

# QuadEGA PROSYNC™

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## Operations Manual

QUADEGA PROSYNC

User's Manual

Quadram Corporation  
One Quad Way  
Norcross, Ga. 30093  
Part Number 12-9371-01/R1

## NOTICE

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FCC ID:D2A62LVEGA

Certified to comply with Class B limits, Part 15 of FCC Rules.

See instructions if interface to radio reception is suspected.

## Radio and Television Interference

The equipment described in this manual generates radio-frequency energy. If it is not installed properly it may cause interference with radio and television reception. The monitor you purchase must comply with the limits for Class B computing devices in accordance with the specifications in Subpart J, Part 15, of FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation.

The cable connection between the computer and the monitor must be a shielded cable with the shield properly grounded. You can determine if your equipment is the cause of interference by turning it off. If the interference stops, it was probably caused by the computer or the monitor. To correct the problem try:

1. Turning the TV or radio antenna until the interference stops.
2. Moving the computer further away from the TV or radio.
3. Moving the computer from one side of the TV or radio to the other.
4. Plugging the computer into an outlet that is on a different circuit breaker or fuse than the TV or Radio.
5. Installing a rooftop antenna connected to your TV and radio with coaxial cable.
6. Identifying the offending piece of hardware by selectively turning them off one at a time and checking for interference.

If necessary, you should consult your computer dealer for additional suggestions. You may find the booklet "How to Identify and Resolve Radio-TV Interference Problems" prepared by the Federal Communications Commission helpful. This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. Refer to Stock Number: 004-000-00345-4.

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## GETTING STARTED

QuadEGA ProSync is a high-resolution, advanced graphics adapter for the IBM PC series computers, designed to be fully compatible with the IBM Enhanced Graphics Adapter (EGA).

In addition to its compatibility with the EGA enhanced graphics modes, the QuadEGA ProSync has the ability to emulate the IBM Color Graphics Adapter (CGA), IBM Monochrome Display Adapter (MDA) and Hercules Graphics Card (HGC).

The QuadEGA ProSync supports all the features of the IBM EGA, as well as some special QuadEGA ProSync features:

Supports four different monitor types:

NEC MultiSync (or equivalent)

IBM Enhanced Color Display

IBM Color Display

IBM Monochrome Display

752 x 410 high-resolution graphics (requires TTL-compatible color monitor capable of 25.0 KHz)

640 x 480 high-resolution graphics (requires TTL-compatible color monitor capable of 29.4 KHz)

640 x 350, 16-color graphics (from a color palette of up to 64 different colors)

640 x 200 and 320 x 200, 16-color graphics

640 x 350, 4-color monochrome graphics

**Includes the QuadEGA ProSync Utility  
Diskette:**

**INSTALL.COM** lets you add high-resolution drivers to your Microsoft Windows diskette, easily create AUTOEXEC.BAT files to configure your system for use with the QuadEGA ProSync, and prepare a QuadEGA ProSync game mode pre-boot diskette.

**QEGABOOT.SYS** lets you run CGA-compatible game software which requires that you use the game diskette to boot the computer.

**QEGA.COM**, with screen saver feature, lets you emulate the Hercules Graphics Card (HGC) and Color Graphics Adapter (CGA) modes.

**DIAG.COM** performs a series of diagnostic tests to ensure that your QuadEGA ProSync is installed properly and operating correctly.

**RAM-based, loadable character generator;**  
capable of up to 512 displayable character  
codes for multiple character fonts

**Supports up to 43 lines of 80-column text**

**Smooth, flicker-free horizontal and vertical  
scrolling**

**256K on board memory supports up to 8  
graphics pages in 320 x 200 16-color mode**

**IBM EGA "Feature Adapter" compatible  
connector**

Designed using advanced custom chip (VLSI) technology for speed, reliability and compatibility

Two Year Warranty. If something goes wrong with the QuadEGA ProSync, Quadram will, under the terms of our warranty, repair or replace it free of charge, for up to two years from the purchase date.

## SYSTEM REQUIREMENTS

The QuadEGA ProSync can reside in any open system expansion slot of the IBM PC, PC/XT, PC/AT or 100% PC-compatible computer.

### CHECK YOUR ROM MODULE!

Some early model IBM PCs do not recognize the boot up sequence of the IBM EGA, and therefore will not properly boot up the QuadEGA ProSync. If your IBM PC or PC/XT was manufactured before April 1983, you will need to update your system ROM module BEFORE you install the QuadEGA ProSync. If you own a PC-compatible, you should check with your dealer about your system's compatibility with the IBM EGA.

You can find out the date of the ROM module installed in your IBM PC or PC/XT by running the ROMDATE.COM program on the QuadEGA ProSync Utility Disk.

To run the program, use the following steps:

- Step 1      Place your IBM DOS disk in Drive A:  
                  and boot up your system.
  
- Step 2      Replace the DOS disk with the  
                  QuadEGA ProSync Utility Disk.
  
- Step 3      At the system prompt, type: **ROMDATE**  
                  (then press **Enter**)

The program will print out the date of the ROM module installed in your PC. If the date is earlier than 10/27/82, you will need to see your dealer to get an updated ROM module

## INSTALLATION

The QuadEGA ProSync installation procedures are organized under four general headings:

How to get your PC ready

How to get your QuadEGA ProSync ready

How to install the QuadEGA ProSync and  
reseal your computer

How to use the QuadEGA ProSync and Utility  
Disk software

To begin, you'll need to remove the cover from your PC to access the expansion slot where your QuadEGA ProSync will be installed. You can do this easily in a few minutes with the aid of common tools.

### TOOLS NEEDED

The following tools will aid you in the installation of the QuadEGA ProSync:

Medium "flat-blade" screwdriver

Small "flat-blade" screwdriver (optional)

3/16" nutdriver (optional)

1/4" nutdriver (optional)

## GETTING THE PC READY

The following instructions describe how to configure your IBM PC, PC/XT and PC/AT.

**NOTE:** Most IBM PC-compatible computers are similar in construction to the PC, PC/XT or PC/AT, and therefore, QuadEGA ProSync installation in these machines will be similar. If you are unsure as to how to install the QuadEGA ProSync in your PC compatible, the Quadram Technical Support Department can provide you with more information specific to your machine (see page 37 for Technical Support Information).

To get your IBM PC, PC/XT or PC/AT ready for installation, perform the following steps. Follow steps 1 through 6 carefully:

- Step 1** Turn off the power to the computer and unplug the PC power cord from the wall outlet.
- Step 2** Turn off the power to any external devices, such as your monitor or printer.
- Step 3** Disconnect all of the cables that may be attached to the rear of the computer.

**PC/AT NOTE:** If you have the plastic back panel installed on your PC/AT, you will need to unfasten it from the plastic fastener strips before performing step 4.

- Step 4** Move any external devices, including the keyboard, away from the computer.
- Step 5** Using a screwdriver (or 1/4" nutdriver), remove the five cover mounting screws at the rear of the computer.

- Step 6** From the front of the computer, hold on to both sides of the system cover and slide it carefully toward you. When the rear edge of the cover reaches the front of the PC, tilt the front of the cover upward and remove it from the computer.

## CONFIGURING YOUR SYSTEM

The PC, PC/XT and PC/AT allow you to change your system configuration to support different types of monitors. The PC and PC/XT can be configured for monochrome, color or no display. Your system needs to be configured for "no display" to allow an EGA to boot up properly. This section is divided into two parts:

How to configure your PC or PC/XT

How to configure your PC/AT

## CONFIGURING YOUR PC OR PC/XT

To configure your PC or PC/XT, you must change two switches located inside your computer system.

The PC (and compatibles) have two banks of switches used for system configuration. The PC/XT has only one bank of switches. Two of these switches correspond to the type of monitor to be used. To set the switches, follow steps 1 and 2 carefully:

**Step 1** Using the diagram below, locate Switch Block 1. Remember, the PC/XT has only one Switch Block.

**Step 2** Switch Block 1 has 8 individual switch settings. Set switches 5 and 6 to ON. This will configure your PC for "no display." Do not change any other switches.

**Step 3** For PC/XT only. If you are installing the QuadEGA ProSync into the PC/XT short slot (slot 8), you will also need to set the QuadEGA ProSync Slot-8 Jumper Block. See the QuadEGA ProSync Slot-8 Jumper Block section for more information.

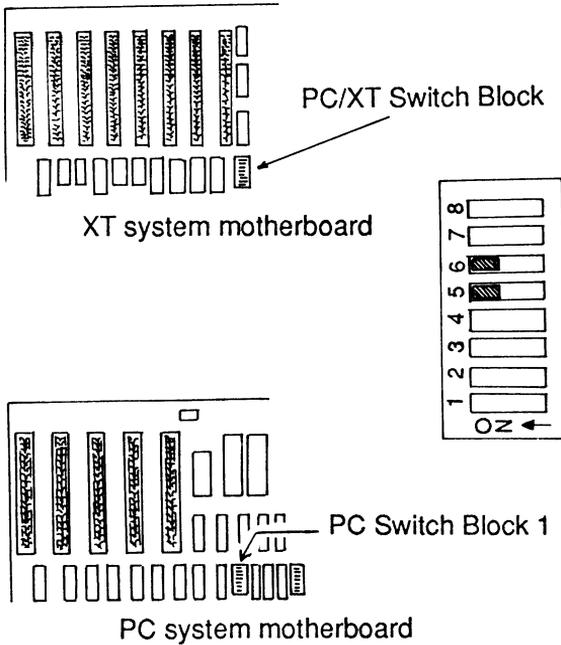


FIGURE 1

### PC/AT SETUP

The PC/AT (and most PC/AT compatibles) do not have a bank of switches to set for the system configuration. Instead the PC/AT requires that you run the menu-driven "setup" program supplied on the PC/AT Diagnostics disk for system configuration.

After you have configured the QuadEGA ProSync and resealed your computer, you should run the PC/AT Diagnostics "setup" program. The menu-driven "setup"

program will ask you a series of questions about your system. When you are asked what type of monitor you are using, reply with the type of monitor the QuadEGA ProSync will be attached to.

Some PC/AT compatibles may have a special "IBM EGA" option in the setup menu. You should choose this option.

If your setup menu has options for both "IBM EGA" and "Multi- mode monitor," you may have to try both settings before you can determine the proper configuration. Some computers will perform better under the "Multi- mode" option. Refer to your PC/AT Guide to Operations manual for more information

## GETTING THE QUADEGA PROSYNC READY

Because the QuadEGA ProSync can emulate different display adapters, care must be taken when installing the unit in your system. You must configure the QuadEGA ProSync to match your monitor and any other display adapters you might have installed in your computer.

This is important because the IBM PC will not allow two similar display adapters in the system at the same time. That is, you cannot have the QuadEGA ProSync emulate a Monochrome Display Adapter (MDA) with another MDA card co-resident in your system. Nor can you have the QuadEGA ProSync emulate the Color Graphics Adapter (CGA) when another CGA card is co-resident in your system. Furthermore, the QuadEGA ProSync cannot co-reside with another QuadEGA ProSync or EGA card.

