button on the GML Main Screen and the GML Master Control Panel should now be lit. If not, there is a problem that needs to be solved before continuing. If the tape is running and the SMPTE is good, the RUN (ABORT) button on the GML Main Screen and the GML Master Control Panel will be lit. This indicates that the GML Automation System is locked to the incoming SMPTE. The RUN (ABORT) button on the GML Main Screen is red when on and gray when off.

- Refer to section 8 **GML Main Screen** for more information about the ENABLE and RUN (ABORT) buttons.

### 2.4.3 Turn On the Faders and Mutes

The GML Automation System normally 'comes up' with both Faders and Switches 'configured' for Configuration 1. There are seven pre-determined configurations, but we'll use Configuration 1 for now. Choose a fader and press it's SEL button (this is the little button on the fader itself). This places that fader into Read/Write (or playback/record) mode, as indicated by both the green and red LEDs being lit. If the tape is running, the SMPTE is good, and the GML Automation System is locked to the incoming SMPTE, any change on that fader and/or mute switch will be recorded.

- Refer to section 12 describing **Configurations** for more information.

### 2.4.4 You are now ready to mix

Roll tape.

When the GML Automation System locks to the incoming SMPTE, the RUN (ABORT) button on the GML Main Screen and the GML Master Control Panel will light.

Move the fader and change the state of the mute that you have 'selected'.

Stop and rewind the tape.

Playback the mix. Start the SMPTE source so it starts prior the time of the recorded moves. The recorded moves will playback at the times they were recorded.

You will notice that the default mix name, "Untitled Mix" is displayed in italics. This means the mix data in the GML Automation System has changed since the last time it was saved .

## 2.5 Save the mix.

Select the **Save Mix** menu item from the **File** menu or press COMMAND-S (S ). Because this is a new mix, you will be prompted to name the mix. Name the mix "My mix" and press the <return> key. This will save the mix in the Title Folder. Once a mix has been saved, future saves will append a mix index to the end of the mix's name. A mix index consists of six characters ".mx000". The last three digits are incremented on each save. This provides a way to back track with previous mixes. Thus, your next saved mix name will be "My mix.mx001". The Macintosh has a 31 character limit for files and folders and since we add the mix index to the mix name, only 25 characters can be used for mix names. If more than 25

characters are entered, the extra characters will be truncated to make room for the mix index. If a file or folder already exists with the same name, you will be prompted to rename the mix.

The **Save Mix** command is only selectable when the mix data has been changed. If no mix exists in memory or if the mix data has not been changed, you will not be able to select this menu item. If you wish to make a backup or rename an unsaved mix, select the **Save As** menu item. **Save As** is always selectable.

- *Refer to section 9 The **File** Menu for more information about the save commands.*
- *Refer to section 5 **Loading and Saving Files** for more information regarding saving files.*

### 3. Automated Mixing Essentials

When the system is **ENABLED**, each cycle of *starting* and *stopping* the tape machine is called a 'PASS'. Each pass consists of changes made in all previous passes plus the changes just added to in *this* pass. These 'passes' are retained in the GML Node's memory, it is not saved to the Macintosh hard disk unless you specifically tell it to.

***The best automated mixes are made after the direction of the mix is firmly established.***

Usually, automating faders from the very outset (i.e., the first channel ever heard) of a mix results in, at best, back tracking, and, at worst, conflict and much confusion over existing prematurely executed mixing ideas.

Successful automated mixing on the GML system starts by observing the following guidelines:

- Ensure that the ENABLE and ALTERNATE buttons are lit on the Master Control Panel.
- After starting the tape machine, ensure that the RUN(ABORT) button is lit before touching faders and mutes; usually this can happen within a couple of seconds.
- For each channel to be changed, press the SEL button on that fader before making a move. This will toggle the channel out of safety mode and into the effective sub-configuration of the chosen standard configuration. One may toggle all channels by using the ALL button on the GML Master Control Panel.
- Start with MUTES. It's much easier to automate FADERS for an arranged work.
- Decide what types of changes you plan to make to the mix. If you're working primarily on MUTES select SWITCH UPDATE mode; if you're working primarily on FADERS, select FADER UPDATE mode.
- For creating and editing simultaneous switch and fader changes, select FADER AND SWITCH UPDATE mode.
- For erasing bad mute changes, select SWITCH WRITE-ONLY mode.
- For erasing bad fader moves, select FADER WRITE-ONLY mode.
- Once one or more changes have been programmed for faders, select FADER AND SWITCH UPDATE with ABSOLUTE OFFSET mode. This will insure that the fader will return to your previously programmed moves.
- **Remember: if there are no red LEDs lit on the channels that you have changed, the channel is not in 'WRITE' and the changes will not be recorded.**
- When finished with changes on a particular channel, press it's SEL button again to toggle the channel back into READ, or safety mode.
- Although generally, it is *not* necessary to toggle channels into UPDATE at any particular time, you should avoid leaving a channel in a WRITE-ONLY configuration, at any time other than when you are specifically **ERASING** a bad fader move or switch change. Other than that, it is unnecessary to leave channels in READ-ONLY, or safety mode between passes.
- Periodically save the current mix to disk after stopping the tape.
- The process of automated mixing is one of *adding* changes to your mix. **SAVING** a mix is simply the act of making a permanent copy of the state of this "composite" mix to the Macintosh hard disk. You should save a mix whenever you feel that you have created enough changes that are worth keeping should the system go down for any reason.
- Some mixers save the mix after every pass. We feel this is excessive, but not harmful. Typically, saving the mix every 4 or 5 passes is probably adequate.

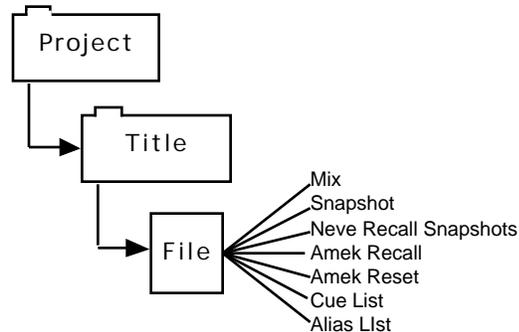
Remember that selecting any of the GML-supplied Standard Configurations will always result in the system being initially placed in the 'read-only', or safety mode.

- Refer to section 12 which describes **CONFIGURATIONS** for more information.

## 4. Folder Hierarchy

The application *coerces* the user to implement a folder hierarchy to provide a methodical placement of files in the Macintosh File system.

The application's folder hierarchy is as follows:



### 4.1 The Project Folder

The Project folder contains the Project Preference file and all the Title folders that relate to the Project. The Project folder can be created anywhere on the Macintosh file system. This includes floppy disks and compatible external hard drives.

#### The Project Preference file

The Project Preference file resides in the Project Folder. It contains the default settings for all mixes under the Project Folder. The following data is saved in the Project Preference file; SMPTE and tape machine preferences, fader configurations, the names for the fader configurations, system switches, and custom machine parameters.

The Project Preference file is updated when the application quits, or when you change Project Folders. When a Project Folder is selected, these preferences are sent to the GML Node. The Project Preference data overrides that of the application preferences. If the Project Preference file is renamed to something other than "Prefs", removed from the Project Folder, or deleted, the application preferences found in the GML Prefs file data will be used instead.

- Refer to Appendix N - **Application and Project Preferences Explained** for more information.

### 4.2 The Title Folder

The Title Folder contains all of the files for a particular song or show. Every song or show should have its own Title Folder in which all mixes for that song or show are stored. The Title Folder is only created under the Project Folder. This provides the user with an organized method of file placement, thus reducing the "Where did I save that mix?" problem found with other systems.

### 4.3 GML Files

The Automation System related files can consist of GML Mixes, GML Snapshots, Neve Recall Snapshots, Amek Recall Files, Amek Reset Files, Cue List, and an Alias List.

#### The Mix File

The mix file contains all fader movements and switch events. A switch setting may also be referred to a "switch event". The mix file also stores console configuration data, which is used every time the mix is reloaded. The configuration data is composed of:

- The GROUP ASSIGNMENTS. A list of which channels are controlled by each grouper. Also, whether a Group Master is an ADDITIVE GROUP or not.
- The MIX COMMENT. This is a brief message describing the mix.
- The SECTION ASSIGNMENTS. This enables the user to divide the console into three divisions which allows one to limit the effect of CONFIGURATION changes to a selected "section". This is often used in film and video production.
- The SOLO MASK. This allows one to "mask off" effects channels so that, when soloing, effects are not muted.
- The value of the eight TIME REGISTERS.

- The configured number of FADERS, GROUPS and STEREO FADERS on *this* console. These can be configured from within the **System Hardware Preferences** dialog.
- The FADER CONFIGURATIONS used on this mix. These can be customized from the **Edit Configurations** dialog.
- Any CUSTOM CONFIGURATIONS the user had specified.
- The SMPTE OFFSET value. This value *offsets* the incoming SMPTE value before any other processing or display. It is added (or subtracted) from the actual SMPTE input. Often it is required to re-synchronize existing automation data to code that may have changed through the production process.
- The frame rate and type of SMPTE TIME CODE used.

### **The Snapshot File**

The Snapshot file records information on fader positions and/or switches settings. This file is an instruction to the system to make a fader or switch relocate to an exact position, starting at an exact SMPTE time at a precise speed. A Snapshot file may contain a 40 character comment.

### **Neve Recall File**

The Neve Recall Snapshots records the position of only Neve faders and switches. This allows the entire console to be setup when returning to a specific project.

### **Amek Recall File**

This stores the Amek APC Recall information. This only applies to the Amek APC console.

### **Amek Reset File**

This stores the Amek APC Reset information. This only applies to the Amek APC console.

### **The Cue List**

This file provides a list of cue points which can be used for editing and locating purposes. The Cue List file is saved as a normal text file which can be viewed and modified by any text editor.

The Cue List file is automatically loaded and displayed when you select a Title Folder which contains a Cue List file. If this file is renamed anything other than "Cue List", moved from the Title Folder, or deleted, no cue list will be used for the mix until a new Cue List is created. In order to create a Cue List file, a Project and Title Folder must be selected. The Cue List menu items, located under the **Edit** menu, will be disabled until a Project and Title Folder have been selected.

The Cue List file is saved when Title Folders are changed, when the Cue List window is closed, and when the application quits.

- *Refer to section 10.3 **Cue List Editor Commands** for more information.*

### **The Alias List**

The Alias List file is a text file which contains a list of aliases and their associated channels created during mixing. This file may be edited off-line by any text editor to modify the alias list data.

- *Refer to section 10.2.3 on **Aliases** for more information.*

## 5. Loading and Saving Files

### 5.1 Loading Files

If you are continuing work on a saved mix, or you wish to use a saved file, you need to load it into memory.

- 5.1.1 **Select the Open menu item under the File menu or press COMMAND-O to display the Project Dialog.**



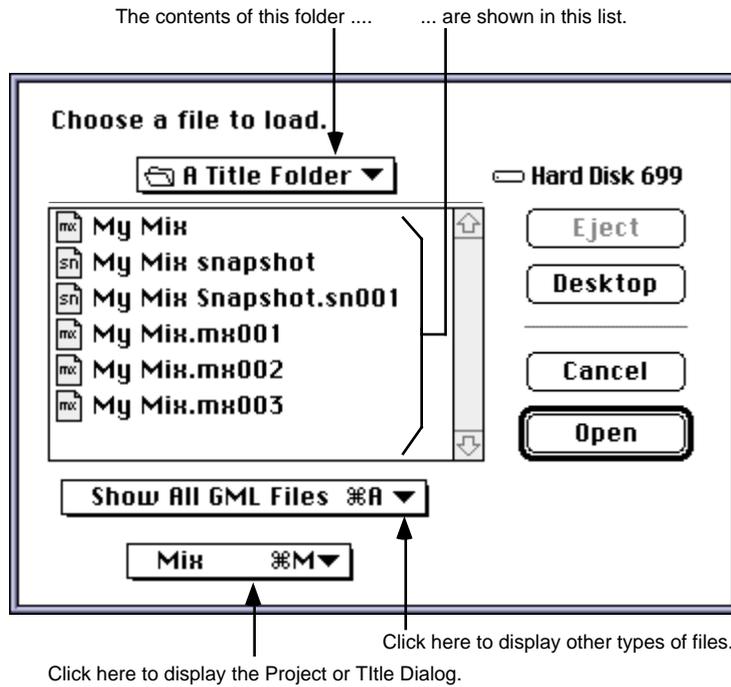
At the bottom of the Project Dialog is a pop-up menu with **Select or Create a Project Folder** selected. This pop-up menu is used to move between the Project Dialog, Title Dialog and Mix Dialog freely. Since we want to load a mix, select **Load a GML File** or press COMMAND-M. This will display the Mix Dialog and list all available GML files.

Note that when the **Open** menu item is selected, the last dialog used will be displayed. The **Select or Create Title Folder** menu item is only selectable if a Project Folder has been selected. The **Load a GML File** menu item is only selectable if both Project and Title Folders have been selected.



- 5.1.2 **Locate and open the desired file.**

The Mix Dialog always defaults to displaying the files located under the selected Title Folder. Note that the last mix used under the selected Title Folder is automatically selected.

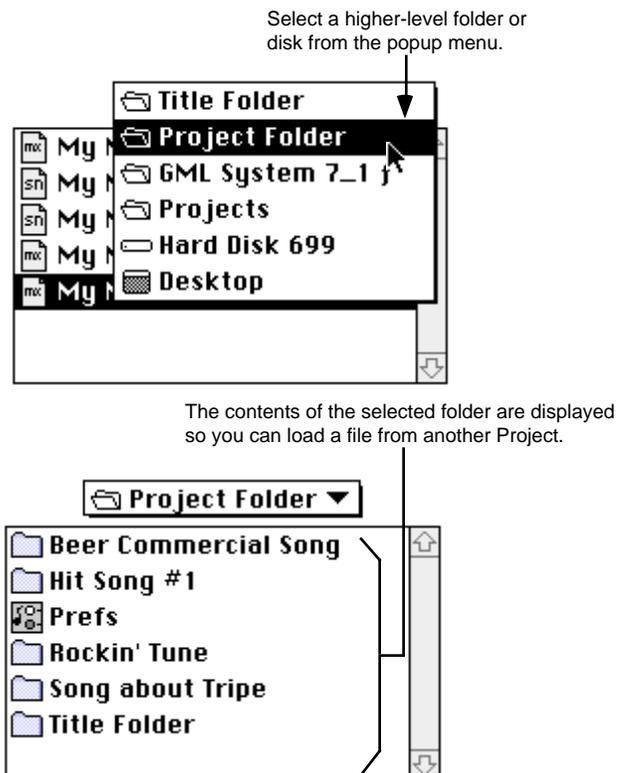


To load a file shown in the File List, double-click on the file name.

To load a file located in another project, follow these steps:

5.1.2.1 If the file is located on a floppy disk, insert it in the floppy drive on the Macintosh. If you want to import a mix from an Idris floppy disk, refer to section 14.3.9 **How To Import Files**.

5.1.2.2 Use the pop-up menu located above the Mix Dialog list to select the folder or disk that contains the file you want to load. You may need to open one or more folders in order to locate the file you want.



### 5.1.2.3 Double-click on the file name.

The pop-up menu below the File List in the Mix Dialog selects which files are displayed. It defaults to **Show All GML Files**. Other display selections are **Mix Files**, **Snapshot Files**, **Neve Recall Files**, **Amek Recall Files**, and **Amek Reset Files**. These options make it easier to view only the specific type of file you wish to load. When a new display selection is chosen, the list of files is updated to display those files which match the display criteria. For example, with the list of files shown above, selecting **Snapshot Files** will cause the list to be updated so that only “My Mix snapshot 1” and “My Mix snapshot 2” are displayed.

Loading a mix will erase any mix currently in memory. If the current mix in memory has been changed but not saved, attempting to load a mix will display the following warning dialog:



Click on the **Continue** button to load the new mix into memory without saving the current mix.

Click on the **Cancel** button to stop the process of loading the new mix into memory.

Click on the **Save** button to save the current mix in memory before loading the new mix.

When a mix is loaded, its name will be displayed in the GML Main Screen and its comment, if any, will be displayed in the Comment Field of the GML Main Screen. Also, any group assignments and sections saved with the mix will override how the console is configured.

## 5.2 Saving Files

When you are working on a mix, you're actually working on a copy of the mix stored in the memory of the GML Node's memory. You need to save the mix for future use. You should save your work when you want to keep any changes made. **If a power failure or other problem occurs which interrupts your GML Automation session, any work that has not been saved will be lost.**

When saving is attempted, and a Project and/or Title Folder has not been selected, the application will display the appropriate dialog to provide a proper hierarchy for the file. For example, if a mix has been created without selecting either Project or Title Folder and a save command is selected, the Project Folder dialog would be displayed. Once a Project Folder was selected the Title Folder dialog would be displayed prior to saving the mix.

There are three save commands, **Save Mix**, **Save Snapshot** and **Save As**.

### 5.2.1 Save Mix <S >

The **Save Mix** command is only used to save the current mix in memory. This command is selectable when the current mix in memory has been changed. After the mix has been saved, the **Save Mix** command will be unselectable until the mix data is changed again.

The first time a mix is saved, the **Save As** dialog, described below, will be displayed to allow the mix to be named. On future saves, a six character mix index, “.mx000” is added to the mix file name. This provides a means for back tracking between mixes. The three digits are incremented on each save. Therefore, your first mix will consist of just the mix name. Subsequent mixes will be named as follows: My Mix.mx001, My Mix.mx002, etc....

When saving an older mix, the program will increment the mix extension until a non-conflicting file name is found. For example, suppose you have created three mixes: My Mix, My Mix.mx001, My Mix.mx002. If you loaded My Mix, made a change and then saved it, the program will try to save the mix as “My Mix.mx001”, but will notice that “My Mix.mx001” already exists. It will then try to save the mix as “My Mix.mx002”, but will notice that “My Mix.mx002” exists too. The mix will be saved as “My Mix.mx003” since no mix exists with that name.

When the 1000th version of a mix is about to be saved, an alert will be displayed reminding you to save the mix under a new name. This will reset the mix counter back to 000. You will NOT be able to save the mix until you do so. This was done so that old mixes will not be destroyed.

The mix will always be saved in the selected Title Folder. To save a mix in a different folder or drive, use the **Save As** command described below.

### 5.2.2 Save Snapshot < D>

This command is the same as the **Save Mix** command except for the following differences

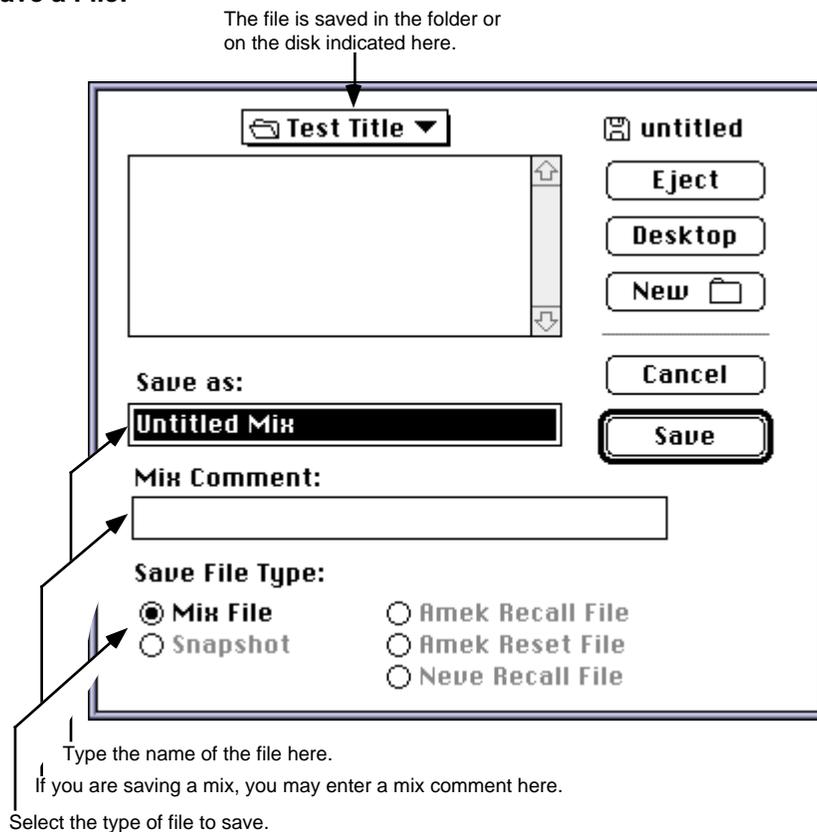
- it is only selectable if a Snapshot is in memory and it has been changed.
- when a new snapshot is saved, the **Save As** dialog will be displayed with the **Snapshot** button selected as the default file type.
- the Snapshot file extension is “.sn000”.

### 5.2.3 Save As

**Save As** is always selectable. This command is used to save all mix related files. The **Save As** dialog allows a file to be saved anywhere, (i.e., another hard drive or floppy disk) on the Macintosh.

- Refer to the section **Loading Files** for information on changing directory locations.

#### 5.2.3.1 How to Save a File:



#### 1. Enter a name for the file.

You cannot use a colon (:) in the name; all other characters are permitted. The Macintosh has a 31 character limit to file names.

MIXES and SNAPSHOTS are, however, limited to 25 characters because a six character MIX or SNAPSHOT index, is appended to the file name. The three digits following the “.mx” or “.sn” are incremented on each save. Your first mix will naturally consist of just the file name. Subsequent MIXes will be named as follows: My Mix.mx001, My Mix.mx002. If more than 25 characters are entered for a MIX or SNAPSHOT name, the file name will be truncated to make room for the extension. If a MIX or SNAPSHOT is renamed, the extension resets to 000.

When the 1000th MIX or SNAPSHOT is about to be saved, an alert will be displayed reminding you to save the file under a new name. This will reset the MIX or SNAPSHOT index counter back to 000. You will NOT be able to save the MIX or SNAPSHOT until you do so. This was done so that old MIXES or SNAPSOTS will not be destroyed.

**2. If you are saving a MIX or a SNAPSHOT, you may attach a comment to the file.**

This is used to add a note about the MIX or the SNAPSHOT. This will be displayed on the GML Main Screen when the MIX or SNAPSHOT is loaded into the GML Node's memory. The comment is limited to 40 characters. If more than 40 characters are entered, a dialog will be displayed reminding the user of the 40 character limit. Comments for files other than MIXES and SNAPSOTS will be ignored.

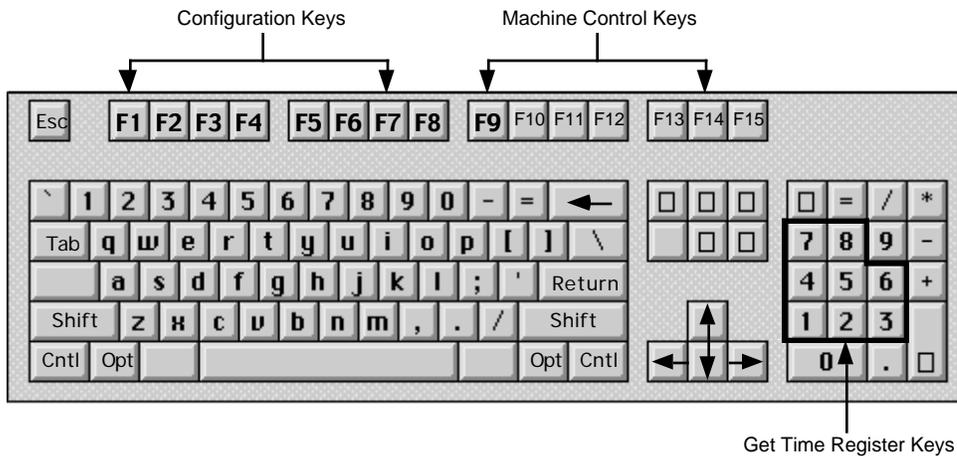
**3. Select the type of file to save.**

The **Save File Type** buttons determine the type of file to be saved. The buttons will only be selectable when the corresponding file exists in memory. For example, the **Snapshot** button will become selectable only after a SNAPSHOT has been taken. The **Mix File** is always the default selection.

**4. Click on the Save button.**

If you entered a name that is already in use, a dialog box will be displayed asking if you want to replace the existing file with the file you want to save.

## 6. The Macintosh Keyboard



### 6.1 Configuration Keys (Function Keys 1 - 8)

Pressing a configuration key places the console in the MAIN sub-configuration or “safety mode” for the chosen configuration.

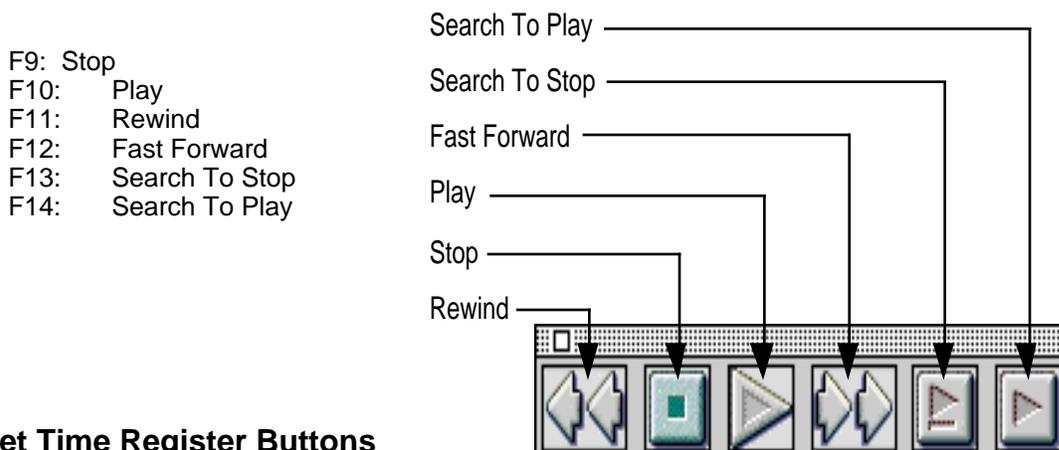
The default configurations are as follows:

- F1: Fader and Switch Update
- F2: Switch Update
- F3: Switch Write Only
- F4: Fader Write Only
- F5: Fader Update
- F6: Fader and Switch Update with Absolute Offset
- F7: Fader and Switch Update with Relative Offset
- F8: Special Configuration

- Refer to section 12.5 **Default Configurations** for a description of these configurations.
- Refer to section 8 **The GML Main Screen** for information on using the Configuration pop-up menu to select configurations.

### 6.2 Machine Control Keys (Function Keys 9 - 14)

These keys are used to control the tape machine. The commands, “Search To Stop” and “Search To Play” are only active if there is a cue point to search to. These commands enable the tape machine to locate to that cue point’s SMPTE location on the tape and either stop at or play from that point.



### 6.3 Get Time Register Buttons (Keypad Keys 1 - 8)

To store the current SMPTE time in a Time Register, the SHIFT key must be held down and a corresponding Time Register key must be pressed. For example, while holding the SHIFT key down, and pressing keypad key 1, the current SMPTE time will be stored in Time Register 1. You can also store SMPTE times in the Time Registers through the **Command Line** window with the Grab Time command. The Grab Time syntax is “gt# <return>”. The ‘#’ character will be 1-8. For example, to store the current SMPTE time in Time Register 1, type “gt1 <return>”.

- Refer to section 11.2 **Cue List Editor** for another way to store SMPTE times in the Time Registers.

## 7. The Master Control Panel

The Master Control Panel is the main control component of the system. The Master Control Panel is located in the console. Note that the buttons marked SOLO, CONFIGURE, ALTERNATE, PRESET (FADER and MUTE), and SNAPSHOT (TAKE and RECALL), do not have any meaning unless they are used in conjunction with the ALL button, or with the SEL buttons on individual faders.

### Select 1-4/5-8

This controls which Time Register will be selected from the four Time Register buttons below it. If this button is *not* lit, Time Registers 1 through 4 will be selectable. If it is lit, Time Registers 5 through 8 will be selected.

### Register Buttons

Buttons 1/5 through 4/8 each select one of eight Time Registers. The Time Register selected depends upon which of these buttons is pressed and the state of the Select button. For example, to select Time Register 5, you need to press the Select button so it is lit. Then press register button 1/5. Because the Select button is lit, the high value of the Time Register button is used. In this case 5.

### Snapshot Take

Allows a static “picture” of selected console settings to be recorded by the GML computer.

### Snapshot Recall

Allows a static “picture” of all or part of the console to be recalled, thereby changing fader positions and/or mute states.

### All

This button is used to select ALL of the channels on the console.

### Solo

Enables the system’s in-place SOLO function. The fader’s SEL button now acts as an in place solo. To mask effects returns, enter the channel numbers or ranges with the ‘MA’ command in the **Command Line** window.

NOTE: Older GML Master Control Panels have this button labeled as “Auto Fade.” These should be marked with the word “SOLO” instead.

### Group Select

Allows for channels to be assigned to groups manually. For example, to assign Fader 1 to Group 1, press the Group Select button so it is lit. Then press and hold down the Sel button on Group 1 and press the Sel button on Fader 1. Fader 1 is now assigned to Group 1. When Group Select is lit, pressing any fader’s Sel button, will light the Sel LED on the Group it is assigned to. Using the above example, pressing the Sel button on Fader 1, the Sel LED on Group 1 will be lit. Also, pressing a Group’s Sel button will light the Sel LED of any faders assigned to it.

When a Fader is assigned or de-assigned from a Group, the mix title will be displayed in italics meaning the mix data has changed.

### Configure

Turns on the special configuration function. To place a configuration into the special configuration, hold the SHIFT key down, and then press the corresponding configuration key on the Macintosh keyboard.

### Alternate

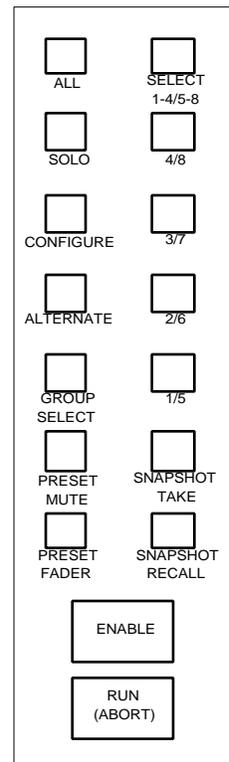
Turns on the sub-configuration toggling function. This is used to change the sub-configurations of the faders. It is normally on most of the time. When the ENABLE button is pressed, this button turns on automatically.

### Preset Mute

Turns on the PRESET functions for switches. It cannot be selected when the system is enabled.

### Preset Fader

Turns on the PRESET function for faders. It cannot be selected when the system is enabled.



**ENABLE**

This is the master switch for the automation. It must be lit in order for fader and switch changes to be recorded or played back. This button must be off to use the preset functions or the "pt" command line functions. When this button is turned on, the Preset buttons will go out (if they were lit), and the ALTERNATE button will light.

**RUN (ABORT)**

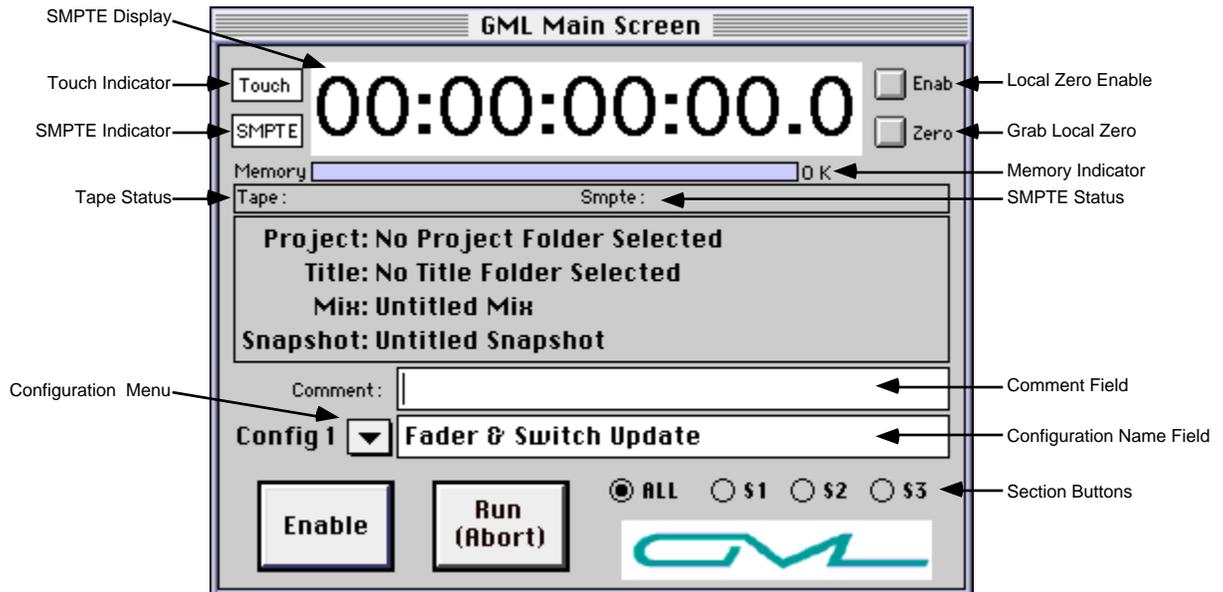
This indicates that the system is running in real time. It will only be lit if the ENABLE button is lit and the GML computer is synchronized to incoming SMPTE. When the user starts tape rolling, the GML computer synchronizes internally in several seconds. Once running, three things occur simultaneously: The GML Main Screen will stop displaying SMPTE frames and tics, updating the time once per second, the faders and switches move to position and resume playback, and the RUN (ABORT) light turns on.

If, while tape is running, the user decides that the new moves are undesirable, they may ABORT the data by hitting the RUN(ABORT) button BEFORE taking the tape machine out of PLAY. All changes made to faders or switches will be forgotten.

The GML Main Screen also has two buttons, ENABLE and RUN(ABORT), whose actions duplicate those of on the Master Control Panel. They are gray if the Master Control Panel buttons are not lit. The software ENABLE button will change to green when the ENABLE button on the Master Control Panel is lit. The software RUN (ABORT) button will be displayed in red when the RUN (ABORT) button on the Master Control Panel is lit. Clicking on the software RUN (ABORT) button has the same effect as pressing the RUN (ABORT) button on the Master Control Panel. When the automation is enabled and synchronized, both the ENABLE and RUN (ABORT) buttons will be lit on the Master Control Panel and the software ENABLE button will be green and the software RUN (ABORT) button will be red.

## 8. The GML Main Screen

The **GML Main Screen** is the master screen for the GML Automation System and is open throughout the use of the application.



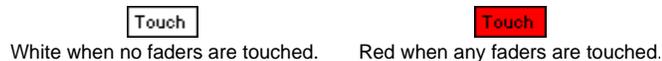
### The SMPTE Display

Displays the time at which automation is recorded and played back.

### Touch Indicator

Lights up red when a fader's knob is touched.

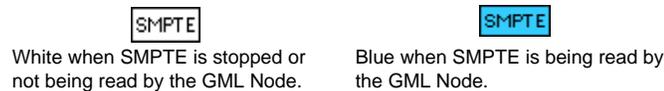
The Touch Indicator



### SMPTE Indicator

Lights up blue when SMPTE is being received by the GML computer.

The SMPTE Indicator



### Local Zero Enable

This toggles the **LOCAL ZERO** function and changes all SMPTE displays to reflect the use of a **LOCAL ZERO** time value. This can also be performed in the **User Preferences** window.

### Grab Local Zero

This will make the current SMPTE time a "**LOCAL ZERO**" offset time and turns the **LOCAL ZERO** function on. This can also be performed in the **User Preferences** window.

### Memory Indicator

This displays how much memory is used by the current mix. The number to the right of the indicator displays the amount of memory found in the GML Node upon start up. As fader moves and switch events are added to the mix, a red bar will progress from left to right indicating how much memory is consumed.

### Tape Status

This shows the status of the tape (i.e., Running, Stopped, etc...).

## **SMPTE Status**

This shows the status of SMPTE (i.e., SMPTE has Stopped, etc...).

## **DISCONTINUOUS TIME CODE MONITOR**

On a tape start-up, the GML System Timing Control (on the GML SMPTE board) defaults to a protocol which first checks incoming code for speed stability (within +/- 3% of initialized speed) and then waits for four consecutive error-free time-code reads before starting "locked" system run. At this point the master system clock is generated by a highly stable digital phase-locked loop and is affected only by the incoming SMPTE's sync word and not absolute numbers.

Should the incoming SMPTE code differ from the internally incremented code, the system displays a "SMPTE Is Discontinuous" message. Should this condition persist, it should not be ignored, as one may anticipate erratic automation performance ("moves coming back in the wrong place...", and etc.) which varies according to where the tape machine starts.

Most of the incoming SMPTE code check features may be turned off by entering "fc off <return>" in the **Command Line** window.

## **Project**

Displays the name of the selected Project Folder. If a Project Folder has not been selected, "No Project Folder Selected" is displayed.

## **Title**

Displays the name of the selected Title Folder. If a Title Folder has not been selected, "No Title Folder Selected" is displayed.

## **Mix**

Displays the name of the current mix in memory and the mix status. The default mix name for a new mix is "Untitled Mix". If a saved mix is loaded, that mix's name will be displayed here. When the mix data has changed in any way, the mix name is displayed in italics. Otherwise, the mix name is displayed normally. For example, after a mix has recorded data, the mix name will be displayed in italics, indicating that the mix data has changed. After the mix is saved, the mix name is re-displayed without italics.

## **Snapshot**

Displays the name of the current snapshot in memory and its status. The default snapshot name for a new mix is "Untitled snapshot ". If a saved snapshot is loaded, that snapshot's name will be displayed here. When a new snapshot is taken, the snapshot name is displayed in italics. Otherwise, the snapshot name is displayed normally. For example, after a snapshot is taken, the snapshot name will be displayed in italics, indicating that the snapshot data has changed. After the snapshot is saved, the snapshot's name is re-displayed without italics.

## **Comment Field**

This allows you to enter a short comment describing the mix or snapshot. To enter a comment, click in the Comment Field and begin typing. The comment is limited to a maximum of 40 characters. If you exceed the 40 character limit, the Macintosh will beep and the text will be truncated. You can also enter or change the comment in the **Save As** dialog. The comment will be displayed when a mix or snapshot containing a comment is loaded.

## **Configuration Pop-up Menu**

This displays the eight standard configurations. Selecting a configuration will put the console in that configuration's MAIN sub-configuration or "safety-mode" if using the default configurations. There are two other ways of selecting a configuration: the Configuration keys (F1-7) and the **Configuration Preferences** window.

To customize the configurations or to revert back to the default configurations and default configuration names, refer to section 10.6.1 **Configuration Preferences**.

## **Configuration Name Field**

This displays the name of the current configuration. You can use this field to edit the name of the current configuration. To edit a configuration's name, click once in this field and begin typing. To revert back to the default configuration names, refer to section 10.6.1 **Configuration Preferences**.

## Section Buttons

These buttons aid in limiting the number of channels that are “configured” by a Standard Configuration button. Only the selected section of the console is able to receive a console configuration. The four section buttons are **ALL**, **S1**, **S2** and **S3**. The **ALL** section button is the default selection, and allows **Configuration Keys** 1 - 7 to control the configuration of the entire console. The other three buttons only pertain to the channels assigned to sections 1, 2 and 3. If channels are assigned to a section, and that section is selected, then only the channels in the selected section will be effected when a different console configuration is selected.

Sections can also be changed via the **Command Line** window by typing “AS <return>”, “S1 <return>”, “S2 <return>”, and “S3 <return>”.

To assign channels to a section, you may use the **Configuration Editor** window or the **Command Line** window. The **Command Line** window syntax is “<Section> <channel list>”. For example, to assign channels 1,2,3 and 5 to section 1, type “S1 1-3,5 <return>”.

## Enable Button

This button is the software counterpart for the ENABLE button on the Master Control Panel. Clicking on this button is the same as pressing the ENABLE button on the Master Control Panel. It is displayed as gray when the ENABLE button on the Master Control Panel is *not* lit, and displayed as green when the ENABLE button on the Master Control Panel is lit.

- *Refer to section 7 **The Master Control Panel** for more information*

## Run (Abort) Button

This button is the software counter part for the RUN (ABORT) button on the Master Control Panel. Clicking on this button is the same as pressing the RUN (ABORT) button on the Master Control Panel. It is displayed as gray when the RUN (ABORT) button on the Master Control Panel is *not* lit, and displayed as red when the RUN (ABORT) button on the Master Control Panel is lit.

- *Refer to section 7 **The Master Control Panel** for more information*

## 9. The File Menu

The **File** menu items control the loading and saving of files between the Macintosh and the GML computer.

File	
New Mix	
Open...	⌘O
Close	⌘W
Save Mix	⌘S
Save Snapshot	⌘D
Save As...	
Import Idris Mix ...	
Eject Idris Disk	
Quit	⌘Q

### 9.1 New Mix

The **New Mix** command is used to clear the current mix from the GML Node's memory. All channel assignments to groupers will be lost and the group faders will be moved to 0dB. If the current mix in memory has been changed but not saved, a dialog will be displayed allowing the user to save the mix before clearing it from memory.

### 9.2 Open... <O >

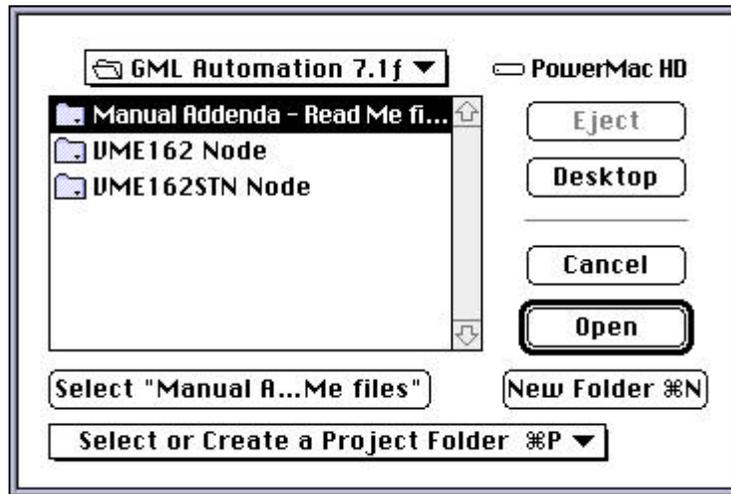
The **Open** menu item is always selectable. This displays the Project, Title or Mix Dialog. These dialogs allow you to select and create a Project and Title Folder, and load a mix into memory. When selected, the Project Dialog is displayed with the currently selected Project Folder selected. You can move between all three dialogs by use of the pop-up menu at the bottom of each dialog.

#### Project Dialog

The Project Dialog allows you to select and create a Project Folder. The last used Project Folder will automatically be selected. A Project Folder can be selected and created on any hard drive or floppy disk. To select a Project Folder, highlight the desired folder name by clicking once on it. Notice that the **Select** button will display the name of the highlighted folder. Click on the **Select** button to select the highlighted folder as the Project Folder. The selected Project Folder's name will be displayed on the GML Main Screen. Once the Project Folder has been selected, the Title Dialog will be displayed in order to select and create a Title Folder.

To create a Project Folder, click on the **New Folder** button or press <N >. The **New Folder** Dialog will be displayed, in which the name of the new Project Folder is entered. After the Project Folder has been created, it will be selected in the File List of the Project Dialog and its name will be displayed in the **Select** button. Click once on the **Select** button to make the selected folder the Project Folder.

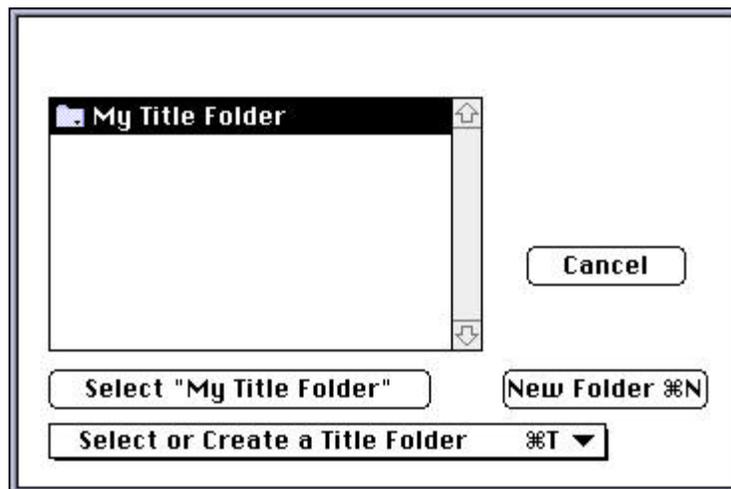
• Refer to section 2.3 **Create a Project and Title Folder for the mix** for more information.



The pop-up menu located at the bottom of the Project, Title and Mix Dialog has a dual purpose. First, it reminds the user what action is to be performed in the dialog. For example, in the Project Dialog, the pop-up menu says, **“Select or Create a Project Folder”**. This lets the user know that they are to select or create a Project Folder. Second, it allows the user to move between the three dialogs quickly and easily. Since each menu item has a command key equivalent, the user never has to remove his/her hands from the keyboard.

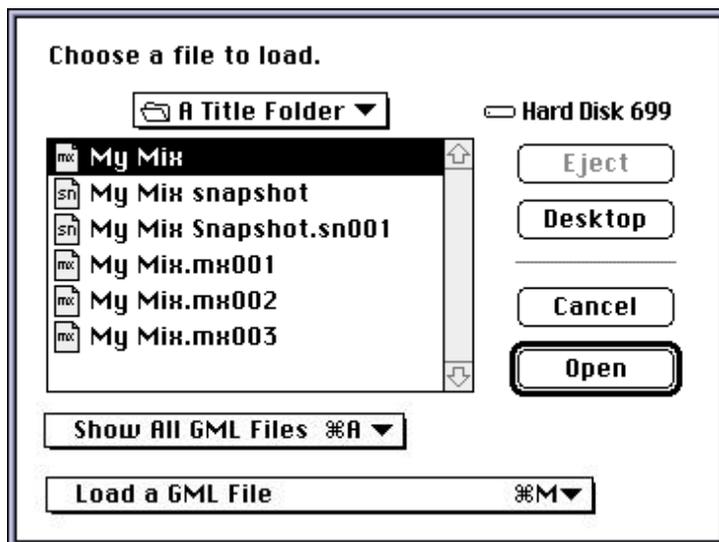
### Title Dialog

The Title Dialog pop-up menu item is only selectable once a Project Folder has been selected. The Title Dialog allows you to select and create a Title Folder. The last selected Title Folder is automatically chosen. Only the Title Folders located in the selected Project Folder are displayed. A Title Folder is always created under its Project Folder, so you are not given a choice as to where it will be created. This is done to ensure that all the Title Folders for a Project will be located in the same folder. The selected Title Folder's name will be displayed on the GML Main Screen. Once a Title Folder is selected, the Mix Dialog will be displayed which allows a GML File to be loaded into memory. A Title Folder is created the same way a Project Folder is created.



### Mix Dialog

The Mix Dialog is used to load a GML file into the memory of the GML Node. The Mix pop-up menu item is only selectable when both a Project and Title Folder have been selected. Select this menu item to load a GML File into memory. If a mix or snapshot is loaded, the name of the file will be displayed on the GML Main Screen.



Prior to loading a mix, if the current mix in memory has been changed but not saved, the following dialog will be displayed to provide the user the option of saving the mix before clearing it from memory.

Click on the **Continue** button to load the new mix into memory without saving the current mix.

Click on the **Cancel** button to stop the process of loading the new mix into memory.

Click on the **Save** button to save the current mix in memory before loading the new mix.



The Mix Dialog always displays the files located under the Title Folder. However, it is possible to load a file from other Project Folders. To do so, use the folder pop-up menu located above the file list to change directories. To load a file from a different hard drive or floppy disk, click on the **Desktop** button to see a list of available storage devices then click on the **Open** button to select that device.

The pop-up menu below the file list area of the Mix Dialog determines which files are displayed. It defaults to **Show All GML Files**. Other display selections are **Mix Files**, **Snapshot Files**, **Neve Recall Files**, **Amek Recall Files**, and **Amek Reset Files**. These options make it easier to view only the specific type of file you wish to load. When a new display selection is chosen, the list of files is updated to display those files which match the display criteria. For example, with the list of files shown above, selecting **Snapshot Files** will cause the list to be updated so that only My Mix snapshot 1 and My Mix snapshot 2 are displayed.

- Refer to section 5 **Loading and Saving Files** for more information.

### 9.3 Close <W >

The **Close** menu item is only selectable when the active window can be closed with this command. Some windows cannot be closed with this command, like the GML Main Screen and the Splice window, so this menu item will be dimmed when they are the active window. When a window is closed, its screen location is remembered so the next time it is opened, it will be displayed at the same location.

## 9.4 Save Mix <S >

The **Save Mix** menu item is only selectable once the MIX data has changed. The **Save Mix** menu item can only save the current MIX in memory.

The first time a MIX is saved, the **Save As** dialog, described below, will be displayed to allow the MIX to be named. On future saves, a six character MIX index, “.mx000”, is added to the MIX file name. This provides a means for back tracking between mixes. The three digits are incremented on each save. Therefore, your first MIX will consist of just the MIX name. Subsequent MIXES will be named as follows: My Mix.mx001, My Mix.mx002.

If an older MIX has been loaded and then changed, upon saving, the program will increment the MIX extension until a non-conflicting file name has been found. For example, suppose you have created three MIXES: My Mix, My Mix.mx001, My Mix.mx002. If you loaded My Mix, made a change and then saved it, the program will try to save the mix as “My Mix.mx001”, but will notice that “My Mix.mx001” already exists. It will then try to save the MIX as “My Mix.mx002”, but will notice that “My Mix.mx002” exists too. The MIX will be saved as “My Mix.mx003” since no MIX exists with that name.

The MIX will always be saved in the selected Title Folder.

If the 1000th version of a MIX is attempted to be saved, the user is prompted to save the MIX under a new name. This will reset the MIX index to 000 .

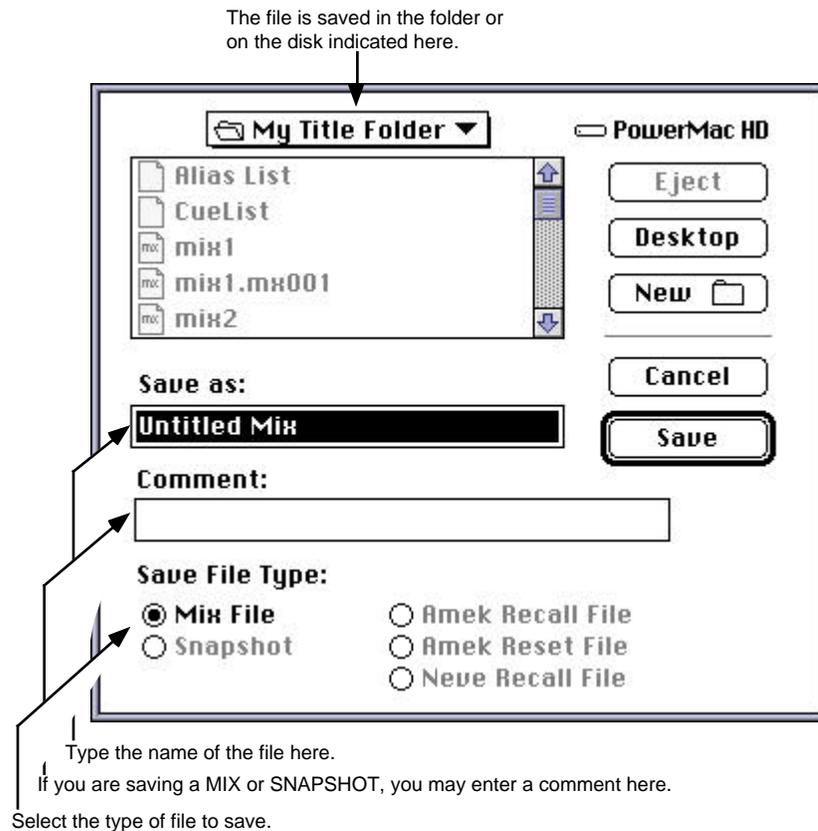
- Refer to section 5 **Loading and Saving Files** for more information.

## 9.5 Save Snapshot <D >

The **Save Snapshot** menu item is only selectable once the SNAPSHOT data has changed. Automatic SNAPSHOT numbering behaves the same as automatic MIX numbering. The first time a SNAPSHOT is saved, it is named as normal. Subsequent SNAPSHOTS have “.sn000”, “.sn001”, et al. appended and auto-numbered. The SNAPSHOT will always be saved in the selected Title Folder.

## 9.6 Save As

The **Save As** menu item is always selectable. This command can save all mix related files.



This dialog allows you to save the file anywhere on the Macintosh or other storage medium.

You select the type of file you wish to save by selecting the appropriate file type radio buttons at the bottom of the dialog. **Mix File** is the default selection. The other radio buttons become selectable when the appropriate file type exists in memory. For example, the **Snapshot** button will only become selectable AFTER you take a SNAPSHOT .

- *Refer to section 5 **Loading and Saving Files** for more information.*

## 9.7 Import Idris Mix

**IMPORTING OF IDRIS MIXES IS NO LONGER SUPPORTED IN 7.7.0!**

## 9.8 Eject Idris Disk

This will eject the Idris disk from the Macintosh floppy drive. This menu item is only selectable when there is an Idris disk in the Macintosh floppy drive.

## 9.9 Quit <Q >

This menu item is always selectable. This terminates the application. If the mix is changed, a dialog will be displayed giving the user the option of saving the mix before quitting the application.

## 10. The **Edit** Menu

The Edit menu contains commands which perform a variety of editing functions on the mix data.

<b>Edit</b>	
	<b>Undo</b> ⌘Z
Macintosh Edit Commands	<b>Cut</b> ⌘H
	<b>Copy</b> ⌘C
	<b>Paste</b> ⌘U
	<b>Clear</b>
GML Cue List Editor Commands	<b>Add Cue Point</b> ⌘M
	<b>Delete Cue Point</b> ⌘L
	<b>Erase Cue List</b>
GML Switch Editor Menu	<b>Switch Editor</b> ▶
	<b>Clear File...</b>
GML Mix Editing Commands	<b>Trim</b> ⌘T
	<b>Clear</b> ⌘B
	<b>Swap</b>
	<b>Copy</b>
	<b>Merge</b>
	<b>Splice</b>
	<b>Shift</b>
	<b>Extract</b>
	<b>Group Merge</b>
<b>Razor Blade</b>	
GML Preferences Menu	<b>Preferences</b> ▶

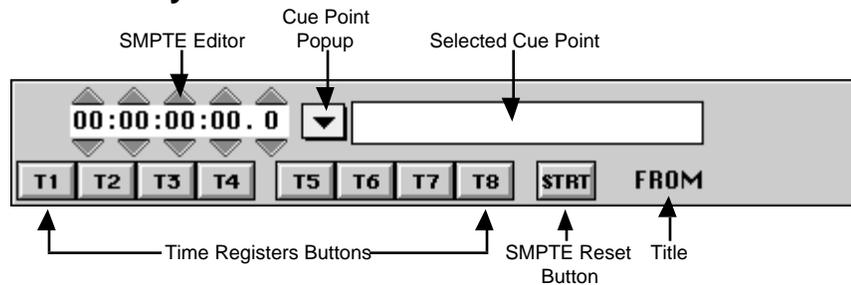
### 10.1 Macintosh Edit Commands

These basic edit commands are the same commands that can be found in most Macintosh applications and have the same functionality. In the GML application these commands are *only* used for text editing.

<b>Edit</b>	
<b>Undo</b>	⌘Z
<b>Cut</b>	⌘H
<b>Copy</b>	⌘C
<b>Paste</b>	⌘U
<b>Clear</b>	

## 10.2 Basic Elements of GML Edit Windows

### 10.2.1 The SMPTE Entry Field



The SMPTE Entry Field is used to set a SMPTE time for use in an operation. This is used in windows in which a FROM, TO, or TARGET time is required.

#### Title

The Title of the SMPTE Entry Field will either be "FROM", "TO", or "TARGET". This describes which SMPTE time is represented by SMPTE Editor. When clicked on, the current SMPTE time will be placed in the SMPTE Editor.

#### SMPTE Editor

This displays the SMPTE time and allows it to be edited. Clicking on the arrow icons above and below each number, changes the SMPTE time accordingly. Holding the mouse button down on an arrow icon will continuously update the corresponding SMPTE value. To type in a new value, click on the SMPTE number to be edited and begin typing.

When the SMPTE time is changed, the Time Registers and Cue List are searched for a matching SMPTE time. Any Time Register and Cue Point which matches the SMPTE Editor's SMPTE time will be selected. This is done to show that the current SMPTE time corresponds to a Time Register and/or a Cue Point.

In windows which contain a FROM and TO time, the FROM time must always come before the TO time. When either time is changed, the application makes sure the times remain valid. For example: say you are in the Clear window and the current FROM time is 01:20:00:00.0 and the current TO time is 01:20:10:00.0. If the FROM time is changed to 01:21:00:00.0, it has become invalid since a FROM time cannot come after a TO time. In this case, the TO time is changed to 01:21:00:00.0. This reduces the amount of editing needed to make the TO time valid.

#### Cue Point Pop-up

This pop-up menu contains a list of all the Cue Points. If a Cue Point has a comment, it will be displayed, otherwise, the Cue Point's SMPTE time will be displayed. If no Cue Points exist, "Empty Cue List" will be displayed. If a Cue Point is selected, its SMPTE time is displayed in the SMPTE Editor, and its comment or SMPTE time is displayed in the Selected Cue Point field.

When a Cue Point is selected, the Time Registers are searched to find matching SMPTE times. Any Time Register which matches the SMPTE Editor's SMPTE time will be selected. This is done to show that the current SMPTE time corresponds to a Time Register.

#### Selected Cue Point

If a Cue Point has been selected from the Cue Point Pop-up, its comment or SMPTE time is displayed. If the **Cue Point** does *not* have a comment, then its SMPTE time is displayed. If this item is clicked on, it acts as though the Cue Point Pop-up item has been clicked on, and displays a pop-up menu containing the Cue Points.

#### Time Register Buttons

Clicking on a Time Register button will place that Time Register's value into the SMPTE Editor.

When a Time Register is clicked on, the Cue List is searched to find matching SMPTE times. Any Cue Point which matches the SMPTE Editor's SMPTE time will be selected. This is done to show that the current SMPTE time corresponds to a Cue Point.

