ProFormance 3

The Fastest Graphic Accelerator for your Mac

User Guide

Includes ProFormance Installation, Software and Troubleshooting

Formac

ProFormance 3

User's Guide

License Agreement

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Introduction

Congratulations on your decision to by a Formac ProFormance 3 video card; one of the latest developments from the Formac GA (Graphic Accelerator) development program, offering market leading performance to accelerate your graphics work.

New Technology

The award winning ProFormance 3 is designed for fast thinking multimedia professionals and engineered specifically for the PCI Mac. A full 128 bit processor architecture, coupled with an industry leading 270 MHz integrated RAMDAC delivers the kind of graphics seen only in high-priced, top of the line professional workstations. Up to 32 MB synchronous memory handles 3D games and large graphic textures with extraordinary speed. Our unique Font Cache feature allows you to load font files directly into the on-board memory, freeing up your main processor and hard drive for other tasks. This kind of power enables you to see millions of colors at the highest resolutions, all on the largest displays available. Everything from top heavy PhotoShop files to elaborate 3D animations will run with astounding speed and seamless ease. Run even the most complex 3D games virtually flicker free. Forward thinkers can rest easy knowing the 66 or 33Mz PCI bus will support the newest G3's.

Large Selection of Onscreen Resolutions and Colors

All Formac video cards are programmed for trouble-free connection to any Formac color monitor, old or new. A maximum image size of 2000 x 2000 or up to 1,000,000 colors can be displayed depending on model and version. Connecting a multi-scan monitor to you video card allows you to select from a range of onscreen display sizes using the monitor control panel and if you are using system 7.6 or higher there is no need for any hardware modification or system restarts between changes.

Driver Software

The ProGraphics control panel, written using "native" PowerMac code, has many functions such as gamma correction and screen saving.

This guide describes all steps in the installation of a ProFormance video card from taking it out of the box to user-specific configuration of the software. This includes the installation of the hardware, connecting a monitor and the installation of the driver software with the optimal configuration.

Resolutions

The ProFormance 3 supports the following resolutions.

Resolution	Aspect Ratio	Refresh
640 x 480	4:3	65 - 125 Hz
800 x 600	4:3	65 - 125 Hz
1024 x 768	4:3	65 - 125 Hz
1920 x 1080	16:9	65 - 125 Hz
Up to 2000 x 2000	1:1	80 Hz

Package Contents

Your ProFormance 3 package contains the following components. Check to make sure that no parts are missing.

- ProFormance 3 (8 MB, 16 MB, 32 MB)
- ProGraphic Control Panel CD
- Installation Guide
- Your ProTV package should contain the following items:

System Requirements

MacOS 7.6 or higher

Hardware Installation

Installation Guidelines

Please read this section before proceeding. Note the following points before installing the video card.

- Ensure that the Macintosh has been switched off and the power cord disconnected.
- Observe full anti-static precautions and ground yourself against an earthed object before touching your video card or any electrical components in the Macintosh.
- This user guide is issued with the assumption that you are familiar with the installation of PCI cards in your Macintosh. This manual contains procedures that are specific to the ProFormance 3.
- When the Macintosh is powered on, do not attempt to open or close the Macintosh case.
- Further information about the installation of PCI cards can be found in the manual for your Macintosh.

Preparing the Proformance 3 Card

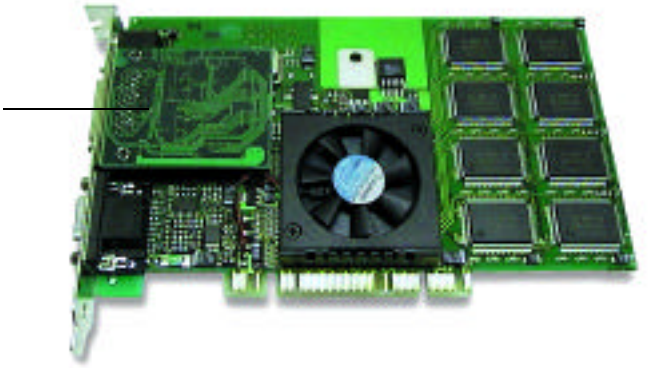
The basic ProFormance 3 card does not require any special preparation in order to power a standard monitor. It can be installed by simply replacing the existing video card and reconnecting the monitor to the VGA port on the ProFormance 3 card.

TFT Adapter

The TFT option is required to support a TFT monitor (The TFT option is a separate purchase). The following illustration (**fig 2.1**) shows the ProFormance 3 card with the TFT adapter installed.