Before you begin, you need to answer two basic questions:

1. What display adapters will you have installed in your system?
2. What type of monitor will you be using?

Depending on your answers to the above questions, you may choose to install the QuadEGA ProSync in one of three ways:

1. Alone, without any other display adapters co-resident.

2. With an MDA card co-resident, and the QuadEGA ProSync configured as a CGA or EGA.
3. With a CGA co-resident and the QuadEGA ProSync configured as an MDA or EGA.

If you plan for the QuadEGA ProSync to be co-resident with another display adapter, you must specify which adapter is to be the "primary" adapter, and which is to be the "secondary" adapter. (Refer to the QuadEGA ProSync Switch Block Settings section.)

The adapter you specify as primary will be the output source on boot-up. The secondary adapter will remain dormant until you activate it using the DOS MODE command.

For instance, if you have the QuadEGA ProSync set up to be the primary adapter, and an MDA set up as the secondary adapter, the QuadEGA ProSync will output the DOS prompt to its display when you boot up your system with a DOS disk. The MDA will not display the DOS prompt. Any DOS commands issued will be displayed from the QEGA's display output. You can redirect the video output through the secondary adapter using the DOS MODE command. Refer to Activating The Secondary Adapter section for more information.

Once you have determined which type of monitor and display adapters will be used in your system, you can configure the QuadEGA ProSync.

## CONFIGURING THE QUADEGA PROSYNC

The QuadEGA ProSync has several switches and connectors that enable you to run the unit in different text and graphics modes. This section details each of these:

### Switch Block

Toggle Switch

Feature Connector

2XX/3XX Jumper Block

Slot-8 Jumper Block

Feature Clock Jumper Block

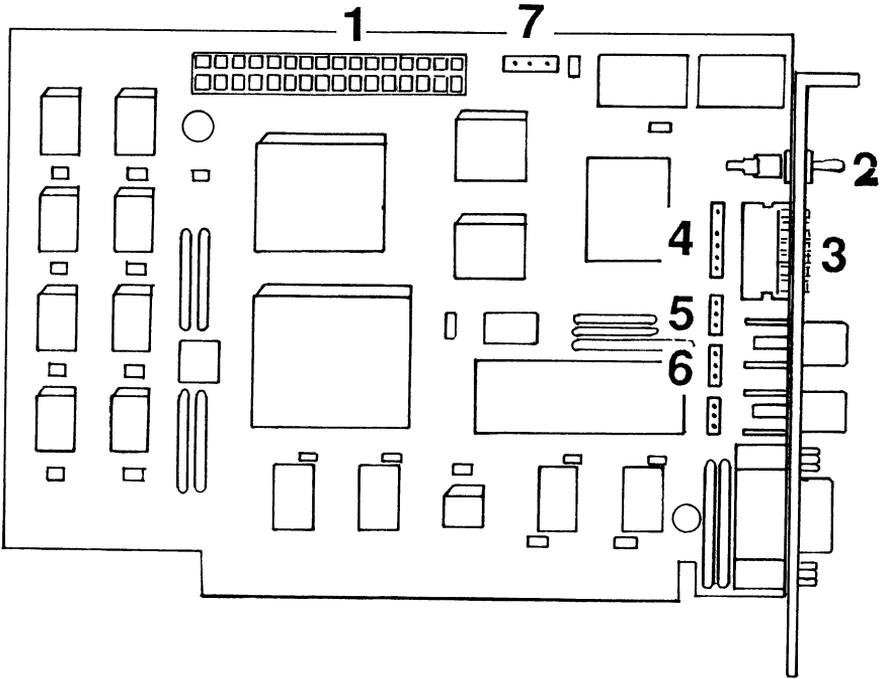
Light Pen Port

Figure 2 shows the locations of all switches and connectors on the QuadEGA ProSync.

QuadEGA ProSync

1. Feature Connector
2. Toggle Switch
3. Switch Block
4. Light Pen Port
5. 2XX/3XX Jumper Block
6. Slot-8 Jumper Block
7. Feature Clock Jumper Block

FIGURE 2. QnUADEGA PROSYNC CONNECTORS AND SWITCHES



1. Feature Connector
2. Toggle Switch
3. Switch Block
4. Light Pen Port
5. 2XX/3XX Jumper Block
6. Slot-8 Jumper Block
7. Feature Clock Jumper Block

# QUADEGA PROSYNC SWITCH BLOCK SETTINGS

The QuadEGA ProSync Switch Block is located on the QuadEGA ProSync PC board next to the installation bracket. The switches are positioned in such a way that you can reach them from the rear of your computer after you have installed the QuadEGA ProSync and re-sealed the system.

Switches 1 through 4 are used to configure the QuadEGA ProSync. Switch 5 enables or disables the QuadEGA ProSync Emulation Mode. (See the QuadEGA ProSync Emulation Mode section for instructions on how to set this switch.) Switch 6 is unimplemented, and does not need to be set. Each switch can be set to either the ON or OFF position. There is a label on the switch block indicating which position is ON and which position is OFF.

The following lists show the possible monitor/adaptor combinations and the appropriate QuadEGA ProSync switch settings for each.

If you plan for the QuadEGA ProSync to be co-resident with another display adapter, you must specify which is to be the "primary" adapter, and which is to be the "secondary" adapter. (See Getting the QuadEGA ProSync Ready.) Separate tables list the switch settings for the QuadEGA ProSync when it is installed as a primary adapter and as a secondary adapter.

Find the table that matches your system configuration and set your switches accordingly.

NOTE: The following abbreviations are used in the QuadEGA ProSync switch setting tables.

<u>Abbreviation</u>	<u>Meaning</u>
MD	Monochrome Display
ED	Enhanced Display
CD	Color Display
MDA	Monochrome Display
Adapter	

**CGA  
EGA  
Adapter**

**Color Graphics Adapter  
Enhanced Graphics**



## QUADEGA PROSYNC ALONE

Display <u>Used</u>	QuadEGA ProSync <u>Configured As</u>	QuadEGA ProSync Switches			
		<u>Sw1</u>	<u>Sw2</u>	<u>Sw3</u>	<u>Sw4</u>
MD	MDA	Off	Off	On	Off
CD/ED	CGA (40x25)	On	Off	Off	On
CD/ED	CGA (80x25)	Off	Off	Off	On
ED (normal)	EGA	On	On	On	Off
ED (enhanced)	EGA	Off	On	On	Off

## QUADEGA PROSYNC WITH MDA CO-RESIDENT

**Primary adapter:** QuadEGA ProSync  
**Secondary adapter:** MDA

Display <u>Used</u>	QuadEGA ProSync <u>Configured as</u>	QuadEGA ProSync Switches			
		<u>Sw1</u>	<u>Sw2</u>	<u>Sw3</u>	<u>Sw4</u>
CD/ED	CGA (40x25)	On	Off	Off	On
CD/ED	CGA (80x25)	Off	Off	Off	On
ED (normal)	EGA	On	On	On	Off
ED (enhanced)	EGA	Off	On	On	Off

**Primary adapter:** MDA  
**Secondary adapter:** QuadEGA ProSync

Display <u>Used</u>	QuadEGA ProSync <u>Configured as</u>	QuadEGA ProSync Switches			
		<u>Sw1</u>	<u>Sw2</u>	<u>Sw3</u>	<u>Sw4</u>
CD/ED	CGA (40x25)	On	On	On	On
CD/ED	CGA (80x25)	Off	On	On	On
ED (normal)	EGA	On	Off	On	On
ED (enhanced)	EGA	Off	Off	On	On

## QUADEGA PROSYNC WITH CGA CO-RESIDENT

**Primary adapter:** QuadEGA ProSync (with Monochrome Display)  
**Secondary adapter:** CGA

CGA <u>Mode</u>	QuadEGA ProSync Switches			
	<u>Sw1</u>	<u>Sw2</u>	<u>Sw3</u>	<u>Sw4</u>
40x25	On	Off	On	Off
80x25	Off	Off	On	Off

**Primary adapter:** CGA  
**Secondary adapter:** QuadEGA ProSync (with Monochrome Display)

CGA <u>Mode</u>	QuadEGA ProSync Switches			
	<u>Sw1</u>	<u>Sw2</u>	<u>Sw3</u>	<u>Sw4</u>
40x25	On	Off	On	Off
80x25	Off	Off	On	Off

40x25	On	On	Off	On
80x25	Off	On	Off	On

## QUADEGA PROSYNC EMULATION MODE

Switch 5 on the QuadEGA ProSync Switch Block enables or disables the QuadEGA ProSync Emulation Mode.

When switched to the OFF position, the QuadEGA ProSync becomes fully compatible with the IBM Enhanced Display and EGA. CGA and HGC emulation are disabled.

When switched to the ON position the QuadEGA ProSync will automatically emulate the CGA and HGC once the QEGA program has been run. In most cases, having switch 5 in the ON position will not interfere with other hardware or software. The only notable exception at this time is that some debugging software and hardware use the same Non-Maskable Interrupt that the QuadEGA ProSync uses for emulation. If you are using such software or hardware, you should turn switch 5 off.

When switched to the ON position, the QuadEGA ProSync Emulation Mode is enabled. The QuadEGA ProSync Emulation Mode permits you to use the QuadEGA ProSync Utility Disk to configure the QuadEGA ProSync to be fully compatible with the Color Display and Monochrome Display, and with software written for the CGA and Hercules Graphics cards.

Set switch 5 to the appropriate position for your system configuration and software.

## THE QUADEGA PROSYNC TOGGLE SWITCH

The QuadEGA ProSync toggle switch is located next to the QuadEGA ProSync Switch Block and is easily accessible from the rear of your computer after installation. (Refer to Figure 2.)

The toggle switch tells the QuadEGA ProSync what kind of monitor you are using. When the toggle is switched to the left (as you look at the switch from the rear of the computer), the QuadEGA ProSync is configured to work

with the Enhanced Color Display. When the toggle is switched to the right, the QuadEGA ProSync is configured to work with either the Color Display or the Monochrome Display.

Set this switch to the appropriate position for your monitor according to the following table:

<u>Monitor</u>	<u>Toggle</u>
Enhanced Display	To the Left
Color Display	To the Right
Monochrome Display	To the Right

### THE QUADEGA PROSYNC 2XX/3XX JUMPER BLOCK

The QuadEGA ProSync supports the IBM EGA 2XX/3XX address port jumper block. Currently, the 2XX address port is not supported by IBM and is reserved for future expansion. Therefore, the jumper should be configured for the 3XX position at all times. The jumper should already be positioned on pins 1 and 2 (the default setting). If this is not the case, reposition the jumper pin on pins 1 and 2. (Refer to Figure 2.)

### THE QUADEGA PROSYNC SLOT-8 JUMPER BLOCK

If you are installing the QuadEGA ProSync in an IBM PC/XT and wish to use the short slot (slot 8), you will need to change the jumper pin on the QuadEGA ProSync "Slot-8" Jumper Block.

The jumper must be positioned on pins 1 and 2 to enable the slot-8 option. (Refer to Figure 2.) Positioning the jumper on pins 2 and 3 (default positions) disables the slot- 8 option.

