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IMPORTANT INFORMATION
for
mach32 Users

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ATI *mach32* FlexDesk Windows Driver   Version 2.3   April 29, 1994

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Contents

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1.0   Introduction

This is Version 2.3 of the FlexDesk Windows Driver.

FlexDesk is a very advanced Windows driver. It supports the ATI *mach32* (68800) chipset with 512KB or more of memory. This driver supports 16, 256, 32768, 65536 and 16.7 million colors in resolutions of 640x480, 800x600, 1024x768 and 1280x1024 (depending on memory configuration).

The Windows Desktop (work area) can be larger than the physical screen. This feature is called Virtual Desktop. This allows a large (up to 1280x1024) work area even on fixed frequency VGA monitors. The mouse is used to pan around on the desktop.

Full palette manager functions are supported in 8 bpp modes. A more unusual feature is that the palette manager can be disabled for an additional 3/3/2 color mode.

This driver also supports Multimedia Video Acceleration. This allows users to stretch small Video for Windows images to partial or full screen for better visibility while maintaining smooth, realistic playback. ATI's Color Interpolation reduces pixel "blockiness" associated with stretched images. A color configuration control panel enables adjustment of the hue, brightness, saturation and contrast of multimedia video images for optimal quality.

VESA Display Power Management Signaling (DPMS) is supported, providing energy savings and extending the life of DPMS-compliant monitors.

FlexDesk requires that Windows be in 386 Enhanced Mode. The driver uses the best possible combination of Linear Frame Buffer and Accelerator in order to maximize performance. If the Linear Frame Buffer is not available, that feature is emulated. To use the *mach32* on a 286 based processor, or in Windows Standard Mode, use the supplied Microsoft 8514/A driver.

The ATIKEY.EXE (with ATIKEY.DLL) application allows keyboard pan and zoom. This application is started by including it in either the WIN.INI load= line (load=atikey.exe) or your Startup Group (see your Windows documentation for details). When installed, you can change the keystrokes that will call up any of six functions (pan left, right, up or down and zoom in and out), by using the FlexDesk Control Panel.

2.0   Feature Summary

FlexDesk is very feature rich. This section summarizes the features that are in the current driver:

Multiple Pixel Depths
> 16, 256, 32K, 65K and 16.7M color support.

Multiple Resolutions
> 640x480, 800x600, 1024x768 and 1280x1024.

Virtual Desktop
> Desktop Size can be different from the Screen Size, allowing panning over the Windows workspace.

Keyboard Pan and Zoom
> Keyboard control over the Virtual Desktop panning, and keystrokes to zoom in and out of the image.

Control Panel
> Easy to use Windows application controls resolution, color, font, desktop size, video color controls and power savings from a single driver.

Crystal Fonts
> Support for anti-aliased ATI Crystal Font technology to permit accurate screen fonts for Desktop Publishing.

Multiple Font Sizes
> Small Font (96 ldpi), Large Font (120 ldpi) and DTP (Desktop Publishing 128 ldpi) support is provided.

Linear Frame Buffer
> FlexDesk can exploit the Linear Frame Buffer feature of the *mach32* for greater performance.

Palette Manager
> FlexDesk has the ability to optionally disable the 8 bpp palette manager, for an additional fixed color mode. When enabled, full palette control is provided to applications in 8 bpp (256 color).

Multimedia Video Acceleration
>Video for Windows images can be enlarged to a more usable size while maintaining smooth, realistic motion. This makes the *mach32* "video-ready"; ready to accelerate applications incorporating videos based on Microsoft's Video for Windows (.AVI) file format.

Video Color Configuration Control Panel
>Special control panel allows users to adjust the hue, brightness, saturation and contrast of their Video for Windows images for maximum viewing quality.

Color Interpolation
>The FlexDesk driver reduces pixel "blockiness" of stretched Video for Windows images for more realistic playback quality. (This feature is only supported on more recent versions of ATI's *mach32* products. Support is indicated when the horizontal and vertical color interpolation buttons are displayed in the VIDEO portion of the FlexDesk Control Panel).

Field Configurable
>If bugs are found in the driver, major sections can be enabled or disabled to provide a customer "work-around" until a formal solution is implemented. This provides a "safety net" for users.

3.0   Included Files

These are the files which ATI has modified. All other files are from the standard Microsoft Windows 3.1 or Video for Windows 1.0 distribution. WIFEMAN.DLL is a standard Microsoft file, but is included in this list because it is not normally distributed with North American Windows releases. You may not have all of these files, because some are supplied only with Crystal Fonts, Video, DeskScan or other special features. File gsfonts.lzh is optional because Crystal Fonts will run without it (using TrueType fonts).

mach.drv	main driver
machvdd.386	virtual display driver
mach.3gr	grabber
mach.386	non-display virtual driver
mxxpanel.exe	flexdesk control panel
mxxpanel.hlp	help for flexdesk control panel
atikey.exe	keyboard control
atikey.dll	keyboard control
defaults.flx	default flexdesk settings
oemmach.inf	win 3.1 installation
gsfonts.lzh	crystal fonts
atiprof.exe	
ativideo.drv	main multimedia video acceleration driver
mach.wri	file which you are reading. Addendum to manual
ativideo.hlp	Windows help file for multimedia video acceleration
atirle.drv	ATI RLE video compression driver
ativdacc.drv	ATI video acceleration driver. This driver accelerates standard video compression drivers such as indeo.drv (Indeo(TM) video) and msvidc.drv (Video 1).