You must install the TFT adapter on the ProFormance 3 card prior to installing the video card in the Macintosh.

figure 2.1
Card with a TFT adapter

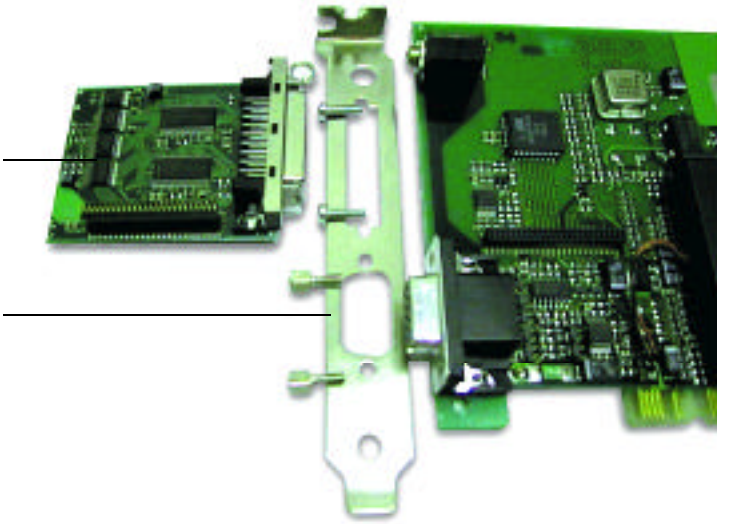


Installing the TFT Adapter

1) Remove the back plate from the ProFormance 3 card. The back plate is attached to the ProFormance 3 card by 4 screws and an "O" ring. The following illustration (**fig 2.2**) shows the back plate removed as well as the TFT adapter.

You must remove the back plate from the ProFormance 3 card to install the TFT adapter. Attempting to install the TFT adapter without removing the back plate will likely result in bending pins on the TFT adapter and void the warranty.

figure 2.2
Removing the back plate



2) Install the TFT adapter. Press the adapter pins into the adapter slot, using care not to bend any of the pins. The illustration below (**fig 2.3**) shows the position of the adapter prior to setting the pins.

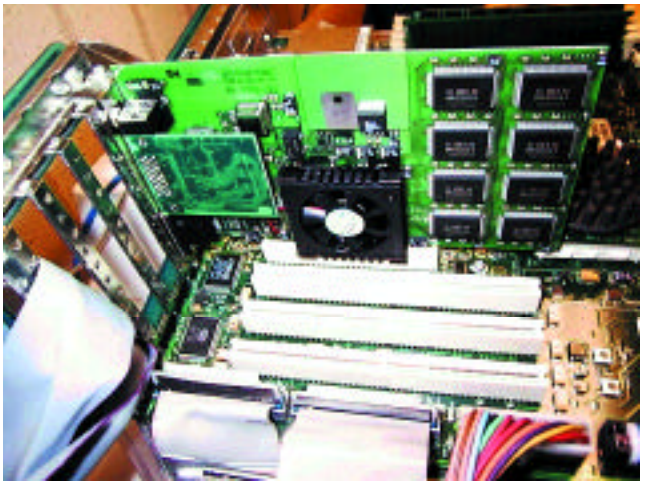
figure 1.3
Installing the TFT adapter

3) Reconnect the back plate to the ProFormance 3 card using the 4 screws and the "O" ring. You are now ready to install the ProFormance 3 card in the Macintosh.

Installing the Card

1) Install the ProFormance 3 card in the Macintosh. You can install the ProFormance 3 card in either a 16 or 32 bit slot. You should install the ProFormance 3 card in a 32 bit slot to take advantage of its performance capabilities. The following illustration (**fig 2.4**) shows the ProFormance 3 card installed in a 32-bit slot.

figure 2.4
Install card into an available PCI slot



2) Close the G3 case and power up the G3.

Connecting a Monitor

Video cables to connect the monitor to the Formac video card are delivered with the monitor. In most cases the video cable will be fitted with a DB15 plug that matches the connector on the Formac video card (an exception is the ProNitron 80.17). The cable is fitted with two screws that should be used to securely fix the connection to the video card and ensure a good connection. Check before each boot-up that the video cable is connected to the video card as the plug contains various connections that set the video configuration during the boot process.

Configuring Older Monitors

If the attached monitor is an older fixed-frequency monitor, such as the ProNitron 80.16, 80.18 or 80.21, then use the keyboard options to set the video configuration. In this case the video cable is connected in the same way and the following keys should be used:

"Q" key: selects Formac's 16" monitor timing (832 x 624 at 80Hz)

"W" key: selects Formac's 19" monitor timing (1024 x 768 at 80Hz)

"E" key: selects Formac's 21" monitor timing (1120 x 840 at 80Hz)

"M" key: selects Apple's 21" monitor timing and enables all possible Apple resolutions (only for multi-scan monitors that support the Apple 21" resolution)

"R" key: resets the selection and enables the monitor-sensing capability

If the configuration has been set using the keyboard option, it will be stored by the GA software in the parameter RAM. It will be automatically recalled every boot-up until the reset key is used ("R"). The keyboard configuration also takes priority over the hardware configuration until the next reset command.