### SMPTE Reset Button

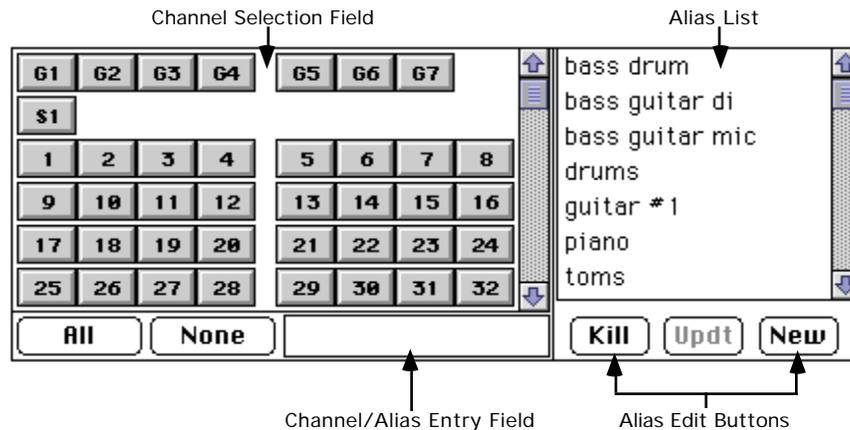
This buttons provides a quick way to reset the SMPTE Editor's value. This button's title is either "STRT" or "END". This button sets the time in the SMPTE Editor to either 00:00:00:00.0 (Start) or 23:59:59:23.3 (End ). The **Start** button will only be found in the FROM SMPTE Entry Field. The **End** button will only be found in the TO SMPTE Entry Field. The TARGET SMPTE Entry Field does not use this button.

### Changing the SMPTE Time

There are four ways to change the time displayed in the SMPTE Editor:

1. Clicking on the arrow icons above and below each SMPTE number, changes the SMPTE time accordingly. Holding the mouse button down on an arrow icon will continuously update the corresponding SMPTE value. To type in a new value, click on the SMPTE number to be edited and being typing.
2. Clicking on a Time Register button will place that Time Registers SMPTE time in the SMPTE Editor.
3. Selecting a Cue Point from the Cue Point pop-up menu will place that Cue Point's SMPTE time in the SMPTE Editor.
4. Using the mouse, click once on the TO, FROM, or TARGET text. This will capture the current SMPTE time and place it in the SMPTE Editor.

## 10.2.2 The Channel Selection Field



The Channel Selection Field displays all the groupers, stereo faders, and channels based upon how the software was configured in the **System Hardware Preferences** dialog. The Channel Selection Field is used to select which channel(s) will be included in an operation. A channel is selected if its number is displayed in red, otherwise it is de-selected.

Channel 3 selected.      Channel 3 de-selected.

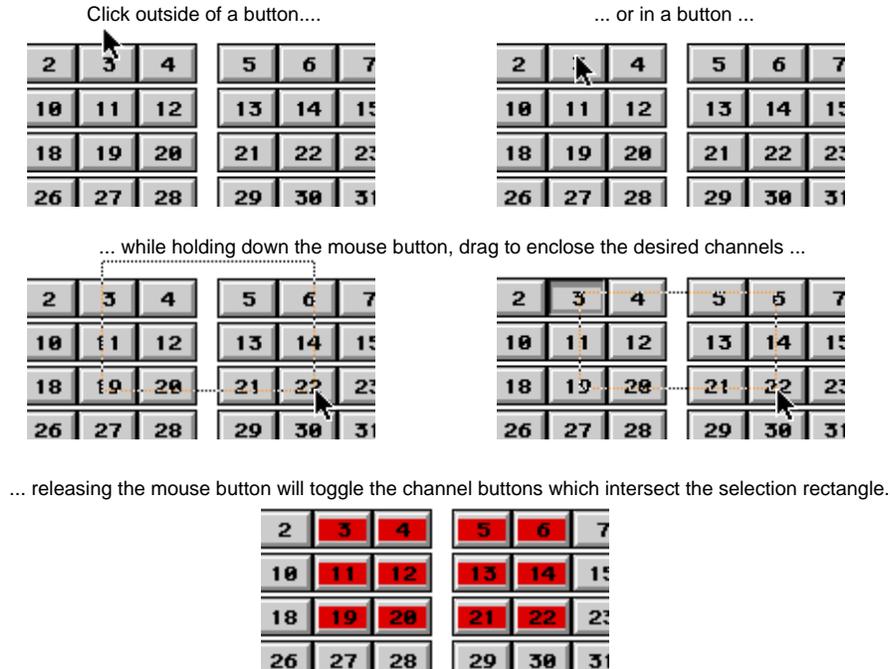


### How to Select Channels

There are a number of ways to select channels:

- Clicking on a channel button will toggle the button's state (i.e., from de-selected to selected or from selected to de-selected).
- To select all channels, click on the **All** button.
- To de-select all channels, click on the **None** button.
- Use the Channel/Alias Entry Field to type in the channels as described below.
- Use Aliases, described below, to define a group of channels.
- Use the mouse to click in the Channel Selection Field and drag a selection rectangle around the desired channel(s). This will toggle the channel buttons which intersect the selection rectangle.

## Selecting channels via dragging



### 10.2.3 Aliases

#### What is an Alias ?

An alias is used to represent any number of groupers, stereo faders, and channels. An alias can be named to help describe the channels that have been assigned to it. The aliases are saved in a file called the Alias List which is saved in the Title Folder.

#### How to create an alias.

##### 1. Click on the New button.

This will create an alias with the default name "Alias #". The alias names will add consecutively (i.e., "Alias #1", "Alias #2", "Alias #3", etc.....). Any channel(s) currently selected in the Channel Selection Field will be assigned to the new alias. The new alias will be alphabetically sorted in the Alias Table. If a Title Folder has been selected, the alias list file will be saved to the hard drive.

##### 2. Rename the new alias.

When an alias is created, it is automatically placed in an edit mode so that its name may be renamed. To rename the alias, type the desired name and press <return> or click on another alias. This will save the new name. Pressing the <escape> key exits the edit mode and will cancel any editing.

##### 3. Assign channels to the alias.

Select the channels to be assigned to the alias.

- Refer to section 10.2.4 *The Channel/Alias Entry Field* if you are not sure how to select channels.

When the selected channel(s) in the Channel Selection Field does NOT match the channel(s) assigned to the selected alias, the alias name will be displayed in italics. When it does match, the alias name will be displayed in normal text. So when you select your first channel, the alias name will become italicized. This will not happen if multiple aliases are selected.

Also notice that the **Update** button has become enabled.

##### 4. Click on the Update button to store the channels.

This makes the alias remember which channels are assigned to it. Because the selected channel(s) in the Channel Selection Field match the channel(s) assigned to the alias, the alias name will be displayed in normal text. Notice that the **Update** button is now disabled.

##### 5. Repeat to create more alias'.

### **How to Rename an Alias.**

Use the mouse and double-click on an alias name. The cursor will change to an I-beam, indicating you may begin typing a new alias name. To keep the new alias name either click on another alias or press `<return>`. Press the `<escape>` key to cancel any editing. When an alias is re-named, the alias list is resorted alphabetically.

### **When is the Alias List information stored?**

The alias list is stored in a file called Alias List, which is located in the Title Folder. This file is only saved when a Project and Title Folder have been selected. If a Title Folder has not been selected, the alias list will not be stored, but will still function properly. The alias list is stored everytime the **Update** button is pressed and when a new alias is created.

### **When is the Alias List file used?**

If an Alias List file is located in the selected Title Folder, it will be read into memory, overwriting any existing alias list data. If a new Project or Title Folder is created, the existing alias list in memory will be erased.

### **Selecting aliases.**

Clicking on an alias will select it and display the channel(s) assigned to it in the Channel Selection Field. All other channels selected in the Channel Selection Field will be de-selected. To include an aliases channels with the already selected channels, hold down the SHIFT key and then select the alias.

To select multiple aliases, hold down the SHIFT key while clicking on the desired aliases. Each time an alias is selected, its channels will be added to the selected channels in the Channel Selection Field. Another way to select an alias is to use the Channel/Alias Entry Field as described below.

When a selected alias is clicked on, it will be de-selected. Each time an alias is de-selected, the channels associated with it will be de-selected as well.

### **The Alias Edit Buttons**

#### **The Kill Button**

The **Kill** button deletes all selected aliases. This is an undoable operation.

#### **The Update Button**

The **Update** button assigns the selected channel(s) in the Channel Selection Field to the selected alias. This writes the Alias List file to the disk if a Project and Title Folder has been selected. This button is disabled when multiple aliases are selected.

#### **The New Button**

This will create an alias with the default name "Alias #*n*". The alias names will add consecutively (i.e., "Alias #1", "Alias #2", "Alias #3" and so on). Any channel(s) currently selected in the Channel Selection Field will be assigned to the new alias. The new alias will be alphabetically sorted in the Alias Table and if a Title Folder has been selected, the alias list will be saved to the hard drive.

### **The Alias Table**

The Alias Table lists all the aliases in a scrollable view.

## **10.2.4 The Channel/Alias Entry Field**

### **Using the Channel/Alias Entry Field to select Channels.**

All commands which require the user to specify channel numbers follow the same rules of syntax:

- All channels are identified by their number as it appears on the console.
- All groupers are identified by their number preceding with a "g", as in g1, g2.
- All stereo faders are identified by their number preceding with an "s", as in s1, s2.
- Ranges of channels are specified by placing a dash "-" between the lowest and highest channel numbers, as in "1-7" or "g1-3". Do NOT use spaces between the dash.
- Ranges of groups only require one "g". For example, the range "g1-g4" can be entered "g1-4".

As another example, to clear fader data from groups 1, 2, 3 and 4, and channels 7, 8, 9, and 15, the **Command Line** window syntax is: `cl g1-4 7-9 15 <return>`.

If you wish to specify all of the channels on the console (including groups), type the word "all" instead of channel numbers or ranges. For example, "cl all <return>".

Selecting channels with the Channel/Alias Entry Field de-selects all other channels. If you want the channels you are selecting to be included with the channels currently selected, precede the text with a plus sign "+". For example, to include channel 3 in the already selected channels, type "+3 <return>". If you enter a channel that is not valid for your configuration, a dialog will be displayed describing the invalid channel number.

#### Using the Channel/Alias Entry Field for Aliases.

The Channel/Alias Entry Field can be used to select an alias. Just type the first characters of the aliases name and press <return>. This will search the alias list for a matching alias name, select it, and display the selected alias' channels in the Channel Selection Field.

A search for a matching alias name takes place ONLY if the text entered is NOT a valid channel. For example, if the text 'bass' is entered, a search will be performed for an alias beginning with 'bass', because 'bass' is not a valid channel number. If you want an alias name to begin with a number, say for example, "12 string", typing just '12' will select channel 12. To select that alias, you need to place quotes around the text. So you need to type "12".

To select an alias which contains a space in its name, you must surround the name with quotes. For example, if one alias was named "vocals" and another was named "vocals #2", typing "vocal" would only select "vocals". To select the second alias, you need to type "vocals #".

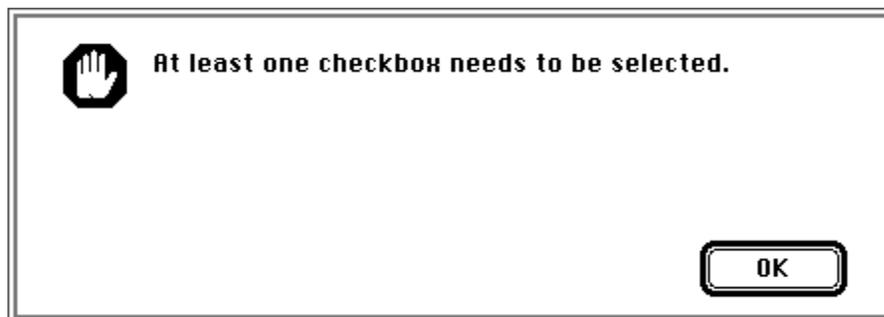
If you want an aliases channels to be added to the current channel selection, precede the name with a plus ('+') character. The is the same as selecting an alias with the SHIFT key pressed.

### 10.2.5 The Fader and Switch Checkboxes

**FADERS**

**SWITCHES** 

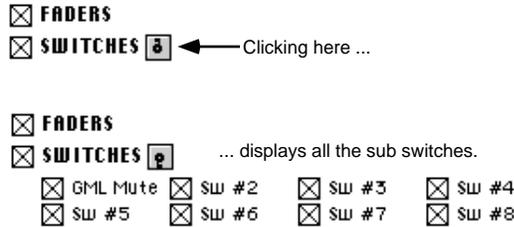
These checkboxes determine which data from the selected channel(s) will get processed in an edit operation. If a checkbox is selected, the corresponding data for the selected channel(s) will be modified by the edit operation. If a checkbox is not selected, the corresponding data will not be changed by the edit function. For example, if you want to clear fader data, but keep the switch data, you would select the **FADERS** checkbox and de-select the **SWITCHES** checkbox. At least one checkbox needs to be selected to perform the edit operation. If neither checkbox is selected, the following dialog will be displayed:



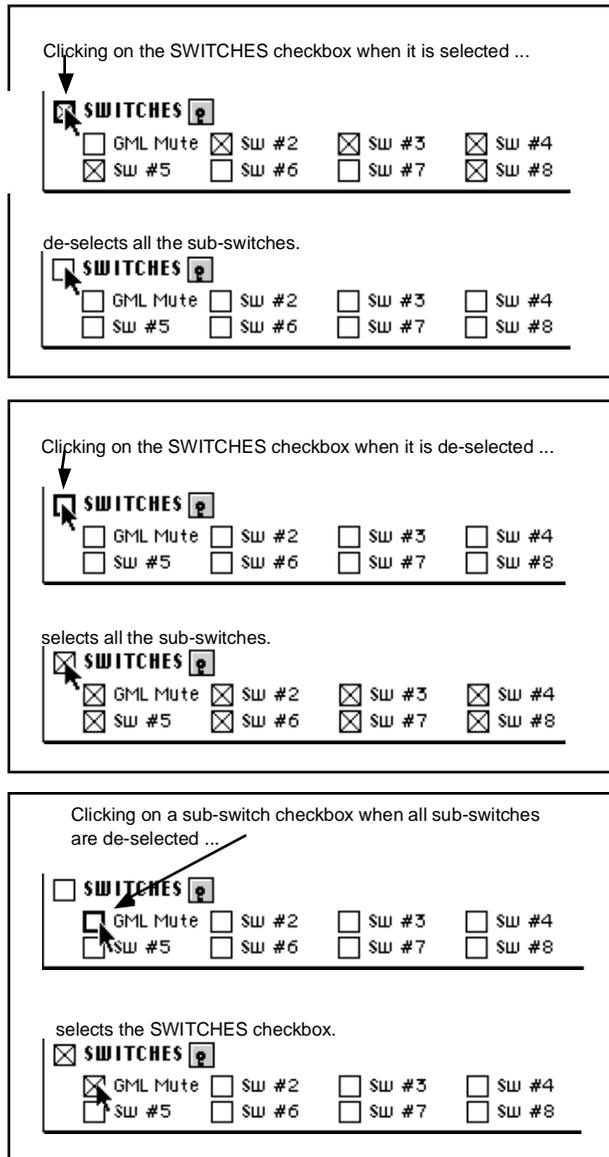
When the **SWITCHES** checkbox is selected, all the sub-switches are selected as well. If you do not want all the sub-switches to be included in an edit operation, use the Sub-Switch Selector to select the individual sub-switch(es).

### 10.2.5.1 The Sub-Switch Selector

The icon to the right of the **SWITCHES** checkbox is called the Sub-Switch Selector. It allows individual sub-switches to be included or excluded from an edit operation. For example, suppose you have recorded data on all eight sub-switches, and you only want to clear the GML Mute data. Open the **Clear** window, click on the **SWITCHES** checkbox to de-select all the sub-switches, click on the Sub-Switch Selector to display the sub-switches, then select the GML Mute switch by clicking on it. When the clear operation is performed, only the GML Mute data will be erased.



If you toggle the **SWITCHES** checkbox, the sub-switches will reflect the state of the **SWITCHES** checkbox. Refer to the pictures below. If all of the sub-switches are de-selected, the **SWITCHES** checkbox is automatically de-selected. If any sub-switch is then selected, the **SWITCHES** checkbox will become selected. The **SWITCHES** checkbox, in this case, indicates that at least one sub-switch is selected.



### 10.3 Cue List Editor Commands

These commands are only selectable when both a Project and Title Folder are selected. The **Cue List Editor** window does NOT need to be open for these commands to work. Note that these are undoable operations.

#### 10.3.1 Add Cue Point < M>

This will create a new cue point with the current SMPTE time.

#### 10.3.2 Delete Cue Point < L>

This will remove the selected cue point from the cue list.

#### 10.3.3 Erase Cue List

for confirmation.

### 10.4 The Switch Editor

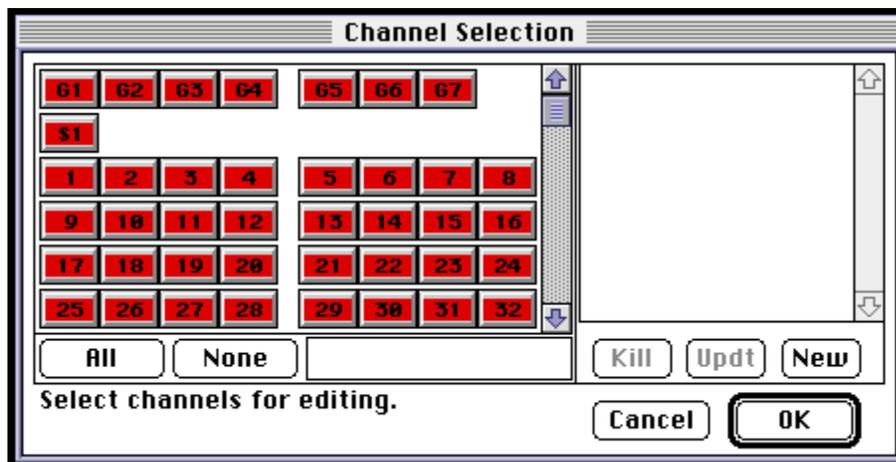
This will delete all cue points in the Cue List. A dialog will be displayed prior to erasing the cue list, asking The **Switch Editor** is used to add, delete, or modify switch events. A switch event is recorded data that pertains to switches. The GML Automation controls up to eight console switches, one of which is the fader mute, the other seven depend on the console and if those switches have been interfaced to the GML computer. A switch will create a switch event when the switch is being recorded and it is toggled.

The **Switch Editor** Menu selection points to a sub-menu as follows:



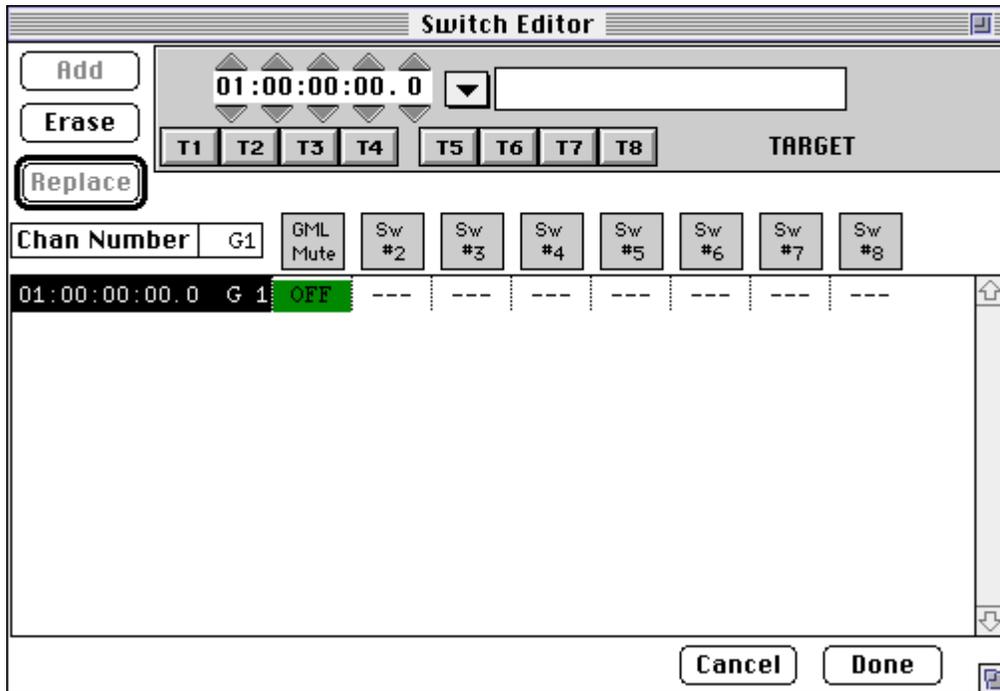
If **Editor** is chosen, the **Switch Editor** is displayed using the previous Channel Selection(s).

If **Select Channels** is chosen, the **Channel Selection** window is displayed.



This dialog is used to select which channel's switch event data will be displayed in the **Switch Editor**. After the **OK** button is clicked on, the **Switch Editor** will be displayed with the switch events from the selected channels.

The **Channel Selection** window defaults to all the channels selected when it is first displayed and will remember the last channels selected. For example, if you want to view the switch event data on channels 1, 3, and 5, you would click on the **None** button to de-select all the channels then select channels 1,3, and 5. The next time you select **Select Channels**, the **Channel Selection** window will only show channels 1, 3, and 5 as selected.



If there are a large number of switch events in the mix, it may take some time for the entire list to be displayed. However, this will not prevent you from working since this list is built in the background. If the switch events you wish to work on are not displayed yet, you will need to wait until they are added in order to select them.

You can tell that the list of switch events is still being built by pressing the <end> key or scrolling to the end of the scrollbar. As switch events are added to the Switch Editor window, the scrollbar will move up indicating that there is more data available.

### The Add, Erase, and Replace buttons

#### Add

The **Add** button is used to add a new switch event to the switch event list. The **Add** button becomes enabled when either the SMPTE time in the TARGET SMPTE Field or the Channel Number is changed. When a new switch event is created, it is scrolled into view and selected.

#### Erase

The **Erase** button is used to erase the data for the selected switch event(s). The **Erase** button is disabled until one or more switch events are selected. The erased switch event(s) will still be displayed but all the switch event data will be erased.

#### Replace

The **Replace** button is used to change the data and/or SMPTE time of a pre-existing switch event(s).

The **Replace** button is disabled until one of the following conditions are met:

- One switch event is selected and the SMPTE time is changed.
- One switch event is selected and the Channel Number is changed.
- Multiple switch events are selected and the SMPTE time is changed.
- Multiple switch events are selected and one or more switches are toggled.

#### SMPTE Editor

This displays the SMPTE time of the selected switch event. The SMPTE time is edited here when creating a new switch event.

#### Channel Number Field

The Channel Number Field is an editable text field which displays which channel the selected switch event takes place on.

### **The Eight Switches Columns**

These represent the data of the switch events. A switch can have three states, ON (red ), OFF (green), NULL(gray). A NULL state means the switch event for the corresponding switch will do nothing. Clicking in a switch column of a switch event will change the state of that switch for the select switch event.

### **The Switch Event View**

This is a scrollable view which displays the switch events. You can use the Page Up, Page Down, Home and End keys to move around. The UP and DOWN arrow keys are used to select the next switch event.

### **The Cancel Button**

The **Cancel** button will close the **Switch Editor** and ignore any changes made to the switch events.

### **The Done Button**

The **Done** button will add any changes to the switch events into the mix and close the **Switch Editor**. These changes will mark the mix as being changed.

### **How to select multiple switch events**

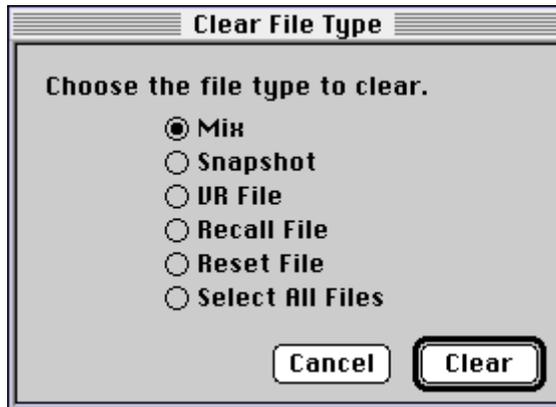
To select a switch event, you must click in the leftmost column displaying the SMPTE time. Clicking in the switch columns will cause a switch event to toggle.

- Double clicking on a switch event in the column displaying the SMPTE time will select all other switch events at that SMPTE time which have similar data.
- Selecting a switch event, then while holding down the SHIFT key, click on other switch events. Only switch events with similar SMPTE time and data will be selected.
- Select a switch event, then while holding down the SHIFT key, click on another switch event, then drag the mouse across other switch events. Only switch events with similar SMPTE time and data will be selected.

## 10.5 Mix Editing Commands

### 10.5.1 Clear File

This will display the **Clear File Type** window where you select which file type to clear from the GML Node's memory. Note: This will NOT delete the file from the hard drive. The **Mix** file type is the default selection. The UP and DOWN arrow keys can also be used to select the file type.



If the current mix in memory is about to be cleared and has been changed but not saved, the following warning dialog will be displayed:



Click on the **Continue** button to clear the mix from memory without saving it.

Click on the **Cancel** button to NOT clear the mix from memory.

Click on the **Save** button to save the current mix in memory before erasing it.

When a mix is cleared, the name on the GML Main Screen is changed to "Untitled Mix".

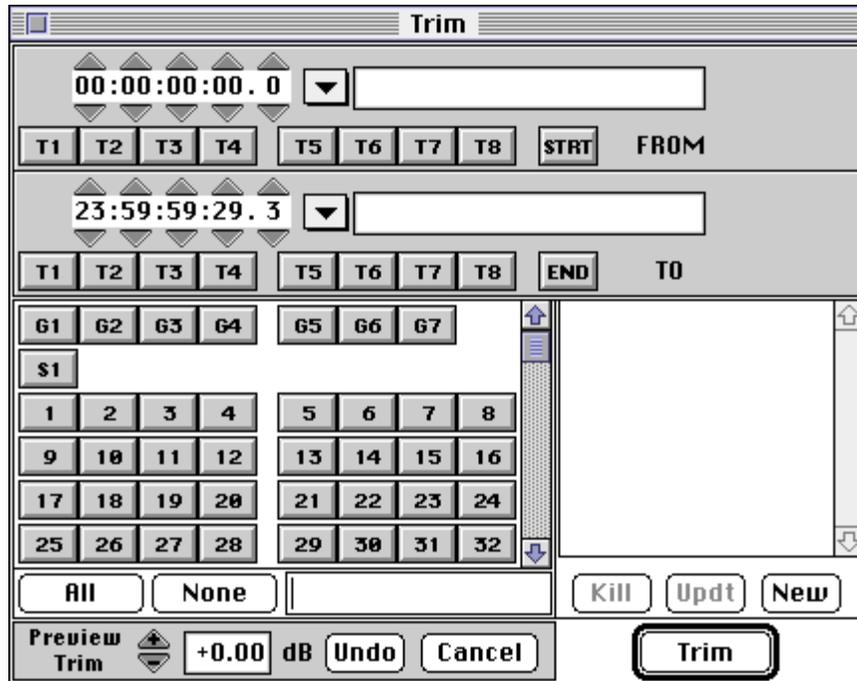
Another way to clear a mix is to use the clear command ("cl") in the **Command Line** window. To clear the entire mix, type: "cl all <return>". Note: If the **Command Line** window is used to erase the mix, the warning dialog described above will NOT be displayed. Thus, you will NOT have a chance to save the mix prior to clearing it.

## 10.5.2 Trim < T >

(Command Line Syntax: `tr <dB> <channel list> <return>`)

The fader data for the selected channel(s) are modified by either adding or subtracting gain for the entire mix or between the “FROM” and “TO” time points. Note that while SMPTE is running, a Trim can only be performed if the default FROM and TO times are used. Trimming between to times other than the default FROM and TO times is only allowed when SMPTE is stopped.

The **Trim** window may remain open throughout the use of the application.



To Trim, enter the following parameters:

- The FROM time (defaults to 00:00:00:00.0).
- The TO time (defaults to 23:59:59:23.3).
- Select the channel(s) to be included in the operation.
- A number which indicates the amount of gain to be added to the channel's data. The number represents the value in dB, and can contain a decimal point and a fractional value if desired. Because the number is ADDED to the existing data, in order to subtract gain, the user must preface the number with a minus sign.

Prior to executing the Trim command, you will “preview” the trim to make sure the levels are satisfactory. Read the section below on **The Preview Trim Panel**.

To make the previewed trim part of the mix, click on the **Trim** button. If any data is invalid when the **Trim** button is clicked on, a dialog will be displayed describing which data was missing or invalid.

Upon completion of the Trim command, the fader data in the current mix in memory is modified by the dB value. If the user enters a dB value which would push the fader to an impossible level, the system simply truncates the value to the maximum or minimum acceptable levels for those moves which would be impossible.

The Channel/Alias Text Entry field is the default “active” text field whenever the **Trim** window is the front-most window. This allows the user to enter text into the Channel/Alias Text Entry field immediately. For example, after editing the **FROM** time by hand, one wishes to type a channel number in the Channel/Alias Text Entry field, but the Channel/Alias Text Entry field is *not currently active*. To activate it you can click on it or you can type COMMAND-T.

## The Preview Trim panel



The Preview Trim pane is used to enter the dB value for the Preview Trim.

Pressing <COMMAND - UP ARROW> or <COMMAND - DOWN ARROW> will change the dB value by a quarter (0.25) dB. If the SHIFT key is held down while pressing <COMMAND - UP ARROW> or <COMMAND - DOWN ARROW>, the dB value will change by a tenth of a (0.10) dB. This will move the selected faders accordingly. Pressing and holding down either key combination will continuously update the dB value. These key commands were selected to prevent the user from accidentally trimming channels while intending to change cue points.

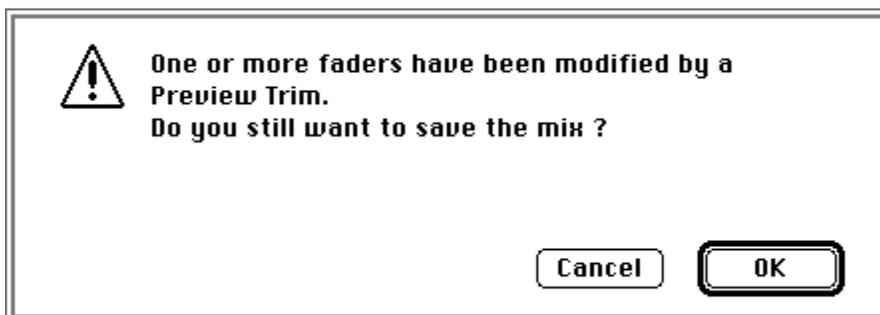
Clicking on either + or - arrow icon will change the dB value by a quarter (0.25) dB. If the SHIFT key is held down while clicking on either + or - arrow icon, the dB value will change by a tenth of a (0.10) dB. Clicking on either + or - arrow icon while holding down the mouse button will continuously update the dB value.

To type in a dB value, double-click in the dB Text Field and begin typing.

The **Undo** button toggles between the last two dB values entered. When clicked on, the previous dB value is displayed and the faders are trimmed to this dB value.

The **Cancel** button resets the selected faders to their original location prior to performing the Preview Trim and resets the dB value to 0.00 dB.

If a Preview Trim has been performed, but NOT made part of the mix (i.e., the **Trim** button was not clicked on), and the current mix in memory is about to be saved, the following dialog will be displayed:

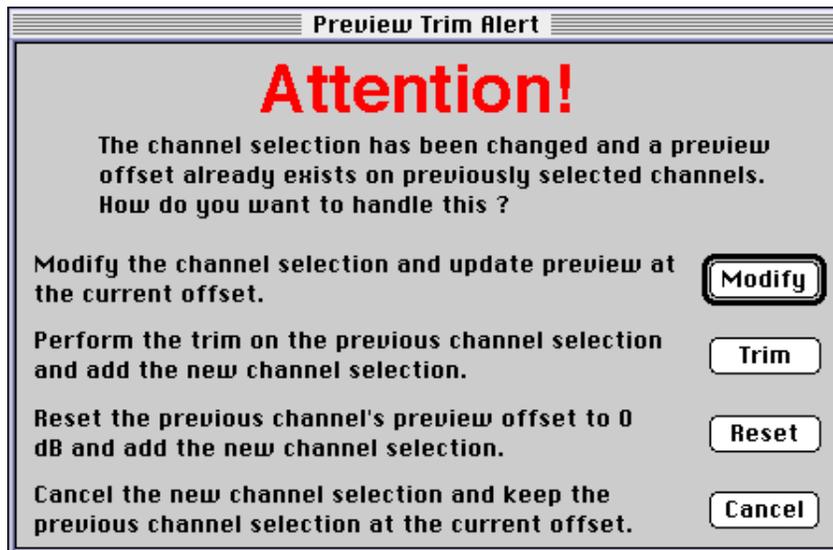


This warns the user that a fader has been offset, but the offset is not part of the mix so the offset will not be saved. Clicking on the **OK** button will keep the offset as part of the mix and then proceed to save the mix. Clicking on the **Cancel** button terminates the save process.

- Refer to Section 14.3.22 **How To Precisely Trim Fader Levels** to perform trim commands using the **Command Line** window.

### 10.5.2.1 The Preview Trim Alert

If a channel has been offset via the Preview Trim panel, and other channels are selected or de-selected, the Preview Trim Alert will be displayed.



This gives you a choice of how to incorporate the newly selected and/or de-selected channel(s).

• Refer to **Tutorial #1** for more information regarding the Preview Trim Alert.

#### Modify

**Modify** will offset the newly selected channels at the current offset and reset any de-selected channel to their fader position prior to the offset. This is useful if you want the channels just selected to be offset at the same level as the previously offset faders.

This button will perform the following actions:

- Any channel(s) have become de-selected will be reset to their original fader position prior to the preview offset.
- Any channel(s) have become selected will be offset to the current dB value displayed in the Preview Trim panel.
- All other channels will remain unchanged.

#### Trim

**Trim** is useful to make the currently trimmed channels a permanent part of the mix and include the newly selected channels with the previous selected channels.

This button will perform the following actions:

- The preview offset on the previously selected channel(s) will be made part of the mix.
- The newly selected channel(s) will NOT be offset, but will be displayed as selected AFTER the preview offset has been made part of the mix.
- The newly de-selected channel(s) will be offset, and will be displayed as de-selected AFTER the preview offset has been made part of the mix.
- The previously selected channel(s) remain selected.

#### Reset

**Reset** is useful when you want to undo the previous offset, but include the new channel selection with the previous channel selection.

This button will perform the following actions:

- The preview offset will be reset to 0 dB and the previously selected channel(s) will be returned to their original fader positions.
- The newly selected channel(s) will be included in the channel selection.
- The newly de-selected channel(s) will be removed from the channel selection.
- The previously selected channel(s) remain selected.

#### Cancel

**Cancel** is useful when you want to return to your previous channel selection.

This button will perform the following actions:

- The modification to the channel selection is ignored.
- The previously selected channel(s) remain selected.

### 10.5.3 Clear < B>

(Command Line Syntax: cl <channel list> <return>)

The selected data, (fader and/or switch data) for the selected channel(s) are ERASED between the "FROM" and "TO" time points from the current mix in memory. Note that this does NOT delete the mix from the hard drive or effect the mixes stored in any way.

The **Clear** window may remain open throughout the use of the application.

The screenshot shows a 'Clear' dialog box with the following elements:

- Time selection for 'FROM': 00:00:00.0
- Time selection for 'TO': 23:59:59.3
- Buttons for channel selection: T1, T2, T3, T4, T5, T6, T7, T8
- Buttons for data type selection: G1, G2, G3, G4, G5, G6, G7, S1, and a 4x4 grid of numbered buttons (1-32)
- Buttons for action: All, None, Kill, Updt, New
- Checkboxes:  FADERS,  SWITCHES
- Large 'Clear' button

The user enters the following parameters:

- The FROM time (defaults to 00:00:00.0).
- The TO time (defaults to 23:59:59.3).
- Select the channel(s) to be included in the operation.
- Select the type of data to be cleared from the Faders and Switches checkboxes at the bottom left corner of the dialog.

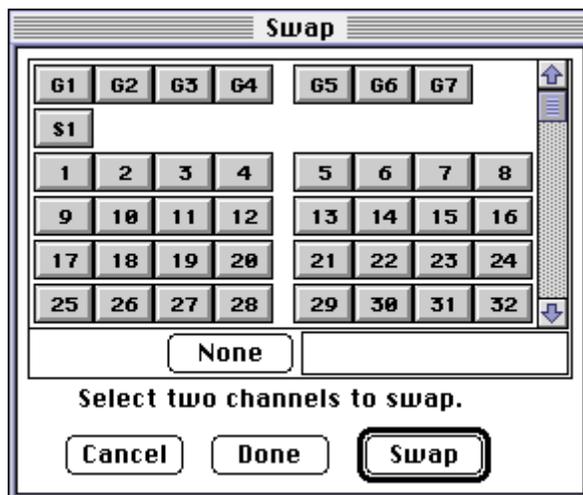
If the data is invalid when you click on the **Clear** button, an error dialog will be displayed describing which data was missing or invalid.

- Refer to section 14.3.20 **How To Erase Data without Rolling Tape** to clear data using the **Command Line** window.

#### 10.5.4 Swap

(Command Line Syntax: `swap <channel 1> <channel 2> <return>`)

All of the data for all functions, for the entire duration of the mix is swapped between any two channels.



Once two channels are selected, click on the **Swap** button to mark those channels to be swapped. Once the channels are marked, they are de-selected so you may perform multiple swaps without having to constantly re-open this window. After all the channels to be swapped have been marked, click on the **Done** button to execute the swaps.

If the data is invalid when you click on the **Clear** button, an error dialog will be displayed describing what data was missing.

To exit this dialog, you must click on either **Cancel** which will leave your mix unchanged, or **Done** which will swap any marked channels.

- Refer to section 14.3.25 **How To Swap Data Between Channels** to swap data using the **Command Line** window.

### 10.5.5 Copy

(Command Line Syntax: cp <channel 1> <channel 2> <return>)

The fader and/or switch data on any channel is copied to any other channel between the "FROM" and "TO" time points.

The screenshot shows a 'Copy' dialog box with the following elements:

- Time selection for 'FROM': 00:00:00.0
- Time selection for 'TO': 23:59:59.3
- Buttons for time selection: T1, T2, T3, T4, T5, T6, T7, T8
- Buttons for operation: 'STRT' and 'END'
- Labels: 'FROM' and 'TO'
- Fader buttons: G1, G2, G3, G4, G5, G6, G7
- Switch button: S1
- Grid of 32 numbered buttons (1-32)
- Buttons: 'All', 'None', 'Kill', 'Updt', 'New', 'Cancel', 'Copy'
- Checkboxes:  FADERS,  SWITCHES
- Text input field: 'Source Channel:'

The user enters the following parameters:

- The FROM time (defaults to 00:00:00:00.0).
- The TO time (defaults to 23:59:59:23.3).
- The channel from which data is copied.
- The channel(s) to which data is copied.
- Select the type of data to be copied from the Faders and Switches checkboxes at the bottom left corner of the dialog.

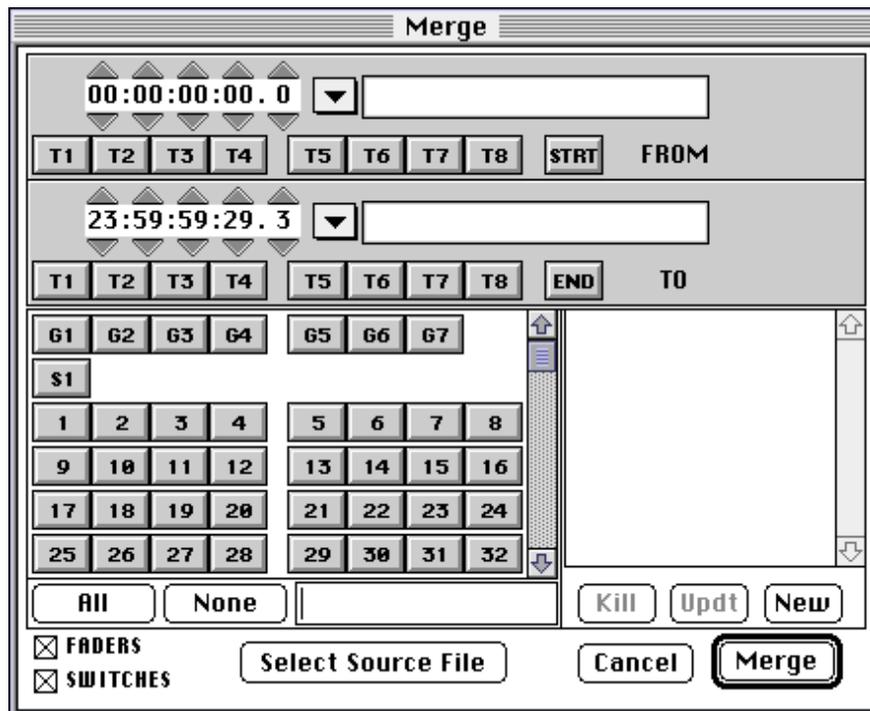
The editor will create data in the new mix to "preset" the copied channel to its correct beginning and ending states at the FROM and TO times of the operation. The copied data replaces any data which it may overlay. The new mix is left in memory when the operation is complete.

If the data is invalid when you click on the **Copy** button, an error dialog will be displayed describing what data was missing.

To exit this dialog, you must click on either **Cancel** which will leave your mix unchanged, or **Copy** which will perform the operation.

### 10.5.6 Merge

This will take a section of a saved mix, (called the "input" mix), between the "FROM" and "TO" time points and insert it into the current mix. Any existing data in the current mix between the "FROM" and "TO" time points will be replaced with data from the "input" mix. This is used to combine pieces of two different mixes.



The user enters the following parameters:

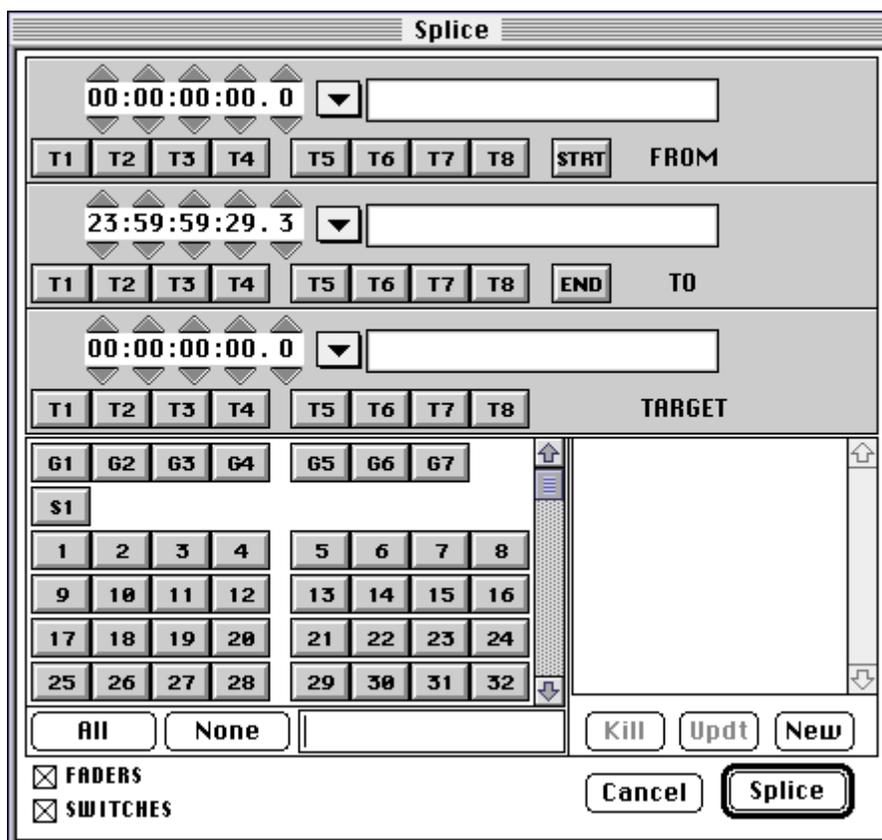
- The FROM time (defaults to 00:00:00:00.0).
- The TO time (defaults to 23:59:59:23.3).
- Select the channel(s) to be included in the operation.
- The type of data to be copied from the Faders and Switches check boxes
- Select the input file by clicking on the **Select Source File** button. A standard **Open File** dialog will be displayed, from which the input mix is selected. A mix file can be selected from anywhere on the Macintosh file system. Once an input file has been loaded into memory, its name will be displayed in the window's title.

If the data is invalid when you click on the **Merge** button, an error dialog will be displayed describing what data was missing.

One Frame before the FROM time, the mix will set the console functions for the merged channels to their state at that time in the input mix, and one frame after the stop time, will set them to their state for that time in the main mix. This is essentially an automatically generated "preset" at each of these times.

To exit this dialog, you must click on either **Cancel** which will leave your mix unchanged, or **Merge** which will perform the operation.

10.5.7 **Splice**The splice command takes a section of the mix, and copies it to another section of that same mix. The location of where it is placed is referred to as the “TARGET” time. It is ideally suited for mixing music with repetitive sections, such as identical choruses or verses.



The user enters the following parameters:

- The FROM time (defaults to 00:00:00:00.0).
- The TO time (defaults to 23:59:59:23.3).
- The TARGET time (defaults to 00:00:00:00.0).
- The channel(s) to be included in the operation.
- The type of data to be copied from the Faders and Switches check boxes.

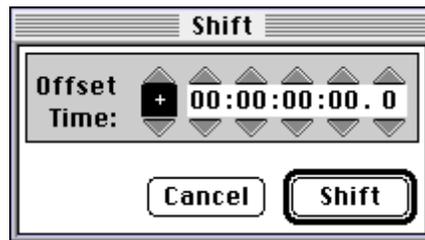
If the data is invalid when you click on the **Splice** button, an error dialog will be displayed describing what data was missing.

The editor will create data in the new mix to “preset” the spliced channels to their correct beginning and ending states at their FROM and TO times of the operation, exactly as described under the merge operation. The spliced data replaces any data which it may overlay.

To exit this dialog, you must click on either **Cancel** which will leave your mix unchanged, or **OK** which will perform the operation.

### 10.5.8 Shift

The entire mix is shifted backwards or forwards in time, by modifying the time code numbers stored in the mix data. For example, a mix which starts at 01:00:00:00.0, if shifted backwards by 10 seconds, (-00:00:10:00.0), will start at 00:59:50:00.0



The user enters the following parameters:

- The channels to be included in the operation.
- The time by which to shift the mix.

If the data is invalid when you click on the **Shift** button, an error dialog will be displayed describing what data was missing.

The shift operation is performed on the mix in memory, which is left in place with nothing modified except the stored SMPTE time code numbers. This will not display the mix name in italics because the mix data has not been changed. Note that the shift operation is only frame-accurate, that is, the user-entered OFFSET time will ignore any value in the "tics" position.

To exit this dialog, you must click on either **Cancel** which will leave your mix unchanged, or **Shift** which will perform the operation.

### 10.5.9 Extract

The fader and/or switch data on the selected channel(s) is extracted, or “remains” in the mix, while all other data, between the “FROM” and “TO” time points, is cleared. This performs exactly the opposite function of the clear operation.

The screenshot shows the 'Extract' dialog box with the following details:

- Title:** Extract
- FROM Time:** 00:00:00:00.0 (with a dropdown arrow and an empty text input field)
- TO Time:** 23:59:59:29.3 (with a dropdown arrow and an empty text input field)
- Buttons:** T1, T2, T3, T4, T5, T6, T7, T8, STRT, FROM, END, TO
- Faders/Buttons:** G1, G2, G3, G4, G5, G6, G7, S1, and a grid of numbered buttons (1-32)
- Bottom Section:** All, None, Kill, Updt, New, Cancel, Extract (highlighted)
- Checkboxes:**  FADERS,  SWITCHES

The user enters the following parameters:

- The FROM time (defaults to 00:00:00:00.0).
- The TO time (defaults to 23:59:59:23.3).
- The channel(s) to be included in the operation.
- The type of data to be copied from the Faders and Switches checkboxes.

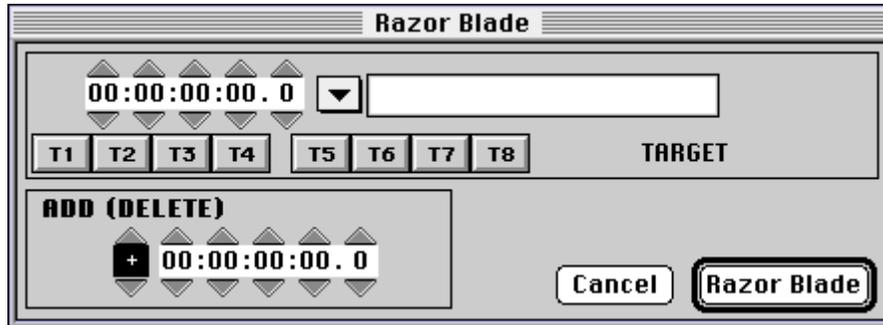
If the data is invalid when you click on the **Extract** button, an error dialog will be displayed describing what data was missing.

The specified data is extracted from the current mix, all other data is erased, which then becomes the new mix in memory.

To exit this dialog, you must click on either **Cancel** which will leave your mix unchanged, or **Extract** which will perform the operation.

### 10.5.10 Razor Blade

Razor Blade allows the mix to be edited by adding or removing a portion of the current mix.



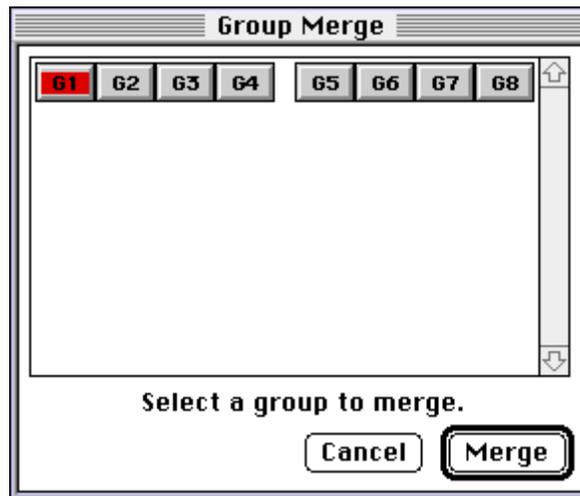
An edit decision list is commonly provided to a mixing team by the film editorial department. This list may be entered into the GML editor in the same manner that it was created. The user enters the Target time and the Duration time. The Target time is the start of the edit point and Duration is the amount of time to be added or subtracted. Subtract times are entered with the minus sign as a prefix.

If the data is invalid when you click on the **Razor Blade** button, an error dialog will be displayed describing what data was missing.

To exit this dialog, you must click on either **Cancel** which will leave your mix unchanged, or **Razor Blade** which will perform the operation.

### 10.5.11 Group Merge

This transfers a group's data to the channel(s) assigned to the group. This enables the corresponding channel(s) that are assigned to the group, to retain the grouper's moves. You can then assign the grouper to another set of channels.



The user selects the group they wish to merge.

To exit this dialog, you must click on either **Cancel** which will leave your mix unchanged, or **Merge** which will perform the operation.

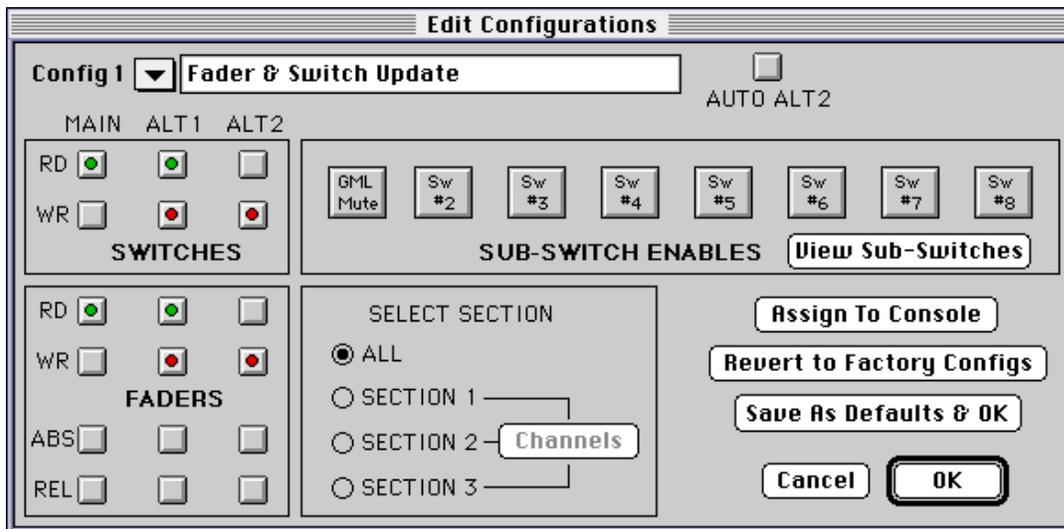
## 10.6 Preferences

This contains items which pertain to how the system is setup and operates.



### 10.6.1 Configuration Preferences

Allows the configurations to be edited, the console to be split into three sections, and sets which of the sub-switches (if applicable to your system) are used for each configuration.



#### The Edit Configurations Window

##### Configuration Pop-up

This allows you to select a different configuration to edit. This always defaults to the first configuration. You can rename a configuration as described in the Configuration pop-up in the GML Main Screen.

##### Auto-Alt2 Button

When this button is turned on, and the configuration under which it was set is selected, and the automation is locked to incoming SMPTE and RUNNING, touching a fader is the same as a double-click on the SEL button. That is, selecting the ALT2 configuration. Often this is used to allow a mixer to 'select' a configuration without looking down at the fader.

##### Switches and Fader Buttons

These buttons represent the three states for each configuration. They are MAIN, ALTERNATE 1 (ALT 1) and ALTERNATE 2 (ALT 2). The colored dot shows which fader indicators will be turned on in each sub-configuration. To modify a sub-configuration, click on the buttons to set the fader indicators to the desired setting. After you change a configuration, you can use the Configuration Pop-up to select another configuration. To make an edit permanent, click on the **OK** button.

##### Sub-Switch Enables

These represent the record and play back characteristics of the eight console switches controlled by the automation. Usually systems use only the first of these switches, the GML Mute.

A sub-switch enable button will only be displayed if at least one channel has been assigned to it.

- Refer to section 10.6.3 **System Hardware Preferences** for information on assigning channels to switches.

These buttons are used to toggle the state of the sub-switch READ and WRITE buttons for the selected configuration. These settings determine when a switch will record and play back data. When a sub-switch enable button is clicked on, it will be displayed in either Gray or Red. Gray indicates that all sub-switches are turned off for that configuration. Red indicates that all sub-switches are enabled for that configuration.

These buttons can also be displayed in Green when the **Individual Switch Enables** window, described below, is closed. Green indicates that some sub-switches are turned off for that configuration.

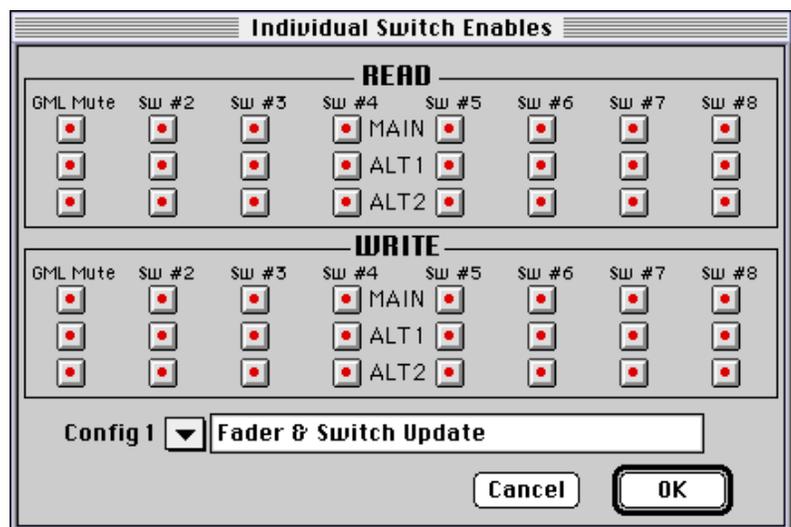
### View Sub-Switches Button

This opens a window to edit the sub-switch recording and playback characteristics for each configuration. You can select the configuration to edit by using the Configuration pop-up. The configurations can be renamed as described for the Configuration Pop-up in the GML Main Screen. Only switches which have channels assigned to them will be displayed in this window.

If the corresponding sub-switch enable button in the **Configuration Preferences** window is Red, the READ and WRITE buttons will be selected. If the corresponding sub switch enable button in the **Configuration Preferences** window is Gray, the READ and WRITE buttons will be de selected.

Clicking **Cancel** will ignore any changes made.

Clicking **OK** will keep any changes made. If all the READ and WRITE buttons are selected, the corresponding **Sub-Switch Enable** button in the **Configuration Preferences** window will be displayed in Red. If all the READ and WRITE buttons are de-selected, the corresponding **Sub-Switch Enable** button in the **Configuration Preferences** window will be displayed in Gray. If some of the READ and WRITE buttons are selected, the corresponding **Sub-Switch Enable** button in the **Configuration Preferences** window will be displayed in Green.



### Select Section

This allows you to split the console into three sections. The default position is to treat the entire console as a whole. To define a section, click on the appropriate section button. The **Channels** button will become active. Click on the **Channels** button to assign channels to a section. You can also define a section by entering the section command in the **Command Line** window.

### Assign to Console Button

This will send the currently displayed configuration to the console.

**Revert To Factory Configs Button**

This will reset all configuration names and sub-configurations to the factory defaults. A dialog will be displayed asking for confirmation prior to resetting the configurations.

**Save As Defaults and OK Button**

This will store the configurations in the application preference file so that no matter which project you are working on, these configurations will become the default configurations. This will close the window.

**OK and Cancel**

Clicking on **OK** will keep any changes and close the window.

Clicking on **Cancel** will ignore any changes and close the dialog.

Note: If a configuration is changed, it is not sent to the console. Only when the **Assign to Console** button is clicked on, or that configuration is selected from the Configuration Pop-up menu, is the configuration sent.

## 10.6.2 SMPTE and Machine Preferences

Allows a specific tape machine to be initialized and customized, and other time code related options to be set.

Time Code And Machine Preferences	
<b>Time Code And Machine Parameters</b>	<b>Machine Control</b> <input checked="" type="checkbox"/> Enable
SMPTE Type <input type="text" value="30 NDF"/>	Machine Type <input type="text" value="Sony 3348"/>
Play <input type="checkbox"/> Phase <input type="text" value="POS"/>	Command Length <input type="text" value="2"/>
Pulses Per Frame <input type="text" value="-32191"/>	Dead Zone <input type="text" value="2"/>
Use Tach ? <input type="text" value="YES"/>	Min. Wind Speed <input type="text" value="2"/>
Tolerance <input type="text" value="32"/>	Max. Wind Speed <input type="text" value="136"/> <input type="text" value="0000"/>
<b>Hard SMPTE Offset</b>	
<input type="text" value="0 :00:00:00.0"/>	
<input type="button" value="Revert to Factory Machine Params"/>	
<input type="button" value="Capture New SMPTE Params"/>	<input type="button" value="Save As Default &amp; OK"/>
<input type="button" value="Cancel"/>	<input type="button" value="OK"/>

### SMPTE Type Pop-up

Displays and allows entry of one of the four common SMPTE types, **30** frames-per-second, **30** frames-per-second non-drop, **25** frames-per-second and **24** frames-per-second.

### Play Enable Checkbox

This increases the sensitivity of the SMPTE function within the GML Node to sense when and how the tape machine goes into play.

