
Appendix C1

Software Support

SOFTWARE SUPPORT

1. INTRODUCTION

The CL-GD546X family of VisualMedia accelerators is shipped with the CL-GD546X VGA BIOS and an extensive set of utilities and software drivers. The following sections briefly describe some of the utilities and high-performance software drivers available.

To get an up-to-date list and description of the BIOS, utilities, and software drivers supported refer to the latest release of the CL-GD546X VGA BIOS and Utilities Release Kit or the CL-GD546X Display Drivers and Utilities Release Kit. These programs are also available on the Cirrus Logic BBS, ftp, and web sites. (see [Appendix C3](#), “[Cirrus Logic BBS, FTP, and WWW Page](#)”, for further information on these support areas).

2. CL-GD546X SOFTWARE UTILITIES

This section describes the software utilities provided with the CL-GD546X VisualMedia accelerators and explains the function and usage of each.

2.1 CLMODE — A CL-GD546X Video Mode Configuration Utility

The CL-GD546X accelerators have many more video modes than the original IBM VGA, offering enhanced modes up to $1600 \times 1200 \times 256$ colors, $1280 \times 1024 \times 64K$ Direct Color, and 1024×768 in 16.8 million True Color. To take advantage of these features, install a compatible monitor and select the proper monitor parameters.

The CLMODE utility provides a number of graphics configuration options. All the options are selected from a menu or direct keyboard input at the DOS command line. The menu options include:

- Monitor-type selection based on monitor vertical and horizontal sync frequencies
- Selection and setting of CL-GD546X VGA BIOS Standard and Extended Video modes
- Extended Video mode preview to verify high-resolution modes supported by the video subsystem
- Selection and setting of video refresh rates for each individual video mode resolution (that is, 640×480 , 800×600 , 1024×768 , 1280×1024 , and 1600×1200) to match video refresh rates supported by a monitor

The CLMODE utility is described in detail in the CL-GD546X BIOS and Utilities Release Kit. Note that CLMODE is included as the WINSTUB in the WINMODE utility so WINMODE can be used in place of CLMODE on the command line (typically in AUTOEXEC.BAT).

2.2 RAMBIOS.COM — RAMBIOS Utility

This RAMBIOS.COM utility version of the VGA BIOS EPROM code can be loaded into DOS memory. The RAMBIOS.COM utility allows the VGA BIOS to perform in a 16- or 32-bit system memory, instead of an 8- or 16-bit bus ROM. This permits many VGA operations that use the VGA BIOS to run faster in systems that do not normally shadow the VGA BIOS. The RAMBIOS should only be used in the event that a significant software fix is required. The RAMBIOS utility is described in detail in the CL-GD546X BIOS and Utilities Release Kit.

The most noticeable performance boost is in text modes where VGA BIOS character-write and text-scrolling functions are used. Common benchmark programs demonstrate this increase in performance are PC Bench™ from Ziff-Davis® Publishing Company, and QA Plus™ from Diagsoft®.

However, most GUI applications only use the BIOS for mode switching. Actual performance increases vary between applications and in most cases are not significant.

Many of the newest '386 and later PCs automatically cache (copy into system memory) the VGA BIOS at power-on. This is sometimes called 'Shadow RAM'. In this case, the BIOS is already executing out of 16- or 32-bit memory and the RAMBIOS.COM utility is not necessary.

The RAMBIOS.COM utility can be performed from the command line or from within AUTOEXEC.BAT. The utility installs automatically in system memory at the correct address, shortly after power-on or a warm-boot.

The RAMBIOS utility only works with MS-DOS or PC-DOS, and does not work with OS/2®, UNIX®, or XENIX®.

2.3 MFGTST.EXE — Manufacturing Test Utility

MFGTST.EXE provides the ability to visually and programmatically verify correct operation of the CL-GD546X. Primary features include: write/read/compare tests of all video register groups, write/read/compare tests of all video RAM, display patterns for visual verification of all primary video modes, as well as a complete set of miscellaneous video tests designed to verify proper operation of the video device. All RAM and register tests are self-checking to the extent that values are read and compared to expected values. When a difference is detected, an error message is generated. To use this utility, refer to [Appendix B6, "Manufacturing Test"](#).

2.4 REG.EXE — A Register Utility

The REG.EXE utility is a useful tool for verifying, manipulating, and testing IBM/PC-compatible I/O registers, Memory-Mapped registers, and memory locations. REG.EXE is intended for engineering and technical developers to be used for low-level control of hardware devices in a PC. The versatility and compatibility with any test environment or device makes REG.EXE a useful and reliable tool for all developers and manufacturers in the IC industry. REG.EXE is available only upon request. Contact your local Cirrus Logic field application engineer for a copy.