Video Configuration

The ProFormance 3 Formac uses a similar system to Apple video cards to configure the picture to be displayed. The 15-pin connector has three "sense" pins, in addition to the standard color and synchronization connections to the monitor, which can be connected to each other or the earth in different ways.

During boot-up, the ProFormance video card sends a signal to each of these pins and from the returning signal sets a special resolution defined for that signal. This check is only performed during boot-up so if no monitor is connected at that time there is no return signal and the video card switches off. Therefore it is important to ensure that the monitor is connected before booting.

The previously described Hotkey combinations overwrite this detection system. The Mac boots in two phases, in the first phase the sense pins are detected, the keyboard input in the second. Thus when the Macintosh detects that a special key combination has been pressed, it overwrites the sense pin configuration.

Formac Monitors With BNC Connectors

These monitors are supplied with a video cable fitted with 5 BNC connectors at one end and a DB-15 connector at the other. The BNC connectors on the monitor for the red, green and blue video inputs are correspondingly marked with "R", "G" and "B". The inputs for horizontal (combined) and vertical synchronization are marked "HD" and "VD" respectively. The red, green and blue leads on the video cable should be connected to the respective color inputs. The black lead is not connected (this should only be connected to the "HD" connector if the monitor is connected to the on-board video port). The gray lead is not connected i.e. vertical synchronization is not used. The DB-15 end is connected directly to the Formac video card. Ensure that the right connections have been made to each input.

Formac Monitors With VGA Connectors

These monitors are either supplied with a VGA cable or the cable is built into the monitor. If the cable is separate to the monitor you should connect one end to the VGA port on the monitor. Connection to the Formac video card requires a VGA to DB-15 adapter (this is supplied as standard with Formac monitors, some monitors require that this be purchased separately in which case you

should contact your supplier for details). The adapter should be connected to the video card first and secured using the two screws, the VGA cable should then be attached to the adapter and secured in the same fashion. If you have a ProMedia or ProFormance video card, the VGA cable can be directly connected without an adapter.

Formac BNC cables

Formac BNC Cables

If the ProFormance 3 is connected to the monitor using a BNC cable, ensure that the gray lead is connected to the "HD" connector and the black lead to the "VD" connector.

To attach an Apple monitor or another monitor with a D-SUB 15 connector to the ProFormance 3 requires an additional adapter.

Software

Installation

Once the Formac video card has been installed and the monitor connected you can install the GA driver software. This is done by simply copying the ProGraphics control panel to the system folder. When asked if you want to copy the data to the control panel, click on "OK" and restart the system to activate the Formac software. Check during the reboot that the Formac ProGraphics software icon appears at the bottom of the screen and that it is not crossed out.

GA Control Panel

Open the ProGraphic control panel by selecting “GA” from your Macintosh’s control panels folder (located under the Apple Menu). The top part of the window displays continuously. The bottom part of the window contains tabs that you can select to access the various settings for the ProFormace 3.

Header

The area at the top left portion of the window (**fig 4.1**) contains two switches which are activated by clicking on either of them:

fig 4.1
Header Settings

? (help): The help button enables / disables the help function for the control panel.

Identify the Monitors: Allows you to see which monitor is connected to which video card.

Monitor Overview

The area at the top right portion of the window displays the monitors that you have installed in your system. If you have more than one monitor in use, for example a second monitor running from the built-in video card, then one of these monitors will be the start-up screen.

There are certain control panels and other system elements that only affect this screen. If you find that when you do something (such a color correction) and it only effects one screen, this is probably the reason why.

To set the main screen or the start-up screen you should use the monitor overview window. This behaves the same way as the Apple "Monitor and Sound" control panel. To change the setup, click on the symbol or the menu bar and drag it to the monitor you want to be the start-up or main screen respectively.

Control Panel Tabs

The tabs on the Control Panel provide access to its various functions. Each of the tabs is described below.

The About GA Tab

The "About GA" tab contains contact information for Formac Electronics (**fig 4.2**).

fig 4.2
About Tab Settings

Netscape, MS Explorer: Enable you to call up your Internet Browser directly to download the latest version of the ProGraphic software.

Monitors & Sound: Opens up the Apple Monitors and Sound control panel.
Factory settings: Recalls the default settings.