### Machine Play Phase

Since we monitor the "PLAY" line, we wish to know if the signal is positive or negative when the machine is in "PLAY".

### Pulses Per Frame

Number of TTAC pulses per SMPTE frame. Automatically calculated during **Capture New SMPTE Params**.

### Use Tach Pop-up

Used should you wish to turn the **Tach** off. Note: "SEARCH-TO-PLAY" and "SEARCH-TO-STOP" machine control operations require **Tach**.

### Tolerance

This is used to make the GML Node more "tolerant" of tape dropouts. The tolerance value of the system is measured in "tics". A tic is one quarter of the duration of a SMPTE frame. The default tolerance value is 32 tics, or 8 frames. This means that the system will tolerate a dropout of time code for up to 8 frames. The minimum tolerance value is 4 tics, or 1 frame. The maximum tolerance value is 255 tics. If a tolerance of 255 tics does not help the problem, it may be best to re-record the time code.

The tolerance value can also be modified from the **Command Line** window by using the "tolerance" command, "to <tolerance value> <return>". To see the current tolerance value from the **Command Line** window, just type "to <return>".

### Hard SMPTE Offset

Displays and allows entry of the offset *immediately* applied to the incoming SMPTE time code. Often used to resynchronize with a decision list that has come back from video or film editing.

**Revert To Factory Machine Params Button**

Resets all parameters for all machines to the factory defaults.

**Capture New SMPTE Params Button**

Used to initialize the tape machine. When clicked on, you are prompted to run SMPTE from the tape machine. The GML Node computer will analyze the SMPTE and reinitialize the SMPTE board.

**Machine Type Pop-up**

Lists currently available tape machines. Code-only interfaces need not select a machine at all. Selecting a tape machine will enter new values into the parameters just below it. After a new machine is selected, any parameters modified are remembered.

**Command Length**

Describes the length of the pulses sent to the tape machine in (frame rate / 4) increments. Thus, if Command Length is set to 2, the length of the command pulses at 30 frames per second code rate will be  $8.33 \text{ millisecond} * 2 = 16.66 \text{ ms}$ .

**Dead Zone**

Describes the length of the space between pulses sent to the tape machine in (frame rate / 4) increments. Thus, if this is set to 4, the space between any two command pulses at 30 frames per second rate will be  $8.33 \text{ millisecond} * 4 = 33.33 \text{ ms}$ .

**Minimum Wind Speed**

Sets the minimum average speed that the machine control will attain. Generally this is set to 1, but there are machines that will not be particularly stable at slow wind speeds, and this number must be made higher.

**Maximum Wind Speed**

This is the maximum fast wind speed that the machine may attain, on average. Since this is a difficult number to "guess" and since it is critical in establishing a full-range control curve for smooth tape de-acceleration, an indicator is provided which displays the peak tape speed. Thus, one best sets this parameter by fast forwarding or rewinding a tape, observing that a <number> is no longer growing larger, and entering the new <number>. Should one be unsure that the indication is correct, or whether the top speed has been reached, one may enter zero.

**Control Now**

Establishes the distance at which the tape control system begins to slow the tape speed. Larger numbers cause the control curve to occur sooner, the slow down to be more gradual, and the likelihood of an overshoot to be less so. Smaller numbers speed tape search but increase overshoot.

**Stop Now**

This is the number of tics (or quarter-frames) away from the locate point that the stop (or play) command is fired, and the search is considered to be complete. On some machines, smaller values occasionally result in unacceptably long "rocking" or "hunting".

**Linear Law**

This selects whether a linear or a logarithmic curve (law) is to be used in stopping the tape machine. Which curve best suits a particular tape machine is best determined by experiment. Note that one must also modify Control Now and Stop Now each time one changes one's choice of curves.

**Save As Default and OK**

Saves the parameters in the application preferences and closes the dialog. This means that every new Project Folder created will use these values as default values. Existing Project Folders will only use these value if their Project Preference files are removed or renamed.

**Cancel**

Ignore any changes recently made.

**OK**

Uses the current parameters and closes the dialog.

### 10.6.3 System Hardware Preferences

This is where you configure the software to match how your console is configured. You enter the number of channel, groups, stereo faders, etc. You also enter the GML Node's IP address, configure your VR set up if you have one, rename the 8 sub-switches and assign them to specific channels. These are always saved as application defaults.

Note: The application defaults are saved in a file called "GML Prefs". This file is located in the GML Folder inside the Preferences Folder inside the System Folder. If this file is removed or deleted, the application will use all its default values meaning you would have to re-configure the software and reassign and rename all sub switch configurations.

- Refer to Appendix N - **Application and Project Preferences Explained.**

**System Hardware Preferences**

**BASIC SYSTEM**

Channels: 48

Groups: 7

Stereos: 1

Default Group Zero: 10 dB

B-Processor: SBC4 68020

Node Memory Size: 2 Mbyte

Auto Node IP Address: 192.168.100.6

Enable SSL 5000 Scan

Enable APC

Enable System Status Window

UR GRAPHICS ENABLE

Total number of UR channels: [ ]

Number of UR channels to left of Center Section: [ ]

Data Threshold: [ ]

Match Threshold: [ ]

**SUB-SWITCHES (Phase)**

GML Mute Channels

Sw #2 Channels

Sw #3 Channels

Sw #4 Channels

Sw #5 Channels

Sw #6 Channels

Sw #7 Channels

Sw #8 Channels

Update GML Node EEPROM

Use System Time Node

IP Address: 192.168.100.7

Update System Time Node EEPROM

Cancel Save & OK

If the application is booted up without the application preferences found, you will be reminded to configure the software. The displayed window shows the default configuration. When the application is run the first time, or when the application preferences are not found, the software is configured with this configuration. Most changes in this window will require the application to be restarted for the changes to take effect. An alert dialog will be displayed when a restart is needed. You have the option of ignoring your changes if you do not want to reboot.

#### Channels, Groups, Stereos

Enter the number of each type of fader in your system here. To move to another edit field, press the Tab key or use the mouse and click on it. The application will need to be restarted for these changes to take effect.

These three values determine the software loaded when the application boots up.

The total number of faders cannot exceed 128. If they do, the number of channels will be truncated. The value for channels can range from 8 to 128. The value for groupers can range from 0 to 24. The value for stereo faders can range from 0 to 24.

#### Default Group Zero

This is used to set the dB level of where the group faders designate 0dB. The default value is 10dB.

### **B-Processor**

Select the type of B-Processor the GML computer uses. It may be either OB68K 68K, SBC3 68020, or SBC4 68020.

### **Node Memory Size**

Select the amount of memory installed in the GML computer. The pop-up menu selections can either 1 Mbyte, 2 Mbyte, 4 Mbyte or 8 Mbyte.

### **Remote IP Address**

This is the address used by the application to talk to the GML computer. This value should never need to be changed once installed. This value is checked to make sure it does not conflict with the Macintosh's own IP address.

### **Enable SSL 5000 Scan**

This enables the automation to control switches on a SSL 5000 console when the custom GML hardware is installed.

### **Enable APC Scan**

This enables the automation to control switches on a APC console when the custom GML hardware is installed. When selected, the VR Enable checkbox is automatically turned off since it is impossible to have VR on a APC console.

### **Enable System Status Window**

When checked, a System Status window will be displayed when specific status messages are sent from the GML computer. This is used for diagnostic purposes and does not disable any features when checked.

### **VR Graphics Enable**

When checked and VR graphics are installed, the application, upon restart, will recognize VR graphic commands. When selected, the Enable APC checkbox is automatically turned off since it is impossible to have VR on a APC console.

### **Total Number of VR channels**

The number of channels using VR.

### **Data Threshold**

This represents the amount of change that needs to be applied to the data in order for the VR computer to recognize it as new data. This value can be between 1 and 100. The default value is 8.

### **Match Threshold**

This represents how close a fader or knob needs to be from its original location for the VR computer to see it as a match. This value can be between 1 and 100. The default value is 3.

### **Sub-Switches**

GML Automation supports eight high-speed sub-switches, one of which is identifiable as The GML Mute. These switches are normally located in the console and the GML Automation dynamically stores their changes. Each switch can have up to eight characters to describe its function. To rename a button, click on its name and begin typing. Changing a sub-switch's name will not require the application to be restarted.

A sub-switch needs to be assigned to a channel(s) for it to be 'seen' by the GML computer. To assign a sub-switch to a channel(s), click once on the **Channels** button next to its name. This will display a **Channel Selection** dialog. Select the channels to be effected by the switch. When you are done selecting channels, click on the **OK** button. Click on the **Cancel** button to ignore any channels selected.

Note: Changing the channels assigned to a sub-switch will require the application to be rebooted.

### **Phase**

The **Phase** switch is used to change how the GML Node 'sees' the switch event data. When checked, the switch event data will be toggled (i.e., an OFF event will be displayed as an ON event).

### **Update GML Node EEPROM Button**

Clicking on this button will send the gal\_EEPROM file, located in the TFTPd folder on the Macintosh, to the GML Node where it will be burned into its EEPROM. This will allow the GML Node to be reset and initialized in about 10 seconds. This needs to be performed whenever you receive a new software update. After the EEPROM has been updated, quit the application and reset the GML Node.

### **Use System Time Node CheckBox**

If this is enabled, the next time the application is started, it will attempt to make a connection to the machine located at the IP Address. This will allow an external device called the System Time Node to handle the SMPTE time. This should be used with GML Automation Versions 7.7.0 and newer.

### **Update System Time Node Button**

This will update the EEPROM in the System Time Node with new software. This function will only be enabled once the **Update System Time Node** button is enabled and the connection to the System Time Node is established.

### **Cancel**

Clicking on the **Cancel** button will ignore all changes made to the configuration of the software. This will close the dialog and all changes made will be lost.

### **Save & OK**

This writes the new configuration to the Application Preferences file. The Application Prefs file is called GML Prefs, which is stored under the GML folder in the Preferences Folder which is in the System Folder.

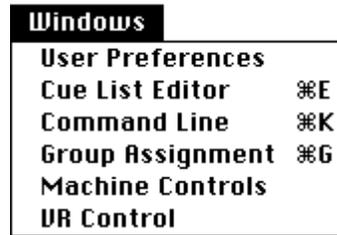
- Refer to Appendix N - Application and Project Preferences Explained.

An alert will be displayed if a change will require the software to be rebooted. The alert will allow you to either **Save & Quit** or **Cancel**. The **Save & Quit** button will continue with saving the new configuration to the Application Preference file and quitting the application. If a mix is in memory that has been changed but not saved, you will be given an opportunity to save the mix before quitting the application.

A file called '**Console Config**' is created. This is a text file that can be read in SimpleText which shows how the software is configured. It displays the channels, groups and stereo configuration. It also displays which channels are assigned to which groups. This is a simple and quick way of viewing how the software was configured.

## 11. The **Windows** Menu

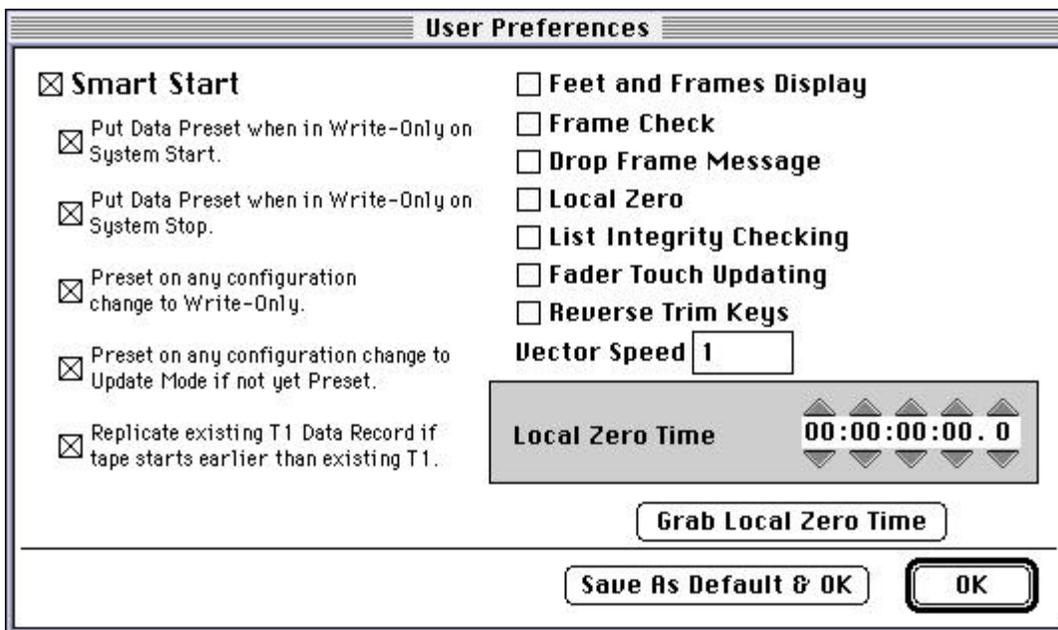
This menu lists windows which perform functions other than editing and filing.



### 11.1 User Preferences

Allows Smart Start and its related switches to be set, how the time code is to be displayed (feet or frames), frame checking on or off, a local zero SMPTE time grabbed or entered by hand. These can be saved as application preferences so they will always be used.

- Refer to Appendix N - **Application and Project Preferences Explained** for more information regarding preferences.



#### Smart Start:

Smart Start is our term for the automation list initialization functions. The individual smart start functions may be turned off via the appropriate check box. Turn all smart start functions on/off by toggling the **Smart Start** checkbox. You can also use the Smart Start command "ss" to toggle smart start as well. The syntax for the Smart Start command is "ss <on | off> <return>".

When **Smart Start** is enabled, the GML system no longer requires a user-entered T1 or a user generated preset at T1. This will happen automatically whenever the system is "started" with a function in **WRITE** or **UPDATE** in a wide variety of situations. However, the system maintains the ability to manually re-write, or change the "preset" of fader and switch data at T1 by selecting the same conditions as before (i.e., **PRESET MUTE** and/or **PRESET FADE** plus T1).

If, while running, a channel is selected for write only, the fader position and/or mute state will be recorded at the time that the configuration change is made.

Also, if while running, a channel is selected for **UPDATE** and there has NOT yet been any data for this channel, the system will automatically make a preset at T1.

Any time that the system starts running at a time earlier than the existing T1, the first data for each function will be moved to the earlier time, and that time, in turn will become the new T1.

### **Feet and Frames Display**

When checked, all SMPTE times are displayed in feet and frames. Otherwise, SMPTE times are displayed in hours, minutes, seconds, frames, and ticks.

### **Frame Check**

When checked, the SMPTE displayed on the GML Main Screen is only updated when the SMPTE is actually changing frames.

### **Drop Frame Message**

Toggles the Drop Frame message flag.

### **Local Zero**

This allows the SMPTE display to be “preset” to 00:00:00:00.0 at a user selectable SMPTE time. All uses of times, time entries and SMPTE displays will then display the new format. When checked, the time displayed in the Local Zero Time field becomes the time from which zero is computed.

### **List Integrity Checking**

When checked, the GML Node will check the mix upon loading and saving, if it has been corrupted. If a mix has become corrupted, a System Status window will be displayed with a message saying the mix has become corrupt. If a mix does become corrupted, save it immediately and call GML.

### **Fader Touch Updating**

When checked, anytime a fader is touched, the appropriate fader in the front most editing window will be toggled. Also, the Touch indicator on the GML Main Screen will be lit red. This allows the user to select faders for editing when they are away from the keyboard.

### **Reverse Trim Keys**

This allows the user to change which keys are used to perform a trim, and which select a cue point. The default configuration is that <> + Up Arrow and <> + Down Arrow are used to Trim a fader. The Up Arrow and Down Arrow keys are used to select a cue point. If this checkbox is checked, then the keys functions are reversed.

### **Vector Speed**

This controls the speed of fader moves made by using the PRESET Fader function and when the user releases a fader after making a move in ABSOLUTE OFFSET mode. The number entered for the vector speed represents the number of SMPTE frames over which the moves will occur (duration of move(s)). This value can range from 1 frame to 63 frames. The default value is 1 frame. Note that the vector speed value is NOT stored in any preferences. The system will always default to a vector speed of 1 frame when the application is launched.

• *Refer to section 14.3.21 **How To Control Fader Speed** for more information.*

### **Local Zero Time**

The time displayed here will be the SMPTE time from which local zero calculated, when Local Zero is turned on. It can be modified like any other SMPTE field. This is saved with each mix.

### **Grab Local Zero**

This captures the current SMPTE time and places it in the Local Zero Time field. This time then becomes the local zero time when Local Zero is activated.

### **Save As Default & OK**

This saves the User Preference data in both the Project Prefs file, and the Application Prefs file in the System Folder and proceeds to close the dialog.

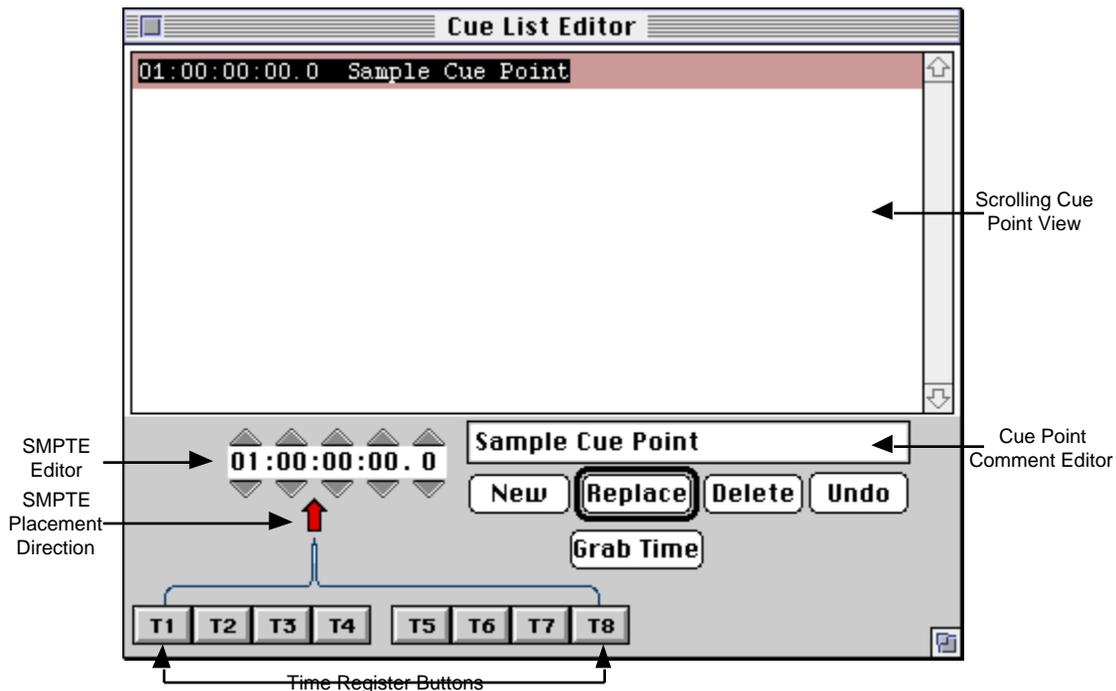
• *Refer to Appendix N - **Application and Project Preferences Explained** for more information regarding preferences.*

### **OK**

This saves the User Preference data in the Project Prefs file, which is stored in the Projects folder, and closes the dialog.

## 11.2 Cue List Editor < E>

This will display the **Cue List Editor** window. If the **Cue List Editor** is already opened, this will make it the active window.



The **Cue List Editor** is used to maintain a list of Cue Points for a particular mix. A Cue Point is just a SMPTE time with an optional comment. The Cue Points are available from every window which needs a FROM, TO, or TARGET time in the form of a pop-up window. This simplifies the selection of SMPTE times for editing.

### The Scrolling Cue Point View

This scrollable view displays all the Cue Points created for a mix. There are three colored highlights used:

- Light blue highlight is used to select the Current Cue Point.
- Pink highlight is used to show the Current Tape position.
- Brown highlight is used when both the Current Cue Point and the current tape position select the same cue point.

### Current Cue Point

The Current Cue Point is the tape location the machine control commands Search To Stop and Search To Play will search to. The Current Cue Point has its data displayed in the SMPTE Editor and any comment associated with it displayed in the Comment Editor. Any cue point selected will become the Current Cue Point. You can select a cue point via mouse click or the UP and DOWN arrow keys. The UP and DOWN arrow keys function on a global basis. This means that even if the **Cue List Editor** is in the background, you can use the Up and Down arrow keys to select a cue point. Note that this is NOT the case when dealing with modal dialogs. A modal dialog is a dialog which requires user interaction before moving on such as the **Mix Overwrite Alert** or **System hardware Preferences** dialog. The Current Cue Point can also be selected from the pop-up menu at the bottom of the Machine Control window.

### Tape Position

As SMPTE is running, a pink highlight will highlight the Cue Point which matches the incoming SMPTE time. If the incoming SMPTE is beyond the last Cue Point, the last Cue Point will remain lit. If the incoming SMPTE is before the first Cue Point, the first Cue Point will remain lit. When the Current Cue Point and Tape Position match, the highlight is brown.

### **The Cue Point Comment Editor**

This is used to edit the comment of the Current Cue Point. The basic Macintosh editing commands apply to this field.

### **SMPTE Editor**

This displays the SMPTE time of the Current Cue Point. The SMPTE Editor is also used to modify the SMPTE time of an existing Cue Point to perform a Replace. The SMPTE Editor is also used to create the SMPTE time for a new Cue Point.

### **SMPTE Direction**

This arrows shows where the SMPTE will be placed when a Time Register button is clicked on. When the arrow is pointing up, and a Time Register button is clicked on, that Time Register's value will be placed in the SMPTE Editor. This is useful if you wish to create a Cue Point based on a Time Register time.

When the arrow is pointing down, clicking on a Time Register button will place the SMPTE time displayed in the SMPTE Editor, into that Time Register. This is useful if you want to store a Cue Point's SMPTE time into a Time Register.

To change the direction of the arrow hold the SHIFT key down. While it is held down, the arrow changes direction. It remains in that direction until the SHIFT key is released. Clicking on the arrow will cause the arrow to change direction and remain there until it is clicked on again.

### **Time Register Buttons**

These eight buttons represent the eight Time Registers. What happens when clicked on, depends upon the direction of the SMPTE Direction arrow described above.

### **Cue List Editor Buttons**

#### **New**

Used to create a new cue point. This is only active when the SMPTE Editor's value has changed.

#### **Replace**

This will replace an existing cue point with the data displayed in both the SMPTE Editor and Comment Editor. This button is only active if either the SMPTE Editor's value has changed or the text in the Comment Editor has changed. After performing the Replace function, this button becomes disabled until another change is made.

#### **Delete**

Deletes the Current Cue point. This is an undoable event.

#### **Undo**

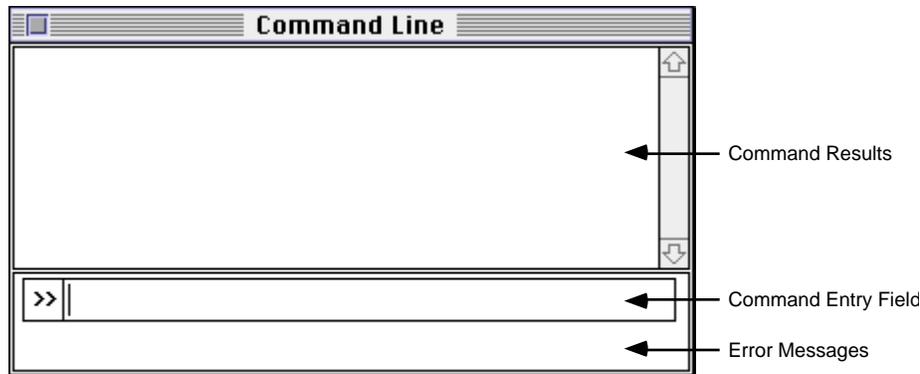
Resets the Comment Editor and the SMPTE Editor values to the original Current Cue point values.

#### **Grab Time**

Grabs the current SMPTE time and places the value in the SMPTE Editor. This time can be used to create a new cue point.

### 11.3 Command Line < K>

This displays the **Command Line** window. If the **Command Line** window is covered by another window(s), this command will bring it to the front and make it the active window. Up until 1994, GML Automation Systems utilized a “dumb terminal” to interface with a user. Commands in the original system were entered as one or more characters in a sequence. To provide a familiar environment for those users, many of these character commands may be entered in this window.



The **Command Line** window maintains a buffer (command history) of the last 16 commands and contains a scrolling view in which the results of the last 16 commands are displayed. To move backwards in the command history, press COMMAND-R. To move forward in the command history, press COMMAND-F. As you move through the command history, the commands will be displayed in the command line. When you see the command you want to execute, press the <return> key. If you want to edit a parameter, you can use the cursor keys or the mouse to position yourself accordingly.

The Command Entry Field is where the commands are typed in. Errors are displayed in the Error Messages part of the window.

#### 11.3.1 Command Line Syntax

In this section, you will see words between the symbols “<” and “>”, such as the word <return> or <SMPTE number>. The user is expected to type in what is described by the words between the symbols, NOT the literal characters on the manual page. For example, <SMPTE number> indicates that the user should type in a real SMPTE number such as “01:01:22:00.1”. The GML computer does not process the command until you “enter” it by pressing the <return> key on the keyboard.

Some commands require you to type in additional information, or “parameters” after the command name. When this is necessary, you must separate the command name and its parameters with spaces. For example, to lower the volume of channel 5 by 3 dB you would use the “trim” command which requires two additional parameters (channel number and gain value). Therefore, this command would be entered as “trim -3 5 <return>”.

The command line can be edited before pressing the <return>key. Double clicking in the Command Entry Field selects all the text so the next keystroke will erase it. The regular editing keys (Back Space, Cut and arrow keys) can be used too. You can also cut and paste text to and from the Command Entry Field.

It does not make a difference if the text is entered in all capital or lower case characters. The GML computer will only “see” the first ten “words” typed on a line including the name of the command. A “word” is any sequence of typed characters separated by spaces. Examples of “words” are: “c1”, “g1-6”, “sconvert”, “all”, “-2.4”, etc.

#### 11.3.2 SMPTE Time Code Syntax

All commands which require the user to specify SMPTE time code numbers follow the same rules of syntax:

- Only significant numbers need be entered, and no leading zeros are required.
- The colons (“:”) and possibly the period (“.”), used for specifying “tics”, or quarter-frames are required as punctuation before every significant number.

The following examples show SMPTE numbers in their hand-entered (abbreviated) forms along with their full meanings:

1::2 MEANS 01:00:02:00.0  
:::3.1 MEANS 00:00:00:03.1  
2 MEANS 02:00:00:00.0  
3::1..2 MEANS 03:00:01:00.2

Negative SMPTE numbers must be preceded with a minus sign ("-") without a space, as in "-0:0:0:15".

### 11.3.3 Channel List Syntax

All commands which require the user to specify channel numbers follow the same rules of syntax:

- All channels are identified by their number as it appears on the console.
- All groupers are identified by their number preceding with a "g", as in g1, g2.
- All stereo faders are identified by their number preceding with an "s", as in s1, s2.
- Ranges of channels are specified by placing a dash "-" between the lowest and highest channel numbers, as in "1-7" or "g1-3". Do NOT use spaces between the dash.
- Ranges of groups only require one "g". For example, the range "g1-g4" can be entered "g1-4".

As another example, to clear fader data from groups 1, 2, 3 and 4, and channels 7, 8, and 9, and 15, the **Command Line** window syntax is: "cl g1-4 7-9 15 <return>".

If you wish to specify all of the channels on the console (including groups), type the word "all" instead of channel numbers or ranges. For example, "cl all <return>".

Selecting channels with the text pane, de-selects all other channels. If you want the channels you are selecting to be included with the channels already selected, precede the text with a plus sign "+". For example, to include channel 3 in the already selected channels, type "+3 <return>".

If you enter a channel that is not valid for your configuration, a dialog will be displayed describing the invalid channel number.

### 11.3.4 Summary of **Command Line** commands

<u>Command</u>	<u>Description</u>
"as"	all sections
"cl"	clear
"ct"	clear time register
"cp"	copy
"dt"	display Time Registers
"fc"	frame check <on off>
"g1"	group commands
"g2"	
"g3"	
"g4"	
"g5"	
"g6"	
"g7"	
"g8"	
"g9"	
"g10"	
"g11"	
"g12"	
"g13"	
"g14"	
"g15"	
"g16"	
"g17"	
"g18"	
"g19"	
"g20"	
"g21"	
"g22"	
"g23"	
"g24"	

```

"gt1"          grab time register value
"gt2"
"gt3"
"gt4"
"gt5"
"gt6"
"gt7"
"gt8"

"ma"           solo mask
"gmerge"       merge groups
"of"           SMPTE offset

"s1"           section commands
"s2"
"s3"

"size"         size of mix in memory
"ss"           smart start <on | off>
"swap"        swap

"t1"           set Time Register value
"t2"
"t3"
"t4"
"t5"
"t6"
"t7"
"t8"

"to"           tolerance
"tr"           trim
"trim"        same as above
"v"           vector
"version"     version
"w"           window <on|off>
"we"          window end <00:00:00:00.0 | t1...t8>
"ws"          window start <00:00:00:00.0 | t1...t8>

```

The tape initialization command (“ti”) in the **Command Line** window has been disabled. To re-initialize the SMPTE board, open the **SMPTE & Machine Preferences** dialog and click on the **Capture New SMPTE Params** button. See section 10.6.2 SMPTE and Machine Preferences.

### Automation Enable Window

There is an optional automation enable window which, when the system is running, allows new data to be recorded only between its start and end times. The system plays data as usual outside of the window (if enabled for READ). This feature uses two SMPTE (or feet and frames) time parameters, WINDOW START and WINDOW END, whose times are stored by typing “ws <time> <return>” and “we <time> <return>”. The window status may be displayed by entering “w <return>”.

There is a switch to turn the window operation on and off: “w on <return>” and “w off <return>”. When appropriate times are entered, and the system enabled, and the tape is started, the system plays back existing moves on faders and switches enabled for READ or UPDATE, but will write nothing even if enabled for WRITE or UPDATE until the “running” time falls within the ‘WINDOW’. At these times the system runs normally.

Furthermore, if a function is enabled for WRITE, the system automatically makes a preset at the current position when the SMPTE time becomes equal to WINDOW START and the system is running. Later, when the SMPTE time equals WINDOW END, the system will return the function to (create a preset of) the original function’s value at WINDOW START.

*The presets created by WINDOWS always creates fader moves with vectors equal to 1.*

### Automation Data Copy

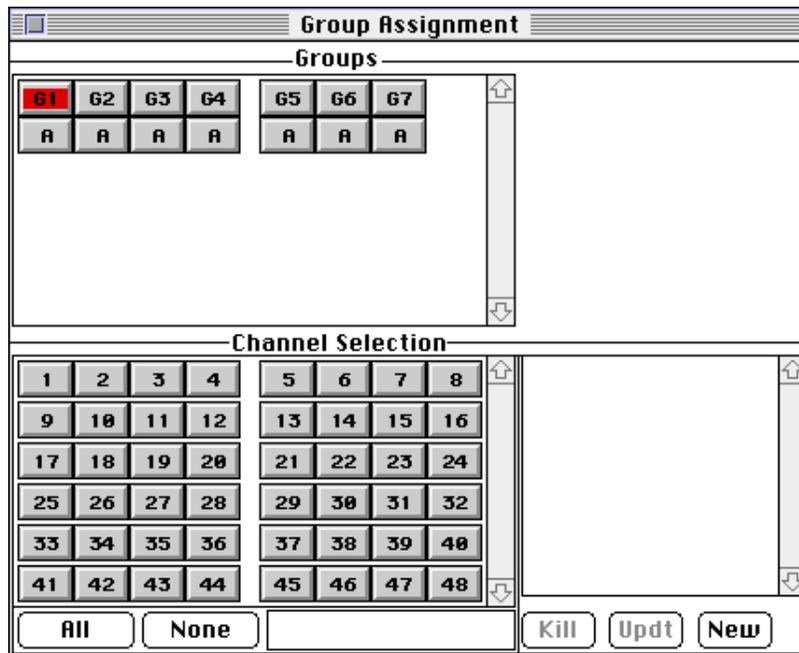
An extremely fast channel to channel copy routine is available through the **Command Line** window. The syntax is consistent with other GML commands.

Examples:

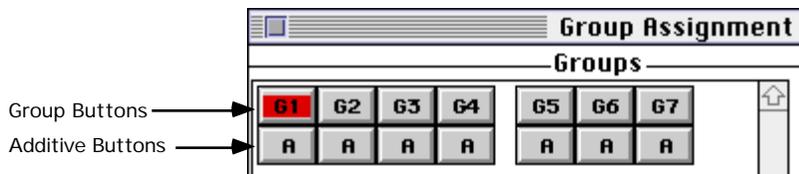
<code>cp 2 3 &lt;return&gt;</code> the entire mix.	Copy channels and faders from channel 2 to channel 3 for the entire mix.
<code>cp 1 2 3 4 &lt;return&gt;</code> and 4 for the entire mix.	Copy switches and faders from channel 1 to channels 2, 3, and 4 for the entire mix.
<code>cp 9 11-20 &lt;return&gt;&gt;</code> and up to and including 20 for the entire mix.	Copy switches and faders from channel 9 to channels 11 and up to and including 20 for the entire mix.
<code>cp t3 t4 1 2 &lt;return&gt;</code> starting at T3 and ending at T4.	Copy switches and faders from channel 1 to channels 2 starting at T3 and ending at T4.
<code>cp m 2 3 &lt;return&gt;</code> entire mix.	Copy only switch data from channel 2 to channel 3 for the entire mix.
<code>cp f 10 2 &lt;return&gt;</code> entire mix.	Copy only fader data from channel 10 to channel 2 for the entire mix.
<code>cp t3 t4 f 1 2 &lt;return&gt;</code> T3 and ending at T4.	Copy only fader data from channel 1 to channel 2 starting at T3 and ending at T4.

## 11.4 The Group Assignment Window

This window lets you assign channels to a group.



This window defaults to showing the channels assigned to Group 1. To select another group, either click on the desired Group button, or press the TAB key to select the next group. When a channel is selected, it will automatically be assigned to the selected group. When a channel is de-selected, it will automatically be de-assigned to the selected group.



### 11.4.1 Additive Grouping

The **ADDITIVE** mode allows a group master so-selected to “superimpose” its moves on a channel fader. All moves entered in this mode exist only on the channel fader. In operation it resembles the “UPDATE” mode on SSL and similar VCA systems. In practice, this feature allows one to easily update a channel fader without making unwanted changes.

There are two ways to place a group master into **ADDITIVE** mode:

1. Use the **Command Line** window and entering “g1 a <return>”.
2. Using the **Group Assignment** window, click on the additive button located under a group button. This will toggle the additive state of the group.

Groups are then assigned as usual. The **READ** and **WRITE** function LEDs will be extinguished in this mode. In fact, no configuration choice except for **ABS** offset is permitted on a group master fader enabled for **ADDITIVE** grouping.

Since **REL** offset is effectively available from the **ADDITIVE GROUP** master, this function is not permitted on a channel fader in an **ADDITIVE** mode group.

An **ADDITIVE** group is returned to normal operation by either typing “g1 n <return>” or by toggling the **ADDITIVE** button in the **Group Assignment** window.

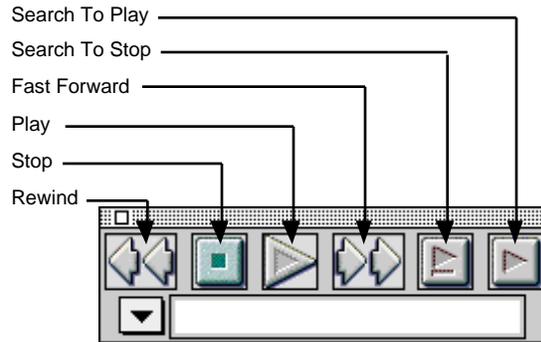
**ADDITIVE** group declarations are not saved with mixes, although the assignments are.

- Refer to the **Command Line Window** for another way of assigning channels to a group

## 11.5 Machine Controls

This window controls the tape machine. Because this is a “floating window”, it will ALWAYS be displayed in front of any other window, however, you can still use the window being covered by this window. The buttons, and the function keys that control them are:

F9 Stop  
F10 Play  
F11 Rewind  
F12 Fast Forward  
F13 Search to Stop  
F14 Search to Play



You can also activate the buttons by using the mouse to click on them. Search to Stop and Search to Play are only active if at least one Cue Point exists in the Cue List Editor.

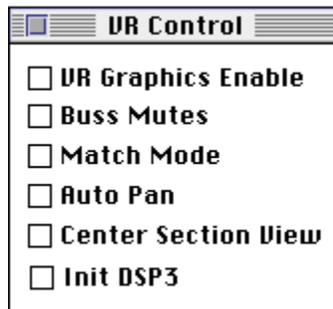
**11.5.1 Current Cue Point Pop-up Menu** This is used to select the Current Cue Point. It displays a pop-up menu of all the cue points in the **Cue List Editor** window. If no cue points exist, “**Empty Cue List**” will be displayed. When a Current Cue Point is selected from this pop-up, it will select the appropriate cue point in the **Cue List Editor** window and cause the tape machine to execute a “Search To Stop” command. The Current Cue Point’s comment or SMPTE time is displayed next to the pop-up menu.

## 11.6 VR Control

This window will be displayed if:

- The VR Enabled check box in the **System Hardware Preferences** dialog is checked  
*and*
- the VR computer is “seen” by the GML computer  
*and*
- the **VR Control** menu item is selected.

The VR Control commands:



### VR Graphics Enable

This turns the VR graphics display on if checked, or off if unchecked. The VR graphics are always displayed on the VR computer's monitor.

### Buss Mutes

The Neve control circuitry normally mutes the busses to hide the *hideous* scanning noise caused by use of the VR functions. Should one wish to hear the console anyway, the **Buss Mute** may be disabled (on GML Automation Systems only).

### Match Mode

This puts the VR computer in Match Mode. If a VR snapshot has been loaded, the VR computer will display how the console should be set in order to match the snapshot.

### Auto Pan

(not used)

### Center Section View

This displays the center section of the console on the VR computer's screen.

### Init DSP3

Before AT&T abandoned professional audio altogether in a bald-faced attempt to make billions in the local telephone business, they “sold” a few DISQ systems for Neve VR Consoles. GML addresses this system, and if it crashes (as it often does) and forgets where the faders were, this button restores the DSP data.

## 12. The Channel Fader LED Indicators and Configurations

“**CONFIGURATION**” is the GML term for the *state* of a FADER or a SWITCH.

### 12.1 The GML Automated Fader

The LED indicators on the Channel Fader Assembly reflect the **state** of the *two* automated functions, FADERS and SWITCHES (or, most often, only mute).

The state of FADER READ and WRITE, SWITCH READ and WRITE, and ABSOLUTE and RELATIVE OFFSET are initially determined by setting the CONFIGURATION. This is done either by pressing function keys F1-F7 or by the Configuration pop-up menu on the **GML MAIN SCREEN** or via the **GML MASTER PANEL**.

To explain the meaning of “Configuration”, we compare the faders states recording.

- When the **green** READ LED is on, the system allows *playback* of Automation Data, if the system is **ENABLED** and **RUNNING**.
- When the **red** WRITE LED is on, the system allows the *recording* of Automation Data, if the system is **ENABLED** and **RUNNING**.

Thus...

- When the **green** READ and **red** WRITE LEDs are both on, the system is said to be in UPDATE mode and the system allows the simultaneous *RECORDING* and *PLAYBACK* of Automation Data, if the system is **ENABLED** and **RUNNING**. While **RUNNING** in this mode, ‘touching’ a FADER stops the *PLAYBACK* of data and starts the *RECORDING* of data. Releasing the Fader starts the *PLAYBACK* of data again.
- If both the **green** READ and **red** WRITE LEDs are *off*, the fader is said to be in “MANUAL MODE”. Nothing will be played back or recorded, but existing data for that Channel *will not be erased!*
- If the **red** WRITE LED is *on* and the **green** READ LED is *off*, the fader is said to be in “WRITE-ONLY” mode. New moves or changes are added under this selection will be recorded.

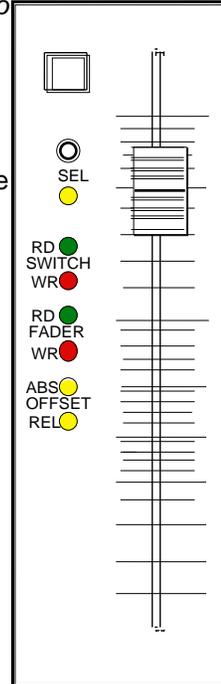
This mode ERASES FADER or SWITCH CHANGES!!!

Never use this Configuration unless your intention is to erase undesired portions of a mix.

**The OFFSET modes determine a fader’s response at the instant the user releases the fader knob.**

In **ABSOLUTE** offset mode (sometimes called “snap-back” mode), the fader returns to its position in the prior pass of the mix. The speed of the return motion is controlled with the Vector command in the **Command Line** window.

In **RELATIVE** offset mode, the fader adds an offset (after the fader’s release) to moves it made in prior passes, starting from the point in time at the instant of release to the end of the mix, whether the mix is played though or not. Moves occur as before, but the overall level of the moves after the fader’s release are offset (up or down) by the *difference* between the fader’s position at release time, and it’s position at the same instant in the prior pass.



## 12.2 Null Indicators

When a fader is in WRITE or UPDATE and the fader knob is touched, the two offset LEDs change their function to indicate either a NULL between the current fader position and the last read data or the direction from the current fader position to the last read data. This feature allows “hand” nulling for a smooth transition from the end of a newly entered fader move and any existing fader move simultaneously, or previously read.

If a channel is in RELATIVE offset mode, the null indicators display a null when the OFFSET (the amount added or subtracted from the fader) is zero.

The fader NULL indicators will continue to display null information with the system stopped. The null point displayed is the last data that was read while the system was running, or the last SNAPSHOT recalled. The comparison data is refreshed when the system starts running again or another SNAPSHOT is loaded.

## 12.3 Relative Mode Recovery

If, when running, a channel is configured for RELATIVE offset, and an appropriate move is performed, and an operator wishes the fader to return to its original position, one may switch from RELATIVE offset to ABSOLUTE offset mode, then touch and release the fader, and then expect the fader to return to the original position. The accumulated RELATIVE offset value will be zeroed.

The easiest way to configure for this is to enable ABSOLUTE offset in the ALT1 configuration, and RELATIVE offset in the ALT2 configuration.

## 12.4 Accessing Configurations

Standard Configurations are selected by either pressing function keys F1-F7 or by the Configuration pop-up menu on the GML Main Screen.

Each configuration is made up of three sub-configurations, MAIN, ALT 1, and ALT 2. To reach either the two Alternate Configurations, use the SEL button on the Channel Fader - a single press activates ALT 1, a rapid double press activates ALT 2. You can also toggle *all* channels through the three configurations by pressing the ALL button on the Master Control Panel in the console.

You can toggle individual faders configuration state by pressing the SEL button on each fader while the Master Control Panel ALTERNATE button is set lit. This will display the first alternate configuration. To select the second alternate configuration, click the ALL button or SEL button twice in quick succession.

## 12.5 Default (Standard) Configurations

### Fader and Switch Update

...readies the console to be quickly switched into the UPDATE mode (record and playback) for both faders and switches.

### Switch Update

...prepares the console for UPDATE mode for Switches only, leaving faders in READ mode.

### Switch Write only

...prepares the console to ERASE switches. Faders remain in READ mode. Use this mode *ONLY WHEN YOU WISH TO ERASE PREVIOUSLY RECORDED SWITCH ACTIVITY!*

### Fader Write Only

...prepares the console for the ERASE mode for faders. Switches remain in READ mode. Use this mode *ONLY WHEN YOU WISH TO ERASE PREVIOUSLY RECORDED FADER MOVEMENT!*

### Fader Update

...prepares the console for UPDATE mode for faders only, leaving switches in READ mode.

### Fader and Switch Update with ABSOLUTE OFFSET mode

...prepares the console for UPDATE mode for both Faders and Switches; also provides ABSOLUTE OFFSET mode with a double-click of the SEL button.

Fader and Switch Update with RELATIVE OFFSET mode

...prepares the console for UPDATE mode for both Faders and Switches; also provides RELATIVE OFFSET mode with a double-click of the SEL button.

The Special Configuration

The Special Configuration on the GML Master Control Panel allows one to assign a custom configuration to one or more channel faders at the same time that the remainder of the console is in another, perhaps a standard, configuration.

The Special Configuration is accessible through the **Edit Configurations** window.

To assign the Special Configuration, hold down the SHIFT key and press a configuration key F1-F7. Upon doing so, the Master Control panel will change to "Configure" mode. Pressing a fader's SEL button will change the configuration of that fader to what the Special configuration contains. To change all faders to this configuration, press the ALL button on the Master Control panel, or use the Configuration pull down menu on the GML Main Screen to select Configuration 8 (Special Configuration).

The Special Config defaults to all faders and switches turned off, or "Manual Mode".

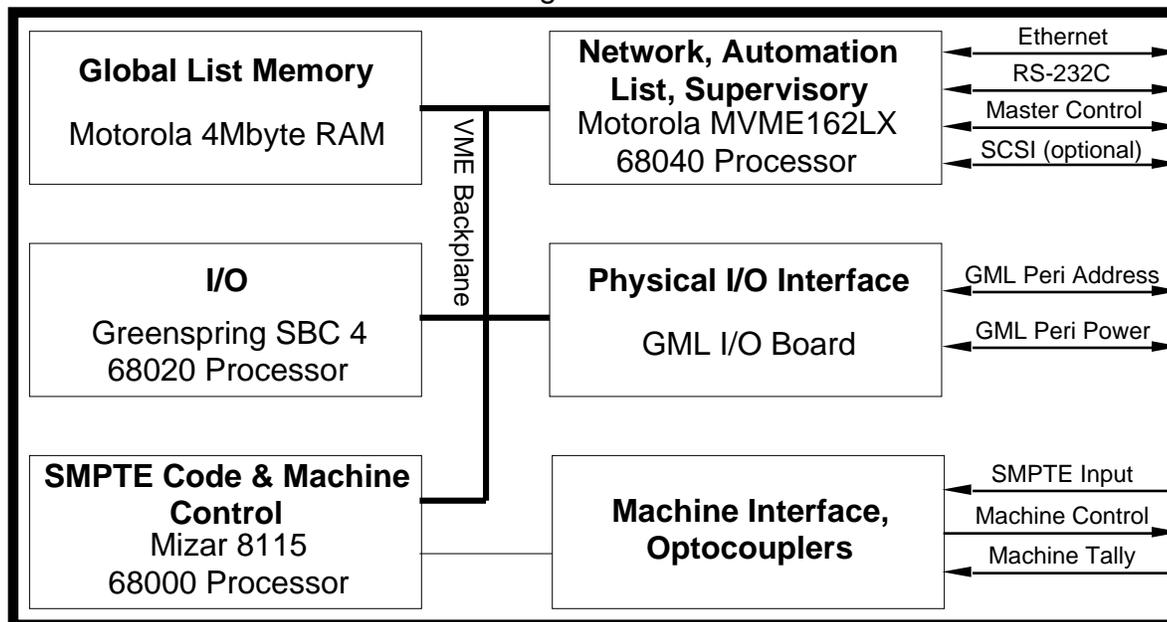
- *Refer to section 10.6.1 **Configuration Preferences** for creating your own configurations or renaming them.*

## 13. System Administrator

### 13.1 GML Node Description

The GML Node is a multiprocessor computer that drives the faders and switches in the console. The multiprocessor solution creates a real independency between the tasks accomplished by the GML Automation, as well as speed and reliability in real time data acquisition.

#### 13.1.1 Block Diagram of the GML Node



#### 13.1.1 The GML Node Enclosure

There are two current GML Node enclosures:

1. The Electronic Solutions enclosure used by older GML Systems.
2. The ELMA enclosure used by the newer GML Systems.

It's important to know which enclosure you have because the slot locations for the circuit boards differ for each enclosure.

- Refer to Appendix I - **GML Board Schematics** for schematics on the boards described below.

#### 13.1.2 The "A" Processor Board

The GML Node bus is a standard VME - BUS with the Motorola MVME162LX processor board located in the first (i.e., bottom) slot. This board has a 25mHz 68040 processor, and is the master processor for the system. It is designated as the "A" processor in the multi-processor hierarchy. This board performs several tasks such as:

- network communication with the Macintosh computer
- managing memory
- downloading software from the Macintosh
- sending and receiving data to/from the other processors in the system.

This board contains the Motorola 162VME Debugger and the GML Test program in on-board EPROMs. Upon power-up, the MVME162LX may be instructed to download its operating system from the Macintosh, or boot from the software in its EEPROMs.

- Refer to the Appendix B - **Booting the GML Node** for more information.

The "A" processor can be visually recognized by the 4 serial in/out ports labeled CONSOLE 1,2,3,4. CONSOLE 1 becomes "PORT 0" on the GML Node's rear panel. CONSOLE 2 becomes "PORT 1" on the GML Node's rear panel.

The MVME162LX Motorola computer board has a standard Industry Pack (IP) parallel interface board to interface with the Master Control Panel. In order to drive the LEDs on the Master Control Panel, the IP board is buffered by the GML 9402 p/c board which is mounted elsewhere inside the GML Node Enclosure.

### 13.1.3 The “B” Processor Board

Slot 2 in the VME rack is occupied by the “B” processor. The “B” processor may be either an Omnibyte OB68K/VME1, or a GreenSpring SBC3 or SBC4 processor. This board is strictly an I/O processor, which sends and receives data to/from the faders and switches via the GML PERI board.

The only performance difference between the OB68K/VME1 and SBC3(4), is raw speed. The OB68K VME1 runs with a 12MHz 68000 Motorola processor, while the SBC3(4) has a 16MHz 68020 processor. Therefore, the SBC3(4) is recommended to be installed in systems that have to run with more than 64 channels (including groups), and absolutely required for systems over 80 faders.

The SBC3 and SBC4 can be recognized by the fact that they are half-width (3U) boards. The OB68K/VME1 has a 26 pin 3M connector on its front panel and it is a full (6U) board.

### 13.1.4 Shared Global Memory Board

Slot 3 has a Motorola memory board with 1, 2, or 4 megabytes of RAM installed. All processors in the GML Node have access to this memory. Its base address is 0x400000.

### 13.1.5 The PERI Board

The PERI board resides in slot 5 of the ELMA enclosure and slot 6 of the Electronic Solutions enclosure. This board is the interface for all signals between the “B” processor and the console.

### 13.1.6 The SMPTE Board

The SMPTE board is found in slot 7 of the Electronic Solutions enclosure and slot 4 of the ELMA enclosure. This board is comprised of two half width boards: the Mizar 8115 68000 processor, and a GML 8740F SMPTE board. Its purpose is to interface machines and incoming SMPTE code. The board runs independently, locking to the incoming SMPTE signal, checking for valid SMPTE data, and running a “flywheel” that actually generates the system time reference. It places the time reference in memory where the “A” processor uses it to build the decision list.

### 13.1.7 The Tape Controller Board

The Tape Controller Board is usually mounted on the back panel of the GML Node. Its purpose is to interface the GML SMPTE Board / GML Application Board with the user's tape machine to provide PLAY, STOP, FAST FORWARD, REWIND, SEARCH TO PLAY, SEARCH TO STOP functions. The SMPTE signal is also carried through this board.

GML does not provide full connections to machine remote control input connectors at this time. Recommended connections for the minimum interface are given in Appendix G - **SMPTE/Machine Interfaces**.

## 13.2 Troubleshooting

The information in this section is intended to provide the user with the necessary tools to quickly locate a problem and fix it. If, after performing the tests and the suggested fix the Automation does not work properly, the user should call GML with the following information:

- your telephone number, the Studio Name and the Room Name (if necessary),
- the name of your technician,
- the exact way the failure acts, and the situation leading up to the failure,
- the tests performed to reveal the failure,
- the description of the steps to attempt to fix the problem,
- how urgent the problem is,
- if the problem is Macintosh related, please provide the information discussed in section 1.3.1 **In case of problems**.

### 13.2.1 Things to look for in case of a failure

#### 13.2.1.1 Failure during boot up

When the user double-clicks on the GML System 7 icon, the Macintosh attempts to establish an Ethernet connection with the GML Node. When a connection is established, the Macintosh will continue to initialize the GML Node. If the Macintosh is unable to connect to the GML Node, a dialog will be displayed asking for the GML Node's IP address. Make sure the IP address displayed is indeed the correct IP address for the GML Node.

If the IP address is correct and this step has been repeated several times, you will need to troubleshoot the GML Node, the Macintosh, or the physical network. In this situation, it is helpful to run ZTerm in the background in order to see the GML Node's responses during boot up. Connect a serial terminal to "PORT 0" of the GML Node. Refer to sections 14.1 **GML Guidelines for Correct Network Operation** and section 14.3.2 **How to Use ZTerm to Monitor Network Activity**.

#### 13.2.1.2 Failure of the Macintosh computer

Should your Macintosh crash while booting up, the problem may be software related. Try re-booting the Macintosh with the Extensions disabled. To disable the Extensions, hold down the SHIFT key while the Macintosh reboots. When the start up screen displays the message "Extensions Disabled", you may release the SHIFT key. If your Macintosh still crashes, you may have a hard disk or a hardware problem with your Macintosh. In this case, refer to your **Macintosh User Guide** for more troubleshooting information.

#### 13.2.1.3 Failure while mixing

The Macintosh computer and the GML Node run independently, transferring data to each other. If the Ethernet connection is lost during a session, the Macintosh computer will continuously wait for a response, while the GML Node will continue to communicate with the console. If this happens, check or replace the Ethernet cable. If this does not resolve the problem, there may be no way to retrieve any unsaved data in the GML Node's memory. You will need to reboot the Macintosh and the GML Node and refer to section 14.1 **GML Guidelines for Correct Network Operation**.

While mixing, the SMPTE time code is displayed on the GML Main Screen and the SMPTE Indicator should be lit red, indicating the GML Node is *receiving* the time code. If this does not happen then:

1. Check the SMPTE connection.
2. Check if the GML Node is actually connected to the SMPTE source by testing the cable with an Ohmmeter or using a scope.
3. Perform a hardware verification directly on the GML Node for SMPTE.

Open the front (on the ELMA rack) or rear (on the vintage GML assembly) panel of the GML Node and check for the yellow SMPTE indicator on the SMPTE board (the 8115 Mizar Processor).

4. Check if the Macintosh computer has crashed.
5. Verify the SMPTE code with a SMPTE reader.
6. Verify that the GML Node does work by using a known working SMPTE generator directly to the GML Node SMPTE connection.
7. Re-initialize the SMPTE board.

Initializing causes the SMPTE processor to analyze the incoming time code and to sync to the incoming SMPTE and perform correct tracking of the tape at high resolution. A previous user may have saved the SMPTE parameters in the Project Folder, which might not match the actual SMPTE signal. This occurs when one uses a Project Folder that someone else has used, or when the same project has implemented different tapes that were recorded on different machines.

• Refer to section 10.6.2 **SMPTE and Machine Preferences** window for Re-Initialization procedures.

The SMPTE signal may act erratically if the SMPTE source is providing bad SMPTE data. Check by connecting a known-reliable SMPTE generator *directly* to the GML Node. If this solves the problem, then the SMPTE recorded on the tape may be bad. If the studio technician has established that the SMPTE source is bad, then your best choice is to re-record SMPTE on your tape. Make sure this does not affect any synchronization with other tapes or other records in your project. If re-recording SMPTE is not an option then you will have to reshape the SMPTE signal. Do not forget that the SMPTE signal is a digital recording in an audio frequency domain. Any digital resaper will do the job.

#### 13.2.1.4 Failure while playing back a mix

If the mix does not play the correct data, you should:

1. Check that the GML Fader Power Supply is turned on.
2. Make sure the SMPTE is correct as discussed in section 13.2.1.3 **Failure while mixing**.
3. If the SMPTE is valid, make sure a mix is in memory.

Open the **Command Line** window and type "size <return>". A size of 1024 bytes will indicate that there is no mix in memory. However, anything above 1024 bytes indicates that there is a mix in memory.

The reasons for not having a mix in memory are:

1. Starting to mix without pushing the ENABLE button ...
2. Starting to mix without setting the console in UPDATE / WRITE ONLY mode.

Even if a mix is in memory, nothing will be played back until:

1. The ENABLE button is turned on ...  
and ...
2. The console is set to READ ONLY mode or UPDATE mode.

Note that if one starts the playback with the console in WRITE ONLY mode, the mix will *not* be played back and the data will be erased at the “starting” time. If this has happened by mistake, hit, (*while SMPTE is running,*) the RUN / ABORT button. This will restore the mix data.

If there is a mix in memory, but the faders will not move, then:

1. Check that the GML Fader Power Supply is turned on.
  2. Make sure one of the Fader I/O boards is not defective and is jamming the external bus.

If it is necessary to remove one or more Fader I/O boards, then do so only *from the far end of the console*. Then, open the **System Hardware Preferences** window and redeclare the number of channels minus the faders that were taken out. If the number of channels is not redeclared, the missing Fader I/O boards will generate noise that will be transformed in a *huge* amount of data and the GML Node will quickly run out of memory. If the number of faders declared exceeds the number of physical faders, the noise taken from the fader I/O boards will be interpreted as data, which will eat up the memory.

3. Check the 50 pin cables that link the GML Node and the I/O rack.

If the switches do not play back, than there are three possibilities for this:

1. Either the switches are not properly configured in the **System Hardware Preferences** window.
2. A Switch I/O board may be bad.
3. Check the 50 pin cables that link the GML Node and the I/O rack.

Note that the mute data appears on Data Line 0, which is on pin 1 in the 50 pin PERI ADDRESS cable (a random-access address/data bus). If this wire is broken, no mutes will be played. However, the other switches *might* work. If switch 3 is used for “MCUT” in a Neve VR console, for example, the data appears on pin 3 of the 50 pin PERI ADDRESS cable. Switch 4 data, perhaps used for “EQ”, appears on pin 4, and so on.

## 13.2.2 Most Common Problems

### Dang, my mutes won' t play back.

- Follow the steps in section 13.2.1.4 **Failure while playing back a mix.**

### The stupid mutes won' t follow the grouper.

If the mutes do not follow the grouper, then check the set-up in the **System Hardware Preferences** window. Both mutes and groups must be properly declared for the GML Node to “see” them. If they are configured properly and the problem is still present, follow these steps:

1. Assign all channels to one grouper.
  2. As you toggle the group fader's mute switch, all assigned channel's mute switch should follow.  
If no mutes follow, then the 50 pin cable PERI ADDRESS has to be checked or one of the switch I/O boards is broken. If some mutes follow and others do not, replace the corresponding switch card that drives the non-working switches.
3. Assign all channels to a different grouper.  
If mutes will follow some groupers, and not others, then the group switch card is broken and has to be replaced.

