5 Installing Graphics Accelerator Software

The LPM30 comes standard with the ATI *mach64* video chip on board. The *mach64* chip is a 64-bit graphics accelerator offering superior video performance. Certain utilities must be run before using the *mach64*. For optimal performance, install the utilities completely.

Preparation

Make sure no hardware (internal modems, fax cards, or LAN cards) are using addresses between the range of 2E0 to 2EF, such as COM 4 (2E8). If they are occupied, change the device(s) to a different range outside of 2E0 through 2EF.

Make sure LAN cards, scanner cards, and other adapters are not using memory addresses between C0000 and C7FFF. Check and record the amount of memory installed on the system board.

Review the CONFIG.SYS file to determine if a Memory Manager Device driver is loaded. Memory Manager Device drivers (for example; EMM386, QEMM, and 386MAX) may interfere with the *mach64* installation. Install the Memory Manager after the *mach64* is completely loaded.

Installation

Perform the following steps to install *mach64* graphic utilities:

1.   Turn on the monitor and then the computer. (This allows *mach64* to read the monitor type from the monitor during power-up for proper card operation).

2.   From the DOS prompt, insert Disk 1 of the utilities into the appropriate floppy drive.

3.   From the drive where the utilities diskette is located, type INSTALL and press <Enter>.

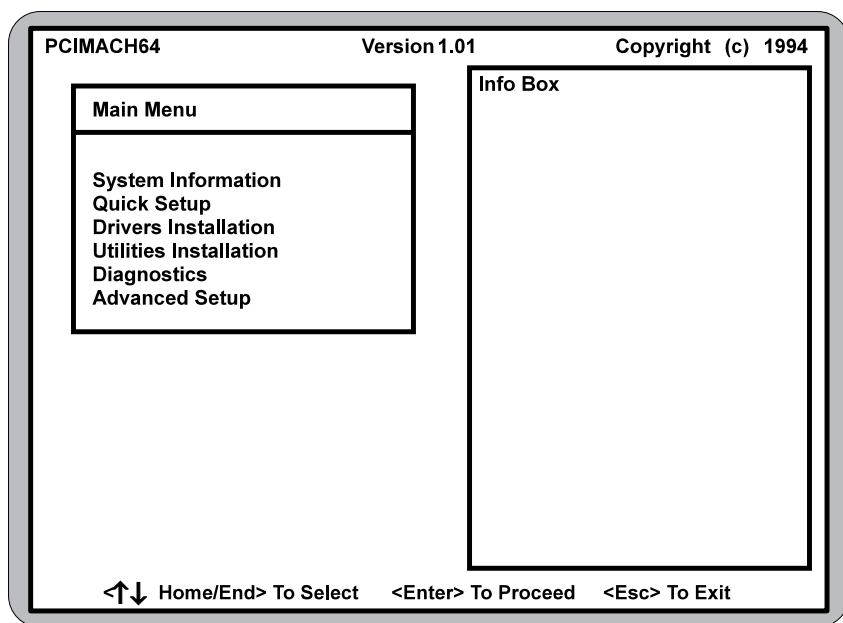4.   After the INSTALL program is initialized and loaded, the Main Menu appears (see Figure 5-1).

```
PCIMACH64                    Version 1.01              Copyright  (c)  1994
                                              Info Box
      Main Menu

      System Information
      Quick Setup
      Drivers Installation
      Utilities Installation
      Diagnostics
      Advanced Setup




        ↑↓  Home/End> To Select    <Enter> To Proceed    <Esc> To Exit
```

Figure 5-1 Main Menu

Main Menu Options

System Information-Checks your system configuration and displays detailed information, including boot-up files and any possible conflicts. This information is based on your current system configuration and the card you are installing.

Quick Setup-Sets the card to an optimal configuration using the information acquired during system checking.

Drivers Installation-Installs enhanced graphics and multimedia drivers for popular operating system checking.

Diagnostics-Tests the proper functioning of your card in both VGA and accelerated display modes.

Advanced Setup-Should only be attempted by experienced computer users. Although some settings may improve the performance of your card, they may not be fully compatible with your system or specific software applications.

System Information

This program checks the system for possible conflicts and displays the card configuration in the INFO BOX. If a conflict exists, it issues a warning and suggests possible corrective actions. Perform the following steps to check your system:

1. From the Main Menu, select SYSTEM INFORMATION by highlighting the selection and pressing <Enter>**.**

2. Review the information in the INFO BOX and take any necessary action as directed.

Quick Setup

You must specify a monitor in QUICK SETUP. Proper monitor selection is necessary for correct resolution and refresh rate operation. Information on display modes supported by the highlighted monitor are displayed in the INFO BOX. Perform the following steps to install the monitor type:

1. Select QUICK SETUP from the Main Menu by highlighting the selection and pressing <Enter>. A Monitor Selection Menu will appear (see Figure 5-2).