The Information Tab

This tab shows the most important information regarding the currently selected video card (**fig 4.3**). In the following format:

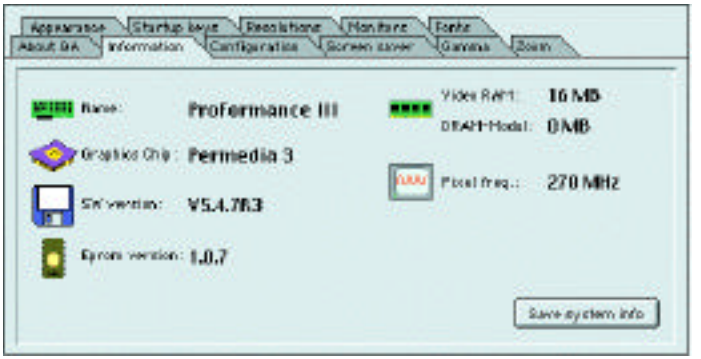


fig 4.3
Information Tab Settings

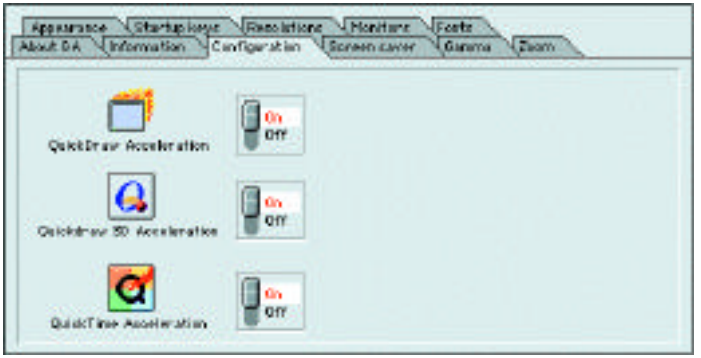
In this example the selected card is a ProFormance III with an Permedia3 processor (the standard type for the ProFormance card), 16 MB of video RAM, max. pixel frequency of 270MHz, fitted with Firmware (indicated as Eprom) version 1.0.7 and ProGraphics software version 5.4.7ß3.

Save system info: This button creates a file with all your system information in it. If you experience a problem with your video card, use this button to create a file which should be sent to us by email or fax. The file can be read using SimpleText.

The Configuration Tab

This tab contains the switches that activate or deactivate the video card functions (**fig 4.4**). All changes are implemented immediately without the need to restart.

fig 4.4
Configuration Tab Settings



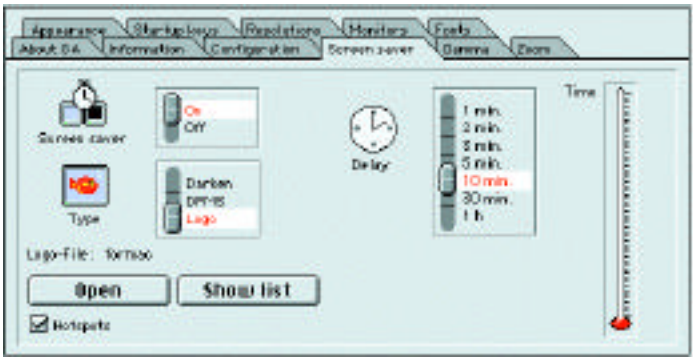
Switches: Use the three switches to turn Quickdraw, Quickdraw 3D, and Quicktime acceleration on and off.

Typically, there is no need to switch off the accelerations. However, there may be circumstances where some specialist software is incompatible with them; being able to switch them off allows the special software to be run.

The Screen Saver Tab

You have the choice of three types of screen saver (**fig 4.5**). All three modes are deactivated by moving the mouse or pressing a key.

fig 4.5
Screen Saver Tab Settings



Screen Saver: On/off switch for the screen saver.

Type: Type of screen saver

1) **Darken** is a standard type of screen saver that reduces the brightness of the display to 20% after a set time on inactivity.

2) **DPMS** supports monitors with power save ability. The monitor is switched to a low-power mode reducing the power usage of the monitor. There is a short delay when exiting this type of screen saver before the picture is restored.

3) **Logo** displays a black screen with a logo image to show that the monitor is still switched on. The image is chosen by the user but must be of the same type as a start-up image. The ProGraphics control panel contains a sample image.

Open: Selects a picture file for the Logo screen saver using the normal Macintosh navigation techniques.

Show list: Displays a list box containing all the pictures in the boot directory of the hard disk.

Hotspots: Activate an area in the bottom left hand corner of the screen; if the mouse is moved into this area the screen saver activates.

Delay: Time delay before the screen saver activates.

Thermometer: Shows how much time is remaining before the screen saver activates.