**The Touch Control on all, or some faders, works intermittently.**

The most common source of problems with the Touch Control on GML faders is, surprisingly, external to the system. The Touch Control works by sensing changes in a minute (100mv or less) high-frequency signal on the metal fader knob. It is kept small so that the crosstalk will be in the order of -90dB. Should there be a ground inconsistency, or a piece of equipment oscillating, or a switching power supply that has been badly shielded (as in, for instance, the original Sony 3324), these signals *will interfere* with the GML Touch Control's operation.

Your next possibility is a faulty fader track. If the wiper of the fader has lost its elasticity, and is barely touching the track, refer to section 13.2.6.1 **Troubleshooting the GML Fader** for cleaning the track and changing the wiper.

Even a person's skin can prevent the Touch circuit from working. If the skin is too dry, touching a fader knob may not activate the Touch circuit. In this case, a good hand lotion usually helps.

**Gosh, some of the faders, at the end of the console, have erratic LEDs, and their motors spin endlessly. What's with that?**

Those faders are not properly declared in the **System Hardware Preferences** window and they are not "seen" by the GML Node. Make sure the software is configured correctly and make sure all the Fader I/O boards are addressed correctly.

**My faders are grouped and as soon as I touch the grouper they jump to a certain position.**

This usually happens when faders are positioned at the bottom of the track (i.e., at infinity), and are assigned to a group. Ungroup the faders, set them at 0 dB, then regroup them.

**My faders are grouped and as soon as I touch the grouper, they jump a quarter of a dB from the previous position.**

The servo gain is out of alignment. Readjust the individual Fader I/O board(s) D/A calibrators described below in section 13.2.4.4 **Checking the alignment of the servo gain**.

**I know I wrote some movements with my faders, but gee whiz, nothing plays back.**

- Follow the steps in section 13.2.1.4 **Failure while playing back a mix**.

Check if the touch on the non-working faders works properly. You can easily check it by observing the SEL LED on the fader or the Touch Indicator on the GML Main Screen.

- Refer to the above section **The Touch Control on all, or some faders, works intermittently**.

**My faders are grouped and jump erratically as soon as I move the grouper.**

Either one bit in the data word is not transmitted to the I/O rack, or a particular Fader I/O board's D/A converter is malfunctioning. The first problem may be due to the fact that one of the 50 pin-cable PERI ADDRESS may be broken. Also, a Fader I/O board may hold that bit to ground or power supply if it has a bad interface chip. Perform the ROM tests described in section 13.2.4 to identify the source of the problem.

**System won't initialize, even if I play SMPTE.**

Make sure the SMPTE cable is not broken. If the SMPTE comes through a patch-bay, then check for the proper set-up.

- Follow the steps in section 13.2.1.4 **Failure while playing back a mix**.

**SMPTE does not read on the GML Main Screen.**

- Follow the steps in section 13.2.1.4 **Failure while playing back a mix**.

**What the heck! After booting the Automation, the console does not look like it's being initialized.**

Check the **System Hardware Preferences** window for proper declaration of the B processor.

**The Macintosh computer won't communicate with the GML Node.**

Check the set-up and the tests described in section 14.1 **Guidelines for Correct Network Operation** section.

### **My mix eats up a lot of memory.**

Some mixers keep touching the faders while waiting for a certain event to happen (a drum beat, an intro of the vocals, a silent passage). By doing so, they will record a lot of data in the memory *even if the fader is not moved*. There is a certain style of recording a mix with GML Automation that comes with experience. Mixers should try to touch the faders only when they want to move them.

### **When I open the faders to clean them, there are crumbs inside the fader. Does GML allow its people to eat while assembling the faders?**

Yes, GML does allow its people to eat, but they refrain from doing so while assembling the faders. This sounds like a problem on your end. The solution is to not feed your mixers while they are mixing. Note: Please disregard if you're a union house.

## **13.2.3 Testing the GML Node**

### **13.2.3.1 The Power Supply**

For the Electronic Solutions enclosures

The power voltage may be measured on the VME motherboard power connector. The pins are as follows:

- 1,2,3 (GND)
- 5 (-12V)
- 6,7,8,9 (+5V)
- 10 (+12V)
- 11 (+5V standby)

For the ELMA enclosures

The power voltages are labeled on the VME motherboard.

### **13.2.3.2 68040 Processor tests**

The "DIAG" environment.

1. Connect a terminal to the GML Node.
  - Make sure the terminal is connected at PORT 0 of the GML Node.
  - Refer to section 14.3.2 **How to Use ZTerm to Monitor Network Activity for viewing the data on the Macintosh.**
2. Quit the Automation application.
3. Reset the GML Node.
4. After the GML Node has initialized, press <Control>-<C>.
  - This will provide you with a prompt.
5. At the 162bug> prompt type "sd <return>".
  - The prompt will change in 162diag>. The GML Node is now ready for the 68040 processor tests.
6. Type "st <return>".
  - This command will start the "A" processor self test, which is a Motorola MVME162LX board.
7. Make note of any reported errors and call GML for assistance.

## **13.2.4 GML Automation Test Procedure ('ROM' tests)**

### **13.2.4.1 Setting up the GML system for testing**

1. Tests have to be performed using a terminal connected at "PORT 0" of the GML Node.

Some users may have a Freedom One terminal. Others may use a terminal emulator for Macintosh, like ZTerm.

- Refer to section 14.3.2 **How to Use ZTerm to Monitor Network Activity for viewing the data on the Macintosh.**

2. Reset the GML Node.
3. After the GML Node has initialized, press <t>.
4. Then chose "T" from the list. The system is ready to be tested.
5. Turn the main GML Power Supply on, and then the Fader power.

#### 13.2.4.2 Computing Fader Addresses for testing

The ROM tests will ask for a specific address for a fader or switch under test. The hex addresses are as follows for an 8 group system (16 & 24 group systems will be different):

Group 1	0x00
Group 2	0x02
Group 3	0x04
Group 4	0x06
Group 5	0x08
Group 6	0x0A
Group 7	0x0C
Group 8	0x0E
Input 1	0x10
Input 2	0x12
Input 3	0x14
Input 4	0x16
Input 5	0x18
Input 6	0x1A
Input 7	0x1C
Input 8	0x1E
Input 9	0x20
Input 10	0x22, etc.

Note, that if you have seven groups and a stereo fader, the groups will have addresses from 0x00 to 0x0C, while the stereo fader will be addressed as 0x0E. Usually, the stereo faders will be set to addresses immediately following the groups. If the system has more than 8 groups plus stereos, then the input addresses will be incremented by 0x10. For example, suppose a console is configured for 8 groups and 3 stereos. Groups will have addresses 0x00 to 0x0E and the stereos 0x10 to 0x16, and the inputs will start at 0x20.

The user should be aware that the stereo faders might be connected at the last inputs of the console. In this case, the GML Node will “see” them like regular inputs and *will not* call them with the GML abbreviations s1, s2, s3.

The switch address and the fader address *have to be identical* for each input channel.

#### 13.2.4.3 Checking the position value returned by each fader

1. From the “Main” menu, press 1 to start the **Get the A/D Value** test.
2. Enter the address of the fader you wish to test.
3. Move the fader up and down while watching the terminal screen.

The hex value will show the voltage at the control track of the fader. When the fader is at the bottom (infinity) the value is 0x000, and when at the top the value is 0x3FF.

4. Move the fader slowly and check the range of the hex value.

You should be able to watch the value increase bit by bit. The value should move smoothly between the values of 0x0000 - 0x3FF.

#### 13.2.4.4 Checking the alignment of the servo gain

1. From the “Main” menu, press 2 to start the **Recirculate** test.
2. Position the fader under test to 0 dB.
3. Enter the address of the fader under test.
4. Perform the servo gain adjustment if needed.

If it moves towards the top or bottom, then the servo gain is out of alignment. This is due to the fact that the computer takes the value of the control voltage provided by the fader and sends it back to it. If the overall gain is adjusted, then the control voltage sent by the computer will result in no movement of the fader. The screen will show both value read and value sent.

#### Steps for performing the gain alignment

1. Turn the fader power supply off.
2. Turn the main power supply off.
3. Take an extender board and connect the corresponding fader I/O board with the extender in the I/O rack.
4. Turn the main power on.
5. Turn the fader power on.

6. Adjust the servo gain pot on the Fader I/O board.

Continue adjusting the pot until the fader stops moving. If it does not, re-position the fader knob at 0dB and continue with the pot adjustment till the knob no longer moves.

Note: On the Fader I/O board, the least significant fader is connected at the bottom of the board. For example, for faders numbered 25 through 32, fader 25 is connected at the bottom 26 pin 3M connector and fader 32 is connected at the top.

#### 13.2.4.5 Checking fader movement

1. From the "Main" menu, press 3 to start the **Go To A/D Value** test.
2. Enter the address of the fader under test.
3. The fader should jump to the A/D value recorded at test 1.
4. Press 4 to start the **Fader Zig-Zag** test.
5. Enter the address of the fader under test.

The fader should start moving up and down. If no *Get A/D Value* test has been previously performed the fader will move between the bottom of its track and the top of its track. Otherwise it will move between the A/D Value taken at test 1 and a hex number given by the difference: A/D Value - 1FF.

#### 13.2.4.6 Checking the LEDs for each fader

1. From the "Main" menu, press 5 to start the **Check LEDs** test.
2. Enter the address of the fader under test.
3. The fader LEDs should start blinking.

#### 13.2.4.7 Checking the data transmitted by each switch to the computer

1. From the "Main" menu, press 6 to start the **Scan Switch** test.
2. Enter the address of the switch under test.
3. Toggle the Mute switch on and off. Watch the screen and notice the hex value.

If there is a one bit change while toggling the mute, then the mute switch works properly.

#### 13.2.4.8 Checking mutes toggling

1. From the "Main" menu, press 7 to start the **Toggle Switch** test.
2. Enter the address of the switch under test.
3. The mute switch under test should start blinking.

#### 13.2.4.9 Checking the Touch and Select functions

1. From the "Main" menu, press 8 to start the **Get Touch/Sel** test.
2. Enter the address of the fader under test.
3. Touch the knob. The hex value should be 0x8000.
4. Press the Sel button. The hex value should read 0x4000.

#### 13.2.4.10 Checking the Master Panel

1. From the "Main" menu, enter 9 to start the **Test Master Panel** .
2. Push the buttons of the Master Control Panel. The hex value should read as follows:

SOLO	0x0001
CONFIGURE	0x0002
ALTERNATE	0x0004
GROUP SELECT	0x0008
PRESET MUTE	0x0010
PRESET FADER	0x0020
ENABLE	0x0040
RUN/ABORT	0x0080
SELECT 1-4/5-8	0x0100
4/8	0x0200
3/7	0x0400
2/6	0x0800
1/5	0x1000
SNAPSHOT TAKE	0x2000
SNAPSHOT RECALL	0x4000
ALL	0x8000

If the reading is different, in most of the cases, the 50 pin cable connecting the Master Control Panel has broken wires.

## 13.2.5 Tests performed after booting up the Automation

### 13.2.5.1 Testing the GML mutes

#### With the solo mode

A simple test for MUTE performance is the solo mode. This tests the ability of the computer to read and write mutes. It also tests if the fader and switch cards are addressed correctly.

1. Set a recognizable pattern of mutes, across the console.
2. Press each SEL button and see if the corresponding channel is soloed.
3. Invert the pattern and repeat.

The integrity of the pattern should remain. Mutes set on should remain on while mutes set off should be toggled by the solo function on and off as pressing the SEL button on the soloed fader.

#### With the group mode

1. Group some channels to a grouper.
2. Toggle the mute switch on the grouper.  
The corresponding mutes on the channels assigned to the grouper should follow the grouper's mute switch.

### 13.2.5.2 Testing the faders

1. Position all faders at 0 dB.
2. Assign the faders to a number of groupers.
  3. Move the groupers up and down slowly, noting whether the slave faders show any signs of jumping. The slowest possible move on a grouper will cause the slave faders to increment or step forward, but no reverse motion should ever be seen.

#### Servo gain test

For input faders

While holding the grouper stable, touch each fader in the group several times, being careful not to move them. If the fader moves from its position, the servo gain needs adjusting on that fader.

- Refer to section 13.2.4.4 **Checking the alignment of the servo gain.**

For groups

Servo gain should be tested for group masters as well. Do this by repeatedly taking a snapshot and recalling it. If the faders creep, the gain needs to be adjusted.

- Refer to section 13.2.4.4 **Checking the alignment of the servo gain.**

### 13.2.5.3 Testing the mix

The mix can be easily tested. Just save the mix in a your Title Folder and start the Walk application located in the Utility folder.

- Refer to Appendix O - **GML Walk Documentation.**

## 13.2.6 Troubleshooting the System Peripherals

### 13.2.6.1 Troubleshooting the GML Fader

#### Schematics

- Refer to Appendix I - **GML Board Schematics.**
- Refer to Appendix G - **SMPTE/Machine Interfaces.**

#### 13.2.6.1.1 Theory of operation

The fader has an audio track and a control track. The control track receives 10V reference voltage at the top of its track. Depending on the position of the fader, the returned voltage to the computer is a value between 0V (knob at the bottom) and 10V (knob at the top). The fader knob is electrically connected through the wiper and a 0 ohms track to the fader board. As soon as the operator touches the knob, they will modify the capacitance of the fader's internal oscillator. The oscillator is an LF411 IC which oscillates around 200KHz. By touching the knob, the frequency will decrease to 20KHz, enough to be detected by the following rectifiers and 74C14 Schmidt Triggers. The output will change from 1 to 0 and the Fader I/O board will transmit the information to the PERI board, in the Node.

Note: If the 74C14 has to be changed, you must use the same type of IC. If a faster HCMOS, or a TTL chip is used, this will result in the malfunction of the touch function.

#### 13.2.6.1.2 Cleaning the track.

Cleaning a GML fader requires attention and care. The easiest way to open the fader is to open the left panel first then the front panel. Carefully remove the front panel because it has wires connected to the switches. Make sure these wires do not interfere with the wiper's movement, otherwise you will bend the wiper's brushes which are *unfixable*. Remove the right fader panel (i.e., the side with the track). Unsolder

the touch wire that is connected to the track to the corner of the fader pcb. Carefully remove the panel and track assembly, paying special attention to the wires. Also remove it vertically to gently release the wiper. Clean the track with a solvent and lubricate it with a thin film of 200cs. viscous silicone oil.

Notes:

Do not forget to lubricate the fader, otherwise the wiper will scratch the track in a couple of weeks.

Do not use too much oil, or you will cause the fader to be noisy.

Do not remove the track from the right panel of the fader. It has been precisely mounted for a good match with the fascia of the fader.

Re-assemble the fader following the same steps in a reverse order. Pay attention to the wires so they do not interfere with the wipers movement.

#### 13.2.6.1.3 Changing the wiper.

Disassemble the GML fader as described above. Upon exposing the wiper, you will notice it's mounted with screws on the fader knob. When replacing it, make sure the bus wire that connects the knob and the touch brush does not touch the ground.

#### 13.2.6.2 Troubleshooting the Fader I/O board

##### 13.2.6.2.1 Theory of operation

Each Fader I/O board drives 8 faders at a time. It has a switchable address which the computer uses to identify a specific Fader I/O board. Each Fader I/O board has 8 groups of circuits, called cells. Each cell controls a single fader. Thus the hex address of a fader will be computed by adding the hex address of the Fader I/O board and the hex address of the position of the fader on board. For example, in a console with no more than 8 groups plus stereos, fader number 27 will have the address 0x44:

0x40 Fader I/O board

0x04 position of the fader on board.

Notes:

- The faders are connected to the Fader I/O board with 26 pin flat cables and 26 pin 3M connectors. The Fader I/O board is inserted vertically in the I/O rack.
- The least significant fader in the group is connected at the bottom connector. Thus, fader number 27 in the console is connected at position 3 on the Fader I/O board.
- The fader addresses are only even numbers. Therefore the position of each fader on the Fader I/O board is:

Position 1	0x00
Position 2	0x02
Position 3	0x04
Position 4	0x06
Position 5	0x08
Position 6	0x0A
Position 7	0x0C
Position 8	0x0E

The Fader I/O board uses U4, U5 and U6 to decode its address. Once the address is decoded, the operation of writing and reading data, to and from faders, is accepted.

The DAC1000 converts the control voltage for each fader through U11. Because this voltage changes rapidly, each fader's driving cell has a Sample and Hold OpAmp, LF398, to hold it for the period of time that the computer scans the entire console and re-updates the fader control voltage. In each fader driving cell, there is a Quad OpAmp LF347, that compares the voltage value received from the computer, with the one that the control track has at that particular moment. The resulted error voltage at the output 14 of LF347 will drive the motor with the power transistors MJE700/800. DG390 is a switch used to disconnect the motor when the knob of the fader is touched. The touch status is also sent to the computer using CD4066.

The knob position for each fader is a voltage value between 0 and 10V presented at the input 10 of LF347. The voltage is then sampled with DG507 and sent to the PERI board, in the GML Node, where an Analog to Digital Converter converts it to a digital value.

LF412 is responsible for the voltage references for the fader control track and the DAC1000.

CD4724, U3, sends strobes to the Sample and Hold OpAmps.

74C154, U8, sends enable strobes for reading / writing data from / to faders.

##### 13.2.6.2.2 Locating the broken Fader I/O board.

If a group of faders does not work properly, the first solution will be to change the Fader I/O board.

Usually, the bad behavior of faders will be noticed in groups of eight. If the faders in the whole console acts strangely, the easiest way to locate the problem is to pull out Fader I/O boards (with the GML power

off), one at a time from the I/O rack. Of course some of the faders in the console will be shut off, but the behavior of the others will undoubtedly tell the technician if he/she has pulled the broken card.

### 13.2.6.3 Troubleshooting the Switch I/O board

#### 13.2.6.3.1 Theory of operation

The Switch I/O board controls switches in groups of 8. You will notice eight 26 pin male connectors, numbered 0 through 7. Connector 0 is dedicated to drive eight mutes. Usually it will be connected to a daughter pcb called the Scramble board. The Scramble board's only purpose is to drive and read the status of the relays.

The Switch I/O board is connected in the I/O rack. It has a switchable address which the computer uses to identify a specific Switch I/O board. To locate a switch address use the same technique for computing a fader address.

Connectors 1 through 7 are used to drive other switches in the console. For example, if one would like to automate some other computer-accessible switches as in a VR console the *MCUT*, *EQ*, *SCUT*, and *INS*, one would use connectors 2, 3, 6, 7.

Note: When using the ROM test for such a configuration, toggling switches would result in toggling all of the switches at the same time.
--

ICs U3, U4, U14 decode the address of the Switch I/O board. The switch data for each switch function is received serially, through one of the inputs of 74C244, U1 or U2. We will discuss the Mute switch control circuitry here, but the others are the same.

The mute data enters through pin 8 of 74C244, U1, and is presented to CD4724, U27, U28 inputs. The purpose of U27 and U28 is to set the switches OFF or ON depending on the data received. The enable signal for these circuits is the output of 74C89 16x4 Random Access Memory, U11. This memory is used for storing the mask data, whenever a switch is not activated. The write enable for the memory is permitted only when bit PA8 is set low. The status of each switch is read with 74C373 U31...38. Then it is sent to the computer through the same 74C244, when pin19 is set low. IC 74C42 is a BCD to decimal decoder that provides enable signals for U31...38. To locate a broken Switch I/O board, use the same method as for Fader I/O board. Note that as opposed to the fader, the switch data arrive serially on PD0. If that connection is broken, *no mutes will work in the console*. In this case, one may be confused by the fact that the faders still work. The faders will miss just the least significant bit in their *parallel data* resulting in a small, unnoticeable jumpiness of movement.

## 13.2.7 Maintenance of the GML Network Automation System

### 13.2.7.1 Fader maintenance

It is recommended that the studio technician tests the system on a regular basis. Thus, fader problems will be discovered in time and the system will always be ready. A fader with a worn out string, gives an impression of heaviness, or dragging when moved. If the string is frayed it has to be changed immediately.

Whenever a fader is open, do not forget to clean it as described in section 13.2.6.1.2 **Cleaning the track**. In addition, lubricating the wiper rails is strongly recommended. When lubricating the fader, care should be taken so that the oil does not touch the string, because, the friction on the motor shaft will decrease.

If the audio signal is scratchy, try to clean and lubricate the track first while moving a fader. If the problem does not go away, replace the track.

The fader digital ground is floating against the console ground. The ground of the faders and I/O rack is connected at the GML Node ground. Whenever there is any problem that seems unsolvable, check if there is an unexpected ground connection to the console. You should do this at least once a year. Here is how to do it:

1. Disconnect the GML Node power cord from the 110V power outlet.
2. Disconnect the Power Supply power cord from the 110V power outlet.
3. With an ohmmeter, check the resistance between the 110V outlet ground and the GML Node ground. If there is any resistance, it is because the console chassis is touching the faders ground. This will result in erratic behavior of the Automation.

### 13.2.7.2 I/O rack, fader I/O boards, switch I/O boards

Like with any electronic equipment, the I/O boards and the Power Supply should be dusted at least once a year. Also, cleaning the I/O rack connectors will be very helpful. The I/O boards have gold plated edge connectors. If the GML Node computer is in a particularly dirty location (such as anywhere in Los Angeles), the studio technician should clean these connectors with an eraser, at least once a year.

When unexplainable things happen, check the power supplies. The GML Fader Power Supply should be 12V +/- 0.1V, +16V and -16V, with a drop of no more than 2V under simultaneous fader movement (*all* the faders are moving).

### 13.2.7.3 GML Node maintenance

The GML Node should be dusted at least twice a year.

Special care should be taken in maintaining the 50 pin cables, PERI ADDRESS and PERI POWER. Under no circumstances should these cables be stepped on or made longer than 28 feet. Remember that the 50 pin cables are the external bus of the GML Node and they cannot take much abuse and mishandling.

## 14. Appendix

### 14.1 Appendix A - Guidelines for Correct Network Operation

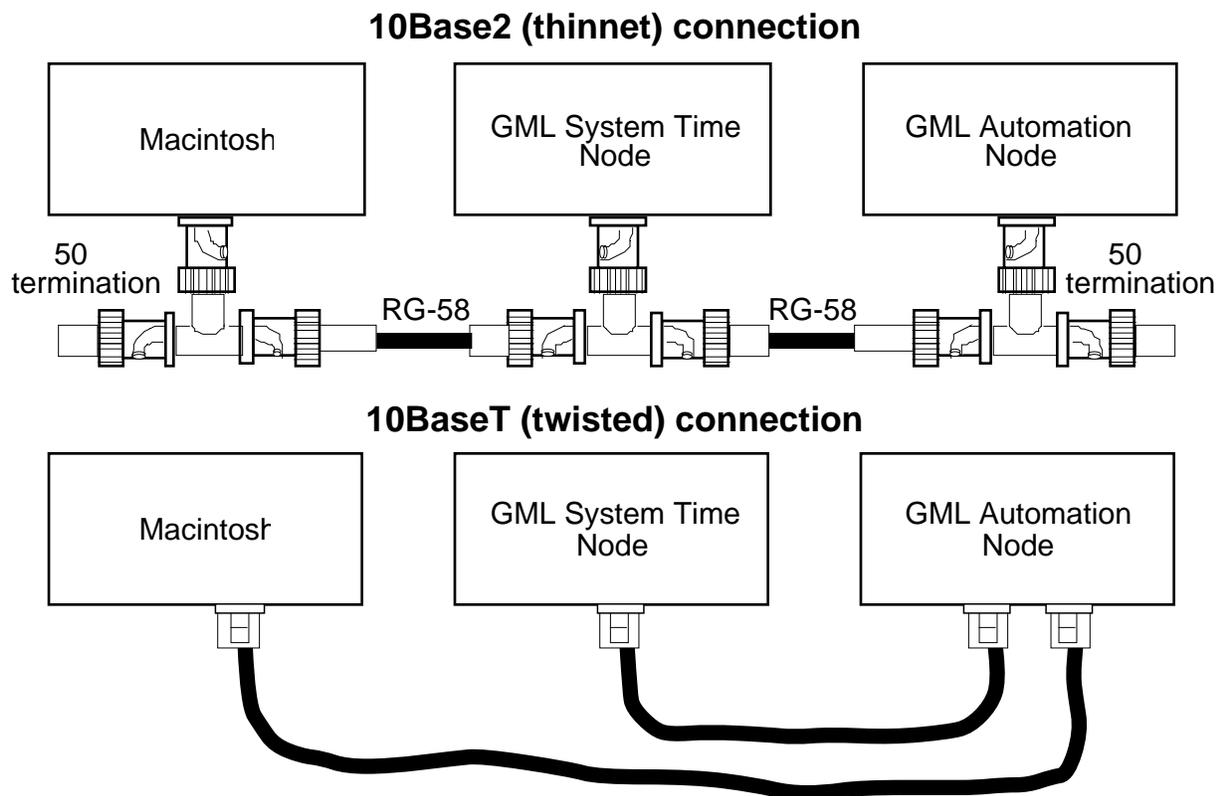
**For proper operation of the GML Fader's Touch Detector, the Macintosh and all Macintosh-connected peripherals must be ground-lifted!**

#### 14.1.1 Introduction

The GML Automation code runs on the GML VME Computer, which we call the GML Node. The GML Node communicates with the Apple Macintosh by means of TCP/IP network protocols and GML Network Automation protocol across Ethernet physical media (we use 10base2, also called ThinNet). The network uses RG-58 cable terminated with BNC connectors, tees and 50 $\Omega$  terminations as shown in the following pages.

#### Step 1: Connect the Ethernet Cable, and Adapters (if necessary)

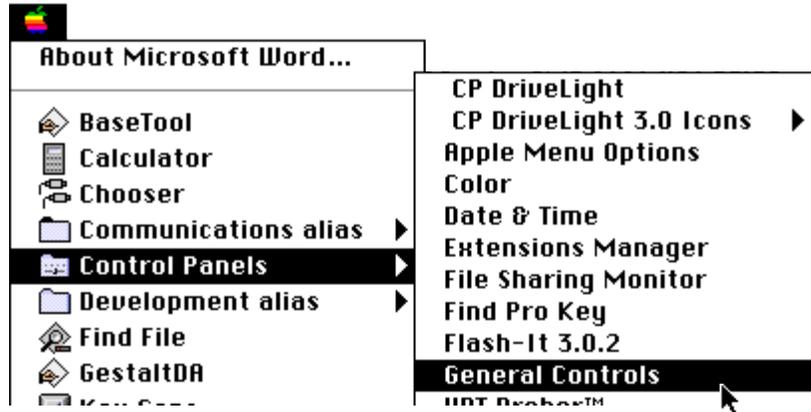
GML Automation Systems are shipped either equipped with 10Base2 ("thinnet"), or 10BaseT ("twisted") physical Ethernet networks. For proper system operation of a 10Base2 network, the cable connecting the AAUI ThinNet Transceiver (also called a "Media Access Unit") on the back of the Macintosh and the BNC network connector on the rear of the last GML Node in the chain *must be terminated with 50 $\Omega$  BNC terminators on BNC "tee's" as shown:*



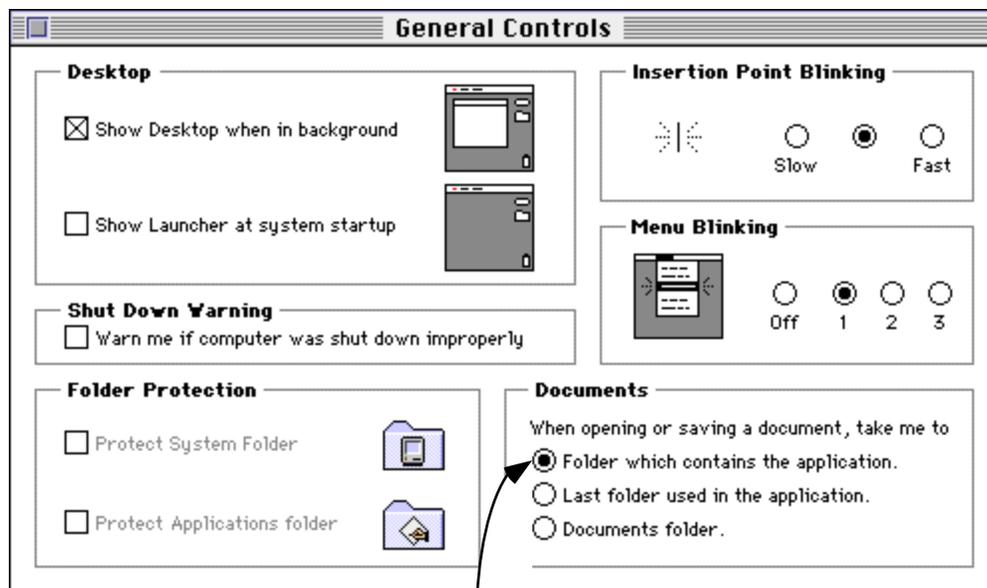
**Failure to provide correct, faultless cabling and termination will completely disable the network! This is far and away the most common problem that users have with GML Automation Systems!!**

## Step 2: Update the Macintosh General Controls Control Panel.

From the **Control Panels** sub-menu, select **General Controls ...**



... to display the **General Controls** Control Panel.

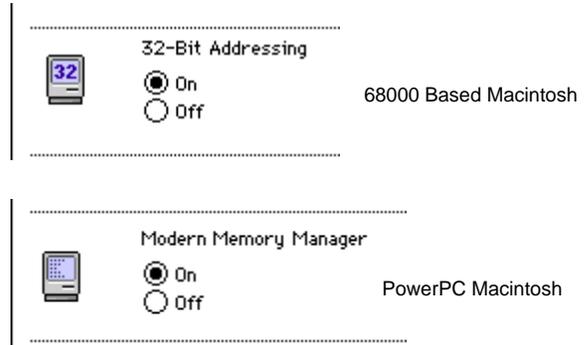


Make sure this is set.

Under the section titled **Documents**, make sure that the first radio button is checked. This allows for proper operation of the GML Automation System Project / Title Folder hierarchy. If this is set incorrectly, the application will not display the correct Project and Title Folder data. A problem which indicates that this button is not set, is that after a Project Folder is selected, the Title Folder dialog displays the Project Folder names and not the Title Folder names.

### Step 3: Make sure the Memory Control Panel is Configured Correctly.

Open the **Memory** Control Panel and make sure that the Memory is configured properly. If the memory is configured incorrectly, the application will run very slow (i.e., 30 seconds to open a window). If you have a 68000 based Macintosh, make sure the 32-Bit Addressing is turned ON. If you have a Power Macintosh, make sure the Modern Memory Manager is turned ON.



### MacTCP (68K) or Open Transport (Power Mac)?

MacTCP is used by 68K-based Macintoshes. Open Transport and the TCP/IP Control Panel are used by the newer Power Macintoshes and replace the MacTCP Control Panel. MacTCP and TCP/IP are used to configure the Macintosh's network capabilities. You need to know if your Macintosh uses MacTCP or TCP/IP because the steps to configure the Macintosh will differ.

Follow these steps to find which Control Panel your Macintosh uses:

1. Double click on your hard drive icon in the Finder. This will open a window listing the contents of your hard drive. Scroll until you locate the System Folder.
2. Double click on the System Folder icon. This will open a window listing the contents of System Folder.
3. Scroll until you locate Control Panels. Double click on Control Panels.
4. List the Control Panels in alphabetical order by selecting by **Name** from the **View** menu.
5. Scroll down the list of Control Panels until you find either MacTCP or TCP/IP. You should only be able to locate one of these. Once located, follow the preceding steps for that Control Panel.
6. If you have a 68000 based Macintosh follow the steps under 68000 Macintosh Setup. If you have a Power Macintosh follow the steps under Power Macintosh Setup.

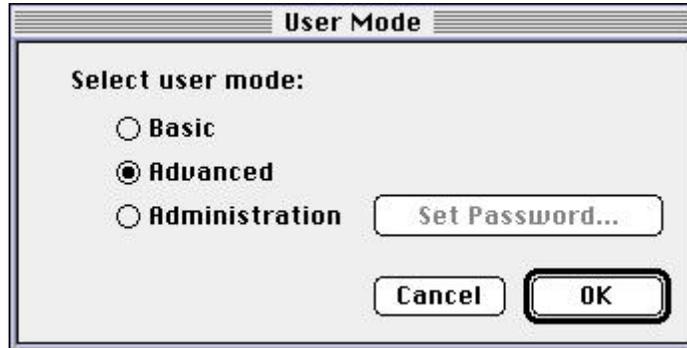
**NOTE:** If both MacTCP and TCP/IP are in the same Control Panels folder, you may run into problems. MacTCP and TCP/IP are not designed to run together. If both are found in the same Control Panels folder, you should reinstall the System software.

#### Step 4: **68K-specific Macintosh Setup**

Note: 68k computers are no longer supported with GML Network Automation.

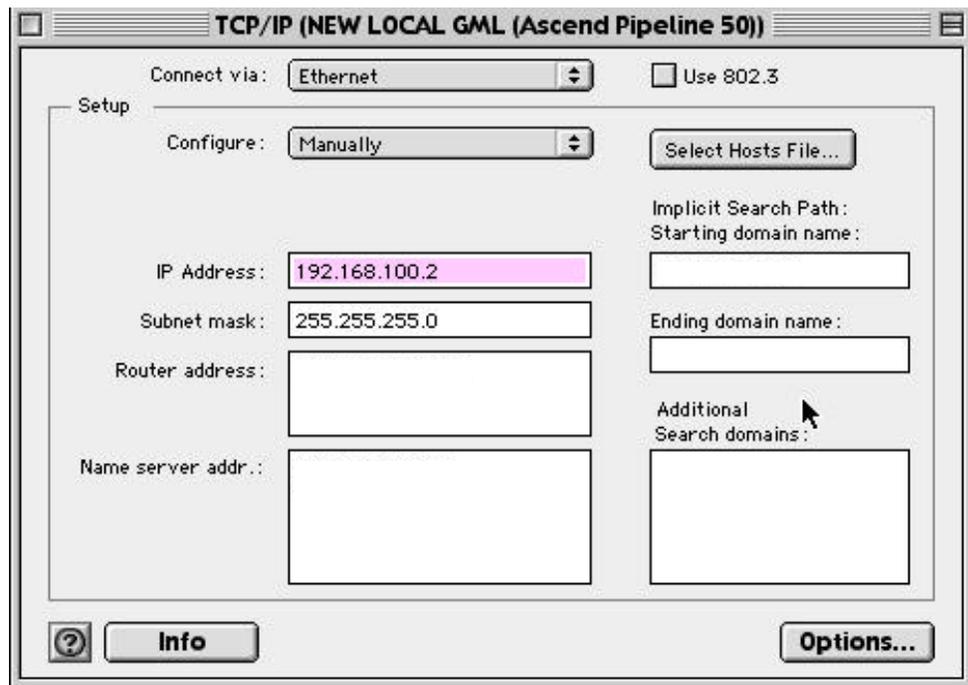
## Step 4: Power Mac-specific Macintosh Setup Configuring TCP/IP

Open the TCP/IP Control Panel by double clicking on its icon. TCP/IP has three modes of operation, Basic, Advanced and Administration. We need to use TCP/IP in the Advanced mode to ensure proper installation. To change modes, select **User Mode** from the **Edit** menu. This will bring up the **User Mode** dialog.



Select **Advanced**, then click on the **OK** button. The TCP/IP window will now be displayed in Advanced mode.

The two systems (the Macintosh and the GML Node) address each other by means of an "IP" address. This address is used when the Macintosh attempts to connect to the GML Node. The same IP address must be entered correctly in both the Macintosh's TCP/IP Control Panel and the GML Node. One may use different IP Addresses, however, IP addressing rules must be observed.



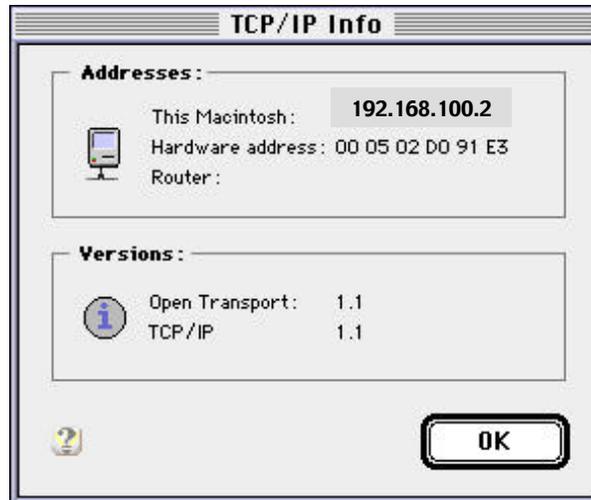
Select **Ethernet** from the Connect via pop-up menu.

Select **Manually** from the Configure pop-up menu.

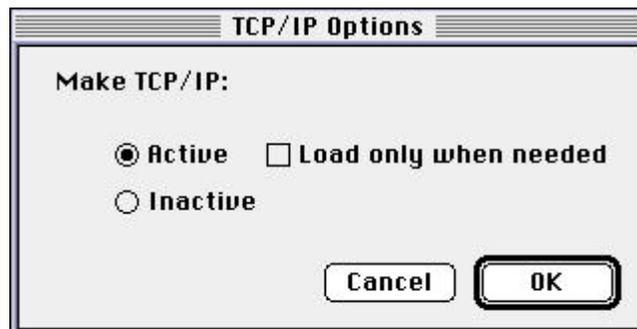
Please enter 192.168.100.2 as shown. Note that the numbers are separated by periods, and without spaces. Enter the Subnet mask as 255.255.255.0 as shown.

Note that the numbers are separated by **periods**, and **without spaces**.

In the lower left corner of the TCP/IP window is the **Info** button. Click on this button to check the version of the TCP/IP software. Make sure it is 1.1 or higher. If not, call GML and we can help upgrade your software. Versions prior to Open Transport 1.1 are not as reliable and conflicted with the application TFTPd. To get version 1.1 you need to upgrade your Macintosh System software to version 7.5.3. Call your dealer for upgrade information.



Click on the **Options...** button to bring up the **TCP/IP Options** dialog.



Make sure the **Active** button is set. If not, click on it then click the **OK** button. Close the TCP/IP window. A dialog will be displayed asking if you want to save the changes to the current configuration.

Click on the **Save** button.

## 14.1.2 Network Troubleshooting

### 14.1.2.1 The Macintosh and the Network

If the GML Node does not respond as intended, one should start troubleshooting with the Macintosh and the physical network.

#### Check the MacTCP or TCP/IP Control Panels.

Redo step 4 **Configuring MacTCP** or **Configuring TCP/IP**.

Note that most network parameter changes do not take effect until after the Macintosh is restarted.

If the Ethernet icon cannot be "selected" without error, one may assume that

...the AAUI Ethernet Transceiver is missing, broken, or improperly connected.

...the Ethernet cable is unterminated or discontinuous.

...the BNC connectors or 50 terminations are missing or improperly attached to the RG-58 cable.

After problems are confirmed and cleared, always restart the Macintosh.

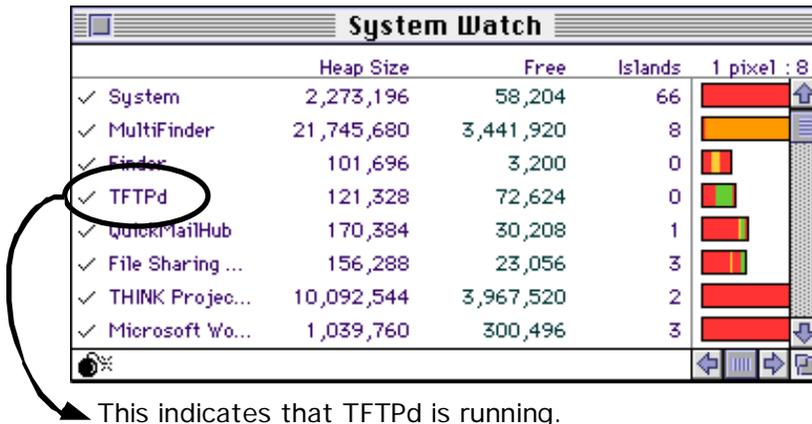
#### Confirm that TFTPd is running in background on the Macintosh.

TFTPd allows the Macintosh to respond to the GML Node's request for its operating system. TFTPd should be installed as shown in the System Folder as a Startup Item.

Locate the Startup Items Folder in the System Folder and open it. The TFTPd application should be seen in the Startup Items Folder.

One may verify that TFTP is installed and running by running the **Swatch** (System Watch) application. **Swatch** is located in the Utilities folder in the GML Application folder.

The screen should look like this:



This indicates that TFTPd is running.

If TFTP is missing from the **System Watch** window, it is not running. Without TFTPd running, loading "ga1" from the Macintosh will be impossible.

When **Swatch** is run on a Power Mac, at the far right of the dialog, the words "Damaged Heap - Bail" are displayed. This can be ignored.

### Rebooting with TFTPd.

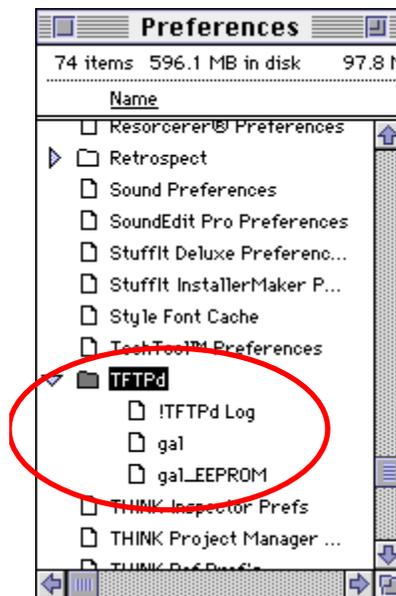
Your Macintosh needs to have completed its rebooting procedure before TFTPd can process or receive the GML Node's file transfer request. If the GML Node sends its request for a file transfer and TFTPd is not yet running, the request will go unanswered, and the GML Node will not be initialized. This problem can arise if both the Macintosh and GML Node are reset at the same time.

Here are two solutions:

1. Wait for your Macintosh to finish restarting before resetting or turning on the GML Node.
2. Have the GML Node store its operating system code in its EEPROM. This allows for much quicker initialization since the GML Node does not need to download the "gal" file from the Macintosh.
  - Refer to section 14.2 **Booting The GML Node** for more information.

### Verify that the boot files are in the TFTPd Folder.

The GML Node loads "gal" and "gal\_EEPROM" from the Macintosh. These files are found in **System Folder:Preferences:TFTPd**.



If one or both of these files are missing, search for them on your hard drive by using the **Find File** utility in the **Finder**. If found, drag them into this folder. If they still cannot be found you'll need to reinstall the application.

### Pinging the Net.

"Pinging" is a network command which looks for a specific IP Address on the net. You may "ping the net" from the GML Node and the Macintosh. This is useful for testing the network connections.

#### Pinging from the GML Node

The command is entered as follows (every space and period must be entered as shown):

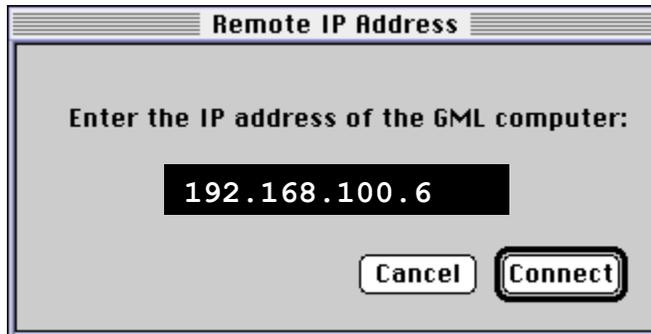
```
162-Bug>nping 0 0 192.168.100.6 192.168.100.2 1 <return>
Source IP Address      = 192.168.100.6
Destination IP Address = 192.168.100.2
Number of Packets Transmitted =1, Packets Lost =0, Packet Size
=128
162-Bug>
```

• *Refer to Appendix L - GML Ping Instructions.*

Both applications, Mac Ping and GML Ping check the network via your Macintosh.

**Unable to Create the Network Connections.**

If the application is unable to connect to the GML Node, a dialog box will be displayed in which an IP Address can be check and re-entered if necessary.



You can re-enter a different IP Address and click on the **Connect** button to try to connect to the new IP Address. This dialog will be re-displayed until a connection is made or **Cancel** is clicked on.

If a connection is still not made, click on the **Cancel** button and quit the application and follow these steps:

1. Use ZTerm to verify the nodes IP address, by pressing the "v" key on the Macintosh keyboard once you've established GML Node activity.
  - *Refer to Appendix C - How to Use ZTerm To Monitor Network Activity.*
2. Then bypass the application during boot up by holding down the SHIFT key on the Macintosh keyboard.
3. Enter the correct GML Node IP address in the **System Hardware Preferences** dialog.
4. Click on **Save & OK** and reboot the application. A connection should now be established.

### 14.1.2.2 The GML Node and the Network

#### Step 1: Connecting a Monitor to the GML Node.

If you have a Freedom 1 terminal from an old GML Automation system, it can be connected to the GML Node's rear panel connector "PORT 0". You can also use your Macintosh to monitor the GML Node, by using the terminal emulation program ZTerm and cabling appropriate to connect the Macintosh's Modem port to the GML Node's 26pin IDC connector. ZTerm is included in the installation disks, and is installed when a full installation is performed.

- Refer to section 14.3.2 **Using ZTerm to view Network Activity** for more information on using your Macintosh to monitor the network activity on the GML Node.

#### Step 2: Verifying TFTP Parameters

To verify the GML Node's TFTP parameters, type "niot <return>". This will list one parameter at a time. To view the next parameter, press the <return> key. To change a parameter, at the correct prompt for that parameter, type in a new value followed by pressing the <return>key. When you are done with all your changes, type a period followed by <return>. You will be asked to save the change. Type "y <return>". Again, the IP numbers may be carefully varied, but we recommend using 192.168.100.6 for the GML Node IP Address and 192.168.100.2 for the Macintosh IP Address.

```
162-Bug>niot
Controller LUN =00?
Device LUN      =00?
Node Control Memory Address =FFE10000?
Client IP Address      =192.168.100.6?
Server IP Address      =192.168.100.2?
Subnet IP Address Mask =255.255.255.0?
Broadcast IP Address   =255.255.255.255?
Gateway IP Address     =0.0.0.0?
Boot File Name ("NULL" for None)      =gal?
Argument File Name ("NULL" for None)  =?
Boot File Load Address      =00020000?
Boot File Execution Address  =00020000?
Boot File Execution Delay    =00000000?
Boot File Length            =00000000?
Boot File Byte Offset       =00000000?
BOOTP/RARP Request Retry    =00?
TFTP/ARP Request Retry      =00?
Trace Character Buffer Address =00000000?
BOOTP/RARP Request Control: Always/When-Needed (A/W)=W?
BOOTP/RARP Reply Update Control: Yes/No (Y/N)      =Y?
162-Bug>
```

#### Step 3: Resetting the GML Node

When the GML Node is reset, it loads its operating system code into memory from one of two sources, a file transfer from the Macintosh, or from its own EEPROM. The main difference is speed. Loading code via a file transfer requires the Macintosh to send the "gal" file. This takes about two minutes. Resetting from the GML Node's EEPROM is faster since neither the Macintosh nor the network is required, and it takes about ten seconds.

- Refer to section 14.2 **Booting The GML Node** for more information.

## 14.2 Appendix B - Booting The GML Node

The GML Node needs to be booted up (i.e., running its operating system), before the GML Node can communicate with the Macintosh. There are two methods in which the GML Node can boot up; via TFTPd and from its internal EEPROMs.

### 14.2.1 TFTPd

TFTPd stands for the Trivial File Transfer Protocol daemon. It is *not* a trivial program by any means! It runs in the background on the Macintosh waiting for a file transfer request from the GML Node. When such a request is received, TFTPd sends a file named "gal" to the GML Node. During a full installation, TFTPd is placed in the Startup Items Folder in the System Folder. This ensures that TFTPd is launched when the Macintosh is rebooted. It takes about 2 minutes for TFTPd to send the file to the GML Node. If the TFTPd application is not running when the GML Node requests the file transfer, the request will go unanswered, and the GML Node will not boot up.

Note that this method is used in the earlier Macintosh automation versions. This method of booting the GML Node is now rarely used. All systems should be configured to boot from their internal EEPROMs, described below, since it is faster, and the two computers can be booted independently of each other.

#### TFTP sequence

To start the TFTPd file transfer, type "<Control>-C" on the keyboard connected to the GML Node in order to get a prompt. Then, type "nab <return>". This will attempt to load the <gal> file from the Macintosh to the GML Node. Upon entering this command, you will see the following display from the GML Node:

```
162-Bug>nab <return>
Network Boot in progress... To abort hit <BREAK>
Network Booting from: VME162, Controller 0, Device 0
Loading: gal

Client IP Address      = 192.168.100.6
Server IP Address     = 192.168.100.2
Gateway IP Address    = 0.0.0.0
Subnet IP Address Mask = 255.255.255.0
Boot File Name        = gal
Argument File Name    =

Network Boot File load in progress... To abort hit <BREAK>

Byte Received =&222860, Bytes Loaded =&222860
Bytes/Second  =&8914, Elapsed Time =25 Second(s)

<gal>: 950422 v5.00
IP address = 0x7f000106
Ethernet address = 0x803e22617c
in_ifaddr = 71f94
so_StatusListenPort = 7ed00
so_CommandControlListenPort = 7eb00
so_MachineControlPort = 7e980
so_FileXferListenPort = 7e880
Initialized...
```

Note that the Server IP Address must match the IP Address that was typed in the MacTCP or TCP/IP Control Panel in order for the file transfer to succeed. The Client IP Address and the Remote IP Address used in the application must match, otherwise, the Macintosh will fail to connect to the GML Node.

"Initialized..." means the file transfer succeeded and the GML Node is now running the GML Network Automation System. The GML Macintosh Automation software can now be launched.

### 14.2.2 EEPROM

Booting the GML Node from its onboard EEPROM is very fast, usually taking about 10 seconds, and more reliable than booting from TFTPd. In order for the GML Node to be configured to boot from its EEPROM, the software must be burned into the EEPROM. The EEPROM can be written to many times and is electronically erased. The only way to do this is from the GML application. It is first necessary to boot the GML Node via TFTPd as described above.

Here are the steps necessary to burn the software into the EEPROM:

1. Run the GML Automation.

Ignore the Project folder selection by clicking on the **Cancel** button or by pressing the Esc key.

2. Select **System Hardware Preferences** from the **Preferences** sub-menu under the **Edit** menu.

3. Click on the **Update Node EEPROM** button.

This will start programming the EEPROM. This takes about 10 seconds.

4. Quit the GML Application.

5. Reset the GML Node.

The easiest way is to turn the power off, and wait 10 seconds before tuning the power back on. The GML Node should now boot up in about 10 seconds from its EEPROM. If you are monitoring network activity via ZTerm or another monitor, the screen should display the following:

```
Copyright Motorola Inc. 1988 - 1993, All Rights Reserved
```

```
MVME162 Debugger/Diagnostics Release Version 2.1 - 10/19/93  
COLD Start
```

```
Local Memory Found =00400000 (&4194304)
```

```
MPU Clock Speed =25Mhz
```

```
Rom Boot in progress... To abort hit <BREAK>
```

```
<gal>: 960125 v5.9.2r0
```

```
IP address = 0x7f000106
```

```
Ethernet address = 0x08003e237c18
```

```
in_ifaddr = 0x68f94
```

```
so_StatusListenPort = 0x75d00
```

```
so_CommandControlListenPort = 0x75b00
```

```
so_FileXferListenPort = 0x75980
```

```
Initialized...
```

## 14.3 Appendix C - How To ...

### 14.3.1 Find the Version for ...

#### The GML Application

To find the version number of the GML Automation Software for the Macintosh, click once on the GML Application icon and not an alias. Select the **Get Info** menu item from the **File** menu. The version number will be displayed next to the Version Info in the window. Also, you can run the GML Application and choose **About GML Automation...** from the **Apple** ( ) menu.

#### The GML Node Operating Software

To find the version number of the GML Node Software, run the application and open the **Command Line** window. Type "version <return>". The version number of the software used by the GML Node will be displayed. Note that the network between the GML Node and the Macintosh needs to operate for this to work. An alternative method for finding the version of the GML Node software is to locate the "gal" and "gal\_EEPROM" files in the TFTPd folder. Select each file and then select the **Get Info** menu item from the **File** menu. The version number will be displayed next to the Version Info in the window.

#### The Macintosh Operating System

To find the version number of the Macintosh System Software, switch to the Finder and choose the **About This Macintosh...** menu item from the **Apple** ( ) menu.

### 14.3.2 Use ZTerm To Monitor Network Activity

ZTerm is a terminal emulation program that is installed when a full installation is performed. It is located in the Utilities Folder. This program is used to dial GML's bulletin board to download software upgrades. It can also be used to monitor network activity between the Macintosh and the GML Node.

Follow these instructions to use ZTerm:

1. **Connect the Macintosh's modem port to Port 0 on the GML Node.**

2. **Run the ZTerm application.**

Double-click on ZTerm's icon.

3. **Verify that the GML Node connection is configured correctly.**

Select the **Connection** menu item under **Settings** menu. Make sure the configuration data matches the following:

Service Name:

Phone Number:

Pre-dial init:

Account:  Password:

Data Rate:  Data Bits:

Parity:  Stop Bits:

Local Echo

Flow Control:  Hon/Hoff  Hardware Handshake

4. **Select the GML Node menu item from the Dial menu.**

This will create a terminal connection to the GML Node.

5. **Press the Reset button on the GML Node.**

6. **You should see something similar to the following on the ZTerm window:**

```
Copyright Motorola Inc. 1988 - 1993, All Rights Reserved

MUME162 Debugger/Diagnostics Release Version 2.1 - 10/19/93
COLD Start

Local Memory Found =00400000 (&4194304)

MPU Clock Speed =25Mhz

ROMboot in progress... To abort hit <BREAK>
<gal>: 951215 v5.8.7r0 (MachTen)
IP address = 0x7f000006
Ethernet address = 0x08003e237c18
in_ifaddr = 0x68f94
so_StatusListenPort = 0x75d00
so_CommandControlListenPort = 0x75b00
so_FileXferListenPort = 0x75980
Initialized...
```

This indicates that the GML Node has been initialized and that the GML application can now be run.

**7. You can check the GML Node's software version, IP address and the GML Node's Ethernet address by pressing the 'v' key.**

You will see something similar to the following:

```
<gal>: 951215 v5.8.7r0 (MachTen)
IP address = 0x7f000006
Ethernet address = 0x08003e237c18
```

**8. The display will show the commands and responses across the network.**

This information may prove to be important for testing purposes.

### 14.3.3 Create and Select Project and Title Folders

The automation system creates a list of events (such as a fader move or switch closure) in the GML Node's memory. The list (a "mix"), is LOST if either the Macintosh or GML Node is turned off or reset. The Macintosh hard disk is used to store copies of the mix permanently. A mix, or any other GML file on a disk is also called a file. Because the hard disk has a large capacity and because more than one person may be storing mixes on the hard disk, the user must create "folders" in which the files will be stored. This forces organization on the many files which will be stored.

The Macintosh GML Automation Software uses a two folder hierarchy, the Project Folder and the Title Folder. The Project Folder is usually named after the client or film. The Client Folder is usually named after a song or reel.

#### Creating New Project and Title Folders

When you begin work on a new Project, you will create a new Project Folder and Title Folder in which all related files will be stored. To create these folders:

**1. Boot the application by double-clicking on the GML Application icon.**

After the application has finished booting, the Project Dialog will be displayed. This dialog allows a previously created Project Folder to be selected or for a new Project Folder to be created.

If you cancel out of this dialog, the GML Main Screen will be displayed with the name of the selected Project Folder as "No Selected Project Folder". This lets you know that you have not yet selected a Project Folder and that you will need to select one before you can save any files. Note that the application will operate correctly if no Project Folder is selected.

**2. Move to where you want to create the Project Folder.**

The Project Dialog defaults to the location of the last selected Project Folder. If you wish to create the Project Folder elsewhere, move to that location. Refer to you **Macintosh User's Guide** for information regarding navigating around the file system.

### 3. Click on the **New Folder** button to name the Project Folder.

The **New Folder** dialog will be displayed. Enter the name of the Project Folder to be created. After you enter the name of the Project Folder, click on the **OK** button to create the Project Folder. The Macintosh has a limit of 31 characters. If more than 31 characters are entered, the computer will beep. If a file or folder already exists with the same name, you will be prompted to re-name the Project Folder. If no text is entered and the **OK** button is clicked on, or the <return> key is pressed, the default name, "Untitled Folder" will be used.

If you cancel out of the **New Folder** dialog, the Project Folder will not be created and you will be brought back to the Project Folder dialog.

When the Project Folder is created, it will be highlighted in the File List of the Project Dialog.

### 4. Click once on the **Select** button.

This will make the selected folder, the Project Folder. The selected Project Folder's name will be displayed on the GML Main Screen.

The Title Dialog will be displayed next.

### 5. Click on the **New Folder** button to name the Title Folder.

The **New Folder** dialog will be displayed. Enter the name of the Title Folder to be created. After you enter the name of the Title Folder, click on the **OK** button to create the Title Folder. The Macintosh has a limit of 31 characters. If more than 31 characters are entered, the computer will beep. If a file or folder already exists with the same name, you will be prompted to re-name the Title Folder. If no text is entered and the **OK** button is clicked on, or the <return> key is pressed, the default name, "Untitled Folder" will be used.

If you cancel out of the **New Folder** dialog, the Title Folder will not be created and you will be brought back to the Title Dialog.

If you cancel out of the Title Dialog, the GML Main Screen will be displayed with the name of the selected Title Folder as "No Selected Title Folder". This lets you know that you have not selected a Title Folder and that you will need to select a Title Folder before you can save any files. Note that the application will function correctly if no Title Folder is selected.

When the Title Folder is created, it will be highlighted in the File List of the Title Dialog.

### 6. Click once on the **Select** button.

This will make the selected folder, the Title Folder. The selected Title Folder's name will be displayed on the GML Main Screen.

## Selecting Existing Project and Title Folders

If your Project Folder has been created from a previous session, you will need to select it as the Project Folder in order to access the files under it.

#### 1. Boot the application by double-clicking on the GML Application icon.

After the application has finished booting, the Project Dialog will be displayed.

This dialog allows a previously created Project Folder to be selected as the Project Folder or for a new Project Folder to be created.

If you cancel out of the Project Dialog, the GML Main Screen will be displayed with the name of the selected Project Folder as "No Selected Project Folder". This lets you know that you have not yet selected a Project Folder and that you will need to select a Project Folder before you can save any files. Note that the application will operate correctly if no Project Folder is selected.

#### 2. Locate the previously created Project Folder.

You may need to change to the location of the Project Folder in order to see it displayed in the file list.

Once you locate the desired Project Folder, click once on its name, then click once on the **Select** button. Note that clicking on the **Open** button will not select the Project Folder, but will proceed to display the files under the Project Folder.

After the Project Folder is selected, the Title Folder dialog will be displayed. Note that the Title Folder dialog only displays the files under the Project Folder.

### 3. Select or create the Title Folder.

If the Title Folder was previously created:

Click once on the desired Title Folder. Then click once on the **Select** button. Notice that you are not allowed to change which files are displayed. Only those files found under the Project Folder are displayed.