The following files are from Microsoft Window 3.1 distribution.

8514oem.fon	**8514sys.fon**	**8514fix.fon**	
vgaoem.fon	**vgasys.fon**	**vgafix.fon**	
cga40850.fon	**cga40woa.fon**	**cga80850.fon**	**cga80woa.fon**
ega40850.fon	**ega40woa.fon**	**ega80850.fon**	**ega80woa.fon**
dosapp.fon			
modern.fon	**roman.fon**	**script.fon**	
coure.fon	**courf.fon**		
serife.fon	**seriff.fon**		
smalle.fon	**smallf.fon**		
sserife.fon	**sseriff.fon**		
symbole.fon	**symbolf.fon**		
vgacolor.2gr			

The Crystal Fonts feature can use Windows 3.1 TrueType fonts and ATI GSF format fonts. The GSF format is required under Windows 3.0, which does not support TrueType. To use GSF fonts, the Crystal Fonts must be placed in a directory. The Crystal Fonts are in an archive to save space. Set the environment variable GSFONTS to the directory the fonts are in prior to running the driver.

Contents of gsfonts.lzh:

gsfonts.ini			
system04.pfm	**system05.pfm**	**system06.pfm**	**system07.pfm**
font3004.gsf	**font3004.pfm**		
font3005.gsf	**font3005.pfm**		
font3006.gsf	**font3006.pfm**		
font3007.gsf	**font3007.pfm**		
font3104.pfm	**font3105.pfm**	**font3106.pfm**	**font3107.pfm**

4.0   Operational Requirements and Optimal Settings

a) FlexDesk requires an ATI 68800 (*mach32*) based video controller. The driver is designed to work with Windows 3.1.

b) A minimum of 512KB of Video Memory is required for FlexDesk operation.

c) Video Memory Required for various graphics resolutions and color depth combinations:

	16 color	256 color	65K color	16.7M color
640x480	512K	512KB	1MB	1MB
800x600	512K	512KB	1MB*	2MB
1024x768	512K	1MB	2MB	---
1280x1024	1MB	2MB	---	---

* 1MB @ 56Hz, else 2MB required

FlexDesk uses Video Memory for Character and Bitmap caching, so more memory will result in greater performance. The above table shows the minimum memory needed to run the given mode.

65K color and 16.7M color modes require either (1) that the Memory Aperture be enabled, or (2) if the Memory Aperture is disabled, the VGA is enabled. This means that 65K and 16.7M color modes are not available if the the Memory Aperture is disabled, *and* the VGA is disabled (this can be done on a *mach32* ULTRA PRO card only).

For unsupported configurations, we recommend that you use the Microsoft 8514/A driver. When installing the 8514/A driver, ensure that the VGA Memory Size is set to 256K or greater. Do not set the VGA Memory Size to Shared, or DOS Boxes will not function correctly with the Microsoft 8514/A driver.

d) Multimedia Video Acceleration Requirements

ATI's Multimedia Video Acceleration (MVA) drivers require an ATI 68800 (*mach32*) based video controller (GRAPHICS ULTRA PRO, GRAPHICS ULTRA+ and various OEM *mach32* implementations). The GRAPHICS ULTRA PRO (or VRAM OEM *mach32*) is preferred and achieves better video playback performance. The driver is designed to work with Windows 3.1. Windows must be in Enhanced mode for the MVA drivers to run.

Modes Supporting Multimedia Video Acceleration

	640x480	800x600	1024x768	1280x1024**
4 bpp *	*GUPRO* 512K/1,2MB *GU+* 512K/1,2MB	*GUPRO* 512K/1,2MB *GU+* 512K/1,2MB	*GUPRO* 1,2MB	*GUPRO* 1,2MB
8bpp **Palette Mgr. On**	*GUPRO* 512K/1,2MB *GU+* 512K/1,2MB	*GUPRO* 1,2MB *GU+* 1,2MB	*GUPRO* 1,2MB	*GUPRO* 2MB
8 bpp * **Palette Mgr. Off**	*GUPRO* 512K/1,2MB *GU+* 512K/1,2MB	*GUPRO* 1,2MB *GU+* 1,2MB	*GUPRO* 1,2MB	*GUPRO* 2MB
16 bpp **(Recommended)**	*GUPRO* 1,2MB *GU+* 1,2MB	*GUPRO* 2MB	*GUPRO* 2MB	N/A
24 bpp	Unaccelerated Playback	Unaccelerated Playback	N/A	N/A

GUPRO = GRAPHICS ULTRA PRO (or VRAM-based OEM *mach32* product)
GU+ = GRAPHICS ULTRA+ (or DRAM-based OEM *mach32* product)

* Users may experience color degradation in 4bpp and 8bpp Palette Manager Off mode. 16 bpp color mode is strongly recommended. Users can optionally disable video acceleration for 4bpp

color mode by making the following entry in the [mach] section of the win.ini:
            [mach]
            MVA4bppAccelerate=off
This entry may improve image quality under some circumstances, although overall picture quality is still poor under 4bpp color mode since video requires higher color depth for realistic rendition of images..
**Playback performance is negatively impacted by increases in screen resolution.