Although REG.EXE can be configured for any PC environment, it contains several features that are tailored to the VGA and graphics accelerator development environment:

- Displays I/O registers and memory on standard display devices including monochrome or TTY/VT-100 monitors
- Adapts to new hardware through configuration capabilities
- Offers editing capabilities of I/O registers and memory
- Customizes display pages, data types, and radix

2.5 OEMSI (OEM System Integration) Utility

The OEMSI utility enables the Cirrus Logic VGA BIOS to be customized to system requirements. Since OEMSI operates upon the binary (executable) image of the BIOS, source code is no longer necessary for customization. Several different derivative BIOS are easily generated from the same core, which reduces maintenance problems and simplifies software-generation control. If OEMSI is used, do not ship the RAM BIOS since its use overrides changes. The OEMSI utility is described in detail in the CL-GD546X BIOS and Utilities Release Kit.

A wide range of parameters, default values, and tables are easily modified or replaced using the OEMSI program. The following is a list of Cirrus Logic VGA BIOS components that can be modified with the OEMSI program:

Sign-on Message. In addition to the Cirrus Logic copyright notices that are displayed when the system boots-up, custom copyright messages can be inserted after the copyright messages are displayed. Also, the positioning of the cursor can be changed.

Hardware Configuration Registers. The CL-GD546X VGA BIOS hardware configuration table includes register values that are programmed at POST. This allows customizing of register values that program video dot clocks and other programmable settings.

Video Mode Parameter Tables. These tables contain the complete set of register values for each Standard and Extended Video mode. Values for both the Standard VGA registers and the Cirrus Logic Extension registers are contained in these tables. They can be customized to configure video refresh rates for individual video mode resolutions.

Font Tables. All fonts used by the Cirrus Logic VGA BIOS can be modified or completely replaced using the OEMSI utility. A flexible scheme is implemented, whereby font tables can be exported from the binary image of the BIOS or imported to it.

2.6 WINMODE Utility

The WINMODE utility is a Windows v3.1 application that can set the resolution, vertical refresh rate and number of colors of the display. WINMODE is described in detail in the CL-GD546X Display Drivers and Utilities Release Kit.

3. CL-GD546X SOFTWARE DRIVERS

Several high-performance text and graphics device drivers are available to enhance the operation of the CL-GD546X graphics applications.

3.1 Driver Applicability

The CL-GD546X VisualMedia accelerators do not require that software drivers run applications in Standard VGA modes. The drivers listed in [Table C1-1](#) are provided as a service to the user for improved resolution and performance to many software packages.

Quality and high-performance device drivers are an important feature of any video subsystem, and the Cirrus Logic list of available device drivers is continuously expanding. For the latest list of available device drivers, please refer to the CL-GD546X Display Drivers and Utilities Kit.

Table C1-1. Driver Support

Software Drivers	Resolution Supported	No. of Colors
Microsoft® Windows® Microsoft® DCI (display control interface) Provider Microsoft® Windows® 95 Microsoft® DirectDraw™	640 × 480, 800 × 600, 1024 × 768, 1280 × 1024, 1600 × 1200	256 (8 bit)
	640 × 480, 800 × 600, 1024 × 768, 1280 × 1024	65,536 (16 bit)
	640 × 480, 800 × 600, 1024 × 768	16.8 Million (24 bit)
	640 × 480, 800 × 600, 1024 × 768	16.8 Million (32 bit) CL-GD5464 only
Microsoft® Windows NT™	640 × 480, 800 × 600, 1024 × 768, 1280 × 1024, 1600 × 1200	256 (8 bit)
	640 × 480, 800 × 600, 1024 × 768, 1280 × 1024	65,536 (16 bit)
	640 × 480, 800 × 600, 1024 × 768	16.8 Million (24 bit)
	640 × 480, 800 × 600, 1024 × 768	16.8 Million (32 bit)
AutoCAD® AutoShade® with Renderman™ 3D Studio™ MicroStation®	640 × 480, 800 × 600, 1024 × 768, 1280 × 1024, 1600 × 1200	256 (8 bit)
	640 × 480, 800 × 600, 1024 × 768, 1280 × 1024	65,536 (16 bit)
	640 × 480, 800 × 600, 1024 × 768	16.8 Million (24 bit)
OS/2® v3.X, Warp	640 × 480, 800 × 600, 1024 × 768, 1280 × 1024	256 (8 bit)
	640 × 480, 800 × 600, 1024 × 768	65,536 (16 bit)
VPM (video port manager)	Resolution-independent	—