If you cancel out of the Title Folder dialog, the GML Main Screen will be displayed with the name of the selected Title Folder as "No Selected Title Folder". This lets you know that you have not yet selected a Title Folder and that you will need to select a Title Folder before you can save any files. Note that the application will operate correctly if no Title Folder is selected.

If you want to create a new Title Folder:

1. Click on the **New Folder** button.
2. Enter a name for the Title Folder, and click on the **OK** button.  
The new Title Folder will now be displayed in the File List of the Title Dialog.
3. Click once on the **Select** button.
  4. The GML Main Screen will be displayed with the name of the newly created Title Folder.

After the Title Folder has been selected, the Mix Dialog is displayed.

### 4. Select the file to load.

You may select a mix or other file type to load into the GML Node's memory. You may load a file from anywhere on the Macintosh file system. Click once on the file name you wish to load and click on the **Open** button.

If you cancel out of this dialog, nothing will be loaded in the GML Node's memory. If a mix is loaded, the dialog will close and the mix name on the GML Main Screen will display the name of the loaded mix.

## 14.3.4 Change Project Folders

Why would you change Project Folders ?

A Project Folder is used to store all the Title Folders pertaining to a particular musical group or film. If you wanted to work on a different music group's song or a completely different film, you would need to change to the appropriate Project Folder in order to have access to the preferences and files for that Project. This will also store the Project's files in the correct location.

To select a pre-existing Project Folder, or to create a new Project Folder, select the **Open** menu item under the **File** menu. Follow the necessary steps under **Creating and Selecting Project and Title Folders** in section 14.3.3 described above.

## 14.3.5 Change Title Folders

Why would you change Title Folders ?

A Title Folder is used to store the different mixes pertaining to a specific song or film reel. Every time a new song or film reel is to be worked on, a new Title Folder should be created to store those mixes. If you wanted to work on a different song or film reel, you would need to change to the appropriate Title Folder in order to have access files for that song or film reel.

To select a pre-existing Title Folder, or to create a new Title Folder, select the **Open** menu item under the **File** menu. Follow the necessary steps under **Creating and Selecting Project and Title Folders** in section 14.3.3 described above.

### 14.3.6 Initialize the SMPTE Interface

The SMPTE/tape-machine interface in the GML Node, (i.e., the SMPTE board), must be initialized for your time code and your tape machine. You DO NOT need to initialize the SMPTE interface if:

- There was a valid SMPTE time displayed in the SMPTE display of the GML Main Screen.
- The last user of the system was using the same type of SMPTE code at the same play speed, on the same tape machine.

Unless these two conditions are met, you must initialize the SMPTE interface.

To initialize the SMPTE interface:

1. Open the **SMPTE & Machine Preferences** dialog.
  2. Click on the **Capture New SMPTE Params** button. The **Tape Init** dialog will be displayed and will display the initialization process.

3. Place a roll of tape striped with the appropriate SMPTE code on a tape machine.

Start the tape machine. The SMPTE indicator should be lit in blue. This indicates the GML Node is receiving SMPTE code. The SMPTE board initializes itself by analyzing the incoming time code and the tachometer pulses from the tape machine.

4. As the SMPTE board initializes, it displays the following messages in the Tape status:

Init FPS - while the system calculates the frame rate of the time code.

Wait PL - while it starts its internal phase locked loop (which synchronizes incoming SMPTE and automation data).

Init TTAC - while it analyzes the tach pulses from the tape machine.

TAPE RUNNING - when the initialization process is complete.

The initialization process should never take more than a minute and usually takes much less time. When you see the TAPE RUNNING message, you can stop the tape machine. The SMPTE board is initialized at this point. Note that the "ti" command has been disabled from the **Command Line** Window.

### 14.3.7 Re-Initialize the SMPTE Interface

You should re-initialize the SMPTE interface everytime you:

- Change the type of time code you are using.
- Change the tape speed by more than four or five percent.
- Change master tape machines.

### 14.3.8 Add a Comment to a Mix or Snapshot

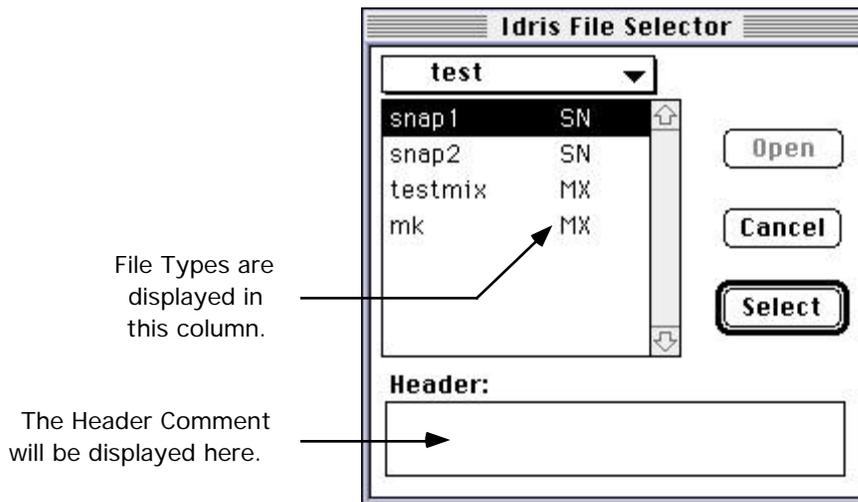
A comment is used to note what a MIX or SNAPSHOT contains. A comment is limited to a maximum of 40 characters. When a MIX or SNAPSHOT is loaded into memory, its comment will be displayed on the GML Main Screen in the Comment Field, overwriting any text that was already there.

There are two ways to add a comment:

1. Click on the Comment Field in the GML Main Screen and begin typing your comment.
2. The **Save As** dialog allows you to edit the Comment before saving the file. If the comment is modified, and the **Cancel** button is clicked on, the comment will not retain those changes.

### 14.3.9 Import Files

It is possible for mixes created on the old Idris-based automation system to be imported to the Macintosh. These mixes can then be used with the new Macintosh based automation system, however, these new mixes cannot be saved for use on the Idris-based automation system.



To import a mix from the Idris automation system to the Macintosh, the desired mixes need to be saved on a 3.5 inch floppy disk formatted from the **Idris-based GML Automation** via the BACK UP command (i.e., “b” on the Idris command line). This will format the floppy disk and copy the selected directory to the floppy disk. The syntax for using the backup command is “b mix1 <return>”. This will save “mix1” to the floppy disk. Please refer page 2 - 46 in your old GML Automation Manual for more information regarding the back up procedure.

Follow these steps to import a mix from an Idris disk.

1. **With the application running, make sure it is the “active” application by clicking on the GML Main Screen window.**

“Active” means this window in this application *responds* to the users keystrokes and mouse clicks.

2. **Insert the Idris floppy disk.**

If the application is not the ‘active’ application, the Idris disk will be unrecognized by the Macintosh and you will be asked if you wish to initialize the floppy. If this happens, click on **Eject** and return to step 1.

3. **The application will display a dialog box that it recognizes the Idris disk.**

The **Import Idris Mix** and **Eject Idris Disk** menu items under the **File** menu will become selectable at this point.

4. **Select the Import Idris File under the File menu.**

The **Idris File Selector** dialog will be displayed. This has been designed to simulate the Macintosh Open File dialog and operates accordingly. When a file is highlighted, the application will retrieve the header comment from the file and display it in the Header Comment Field. Please note that if there are a large number of mixes in the Title folder, it may take some time for the files to be displayed.

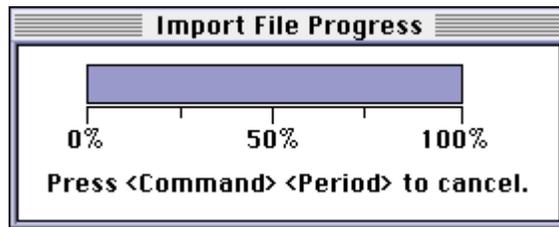
5. **Select a mix to import.**

Highlight the directory in which the desired mix resides by clicking once on it, and click on the **Open** button. This will display the files which are located in the that directory. You will have to do this for two more directories, since the Idris Automation System uses the hierarchy of Engineer / Client / Song. Eventually you will see the mix listed. Notice that the file types of the Idris files will be displayed. For example, “MX” will be displayed after a mix file, “SN” will be displayed after a snapshot file and “VR” will be displayed after a VR file. Also, when a file is highlighted, the application will read the header comment from the floppy disk and display it in the Header Comment Field. Select a mix by clicking once on it, then click the **Select** button or press the <return> key. Double clicking on the mix name will work as well.

6. **Select where to save the mix.**

A Project Folder dialog will be displayed so you can either select an existing Project Folder or create a new Project Folder. You will then be asked to select or create a Title Folder. If you cancel out of either dialog, the import process will be terminated.

#### 7. The Import Progress dialog will be displayed.



The Macintosh will beep when the importing has completed successfully. Pressing COMMAND-PERIOD ( . ) will terminate the importing function and no file will be saved to the Macintosh hard drive.

#### 14.3.10 Delete Files

The only way to delete a file from a hard disk or floppy disk is to go to the Finder, locate the file on the drive, and drag the file(s) to the Trash icon on the Desktop. Then select **Empty Trash** from the **Special** menu.

#### 14.3.11 Rename Files

The only way to rename a file is to go to the Finder, locate the file on the drive, click once on the file's name, then type the new name for the file. Press <return> when finished.

#### 14.3.12 Display the Contents of the Time Registers

GML Automation uses eight time registers to store frequently used SMPTE numbers. The **Command Line** window command "dt" is used to display the contents of the time registers. Also, whenever the user performs a "gt" or "t1" type command, the time registers are automatically displayed.

Another way to view the contents of the time registers is to click on any of the time register buttons in the edit windows. This will place the corresponding time register's SMPTE value in the SMPTE Editor Field.

#### 14.3.13 Store the Current SMPTE Time into a Time Register

There are two ways to store the current SMPTE time into a time register:

1. The **Command Line** window Get Time command "gt".

Gt1, gt2, gt3, gt4, gt5, gt6, gt7, and gt8 are used to save the current SMPTE time displayed in the corresponding time register. If you enter a get time command when tape is running, the time will be captured at the instant you press the <return> key. The **Command Line** window will respond by displaying all 8 time register values after executing any get time command.

2. Use the Get Time keys on the Macintosh keyboard.

To store the current SMPTE time in a time register, the SHIFT key must be held down and a corresponding Get Time Register key must be pressed. Get Time Register keys are keypad keys 1 - 8. For example, holding the SHIFT key down, and pressing Get Time Register key 1, will store the current SMPTE time in time register 1.

#### 14.3.14 Type a SMPTE Time into a TIME Register

Using the **Command Line** window, the user can type a SMPTE number directly into a time register with the commands t1, t2, t3, t4, t5, t6, t7, t8. The syntax of hand entered SMPTE numbers is described under section 11.3.2 **SMPTE Time Code Syntax**.

Only significant numbers need be entered, and no leading zeros are required.

- The command name must be followed by a SMPTE time code number in the correct format.
- The **Command Line** window will automatically display the contents of all 8 time registers immediately after the command is executed.

### 14.3.15 Clear the Time Registers

The contents of individual or all time registers can be cleared to zeroes with the clear time register (“ct”) command. Note that you cannot clear time register 1.

- Type “ct 2 <return>” to clear only time register 2.
- Type “ct 3-6 <return>” to time registers 3, 4, 5 and 6.

The system will display the contents of all eight time registers after any use of the clear time register command.

### 14.3.16 Compensate for Bad SMPTE Time Code

Occasionally, a studio will encounter a tape with SMPTE of questionable quality. This may happen for any number of reasons. If the system has difficulty reading time code for some period of time, it can be made more “tolerant” of tape dropouts or other similar problems.

The “tolerance” value is measured in “tics”. A tic is one quarter of the duration of a SMPTE frame. The default tolerance value is 32 tics, or 8 frames. This means that the system will tolerate a dropout of time code for up to 8 frames. The maximum tolerance value is 255.

There are two ways of changing the tolerance of the system:

1. Use the tolerance command in the **Command Line** window.

Open the **Command Line** window and type “to <tolerance value> <return>”.

Value represents the tolerance value. It can be a value from 0 to 255. If a tolerance of 255 does not help the problem, it may be best to re-record the time code.

To see the current tolerance value from the **Command Line** window, just type “to <return>”. The system will display the current tolerance value.

2. Enter a tolerance value in the Tolerance Entry Field in the **SMPTE and Machine Parameters** window.
  - Refer to the Tolerance description in section 10.6.2 **SMPTE and Machine Parameters** window documentation for more information.

### 14.3.17 Offset the Incoming SMPTE Time Code

There are some situations, particularly when using multiple tape or video machines, when you may desire running the system at a fixed offset from the actual incoming SMPTE code. This can be done with the command “of <SMPTE number> <return>”.

There are two ways to offset the incoming SMPTE:

1. Use the offset command in the **Command Line** window:
  - To offset the incoming time code by 1 hour and 1 second, type “of 1::1 <return>”.
  - To offset it by a negative number, such as -1 minute, type a minus sign before the number, with no spaces, as in “of -:1 <return>”.
  - After entering the offset command, the SMPTE display on the GML Main Screen will reflect the offset as soon as tape starts rolling again.

2. Enter a hard SMPTE offset in the **SMPTE and Machine Preferences** dialog.

Open the **SMPTE and Machine Preferences** dialog by selecting **SMPTE and Machine Preferences** from the **Preferences** sub-menu from the **Edit** menu.

Enter the offset value in the Hard SMPTE Offset Editor.

Click on the **OK** button for the offset to take effect.

### 14.3.18 Create a Fader Preset for Any Channel(s)

A fader preset is an instruction to the system to make a fader move to an exact position, starting at an exact SMPTE time, at a precise speed. You can preset as many faders as you like at any one time.

Follow these steps to create the fader preset:

1. Disable the system by pressing the ENABLE button so it is turned off.
2. Select the SMPTE time (at which the move(s) will start) by winding the tape or the time register buttons on the Master Control Panel.
3. Place the fader(s) at the exact (dB) position at which you want the move(s) to stop.
4. If you want the move to occur at a specific speed, set the vector with the vector command.
  - Refer to section 14.3.21 **How to Control Fader Speed**.
5. Press the PRESET FADER button on the Master Control Panel so it is lit.

6. For each channel you wish to preset, press its SEL button while watching the ALL button on the Master Control Panel. It will light, then go out. After it goes out, you may proceed to the next channel.
7. Enable the system by pressing the ENABLE button so it is lit.
8. Run the mix to ensure that the preset(s) work as you desire.

You can preset both faders and mutes at the same time by checking that the fader shows the desired mute state for the SMPTE time shown, and that the PRESET MUTE button and PRESET FADER button are lit.

### 14.3.19 Create a Mute (Switch) Preset for Any Channel(s)

A mute (or switch) preset is an instruction to the system to make a mute change to a desired state at the exact SMPTE time displayed in the GML Main Screen.

Follow these steps to create a preset:

1. Disable the system by pressing the ENABLE button so it is turned off.
2. Select the SMPTE time (at which the move(s) will start) by winding the tape or the time register buttons on the Master Control Panel.
3. Place the mute(s) in the desired state.
4. Press the PRESET MUTE button on the Master Control Panel so it is lit.
5. For each channel you wish to preset, press its SEL button while watching the ALL button on the Master Control Panel. It will light, then go out. After it goes out, you may proceed to the next channel.
6. Enable the system by pressing the ENABLE button so it is lit.
7. Run the mix to ensure that the preset(s) work as you desire.

You can preset both faders and mutes at the same time by checking that the fader shows the desired mute state for the SMPTE time shown, and that the PRESET MUTE button and PRESET FADER button are lit.

### 14.3.20 Erase Data without Rolling Tape

There are two ways to erase data without rolling tape:

1. Use the clear command in the **Command Line** window.

Erasing data without rolling tape is called “clearing” data. The syntax for the clear command is: “cl <function(s)> <channel list> <return>”. The clear command will clear data for any number of channels, for faders, switches, or both, for the entire duration of the mix. You can clear data between two precise SMPTE times by using the **Clear** dialog.

- To clear the entire mix, (all channels, all functions, permanently!), type “cl <return>”. This does not delete a mix from disk if it has been saved.
- To clear switches (including mutes) from channel 3 for the entire mix, type “cl s 3 <return>”.
- To clear faders from channels 5 through 10 and 17, type “cl f 5-10 17 <return>”.
- To clear faders and switches from channels 12 and 14, and group 1, type “cl fs 12 14 g1 <return>”, or just “cl 12 14 g1 <return>”.

2. Use the **Clear** dialog.

- *Refer to section 10.5.3 explaining the **Clear** dialog for more information.*

Remember that if you clear data, the initial presets for those channels (for faders or mutes or both) will also be cleared. They should be re-created immediately after clearing, unless those channels are no longer to be used in the mix.

### 14.3.21 Control Fader Speed

There are two kinds of fader moves which the system will automatically create, without the user physically moving the faders.

- The moves made by using the PRESET FADER function.
- The moves made when the user releases a fader after making a move in ABSOLUTE OFFSET mode.

The user can control the speed of these moves by opening the **Command Line** window and using the vector command. The vector command's syntax is: "v <duration> <return>". The duration number represents the number of SMPTE frames over which the moves will occur. The duration can be no less than 1 frame, and no greater than 63 frames. The vector speed can also be controlled by entering a vector speed in the **User Preferences** window. Refer to the description of Vector Speed in the **User Preferences** window for more information.

- The system has a default vector duration of one frame (fastest possible fader moves) when the application is booted.
- To set the vector to 30, type "v 30 <return>".
- To inquire what the vector is currently set to, type "v <return>".

The vector duration stays the same until the user changes it again, or quits the application. Also, it does not affect the speed of fader moves that are entered in to the system manually. It only affects the moves that are made by fader presets or absolute mode.

- Changing the vector duration does not affect the vectors of moves that were made previous to the change.
- The user can change the system vector at any time, including while the tape is rolling.

### 14.3.22 Precisely Trim Fader Levels

There are two ways to trim faders:

1. Use the Trim window
  - Refer to section 10.5.2 **Trim** window documentation.
2. Use the **Command Line** window and enter the trim command

The syntax for the trim command is as follows: "trim <trim value in dB> <channel list> <return>". The command will affect the specified channels for the entire mix. If you wish to trim faders between two precise time points, use the Trim window. Note that trimming between two time points CANNOT take place while SMPTE is running.

- To add 3 dB to channel 4, type "trim 3 4 <return>".
- To subtract 2.5 dB from channels 7,8,9 and 15, type "trim -2.5 7-9 15 <return>".
- To subtract 1.5 dB from the entire mix, type "trim -1.5 all <return>".

Note: If you use the word "all" for the channel list, the system will add or subtract gain from all input channels, but not the group masters. If the group masters were trimmed as well, the inputs assigned to them would have double the desired change in overall gain.

### 14.3.23 Use Absolute Offset Mode

Absolute offset mode is used when the mixer wants the system to immediately return the fader (when it is released by the user's finger) to the position it was in during the previous pass, at the instant of release. The speed of this automatic return is programmable (See How to Control Fader Speed). Some users refer to this as a "boomerang mode".

To use Absolute Offset mode:

- Select the desired faders speed with the vector command ("v"), if necessary.
- Place the console into the Fader and Switch Update with Absolute Offset configuration by pressing function key F6 or select the configuration from the configuration pop-up menu on the GML Main Screen.
- Ensure that the system is running and the ALTERNATE button is lit on the Master Control Panel.
- Toggle the desired channels out of safety mode and into the offset mode with the SEL button on each fader.
- Make the fader move(s) as you would normally. You will see the faders return to their previous position at the instant you release them.

Except for automatic fader movement, the use of the offset mode is identical to the use of Fader Update or Fader and Switch Update modes.

### 14.3.24 Use Relative Offset Mode

Relative offset mode is used when the mixer wants to adjust the overall level of a particular track, for all or part of a mix. For example, to adjust the level of channel 3 by adding 2 dB of gain for the entire mix:

- Select Fader and Switch Update with Relative Offset mode by pressing function key F7 or by selecting the configuration from the switch configuration pop-up menu in the GML Main Screen.
- Start tape from a position well before the first sound.
- Ensure that the system is running and the ALTERNATE button is lit.
- Toggle fader 3 out of safety mode and into the offset mode with the SEL button on the fader.
- After the first initial preset is executed and before the first sound, move channel 3's fader up 2 dB.
- Toggle back into safety mode for channel 3 (this is recommended, not essential).
- Stop or rewind the tape. It is not necessary to play through the whole mix. All recorded fader movement will now be replayed exactly as before, but at a level that is 2 dB higher than before.

As another example, if you wish to adjust channel 3 up by 2 dB between 01:02:00:00.0 and 01:02:20:00.0, follow the same procedures described above, except:

- Move fader 3 up by 2 dB at 01:02:00:00.0 instead of at the beginning of the mix.
- Don't stop the tape.
- Move the fader down 2 dB at 01:02:20:00.0. Then stop or rewind the tape.

Note that relative offset mode is simply a manual method of performing a trim.

### 14.3.25 Swap Data between Channels

There are two ways to swap data:

1. Using the **Swap** window.
  - Refer to section 10.5.4 *Swap window documentation*.
2. Using the swap command in the **Command Line** window.

The swap command syntax is as follows: "swap <channel number 1> <channel number two> <return>". This can be useful if an input module fails during a session, and there is an unused module somewhere else on the console which can be used instead. The system will automatically "re-order" the data contained in the mix after every swap operation.

### 14.3.26 Erase a Bad Mute

There are two ways to erase a bad mute.

1. Use the **Clear** window
  - Refer to section 10.5.3 *Clear window documentation*.
2. Follow these steps:
  - Rewind the tape to a time well before the bad mute (ten seconds is probably enough).
  - Select the standard configuration Switch Update/Write - (Fader Read) or press the function key F2.
  - Ensure that the ENABLE and ALTERNATE buttons are lit on the Master Control Panel.
  - Start the tape machine in PLAY. Wait for the RUN/ABORT button to light on the Master Control Panel or the GML Main Screen.
  - Just prior to where the bad mute occurs, press the SEL button on the fader of the appropriate channel. It will toggle into the SWITCH WRITE-ONLY sub-configuration.
  - Let the tape roll PAST the time of the bad mute, then immediately press the fader's SEL button again, to take it out of the SWITCH WRITE-ONLY sub-configuration.
  - Rewind the tape machine to the same point again, and listen to the mix to ensure that you successfully erased the bad mute. You can now re-write the mute correctly with the SWITCH UPDATE configuration.

Note: Because this operation is one of ERASURE, it is best to toggle the channel into the SWITCH WRITE-ONLY sub-configuration for as little time as possible, to avoid inadvertently erasing other GOOD mutes.

### 14.3.27 Use the Solo Function

- Press the AUTO-FADE button on the Master Control Panel so it is lit.
- Solo each desired channel by pressing its SEL button.
- Press each SEL button again to take each channel out of solo mode.
- See section 14.3.28 **How to Use the Solo Mask Function** to learn how to solo some channels while leaving others unmuted.

### 14.3.28 Use the Solo Mask Function

The mask function (implemented by the “ma” command) prevents certain channels from muting when soloing other channels.

- To see a list of currently masked channels (if any), type “ma <return>”.
- To prevent channels from muting, type: “ma <channel-list> <return>”.
- The “masked state” of every channel in the list will toggle. If the channel is not masked, it will become masked. If it is masked, it will become unmasked.
- Because the mask command toggles the “mask state” of each channel named in the list, to turn off the mask (i.e., unmask) the channels in the channel list, the same command will be used.

For example, to mask channels 1, 2, and 3. You would type: “ma 1-3 <return>”. To unmask channels 1,2, and 3, you would type the same command.

### 14.3.29 Assign Groups

There are three ways to assign channels to groups.

1. The **Group Assignment** dialog.
  - Refer to section 11.4 **Group Assignment** documentation.

2. The group command in the **Command Line** window

The syntax to assign channels to a specific group is: “g<group number> <channel list> <return>”.

- For example, to assign channels 1,2,3, and 7 to group 2, type “g2 1,2,3 7 <return>”.
- To see the channels assigned to a specific group, type the group number. For example, to see the channels assigned to group 2, type “g2 <return>”.
- Assigning channels in this method toggles the channels group state. For example, to group channels 1,2, and 3 to group 1, you will type: “g1 1-3 <return>”. To unassign those same channels from group 1, you will type the same command.

3. Manually assign channels

First decide which inputs to assign to group masters. It is best to choose groups early in the mix, and not to change their assignments.

- It does not matter what the states of the mutes are when you perform the group assignment.
- For each group, set up the input channel faders. Set each fader at its APPROXIMATE AVERAGE position.
- Press the GROUP SELECT button on the Master Control Panel so it is lit. The system can be disabled or enabled.
- Set the group master fader to 0 dB.
- Hold down the SEL button on the group master fader, and WHILE you are holding it down, press each SEL button of the input faders to be assigned to the group. As you press each input channel SEL button, the group master’s SEL led will light up, then go out. When you release the SEL button of the input channel, the group master’s SEL LED will be lit.

### 14.3.30 Create and Use Snapshots

A snapshot is a “picture” of the state of the console at one instant in time. The snapshot can include both fader and mute information for any number of channels. The system can only have one snapshot in memory at a time, but any number of snapshots can be saved to disk and later recalled.

To create a snapshot for one or more faders or mutes:

- Press the SNAPSHOT TAKE button on the Master Control Panel so it is lit. The system can be enabled or disabled.
- Set the faders and mutes to the desired states (if necessary) for all the channels you want to include in the snapshot.
- If you want ALL the channels included, press the ALL button on the Master Control Panel.
- If you want fewer than all channels included, press each channel’s SEL button, and watch the ALL button light and go out before proceeding to the next channel (exactly as you would do when creating presets).

### 14.3.31 Recalling the Snapshot Information

At any time, all or part of a snapshot may be recalled.

- If all or part of a snapshot is recalled while the tape is rolling, not only will the fader(s) and mute(s) change to reflect the state recorded by the snapshot, but the actual changes made by the recall will be recorded as part of the mix for the channels in UPDATE or WRITE-ONLY mode at the instant of the recall. This is called “dynamic snapshots”.

To recall all or part of a snapshot, with or without tape rolling:

- Press the SNAPSHOT RECALL button on the Master Control Panel so it is lit.
- To recall the snapshot for all channels, press the ALL button on the Master Control Panel.
- To recall the snapshot for fewer than all channels, press each channel’s SEL button.

### 14.3.32 Saving, Loading and Clearing Snapshot Files

Snapshot files are saved and loaded almost exactly as mix files.

- To save a snapshot file:

Select **Save As** from the **File** menu.

Enter a name for the snapshot.

Click on the **Snapshot** button so the file will be saved as a Snapshot.

Click on the **Save** button to save the snapshot.

or

Select the **Save Snapshot** menu item under the **File** menu.

or

Press Command-D (**D** ) to select the **Save Snapshot** menu item.

- To load a snapshot file:

Select **Open** from the **File** menu item or press Command-O (**O** ).

Select **Load a GML File** from the pop-up menu at the very bottom of the Project Dialog.

Locate the desired snapshot file and click on its name.

Click on the **Open** button to load it into the GML Node’s memory.

- To clear a snapshot file from the GML Node’s memory:

Select **Clear File...** from the **Edit** menu.

Click on the **Snapshot** button then click on the **Clear** button.

Loading or saving a snapshot file has no effect on the current mix in memory or mixes stored on disk!

### 14.3.33 Understanding Snapshots in More Detail

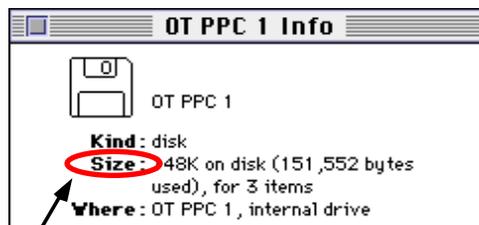
- The snapshot “lives” in a buffer in the GML Node’s memory (RAM). There is enough room for exactly one snapshot of every channel in the system.
- If you take a snapshot for individual channels at any time, the system stores the state of those channels in the snapshot buffer, but does not change the snapshots of the other channels. Similarly, if you load a snapshot (to memory from disk) which does not contain data for every channel, the channels (in the snapshot buffer) for which there is no data in the disk file, will not be modified by the load operation.
- The snapshot buffer simple contains, for every channel in the system, a record of the most recent fader level and mute state of the channel that was either recorded (with the “snapshot take” operation), or loaded from disk.
- The snapshot buffer is always empty when the application is launched.
- When you clear a mix in memory (with the “cl” command), you will also clear the snapshot buffer. If you clear a mix using the **Clear File** dialog, the snapshot buffer will remain untouched. The same is true when clearing a mix from selecting **Mix** from the **New** sub-menu under the **File** menu.
- When the Open File dialog is used to select a file to load, snapshot files are displayed with the symbol “sn” in the adjacent icon.

### 14.3.34 Check Available Disk Space

There are two ways to check available disk space:

1. Use the **Get Info** command.

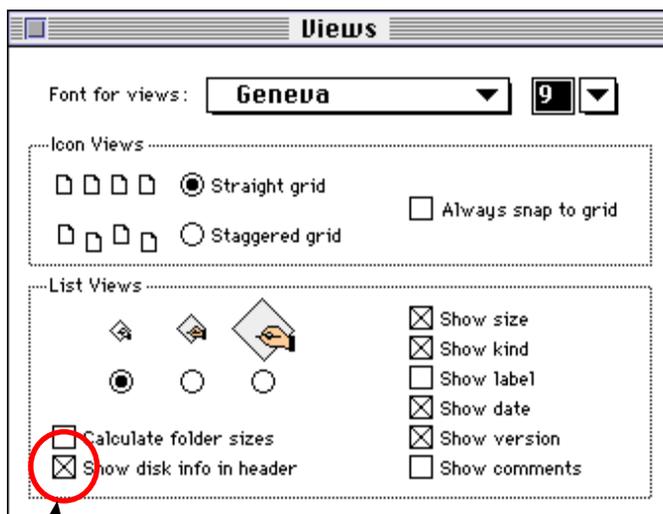
- Click once on the Icon for the disk you wish to check.
- Select the **Get Info** command (⌘ I) from the **File** menu.



Size only shows how much space was USED on the drive.

2. Have the disk space displayed in the Finder windows.

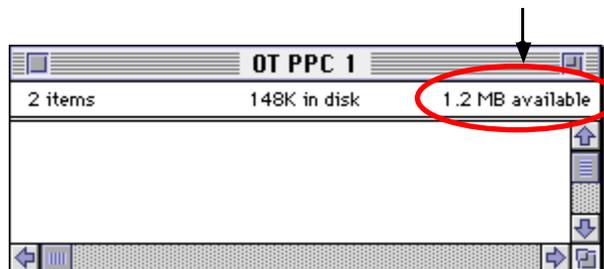
- Select **Views** from the **Control Panels** sub-menu under the Apple ( ) menu. This will open the Views Control Panel which allows this information to be displayed.



Make sure this is checked to see the available space left on a drive in the Finder's windows.

- Click on the **Show Disk Info in Header** checkbox.
- Close the Views Control Panel
- Every Finder window will now display the drive information.

The available space on the drive is now readily available.



### 14.3.35 Check the Size of the Current Mix in Memory

To see how much space the current mix would take up when saved to hard disk or floppy, open the **Command Line** window and type: "size <return>".

The system will display the size of the mix in bytes. The size displayed includes the 1024 bytes of additional information saved with every mix, which includes the mix comment, custom configurations, group assignments, SMPTE offset, and more. If the size displayed is 1024 bytes, there is no mix in memory.

### 14.3.36 Backup and Recover Files

The easiest way to backup your files is to connect another hard drive to your Macintosh and copy all of your files to that particular drive for storage. You can compress the files for storage using any off the shelf software such as "Stuffit Deluxe", or you may use archiving software, such as Retrospect.

### 14.3.37 Record SMPTE Time Code

Tips for recording SMPTE Time Code:

- Always start "striping" (recording) the code **AT LEAST** ten seconds before the first note of music (or other program material). If the reel does not have enough "pre-roll" (blank tape) before the program material, splice some blank tape in before you start recording code.
- Never edit or splice the multi-track tape after recording time code, **UNLESS** you are prepared to re-record the code afterwards.
- **NEVER** start the recorded code at 00:00:00:00, or just before the midnight hour. **NEVER** cause the system to "roll over midnight" (go from 23:59:59:29 to 00:00:00:00).

### 14.3.38 Start A Song's Time Display At "0"

No matter what the actual SMPTE time code on tape is, you may elect to view a song's time from 0:00:00 at a point that you specify. As you roll tape at the beginning of a song, press ZERO at the right-hand side of the GML Main Screen SMPTE display. Your time will proceed upwards from 0:00:00. Should you wish to turn this feature off, disable LOCAL ZERO on either the LOCAL ZERO button just under the ZERO that you just pressed, or in the **User Preferences Menu**.

## 14.4 Appendix D - Theory Of Operation

The following discussion attempts to illustrate some fundamental principles of mixing console automation. No knowledge of computers or other console automation systems is assumed of the reader. Only the effects, not the methods of using automation are discussed.

The purpose of console automation is to give the mixing engineer a degree of control over the mixing process that is not possible without the use of a computer or other non-human assistant. This goal is achieved by giving the mixing engineer a computer system which performs the following necessary functions:

- **DATA ACQUISITION:** The computer must be able to sense the events occurring on the automated portions of the console, and convert them to a form of information that can represent their effect.
- **SHORT TERM MEMORY:** The computer must remember the events that are sensed by the data acquiring component(s) of the system. Because the audio program material occurs in real time, these events must be remembered in a real-time context. This means that the computer must record the time at which each event occurs, as well as the event itself. A standard measurement of time, such as SMPTE code, must therefore be used.
- **DATA PROCESSING:** The computer should provide the user with a method of modifying the collected data in any way that is beneficial to the mixing process.
- **LONG TERM MEMORY:** The computer must be capable of storing the event information, in some non-volatile form so that the user may at any time recall this information from a storage medium, and use it again for any purpose.

### Data Acquisition

Currently, the standard GML Automation System will acquire two types of data from the mixing console, fader data and switch data.

#### Faders

When the user touches the knob on an automated fader, the GML computer begins to analyze the movement of the fader at that point in time, until the fader is released. The computer can do this because the knobs on the faders are conductive, and the capacitance of the user's finger touching the knob activates a signal which is "seen" by one of the computer's microprocessors. When the system detects fader movement, it "remembers" four things about the move:

- Which fader was touched (its channel number).
- The exact point in time when the fader was touched.
- The position along the fader track at which the fader came to rest, (recorded in dB.).
- How much time passed before the fader stopped moving, recorded as a count of SMPTE time code frames. This assumes that the fader moved at a constant velocity, and did not change direction. If the system senses that the velocity of the fader move changes during the move, it will remember the newer velocity, or the change in direction, as a separate move.

Thus, all fader movement is remembered as a series of moves, each of which has a known starting time, settling position (in dB.), and duration in frames. The duration value is called the vector of the move. The range of acceptable vectors is 1- 63. If a fader move takes longer than 63 frames, it will be broken down into two or more moves.

#### EXAMPLE:

If a fader is resting at a position of -20 dB., and at SMPTE time 01:00:01:00 it is moved very smoothly to a position of -10 dB., with the engineer's finger releasing the fader at exactly 01:00:02:00, the data remembered will be:

- The fader's channel number.
- The starting time: 01:00:01:00
- The final position after the move: -10 dB.
- The length of time it took to make the move, which is one second. Therefore this value (the vector), will be 24, 25 or 30, depending on the type of time code being used, as one second of time will be translated to 24, 25, or 30 frames by the system. If the move has a change in velocity or direction, or has a duration greater than 63 frames, the system will break it down into smaller moves, and store them separately.

NOTE: When the user of the system starts the master tape machine to play back an automated mix, the system first determines what time code is coming in from the tape, to find its place in the list. It then reads the list from the first time record until the current time, to determine how all the faders and switches should be reset. It then resets them, and resumes playback of the mix from the current point on.

However, the system never records the starting position of a fader move. Only the settling point is recorded. Because of this, it is essential that every mix created with the GML Automation System have a starting "preset" position for every channel on the console. The starting "preset" is the data which tells the computer what the starting state of every fader and switch on the console is. When the preset is present, all subsequent moves or changes will be correct. If the preset data is missing, the system will not "know" how to set the faders and switches at the beginning of the mix. It is important to note, however, that the "preset" is no different in form than any other piece of fader data. That is, a preset is simply a unit of data recording the state of the switches or faders of one or more channels, that has been generated by the system, instead of the user. Because the format of the data generated by the system is the same as the format of data generated by the user, and the two are intermingled in one list, the preset data is as easily modifiable as the user-created data.

#### Switches

The computer "remembers" three things about operations performed on the automated switches (such as mutes).

- The time at which the operation is performed.
- The channel number for the switch affected.
- The new state of the switch.

#### EXAMPLE:

If at SMPTE time 01:01:01:00, the engineer mutes channel 10, the information remembered will be:

- The time of the operation: 01:01:01:00
- The channel number: 10
- The state of the switch: MUTE ON (channel muted).

## Short Term Memory

The GML computer remembers automation data by converting it to a numerical representation and storing it as a list of events in the computer's memory. The computer's memory can be envisioned as a large array of circuits capable of storing numerical information much like a scratchpad or blackboard. The information can be erased or modified, just as the information on a scratchpad can. However, when the computer is turned off, the information in memory is lost. Thus the contents of this memory are volatile. The size of the computer's memory is finite.

### How the List is formed:

The list consists of entries for every event that is recorded by the system. Each event is recorded as a time record, which is a record of an event (or group of events) occurring at one point in time. A time record can have information for many channels at once (because many things can happen at once in any mix). In fact, the channel records (records of events occurring on individual channels) can each have more than one type of information at the same time, because it is possible to use more than one automated function at a time on any channel.

Throughout all of the following documents, the terms list and mix, have the identical meaning. Therefore, when we use the term mix, we really are talking about the information gathered by the system in the above manner.

### The Read List and the Write List:

As mentioned previously, the system stores its mix data in memory, which is of a finite size. In fact, the large amount of memory used for storing mixes is divided into two equal-sized halves. One half is called the readlist, while the other is the writelist. Normally, the mix is stored on the readlist. When the system starts running (when the master tape machine starts), the data on the readlist is read by the system, and the fader and switch changes represented on the readlist are reproduced on the console. As each piece of information is read, it is also copied to the writelist (unless the console is currently configured for erasing that data). Simultaneously, if new data is created while the tape is playing, that new data is also added to the writelist, in the correct order and format. When the tape machine stops, the readlist is erased, and the writelist is moved to the readlist. Therefore, the system maintains one mix in memory when the tape machine is not running, and when it is running, it begins to create the second mix on the writelist. In other words, the readlist is the current mix being played on the console, and the writelist is the new mix being created while the current mix is playing. If the user decides that undesirable data has been created while running a mix, the mix may be aborted. This is done by hitting the red ABORT button on the master panel, before stopping the tape machine. This action causes the system to erase the current writelist, (instead of the readlist), and leave the readlist intact. The system interprets the stopping of the tape machine to be an indication that the user intends to keep the new mix, therefore to correctly abort the mix, the red button must be pressed before stopping tape.

### EXAMPLE:

Assume the engineer starts a mix by creating a "preset" for both mutes and faders for channels 1 through 10 at exactly 00:59:55:00. We will also assume that the faders are all at exactly 0 dB., and that the mutes are all ON, (all channels are muted). Then, at exactly 01:00:00:00, the engineer opens channels 1 through 5 (MUTES OFF), then 5 seconds later simultaneously begins to move fader 4 up 3 dB. very smoothly (taking 1 second to complete the move), and mutes channels 3 and 5. The final move the engineer makes is to move channel 4 down 4 dB., smoothly for 2 seconds, at time 01:00:08:00. The list of data gathered by the system at this point will represent the following information (assuming the engineer is using 30 frame per second SMPTE time code).

The list above represents the total amount of information acquired by the automation system for the activity described above. Internally to the computer, the list is stored in a numerical form, with numbers representing all of this data, instead of the words you see above. However, the meaning of the internal numbers is exactly as the above list appears.

**NOTE:** Just as in the above example, GML Automation will store the SMPTE time code only once for simultaneously occurring data, and will store simultaneous data on one channel (such as mute activity occurring at the same time fader moves are started) without storing the channel number more than once.

The importance of creating the initial "preset" for the mix is illustrated by the above example. Imagine the problem that would occur if the engineer had not created the preset at 00:59:55:00. If the engineer played the tape until 01:00:10:00, fader 4 would be left at rest at -1 dB., which is correct. If he then rewound the tape to 01:00:00:00, and then played it again, the fader would remain at -1 dB., until moved to +3 dB., by the data stored for channel 4 at 01:00:05:00. This move would be incorrect, however, because the move would start at -1 dB., instead of 0 dB. If the preset at 00:59:55:00 is present, however, the fader would not remain at -1 dB. when the tape is started again at 01:00:00:00. Instead, it would move to 0 dB. at 01:00:00:00, and rest there until its next move occurred. The preset is essential, then, because the engineer's intention is to store a fader move from 0 dB. to +3 dB. on channel 4 at 01:00:05:00, not from -1 dB. to +3 dB. Therefore, there must be data for fader 4, stored previous to 01:00:00:00, which sets the fader to 0 dB. The preset achieves this requirement.

### **Data Processing (Modifying the List)**

There are many ways in which the mix above may be changed. It can have data added to it (anywhere in SMPTE time code) by rewinding the tape and performing additional moves, or it can be modified by the mix editor program. Data can also be removed, trimmed or swapped between channels without using the mix editor. However, no matter how the information contained in the mix changes, the mix will always have the same format. All time records will appear in increasing order, there will be no redundant information stored, and the size of the mix will be variable within the limits of the size of available memory.

All mix-modifying operations are discussed in greater detail in the section **System Description**.

### **Long Term Memory**

The process of mixing with GML Automation is iterative (repetitive). In other words, the engineer plays the tape many times, each time with the intention of perfecting a small portion of the total number of changes and moves that will comprise the final mix. In this way, a mix is created by slowly building it from small pieces, (individual moves or changes). The creation of the final mix, then, is cumulative as it is composed of all the fragments of detail combined into one large list. Traditional mixing technique is much the same, of course. Therefore, mixing with GML Automation should be the same as mixing without it, except that from time to time, the engineer will decide that the most recent changes made to the mix are "good", and worth keeping in

long-term memory. At this point the engineer will save the mix to the long-term memory device (the hard disk), so that it will be kept permanently.

Simply stated, the mix automation data is a list of numbers in the computer's main memory (RAM), which is volatile and will be lost when the system is shut down, or reset. When a mix has valuable data, it is the engineer's responsibility to issue a save command to the system so that the mix will be stored permanently as a "file" on the hard disk. In addition to the actual mix data, the save operation will store the current values of some of the other parameters maintained by the system, such as grouping assignments, custom configurations, time code registers, and more.

Because one is capable of storing many mixes to hard disk in the course of one mixing session, the system forces a certain organization on the files stored. This is done with the use of folders. Folders are simply files which contain lists of other files. There is a two-level hierarchy imposed on all mixes stored under Macintosh GML Automation System. All mixes must be associated with one (and only one) Title Folder. All Title Folders must be associated with one (and only one) Project Folder.

This two level hierarchy ensures that the user need never wonder to which music a particular mix belongs. Mixes are, by definition, associated with a title and project.

The only limits on the number of mixes and directories a user may have are those imposed by the physical storage capacity of the hard and floppy disks themselves. There is no numerical limit imposed by the system.

### **Modifying mixes in long term memory:**

There are numerous ways in which a mix that is stored on disk can be altered or further processed by the engineer. The mix can of course, be recalled to the computer's main memory (RAM) with a "load" command, so that it can be used or modified an infinite number of times. One may also copy mixes onto floppy disk for archival purposes, and recovering them from floppy at a later time. In addition, a complete set of file utility commands is built into the Macintosh Operating System for such activities as renaming, deleting, duplicating and listing files and directories.

## 14.5 Appendix E - Location of Installed Files

### • Files installed from a 680x0 Full Installation.

<u>File Name</u>	<u>Location</u>
GML Folder created	System Folder->Preferences
GML Prefs	GML Folder
TFTPd Folder created	System Folder->Preferences
gal	TFTPd Folder
gal_EEPROM	TFTPd Folder
VME162 Node folder created	Selected Installation Folder
proca.VDEN	VME162 Node folder
proca.VDSN	VME162 Node folder
proca.VDTN	VME162 Node folder
proca.VEEN	VME162 Node folder
proca.VESN	VME162 Node folder
procb.VDEN	VME162 Node folder
procb.VDSN	VME162 Node folder
procb.VDTN	VME162 Node folder
procb.VESN	VME162 Node folder
smpte	VME162 Node folder
smpte.179	VME162 Node folder
smpte.279	VME162 Node folder
smpte.304	VME162 Node folder
TFTPd	System Folder->Startup Items
MacTCP	System Folder->Control Panels
EtherTalk Phase2	System Folder->Extensions
ZapTCP	System Folder->Extensions
Utilities Folder created	Selected Installation Folder
GML Walk Folder	Utilities Folder
GML Walk	GML Walk Folder
Walk Description	GML Walk Folder
MacCheck Folder	Utilities Folder
Mac Ping	Utilities Folder
GML Ping	Utilities Folder
SimpleText	Utilities Folder
Swatch 1.7d10	Utilities Folder
ZTerm 1.0b3 Folder	Utilities Folder
Test Project Folder	Utilities Folder
Prefs	Test Project Folder
Test Title (Faders) Folder	
CueList	Test Title (Faders) Folder
tm2.48.7.1	Test Title (Faders) Folder
tm2.48.8	Test Title (Faders) Folder
tm2.96	Test Title (Faders) Folder
Test Title (Mutes) Folder	
CueList	Test Title (Mutes) Folder
mutes.48.7.1	Test Title (Mutes) Folder
mutes.96	Test Title (Mutes) Folder
Prefs	Test Title (Mutes) Folder
Read Me Document	Selected Installation Folder
68K GML System 7	Selected Installation Folder

• **Files installed from a 680x0 GML Application & Network Installation.**

<u>File Name</u>	<u>Location</u>
GML Folder created	System Folder->Preferences
GML Prefs	GML Folder
TFTPD Folder created	System Folder->Preferences
gal	TFTPD Folder
gal_EEPROM	TFTPD Folder
VME162 Node folder created	Selected Installation Folder
proca.VDEN	VME162 Node folder
proca.VDSN	VME162 Node folder
proca.VDTN	VME162 Node folder
proca.VEEN	VME162 Node folder
proca.VESN	VME162 Node folder
procb.VDEN	VME162 Node folder
procb.VDSN	VME162 Node folder
procb.VDTN	VME162 Node folder
procb.VESN	VME162 Node folder
smpte	VME162 Node folder
smpte.179	VME162 Node folder
smpte.279	VME162 Node folder
smpte.304	VME162 Node folder
Read Me Document	Selected Installation Folder
68K GML System 7	Selected Installation Folder

• **Files installed from a Power Mac Full Install - MacTCP Installation.**

<u>File Name</u>	<u>Location</u>
GML Folder created	System Folder->Preferences
GML Prefs	GML Folder
TFTPD Folder created	System Folder->Preferences
gal	TFTPD Folder
gal_EEPROM	TFTPD Folder
VME162 Node folder created	Selected Installation Folder
proca.VDEN	VME162 Node folder
proca.VDSN	VME162 Node folder
proca.VDTN	VME162 Node folder
proca.VEEN	VME162 Node folder
proca.VESN	VME162 Node folder
procb.VDEN	VME162 Node folder
procb.VDSN	VME162 Node folder
procb.VDTN	VME162 Node folder
procb.VESN	VME162 Node folder
smpte	VME162 Node folder
smpte.179	VME162 Node folder
smpte.279	VME162 Node folder
smpte.304	VME162 Node folder
TFTPD	System Folder->Startup Items
MacTCP	System Folder->Control Panels
EtherTalk Phase2	System Folder->Extensions
ZapTCP	System Folder->Extensions
Utilities Folder created	Selected Installation Folder
GML Walk Folder	Utilities Folder
GML Walk	GML Walk Folder
Walk Description	GML Walk Folder
MacCheck Folder	Utilities Folder

Mac Ping  
GML Ping  
SimpleText  
Swatch 1.7d10  
ZTerm 1.0b3 Folder

Utilities Folder  
Utilities Folder  
Utilities Folder  
Utilities Folder  
Utilities Folder

Test Project Folder  
Prefs  
Test Title (Faders) Folder  
CueList  
tm2.48.7.1  
tm2.48.8  
tm2.96  
Test Title (Mutes) Folder  
CueList  
mutes.48.7.1  
mutes.96  
Prefs

Utilities Folder  
Test Project Folder  
Test Title (Faders) Folder  
Test Title (Faders) Folder  
Test Title (Faders) Folder  
Test Title (Faders) Folder  
Test Title (Mutes) Folder  
Test Title (Mutes) Folder  
Test Title (Mutes) Folder  
Test Title (Mutes) Folder

Read Me Document  
PPC GML System 7

Selected Installation Folder  
Selected Installation Folder

### • Files installed from a Power Mac Full Install - Open Transport Installation.

#### File Name

GML Folder created  
GML Prefs

#### Location

System Folder->Preferences  
GML Folder

TFTPd Folder created  
gal  
gal\_EEPROM

System Folder->Preferences  
TFTPd Folder  
TFTPd Folder

VME162 Node folder created  
proca.VDEN  
proca.VDSN  
proca.VDTN  
proca.VEEN  
proca.VESN  
procb.VDEN  
procb.VDSN  
procb.VDTN  
procb.VESN  
smpte  
smpte.179  
smpte.279  
smpte.304

Selected Installation Folder  
VME162 Node folder

Utilities Folder created  
GML Walk Folder  
GML Walk  
Walk Description

Selected Installation Folder  
Utilities Folder  
GML Walk Folder  
GML Walk Folder

MacCheck Folder  
Mac Ping  
GML Ping  
SimpleText  
Swatch 1.7d10  
ZTerm 1.0b3 Folder

Utilities Folder  
Utilities Folder  
Utilities Folder  
Utilities Folder  
Utilities Folder  
Utilities Folder

Test Project Folder  
Prefs  
Test Title (Faders) Folder  
CueList  
tm2.48.7.1

Utilities Folder  
Test Project Folder  
Test Title (Faders) Folder  
Test Title (Faders) Folder

tm2.48.8	Test Title (Faders) Folder
tm2.96	Test Title (Faders) Folder
Test Title (Mutes) Folder	
CueList	Test Title (Mutes) Folder
mutes.48.7.1	Test Title (Mutes) Folder
mutes.96	Test Title (Mutes) Folder
Prefs	Test Title (Mutes) Folder
Read Me Document	Selected Installation Folder
PPC GML System 7	Selected Installation Folder

**• Files installed from a Power Mac GML Application & Network Installation.**

<u>File Name</u>	<u>Location</u>
GML Folder created	System Folder->Preferences
GML Prefs	GML Folder
TFTPd Folder created	System Folder->Preferences
gal	TFTPd Folder
gal_EEPROM	TFTPd Folder
VME162 Node folder created	Selected Installation Folder
proca.VDEN	VME162 Node folder
proca.VDSN	VME162 Node folder
proca.VDTN	VME162 Node folder
proca.VEEN	VME162 Node folder
proca.VESN	VME162 Node folder
procb.VDEN	VME162 Node folder
procb.VDSN	VME162 Node folder
procb.VDTN	VME162 Node folder
procb.VESN	VME162 Node folder
smpte	VME162 Node folder
smpte.179	VME162 Node folder
smpte.279	VME162 Node folder
smpte.304	VME162 Node folder
Utilities Folder created	Selected Installation Folder
GML Walk Folder	Utilities Folder
GML Walk	GML Walk Folder
Walk Description	GML Walk Folder
MacCheck Folder	Utilities Folder
Mac Ping	Utilities Folder
GML Ping	Utilities Folder
SimpleText	Utilities Folder
Swatch 1.7d10	Utilities Folder
ZTerm 1.0b3 Folder	Utilities Folder
Test Project Folder	Utilities Folder
Prefs	Test Project Folder
Test Title (Faders) Folder	
CueList	Test Title (Faders) Folder
tm2.48.7.1	Test Title (Faders) Folder
tm2.48.8	Test Title (Faders) Folder
tm2.96	Test Title (Faders) Folder
Test Title (Mutes) Folder	
CueList	Test Title (Mutes) Folder
mutes.48.7.1	Test Title (Mutes) Folder
mutes.96	Test Title (Mutes) Folder
Prefs	Test Title (Mutes) Folder
Read Me Document	Selected Installation Folder
PPC GML System 7	Selected Installation Folder

## 14.6 Appendix F - Description of Installed Files

### MacTCP (version 2.0.6)

This is a Control Panel which is used to configure your Macintosh for network use. NOTE: this should not be installed on a Power Macintosh as it will conflict with Open Transport.

- *Refer to Appendix A - **Guidelines for Correct Network Operation.***

### EtherTalk Phase 2 (version 2.5.6)

This is a system extension which is required by the Macintosh to perform networking over Ethernet.

NOTE: this should not be installed on a Power Macintosh as it will conflict with Open Transport.

- *Refer to Appendix A - **Guidelines for Correct Network Operation.***

### ZapTCP 1.2

This is a system extension which, in the result of a program crash, will terminate the network connections and prevent the Macintosh from crashing. NOTE: this should not be installed on a Power Macintosh.

### TFTPd

This is used to transfer files from the Macintosh to the GML Node. This is a "background" application meaning it will not be displayed as a running application. To verify that it is indeed running, double click on the Swatch application's icon and look for "TFTPd" in the list of processes. This is installed in the Startup Items folder so it is launched automatically whenever the Mac is rebooted. NOTE: this should not be installed on a Power Macintosh.

### GML Prefs

This file stores the configuration data for the software. The configuration data consists of the information from the **System Hardware Preferences** dialog. Any data saved as a "Default" are stored here too. Examples of "Default" data are the Local Zero value and Switch Configurations. If this file cannot be found when the application is booted, either because it has been deleted, renamed or moved from this folder, a default configuration of 48 channels, 7 groups and 1 stereo will be used.

### gal and gal\_EEPROM

These files contain the operating system code for the GML Node computer. These two files are identical except in their usage. The 'gal' file is used to initialize the Node when the TFTPd program is used. The 'gal\_EEPROM' file contains the same code as the 'gal' file except it has been designed to run from the EEPROM in the A Processor inside the GML Node. When we upgrade our software for the GML Node, these files get replaced with the new files. This provides an easy update procedure.

### VME162 Node Files

These files contain the initialization data for the GML Node computer. These get sent to the GML Node every time the application is run. These files must always be located in the VME162 Node Folder and the VME162 Node Folder must always be located in the same folder as the GML Application otherwise they will not be found, thereby preventing the GML Node from being initialized.

### GML Walk

This is the equivalent of the Walk utility on the older Idris computer. It allows the mix data to be analyzed and saved.

- *Refer to Appendix O - **GML Walk Description.***

### MacCheck

MacCheck is an Apple support utility tool with which you can learn more about your Macintosh computer, as well as diagnose software problems that result from corrupted directories and files. By using MacCheck in conjunction with Disk First Aid, you can resolve common disk corruption problems.

- *Refer to the **MacCheck Read Me** file for more information.*

## Mac Ping

- Refer to Appendix K - **Mac Ping Instructions**.

## GML Ping

- Refer to Appendix L - **GML Ping Instructions**.

## SimpleText

This is a utility used to view and create text documents.

## Swatch 1.7d10

This application shows all running processes. We use this to verify if TFTPd is running. Since TFTPd is a background application this is the only way to see if it is running. When run, Swatch will display a list of running processes, (i.e., applications, extensions and background applications).

## ZTerm 1.0b3

This is a terminal emulation program. If you have a modem, ZTerm can be used to dial into our server to download software upgrades. We have included our server phone number in ZTerm's phone list for you. ZTerm can also be used to monitor the network activity between the Mac and GML Node.

- *Refer to section 14.3.2 **How To Use ZTerm To Monitor Network Activity** for more information.*

## The Test Project Files

This is a sample project folder which contains pre-made mixes. These mixes can be used to test the software.

## The Read Me document

This document will contain information about bug fixes and new features.

## GML System 7

The GML Application. If the Power Macintosh version of this application is installed on a Macintosh, it will run in native code taking advantage of the Power Macintosh 's raw power and speed. The Power Macintosh version of the application will NOT run on 680x0 based Macintoshes.

## 14.7 Appendix G - SMPTE/Machine Interfaces

This appendix describes the procedure for assembling and testing code and tally SMPTE/machine interface for a number of popular tape machines. Information is also given on how to integrate a tape machine that is not included in the list of machines supported.

The **GML Version 2 App Board**, along with the **GML Tape Controller Board**, allows a *full* machine-control interface. The schematic is shown in Appendix I : GML Board Schematics. Machine interconnections are not documented at this time.

### 14.7.1 Code-Only Installations

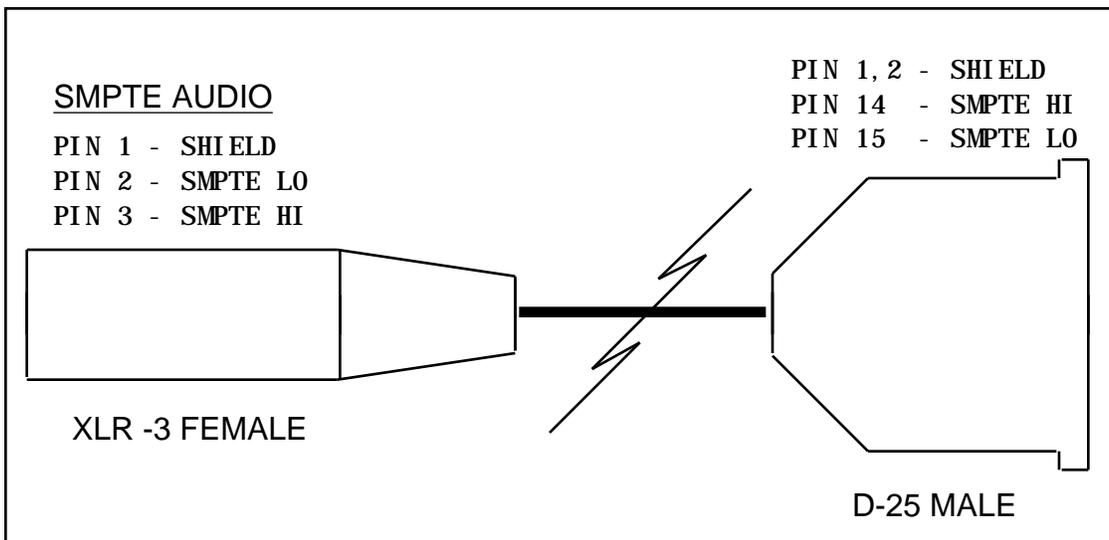
The tape machine interface serves to deliver SMPTE time code from the playback machine (or other SMPTE source) to the GML Automation computer. Three other signals from the tape machine (tallies) are normally supplied in addition to the code in order to enable the user to move tape at very slow speed to search for an exact edit point. These tallies are:

- Tape direction - TDIR
- Tape timer tachometer - TTACK
- Play command - PLAY<R>

### 14.7.2 Code-Only Interface Wiring

An interface which does not include these tallies is called a “code-only” interface, and is all that is required by the GML system to run automation with all the included features EXCEPT the slow-speed edit point search capability.