### THE QUADEGA PROSYNC FEATURE CONNECTOR

The QuadEGA ProSync Feature Connector is compatible with those found on the IBM EGA. The 32-pin Feature Connector is located along the top of the QuadEGA ProSync and supports add-on feature adapters made to enhance the QuadEGA ProSync or IBM EGA. Two RCA Video Jacks are connected to the Feature Connector and will support video output from future feature adapters.

## THE QUADEGA PROSYNC FEATURE CLOCK JUMPER BLOCK

If you wish to install a feature adapter with a clock, you may do so and continue to maintain IBM compatibility using the Feature Clock Jumper Block. The Feature Clock Jumper Block is located to the right of the Feature Adapter. (Refer to Figure 2.) To activate the second clock, make sure the jumper is positioned on pins 2 and 3, the two pins closest to the clock (the default position). To deactivate the clock, position the jumper pins on pins 1 and 2, the two pins furthest from the clock.

## THE QUADEGA PROSYNC LIGHT PEN PORT

The QuadEGA ProSync supports the IBM EGA light pen port, allowing full use of IBM-compatible light pens.

## INSTALLING THE QUADEGA PROSYNC

You are now ready to place the QuadEGA ProSync into your PC. Follow steps 1 through 4 carefully:

Step 1 Find an empty expansion slot for the QuadEGA ProSync. Unused expansion slots may be protected by a metal cover, which rests against the rear panel of your PC. If the expansion slot still has the metal expansion slot cover attached, remove it with a screwdriver (or 3/16" nutdriver) and store it away.

Step 2 Hold the QuadEGA ProSync firmly at the top edge of the board and press the gold edge connector into the expansion slot as shown in Figure 3 below.

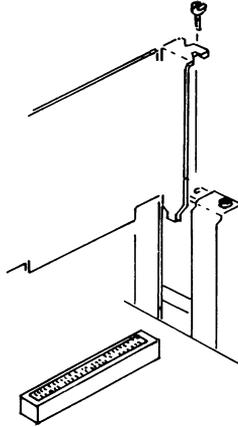


FIGURE 3

- Step 3** Line up the retaining bracket with the screw hole in the rear plate of the system unit.
- Step 4** Use your screwdriver (or 3/16" nutdriver) to screw the QEGA's retaining bracket tightly against the rear plate of the system unit.

Your QuadEGA ProSync is now installed in your PC. The only thing left to do is to put your system back together again. Follow steps 1 through 7 carefully:

- Step 1** Gently push your ribbon cables down and out of the way. This will protect them from the system cover when you slide it back on.
- Step 2** From the front of the computer, hold onto both sides of the system cover, and slide the cover toward the rear of the system.

- Step 3** Carefully align the cover mounting screws with the threaded screw holes at the rear of the computer, and use the screwdriver (or 1/4" nutdriver) to tighten them.
- Step 4** PC/AT only. Reinstall the back panel by pressing the plastic fastening strips together.
- Step 5** Return your external devices (such as your keyboard or monitor) to their original locations.
- Step 6** Reconnect all of the cables that were previously attached to the rear of the computer.
- Step 7** Attach your monitor cable to the QEGA's 9-pin connector. (See the Monitor Compatibility section for more information about monitors and cables.)
- Step 8** Your system should now be ready to run.

## USING THE QUADEGA PROSYNC

Before you power up your system, make sure you have done the following:

1. Installed the QuadEGA ProSync according to the instructions given in the previous sections.
2. Set the QuadEGA ProSync switches to their appropriate positions.
3. Set the QuadEGA ProSync jumper block pins to their appropriate positions.

If you have correctly connected your QuadEGA ProSync and properly set all switches, when you boot up your system with a standard DOS disk, the DOS prompt will appear on your primary display.

If your system does not boot up as you intended, check to see that the installation instructions were properly followed, or refer to Appendix A: Troubleshooting.

### THE QUADEGA PROSYNC UTILITY DISK

The QuadEGA ProSync comes with a Utility Disk, which includes five programs:

INSTALL.COM

QEGABOOT.SYS

QEGA.COM

DIAG.COM

ROMDATE.COM

Each of these are explained in detail in the following sections.

**REMINDER: Back up your disk! Before using the QuadEGA ProSync Utility Disk, we strongly recommend that you make a backup of the disk and store the original in a safe place.**

## **INSTALL.COM**

**INSTALL.COM** is a menu-driven program that includes several features to help you configure your system for use with the QuadEGA ProSync. For instance, if you are a Microsoft Windows user, you can add high-resolution drivers to your Windows diskette.

To run the **INSTALL.COM** program, make the drive with the QEGA Utility Disk the current drive and type:

**A>INSTALL** (then press **ENTER**)

When you run the **INSTALL.COM** program, you will be presented with the following options. Each of these options is explained in the following sections:

1. Modify or create an **AUTOEXEC.BAT** file.
2. Add high-resolution drivers to your Microsoft Windows diskette.
3. Prepare a QuadEGA ProSync game mode pre-boot diskette.
4. Exit to DOS.

To make a selection, move the cursor to the desired option and press **ENTER**.

## **MODIFY OR CREATE AN AUTOEXEC.BAT FILE**

The first menu option allows you to modify or create an **AUTOEXEC.BAT** file that will automatically set up the

QuadEGA ProSync for Color Graphics Adapter (CGA) or Hercules Graphics Card (HGC) emulation, and/or enable the QuadEGA ProSync Screen Saver feature. When you select this option, you will be asked to specify which QEGA.COM commands you wish to incorporate into your batch file. (See the QEGA.COM and AUTOEXEC.BAT sections for more information on these options.) To create the file, simply follow prompts.

## ADD HIGH-RESOLUTION DRIVERS

The second option on the main menu copies files containing high-resolution drivers from your QuadEGA ProSync Utility Disk onto your Microsoft Windows Setup and Build diskettes. To prepare for this procedure, you should first make copies of the Setup and Build diskettes. Use these copies when running INSTALL, as they must be modified to provide the new drivers.

**WARNING:** You must have a NEC MultiSync (or equivalent monitor) to use this option. **DO NOT** use this program with any other monitor. **YOU MAY CAUSE DAMAGE TO YOUR SYSTEM.**

**NOTE:** **DO NOT** use your original Microsoft Windows Setup disk. The INSTALL.COM program will delete some of those files in order to make room for QEGA's drivers.

After you have modified the Windows diskettes, you must install Windows using the standard Microsoft Setup procedure. You will find two additional entries in the Monitor section:

QuadEGA ProSync with NEC MultiSync  
(752x410)

QuadEGA ProSync with NEC MultiSync  
(640x480)

Choose one of these two to activate the QuadEGA ProSync high resolution mode of your choice.

## PREPARE A QUADEGA PROSYNC GAME MODE PRE-BOOT DISKETTE

Some CGA-compatible game programs require that you reinitialize your system when you boot your program. Because they do not boot to the DOS prompt, these programs do not give you the opportunity to first enable the QuadEGA ProSync CGA mode. (See the QEGA.COM section for more information on the CGA mode.) You should run your game program first, without the game mode pre-boot diskette, to see if this is the case.

The game mode pre-boot option creates a CONFIG.SYS file, and copies the QEGABOOT.SYS program from your QuadEGA ProSync Utility diskette onto a blank formatted system disk. (See the QEGABOOT.SYS section for more information.) This allows you to enable CGA or HGC emulation before booting your system with your game disk.

To create a game mode pre-boot diskette, first create a formatted system diskette using the DOS **FORMAT /S** command. Then run INSTALL and follow the menu prompts.

### QEGABOOT.SYS

Some CGA-compatible game programs do not allow you to boot to the DOS prompt, and therefore, do not allow you to first enable the QuadEGA ProSync CGA emulation mode. If you have already prepared a game mode pre-boot diskette (see the INSTALL.COM section), you can use the QEGABOOT.SYS program to run these games.

After you have prepared your game mode pre-boot diskette, perform the following steps:

- Step 1 Place the QEGA pre-boot diskette in drive A and re-boot your computer. (Press CTRL-ALT-DEL or turn your computer off and back on.)

**Step 2** When you are prompted for your game diskette, place it in drive A and press any key. The computer will reboot automatically, thereby starting your self-booting software.

## QEGA.COM

Your QuadEGA ProSync Utility Disk includes a program called QEGA.COM. You may need to run the QEGA.COM program in order to emulate the Color Graphics Adapter (CGA) or Hercules Graphics Card (HGC) modes.

You will need to use QEGA.COM with any programs that directly access the CGA or HGC display adapter registers (or ports). With the exception of HGC-compatible software, most of the newer programs written after the EGA was introduced do not require QEGA.COM for emulation because they do not directly access the CGA display adapter registers.

You should run your program first, without the QEGA.COM program, to see if emulation is necessary.

You may also find that QEGA.COM is not compatible with certain software packages (such as debuggers and hardware probes). In these cases, you may need to reboot your system and use the QuadEGA ProSync without any emulation.

In addition to its emulation features, QEGA.COM includes a Screen Saver function that automatically turns off your monitor when your computer is not in use.

The following is a list of all the QEGA.COM features and their use:

**CGA EMULATION:** Set up the QuadEGA ProSync to be fully compatible with the IBM Color Graphics Adapter (CGA) software.

**HGC EMULATION:** Set up the QuadEGA ProSync to be fully compatible with Hercules Graphics Card software (HGC).

**SCREEN SAVER:** Turn off the image on your monitor if you leave your computer unattended.

The QEGA.COM program is invoked from the DOS prompt by typing the word: QEGA, followed by a set of commands. Below is a summary of the QuadEGA ProSync commands, along with brief descriptions of each. Each command is described in more detail in the following sections.

**NOTE:** Any combination of the QEGA.COM commands can be included in an AUTOEXEC.BAT file. You can create such a file using the INSTALL.COM program. See the INSTALL.COM section for more information.

### The QEGA.COM Commands

<u>Command</u>	<u>Description</u>
QEGA CGA:ON	Enable CGA emulation
QEGA CGA:OFF	Disable CGA emulation
QEGA MONO:ON	Enable HGC emulation
QEGA MONO:OFF	Disable HGC emulation
QEGA MONO:HALF	Enable HGC emulation (1 page graphics)
QEGA MONO:FULL	Enable HGC emulation (2 page graphics)
QEGA SAVE:ON	Enable Screen Saver
QEGA SAVE:{n}	Enable Screen Saver function to shut off video after "n" minutes of no keyboard activity
QEGA SAVE:OFF	Disable Screen Saver
QEGA NOSAVE	Disable Screen Saver

**QEGA CGA:ON** This command configures the QuadEGA ProSync to emulate the CGA.

**NOTE:** When the QuadEGA ProSync is used to emulate the CGA, it must be connected to either the IBM Color Display or the Enhanced Display (or compatible monitors). **DO NOT** use the QuadEGA ProSync in CGA emulation mode with a monochrome monitor.