Power Saving

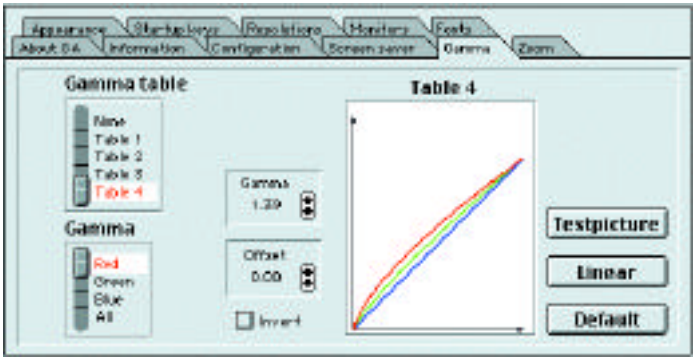
Power saving has the additional advantage over conventional screen savers that it not only increases the active life of the monitor, it also reduces the power usage of the monitor. To do this the monitors must satisfy the Energy Star, VESA or TCO'92 requirements; which state that the monitor must be able to react to certain signals. Usually this means that when the synchronization signal from the video card is stopped the monitor switches to a reduced function level without switching off completely. This cuts the power consumption by up to 75%, something a screen saver cannot do.

Power saving is accomplished in the Formac video cards using the VESA standard: in DPMS mode the monitor functionality is reduced in three (rather than one) stages. The first stage darkens the picture, the second switches the monitor to half functionality and the third puts the monitor into a lowest-power sleep mode. There is a one minute pause between each step. Each progressive stage takes longer to recover from; the lowest power stage has a 20 second recovery time before the picture is restored.

The Gamma Tab

This tab allows the standard gamma curve (correction and offset) to be adjusted for the display (**fig 4.6**).

fig 4.6
Gamma Tab Settings



The curves for red, green and blue can either be adjusted individually or all together. Each color channel can be selected using the Gamma switch. Corrections can be applied using the gamma tables 1-4. The actual adjustments are done by clicking on the up or down arrows for the “Gamma” and “Offset” switches.

The changes made (to individual colors) can be seen in the changes to the curve diagram and the values displayed in the “Gamma” and “Offset” switches. The changes are shown on screen when the switches are reset to the 0 position.

Gamma table : Selection switch for the gamma tables.

Gamma: Selection switch for the color to be corrected.

Gamma: Gamma specifies the gamma correction for the color selected.

Offset: Offset specifies the offset.

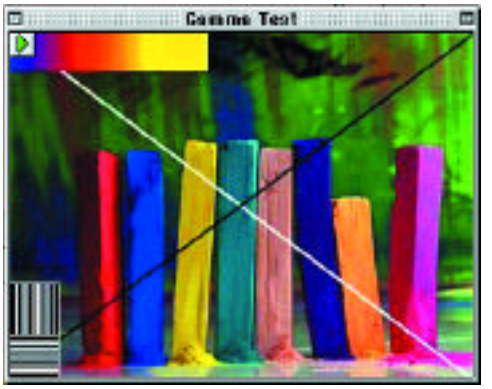
Invert: Inverts the display colors (similar to a photograph negative).

Linear: Resets all colors to linear.

Default: Resets settings to the defaults.

Testpicture: Displays the test picture to verify the gamma settings (**fig 4.7**). The button in the upper left corner of the picture displays a list of pictures on your system. You can select any picture as the test picture using this button.

fig 4.7
Test Picture Window



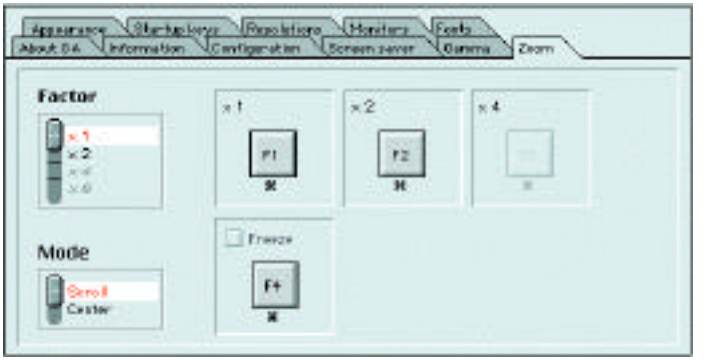
Note: If TFT is installed, the output is digital.

The Zoom Tab

The Zoom tab functions (**fig 4.8**) allow areas of the screen to be displayed at the same resolution and enlarged by up to 400% depending on the video cards capabilities.