On the back panel of the GML computer enclosure is a 26 pin flatwire connector labeled “SMPTE”. A cable plugs into this inlet at one end and is terminated with a 25 pin female D-connector at the other end. This cable is supplied with the system and is normally cut long enough to run to the tape machine. The “breakout” assembly for a code-only interface is just the SMPTE audio, typically a female XLR-3 or a direct connection to the console patch bay, connected to a D-25 male as shown in diagram 1.



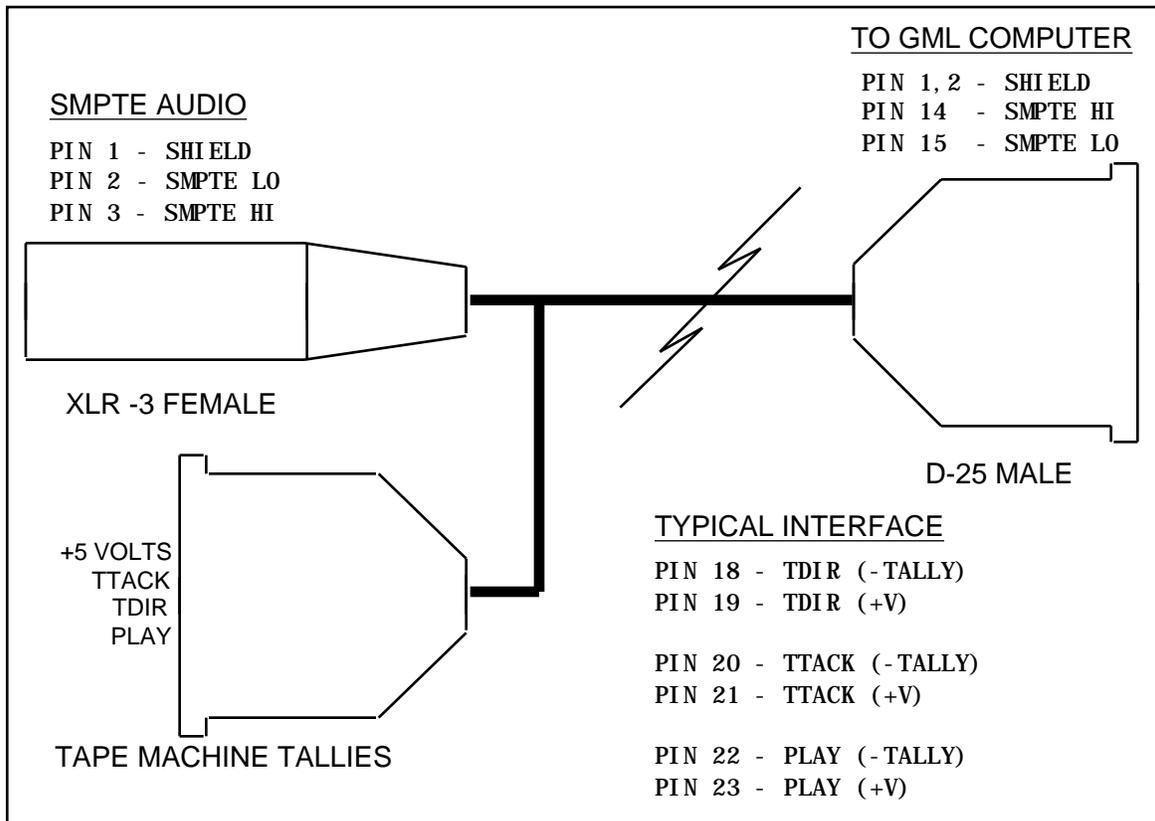
Code-Only Interface - Diagram 1

Many studios standardize on Pin 2 “HI” on all their XLR connectors instead of Pin 3. If that's the case in your situation, just switch pins 2 and 3 in the XLR wiring.

### 14.7.3 Generic Machine - Tally Information

TTACK, TDIR, and PLAY tallies are taken into the GML system through the same D-25 connector and breakout assembly as the time code. Each external tally is isolated with an opto-isolator, with two leads for each signal. Dropping resistors are already implemented on the SMPTE card, but an external 5 to 10 volt source capable of supporting 300 ma. will be needed. Many tape machines have a 5 or 8 volt supply line included in the interface port for this purpose.

The most common hookup connects the three "+" pins to the positive supply. The tally outputs, if open collector, can be tied directly to the three "-" pins, completing the interface. Refer to diagram 2 for pin numbers.



Full Interface Wiring - Diagram 2

When the breakout is assembled and checked, plug the SMPTE audio connector into the time code channel of the tape machine, and the connector with the tallies into its mating connector on the machine. Turn on the machine and automation system. Run automation and play a tape with time code on the SMPTE channel. If all connections are correct, the SMPTE initialization should complete, and the time shown on the terminal display should change when rocking the tape back and forth, even with the time code channel muted. If you see "T8" on the screen during initialization, the TDIR strap on the SMPTE board will need to be changed. This strap provides hardware to invert the PLAY tally, if needed, and would generally only be used in conjunction with a change of tape machine interfaces. This is the only two-position strap on the SMPTE board.

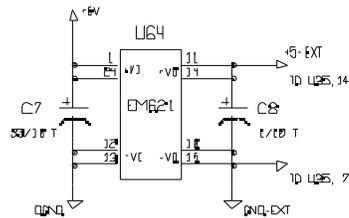
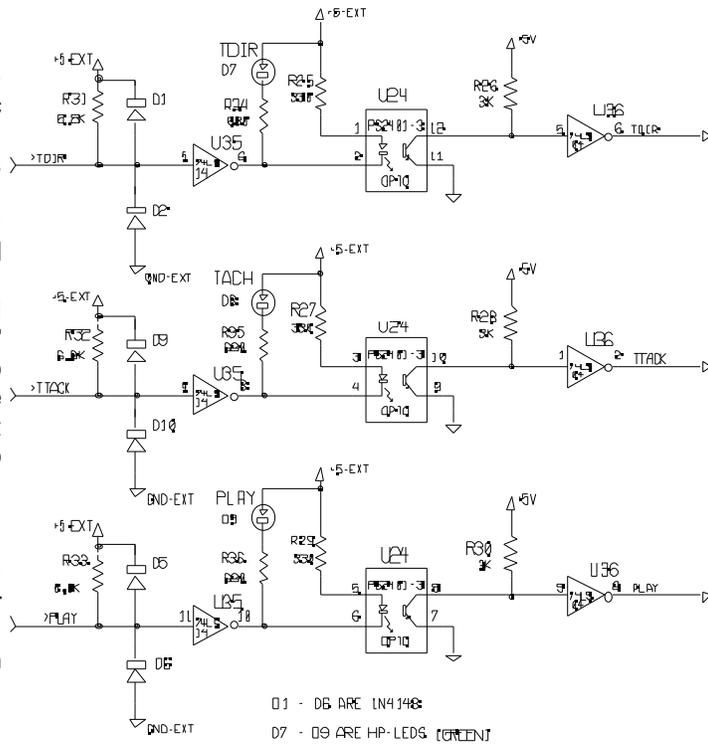
## 14.7.4 New Design Information

For recent purchasers of GML Automation systems, an alternate, yet compatible, external interface will be used. Less current sinking capability is required of the machine's interface drivers. As a result, some machines that would have required buffers with the older GML interface may not need them. These machines [Otari MTR-90 and MCI] have internal loads on the interface drivers and lack the ability to directly drive the LED's in the opto-isolators.

Diagram 3 shows the section of the SMPTE Application board schematic that interfaces with tape machines. Please note that in the following pages concerning specific tape machine interfaces, some connections required by the "old" style interface are optional with the "new", and vice-versa. Specifically, an external control ground connection is required of the "new" interface to refer the tally signals, but no external power supply is required. The "old" interface requires a 5 to 10 volt source to drive the opto-isolators, but no discrete ground connection.

Note that U64 in diagram 3 inverts local 5 volt power, and supplies "external" 5 volt, as well as an isolated ground for use with the opto-isolators and external inverters. Any direct connection between the tape machine's control ground and the GML Automation supply ground is thereby avoided.

The two styles of SMPTE designs are easy to tell apart: All "old" SMPTE boards are wirewrap, whereas the "new" cards are printed circuit board.

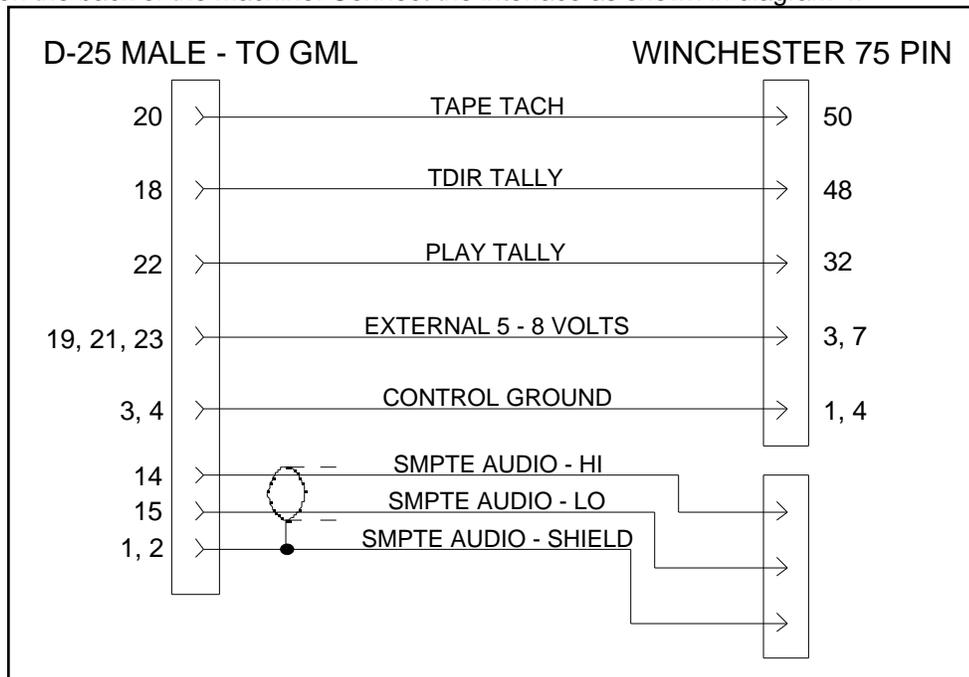


New Tape Interface Design - Diagram 3

## 14.7.5 Interface Diagrams

### 14.7.5.1 Ampex ATR-124 - Machine Interface

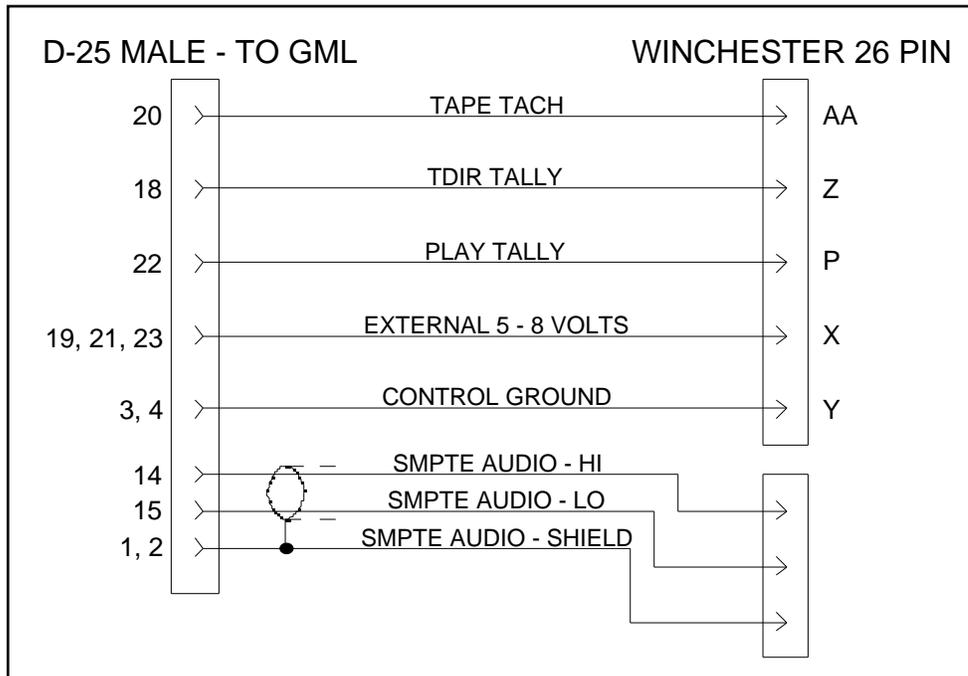
The ATR-124 interface requires a male Winchester 75 pin connector [MRAC75P] and hood [MRE75H], in addition to the 25 pin D male and XLR-3. The Winchester connector mates with the "Accessory" connector on the back of the machine. Connect the interface as shown in diagram 4.



ATR-124 Interface - Diagram 4

### 14.7.5.2 Ampex MM-1100/1200 - Machine Interface

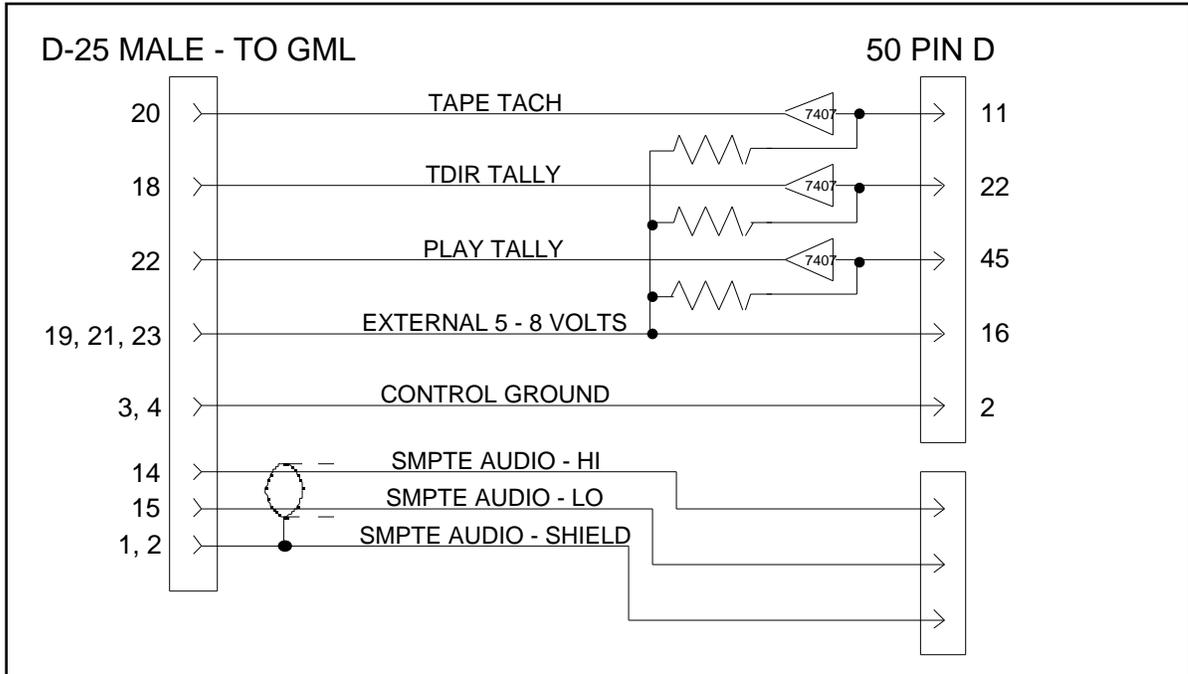
Ampex's MM-1100 and 1200 machines use a Winchester 26 pin connector to interface signals required for GML Automation. Otherwise, the installation is similar to the ATR-124.



Ampex MM-1100/1200 Interface - Diagram 5

### 14.7.5.3 Otari MTR-90 Series I - Machine Interface

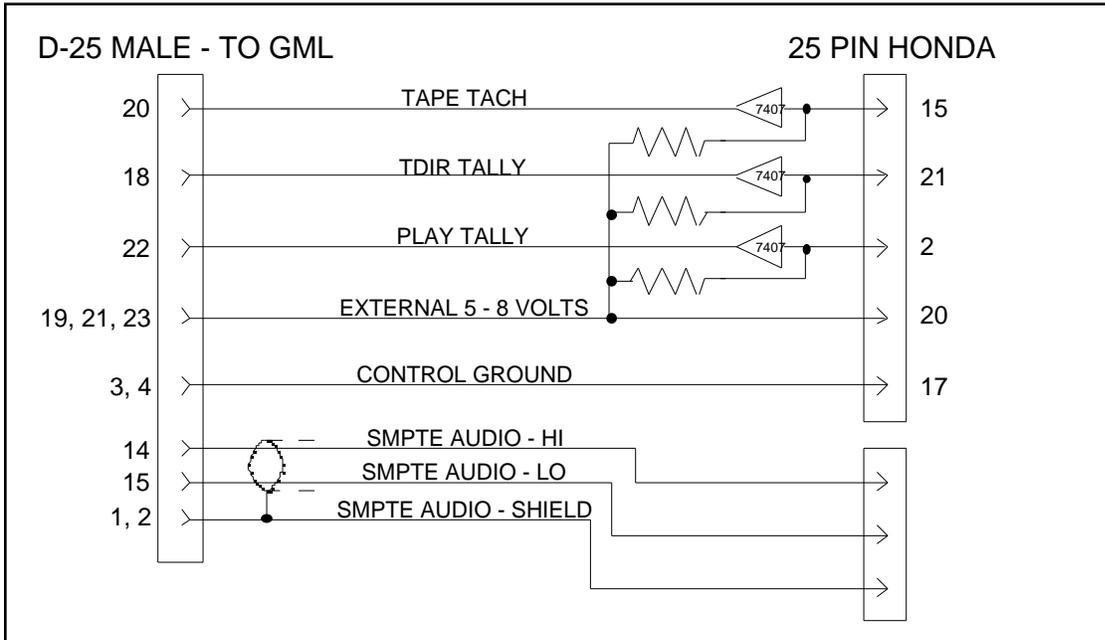
A male 50 pin D connector and hood are required for this interface. We recommend inserting 7407 open collector buffers in line with the tallies to avoid reliability problems with the tape machine. New SMPTE designs do not load the tally lines substantially, so the buffers are unnecessary. See H.2.1 for more details. The three resistors shown are 4.7K 5%. Power and ground for the 7407 must come from the tape machine. (ext 5 volts, control ground)



Otari MTR-90 Series I Interface - Diagram 6

#### 14.7.5.4 Otari MTR-90 Series II - Machine Interface

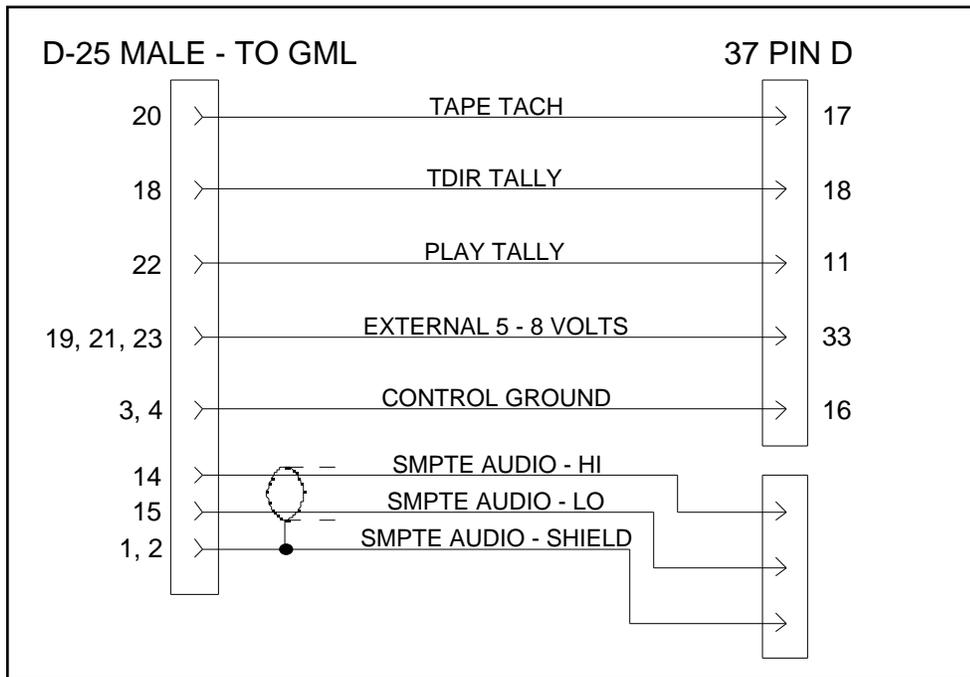
Unlike the Series I machine, a 25 pin Honda male connector [CN225215] is required to complete the cable assembly. See the section describing the Otari MTR-90 Series I for buffer details.



Otari MTR-90 Series II Interface - Diagram 7

### 14.7.5.5 Otari DTR-900 - Machine Interface

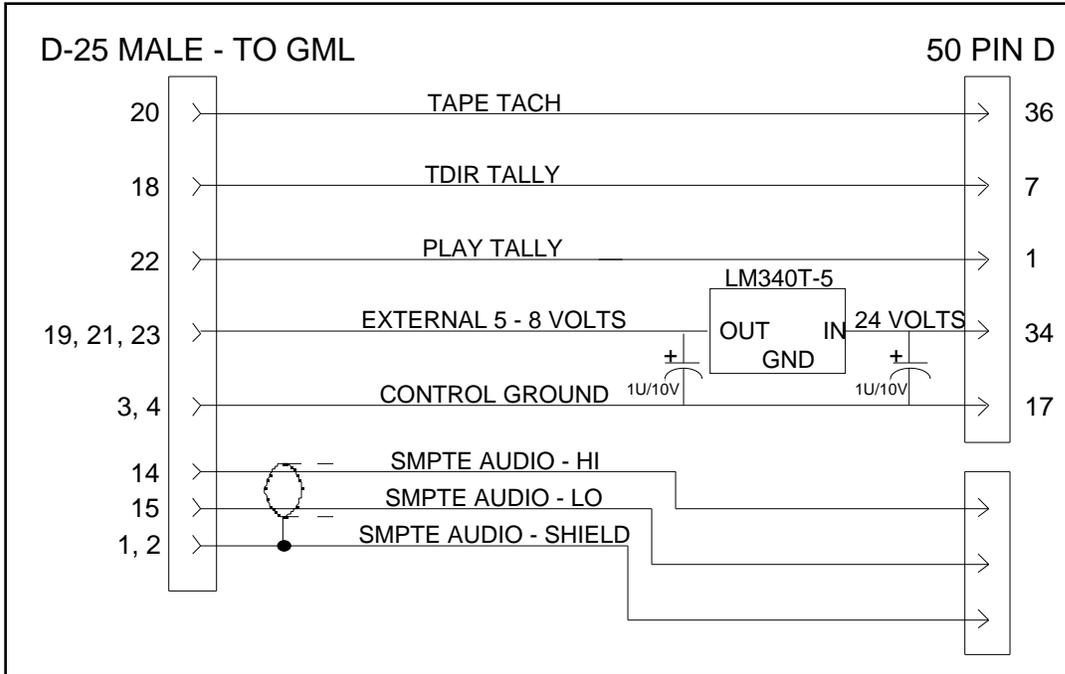
The DTR-900 digital 32-track requires a 37 pin D male connector to bring tallies into the GML system.



Otari DTR-900 Interface - Diagram 8

### 14.7.5.6 Mitsubishi X-800 - Machine Interface

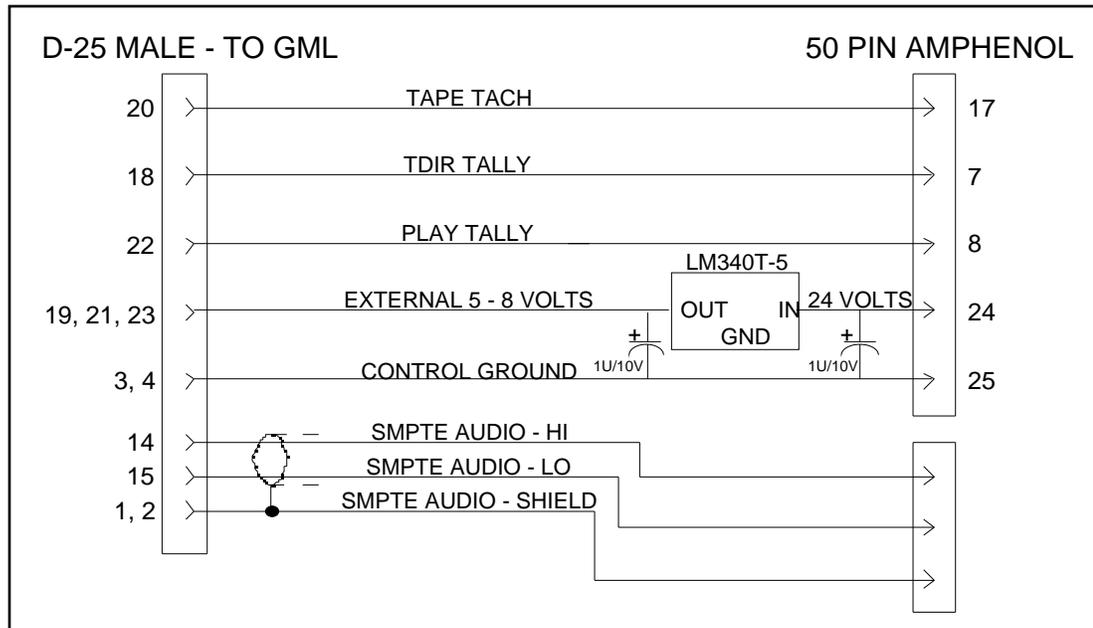
Mitsubishi used a 50 pin D connector on the X800's. A regulator is needed to supply 5 volts to the interface. This is because the tape machine provides +24 volts instead of the more typical 5-8 volts. An LM340T-5 can be installed into the D-25 backshell, or in another convenient location. Connect as shown in diagram 9.



Mitsubishi X-800 Interface - Diagram 9

### 14.7.5.7 Mitsubishi X-850 - Machine Interface

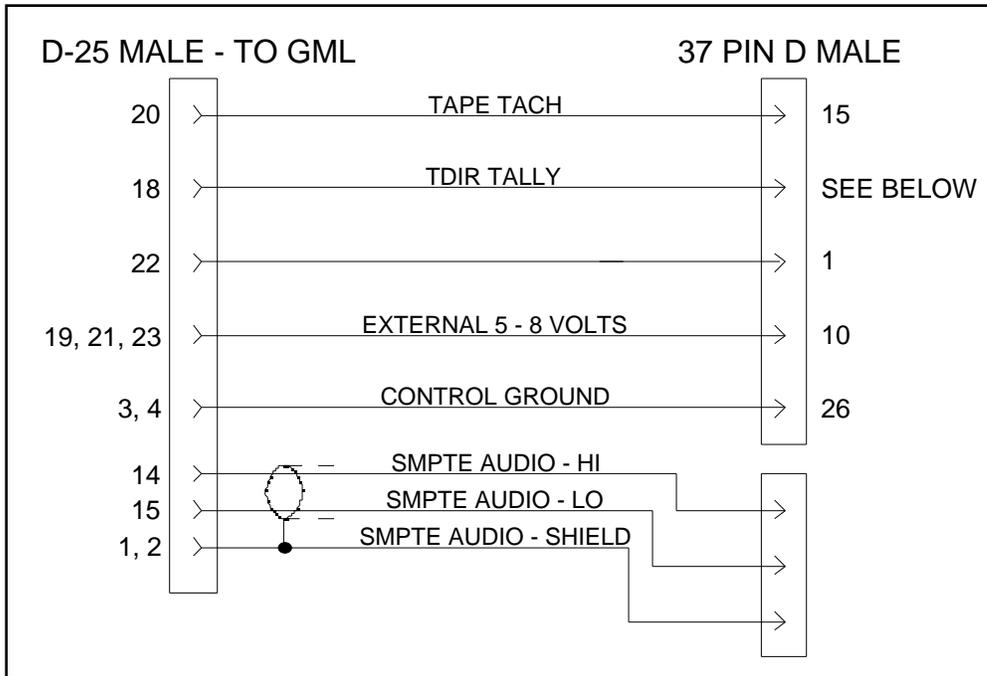
Unlike the X-800, the X-850 uses a 50 pin Amphenol male[5730500]. The connections are made on different pins, but the same 5 volt regulator is required.



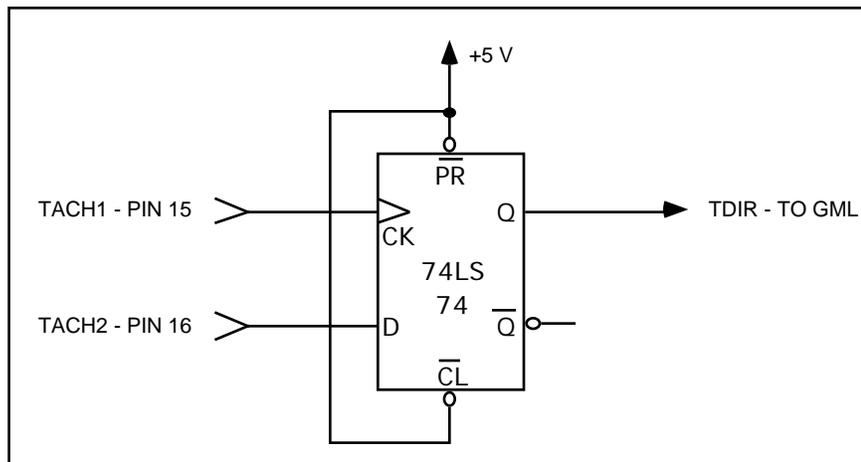
Mitsubishi X-850 Interface - Diagram 10

### 14.7.5.8 Sony 3324 Machine Interface

The 3324 cable requires a 37 pin D male. Also, since TDIR has not been made available on the Sony external interface, it must be derived using a simple quadrature detector. Since Sony provides "TACH1" and "TACH2", phased 90 degrees apart, the quadrature circuit can be built using 1/2 of a 74LS74 as shown in diagram 12. In the past, these circuits have been installed into one of the connector shells.



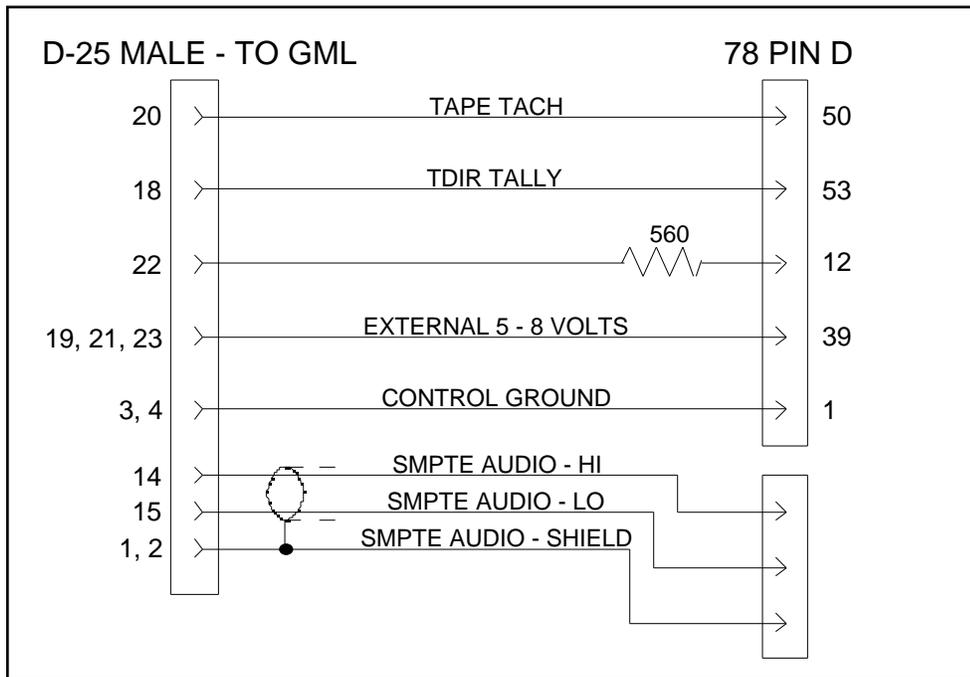
Sony 3324 Interface - Diagram 11



Quadrature Detector - Diagram 12

### 14.7.5.9 Studer A-800 Machine Interface

The A-800 requires a 78 pin D male for its external interface.



Studer A-800 Interface - Diagram 13

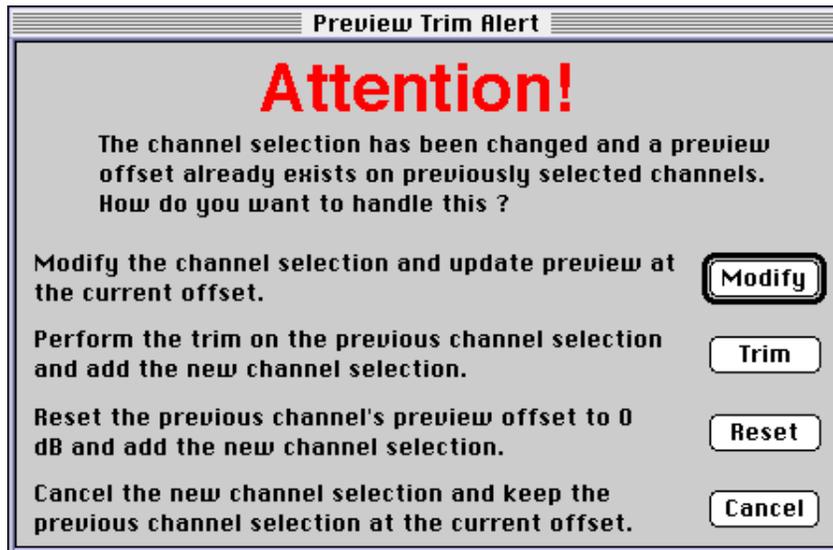
## 14.8 Appendix H - Tutorials

These tutorials assume you understand the basics of the Macintosh and the GML Automation system. If you are unfamiliar with the terminology, refer to the appropriate section in the manual.

### 14.8.1 Tutorial #1 Preview Trim Alert

The Preview Trim Alert is used to alert the user that a channel has been offset but has not been made part of the mix. This is useful if you offset a channel, continued mixing and forget which channel was selected or how much it was offset.

This tutorial will help you understand how each button in the Preview Trim Alert window operates.



#### Setup

This tutorial will only use the faders on channels 1,2 and 3.

1. Click on the **None** button to de-select all channels.



2. Reset the FROM and TO times to their default values by clicking on the "STRT" and "END" buttons.

3. Enter a Preview Trim offset of 0.0 dB and press <return>.



4. Physically move the faders on channels 1 - 3 to 0 dB.

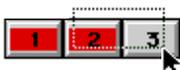
5. Select channels 1 and 2 to Trim.



6. Enter a Preview Trim offset of +10.0 dB and press <return>. The faders on channels 1 and 2 will move to the +10 dB position.



7. Select channel 3 and de-select channel 2. You can do this by dragging a rectangle touching channel 2 and channel 3.



This will cause the Trim Alert to be displayed.

## Modify

**Modify** will offset the newly selected channels at the current offset and reset any de-selected channel to their fader position prior to the offset. This is useful if you want the channels just selected to be offset at the same level as the previously offset faders.

Clicking on **Modify** will perform the following actions:

- Offset the newly selected channel(s) at the current offset value. This will cause the fader on channel 3 to move from 0 dB to +10 dB.
- Offset the newly de-selected channel(s) to their fader position prior to the preview trim. This will cause the fader on channel 2 to move from +10 dB to 0 dB.
- Channels which are not selected or de-selected are left unchanged. In this case, channel 1 is left selected and offset at +10 dB.
- After **Modify**, the faders will be positioned as follows:

Channel 1 fader @ +10 dB.

Channel 2 fader @ 0 dB.

Channel 3 fader @ +10 dB.

- After **Modify**, the channel selection will be displayed as:



## Trim

**Trim** is useful to make the currently trimmed channels a permanent part of the mix and include the newly selected channels with the previous selected channels.

Clicking on **Trim** will perform the following actions:

- Make the offset on the previously selected channels a PERMANENT part of the mix. The +10 dB offset on channels 1 and 2 will exist between the FROM and TO times.
- The newly selected channel(s) will NOT be offset, but will be displayed as selected AFTER the preview offset has been made part of the mix. Channel 3 will be selected along with channel 1. Channel 1 will be at +10 dB, while channel 3 remains at 0 dB.
- The newly de-selected channel(s) will be offset, and displayed as de-selected AFTER the preview offset has been made part of the mix. Channel 2 will be de-selected and remain at +10 dB.
- The previously selected channel(s) remain selected. Channel 1 will be selected and remain at +10 dB.
- After **Trim**, the faders will be positioned as follows:

Channel 1 fader @ +10 dB.

Channel 2 fader @ +10 dB.

Channel 3 fader @ +0 dB.

- After **Trim**, the channel selection will be displayed as:



## Reset

**Reset** is useful when you want to undo the previous offset, but include the new channel selection with the previous channel selection.

Clicking on **Reset** will perform the following actions:

- The preview offset will be reset to 0 dB and the previously selected channel(s) will be returned to their original fader positions. Channels 1 and 2 will move back to 0 dB.
- The newly selected channel(s) will be included in the channel selection. Channel 3 will be shown as selected.
- The newly de-selected channel(s) will be removed from the channel selection. Channel 2 will be shown as de-selected.
- The previously selected channel(s) remain selected. Channel 1 remains selected.
- After **Reset**, the faders will be positioned as follows:

Channel 1 fader @ 0 dB.

Channel 2 fader @ 0 dB.

Channel 3 fader @ 0 dB.

- After **Reset**, the channel selection will be displayed as:



## Cancel

**Cancel** is useful when you want to return to your previous channel selection.

Clicking on **Cancel** will perform the following actions:

- Ignore the new channel selection. Channel 2 will NOT be de-selected, channel 3 will NOT be selected.
- Keeps the previously selected channels at the current offset. In this case, channels 1 and 2 will remain selected and the faders will remain at +10 dB.
- After **Cancel**, the faders will be positioned as follows:

Channel 1 fader @ +10 dB.

Channel 2 fader @ +10 dB.

Channel 3 fader @ 0 dB.

- After **Cancel**, the channel selection will be displayed as:



## 14.8.2 Tutorial #2 The Switch Editor (Creating Switch Events)

This tutorial is to be used to teach you how to create switch events. Only one switch event can be created at a time.

### Setup

1. Open the **Clear File Type** window and select **Mix** and press <return>. This will erase just the MIX data from the GML Node's memory.
2. Select the **Select Channels** menu item from the **Switch Editor** sub-menu from the **Edit** menu.
3. Click on the **All** button when the **Channel Select** window is displayed.
4. When the Switch Editor is displayed, no switch events should be displayed.

We will create an ON GML Mute switch event on channel 1 at the SMPTE time of 01:10:00:05.0. To do so, follow these steps:

1. Double-click on the Channel Number Field. This will select all the text in this edit field so the keystroke will erase this text.

Chan Number

2. Type "1" and press <return>. This indicates which channel will be effected when we perform and Add or Replace.

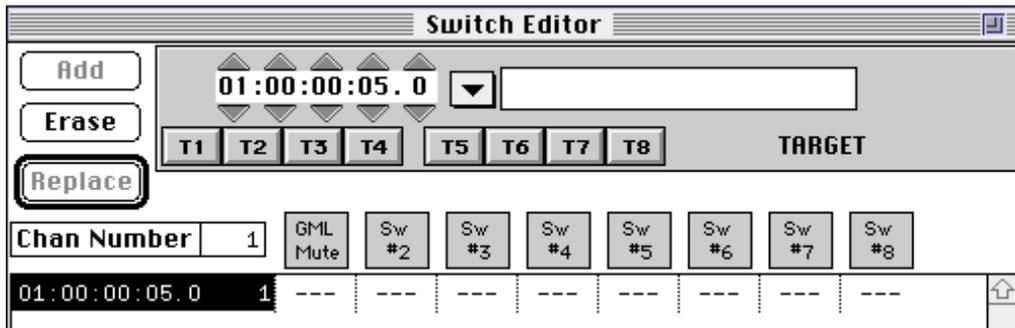
Chan Number

The **Add** button will become enabled, but do not click on it yet.

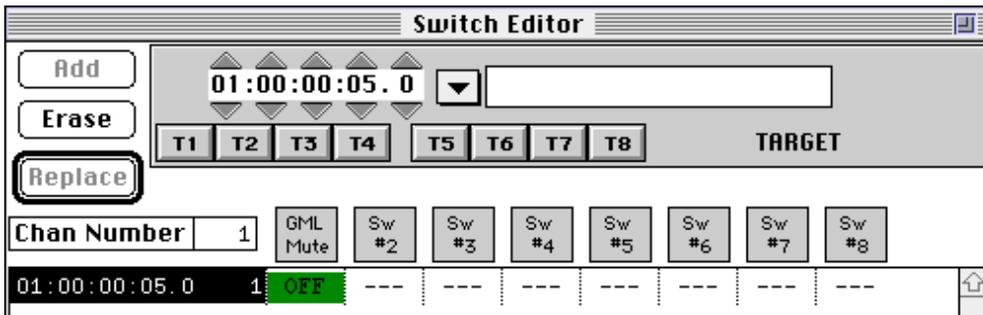
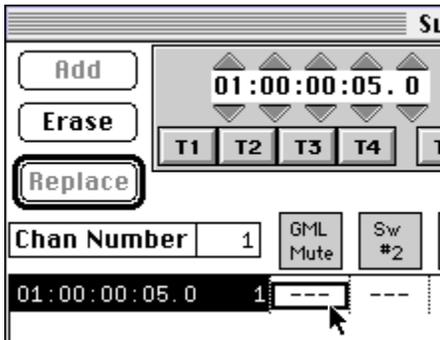
3. Enter the SMPTE time in the SMPTE Editor.

4. Click on **Add** to add this new switch event to the list.

The new switch event will be selected and scrolled into view.



- To make this an OFF GML Mute switch event, click on the GML Mute column at the selected switch event until the word ON appears in the column.



### 14.8.3 Tutorial #3 The Switch Editor (Replacing Switch Events)

More than one switch event can be Replaced at a time. When a switch event is replaced, the original switch event is still displayed, but its data is set to NULL events.

#### Setup

1. Open the **Clear File Type** window and select **Mix** and press <return>. This will erase just the MIX data from the GML Node's memory.
2. Select the **Select Channels** menu item from the **Switch Editor** sub-menu from the **Edit** menu.
3. Click on the **All** button when the **Channel Select** window is displayed.
4. When the Switch Editor is displayed, no switch events should be displayed.
5. Create the following switch events:

01:00:00:00.0	1	ON	---	---	---	---	---	---	---
01:00:00:00.0	2	ON	---	---	---	---	---	---	---
01:00:00:00.0	3	ON	---	---	---	---	---	---	---
02:00:00:00.0	1	OFF	---	---	---	---	---	---	---
02:00:00:00.0	2	OFF	---	---	---	---	---	---	---
02:00:00:00.0	3	OFF	---	---	---	---	---	---	---
03:00:00:00.0	1	ON	---	---	---	---	---	---	---
03:00:00:00.0	2	ON	---	---	---	---	---	---	---
03:00:00:00.0	3	ON	---	---	---	---	---	---	---

#### Replacing a single switch event.

We will replace the switch event on channel 2 at 02:00:00:00.0 to channel 3 at 02:00:20:00.0.

To do so, follow these steps:

1. Click once on the switch event on channel 2 at 02:00:00:00.0 to select it.

02:00:00:00.0	1	OFF	---	---	---	---	---	---	---
02:00:00:00.0	2	OFF	---	---	---	---	---	---	---
02:00:00:00.0	3	OFF	---	---	---	---	---	---	---

2. Double-click on the Channel Number Field. This will select all the text in this edit field so the keystroke will erase this text.
3. Type "3" and press <return>. This indicates which channel will be effected when we perform the Replace.

Chan Number | 3

The **Add** button will become enabled, but do not click on it yet.

4. Change the SMPTE time in the SMPTE Editor to 02:00:20:00.0.

▲▲▲▲▲  
**02:00:20:00.0**  
 ▼▼▼▼▼



When replacing a switch event to an existing switch event, the existing switch event will have its data modified. In this example, we will replace the switch event for channel 1 at 01:00:00:00.0 to channel 1 at 02:00:00:00.0. Since channel 2's GML Mute data will be modified to be changed to ON.

1. Click on the switch event for channel 1 at 01:00:00:00.0.

2. Enter the new SMPTE time in the SMPTE editor.



3. Click on the **Replace** button.



The original switch event for channel 1 at 01:00:00:00.0 is set to NULL and the switch event for channel 2 at 02:00:00:00.0 is set to ON.

## 14.9 Appendix I - GML Board Schematics

The following schematics are provided to supplement the user's understanding and to aid the troubleshooting process.

### 14.9.1 Tape Control Interface

- 14.9.1.1 Tape Control Interface Board (Frame)

- 14.9.1.2 37pin DSUB Tape Interface (Pinout)

### 14.9.2 PERI I/O Board (VME)

### 14.9.3 GML FADER Schematics

- 14.9.3.1 FADER I/O Board (Peripheral Rack)

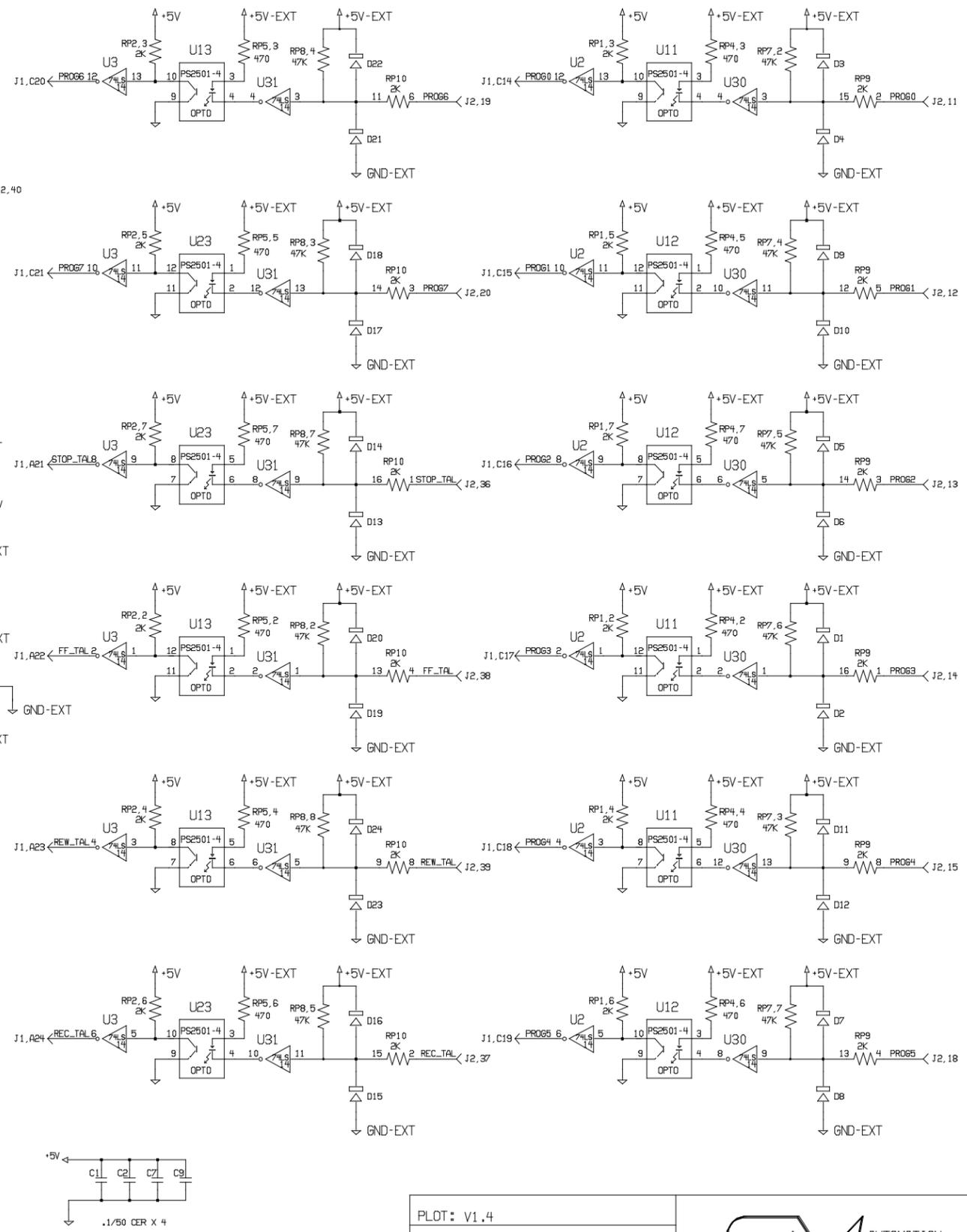
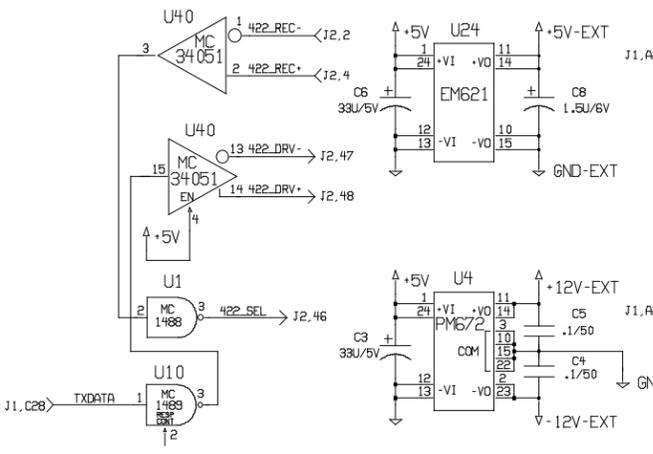
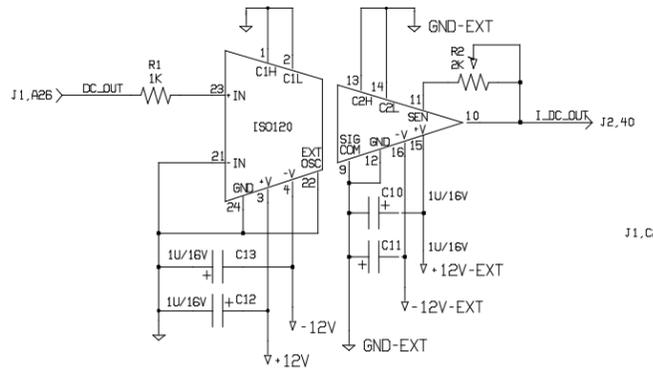
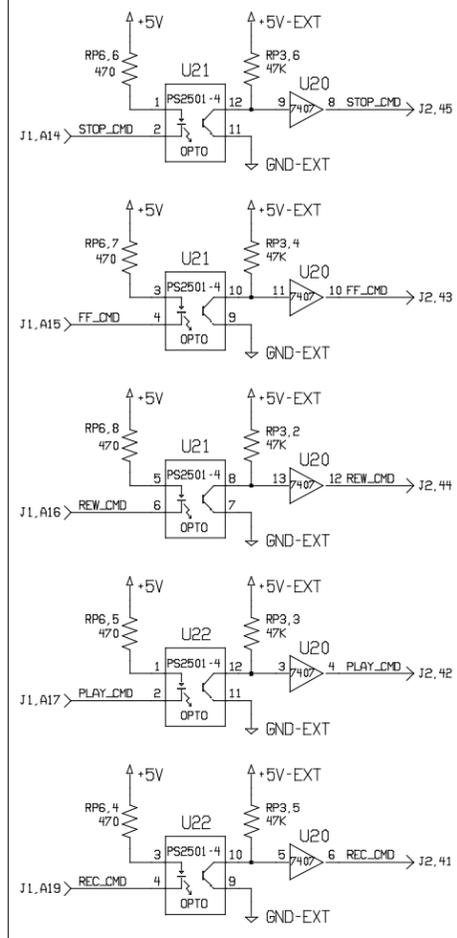
- 14.9.3.2 GML Fader Board (Internal)

- 14.9.3.3 GML Fader Wiring Options

- 14.9.3.4 Neve VR Fader Buffer Board (Fader)

### 14.9.4 Switch I/O Board (Peripheral Rack)

### 14.9.5 GML Mute Scramble Board

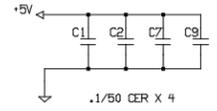


J1

64 PIN DIN CONNECTOR	
ROW A	ROW C
1 SMPT_HI	1 AGND
2 SMPT_LO	2 AGND
3 N/C	3 GND-EXT
4 N/C	4 GND-EXT
5 >TDIR	5 AGND
6 N/C	6 AGND
7 >TTRACK	7 AGND
8 N/C	8 AGND
9 >PLAY	9 AGND
10 N/C	10 AGND
11 +5-EXT	11 AGND
12 +5-EXT	12 AGND
13 N/C	13 AGND
14 STOP_CMD	14 PROG0
15 FF_CMD	15 PROG1
16 REW_CMD	16 PROG2
17 PLAY_CMD	17 PROG3
18 N/C	18 PROG4
19 REC_CMD	19 PROG5
20 N/C	20 PROG6
21 STOP_TAL	21 PROG7
22 FF_TAL	22 N/C
23 REW_TAL	23 N/C
24 REC_TAL	24 N/C
25 N/C	25 N/C
26 DC_OUT	26 SSND
27 -12V	27 RXDATA
28 +12V	28 TXDATA
29 DGND	29 RTS
30 +5V	30 CTS
31 N/C	31 N/C
32 N/C	32 N/C

J2

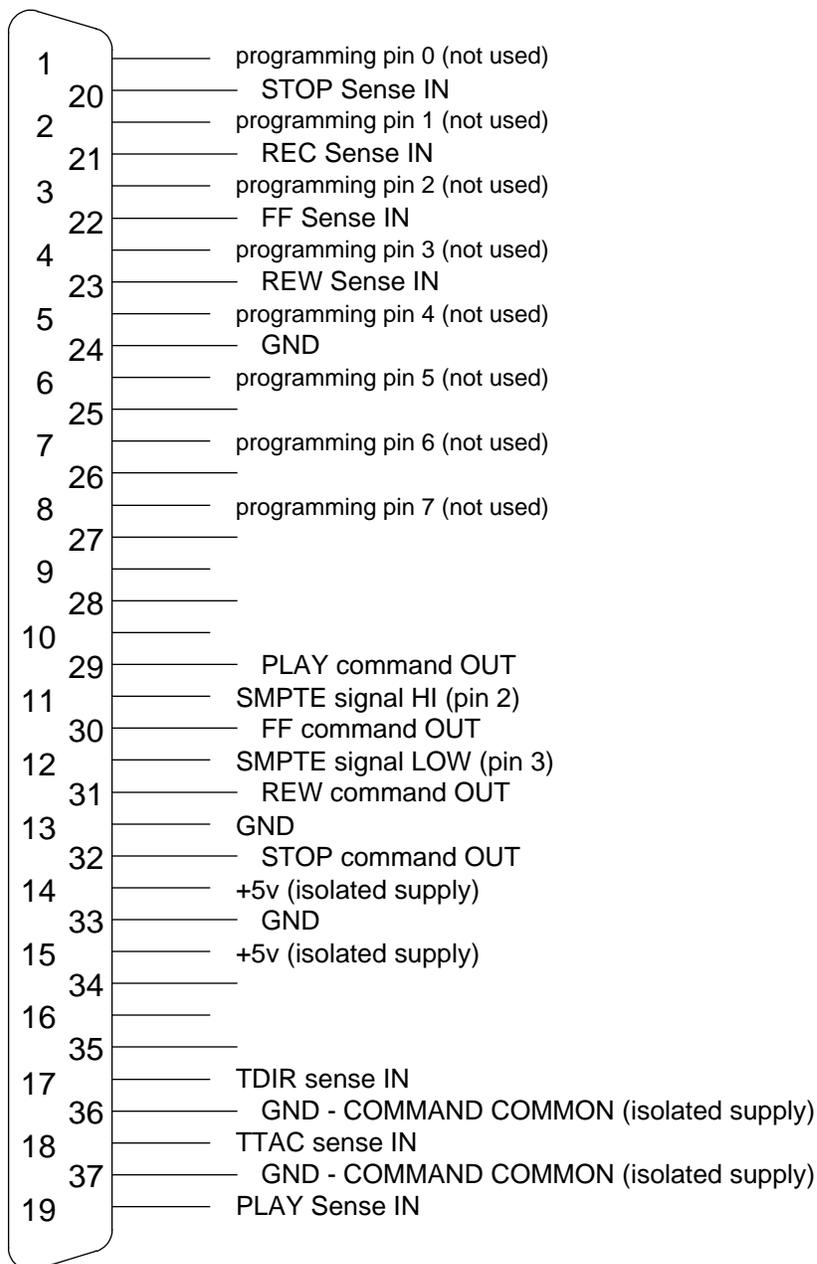
50 PIN D CONNECTOR	
1 AGND	26 SMPT_LO
2 422_REC-	27 SMPT_HI
3 AGND	28 +5-EXT
4 422_REC+	29 +5-EXT
5 AGND	30 >TDIR
6 N/C	31 N/C
7 AGND	32 >TTRACK
8 N/C	33 N/C
9 AGND	34 >PLAY
10 N/C	35 N/C
11 PROG0	36 STOP_TAL
12 PROG1	37 REC_TAL
13 PROG2	38 FF_TAL
14 PROG3	39 REW_TAL
15 PROG4	40 I_DC_OUT
16 N/C	41 REC_CMD
17 N/C	42 PLAY_CMD
18 PROG5	43 FF_CMD
19 PROG6	44 REW_CMD
20 PROG7	45 STOP_CMD
21 SSND	46 422_SEL
22 RXDATA	47 422_DRV-
23 TXDATA	48 422_DRV+
24 CTS	49 GND-EXT
25 RTS	50 GND-EXT