**Example:** A>**QEGA CGA:ON** (then press **Enter**)

**QEGA CGA:OFF** If you wish to deactivate the CGA emulation mode, you can do so with the **QEGA CGA:OFF** command.

**Example:** A>**QEGA CGA:OFF** (then press **Enter**)

**QEGA MONO:ON**      The QuadEGA ProSync will emulate the HGC when you issue the **QEGA MONO:ON** command.

**NOTE:** When the QuadEGA ProSync is configured to emulate the HGC, it must be connected to the IBM Monochrome Display (or compatible monitor). **DO NOT** use the QuadEGA ProSync in the HGC emulation mode with a Color Display or Enhanced Display.

**Example:**      A>**QEGA MONO:ON** (then press **Enter**)

**QEGA MONO:OFF**      To deactivate the HGC configuration, use the **QEGA MONO:OFF** command.

**Example:**      A>**QEGA MONO:OFF** (then press **Enter**)

#### **QEGA MONO:FULL AND QEGA MONO:HALF**

The QuadEGA ProSync can run software written to utilize the graphics capabilities of the Hercules Graphics Card in two different ways. A quick explanation of the Hercules Graphics Card might help.

The HGC has 64K of memory on board for graphics use, divided into two pages of graphics memory. The HGC can be configured to use the full amount of memory (that is, two graphic pages, or 64K), or half that amount (one graphic page of memory, or 32K). Two commands allow you to select either the full (two- page) or half (one-page) configuration. They are **QEGA MONO:FULL** and **QEGA MONO:HALF**.

The advantage of **QEGA MONO:HALF** is that this configuration permits an IBM-compatible CGA card to co-exist with the QuadEGA ProSync (in Hercules emulation mode) in another slot. Color output is directed through the co-resident CGA. **QEGA MONO:FULL** cannot be used when an IBM CGA card is co-resident.

**QEGA MONO:FULL** To configure the QuadEGA ProSync to be fully Hercules compatible, without a co-resident IBM-compatible CGA, use the **QEGA MONO:FULL** command.

**NOTE:** While in the **QEGA MONO:FULL** mode, the QuadEGA ProSync must be connected to an IBM Monochrome Display (or compatible monitor). **DO NOT** use a Color Display or Enhanced Display while the QuadEGA ProSync is in the **QEGA MONO:FULL** mode. Furthermore, the **QEGA MONO:FULL** command does not permit you to have an IBM-compatible color graphics card installed in your system.

**Example:**     **A>QEGA MONO:FULL**     (then press **Enter**)

**QEGA MONO:HALF** If you have a co-resident IBM-compatible CGA in your system, you will need to use the **QEGA MONO:HALF** command.

**NOTE:** While in the HGC configuration, the QuadEGA ProSync must be connected to an IBM Monochrome Display (or compatible monitor). A co-resident IBM-compatible CGA must be attached to an appropriate IBM-compatible RGB Color Display or Enhanced Color Display.

**Example:**     **A>QEGA MONO:HALF**     (then press **Enter**)

## **SCREEN SAVER FEATURE**

If you plan to be away from your computer for a period of time, you can program the QuadEGA ProSync, using **QEGA.COM**, to automatically "shut off" your screen

display for you. QEGA.COM does this by monitoring the keyboard to see if any keys have been pressed. If no key is pressed within the period of time you specify (the default is five minutes), QEGA.COM will shut off the screen. This feature helps extend the life of your monitor by preventing images from being "burned" into your screen while you are away from your computer.

**NOTE:** The QuadEGA ProSync screen saver feature is designed exclusively for use with the QuadEGA ProSync and will only work when your video output is directed through the QuadEGA ProSync. If you have another card co-resident in your system and have directed the video output through that card, the QEGA SAVE function will have no effect.

There are two methods for enabling the screen saver function. The first automatically shuts off your screen after five minutes (the default period). The second method lets you specify the number of minutes you want the QuadEGA ProSync to wait before it turns off the display.

**QEGA SAVE:ON** Use the QEGA SAVE:ON command to turn on the screen saver feature after the default period of five minutes.

**Example:** A>**QEGA SAVE:ON** (then press **Enter**)

**QEGA SAVE:n** Use this command to change the number of minutes you want QEGA.COM to wait before turning off the display. The letter "n" represents the number of minutes. At the DOS prompt, type QEGA SAVE: followed by the number of minutes you want the QuadEGA ProSync to wait. For instance, the following command will turn off the screen after the computer has remained unattended for 15 minutes.

Example: A>**QEGA SAVE:15** (then press **Enter**)

**QEGA SAVE:OFF** To deactivate the screen saver function, type **QEGA SAVE:OFF** at the DOS prompt. You may want to use this feature if you are using a mouse and will not be using the keyboard for some time.

Example: A>**QEGA SAVE:OFF** (then press **Enter**)

**QEGA NOSAVE** The **QEGA NOSAVE** command performs the same function as the **QEGA SAVE:OFF** command.

Example: A>**QEGA NOSAVE** (then press **Enter**)

## **MULTIPLE QEGA.COM COMMANDS ON ONE LINE**

The **QEGA.COM** program features the ability to allow multiple **QEGA.COM** commands on one line. This allows you to save time by combining commands. The following example shows you how to set the **QuadEGA ProSync** to emulate the **IBM CGA** and, at the same time, set the **SAVE** feature for a three minute delay.

Example: A>**QEGA CGA:ON SAVE:3**

Once you are familiar with the **QEGA.COM** commands, you may want to include them in an **AUTOEXEC.BAT** file. You can use the **QuadEGA ProSync INSTALL.COM** program to create an **AUTOEXEC.BAT** file to store **QEGA.COM** commands. See the **INSTALL.COM** section for more information on this option.

## **DIAG.COM**

The **Diagnostics** program on your **Utility Disk** will help you spot any problem that may be occurring with your display adapter. The program may be run from the **DOS** prompt by typing:

A>**DIAG** (Then press **ENTER**)

The **Diagnostics** program will display the amount of video memory available on your display adapter (this should be **256K**), along with your primary and secondary graphics adapters and monitor configurations. If the information shown is incorrect, refer to the **Troubleshooting** section of this manual (**Appendix A**) and run the **Diagnostics** program again.

If the information shown is correct, continue with the program. You will be shown a series of self-explanatory screens demonstrating various attributes and capabilities of the QuadEGA ProSync. If you think the Diagnostics program has spotted a problem, go through the following checklist:

1. Turn off the computer as you may need to set switches on the display adapter and inside your computer.
2. Check QuadEGA ProSync switch settings. There are a variety of ways to configure the QuadEGA ProSync. The Diagnostics program may be diagnosing a feature based upon incorrect switch settings. For switch information, see the Installation section of this manual.
3. Check your computer's switch settings.
4. Check your monitor's switch settings (if any). Monitors which are switchable between Analog and TTL should be set to TTL.
5. Check your connections. Be sure the QuadEGA ProSync is seated firmly in its expansion slot. Make sure you are using the right cable, and that it is connected properly.
6. Run the Diagnostics program again. If you are still experiencing problems, there may be something wrong with your display adapter. Give our Technical Support Department a call for more information and assistance (see page 37 for details).

### ROMDATE.COM

If your IBM PC or PC/XT was manufactured before April 1983, you will need to update your system ROM module BEFORE you install the QuadEGA ProSync. You can quickly and easily check the date your ROM module was manufactured using the ROMDATE.COM program. See

the System Requirements section for details on how to use this program.

## ACTIVATING THE SECONDARY ADAPTER

If you have installed your QuadEGA ProSync with a co-resident display adapter, you should have specified which is to be the "primary" adapter, and which is to be "secondary."

When you boot up a standard DOS disk, output will be directed through the primary monitor. The secondary monitor cannot display anything until it is activated. You can activate the secondary monitor with the DOS MODE command.

### DOS MODE COMMAND

Before you use the DOS MODE command, make sure your DOS disk (with the MODE.COM program) is in your default drive.

The DOS MODE command is invoked by typing the word: MODE, followed by a command. For example, if you have the QuadEGA ProSync set up to be the primary display adapter, and a Monochrome Display Adapter (MDA) set up as the secondary adapter, the QuadEGA ProSync will output the DOS prompt to its display when you boot up your system with a DOS disk.

In this situation, to redirect output through your MDA to the secondary monitor, at the DOS prompt, type:

```
A>MODE MONO          (then press  
Enter)
```

The MONO parameter sets the output to the MONOchrome Display.

To reverse the procedure and direct video output through the QuadEGA ProSync, use the MODE command again. At the DOS prompt, type:

**A>MODE CO80  
Enter)**

(then press

The CO80 parameter sets the output to the COlor Display in 80 columns.

Refer to your DOS manual for more information on the DOS MODE command. You may also wish to use the INSTALL.COM program on your QuadEGA ProSync Utility disk to include the DOS MODE command in an AUTOEXEC.BAT file. Refer to the INSTALL.COM section for more information.

## BATCH FILES

If you frequently need to type in the same sequence of commands, you can save time and typing effort by creating a "batch" file to store the command sequence. A batch file gives MS-DOS (or PC-DOS) the ability to store and automatically execute a whole series of your commands.

You create a batch file simply by typing the commands much like you would at the DOS prompt. Once the file is created, you can execute the entire series by typing a single command. Refer to your DOS manual for more information on how to create batch files.

## AUTOEXEC.BAT FILES

The INSTALL.COM program on your QuadEGA ProSync Utility Disk includes an option that allows you to create a special type of batch file, called AUTOEXEC.BAT. (Refer to the INSTALL.COM section for more information.) You can use this AUTOEXEC.BAT file to have your computer system "configure" itself when you turn it on. The AUTOEXEC.BAT file AUTOMatically EXECutes the commands you store upon booting up your system. When you boot your system, the COMMAND.COM file (part of DOS) automatically searches for the file name AUTOEXEC.BAT, and executes the instructions in that file before you are returned to the DOS prompt.

You can also use DOS to create AUTOEXEC.BAT files. Refer to your DOS manual for details.

## MONITOR COMPATIBILITY

The QuadEGA ProSync works with four different types of monitors. This section provides some information on each of these and how the QuadEGA ProSync works with them. Although there are many compatible monitors, the following section provides details only on those manufactured by IBM.

### MONOCHROME DISPLAY

The IBM Monochrome Display is the most basic of the four monitors. It is designed for use with the IBM Monochrome Display Adapter (MDA). When used with the MDA, the Monochrome Display gives you very sharp green text (256 different characters in two intensities) on a black background. Software written for the Monochrome Display/MDA configuration is text oriented, as the MDA cannot generate graphics.

The Hercules Graphics Card (HGC), manufactured by Hercules Computer Technology, supports all the features of the MDA, plus high-resolution (720 x 348), two-color (two intensities on a black background) graphics on the Monochrome Display. The HGC has become the de facto standard for monochrome graphics in the IBM PC world. Because of this, most graphics-oriented software packages now support the Hercules graphics standard on the Monochrome Display.

IBM's EGA, when used with the Monochrome Display, supports 640 x 350 bit-mapped graphics. As the name "monochrome" implies, graphics generated in this mode are without color, and instead use the four "attribute colors: white, black, intense white and blinking.

The QuadEGA ProSync can emulate both the HGC and IBM EGA monochrome graphics capabilities on the Monochrome Display.