For optimal performance of video clips, the following settings are suggested for the ATI FlexDesk parameters:

        Resolution - 640 x 480
        Colors - 65,000 (16-bit)
        Desktop - No effect
        16 bpp RGB Mode - 5/6/5

e) Overview of Issues and Limitations for Multimedia Video Acceleration

While a great deal of effort has gone into providing you with the best possible acceleration capability for Video for Windows clips, the enormous data requirements of video place limitations on the playback capabilities of most PC's. The following document highlights the outstanding issues and limitations of the Multimedia Video Acceleration drivers, and is intended as a supplement to the Multimedia Video Acceleration User's Guide:

    (i) Multimedia Video Acceleration is not supported under the following conditions (please see the MVA User's Guide for more information on supported modes):

    a)   On products other than ATI's *mach32*-based products (GRAPHICS ULTRA PRO, GRAPHICS ULTRA+ and OEM *mach32* products)
    b)   When using 24 bpp color mode.
    c)   For the GRAPHICS ULTRA+ in modes other than 640x480 (4, 8 & 16bpp) and 800x600 (4 & 8bpp).
    d)   When playing back RLE video images captured at sizes larger than 160x120.

    (ii) The following conditions may cause less than optimal multimedia video playback performance:

    a)   CPU less than 486 (e.g. 286/386)
    b)   Dual monitor configurations
    c)   Having less than 8MB of system RAM
    d)   Having more than 12MB of system RAM (on ISA systems)
    e)   Inferior disk speed (e.g. playback from CD-ROM)
    f)   In general, playing back movies with a native image size larger than 160x120 will result in a lower frame rate. This is especially noticeable on slower computers.

    (iii) Color interpolation (image smoothing) issues:

    a)   functions only under 16bpp color depth and only when the image is enlarged to 2x, 3x and 4x its original size (2x/3x/4x zoom is enabled by pressing the ctrl-2, ctrl-3 or ctrl-4 key combination after the video image is on your screen). Any adjustments (size

changes) made to the image after you have selected 2x, 3x or 4x zoom will disable pixel interpolation).

b)   pixel interpolation is only available only under Rev. 6.0 of the ATI 68800 graphics accelerator chip. Previous versions of the ATI 68800 chip will not support pixel interpolation.

c)   pixel interpolation is not available with 1MB boards.

d)   maximum screen resolution for pixel interpolation is 800x600. In some instances (e.g. 1024x768 @16bpp), only horizontal interpolation will be available.

e)   enabling pixel interpolation will decrease playback performance slightly.

f)   pixel interpolation is enabled through the Video section of the FlexDesk Control panel. For this release, users can experiment by selecting vertical, horizontal or both horizontal and vertical imterpolation. The default mode is interpolation off.

(iv) The following is a listing of outstanding operating problems. Please refer to the "Advanced User Section" in this file for a more detailed description:

a)   RLE files don't play with MCI "Don't Buffer Off-Screen" option turned on

b)   Colors are corrupted in movies created by pasting together different video clips in VidEdit

c)   VidEdit: "About" button for "Microsoft RLE" shows same box as "ATI RLE"

d)   Selecting audio only playback when using VidEdit still results in video being played back in addition to audio.

(v) The following issues related to color modes should be noted:

a)   4bpp color mode is typically not suited for video playback due to the high color requirements of video. You will notice significant image quality degradation when playing video in this mode.

b)   8bpp palettized playback will experience color corruption when more than one video is being played back. This is not a limitation of the Multimedia Video Acceleration driver, but is a function of being in a palettized video mode.

c)   The following characteristics should be noted when playing movies in 8bpp palettized (palette manager "on") display mode:

     (i) When a movie is played (depending on the palette that it requires), it may affect the background color or other application that is in the background, (such as PaintBrush). The background color will be restored once the application program that plays the movie (e.g. Media Player) terminates, or you make the background application "active" by clicking on its window.

     (ii) The application that is currently active will gain control of the display palette (ie. look normal).   In the above example, to bring back the "correct" palette for PaintBrush program, just click on its window.

     (iii) When a movie is played in "Full Screen" mode (by using the "configure" option in MediaPlayer program), the movie will be played at the lowest resolution which was set up by the *mach32* install program. This is usually *640x480* mode.   In other display modes, "Full Screen" playback will be done in 320x240 display resolution. As a result, playing movies in 8bpp palettized mode will result in a lower frame rate.

**** ADVANCED USER SECTIONS ****

5.0   Installation and Sample WIN.INI/SYSTEM.INI Settings

Manual installation of the FlexDesk driver is not recommended. Use the Microsoft SETUP utility to initially install the driver, and then use the FlexDesk Control Panel to make modifications to the setup. This section serves to document the various changes that are made to the SYSTEM.INI and WIN.INI files. For more information on the [Mach] settings, see the Configuration section.