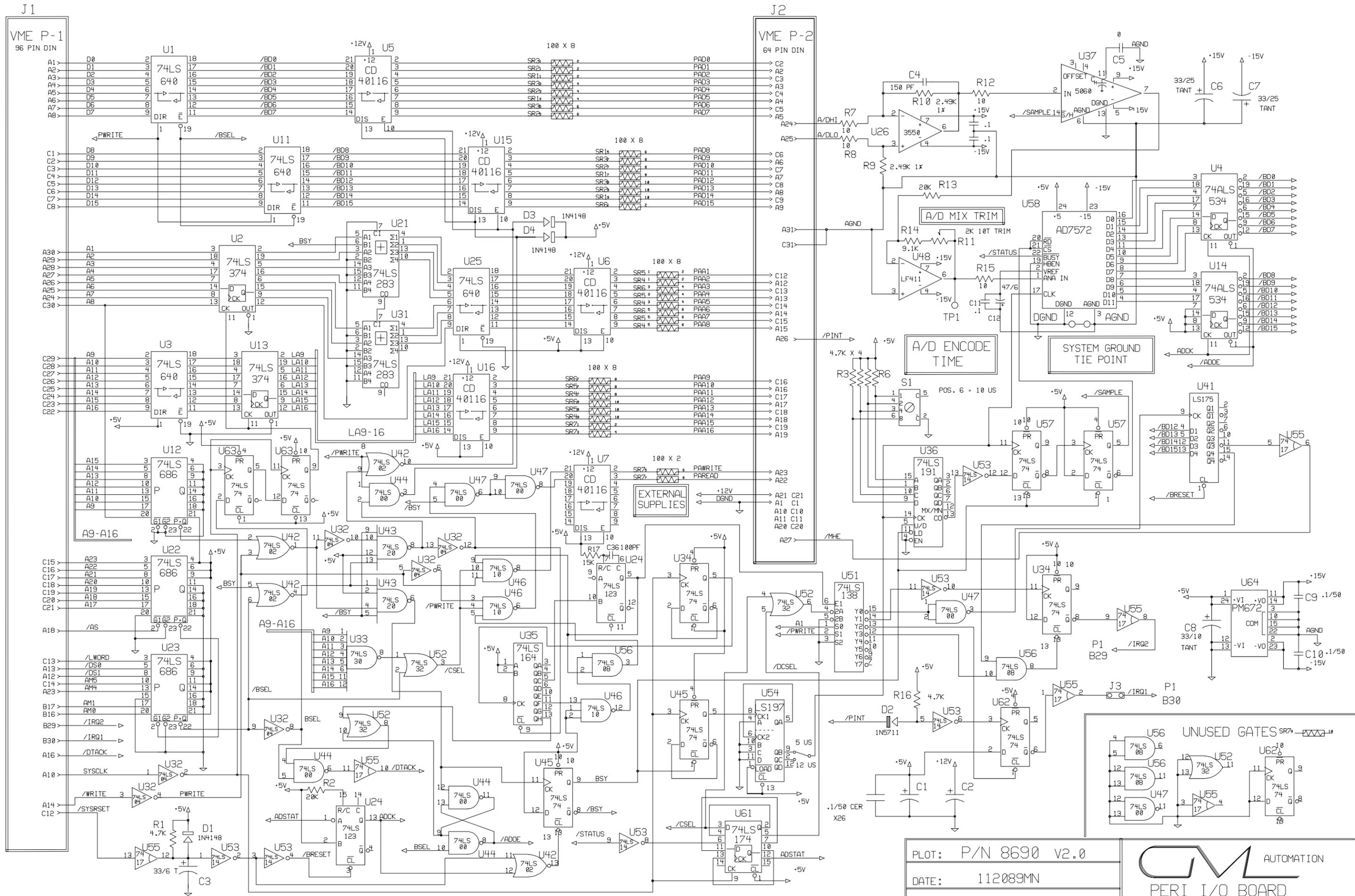


PLOT: V1.4  
 DATE: 121889 RP/MN  
 PAGE: 1

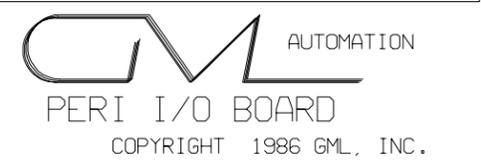


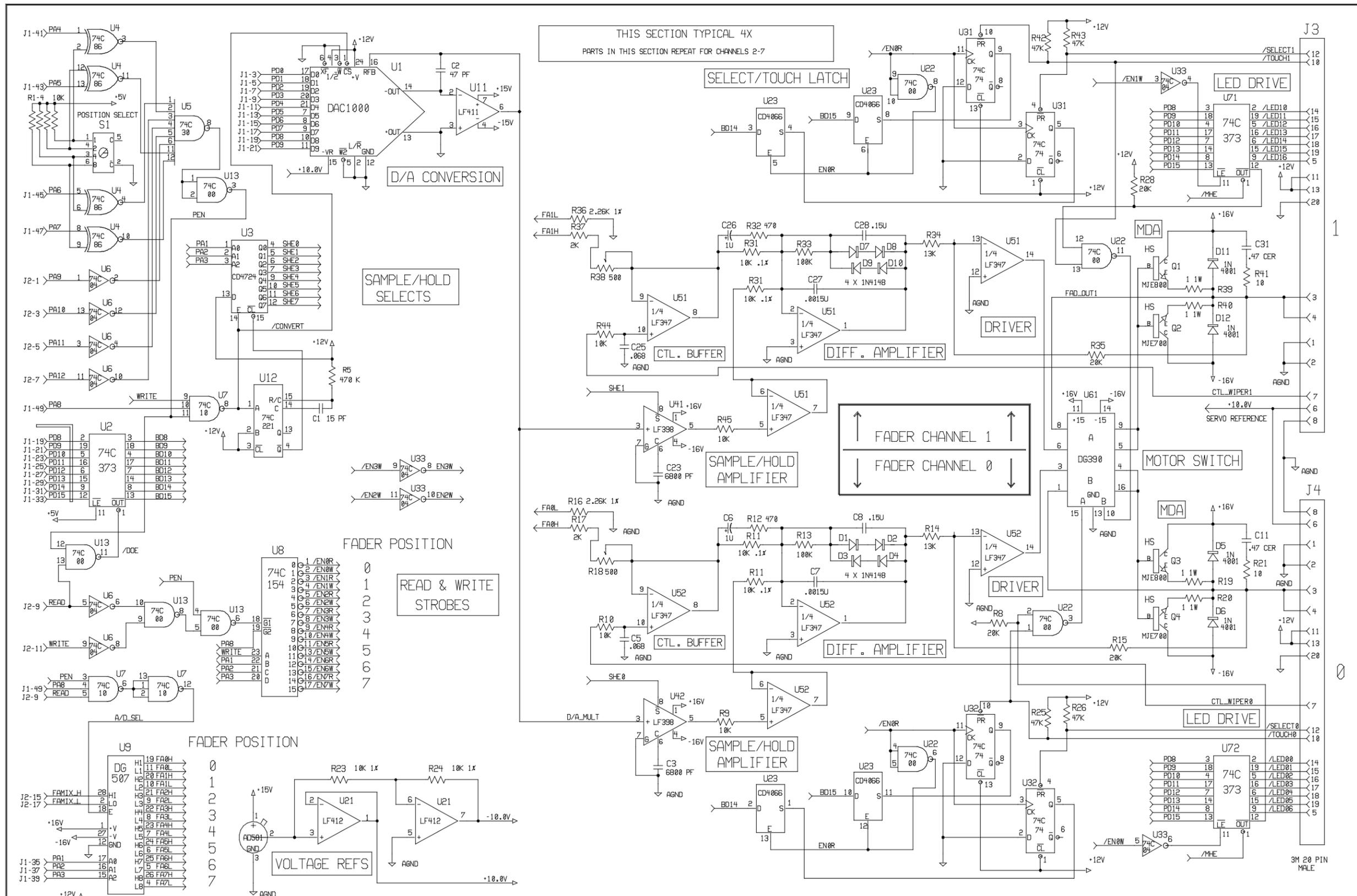
GML System Time Node  
37 pin d-subminiature interface connector  
010222.1 gm





PLOT: P/N 8690 V2.0  
 DATE: 112089MN  
 PAGE: 1

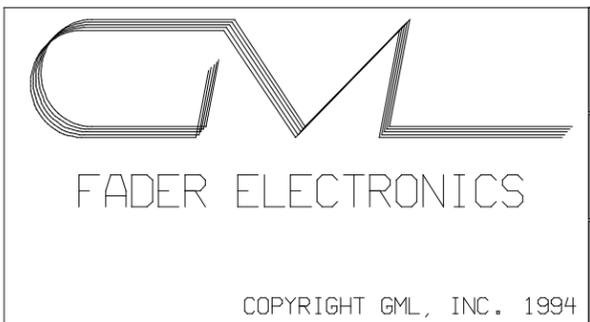
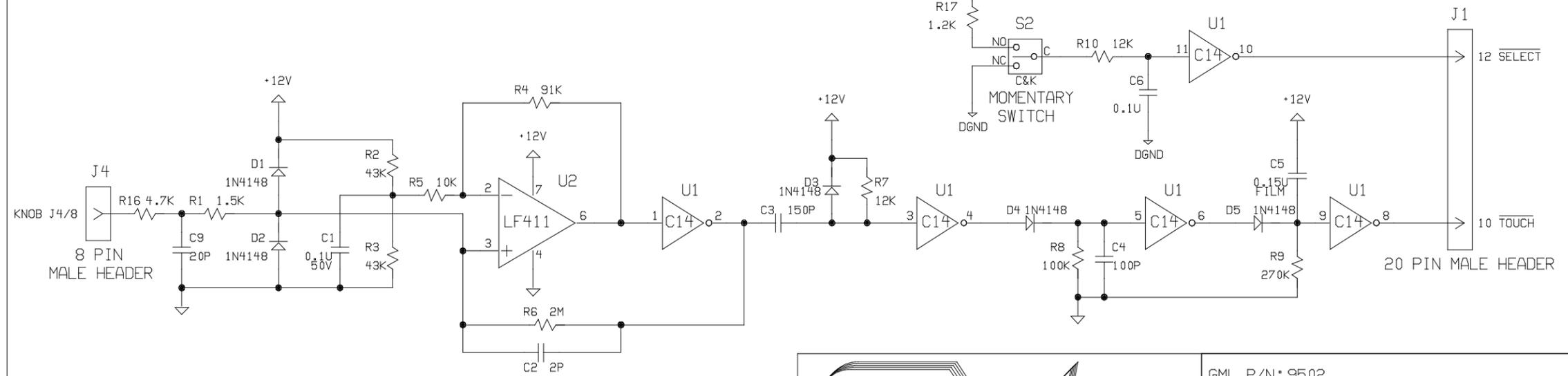
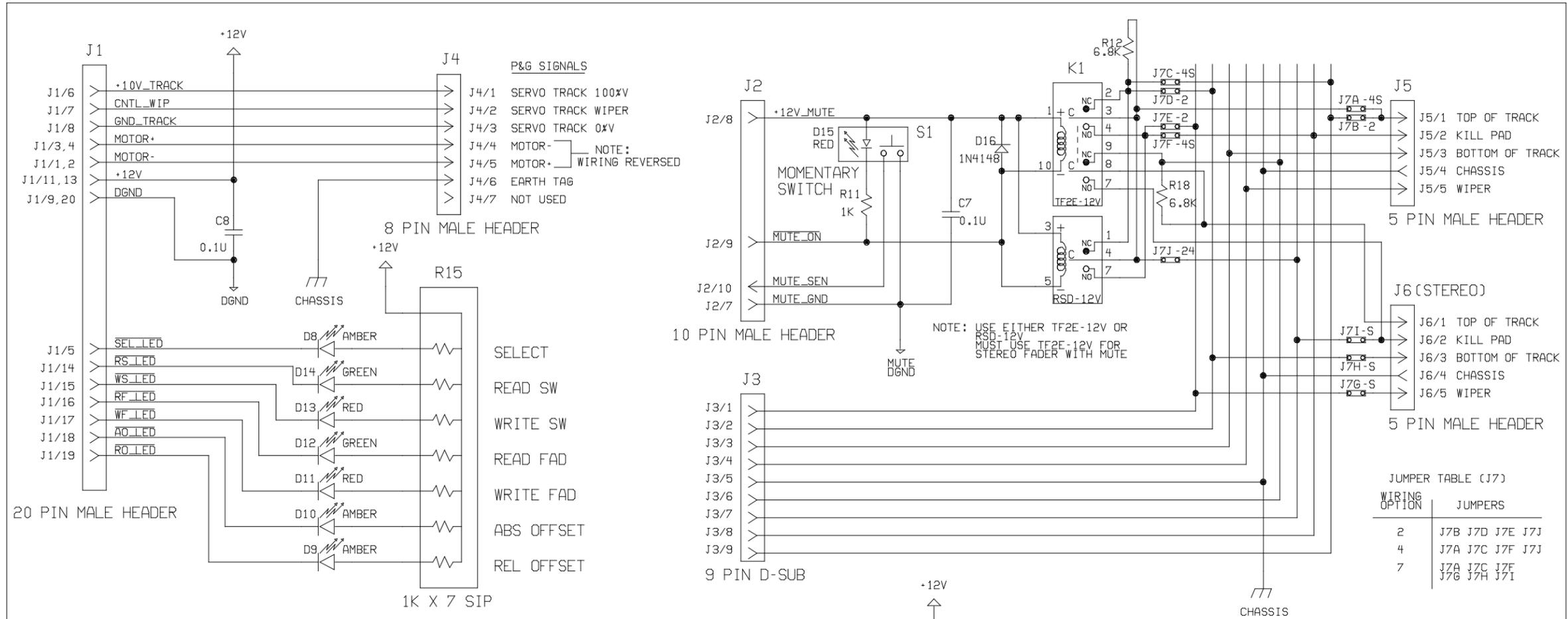




THIS SECTION TYPICAL 4X  
 PARTS IN THIS SECTION REPEAT FOR CHANNELS 2-7

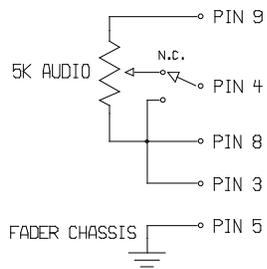
FILENAME: \GML\PERI\FAD10  
 PLOT: V1.1  
 DATE: 121687  
 PAGE: 1

**GML** AUTOMATION  
 P/N 8320 FADER I/O  
 SCHEMATIC  
 ALL DESIGNS COPYRIGHT GML, INC. 1983

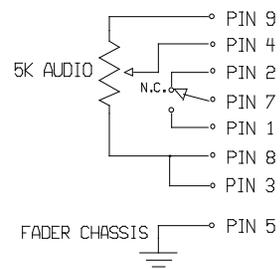


GML P/N: 9502		PAGE: 1/1	
FADER ELECTRONICS V1.0		4400, 3300	
FILENAME:	9502	DRAWN BY:	A.T. MEYER
DRAWING DATE:	021695	LAST REVISION:	022195 ATM

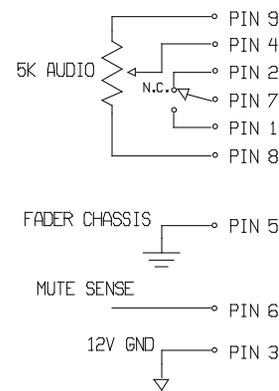
WIRING OPTION 1



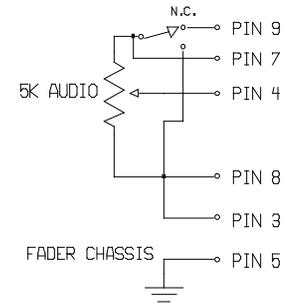
WIRING OPTION 2



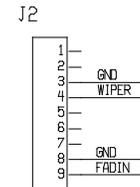
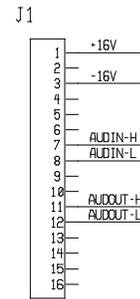
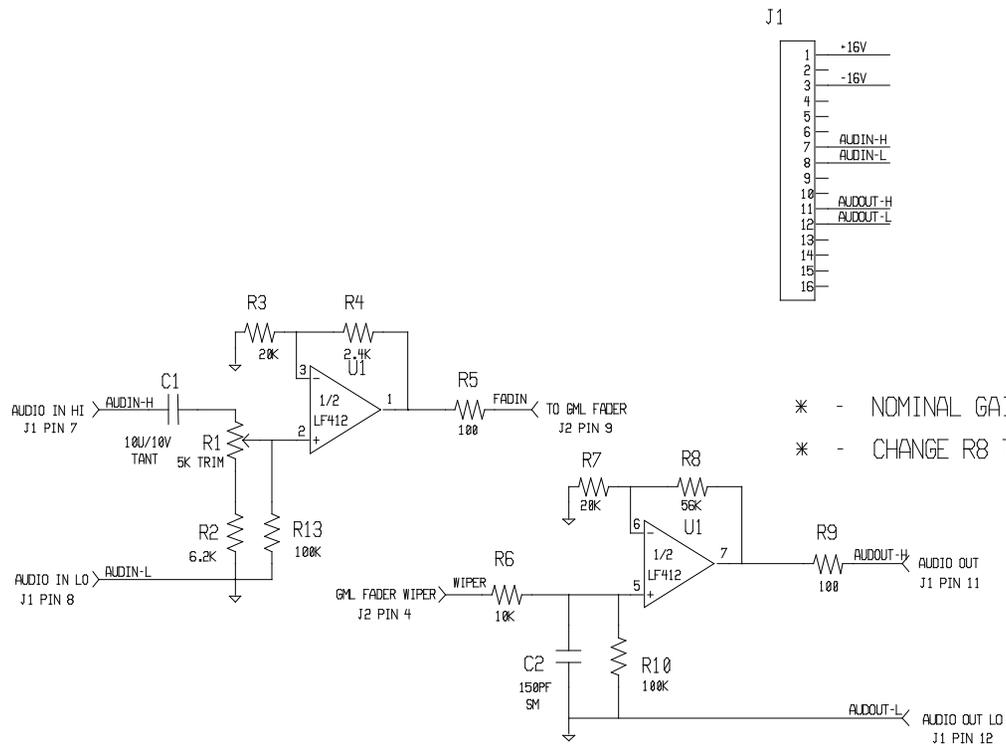
WIRING OPTION 3



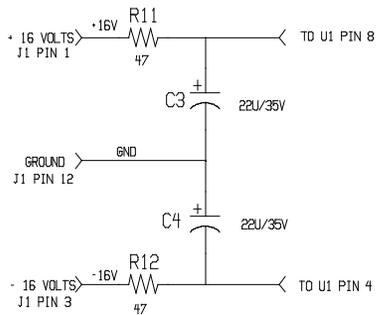
WIRING OPTION 4



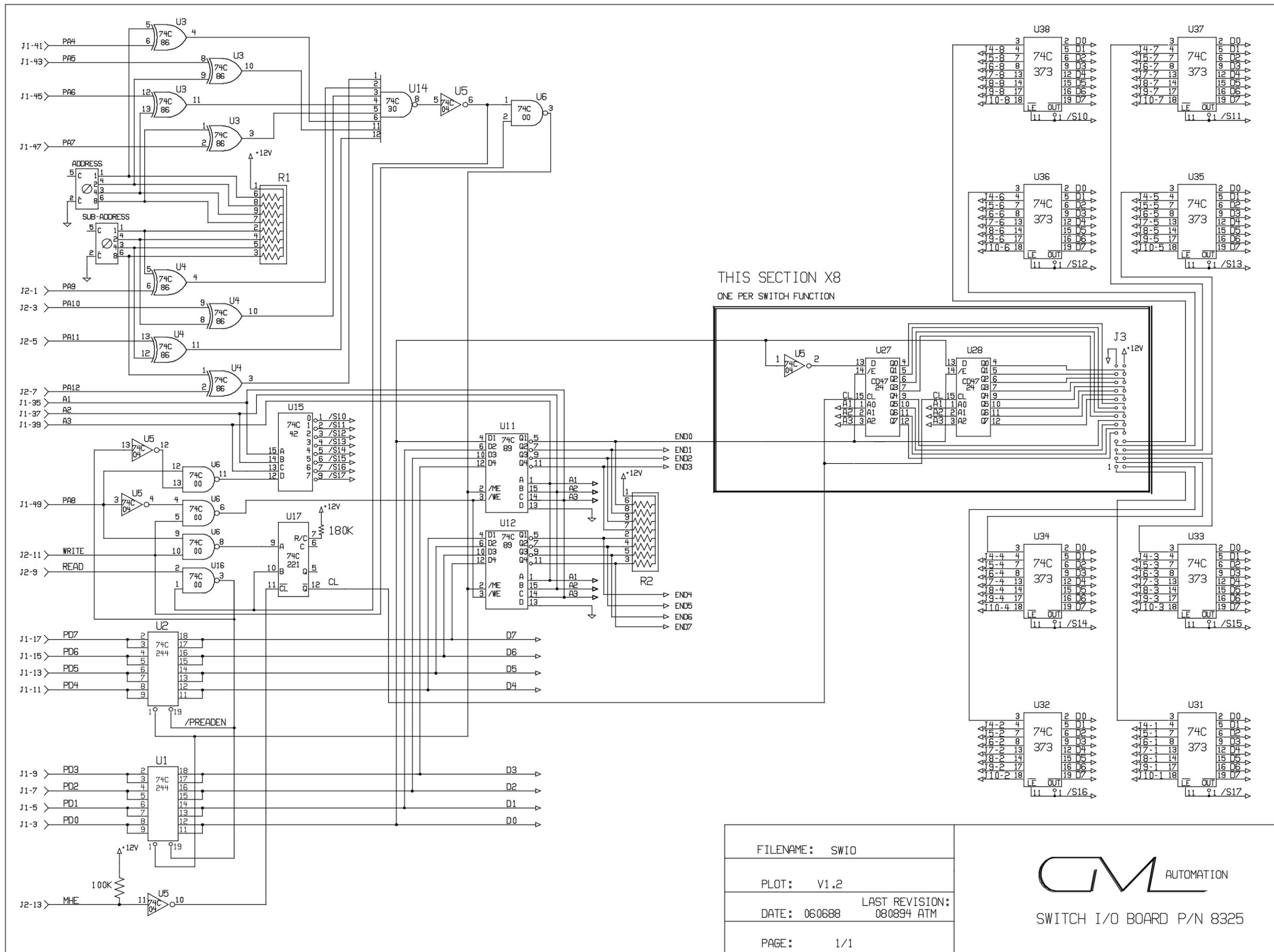
 <b>FADER WIRING</b> COPYRIGHT 1986 GML, INC.	IDENT. & VERSION: FADWIR V2.2	
	DRAWING DATE: 050886	LAST REVISED: 011687
	DRAWN BY: REP	FILENAME: FADWIR

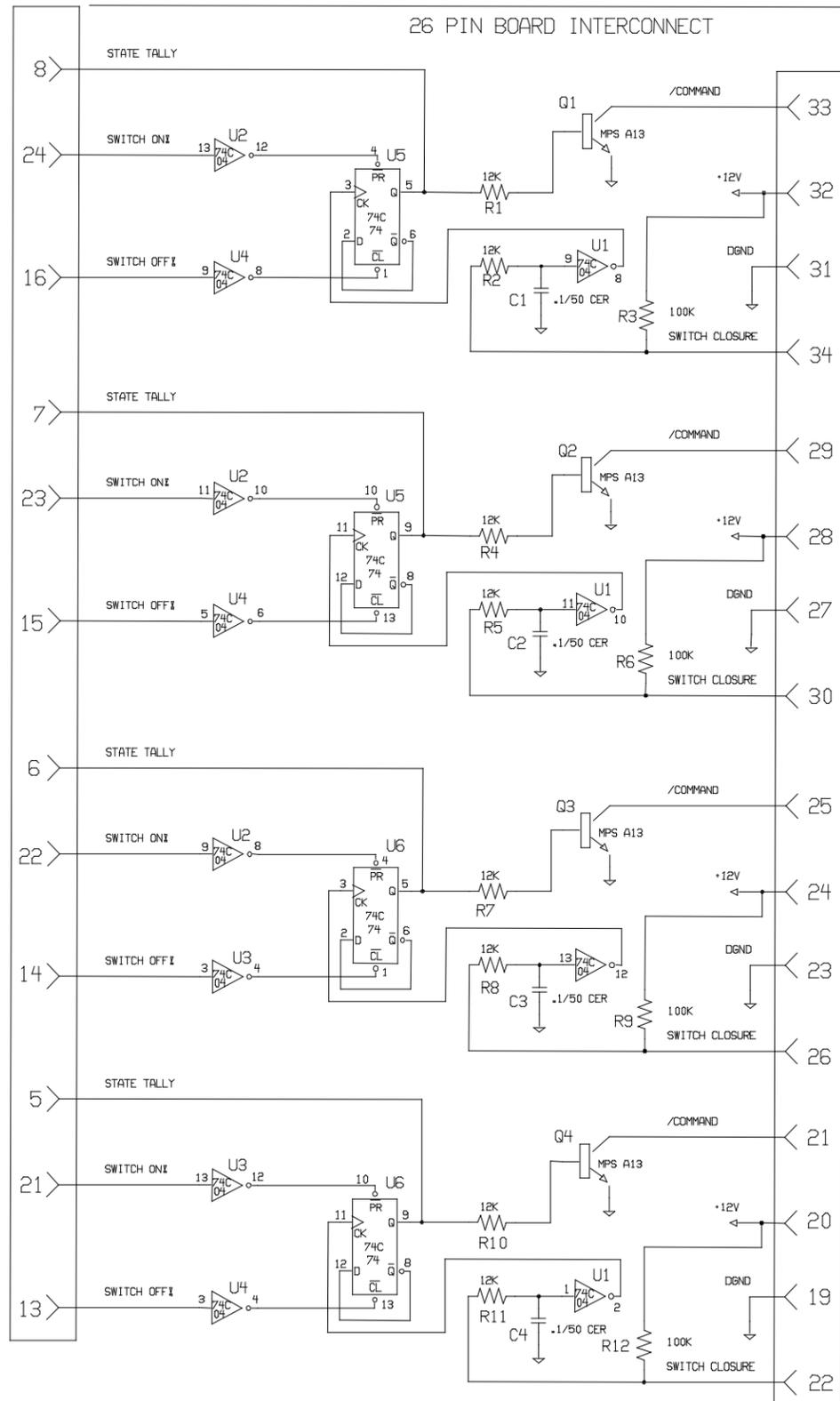


- \* - NOMINAL GAIN = +10 DB
- \* - CHANGE R8 TO 3K FOR UNITY



 <b>NEVE V SERIES</b> <b>FADER BUFFER BOARD</b> <small>COPYRIGHT 1987 GML, INC.</small>	IDENT. & VERSION: P/N 8683 V2	
	DRAWING DATE: 091186	LAST REVISED: 101587
	DRAWN BY: PENDRAGON	FILENAME: BUF96



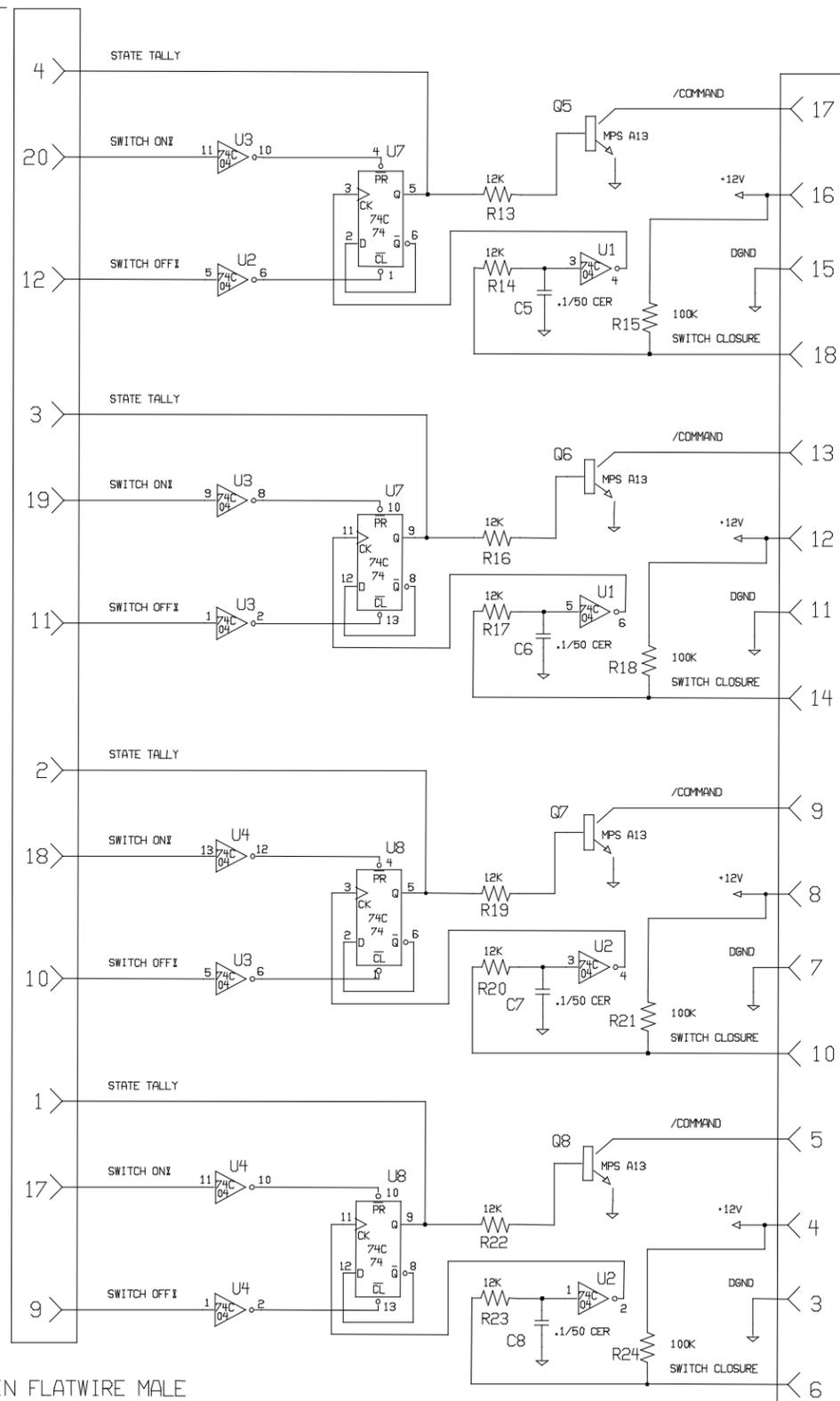


CH1

CH2

CH3

CH4



CH5

CH6

CH7

CH8

34 PIN FLATWIRE MALE

P/N 8325

PLOT: V1.2	
DATE: 080894	LAST REV: 080894 ATM
PAGE: 1	FILE: SCRAM

**GM** AUTOMATION  
SWITCH INTERFACE BOARD

## 14.10 Appendix J - Installer Options

### 14.10.1 680x0 Installations

#### 680x0 Full Installation

This installs all files and utilities on the installation disks. The 680x0 version of the application is installed. The Macintosh will be restarted after the installation has finished.

#### 68K Full Install - Open Transport

This installs all files and utilities on the installation disks in order to run on a Power Macintosh. The Macintosh will be restarted after the installation has finished.

#### 680x0 GML Application & GML Network Only

Only the 680x0 version of the application and application specific files are installed.

### 14.10.2 Power Macintosh Installations

#### MacTCP (68K) or Open Transport (Power Mac)?

MacTCP is used by 68K-based Macintoshes. Open Transport and the TCP/IP Control Panel are used by the newer Power Macintoshes and replace the MacTCP Control Panel. MacTCP and TCP/IP are used to configure the Macintosh's network capabilities. You need to know if your Macintosh uses MacTCP or TCP/IP because the steps to configure the Macintosh will differ.

Follow these steps to find which Control Panel your Macintosh uses:

1. Double click on your hard drive icon in the Finder. This will open a window listing the contents of your hard drive. Scroll until you locate the System Folder.
2. Double click on the System Folder icon. This will open a window listing the contents of System Folder.
3. Scroll until you locate Control Panels. Double click on Control Panels.
4. List the Control Panels in alphabetical order by selecting **by Name** from the **View** menu.
5. Scroll down the list of Control Panels until you find either MacTCP or TCP/IP. You should only be able to locate one of these. Once located, follow the preceding steps for that control panel.
6. If you have a 68000 based Macintosh follow the steps under 68000 Macintosh Setup. If you have a Power Macintosh follow the steps under Power Macintosh Setup.

**NOTE:** If both MacTCP and TCP/IP are in the same Control Panels folder, you may run into problems. MacTCP and TCP/IP are not designed to run together. If both are found in the same Control Panels folder, you should reinstall the System software.

#### Power Mac Full Installation - MacTCP

The Power Macintosh version of the application is installed as well as the MacTCP Control Panel and TFTP application. Both of these applications will cause problems when installed on a Power Macintosh which uses Open Transport. The Macintosh will be restarted after the installation.

#### Power Mac Full Installation - Open Transport

The Power Macintosh version of the application is installed.

#### Power Mac GML Application & GML Network Only

The Power Macintosh version of the application and application specific files are installed

#### Gal File Install

The following files are installed in the TFTPd folder; gal and gal\_EEPROM. These files contain the operating system code for the GML Node and are installed under every installation choice. This installer option is provided so these files may be re-installed in case they get deleted.

## 14.11 Appendix K - Mac Ping Instructions

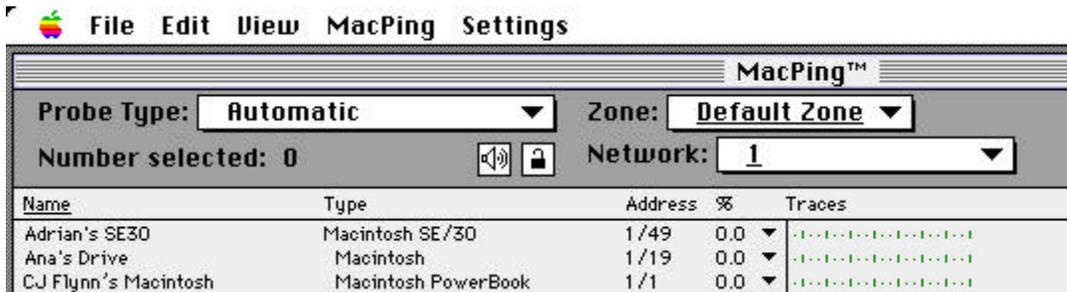
Mac Ping is used to verify that various computers connected via Ethernet can “see” each other. This program will be very useful for troubleshooting the network if the Macintosh fails to connect to the GML Node. Mac Ping works on both 68K based Macintoshes which use MacTCP and Power Macintoshes which use Open Transport.

### How to use Mac Ping:

1. Set up the computers according to the steps defined in **Appendix A- Guidelines for Correct Network Operations** for the initial installation procedure.
2. Double-click on the Mac Ping Icon to launch the Mac Ping application. Mac Ping will be located in the Utilities folder under the folder containing the GML Macintosh application. Note that the Utility folder will only be created when a full install is performed.



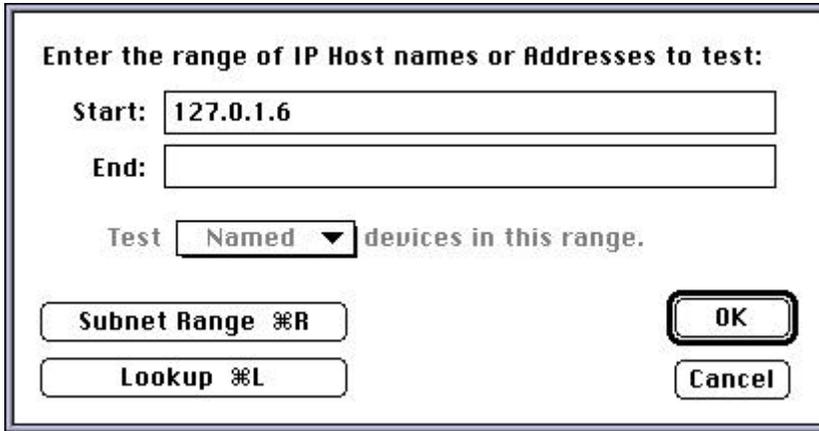
3. Mac Ping will analyze your network for a few seconds and then display the following screen. Note that the machines displayed will differ from what is shown. The GML Node will not be displayed when Mac Ping is launched.



4. Click on the Network pop-up menu and select Test IP Devices.



5. The following dialog will be displayed:



Enter the range of IP Host names or Addresses to test:

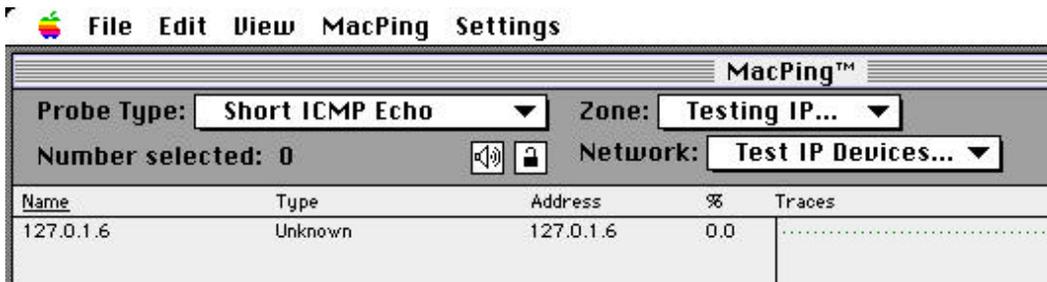
Start:

End:

Test  devices in this range.

Type the address of the GML Node which is set to 127.0.1.6 from the factory. If your GML Node address is different, please enter it here. When you are finished, click on the **OK** button.

6. Mac Ping will now test the connection between the Macintosh and the GML Node. The screen should look like this:



The number located under the “%” symbol indicates the number of dropped packets. This number should always be 0.0 for a reliable connection. A value of 100, indicates that the GML Node is not receiving any of the packets sent to it. This can indicate a broken Ethernet cable or a disconnected Ethernet transceiver.

If you have any questions about the MacPing application there is a help window located under the Apple menu item.

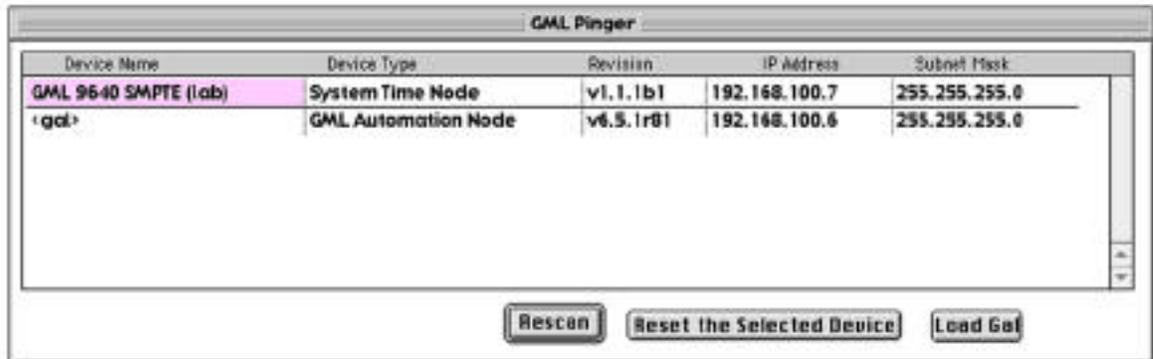


## 14.12 Appendix L - GML Ping Instructions

The GML Ping application is used to verify that the network connection between the Macintosh, GML Node and other network aware devices is operational. When the application is launched, it transmits a network command to all devices on the network. Only those devices which recognize the command send back information about themselves. In the window shown below, you can see that the GML Node and the System Time Node responded. This verifies that your network is functional and that both the Macintosh and GML Node are operating correctly.

Another use for this application is to rename a network device and to change its IP address and Subnet Mask.

Please note that you will not be able to change the GML Node's data if it is running the automation software at the same time that GML Ping is running.



The screenshot shows a window titled "GML Pinger" with a table of network devices. The table has five columns: Device Name, Device Type, Revision, IP Address, and Subnet Mask. There are two rows of data. The first row is highlighted in pink and shows "GML 9640 SMPTE (lab)" as the Device Name, "System Time Node" as the Device Type, "v1.1.1b1" as the Revision, "192.168.100.7" as the IP Address, and "255.255.255.0" as the Subnet Mask. The second row shows "gml" as the Device Name, "GML Automation Node" as the Device Type, "v6.5.1r01" as the Revision, "192.168.100.6" as the IP Address, and "255.255.255.0" as the Subnet Mask. Below the table are three buttons: "Rescan", "Reset the Selected Device", and "Load Gml".

Device Name	Device Type	Revision	IP Address	Subnet Mask
GML 9640 SMPTE (lab)	System Time Node	v1.1.1b1	192.168.100.7	255.255.255.0
gml	GML Automation Node	v6.5.1r01	192.168.100.6	255.255.255.0

### Field Descriptions

#### **Description**

This is the user defined name of a device. This is an editable field and is limited to 32 characters.

#### **Device Type**

This displays what the actual device is. This is an uneditable field.

#### **Revision**

This displays the version of software currently running on a device. This is an uneditable field.

#### **IP Address**

This displays the IP address of a device. This is an editable field. Please note that if you change this value, the automation software will NOT be able to connect to the device *until* you change it in the **System Hardware Preferences** dialog.

#### **Subnet Mask**

This displays the Subnet mask of a device. This is an editable field.

### **How to edit the data.**

1. Double-click on the data you wish to edit. It will be displayed with a black border around it and the cursor will change to an I-beam. If not, you are trying to edit a non-editable field.
2. Double-click on the data again to select all the text in the field. The next keystroke will erase all the selected text.
3. Enter in the new data.
4. To keep the data and have the device updated with it, press <return>. As soon as <return> is pressed the data is sent to the device.
5. To abort the edit, press <ESC>, or click on another field to select it.

## **Buttons**

### **Rescan**

This causes all devices to rescan their data. The application then updates the display with the new data.

### **Reset the Selected Device**

Currently not used. This will be used to reset a device to default values.

### **Load gal**

Currently not used. This will be used to update a device with new software.

## 14.14 Appendix N - Application and Project Preferences Explained

### **Application Preferences**

The application preferences are used as “global” default values for the application. Thus, when custom switch configurations are saved as defaults, everytime the application is run, those switch configurations will be the default switch configurations.

The application preferences are saved in a file called “GML Prefs”. This file is located in the GML folder under Preferences folder under the System Folder. If this file is renamed, deleted, or removed from this location, the application will be configured to a default configuration of 48 channels, 7 groupers, and 1 stereo fader. Also, a dialog will be displayed alerting the user that no preferences were found, and that they should reconfigure the software to match their console configuration.

The application preferences are updated whenever the **Save** button is clicked on in the **System Hardware Preferences** window, or the **Save As Default & OK** button is clicked on in any window.

The application preferences are applied to all *new* Project Folders. If a Project Folder already has Project preference data saved, described below, then the application preference data will be overridden by the Project preference data.

### **Project Preferences**

The Project preferences is contained in a file called “Prefs”. This file is only located in the Project Folder. The Project preferences can be unique for each Project. The data contained in the Project preference file only pertains to the mixes located within the Project Folder. If the Project preferences file is renamed, deleted, or removed from the Project Folder, the application preferences will be used instead.

The Project preferences is useful when one Project uses a different machine or time code format. Everytime the Project is selected, those default values will be restored so you will not waste time reconfiguring the software.

When a Project is selected, the application searches for the “Prefs” file. If found, then the Project preference data is loaded into the GML Node and the application is changed accordingly. For example, if the Project just selected had the Local Zero Enabled flag turned on in its “Prefs” file, then all SMPTE displays will change to reflect the Local Zero effect. If the Project preferences file is not found, the application preferences is used instead.

### **When Preferences are NOT used by the application.**

During the expansion of the GML Application, we may need to change what is stored in the preference files. In order to prevent corruption from using incompatible preference files, new GML software may ignore your preferences upon boot up. If this happens, a dialog will alert you to reconfigure your software. You will need to re-enter your custom switches and switch configuration. You may also need to reconfigure your Project preferences.

## 14.15 Appendix O - GML Walk Documentation

The GML Walk application is used to verify that mix data is correct.

To launch the GML Walk application, double-click on its icon. The GML Walk application can be found in the folder named "GML Walk f", located in the Utilities Folder. Note that the GML Walk application is only installed onto your hard drive when a full installation is performed.

When the application is launch, the Open Dialog is displayed. Use this to move around the Macintosh file system to locate the mix you wish to verify. Only mix files are displayed in the Open Dialog's file list. Refer to your Macintosh Users Guide if you do not know how to use the Open Dialog.

Double-click on the mix you wish to verify.

Once a mix has been selected, you may view its header information or check the actual mix data. The header information contains information regarding the mix such as time and date created, the console configuration, grouping information, solo information, etc. ...

To view the mix header information, select **Mix Header** from the **Display** menu.

A window will be opened which displays the mix header information. This information may be saved to your hard drive or floppy disk and printed for debugging purposes.

To view the mix data, select **Mix Data** from the **Display** menu.

A dialog box will open in which you enter the channels you are interested in seeing and the SMPTE time. Leave the channel list field empty to view mix data for all channels. Leave the SMPTE time field empty to start displaying mix data from the beginning of the mix. This information may be saved to your hard drive or floppy disk and printed for debugging purposes.

### Walk Data Explained

The scrolling on the screen can be stopped by clicking on the **Pause** button. To continue displaying the mixfile click on the **Resume** button.

The mixfile will start with a snapshot that was taken at the beginning of the mix session. At the end of this document there is an example of a mixfile with 8 groups and 40 channels. The line

```
06:59:53:14.0 (0x2e2170), this link: 0x400, next link: 0x62e
```

reads the SMPTE code at the beginning of the mix, and in parenthesis the same SMPTE code in hex.

The actual data:

```
G1 03 01 03fa 01fe
```

is interpreted as:

"G1" - group 1. The channel on which the mix data belongs is displayed first.

"03" - Type of data for this event.

01 = Fader data 02 = Switch data 03 = Fader & switch data

"01"- Fader vector speed.

"03fa" - the value in hex of the position of the fader knob.

This value is between 000 at infinity and 3ff at +10 dB.

"01fe" - The state of the switches for this channel.

The last byte, "fe", represents a word that shows :

```
sw7 sw6 sw5 sw4 sw3 sw2 sw1 sw0
```

Where sw0 is the fader mute. The other switches can be eqs , ins , etc. depending on the Neve console and the user declarations within the install program. Each bit represents the position of the corresponding switch. "1" means mute on, that is, LED on. In our example "fe" means 11111110. All the switches are on except sw0 which is off.

The system is designed to remember changes, in order to save memory. Only changes versus the snapshot and the previous movements will be memorized. After the snapshot was taken the mixer moved fader knob #31 at hex 300 (aprox 0dB). SMPTE time 06:59:54:12.0 . Then moved it back at +10dB one second later at 06:59:55:23.0. Next SMPTE time 06:59:56:01.0 input 1 was unmuted. And so on.

The "walk" program will check also the integrity of the mixfile. If the user has problems running a mixfile he should definitely use "walk" to check the data in the mix. Also if the mixfile seems to swallow a lot of memory the user can run "walk" to check the mix for improper data.

Example:

06:59:53:14.0 (0x2e2170), this link: 0x400, next link: 0x62e

```
G 1 03 01 03fa 01fe
G 2 03 01 03eb 01fe
G 3 03 01 03e6 01fe
G 4 03 01 03dc 01fe
G 5 03 01 03ff 01fe
G 6 03 01 03e1 01fe
G 7 03 01 03eb 01fe
G 8 03 01 03e6 01fe
  1 03 01 0065 01ff
  2 03 01 0069 01ff
  3 03 01 0067 01ff
  4 03 01 0066 01ff
  5 03 01 03f5 01fe
  6 03 01 03d2 01ff
  7 03 01 03d7 01ff
  8 03 01 03ff 01ff
  9 03 01 03ff 01ff
 10 03 01 3cd 01fe
 11 03 01 03ff 01fe
 12 03 01 03ff 01fe
 13 03 01 03d7 01fe
 14 03 01 03b4 01fe
 15 03 01 03e6 01fe
 16 03 01 03eb 01fe
 17 03 01 03ff 01fe
 18 03 01 03f0 01fe
 19 03 01 03f5 01fe
 20 03 01 03ff 01fe
 21 03 01 03ff 01fe
 22 03 01 03ff 01fe
 23 03 01 03d7 01ff
 24 03 01 03f5 01ff
 25 03 01 03ff 01ff
 26 03 01 03ff 01ff
 27 03 01 03ff 01ff
 28 03 01 03f0 01ff
 29 03 01 03ff 01ff
 30 03 01 03dc 01ff
 31 03 01 03dc 01ff
 32 03 01 03d7 01ff
 33 03 01 03eb 01ff
 34 03 01 03eb 01ff
 35 03 01 03ff 01ff
 36 03 01 03ff 01ff
 37 03 01 03ff 01ff
 38 03 01 03ff 01ff
 39 03 01 03ff 01ff
 40 03 01 03ff 01ff
```

06:59:54:12.0 (0x2e21e0), this link: 0x62e, next link: 0x826  
31 01 01 0300

06:59:55:23.0 (0x2e220c), this link: 0x826, next link: 0x830  
31 01 01 03ff

06:59:56:01.0 (0x2e22a4), this link: 0x830, next link: 0x8a0  
1 03 01 0065 01fe

06:59:58:00.0 (0x2e2390), this link: 0x8a0, next link: 0x8ba  
G1 01 01 03ff  
23 01 01 006f  
24 01 01 0001  
25 01 01 006f  
26 01 01 006a

06:59:58:10.0 (0x2e23b8), this link: 0x8ba, next link: 0x8ec  
G1 01 01 03ff  
23 01 01 0001  
24 01 01 0001  
25 01 01 0001  
26 01 01 0001  
27 01 01 0001  
28 01 01 0001  
29 01 01 0001

06:59:58:11.0 (0x2e23bc), this link: 0x8ec, next link: 0x8f6  
1 01 01 03e1

06:59:58:13.0 (0x2e23c4), this link: 0x8f6, next link: 0x900  
1 01 01 03d0

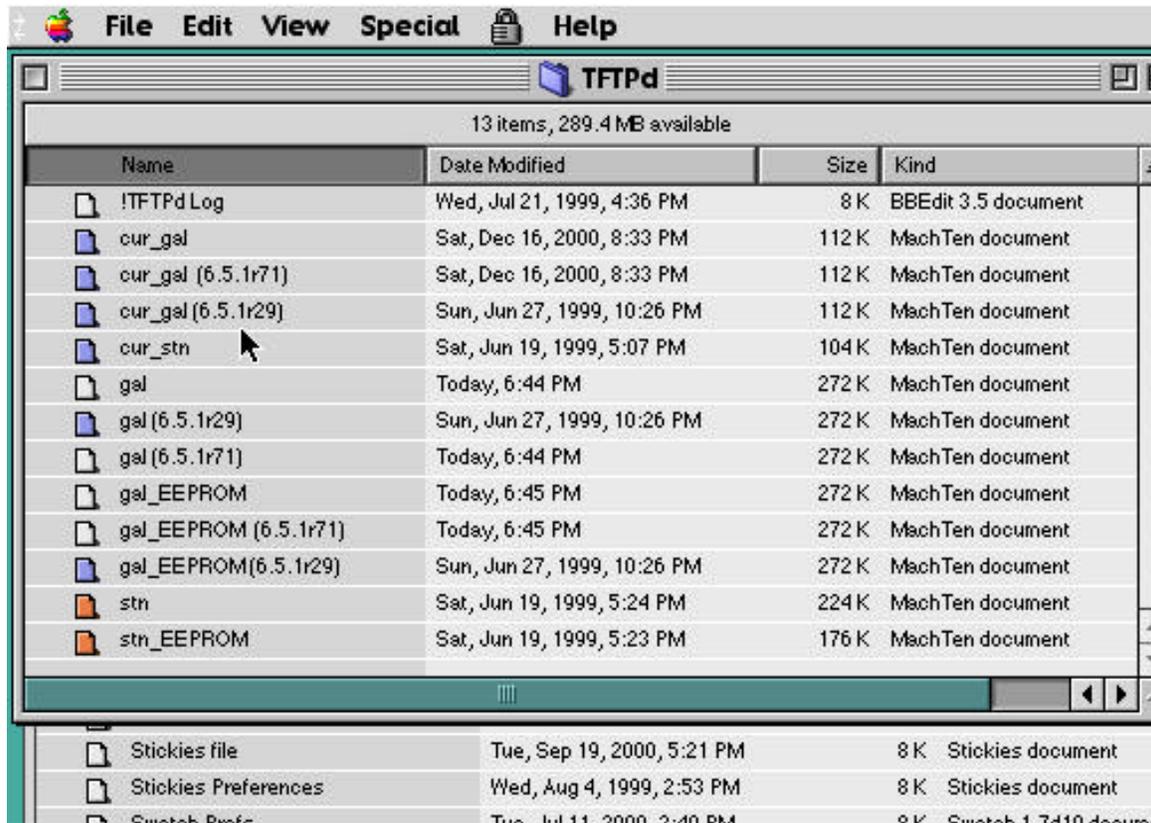
06:59:58:18.0 (0x2e23d8), this link: 0x900, next link: 0x90a  
1 01 01 03bb

## 14.16 Appendix P - Changing <gal> Executables

Should you wish to change only the automation network executable, perhaps because the GML lab has distributed custom or beta versions, follow these instructions.

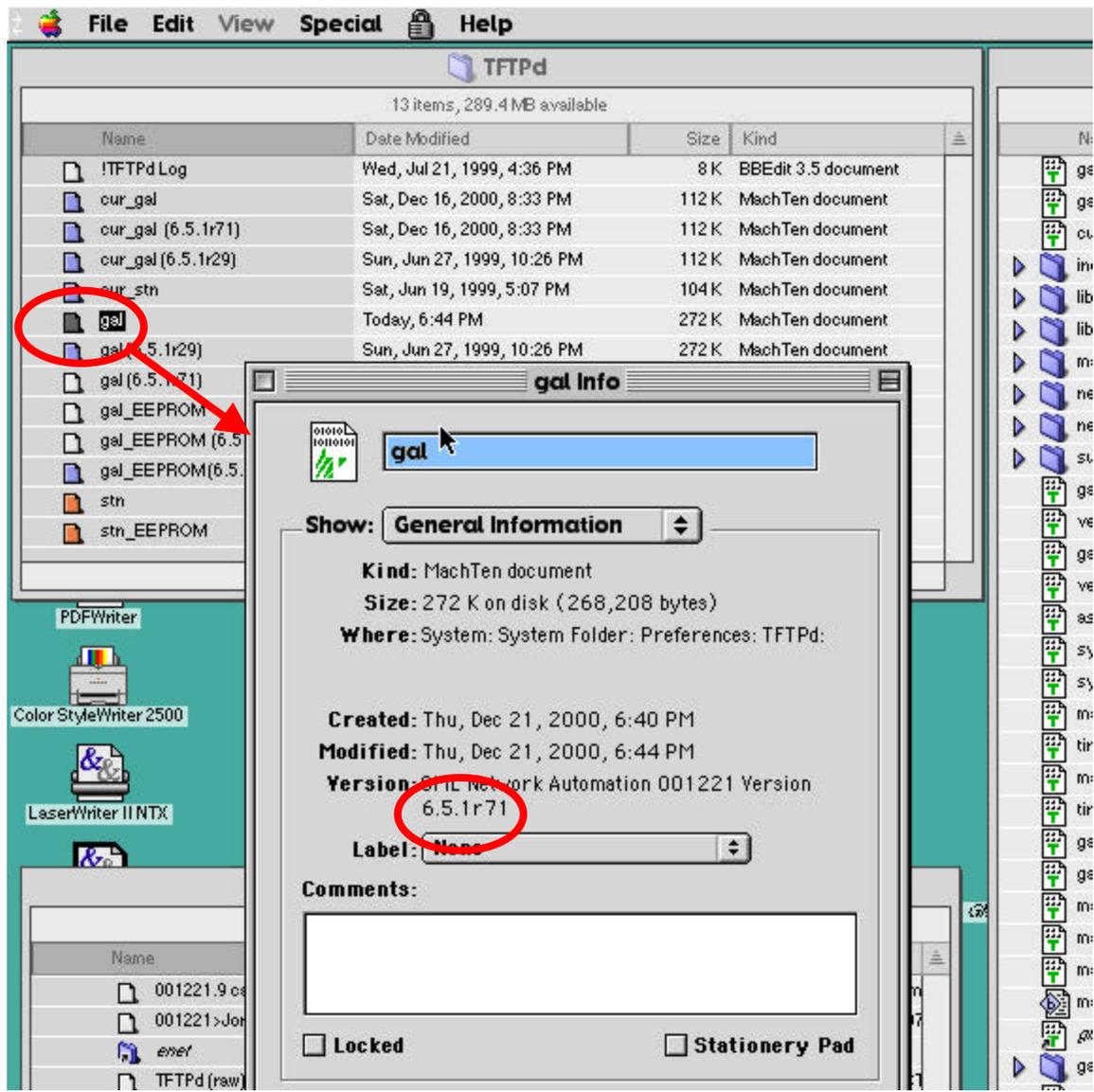
**Before changing executables, make sure you first exit the GML Automation System on the Mac.**

On your Macintosh, the directory with the relevant executables is in the System Folder:Preferences:TFTPd directory.

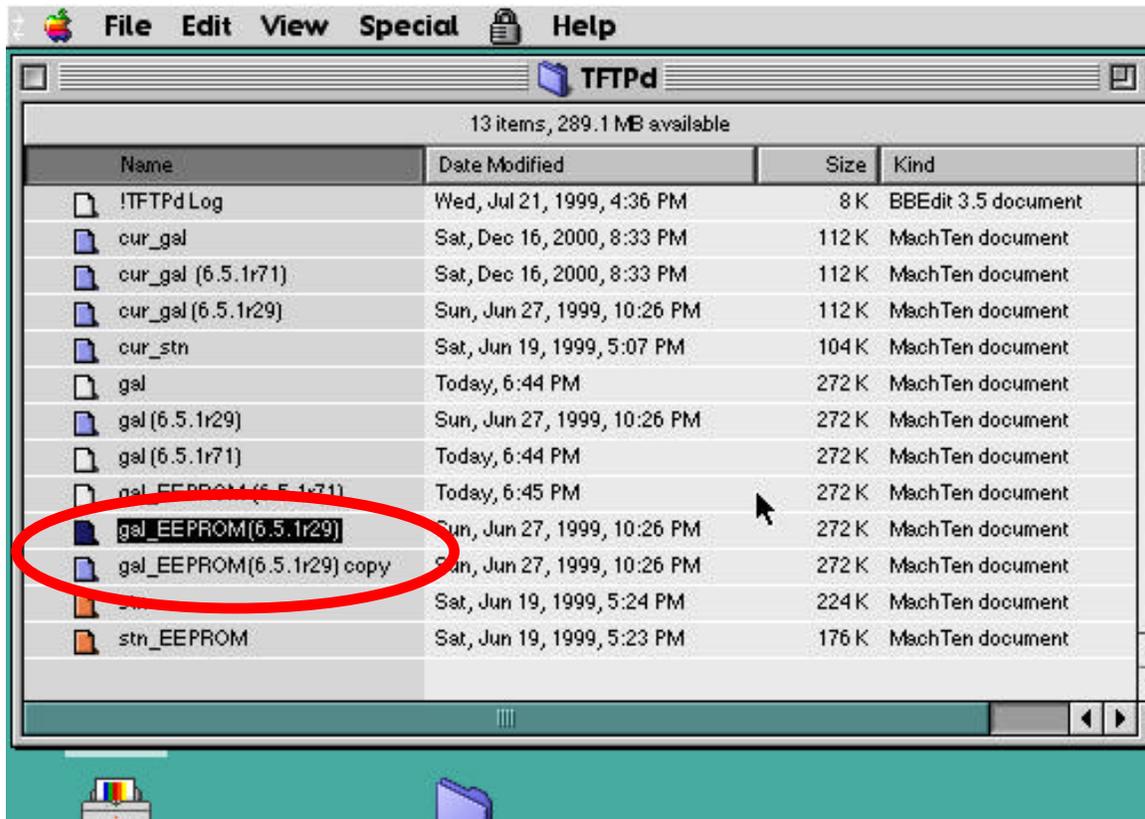


The GML Automation Software can only make use of files marked "gal" and "gal\_EEPROM", so that the *backup* files should be either copied and renamed, or renamed.