**SPECIFICATIONS:** The Monochrome Display has a high-persistence green phosphor screen (P39). When used with the MDA or HGC, it displays 80 characters horizontally, by 25 characters vertically. In this configuration, characters are defined in a 9 x 14 pixel matrix, with 350 lines of vertical resolution and 720 lines of horizontal resolution. The maximum bandwidth is 16.257MHz, with the screen refresh at 50Hz. The Monochrome Display is TTL compatible at a frequency of 18.432KHz.

**SOFTWARE COMPATIBILITY:** Almost all software written for the IBM PC supports the most basic text output of the Monochrome Display when used with the MDA. When the QuadEGA ProSync is not in emulation mode, it will support the new IBM EGA monochrome graphics mode. When the QuadEGA ProSync is connected to a Monochrome Display, it will also work with any software packages supporting HGC graphics. However, remember the QuadEGA ProSync will not generate graphics while it is emulating the MDA since the MDA does not support graphics.

## **COLOR DISPLAY**

The IBM Color Display is an RGB monitor capable of displaying up to 16 different colors. RGB stands for the digital outputs RED, GREEN and BLUE. The standard IBM Color Display actually has four distinct digital outputs, red, green, blue and intensity. Some monitors that do not have a separate digital intensity output may still work without making use of the separate intensity signal. However, they will only be capable of displaying eight distinct colors, rather than 16. The intensity signal is needed to enable an RGB monitor to display 16 colors.

The Color Display is designed to work with the Color Graphics Adapter (CGA). Much of the graphics-oriented software written for the IBM PC over the past several years was written to the CGA standard. The CGA can display text in either 80 or 40-column widths, but the text appears grainy, and is not considered to be sharp.

The basic characteristics of the Color Display have been copied by many monitor manufacturers, making it easy to find a good-quality monitor that conforms to the IBM standard.

**SPECIFICATIONS:** The IBM Color Display has a high-contrast black screen, and can display up to 16 colors when used with the QuadEGA ProSync. When the QuadEGA ProSync is configured for the Color Display, the display can handle up to 80 characters horizontally by 25 characters vertically in an 8 x 8 pixel matrix. This configuration supports the entire IBM character set. The maximum bandwidth is 14.318MHz. Screen refresh is at 60Hz, supporting 640 horizontal lines by 200 vertical lines of resolution. The Color Display is TTL compatible at a frequency of 15.750KHz.

**SOFTWARE COMPATIBILITY:** Most software written for the IBM PC supports the CGA and Color Display. When used with the Color Display, the QuadEGA ProSync supports all CGA software characteristics, as well as the newer Color Display-compatible EGA modes, including 320 x 200 and 640 x 200 16-color graphics.

## **ENHANCED DISPLAY**

The IBM Enhanced Color Display is capable of operating in two distinct modes with the QuadEGA ProSync. The Enhanced Color Display has a dual frequency feature that automatically switches between Mode 1 and Mode 2. When the Enhanced Color Display is in Mode 1, it has the same characteristics as the Color Display, and can display all CGA modes. When the Enhanced Color Display is used with the QuadEGA ProSync and set to Mode 2, it can generate very high-resolution graphics and text, including up to 43 lines of text (rather than 25) and 16 different colors (from a palette of 64) in three different graphics modes.

**SPECIFICATIONS:** The IBM Enhanced Color Display has a high-contrast, 13-inch black screen. It can operate in two different modes, which it automatically selects by checking the polarity of the Vertical Sync signal. The

Enhanced Color Display can display up to 16 colors when used with the QuadEGA ProSync configured as a CGA. In this configuration, the Enhanced Color Display can handle up to 80 characters horizontally, by 25 characters vertically in an 8 x 8 pixel matrix. The entire IBM character set is supported. When used with the Deluxe in EGA mode, the Enhanced Color Display supports all of the new EGA color Graphics and text modes (including 80 characters horizontally by 25 lines vertically, and 80 characters horizontally by 43 lines vertically). It also supports up to 16 colors from a palette of 64 with 640 horizontal by 350 vertical resolution. Screen refresh is at 60Hz. Bandwidth is 16.257MHz. In Mode 1, the horizontal scan rate is 15.750KHz. In mode 2, the rate is 21.850KHz.

**SOFTWARE COMPATIBILITY:** The Enhanced Color Display is a very versatile monitor. It supports software written for the IBM CGA, as well as software written to conform to the newer EGA graphics and text modes. It does this by automatically switching between Mode 1 and Mode 2. The Enhanced Color Display does not support the monochrome graphics modes of either the EGA or HGC. Your dealer can help you choose software that supports the Enhanced Color Display and EGA graphics and text modes.

## **NEC MULTISYNC (AND COMPATIBLE) MONITORS**

The MultiSync monitor, manufactured by NEC, represents a new generation of video displays, which can run more modes than other monitors and offer higher resolution. Rather than having a fixed horizontal scan rate, or a choice of two, the MultiSync automatically adjusts to scan rates covering a wide range. Although the NEC is the only manufacturer shipping such a monitor at this time (August, 1986), it is expected that several other manufacturers will be introducing equivalent monitors in the near future. To be compatible with the QuadEGA ProSync high resolution modes, equivalent monitors must be capable of automatically switching to a 25 KHz scan rate for 752x410 resolution and 29.4 KHz scan rate for 640x480 resolution.

In addition to having a variable scan rate, the NEC MultiSync is also capable of Analog and TTL operation. The monitor should be set to TTL for proper operation with QuadEGA ProSync. Finally, the Manual switch should be set to OFF.

**SOFTWARE COMPATIBILITY:** The QuadEGA ProSync Utilities diskette includes Microsoft Windows drivers that provide two high resolution modes (752x410 and 640x480) when used with the QuadEGA ProSync and a MultiSync monitor. (See the INSTALL.COM section for installation instructions.) It is expected that other software will be available soon that will support the QuadEGA ProSync high resolution modes. Software developers who wish to support these modes should contact Quadram for free source code and detailed implementation instructions. Our experience has shown that, in general, it is very easy to modify an existing EGA driver to support these modes given such instructions.

## CABLE COMPATIBILITY AND PINOUT INFORMATION

The QuadEGA ProSync comes with a 9-pin cable connector, commonly referred to as a DB-9, or DE-9, connector. Your monitor cable should support a DB-9 input. Each of the nine pins have different functions depending on which type of display you are emulating. The following tables list the pin configurations for each IBM monitor type.

### Monochrome Display Pinouts:

(+)	1. Ground	4. N/A	7. Video
	2. Ground	5. N/A	8. Horizontal Sync
	3. N/A	6. Intensity	9. Vertical Sync (-)

### Color Display Pinouts:

(+)	1. Ground	4. Green	7. N/A
	2. Ground	5. Blue	8. Horizontal Sync
	3. Red	6. Intensity	9. Vertical Sync (+)

### Enhanced Color Display Pinouts:

(+)	1. Ground	4. Green	7. blue
	2. red	5. Blue	8. Horizontal Sync
	3. Red	6. green	9. Vertical Sync (-)

**NOTE:** Red, Green and Blue are the most significant bits, while red, green and blue are the least significant bits.

## APPENDIX A: TROUBLESHOOTING

If you experience difficulty with the QuadEGA ProSync, please follow these steps:

1. Make sure the QuadEGA ProSync is firmly seated in its expansion slot, and that it is not touching any other cards in your system.
2. Check your monitor cable to insure that it is properly connected to the QuadEGA ProSync, and that it has the proper "pinout" configuration.
3. Make sure your computer is either an IBM PC or a 100% compatible, and that your ROM module is up to date. Some early model IBM PCs do not recognize the boot up sequence of the IBM EGA, and therefore will not properly boot up the QuadEGA ProSync. The QuadEGA ProSync Utility disk includes a program, called ROMDATE.COM, that allows you to verify the date of manufacture of your ROM module. Refer to the System Requirements and ROMDATE.COM sections for information on how to find out the date of the ROM module installed in your system.
4. Check your computer's switch settings, as well as those on the QuadEGA ProSync to insure that all settings are correct for your configuration.
5. Check your software. The QuadEGA ProSync can emulate four different display adapters. Be sure you are using the correct software for your configuration.
6. Check your monitor. The QuadEGA ProSync can work with four different monitor types. Be sure you have the QuadEGA ProSync configured for the monitor you are using. See the section on Monitor Compatibility for more information.
7. Make sure you are using the correct QEGA.COM commands when in the emulation mode.

## QUADRAM PRODUCT SUPPORT

Our Product Support Department will be glad to assist you with questions you may have concerning the QuadEGA ProSync. Please feel free to call us Monday through Friday, 8:00 a.m. to 5:00 p.m., Eastern Time zone, at 404-564-5686. To help us answer your questions, please try to have the following information handy when you call:

1. **SYSTEM DESCRIPTION:** What kind of PC are you using? What kind of peripheral cards are you using? How much RAM is your system configured for? What kind of monitor are you using?
2. **SOFTWARE:** If you suspect a problem with software and QuadEGA ProSync compatibility, what software package are you using with the QuadEGA ProSync? What display adapters does the software support?
3. **THE DETAILS OF WHAT YOU WERE DOING WHEN YOU NOTICED THE PROBLEM:** Were you in the middle of a program when the problem occurred? Did the problem occur when you were turning on a device, like your printer, for instance?

## RETURN MATERIAL AUTHORIZATION

If you believe your product is defective, or in need of repair, please call our Product Support Department and receive a Return Material Authorization (RMA) number **BEFORE** you ship it to us. If your product is still under warranty, we will require that you send a copy of your sales slip with the product. Obtaining the RMA number before you return the QuadEGA ProSync, helps us keep track of your product.

**QUADRAM CORPORATION LIMITED  
WARRANTY**

**QUADRAM CORPORATION (Quadram) warrants this product against defects in material and workmanship for a period of two years from the date of purchase. During the warranty period, Quadram will repair, or at its option, replace this product at no charge.**

**In order to obtain warranty performance, contact our Product Support Department for a Return Material Authorization (RMA) number, return the product with the RMA written legibly on the exterior of the package, with transportation charges prepaid, to Quadram. Attach a copy of proof of date of retail purchase (such as bill of sale) and a description of the problem.**

**This warranty does not apply if the product has been damaged by accident, abuse, misuse or misapplication, nor as a result of service or modification other than by Quadram.**

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# Appendix A: THE PROSYNC UTILITY DISK

This addendum supplements the ProSync Users Manual. It documents and describes how to use the new features of the ProSync which are available to you with the Revision 2 diskette.

## CONTENTS

1. Overview
2. System Information
3. Bios Extension
4. Text Modes
5. ProSync Drivers
6. Switch Settings

## OVERVIEW

The ProSync Utility Disk includes a number of programs and special drivers. The drivers support running specific programs either in high resolution graphics mode or extended text modes. The higher resolution graphics modes increase the clarity of the screen by 37%, allowing for finer detail in drawings and other graphics. The extended text modes allow more information to be displayed on the screen which is useful for spreadsheets and documents.

**NOTE:** Please refer to the README.BAT file on the diskette for the latest information on what is included. This file can be run by typing README at the DOS prompt.