Copy all files *EXCEPT*:

      mxxpanel.exe   mxxpanel.hlp   atikey.exe   atikey.dll   defaults.flx

... to the WINDOWS\SYSTEM directory. Copy the listed files to the WINDOWS directory.

Modify WINDOWS\SYSTEM.INI. (Sample Only)

```
[boot]
386grabber=mach.3gr
oemfonts.fon=8514oem.fon
fixedfon.fon=8514fix.fon
fonts.fon=8514sys.fon
display.drv=mach.drv

[boot.description]
aspect=100,120,120
display.drv=ATI FlexDesk Driver

[386Enh]
display=machvdd.386
device=mach.386

[Drivers]
VIDC.MSVC=ativdacc.drv
VIDC.RT21=ativdacc.drv
VIDC.ATI0=ativdacc.drv
INDEO=indeo.drv
VIDEO1=msvidc.drv
ATIVIDEO=ativideo.drv

[Installable Compressors]
vidc.rle=ativdacc.drv

[ATI Interceptor]
MSVC=msvidc.drv
RT21=indeo.drv
RLE=atirle.drv
ATI0=atirle.drv
```

Add a section to WINDOWS\WIN.INI. (Sample Only)

```
[Mach]
```

```
            VGAShared=on
            EngineBlt=on
            ScanLine=on
            CacheCharacters=on
            DeviceBitmap=off
            PaletteManager=off
            ColourWeight16=565
            PixelDepth=8          (NOTE: optimal setting for multimedia video = 16)
            DesktopSize=1024      (NOTE: optimal setting for multimedia video = 640)
            ScreenSize=1024       (NOTE: optimal setting for multimedia video = 640)
```

This sets the driver up for 1024x768, 8 bpp, 120 ldpi. To use other pixel depths and ldpi settings, change the settings as appropriate.

When changing ldpi, select the fonts and aspect ratio used:

	Large Font 120 ldpi	**DTP 128 ldpi**	**Small Font 96 ldpi**
[boot]	----------------	-----------------	---------------
oemfonts.fon=	8514oem.fon	8514oem.fon	vgaoem.fon
fixedfon.fon=	8514fix.fon	8514fix.fon	vgafix.fon
fonts.fon=	8514sys.fon	8514sys.fon	vgasys.fon
[boot.description]			
aspect=	100,120,120	100,128,128	100,96,96

MACH.DRV has suggested Windows default colors. In order to make use of these colors, you can delete the entries in the WIN.INI [colors] section. This will prevent inadvertantly selecting colors that make the menu entries disappear.

To Activate the ATIKEY feature, modify the WIN.INI [windows] section, adding the atikey.exe utility to the load line:

```
        [windows]
        load=atikey.exe
```

6.0   Configuration Information

WIN.INI [Mach] Entries

The [Mach] section of WIN.INI has many switches which can be tailored to change FlexDesk. Most of the switches are alterable via the FlexDesk Control Panel, and this is the preferred way to change them. Editing the entries directly in WIN.INI is not recommended. Should you experience any problems, reset the switches to the default settings. Switches have the tags BASE, CRYSTAL, DESKSCAN, SUPPORT or VIDEO, depending on which option they are for.

BlockWrite   = on | off   **Default: on**

When on, and the hardware supports it, VRAM Block Write is enabled to accelerate performance.

BGR   **= on | off**   **Default: dependent on DAC**

When on, forces BGR 24 bit mode. This is selected automatically by detection on DAC type.

CacheCharacters   **= on | off**   **Default: on**

Allow for cacheing characters into the off-screen memory area.

Circle   **= on | off**   **Default: on**

When on, circles are accelerated by the drawing engine.

ColourWeight16   **= 555 | 565 | 655 | 664**   **Default: 565**

Choose color weighting when PixelDepth=16 is active. The number is interpreted as the number of Red, Green and Blue bits. For instance, 565 allots 5 bits for Red, 6 bits for Green and 5 bits for Blue. 655 and 664 modes are only available on TI and ATI 68860 DACs.

CrystalFonts   **= on | off**   **Default: off**

When set on, enables the Crystal Font feature. When Crystal Fonts is enabled, the palette is fixed in 8 bpp non-programmable mode. 5 gradients of red, blue and green (125 colors) are available in the palette. Also the usual 20 Windows system colors are supported, and 16 shades of gray (including black and white). The remainder of the palette is unused.

DesktopSize   **= 640 | 800 | 1024 | 1280**   **Default: 640**

Choose size of Windows work area. The screen may be smaller than the work area (see ScreenSize Setting), in which case the Virtual Desktop feature is activated. Use the mouse to pan the display over the desktop. 640 selects 640x480, 800 selects 800x600, 1024 selects 1024x768 and 1280 selects 1280x1024. All modes have 4:3 aspect (which results in square pixels), except 1280. (1280x1024 is a 5:4 pixel ratio. Square pixels 4:3 with 1280 would be 1280x960).

Dithering   **= on | off**   **Default: on**

Allow for disabling color dithering. This results in faster performance, at the expense of color fidelity.