2. Using the <↑/↓> keys, scroll the monitor list to highlight your monitor. If found, press <Enter> to select. If your monitor is not listed, follow step a) or b) described below:

    a) If a VESA Display Information Format (VDIF) file is available for your monitor, INSTALL can read it and get the necessary parameters to set up the card for optimal monitor operation. To do so, insert the disk containing the VDIF file into your floppy drive. Select READ VDIF... from the Monitor Selection Menu.

Change the DOS directory prompt to the drive containing the disk. INSTALL will read the file and configure *mach64* to support your monitor.

b)   Select CUSTOM... to set up the card to any supported monitor specifications. You will need to manually test and configure each display mode separately. To do so, select CUSTOM... and press <Enter>. Select a resolution and press <Enter>. Pick a refresh rate that matches the specification of your monitor and press <Enter> to bring up the Adjustment Screen. If the monitor does not display a proper Adjustment Screen at the lowest refresh rate, set the resolution to Not Supported.

Warning:
Do not exceed the monitor specifications. Using a refresh rate (i.e., vertical frequency) that is higher than specified may damage your monitor.

A scrambled screen indicates your monitor is not capable of the selected display mode. In which case, immediately press <Esc> to exit.
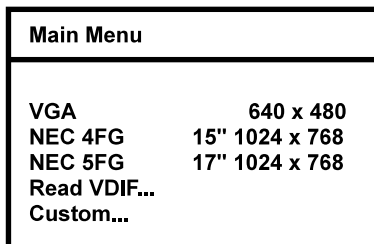
```
┌────────────────────────────────────┐
│ Main Menu                          │
├────────────────────────────────────┤
│                                    │
│ VGA                   640 x 480    │
│ NEC 4FG        15" 1024 x 768      │
│ NEC 5FG        17" 1024 x 768      │
│ Read VDIF...                       │
│ Custom...                          │
│                                    │
└────────────────────────────────────┘
```

Figure 5-2 Monitor Selection Menu

Drivers Installation

Selecting this option brings up the INSTALL ENHANCED DRIVERS menu for installing ATI enhanced drivers. See Chapter 6 for detailed instructions.

Utilities Installation

This procedure is for copying the utilities and the INSTALL program to your hard drive. The boot files can be modified automatically so you can run these programs from any directory. Perform the following steps to run the UTILI-TIES INSTALLATION program:

Note:
It is recommended to accept the defaults suggested during installation.

1. Select UTILITIES INSTALLATION from the Main Menu by using your arrow keys to highlight it and press <Enter>.

2. Enter the destination drive, directory, and press <Enter>.

3. Enter the source drive and press <Enter>.

4. Utilities are in the root directory of the Install Disk #1. Accept the prompt for the root directory and press <Enter> to start copying.

5. When prompted for the boot drive, enter your boot drive (i.e., C) and press <Enter>.

6. To run the INSTALL program from any directory (in DOS), you must add the location of the utilities to the PATH statement in the AUTOEXEC.BAT file. The default directory name used by this installation is C:\MACH64.

7. When finished, press <Esc> and exit from the Main Menu.

8. Changes made to the boot files (CONFIG.SYS and AUTOEXEC.BAT) are active only if you reboot the computer. If you encounter errors or suspect the hard disk is full, refer to the Troubleshooting section in this chapter or your DOS manual for information.

Diagnostics
From this menu, you can test the various operations and circuitry of the *mach64*. The diagnostics screen may be displayed at any supported resolution and color depth for testing. These tests support mouse and keyboard operations, and directions are displayed on the screen. Errors found by testing are discussed in the Troubleshooting section of this chapter.

Advanced Setup
The number of options in the Set Power-Up Configuration menu (see Figure 5-3) depends on the card type (i.e., ISA, VLB, or PCI). To set up these options, use the arrow keys to highlight ADVANCED SETUP and press <Enter>, then set the options to match your monitor and system type. If you need help, press <F1>.

Warning:
The Advanced Configuration option allows you to use certain features may add additional performance to your card; however, these options may not be compatible with your system. If problems occur after an advanced option is changed, return the card to factory defaults to correct them.

```
┌─────────────────────────────────────────────────────────────┐
│              Set Power-Up Configuration                      │
├─────────────────────────────────────────────────────────────┤
│  Monitor Type                    VGA 60Hz  640x480           │
│  Power-Up Video Mode             VGA (CV80)  Color pri.      │
│                                                              │
├─────────────────────────────────────────────────────────────┤
│ <Shift>+<F7> Factory Defaults   <F10> Save  <Esc> To Return │
└─────────────────────────────────────────────────────────────┘
```

Figure 5-3 Set Power-Up Configuration Menu

Advanced Setup Options
Monitor Type-Lets you specify a monitor type as you did in QUICK SETUP.

Power-Up Video Mode-This card can be configured to power up in VGA color or VGA monochrome.