The ProSync also supports most software written to run on the IBM Personal System/2 in VGA modes 11 and 12. Software written specifically for IBM Personal System/2 machines may be used with your current configuration, if you have a variable frequency monitor, i.e. a NEC Multisync, Sony MultiScan or compatible. Future references in this manual to a "variable frequency" monitor will mean this type of monitor.

The additional graphics modes (beyond EGA) available on the ProSync are:

ProSync Modes:           640 x 480, 16 color  
                              752 x 410, 16 color

IBM VGA Modes:         640 x 480, 2 color (Mode 11)  
                              640 x 480, 16 color (Mode 12)

The ProSync 640 x 480, 16 color mode, is very similar to the IBM VGA mode 12. If you have the proper equipment and have set your configuration following the instructions in the ProSync documentation, the ProSync will automatically choose the correct mode, if the software program you are using supports any of the above listed modes.

The following drivers and instructions on how to use them are included with the ProSync:

- Lotus (Text and Graphics)
- Windows
- AutoCAD
- GEM
- WordPerfect, version 4.2
- Wordstar, version 3.x, 4.0

Many software companies include special drivers with their packages to run with the ProSync. Please contact Quadram, Technical Support, 404-564-5686, for information on the available drivers and the list of software packages that support the ProSync high resolution or IBM VGA modes.

Many of the ProSync extended text, higher resolution graphics (640 x 480 or 752 x 410), and the IBM Personal System/2 VGA modes plus some of the drivers listed above require a variable frequency monitor. Others require an ECD or variable frequency monitor.

**WARNING: DO NOT CHOOSE TEXT OR GRAPHICS MODES THAT ARE NOT SUPPORTED BY YOUR MONITOR. SETTING UP TO USE THE OPTIONS AVAILABLE WITH VARIABLE FREQUENCY OR ECD MONITORS CAN CAUSE DAMAGE TO A SYSTEM WITH ANOTHER MONITOR.**

## SYSTEM INFORMATION

The ProSync can be used with hard or floppy disk drive system. If you wish to use the BIOS Extension or Enhancement Selection Utility features, you need to have CONFIG.SYS and AUTOEXEC.BAT files in the root directory on your hard disk or on your DOS boot-up disk for floppy systems. Please refer to your DOS manual for further information on these files. The ProSync Utility Diskette INSTALL program will create these files for you or modify your existing files with the necessary commands.

### Using the ProSync Utility Diskette

1. Make a backup copy of the Utility Diskette, using a formatted diskette. Please refer to your DOS manual for instructions on formatting and copying.
2. Label your backup diskette including the version number and use it instead of the original.
3. Write protect your original diskette and put it away in a safe place. If your backup diskette is damaged, it will be available for copying.
4. Insert the backup ProSync diskette into the A drive. Ensure that the prompt on the screen is the same letter as the drive you wish to access.
5. If using a hard disk system, you may wish to copy all the Utility diskette files into a special subdirectory, instead of using the diskette. Where the instructions refer to inserting the Utility diskette into drive A, please access the files via the subdirectory you have setup.

Running the INSTALL program from A will allow you to install on a floppy disk in your B drive or onto your hard disk. For further information on drives and their designations, please refer to your DOS manual.

When following instructions on how to set up the functions described in this addendum, please type the commands that are in bold type. In some of the commands, brackets are used to distinguish the use of a

key or other information key strokes. Where they appear, do not type the brackets; use the key noted or information noted inside.

## **BIOS EXTENSION**

The BIOS mode provides compatibility with the IBM VGA BIOS and the interface to the ProSync Utility graphics and extended text modes (*see section TEXT MODES*).

To access these modes, you must create or modify your CONFIG.SYS file. You may do this via the ProSync Utility diskette INSTALL program or from the DOS command line.

## **INSTALLATION**

### Command:

The following is the command that must be included in your CONFIG.SYS file. It includes a designation for the monitor type as well as the device driver for the BIOS Extension.

**DEVICE = [Drive letter]:/QEGA BIOS.SYS /m[code]**

where drive letter is the drive used to boot-up the system and where code is chosen from the monitor list as described in Monitor Selection. Please follow the instructions for installation as described in the section below.

### Menu version:

1. Insert the ProSync diskette into drive A.
2. At the DOS prompt, type INSTALL [ENTER]
3. Follow menu instructions.

This command will access a menu driven program on the ProSync Utility diskette. It will install the command described above in a CONFIG.SYS file. It will create the file for you if you do not have one or will modify an existing file.

Command line from DOS (Hard disk):

1. Copy the file QEGABIOS.SYS from the ProSync Utility diskette into the root directory on your hard disk.
2. Create/modify your CONFIG.SYS file by adding the following line to the top of file:

**DEVICE = C:/QEGABIOS.SYS /m[code]**

Command line from DOS (Floppy Drive):

1. Insert the ProSync Utility diskette in drive A.
2. Insert your DOS boot-up disk into drive B.
3. Copy the file QEGABIOS.SYS from the ProSync Utility diskette onto your DOS boot-up disk.
4. Create/modify your CONFIG.SYS file by adding the following line to the top of file:

**DEVICE = A:/QEGABIOS.SYS /m [code]**

Monitor Selection:

You can identify the monitor by adding the appropriate code, as listed below, to the command line.

<u>CODE</u>	<u>MONITOR TYPE</u>
1	Monochrome
2	Color Display
3	Enhanced Color Display
4	Variable Frequency (NEC , Mitsubishi, Thompson)
5	Variable Frequency (Sony, JVC, NANA0)

You may also access the necessary codes by typing README at the DOS prompt.

Adding the code for your monitor to the command line will ensure that the ProSync can choose the correct ProSync graphics mode or IBMVGA modes for your monitor and the software that you are using.

### After Installation:

Either of these methods will activate the device driver the next time you boot up your system. You will receive the following message:

Quadram Bios Extensions  
Copyright 1987, Quadram, Inc.

This will confirm the extensions have been successfully installed.

## **FOR PROGRAMERS**

The QEGABIOS.SYS does two things. First, it provides compatibility with the VGA BIOS. This means that software programs which call the BIOS to get into the IBM functions 11h (640 x 480, 2 color) or 12h (640 x 480, 16 color) will work as intended. Again, these modes require a variable frequency monitor. It also extends the functionality of the BIOS interface (INT 10h) and provides access directly to the extended text modes. The interface to these modes is:

Input  
AH = 6Fh  
AL = 05h  
BL = MODE NUMBER From MODE TABLE

### Sample Code:

1. Sample Code to verify installation of Drivers:

```
MOV AH, 6Fh
MOV AL, 00
INT 10h
will return "V" in BH and "7" in BH registers to verify drive is
installed.
```

2. Sample Code to determine monitor type:

```
MOV AH, 6Fh
MOV AL, 01
INT 10h
will return the monitor number in AL
```

3. Sample Code to set mode:

```
MOV AH, 6Fh
MOV AL, 05h
MOV BL, [MODE NUMBER] From MODE TABLE
INT 10h
```

### GRAPHICS MODE TABLE

<u>MODE</u>	<u>MODE NUMBER</u>	<u>MONITOR</u>
640x480	11h	Variable frequency
640x480	12h	Variable frequency
752x410	60h	Variable frequency

### TEXT MODE TABLE

Please refer to the following section, *TEXT MODES*. All values are in hexadecimal so you will need to add an "h" to the mode numbers as listed.

With these registers loaded, set mode calls will put the card into extended or high resolution mode.

### TEXT MODES

The ProSync supports a number of text display modes for spreadsheets and documents. Adding to the number of columns and rows allows more information to be displayed on the screen than is possible on the standard screen of 80 columns by 25 lines.

## TEXT MODE TABLE

MODE	MODE NUMBER	MONITOR
80X43	40	ECD or variable frequency
132x25	41	Variable frequency
132x43	42	Variable frequency
80x60	43	Variable frequency
120x25	4D	ECD or variable frequency
120x43	4E	ECD or variable frequency
132x25	4F	Color
80x43	50	Monochrome
132x25	51	Monochrome
132x43	52	Monochrome

The variable frequency monitors are downward compatible with all available modes. The ECD monitor is downward compatible with the color modes. There is NO upward compatibility; using a variable frequency monitor mode with monochrome monitor can damage your monitor.

### SETTING TEXT MODES

If you have followed the instructions described above in the section, *BIOS EXTENSION*, and have the appropriate monitor, the modes listed in the *TEXT MODE TABLE* on the ProSync Utility Diskette may be accessed as described below.

#### Menu version:

1. At the DOS prompt, type ESU [ENTER]
2. Follow menu instructions.

This selection will access the Enhancement Selection Utility Menu. The first menu asks you to choose the type of monitor you are using.

The next menu will list only those text modes available based on your choice of monitor. For example, based on the TEXT MODE TABLE above, mode 43 (80 x 60) will only be available if a variable frequency monitor is chosen. Modes 40 and 4D will be available only with ECD

or variable frequency monitors. These options will not appear on the menus if a color or monochrome monitor is chosen.

**WARNING: DO NOT CHOOSE TEXT OR GRAPHICS MODES THAT ARE NOT SUPPORTED BY YOUR MONITOR. SETTING UP TO USE THE OPTIONS AVAILABLE WITH VARIABLE FREQUENCY OR ECD MONITORS CAN CAUSE DAMAGE TO A SYSTEM WITH ANOTHER MONITOR.**

COMMAND LINE FROM DOS:

1 At the DOS prompt, TYPE ESU /[(MODE NUMBER)] [ENTER]

where mode number is as listed in *MODE TABLE*.

The mode number may also be accessed by typing ESU /? [ENTER] at the DOS prompt:

**WARNING: SETTING A MODE NUMBER THAT IS NOT SUPPORTED BY YOUR MONITOR CAN CAUSE DAMAGE TO YOUR SYSTEM.**

## PROSYNC DRIVERS

The ProSync includes drivers for several leading software packages. The following lists the software and the location of the installation instructions in the ProSync documentation.

<u>SOFTWARE</u>	<u>LOCATION</u>
Microsoft Windows	Manual, <i>INSTALL.COM</i>
Lotus Text Modes	<i>Appendix B</i>
Lotus Graphics Modes	<i>Appendix A, Lotus 1-2-3 Graphics</i>
Autodesk AutoCAD	<i>Appendix C</i>
WordPerfect	<i>Appendix A, WordPerfect</i>
Wordstar	<i>Appendix A, Wordstar</i>
DRI GEM	<i>Appendix D</i>

LOTUS 1-2-3 Graphics Ver. 2

Please refer to the instructions for *Installing Lotus 1-2-3 Text Drivers, ver.2* in *Appendix B*.

1. During step 2 please copy two additional files onto the Lotus 1-2-3 backup INSTALL disk:

GD640V20.DRV  
GD752V20.DRV

2. At step 8, two new drivers will have been added to the Lotus Graphics Drivers menu:

ProSync 640x480 Graphics Driver  
ProSync 752x410 Graphics Driver

### LOTUS 1-2-3 Graphics Ver. 1A

1. Make a backup copy of your Lotus 1-2-3 disk.
2. Delete the GD.DRV from the backup Lotus 1-2-3 disk.
3. Copy two files the Lotus 1-2-3 backup disk:

GD640V1A.DRV  
GD752V1A.DRV

4. Choose the graphics mode you would like to use and rename that DRV file GD.DRV to GD640V1A.DRV or GD752V1A.DRV. If you would like to use the 640x480 graphics mode, type:

REN GD640V1A.