DeviceBitmap   **= on | off**   **Default: off**

Allow for realizing bitmaps in the off-screen memory area. For some applications (for example BitStream Facelift), this feature must be turned off.

DeviceBitmapDraw   = on | off   Default: off

Allow the *mach32* draw engine to draw into realized bitmaps. DeviceBitmap=on must be set for this to have any effect.

DPMSFeature   = on | off   Default: off

When on, enables the DPMS (VESA Display Power Management Signaling) for DPMS compliant monitors. When off, the DPMS feature is not available from the Control Panel utility.

DPMSEnabled   = on | off   Default: off

When on, DPMS timeouts will occur, and the monitor will be powered down at the indicated time.

DPMSStandbyMinutes   = <time>   Default: 15 minutes

If DPMSEnabled is on, specifies the amount of time from beginning of inactivity (keyboard or mouse) before the monitor is placed into Standby mode.

```
       <time>           =        <minutes> |
                                 <minutes>:<seconds>
       <minutes>        =        0..90
       <seconds>        =        0..59
       eg:     5        5 minutes
               5:00     5 minutes
               0:05     5 seconds
               :5       5 seconds
               5:5      5 minutes, 5 seconds (305 seconds)
```

DPMSSuspendMinutes   = <time>   Default: 30 minutes

If DPMSEnabled is on, specifies the amount of time from beginning of inactivity (keyboard or mouse) before the monitor is placed into Suspend mode.

DPMSOffMinutes   = <time>   Default: 60 minutes

If DPMSEnabled is on, specifies the amount of time from beginning of inactivity (keyboard or mouse) before the monitor is placed into Off mode.

EngineBlt   = on | off   Default: on

Use the *mach32* blit engine.

EngineDib   = on | off   Default: on

When on, the drawing engine is used to accelerate Dibs (device independent bitmaps).

Environment   **= Small Font | Large Font | DTP Default: none**

This switch is used by the FlexDesk Control Panel when restoring setting from FLX files. It is not used by the driver. To change this, use the FlexDesk Control Panel. Do not edit this manually.

ErrorFatal   **= on | off**   **Default: on**

When set on, all startup errors are treated as fatal, and will result in returning to the DOS prompt. When set to off, a message is displayed and the user is invited to press <D> to return to the DOS prompt, or <I> to ignore the error and continue.

GSFonts   **= <path: c:\gsfonts>**   **Default: NONE**

If this entry is specified, the directory path is used to search for the Crystal Font outlines. If not specified (normal), the environment variable GSFONTS is used instead.

MemMapRegs   **= on | off**   **Default: on**

When on, and the hardware supports it, Memory Mapped Registers are used to improve performance.

MinFontSize   **= <number: 0..255>**   **Default: 8**

Minimum height of a font in pixels to be anti-aliased (Crystal Fonts). If a font renders to less than MinFontSize, it is not anti-aliased. This allows very small characters to remain legible.

MVAColorInterpolationX =on | off   **Default: off**

Enables/disables color interpolation in the horizontal dimension. When on, improves image quality by reducing pixel "blockiness" (in the horizontal dimension) normally exhibited by stretched Video for Windows images. Some performance degradation is experienced when interpolation is enabled.

MVAColorInterpolationY =on | off   **Default: off**

Enables/disables color interpolation in the vertical dimension. When on, improves image quality by reducing pixel "blockiness" (in the vertical dimension) normally exhibited by stretched Video for Windows images. Some performance degradation is experienced when interpolation is enabled.

MVA4bppAccelerate   **=on | off**   **Default: on**

Allows user to enable/disable multimedia video acceleration when in 4bpp color mode. When off, video acceleration is disabled, but image quality for certain Video for Windows images may be improved.

NewBlt   **= on | off**   **Default: on**

When on, enables faster code for bitblts with the *mach32* blt engine.

PanDown   **= <keystroke>**   **Default: NONE**

Set the ATIKEY function PanDown. The PanDown function moves the desktop down using the keyboard.

> <keystroke>   =   [ALT+] [SHIFT+] [CNTRL+] <key>
> <key>   =   F1..F12 |
>   Home | End
>   Left | Right | Up | Down

>   eg: PanDown=SHIFT+CNTRL+Down

PanLeft   **= <keystroke>**   **Default: NONE**

Set the ATIKEY function PanLeft. The PanLeft function moves the desktop to the left using the keyboard.

PanRight   **= <keystroke>**   **Default: NONE**

Set the ATIKEY function PanRight. The PanRight function moves the desktop to the right using the keyboard.

PanUp   **= <keystroke>**   **Default: NONE**

Set the ATIKEY function PanUp. The PanUp function moves the desktop up using the keyboard.

PaletteManager   **= on | off**   **Default: on**

Enable palette management when PixelDepth=8. This allows applications to control the physical palette, and permits applications such as After Dark to do palette cycling animation. When the PaletteManage is off, the color mode will use a fixed 332 (3 bits Red, 3 bits Green, 2 bits Blue) palette.

Pixel   **= on | off**   **Default: on**

When on, get and put pixel are accelerated by the drawing engine. This only applies is VADEngine is enabled.