The video card supports *following* or *centralized* modes for hardware panning; i.e. for moving around the desktop when it is much bigger than the display area.

fig 4.8
Zoom Tab Settings



If you are using hot keys, ensure that the key combinations selected do not clash with hotkey functions of other applications. You should always be aware that when you are in zoom mode that pop-up windows (such as error messages) may not always appear in the part of the screen you are zoomed in on. If you find that you are unable select a window or cannot proceed with your work it could be that there is a message window waiting for your acknowledgment outside of your current view.

Factor: This is where the zoom factor is set. The selection will be applied immediately after moving the switch.

Mode: Type of auto-panning: Following moves the cursor around the screen, centralized keeps the cursor in the middle of the screen and moves the desktop continually in the background.

x1, x2, x3: Clicking in these fields and pressing a key combination establishes a "Hotkey" for the zoom.

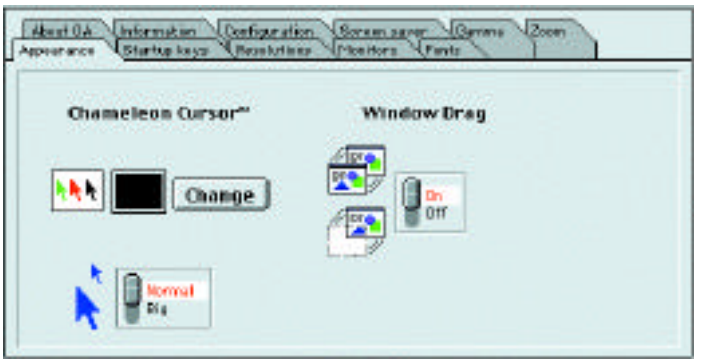
Freeze: The auto-panning can be stopped here, the cursor will then only go as far as the current picture edge, the background will not scroll. Hotkey available.

Note: The amount of zoom available is limited by the resolution and the amount of memory installed on the ProFormance video card.

The Appearance Tab

In this tab you can change the size and color of the cursor (**fig. 4.9**).

fig 4.9
Appearance Tab Settings



Change: This button brings up a new dialog box in which you can select a color for the cursor.

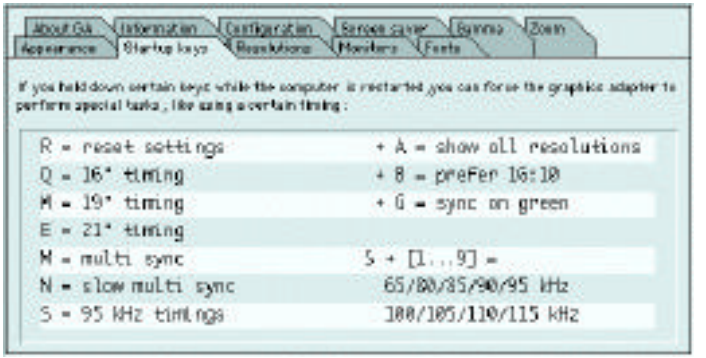
Cursor: Select the cursor size.

Window Drag: This function allows you to change the way in which windows are moved around the desktop. With the switch set to on, when you move a window (by click and holding on the title bar) the contents will be continuously displayed while moving. With the switch set to off the standard Apple mode is used where the contents are blanked out during the move and redrawn after completion.

The Startup Keys Tab

This tab shows what keys are available for configuration during boot-up (**fig. 4.10**). For example, if you press the E key during boot, the video card will automatically switch to Formac 21" timing. This is required for a fixed frequency monitor.

fig 4.10
Startup Tab Settings

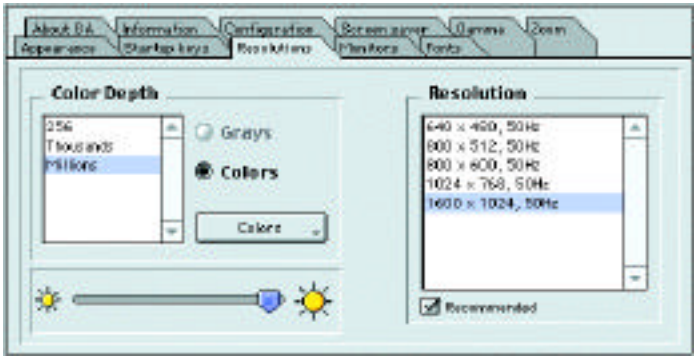


Note: If you have multiple video cards fitted in your system, clicking on the appropriate video card entry in the window header will show the start-keys available for that particular video card.

The Resolution Tab

The color depth and on-screen resolution can be set using this tab (**fig. 4.11**) or using the *Monitor and Sound* control panel which is part of the standard Apple system software. Please consult the Apple handbook for information.

fig 4.11
Resolution Tab Settings



Color Depth: Use this switch to set the desired color depth for color or gray scale.