If you would like to use the 752x410 graphics mode, type:

REN GD752V1A.DRV GD.DRV

5. Lotus 1-2-3 will now run in the mode you have selected.

### WordPerfect and Wordstar

1. Choose the desired text mode per the instructions in the section *TEXT MODES*, in the addendum.
2. The mode setting command (ESU/[mode number]) can be included in your AUTOEXEC.BAT file.

**WARNING: DO NOT CHOOSE A MODE NUMBER THAT IS NOT SUPPORTED BY YOUR MONITOR.**

3. If using a floppy based system, insert the Wordstar or WordPerfect diskette containing the setup program in the appropriate drive. If using a hard disk, change to the directory where the program is located.
4. The next steps vary per program. Please choose the program you are using from the following sections and follow the instructions.

*WORDPERFECT ver. 4.2:*

- 1 At the DOS prompt, type WP/S [ENTER] which will bring up the set-up menu.
2. Choose selection #3, Set screen and beep options.
3. Follow the menu instructions to type the number of rows and columns desired, hit [ENTER] until you are returned to the setup is changed.

*WORDSTAR ver. 4:*

1. At the DOS prompt, type WSCHANGE [ENTER]
2. The program will return:

What file do you want to install (usually WS)? **WS [ENTER]**  
Whata file do you want to save changes to? **[filename].COM [ENTER]**

You can rename the COM file for executing the chosen mode, for example WS132.COM, if you do not want to be in extended mode all the time. To bring up Wordstar in the new mode, you would type the new COM command, WS132 instead of WS, which would still be available, for normal mode.

3. Follow the menus to change console, monitor, screen sizing, height and width. This configuration will be invoked when the [FILENAME].COM file is used. In this example, WS132.COM.

**WORDSTAR 3 X:**

1. At the DOS prompt, type COPY WS.COM WS132.COM  
[ENTER]
2. At the DOS prompt, type DEBUG WS132.COM [ENTER]  
-e248 [ROWS-1] [COLUMNS] in HEX\*[ENTER]  
\* (see below for HEX equivalents).

For example, to set mode 42 (132x43, Variable frequency monitor), the command would be:

-e248 2A 84

where 2A is [row - 1] ( $43 = 2B - 1$ ) and  $84 = 132$ .

W [ENTER]

Q [ENTER]

The HEX equivalents are:

DECIMAL	HEX	FOR ROWS -1
25	19	18
43	2B	2A
80	50	
120	78	
132	84	

All examples refer to the 132x43 mode (mode 42); the same instructions would apply for 120x43 mode (mode 4E), etc.

**WARNING: DO NOT CHOOSE A MODE NUMBER THAT IS NOT SUPPORTED BY YOUR MONITOR.**

## SWITCH SETTINGS

The ProSync Utility Diskette includes a program which allows the switch settings to be changed via software. If you use different programs that require that the switch settings be changed, you may do so physically or by utilizing the SWITCH program.

The program file, SWITCH.EXE, can be accessed from the ProSync Utility diskette or copied into a subdirectory.

To run the program, at the DOS prompt, type:

1. SWITCH [ENTER]
2. Choose the letter for the switch setting you want following the instructions on the menu. When you make your choice from the menu, the switches will change automatically.
3. To make the changes from the command line or by running a batch file, add the command:

SWITCH/[LETTER]

where "LETTER" is the menu choice for the setting you want.

For proper operation, with QEGA.COM, of some programs (particularly games), it is necessary to put the ProSync into a CGA compatible mode. This is an "undocumented CGA Lo-Res" mode. To properly set the switches for these types of programs, choose the letter for "EGA NORMAL." When you are ready to change the settings back for other programs, you simply run SWITCH again.

## **Appendix B: INSTALLING LOTUS 1-2-3 TEXT DRIVERS**

The QuadEGA ProSync offers both 132 column and 120 column by either 43 line or 25 line resolution for Lotus 1-2-3. The instructions below are for installing the Quad EGA ProSync Text Drivers for Lotus 1-2-3. NOTE: There are two installations procedures based on the version of Lotus 1-2-3 which you own, Lotus 2.0 or Lotus 1A.

To install drivers for Lotus 1-2-3, version 2.x:

- Step 1     Make a back-up of the 1-2-3 INSTALL disk.
- Step 2     Copy the files PS132X43.DRV, PS120X43.DRV, PS132X25.DRV and PS120X25.DRV from the QuadEGA ProSync Utility Disk to the 1-2-3 INSTALL disk.
- Step 3     Make the 1-2-3 INSTALL disk the default drive, type INSTALL and press Enter.
- Step 4     Follow screen directions until you get to the MAIN MENU. Select ADVANCED OPTIONS and press Enter.
- Step 5     From the ADVANCED OPTIONS menu select ADD NEW DRIVERS TO LIBRARY and press Enter. Follow the directions to add drivers. Upon completion return to the ADVANCED OPTIONS menu.
- Step 6     Next, select MODIFY CURRENT DRIVER SET and press Enter.
- Step 7     Select TEXT DISPLAY and press Enter.
- Step 8     The display should list all text drivers available. QuadEGA ProSync Text (132x43 or 120 x 43) and QuadEGA ProSync Text (132x25 or 120x25) will be two of the options. Select the driver you wish to install and press Enter. Next, select RETURN TO MENU and press Enter.

- Step 9 From the ADVANCED OPTIONS menu select SAVE CHANGES then press Enter.
- Step 10 Follow the instructions to name the new driver set or make it the default driver set.
- Step 11 After changes have been saved, follow instructions to exit the INSTALL program.
- Step 12 1-2-3 should now be able to start in the mode you have selected.

To install drivers for Lotus 1-2-3, version 1A:

- Step 1 Copy the file TD.DRV from the Lotus 1-2-3 disk to another disk.
- Step 2 Delete TD.DRV from the Lotus 1-2-3 disk by typing:  
  
DEL TD.DRV
- Step 3 Copy the file PS132x25.1A or PS120x25.1A from the QuadEGA ProSync Utility Disk to the 1-2-3 disk.
- Step 4 Rename the new text driver by typing:  
  
REN PS132x25.1A or PS120x25.1A TD.DRV
- Step 5 1-2-3 should now start in either 132x25 or 120x25 mode.

# **Appendix C: PROSYNC AUTOCAD ADI DRIVER**

## **OVERVIEW**

Appendix C describes how to use the QuadEGA ProSync AutoCAD ADI driver. The driver allows you to utilize the higher resolution capabilities available with the QuadEGA ProSync board while using AutoCAD. Further, it adds a "viewport" capability, which allows a second view of the drawing area on the screen and is described in the section entitled Additional QuadEGA ProSync commands. The driver also provides the ability to change the colors used for AutoCAD's status line, menus, and text areas.

## **DRIVER DESCRIPTION**

The AutoCAD driver for the QuadEGA ProSync is implemented using the ADI 2.1 (AutoCAD Device Interface) specification, released by Autodesk in December 1986. This interface is compatible with AutoCAD versions 2.18, and 2.5 above. To use the driver with version 2.18, the AutoCAD driver update disk 3.0 is required; configuration settings can only be accessed while running DPSYNC with option C from DOS. The 2.5 and above versions can also change the settings from within AutoCAD.

The QuadEGA ProSync display driver is implemented as a "terminate and stay resident" program that must be loaded prior to the execution of AutoCAD. All communication between AutoCAD and the display driver are handled by the use of software interrupts. The display drivers' software interrupt number is fixed to the default interrupt number that AutoCAD expects which is 07AH.

## **DRIVER USE AND CONFIGURATION**

### **Installing the ADI Driver**

In order to run the higher resolution on AutoCAD, you need to change the video driver from within AutoCAD. To accomplish this, follow the steps below:

1. Run AutoCAD
2. Choose option #5 "Configure AutoCAD" from the menu
3. When your devices are displayed, press return
4. Choose option #3 "Configure Video Display" from the Configure menu
5. Change your display to the ADI driver which should be first on the list of video cards

NOTE: This installation applies to AutoCAD versions 2.5x and above only.

### Using the ADI Driver

It is necessary to first install the memory resident display driver before starting AutoCAD. Otherwise, AutoCAD will indicate that the driver has not been loaded, and will allow the user to define an alternate display driver. The user still has the option to use the IBM EGA display driver, as supplied by Autodesk, but it limits the display resolution to the standard resolution of 640 x 350. The memory resident driver can be loaded like any other DOS program, from the DOS command line by typing:

DPSYNC X (X=0,1,2,or C for resolution)

where QuadEGA ProSync is the name of the display driver and the options available are:

Option	Meaning
0	Set display resolution to 640x350 (default, standard EGA)
1	Set display resolution to 640x480
2	Set display resolution to 752x410
C	Set display resolution and colors

If none of the options are included on the command line, the default values (standard EGA) are loaded.

If the "C" option is selected, the user will be prompted through all the configurable display settings currently available. Please see the next section, Configuration, for further information on changing the display settings.

The driver first checks to ensure that a QuadEGA ProSync card is installed. If not, an error message is generated, the driver program is removed from memory, and control returns to DOS. It next checks to determine if the driver has been previously installed in memory. If it has, and the settings are different, it updates itself accordingly. In this way, the user can modify the current settings, including resolution, at anytime.

## CONFIGURATION

The user may change the configuration settings by choosing option "C" as noted above or from within AutoCAD by using the command SCREEN in the WINDOW submenu (see section Additional QuadEGA ProSync Commands for information on this command). The prompts are identical, and the rules are the same. The user may configure any combination of colors for the status line, menu area or text area. The prompts displayed are as follows (the default settings are indicated by < > ):

Resolutions: 0=640x350,1=640x480,2=752x410  
(all with 16 Colors)

Enter Screen Resolution (0-2):<1>

Dual Screen Enabled (0=no, 1=yes) (0-1):<0>

Enter Command Line Foreground Color (0-15):<7>

Enter Command Line Background Color (0-15):<0>

Enter Menu Foreground Color (0-15):<7>

Enter Menu Background Color (0-15):<0>

Enter Mode Foreground Color (0-15):<7>

Enter Mode Background Color (0-15):<0>

Enter Coordinate Foreground Color (0-15):<7>

Enter Coordinate Background Color (0-15):<0>

Enter Graphic Background Color (0-15):<0>

Enter Graphic Cursor Color (0-15):<15>

Enter Grid Dot Color (0-15):<15>

Enter Border Color (0-15):<1>

The display of these prompts can be aborted at any time by typing <Ctrl-Break> or <Ctrl-C>, if inside AutoCAD. The driver will use all the settings the user selected before exiting, and the default, or previous settings, for the rest of the configuration.