PixelDepth   **= 4 | 8 | 16 | 24 | 32**   **Default: 8**

Choose number of bits per pixel. 4 allows 16 colors, 8 allows 256 colors and 16 allows 32768 (in 555 mode) or 65536 colors. 24 and 32 both provide for 16.7 million colors. 24 gives a 3 byte per pixel format and saves memory over 32 which gives a 4 byte per pixel format. 24 works for both 640x480 and 800x600

modes, whereas 32 is only usable in 640x480 mode. The Control Panel will always select 24 bpp for 16.7 million color mode. Multimedia Video Acceleration is available in 4, 8 and 16bpp.

Polygon   **= on | off**   **Default: on**

When set on, Polygons are accelerated by the drawing engine.

PolyLine   **= on | off**   **Default: on**

When set on, PolyLines are accelerated by the drawing engine.

RestartPending   **= on | off**   **Default: off**

This switch is used by the FlexDesk Control Panel to remind itself when to request a Restart of Windows to activate settings. Do **not** alter this manually.

ScreenSize   **= 640 | 800 | 1024 | 1280**   **Default: DesktopSize**

Select the screen size (screen mode). Multimedia Video Acceleration is disabled for 1280x1024.

ScanLine   **= on | off**   **Default: on**

Use the *mach32* engine to assist in scanline drawing.

ScanLR   **= on | off**   **Default: off**

Accelerates screen scans. This switch only applies if VADEngine is enabled.

SlowDither   **= on | off**   **Default: off**

When set on, selects VGA style dithering. When off, selects faster ATI style dithering. This setting only works in 256 color palette manager enabled mode.

StretchBlt   **= on | off**   **Default: on**

Enable driver StretchBlt when on. If set to off, GDI StretchBlt will be used instead.

SystemFont   **= <font>**   **Default: HelveticaBold**

Allows the Windows System Font to be specified when CrystalFonts=on. This font is used for Icon titles, menus, etc. This entry should be used with Windows 3.0 only, because Windows 3.1 allows changing the System font through its own mechanism.

TextGamma   **= <number: 20..300>**   **Default: 100**

This setting controls the edge sharpness for the Crystal Fonts feature. Higher values lighten up the edge pixels, giving you "thinner" characters.

UVmul   **= <number: 0..65535>**   **Default: 256**

Video saturation. Adjusts ATI video playback color saturation.

UVsft   **= <number: 0..65535>**   **Default: 0**

Video color. Adjust ATI video playback color. This control adjusts between red and green.

VAD   **= on | off**   **Default: off**

Forces Virtual Aperture when set to on. When set to off, Virtual Aperture is enabled automatically when the Physical Aperture is disabled (through INSTALL).

VADEngine   **= on | off**   **Default: off**

Forces Virtual Aperture to use the BLT engine to transfer data, rather than the VGA area. Selected automatically if necessary.

VGADAC   **= on | off**   **Default: off**

Program VGA DAC in synch with 8514/A DAC registers.

VGAShared   **= on | off**   **Default: on**

Share the video board memory between VGA and Accelerator, or maintain separate memory spaces. When running with Virtual Aperture (Physical Aperture disabled, or VAD=on), VGAShared has no effect (it is forced on).

WIFE   **= on | off**   **Default: off**

Support Windows International Font Extensions (DBCS). This allows FlexDesk to be used with Asian Windows versions. Do not turn this switch on with North American Windows. WIFE will just slow down your system. Do **not** enable this switch when using Japanese Windows 3.1. Japanese Windows is supported directly.

Yadd   **= <number: -256..256>**   **Default: 0**

Video brightness. Makes ATI video playback brighter or darker.

Ymul   **= \<number: 0..65535\>**   **Default: 256**

Video contrast. Adjusts ATI video playback contrast.

ZoomIn   **= \<keystroke\>**   **Default: NONE**

Set the ATIKEY function ZoomIn. The ZoomIn function magnifies the display.

ZoomOut   **= \<keystroke\>**   **Default: NONE**

Set the ATIKEY function ZoomOut. The ZoomOut function allows more of the display to be visible.

7.0   Accessing Video Color Configuration Controls

Adjustments to the hue, saturation, brightness and contrast of video images is allowed by clicking on the VIDEO button in the FlexDesk control panel, and then selecting CONFIGURE.

Please note: the color configuration control panel for multimedia video (located under the VIDEO portion of the FlexDesk Control Panel) is not available when in 8bpp palette manager "on" mode. You must select another color depth or switch to palette manager "off" to allow access to the color configuration controls.

(a)   Video acceleration may still be enabled even though access to the color configuration control panel is not allowed. The status of multimedia video acceleration for the "target session" (ie. any changes you have made to the resolution and/or color depth in the FlexDesk control panel for an upcoming Windows session) is shown in a dialogue box that appears when you press the VIDEO button (ie. if you select a mode that does not support acceleration, you will see a comment to that effect when you click on the VIDEO button).

(b)   Even if you select "8bpp palette manager on" in the FlexDesk control panel for your next session, you will still be able to access the color configuration control panel until you re-start Windows. This is done so that you can still make color adjustments for your current Windows session.