⊕   *Auto Select*-This option automatically chooses a suitable mode for your system.

⊕   *16-bit*-All coprocessor accesses are 16-bit wide. Certain computer systems may lock up when in this mode. If this happens, select 8-bit Host.

⊕   *8-bit Host*-Only data transfers between the host bus and graphics memory are 8-bit; otherwise, coprocessor operations are 16-bit. If your computer has compatibility problems with this setting, select 8-bit.

⊕   *8-bit Host*-I/O operations are 8-bit.

The card can be reset to factory defaults by pressing <Shift><F7>. Once you have finished configuring the necessary parameters described above, save them to the card by pressing <F10>. If you choose not to save the current configuration changes, press <Esc> and choose Discard when prompted. The card then reverts to the previously saved settings in EPROM (or to factory defaults if the card had never been configured).

Troubleshooting

Listed below are several checks you can make to help determine the cause of any problems:

System Lockup

⊕ If you are using a memory manager such as QEMM or 386MAX, you need to modify the command line in the CONFIG.SYS file so the address of the graphics card video BIOS, C0000-C7FFF, is excluded. For example, add "X=C000-C7FF" to the command line.

⊕ Remove all unnecessary boards.

⊕ Disable shadow RAM.

⊕ Ensure the board is seated correctly and the card has been installed using proper utilities.

⊕ Try the card in a different system and reset to factory defaults using the INSTALL program. If the card works in another system, the problem is likely due to incorrect configuration.

Test Patterns OK; Applications Do Not Sync

⊕ The wrong monitor type has been selected. Change the settings in the INSTALL program.

Window Driver Not Installing Properly

⊕ Windows must be running in 386 Enhanced Mode. Incompatible commands or options within CONFIG.SYS   may prevent Windows from starting in enhanced mode. If this occurs, remove the offending driver or reinstall the memory manager software.

AutoCAD Driver Not Installing Properly

⊕ If using a 386, ensure AutoCAD has been configured for the appropriate ADI driver. The protected mode driver requires extended memory.

Error Codes and Messages

Table 5-1 lists problems and solutions for some common errors found by the test program.

Problem	Solution
EPROM BIOS failure	Try reinstalling or run the diagnostics using the **/F** switch. This returns the card to factory settings: **M64DIAG /F <Enter>**.
Memory aperture test failure, diagnostics program locks, or reboots during test (ISA card only)	If you receive an error message indicating the memory aperture location is conflicting with your system memory, restart the INSTALL program as follows**: INSTALL APMP <Enter>**. Now when you enable Memory Aperture, you must select a location *above but not overlapping* System Memory (S), BIOS (B), or Reserved (R) locations. If the problem is due to address limitations inherent with the ISA bus architecture (i.e., aperture + system RAM exceeds 16MB, disable aperture).
Desired resolution is disabled and displays in gray	A mode displayed in gray means the BIOS is told this mode is not available, based on the card configuration. Reinstall using custom monitor selection.
Menu item is disabled and displays in gray	The test program has determined the mode or test is not available under current configuration. Aperture tests are not available if the aperture is disabled. CRT mode and pixel depth are determined by current installation, DAC type, and memory size and type.

Table 5-1 Error Codes and Messages

Problem	Solution
Adapter not detected	This message should only occur when a *mach64* ASIC is not detected. If this message occurs and a *mach64* board is present, it may indicate an I/O conflict exists between Extended Memory Manager (EMM) and Video ROM. Try removing all other boards from the system and booting from a plain DOS disk. Try excluding the video BIOS address (C0000-C7FFF) from the memory manager. Refer to the documentation furnished with the memory manager software for information.
Any FIFO test error	The effects of a bad command FIFO should be visible (e.g., the screen does not come up or it displays garbage.)
Quick memory test error	Run Detailed RAM Test to confirm the error and identify address of the error.
Detailed memory test error	Run Detailed RAM Test several times to confirm the error and take notes of any messages and error codes.
DAC LUT test failure	An error has occurred while testing the DAC LookUp Table. The problem should be visible on the top color bar of any 8bpp mode.
ROM checksum error	An error has been detected in the ROM.
Draw sequence failure	An error has occurred in the draw engine. If the error is intermittent, it might indicate a marginal RAM failure. The effects of this failure may not be immediately apparent.

Table 5-1 Error Codes and Messages (Cont'd)

The information provided in this user guide enables you to solve most problems. For further assistance, please contact your vendor.

The following error message may appear when the INSTALL program is programming the EPROM:

```
Selected Memory Aperture Configuration May Conflict...
```

Ignore this message if the system has 12MB or more system memory and the Memory Aperture feature is disabled. If the system CMOS configuration has Video BIOS Shadowing enabled, reboot the system once the programming of the EPROM has been completed. If this message does not appear, continue the installation procedure.

Click here to continue
to the next chapter.....