Resolution: Click on an entry in this field to select that resolution.

Recommended: If this box is checked then the resolution window will only show the resolutions recommended for your particular monitor; if not, then all available resolutions are shown.

Note: When the Recommended box is checked, only those resolutions that are known to be safe for your monitor are displayed. When the box is unchecked, all resolutions are displayed, including those that may damage your monitor. If you select one of these "unsafe" resolutions, a dialog appears to warn you. Press Esc or wait 20 seconds to cancel the operation. Follow the instructions in the dialog.

Brightness slider — When TFT is installed, the brightness slider displays. Select the desired brightness.

Note: The number of available resolutions is dependent on the type of monitor cable in use or if used, what keys were pressed during boot-up (Q, W, E, or M). If a simple monitor cable was used (providing one resolution) or Q, W or E pressed during boot then only one resolution will be available. Pressing M will make all Apple resolutions available assuming you have a multi-scan monitor that supports these resolutions.

Note: Using a multi-resolution video cable or adapter provides the choice of all standard Apple resolutions from 14" to 21" as well as several Formac resolutions (boot-up pressing the R key).

Note: Be aware of the limitations of your monitor when selecting a resolution higher than the standard for your monitor. Even if a multi-scan monitor appears able to display higher resolutions than recommended there are two drawbacks. The first is that displaying a high

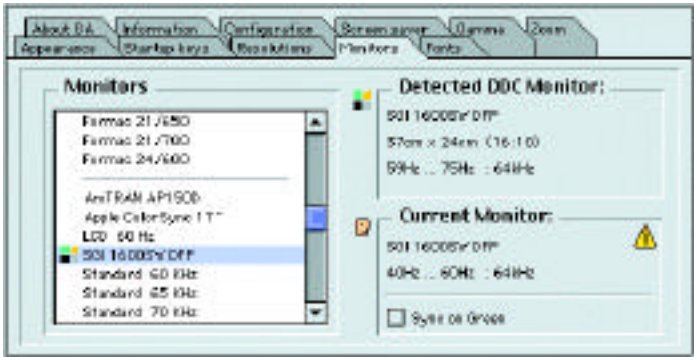
resolution is intensive work for the monitor's electronics and can lead to component damage if taken too far. The second is that the high resolution picture has to be scaled down to fit in the display area of the monitor which reduces the size of text on-screen making it hard to read which in turn can result in eye strain.

In general we recommend that you limit the highest resolution to be one size up from the monitor itself, even if it appears capable of more. This means that 14/15" monitor should be used at a maximum 16" resolution, a 17" monitor at 19" resolution, a 20/21" monitor at 1280 x 960 resolution and a 24" monitor at 1536 x 960 pixels.

The Monitor Tab

Using this tab you can select your Formac monitor (**fig. 4.12**). If the monitor has already been recognized by DDC, you can verify the monitor's values. The window will show if your monitor is recognized by DDC2B and if it is a Formac monitor what configuration it is using.

fig 4.12
Monitor Tab Settings

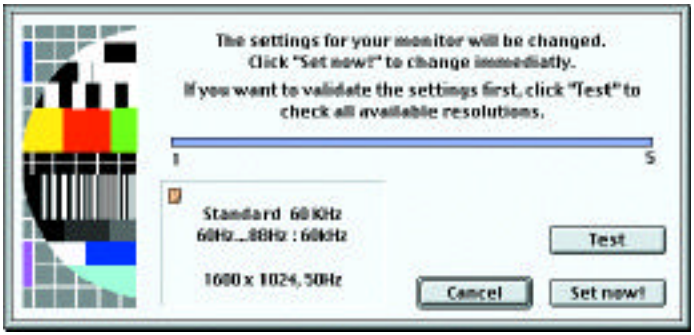


If you don't have a Formac monitor, scroll down through the window and select the horizontal frequency of your monitor.

After a selection has been made, the following window appears.

Test: Starts a test to check all resolutions for the selected horizontal frequency. If a resolution cannot be displayed the screen will remain black, please wait for 20 seconds after which the video card will revert to the last resolution (**fig. 4.13**).

fig 4.13
Appearance Tab Settings



When you start the test, the Test button is replaced by a Continue button and a 20 second timer appears. You can either press the Continue button or wait for the timer to run down to change to the next test.

Set now : If all resolutions are successfully tested, submit the setting to the control panel. If the test does not run through successfully please select the next horizontal frequency down and try again.

Sync on Green: Toggle whether the monitor syncs on green.

Note: The ProMedia does not support sync. on green.

Note: If the ProFormance III video card is connected to a monitor using a BNC type cable then you will get a sync. on green signal if you hold down the "M" and "G" keys during boot.