8.0   Operating Problem Detail

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Opening a Paintbrush file hangs the system.

Paintbrush files (.BMP), which are saved with high color and/or resolutions, may exceed memory availability. The memory available is dependent on you system hardware (i.e. RAM, swapfiles etc.) and the Mach32 driver configuration. It is generally recommended that bitmaps created or viewed using Paintbrush should not exceed 2MB in size.

WinBench 3.11 produces lower results, after playing an video.

When the ATI Video drivers are installed, if you play a video then run WinBench 3.11. you will find that the results are lower. This drop-off in performance is due to the inability of the Mach driver to use any off-screen memory. All off-screen memory has been reserved by the video driver to ensure good video performance. To receive an realistic WinBench 3.11 result, we would recommend exiting and restarting Windows after playing a video.

System hangs running Fox Pro 2.5.

The Fox Pro documentation (Q&A section, Question 16 of the Fox Pro 2.5 manual) states that when running on a 4MB system, the user cannot use emm386, virtual memory should be set at 2MB and smartdrive should be set to 256K or less. Fox Pro will not work, and may hang the system, unless the above requirements are met. Consult your Fox Pro manual for further information.

Images are not saved correctly (i.e. wrong colors) in Paintbrush when using 4bpp (16 color).

For performance reasons, our driver in 4 bpp (16 color) mode actually informs Windows that we are an 8bpp (256 color) driver. As a result, some applications will exhibit color translation problems. We recommend using the Mach32 driver in 8bpp (256 color) mode until this is corrected in a future driver release.

The following EPR's are specific to ATI's Multimedia Video Acceleration feature:

RLE files don't play with MCI "Don't Buffer Off-Screen" Option enabled

If you open any RLE compressed video and configure media player to "not buffer off screen", the video will not be played although audio gets played. Microsoft handles RLE cases "internally". ATI video driver cannot correct this situation. For now the "Don't Buffer off screen" option is NOT recommended.

VIDEDIT: About Button for "MICROSOFT RLE" shows same box as "ATI RLE".

After installing the MVA drivers, VidEdit shows both "Microsoft RLE" and "ATI RLE" as installed compressors (under the Video Compressions Options menu). Selecting either of these will, in fact, access the ATI RLE compressor. We are unable to remove the Microsoft RLE reference from VidEdit during our install due to licensing issues (the text string is embedded in videdit.exe.

Note for Intel Action Media II Users

Installation of ATI's Multimedia Video Acceleration drivers disables Indeo video's capability to detect the presence of the Action Media II for hardware-assisted playback. The result is that playback will be software only (i.e. performance will be slower in most instances than with the Action Media II hardware support).

To allow the Indeo video driver to detect the presence of the Action Media II board and enable hardware-assisted Indeo video playback, the following changes must be made to the [Drivers] section of the SYSTEM.INI file:

Change "**VIDC.RT21 = ativdacc.drv**" to "**VIDC.RT21 = indeo.drv**"

(Exclude quotation marks).

Software only playback (ie. playback without the Action Media II board) will now be unaccelerated.

** NON-ATI VIDEO FOR WINDOWS PROBLEMS **

The following problems are not related to ATI's Multimedia Video Acceleration feature, but are included for your reference and convenience.

"Smart Drive" degrades performance.

The Smart-Drive (smartdrv.exe or smartdrv.sys) disk accelerator software may slow down your video playback significantly. This is especially true when trying to play back video files (*.avi files) that are larger than the Smart Drive Disk Cache. In this particular scenario Smart Drive will end up with the start of the video in its cache, when playback is started. By the time the end of a large video file is reached during playback, Smart Drive will have flushed the beginning of this movie. So the second time the video is played, every single frame must be reloaded from disk. At the same time the memory occupied by Smart Drive cannot be used for productive things like video processing.

Window takes about 1 second to update when obscured and then oncovered.

In certain instances, the video window can take slightly longer than usual to update when another window is overlayed on top of it and then removed.

File marking is ignored by Microsoft "Media Player".

When using the "mark in/mark out" feature of the media player, the resulting playback ignores these settings.

9.0   FlexDesk Error Identification

All FlexDesk error messages are issued at startup. The error message is displayed, and the system speaker is beeped. The operator is invited to press a key to return to DOS. This behaviour can be modified to allow the operator to ignore the error and proceed (see the ErrorFatal switch).

ATI FlexDesk Windows Driver Error 1:

*Error***:   The ATI FlexDesk Windows Driver requires an ATI 68800 or 38800 based video
               board or product.**

Action: Press a key to return to DOS.

Cause: The FlexDesk driver was started on a system without a *mach32* based video product, or a TSR or Memory Manager may
be   preventing driver identification.

ATI FlexDesk Windows Driver Error 2:

*Error***:   The BIOS ROM cannot be accessed. Please refer to your owners manual
               for hardware setup assistance.**

Action: Press a key to return to DOS.

Cause: The *mach32* BIOS ROM failed. A TSR or Memory Manager may be preventing BIOS ROM access.

ATI FlexDesk Windows Driver Error 3:

*Error***:   The ROM BIOS Query has returned a failure. Please ensure that the BIOS ROM
             is enabled, and that you have set up at least one video mode.**

Action: Press a key to return to DOS.