If you wish to check the revision level on any of the "gal" or "gal\_EEPROM" executables (including the ones with revision numbers appended to the end of the filenames), highlight it and key in <command>-l.



For instance, to change back to your original "gal\_EEPROM" (whose revision level is 6.5.1r29) you'll first move the existing "gal\_EEPROM" to the trash. Then highlight "gal\_EEPROM (6.5.1r29)" then duplicate it (<command>-D)...



...then rename "gal\_EEPROM (6.5.1r29)" to "gal\_EEPROM".

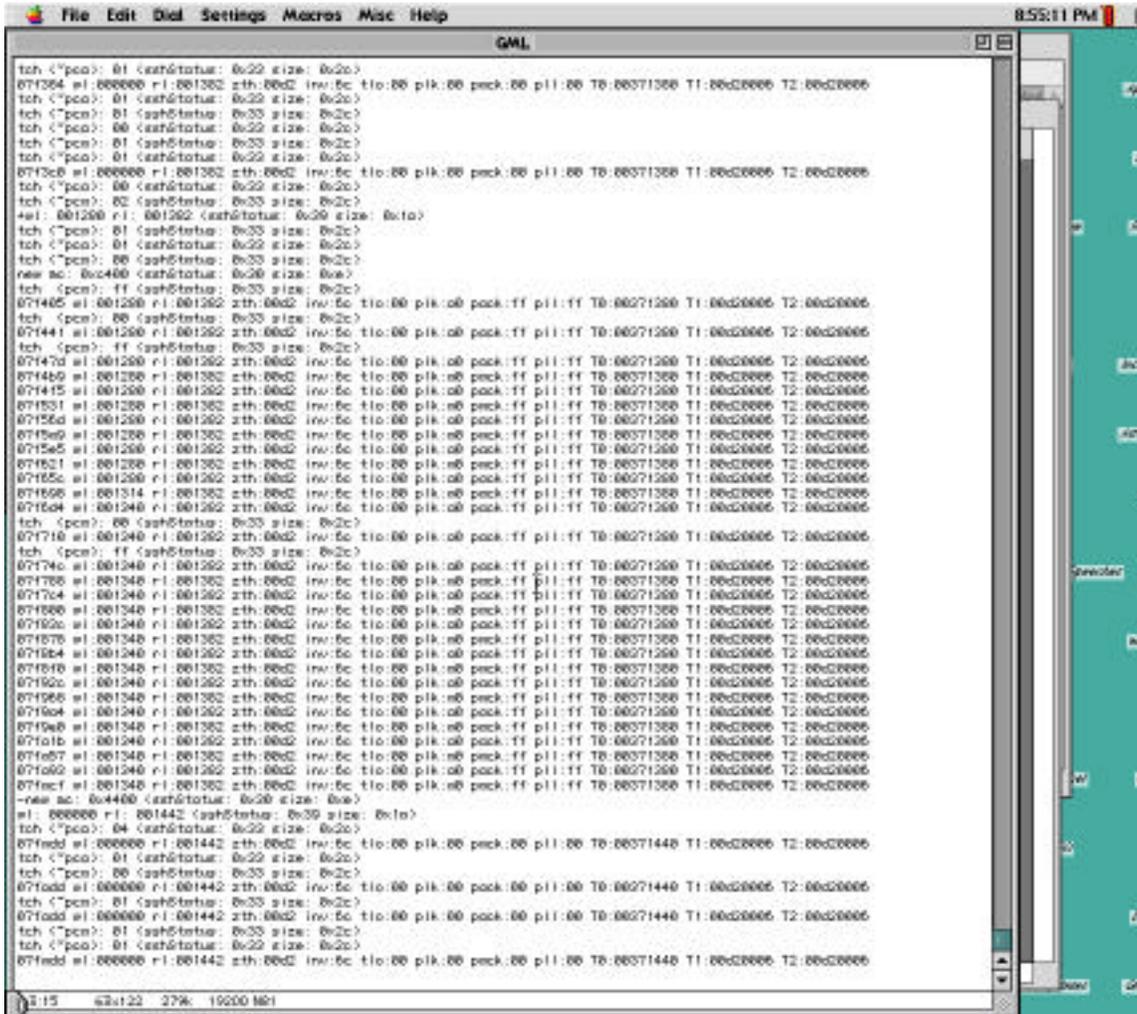
Then, bring up the GML Automation System. Go to **Edit** → **System Hardware Preferences**. Click on **Update GML Node EEPROM**. Wait for approximately 20 seconds longer than the progress bar (for safety's sake) for the EEPROM to burn. *NEITHER RESET NOR POWER OFF THE AUTOMATION NODE OFF DURING THIS PERIOD!*

Exit the GML Automation System. Power down the Automation Node and wait 20 seconds before powering back up.

Check the revision level of the *currently executing* gal\_EEPROM (as distinguished from just checking the file in the TFTPd folder) by going to the Zterm window and keying in the letter 'v'. gal will report the current revision level.

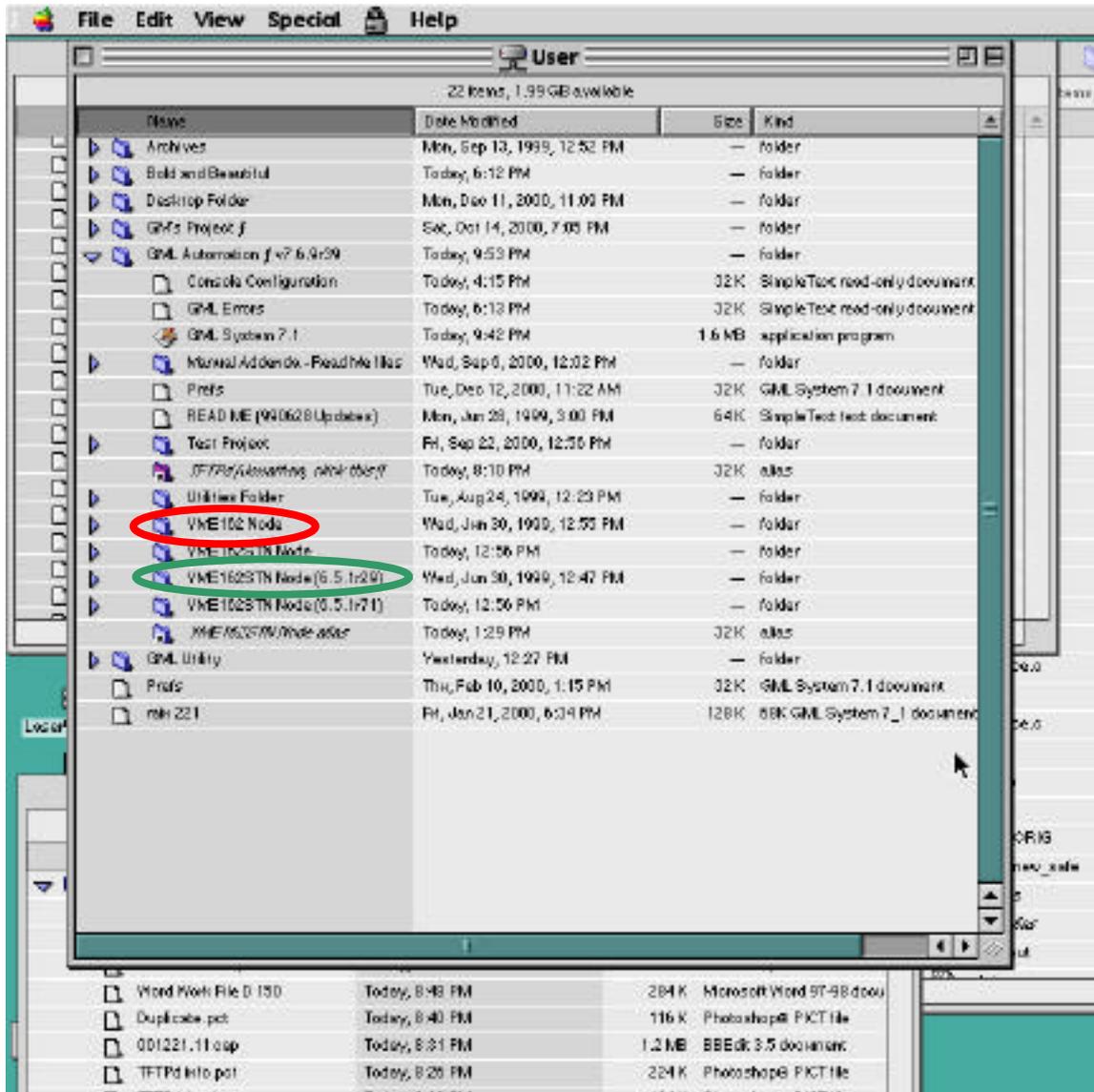
## 14.16.1 TURNING ON <gal> TRACING

Go to the Zterm window (which should already be running) and key in the letter 's' to toggle the tracing on (and off). You'll see a display as follows:



If there is a system problem or a freeze, immediately bring forward the Zterm window as follows. First, move the cursor to anywhere on the Mac's "Desktop" to select the Finder (this will keep the GML app from "freezing" by not selecting something that will send out an unanswerable network instruction packet). Then pull-down the "Current Application" in the upper right-hand corner of the Mac terminal to select "ZTerm". Click in the Zterm window and select several pages of the text. Then pull down "File->Save Selection" and enter a file name and location in which to save the data. Be careful! If you select too much text, it will overrun the Mac's buffer. Select too little and we'll not have enough data to evaluate the problem.

Occasionally, you may also want to change over to the *original proca & procb*. Same thing here: the only folder that the GML Automation System recognizes is the folder labeled "VME162STN Node" (easily located in the root GML Automation directory)



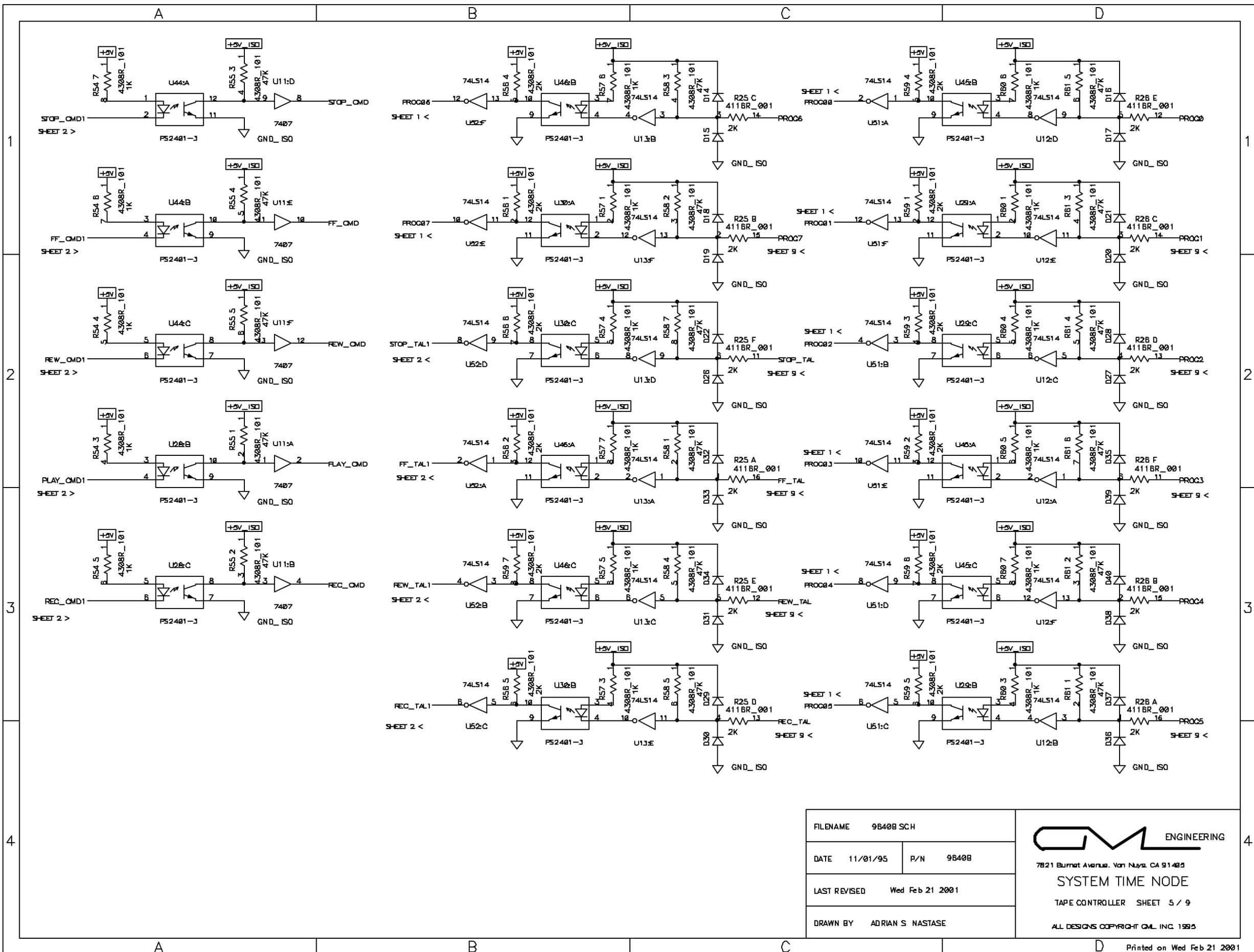
Same steps to changing over revision numbers. Either drag the "VME162STN Node" to the trash or duplicate the folder and rename it, perhaps using the the revision number. Make sure there is a folder names "VME162STN Node", and put the new .proca's & .procb's in it.



## *GML 9640 System Time Node*

The GML System Time Node provides a complete interface between an audio/video source, such as a tape machine or a DAW, and the GML Automation System by way of an ethernet physical network. The 9640 accepts and regenerates incoming SMPTE code, and provides full control of many different types of tape machines.

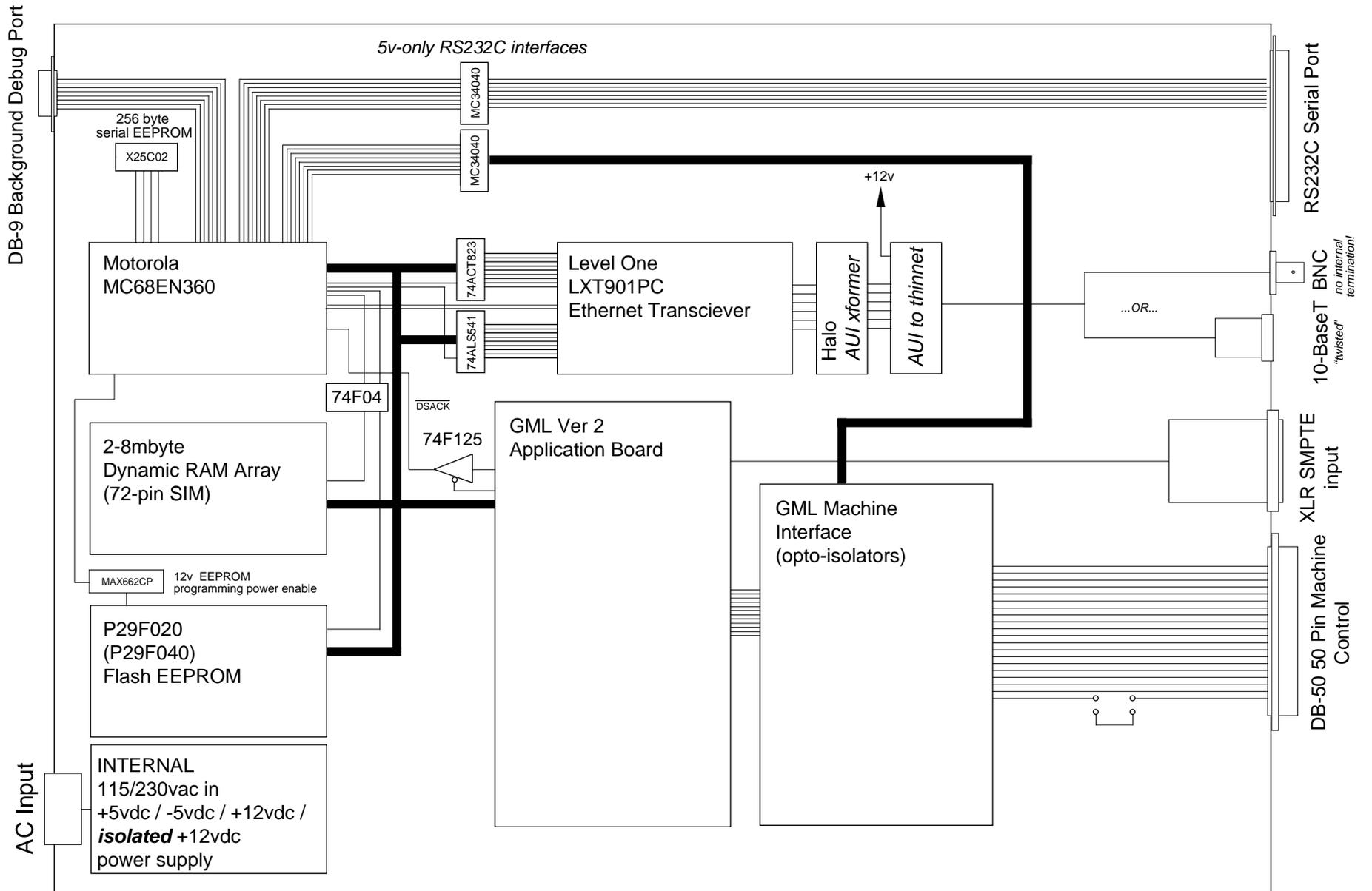
**GML,LLC**  
P.O. Box 1366  
Franklin, TN 37065  
(615) 790-1016 phone  
(615) 794-4802 fax  
[gmlinc@ix.netcom.com](mailto:gmlinc@ix.netcom.com)



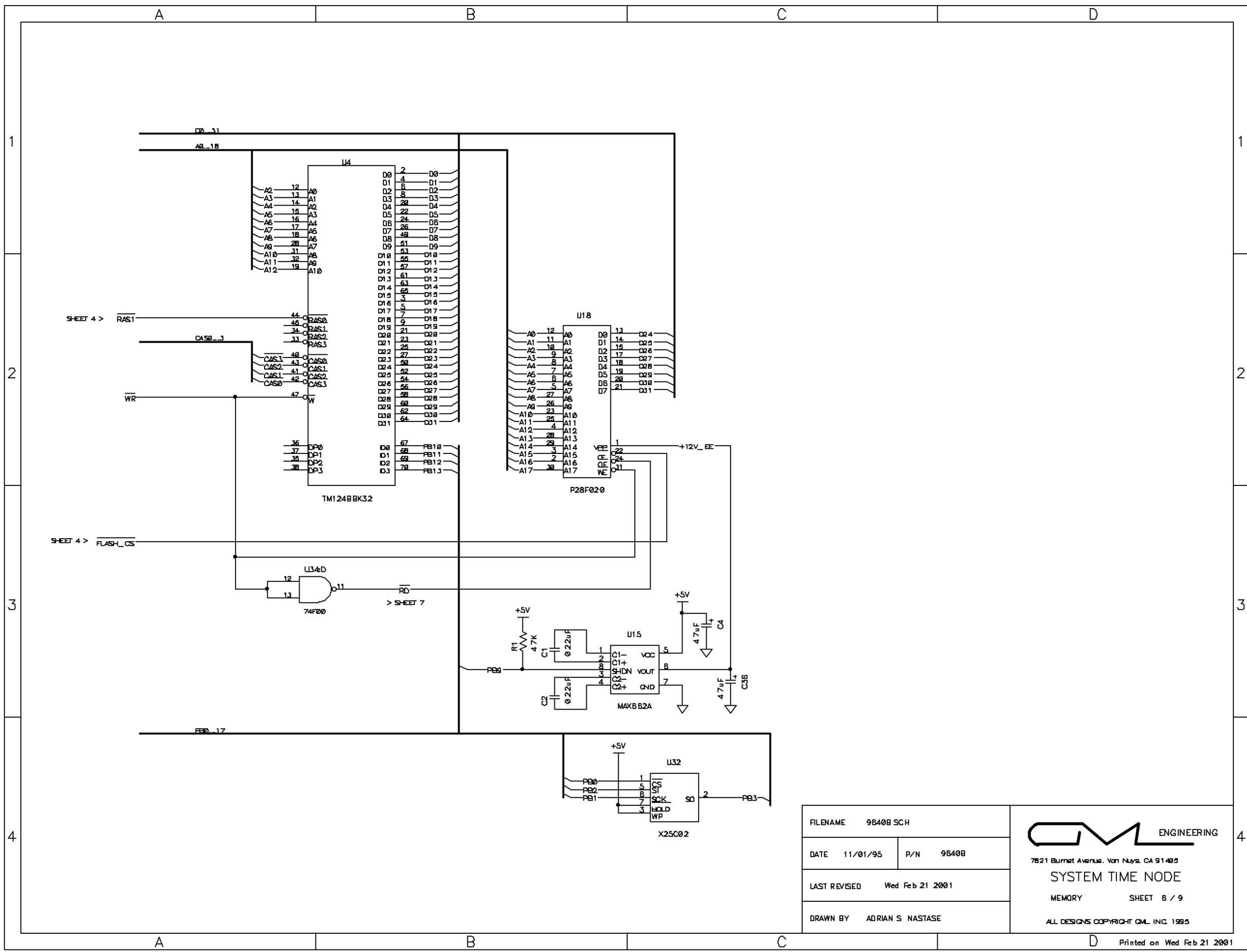
FILENAME	9B40B SCH	
DATE	11/01/95	P/N 9B40B
LAST REVISED	Wed Feb 21 2001	
DRAWN BY	ADRIAN S NASTASE	



ENGINEERING  
 7821 Burnet Avenue, Van Nuys, CA 91411  
**SYSTEM TIME NODE**  
 TAPE CONTROLLER SHEET 5 / 9  
 ALL DESIGNS COPYRIGHT GML INC. 1995

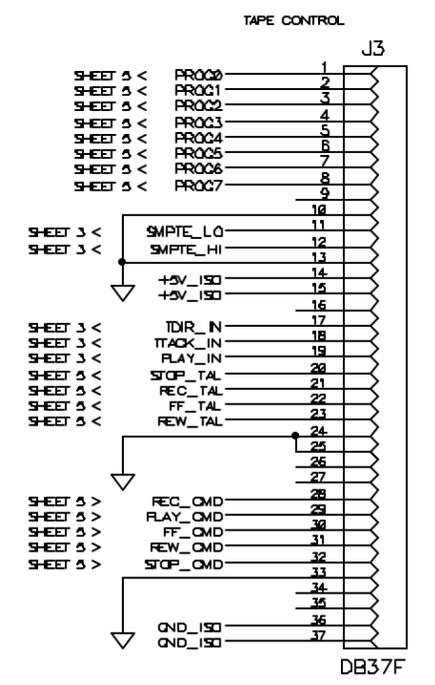
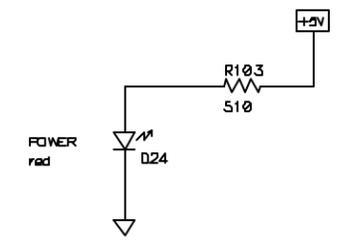
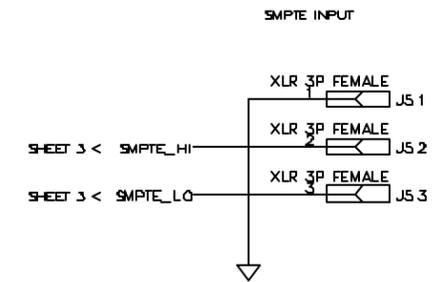
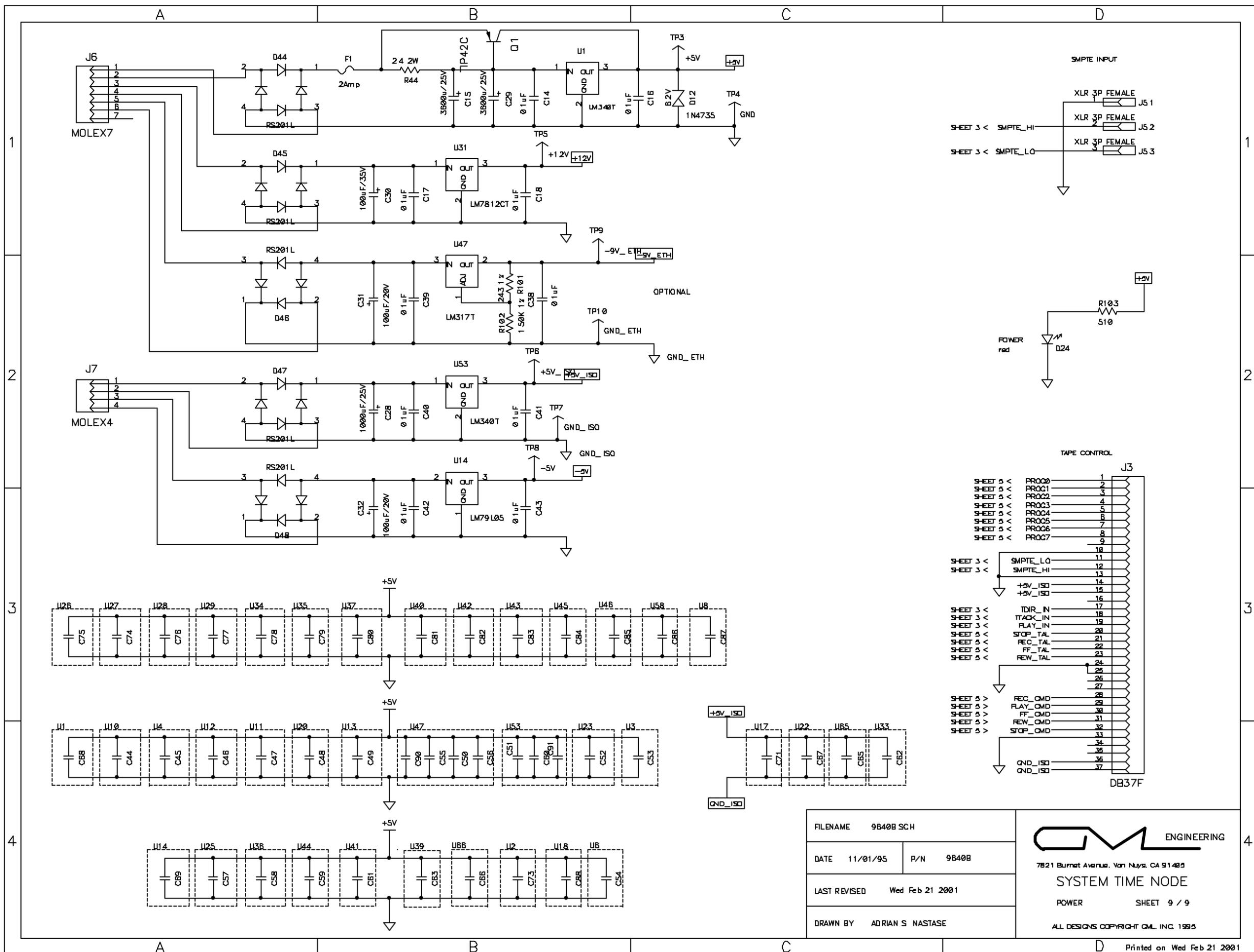


System Time Node - 010222  
 Network Interface to Tape Machines  
 SMPTE Code acquisition and processing  
 Parallel and (optional) Serial Tape Machine Control



FILENAME	9640B SCH	
DATE	11/01/95	P/N 9640B
LAST REVISED	Wed Feb 21 2001	
DRAWN BY	ADRIAN S NASTASE	

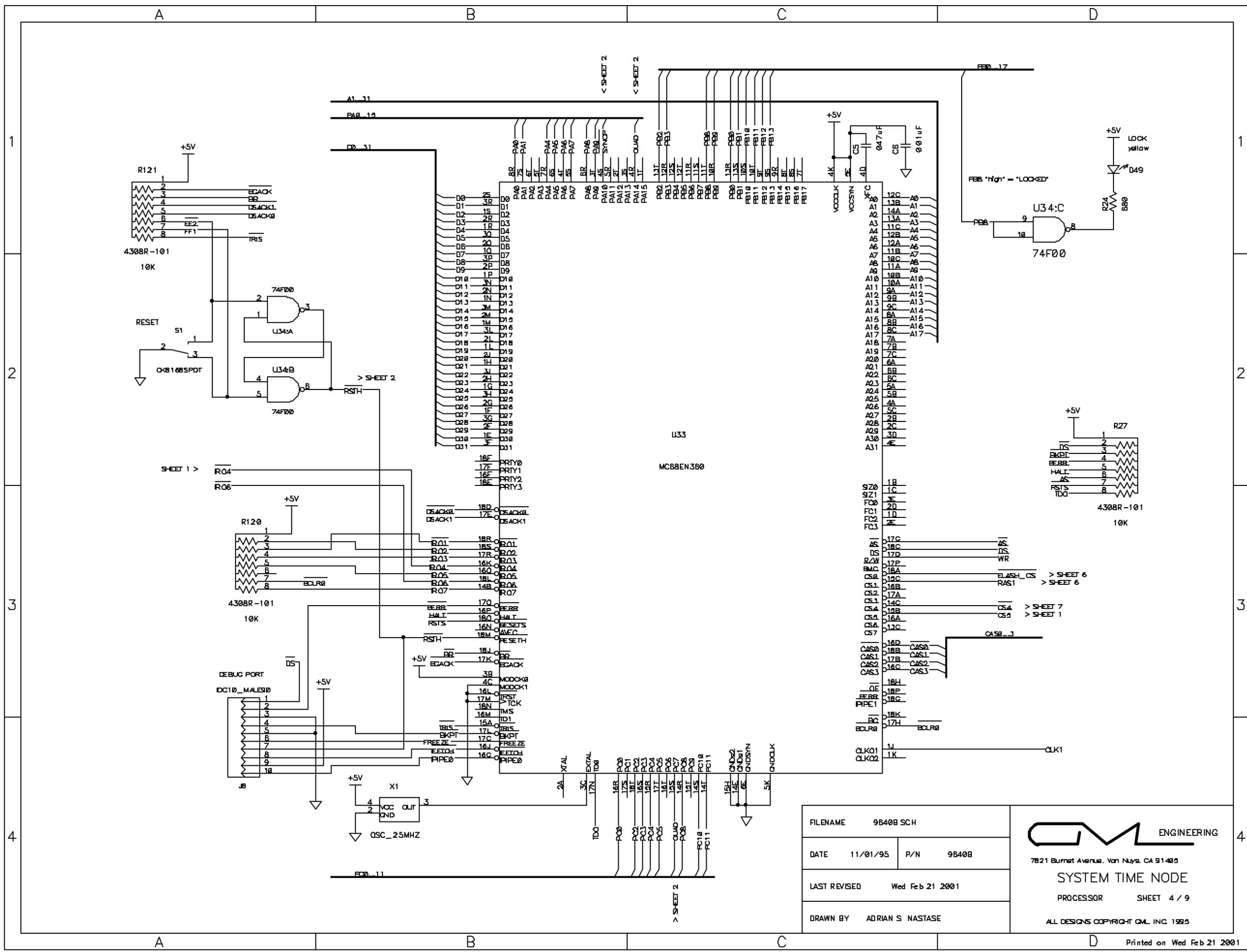

**ENGINEERING**  
 7821 Burnet Avenue, Van Nuys, CA 91405  
**SYSTEM TIME NODE**  
 MEMORY SHEET 8 / 9  
 ALL DESIGNS COPYRIGHT GML INC. 1995

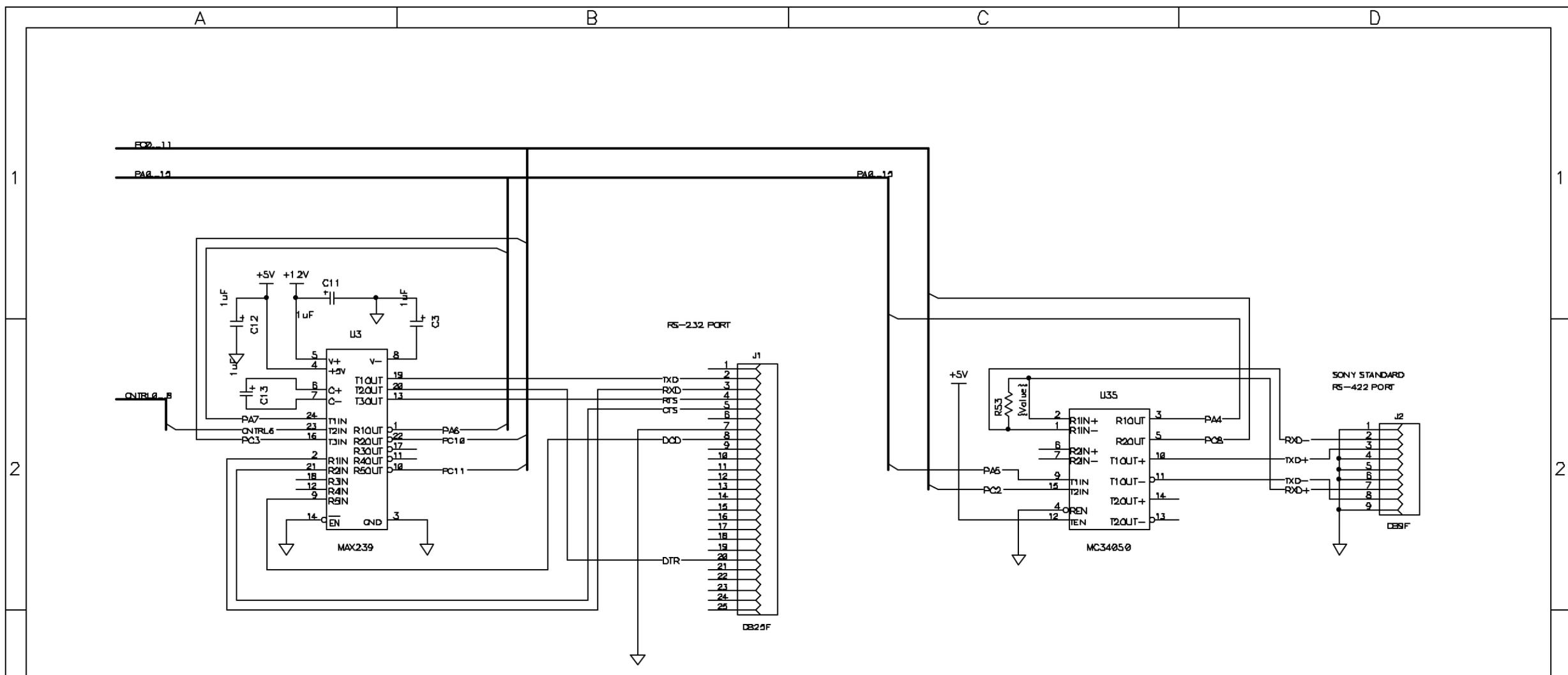


FILENAME	9640B SCH	
DATE	11/01/95	P/N 9640B
LAST REVISED	Wed Feb 21 2001	
DRAWN BY	ADRIAN S NASTASE	

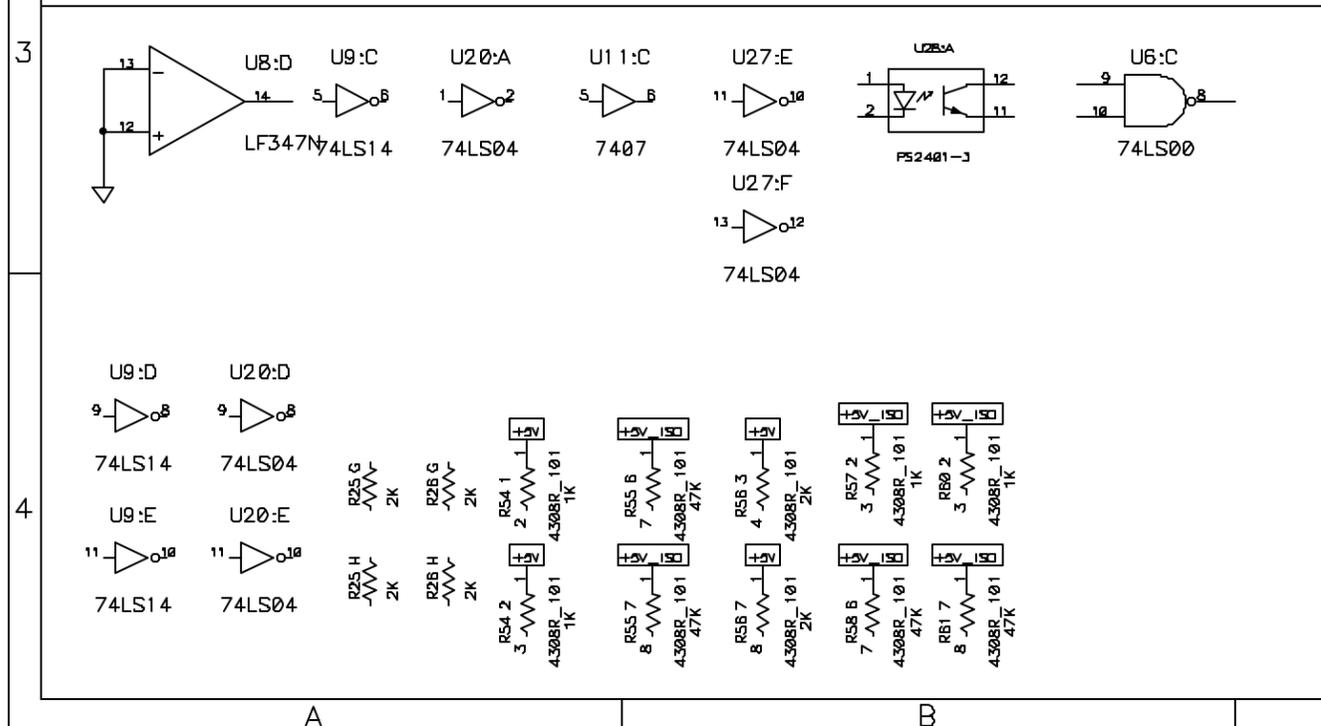


7821 Burnet Avenue, Van Nuys, CA 91405  
**SYSTEM TIME NODE**  
 POWER SHEET 9 / 9  
 ALL DESIGNS COPYRIGHT QML INC. 1995





UNUSED PARTS



FILENAME	9B40B SCH	
DATE	11/01/95	P/N 9B40B
LAST REVISED	Wed Feb 21 2001	
DRAWN BY	ADRIAN S NASTASE	

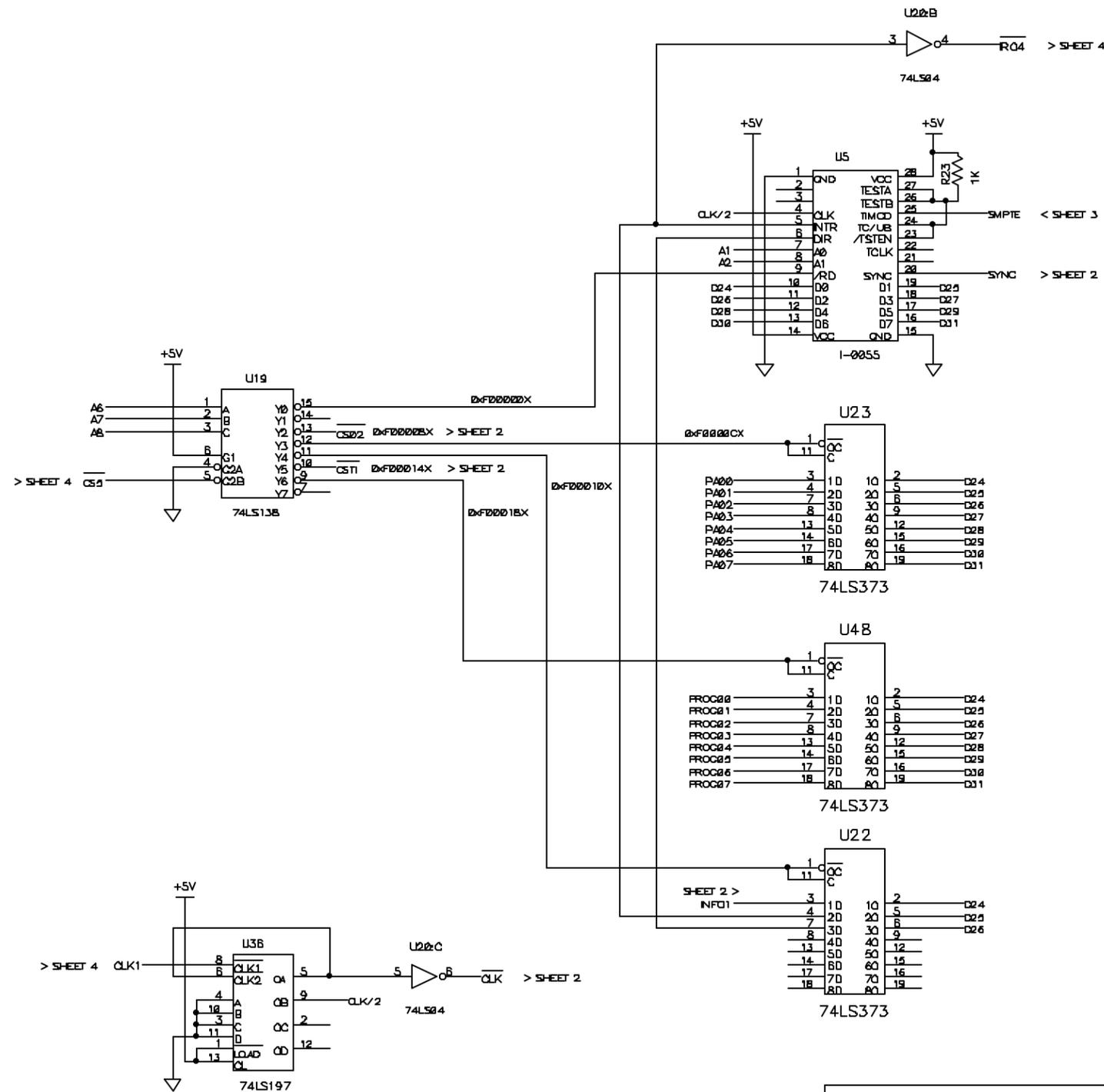
**ENGINEERING**

7821 Burnet Avenue, Van Nuys, CA 91405

**SYSTEM TIME NODE**

SERIAL I/O SHEET 8 / 9

ALL DESIGNS COPYRIGHT QML INC. 1995



FILENAME	9B40B SCH	
DATE	11/01/95	P/N 9B40B
LAST REVISED	Wed Feb 21 2001	
DRAWN BY	ADRIAN S NASTASE	

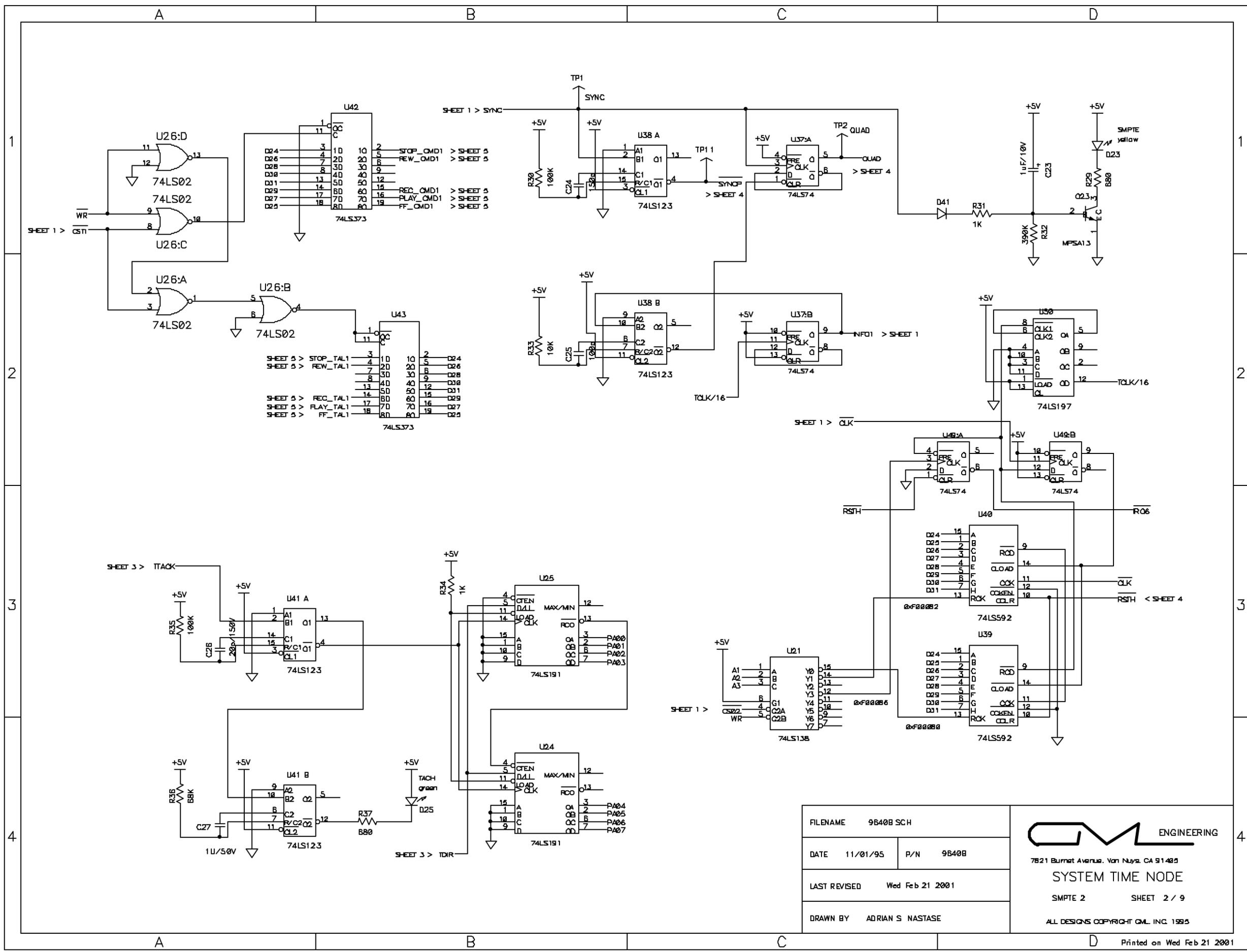
**ENGINEERING**

7821 Burnet Avenue, Van Nuys, CA 91411

**SYSTEM TIME NODE**

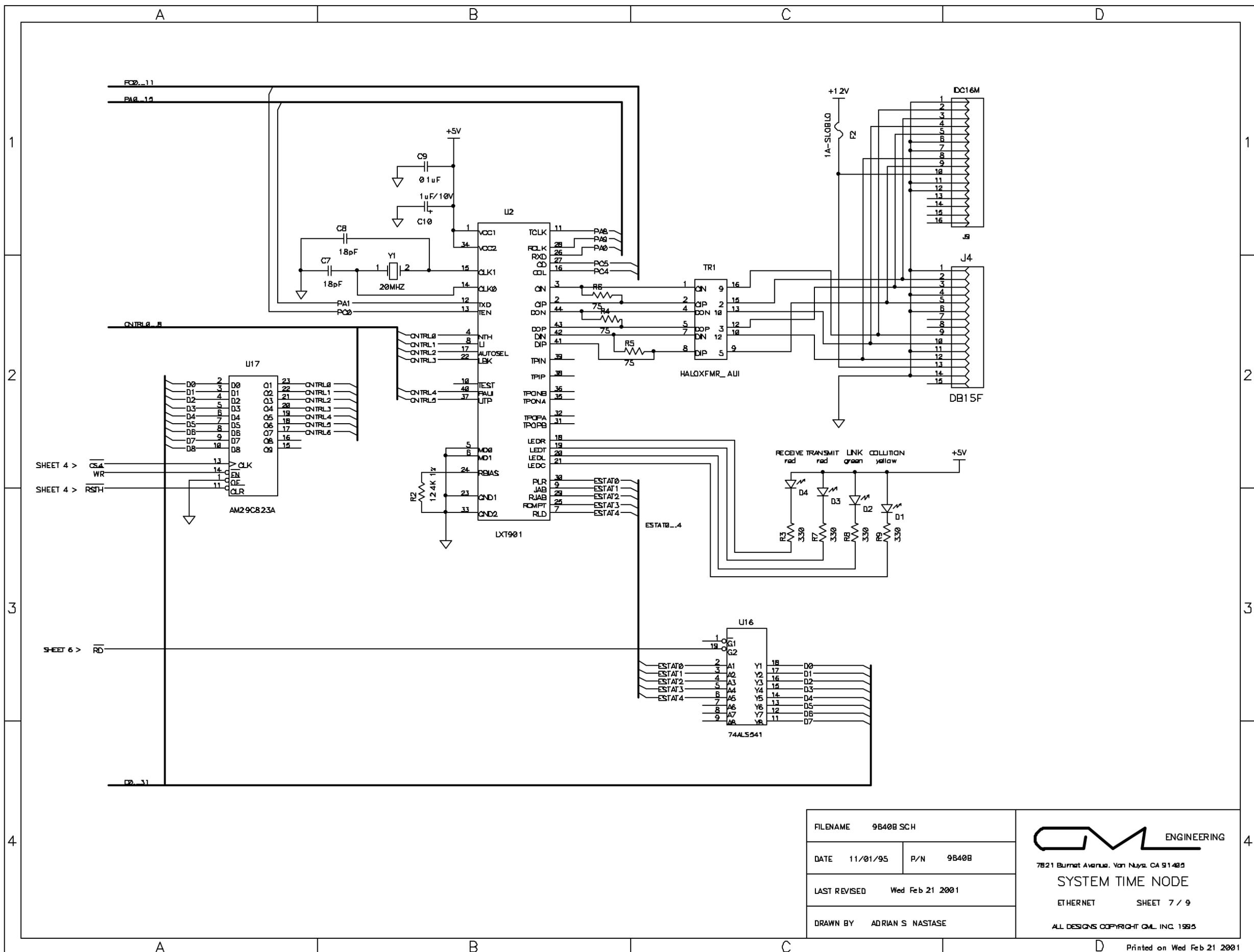
SMPTE 1 SHEET 1 / 9

ALL DESIGNS COPYRIGHT QML INC. 1995



FILENAME	9B40B SCH	
DATE	11/01/95	P/N 9B40B
LAST REVISED	Wed Feb 21 2001	
DRAWN BY	ADRIAN S NASTASE	

**ENGINEERING**  
 7821 Burnet Avenue, Van Nuys, CA 91405  
**SYSTEM TIME NODE**  
 SMPTE 2 SHEET 2 / 9  
 ALL DESIGNS COPYRIGHT GML INC. 1995



FILENAME	9B40B SCH	
DATE	11/01/95	P/N 9B40B
LAST REVISED	Wed Feb 21 2001	
DRAWN BY	ADRIAN S NASTASE	

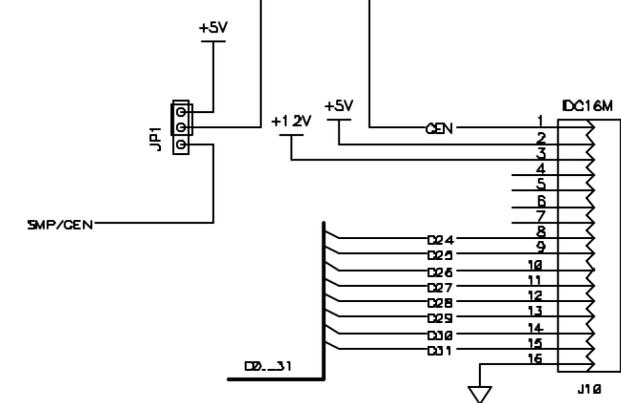
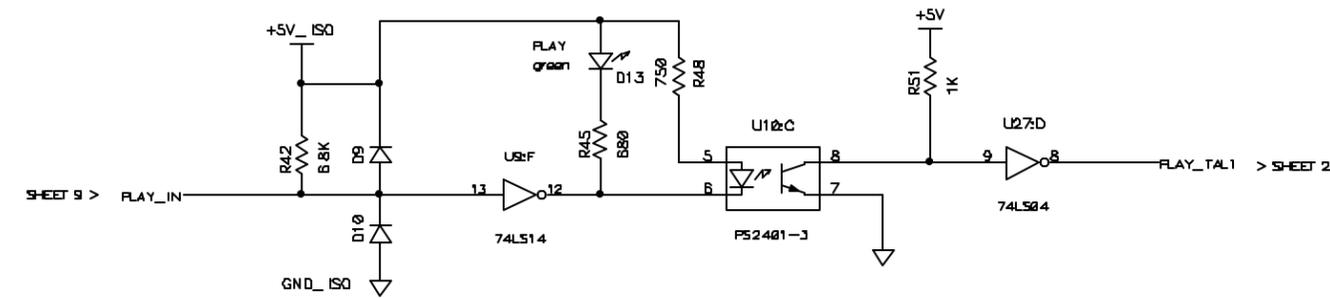
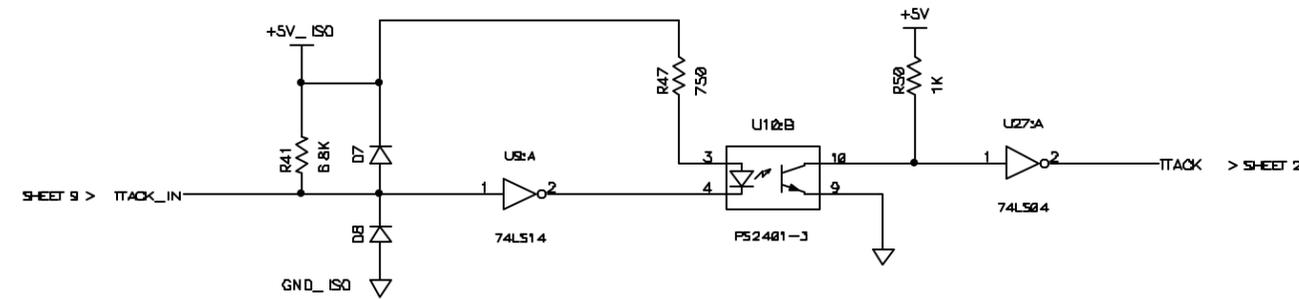
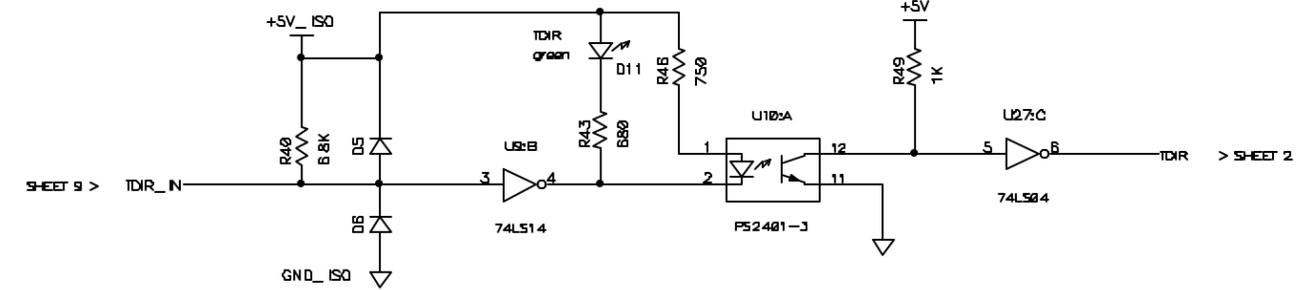
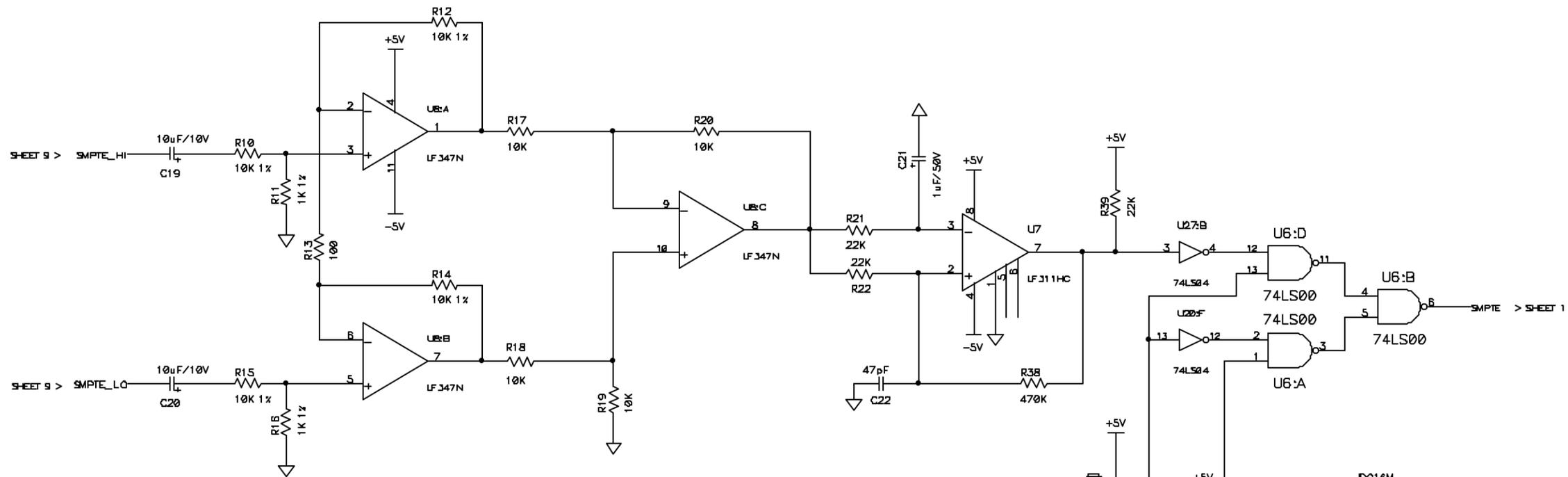
**ENGINEERING**

7821 Burnett Avenue, Van Nuys, CA 91411

**SYSTEM TIME NODE**

ETHERNET SHEET 7 / 9

ALL DESIGNS COPYRIGHT QML INC. 1995



FILENAME	9640B SCH	
DATE	11/01/95	P/N 9640B
LAST REVISED	Wed Feb 21 2001	
DRAWN BY	ADRIAN S NASTASE	

**ENGINEERING**

7821 Burnet Avenue, Van Nuys, CA 91411

**SYSTEM TIME NODE**

SMPTE V0 SHEET 3 / 9

ALL DESIGNS COPYRIGHT QML INC. 1995