The Font Tab

This tab lets you specify the cache usage for fonts (**fig. 4.14**).

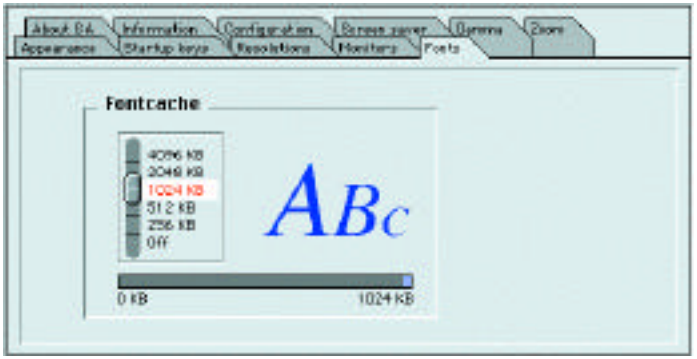


fig 4.14
Appearance Tab Settings

ProFormance 3 Troubleshooting

The following suggestions assume that the Macintosh and monitor are fully operational.

No Picture

Problem: no picture or the picture is not recognizable

1) Check that the video cable is correctly attached to the monitor and securely fastened to the video card.
2) Check that video card is correctly seated in the PCI slot.
3) If the monitor is a fixed frequency Formac monitor, check that the right configuration was set using the keyboard during boot-up and that the right cable connections have been made to the monitor (black to "HD" and gray to "VD")
4) The ProMedia does not support sync. on green.
5) If the ProFormance III video card is connected to a monitor using a BNC type cable, then you will only get a sync. on green signal if you hold down the M and G keys during boot.

Picture Off-Center

Problem: picture is off-center or is under- or oversize

1) If you are seeing a clear picture but it is not central or the right size then it is most likely that you are using a multi-scan monitor which has not had a setting stored for this particular video signal. Check the user guide for the monitor for advice on how to setup and save configurations for the monitor.
2) If you have a fixed frequency monitor then the video card is set to show an invalid resolution for that monitor. Check with your Apple-dealer which resolutions the monitor supports and use the keyboard configuration to set one of these resolutions on the video card.

Colors Seem Off

Problem: the colors do not look right

1) Check the monitor video cable for faults by removing the R-, G- and B-connections in turn. If you can remove any of these connections without the display changing it indicates that the lead is defective and the video cable should be replaced.
2) Check the color settings for the monitor. Some Formac monitors have more than one color setting or have individual color adjusters. Check the monitor user guide for more information on this.

Warranty

By breaking the seal on the CD package, you accept the terms and conditions of the End User License agreement.

Hardware Warranty

Formac, Inc. (Formac) warrants this hardware product against defects in materials and workmanship for a period of one (1) year from the date of original retail purchase. If a defect exists, Formac will, at its option:

(1) Repair the product at no charge, using new or refurbished replacement parts,

(2) Exchange the product with a product that is new or which has been manufactured from new or serviceable used parts and is at least functionally equivalent to the original product, or

(3) Refund the purchase price of the product.

A Replacement product assumes the remaining warranty of the original product, or 90 days, whichever provides greater coverage.

When a product or part is exchanged, any replacement item becomes your property and the replaced item becomes Formac's property. When a refund is given, your product becomes Formac's property.

Exclusions and Limitations

Formac is not liable for any damage to or loss of any programs, data, or other information stored on any media not covered by this warranty. Recovery and reinstallation of system and application software and user data are not covered under this Formac Limited Hardware Warranty. This warranty does not apply: (a) to damage caused by accident, abuse, misuse, misapplication, or non-Formac products; (b) to damage caused by service (including upgrades and expansions) performed by anyone who is not a Formac Authorized Service Provider.

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Some states and provinces do not allow the exclusion or limitation of incidental or consequential damages or exclusions or limitation on the duration of implied warranties or conditions, so the above limitations or exclusions may not apply. This warranty gives you specific legal rights, and you may also have other rights that vary by state or province.

Using Your Service

Please see the Formac web site at **www.formac.com** for the latest information about your service for the Proformance 3.

Communications Regulation Information

FCC Compliance Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Radio and Television Interference

The equipment described in this manual generates, uses, and can radiate radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with Formac's instructions—it may cause interference with radio and television reception.

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

You can determine whether your device is causing interference by turning it off. If the interference stops, it was probably caused by the device.

If the device does cause interference to radio or television reception, try to

correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit from the television or radio. (That is, make certain the computer and the television or radio are on circuits controlled by different circuit breeakers or fuses.)

Changes or modifications to this product not authorized by Formac could void the FCC Compliance and negate your authority to operate the product.