Cause: The *mach32* BIOS ROM has not responded in a reasonable way to the QUERY service. This may be because the ROM is
             disabled, or a TSR or Memory Manager may be preventing the BIOS ROM Query.

ATI FlexDesk Windows Driver Error 4:

*Error***:   You have insufficient Video Memory to run a %1x%2/%3 video mode. Run
             Windows SETUP from DOS and select a lower resolution mode.**

Action: Press a key to return to DOS.

Cause: Not enough video memory. The numbers indicate X, Y and number of colors. For instance,   1280x1024/65536   is
not possible   on a 2MB card.

ATI FlexDesk Windows Driver Error 5:

*Error***:   The ATI FlexDesk Windows Driver requires that Windows be run in 386 Enhanced
             Mode. Select the Microsoft 8514/A Driver to use your video board with
             a 286 based processor, or to use Windows in Standard Mode. If necessary,
             Windows Enhanced Mode can be forced on a 386 based processor by starting
             Windows using the WIN /3 command. This is required on machines with less
             than 4 Mb of system memory.**

Action: Press a key to return to DOS.

Cause: The driver only runs in 386 Enhanced Mode.

ATI FlexDesk Windows Driver Error 6:

*Error***:   The ATI FlexDesk Windows Driver cannot be started. No additional information
             is available. Probable cause is insufficient resources or general
             system failure. Please ensure system integrity and retry. If the
             problem persists, contact customer support services with the following
             error code: %1.**

Action: Press a key to return to DOS.

Cause: This message is issued in circumstances when an error is not expected, and the explanation is *very* technical. The only
code   currently defined is 1, which is issued if the DPMI mapping call for the aperture fails.

ATI FlexDesk Windows Driver Error 7:

*Error***:   The %1x%2 mode cannot be started. Please ensure that you have
             installed the requested mode using the Mach8 or Mach32 INSTALL utility.
             Your selected monitor may not be capable of operating in the requested
             mode - if this is the case, run Windows setup from DOS and select
             a compatible mode.**

Action: Press a key to return to DOS.

Cause: This message is issued when you attempt to start FlexDesk in a mode which is not set up by   INSTALL. This may happen   because you have selected an inappropriate monitor and the mode is   not available with the current monitor, or because you   have not enabled the mode in custom installation.

ATI FlexDesk Windows Driver Error 8:

***Error*:   The ATI FlexDesk Windows Driver cannot be started. The BIOS ROM has failed to activate the requested mode. Please contact customer support services.**

Action: Press a key to return to DOS.

Cause: The mode was available in the BIOS and seems to have been installed correctly, but the BIOS ROM refused to switch to that   mode. This usually indicates a fairly serious problem. Run the TEST program to determine if DOS mode switching works   okay. Check memory managers or TSRs.

10.0   REPORTING PROBLEMS

When reporting problems with this driver, please reference the driver version number. When in doubt about the version number, call up the "About" box in the FlexDesk Control Panel and read the driver version number. If the Control Panel does not indicate the version number (NA), then

(a)   You may not be running the FlexDesk driver. Check that one of the MACH-??.DRV files is referenced in SYSTEM.INI.

(b)   Your bug may be preventing the Control Panel from reading the driver build number. Try restarting Windows, and if this does not remedy the problem, report the Date, Time and Size of the driver (MACH.DRV file).

(c)   You may be using BitStream Facelift 2.0. If you are using this Typeface Manager, report the Date, Time and Size of the driver (MACH.DRV file).

The format is:

Product Version: 2.3

When calling our Customer Support, please ensure that you have all information
which will allow Customer Support to assist you with your problem. This
includes not only the build number, but also information found in the Customer
Support section of your manual including, but not limited to:

Version of the Card: ISA, EISA, Micro Channel or VESA Local Bus
BIOS Version of the Card: What is displayed on the screen at Power On time
Memory on the card: 1 or 2 Megabytes
Hardware <Install> config: Set Power Up configuration, Output of <C-INFO>
Amount of System Memory: 4/8/16 Megabytes
Type of System: 286 / 386 / 486 / Pentium ISA / EISA / Micro Channel / VLB
Version of Microsoft Video for Windows
Contents of autoexec.bat and config.sys
Versions of other Software or Hardware

Exact Steps to recreate problem

The more information provided, the easier it will be for us to recreate and resolve the problem.

11.0   Driver Version History

This is release 2.3 of the driver:

Version 2.3   April 29, 1994

12.0   ATI Address

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33 Commerce Valley Drive East
Thornhill, Ontario
Canada L3T 7N6

Head Office, Sales and Marketing   (905) 882-2600
Corporate FAX   (905) 882-2620

Customer Support (VOICE)   (905) 882-2626
Customer Support FAX   (905) 882-0546

ATI DOWNLOAD BBS   (905) 764-9404
CompuServe   "GO ATITECH"

          TECHNICAL COMPUSERVE INQUIRES 74740,667   (Attention: ATI Support)
          GENERAL COMPUSERVE INQUIRIES   76004,3656 (Attention: Matthew Arbeid)
****