It is acceptable to enter the same color for both the foreground and background for all the settings. This will turn off the menu, coordinate, and text areas, displaying only the drawing screen. For example, this would allow taking a picture of the displayed drawing alone.

For the drawing area of the screen, AutoCAD does not allow the same foreground with background color. For instance, a blue object on blue background will show as white.

**NOTE:** In order for the new dual screen and resolution settings to be active, the user has to quit the drawing and reenter from the AutoCAD main select menu. To effect color changes, the user can do a redraw. The menu colors will change when a menu command is selected. It is not necessary to quit AutoCAD and return to the DOS command prompt.

See the section entitled Expanded Description of Screen Settings Prompts for detailed description of these prompts. In order to save a particular configuration, follow the instructions in the section entitled Saving A Configuration.

## SAVING A CONFIGURATION

To save a configuration, copy the entries down as you enter them in response to the prompts. From the DOS prompt, type the following:

C>COPY CON DPSYNC.CFG

Press <Enter> and type each configuration number followed by a space. For example, to load the AutoCAD default colors you would type the following:

0 0 7 0 7 0 7 0 7 0 0 15 15 0

Press <Enter> and type <Ctrl-Z> followed by <Enter> which will create a file called DPSYNC.CFG. To use the defaults set up by this file, install the driver by typing the following:

PSYNC\_LD

NOTE: If you use this option, you will not need to load the driver by typing DPSYNC as described above.

## EXPANDED DESCRIPTION OF SCREEN SETTINGS PROMPTS

The default values are shown in <>.

### Resolution

Resolutions: 0=640x480, 2=752x410 (all with 16 Colors)  
Enter Screen Resolution (0-2):<0>

The user changes the current display resolution to one of the three available.

### Dual Screen

Dual Screen Enabled (0=no, 1=yes):<0>

The user can enable dual screen mode if both an EGA and a monochrome display adapter are present. To enable this mode, enter a "1" at this prompt.

## Change Colors

The user can modify the foreground and background colors of the command line, menu, mode and coordinates with the following prompts. It is possible to select the same foreground and background color and the text will not show.

Enter Command Line Foreground Color (0-15):<5>  
Enter Command Line Background Color (0-15):<7>

Enter Menu Foreground Color (0-15):<2>  
Enter Menu Background Color (0-15):<5>

Enter Mode Foreground Color (0-15):<7>  
Enter Mode Background Color (0-15):<0>

Enter Coordinate Foreground Color (0-15):<4>  
Enter Coordinate Background Color (0-15):<0>

## DOS RETURN CODES (WHEN DPSYNC LOADED)

When the driver is loaded using DPSYNC from within a batch program, the driver will exit with a return code that may be accessed from the ERRORLEVEL variable and conditionally perform other functions.

The current return codes defined are as follows:

- 0 Driver loaded without error (memory resident)
- 1 Driver already installed (memory resident)
- 2 QuadEGA ProSync adapter not installed

An example batch program to take advantage of this information may be illustrated as follows:

```
DPSYNC 0
IF ERRORLEVEL 1 ECHO Driver already installed
IF ERRORLEVEL 2 ECHO QuadEGA ProSync not installed
```

NOTE: If using PSYNC\_LD, the batch file must be modified to include the above listed "IF ERRORLEVEL" echo commands.

## DISPLAY MODES SUPPORTED

The driver supports the following modes and configurations:

Resolution	Aspect	Menu boxes	Text lines
640x350	6:5	21	3
640x480	1:1	30	3
752x410	6:5	25	3

## DISPLAYS SUPPORTED

The following displays have been tested with the QuadEGA ProSync and the accompanying AutoCAD drivers, in all resolution modes:

- 1) NEC Multisync JC-1401P3A
- 2) Sony Multiscan CPD-1302

In addition, dual screens are supported. For instance, a high resolution color display could be used for graphics, and a monochrome display for text at the same time. To use dual screen mode, it must be selected while you are configuring the driver.

## QUADEGA PROYNC COLOR ASSIGNMENTS (WITHIN AUTOCAD)

Upon entry into AutoCAD graphics mode, the QuadEGA ProSync is programmed to display the standard AutoCAD colors. The standard colors and their corresponding palette data codes are listed below.

### AutoCAD Standard Color Definitions

Palette#	Value	Color
0	00h	Black
1	3Ch	Red
2	3Eh	Yellow
3	3Ah	Green
4	3Bh	Cyan
5	39h	Blue
6	3Dh	Magenta

7	3Fh	White
8	38h	Dark grey
9	04h	Low intensity red
10	14h	Low intensity yellow (brown)
11	02h	Low intensity green
12	03h	Low intensity cyan
13	01h	Low intensity blue
14	05h	Low intensity magenta
15	07h	Low intensity grey

## EXECUTING DRIVERS AND AUTOCAD FROM A BATCH FILE

### Customized Colors

After you have changed the parameters in your DPSYNC.CFG file, copy the DPSYNC.EXE and DPSYNC.CFG files into your AutoCAD directory. Then from within your AutoCAD directory, at the DOS prompt, type the following:

```
copy con:autoexec.bat           (RET)
DPSYNC C < DPSYNC.CFG          (RET)
ACAD                            (RET)
F6 (Function key)              (RET)
```

This will create an autoexec.bat file which will run AutoCAD in your customized set-up.

NOTE: This autoexec.bat file assumes that the video drivers and AutoCAD are in the same sub-directory; if your files are in separate directories make sure you change the directory path (consult your DOS manual) to accommodate those directories.

### Default Colors

To run the AutoCAD drivers with the default settings and AutoCAD from a batch file, at the DOS prompt type the following:

copy con:autoexec.bat	(RET)
DPSYNC x ( x=0,1 or 2 for resolution)	(RET)
ACAD	(RET)
F6 (function key)	(RET)

When the autoexec.bat file is run, it runs AutoCAD in the default color settings and the resolution you choose.

**NOTE:** This set-up assumes that the video drivers and AutoCAD are in the same sub-directory. If your files are in separate sub-directories, make sure you change the directory path (consult your DOS manual) to accomodate the different directories.

## **ADDITIONAL QUADEGA PROSYNC COMMANDS (VIEWPORTS)**

Viewports are a method of storing a view of the current drawing and displaying it in a smaller window on the screen. This allows the user to display two views of the same drawing on the screen at the same time. Adding the command WINDOW to the AutoCAD main Screen menu to utilize this feature is done via an AutoCAD menu file, ACAD250.MNU. This menu file accompanies the QuadEGA ProSync driver program.

**NOTE:** Use of the ACAD250.MNU function is limited to AutoCAD versions 2.5 or later.

The user can rename this menu file ACAD.MNU or select ACAD250.MNU as the startup menu as described in the AutoCAD Manual.

Execution of the WINDOW command reveals a submenu with a number of additional commands which allow the use of viewports.

In order to access the WINDOW commands, the user must type WINDOW at the command line and press <Ins> or select WINDOW from the main Screen menu.

Command: WINDOW <Ins>

NOTE: Pressing the ENTER key or the SPACE bar will result in an error message.

Thereafter the command format is one of the following:

Command	Brief Description
STRVIEW	Store viewport
RCLVIEW	Recall and display
NONE	Remove viewport
TOP LEFT	Top left position
TOPRT	Top right position
BOTTOM LEFT	BOTTOM LEFT
BOTRT	Bottom right position
UP	Scroll up
DOWN	Scroll down
LEFT	Scroll left
RIGHT	Scroll right
FINE	Scroll fine
MEDIUM	Scroll medium
COARSE	Scroll coarse
SCREEN	Modify screen parameters

Please see the next section for a detailed description of these commands.

## EXPANDED DESCRIPTION OF THE VIEWPORT COMMANDS

### STRVIEW Command

By issuing the STRVIEW command, a major portion of the current screen is captured and stored in memory as a viewport. The center of the capture buffer is the center of the graphics area. The area of the capture screen extends from the center toward the outer limits of the drawing area.

**NOTE:** Due to memory limitations only two thirds of the drawing screen is captured. Only one view can be stored at a time. A previously captured view is replaced by the image of the new drawing screen when the STRVIEW command is executed.

### **RCLVIEW Command**

The RCLVIEW command allows the user to display the stored view on the graphics screen. The displayed viewport does not effect the drawing below it. AutoCAD does not know that there is a viewport covering part of the graphics screen.

The viewport is preserved if the user enters the text screen and is recovered upon returning to the graphics screen.

### **NONE Command**

The NONE command removes the viewport area from the screen. The stored view is still in memory and can be recalled again, if desired, using the RCLVIEW command.

In addition the viewport may be toggled on or off by using the direct keyboard <Ctrl-L> key. If the viewport is displayed, the viewport is displayed, the viewport will be turned off, and visa versa.

### **TOPLEFT Command**

The TOPLEFT command places the displayed viewport on the top left part of the graphics screen screen area.

### **TOPRT Command**

The TOPRT Command places the displayed viewport on the top right part of the graphics screen area. The viewport will not extend over the menu area.

### **BOTLEFT Command**

The BOTLEFT command places the displayed viewport on the bottom left part of the graphics screen area. The viewport will not extend over the command line area.

## **BOTRT Command**

The BOTRT command places the displayed viewport on the bottom right part of the graphics screen area. Again, the viewport will not extend over the command line area.

## **UP, DOWN, LEFT, and RIGHT Commands**

Using these commands, the displayed view inside the viewport will scroll in the indicated direction. The user can repeat the command to scroll to the desired location. The scroll resolution can be set as described below.

The view will scroll to the limit of the drawing area saved. In order to include the whole graphics area in the viewport, the user will have to zoom out so that the drawing to be displayed is inside the two thirds of the graphics area.

## **FINE, MEDIUM, and COARSE Commands**

These commands set the scroll resolution of the viewport. If the user desires to scroll to a remote part of the view, it is recommended that a coarser scroll resolution be used with the fine resolution to pinpoint the desired view exactly.

These commands do not change the view displayed on the viewport in any way. They only set the scroll resolution for the scrolling commands described above.

## **SCREEN Command**

The user can completely reconfigure the current display settings, without exiting AutoCAD, using this command. Once selected, a series of prompts, as described under the section entitled Configuration, will appear in the command line area.

**NOTE:** The display of these prompts can be aborted at any time by typing <Ctrl-C>. The driver will use all the settings the user selected before exiting, and the default, or previous settings, for the rest of the configuration.

In order to effect the changes, you must quit and return to the main AutoCAD menu. If you have made changes to a drawing, you should save it before quitting.

## **Addendix D: PROSYNC GEM DRIVER**

NOTE: The QuadEGA ProSync GEM Driver is designed to work with version 2.1 of GEM. For upgrade information, contact Digital Research at 408-646-6464.

### **Installation for Hard Disk Systems**

Follow these steps to install the high resolution 640x480 or 752x410 drivers if you run GEM from a hard disk:

1. Start GEM Desktop as you normally do.
2. Place your backup copy of the ProSync High Res Driver disk in floppy drive A and close the drive door. Display the contents of the disk by double-clicking on the icon for drive A.
3. Double-click on the GEMSETUP.APP icon to start the GEM Setup program. From GEMSETUP choose one of the QuadEGA ProSync driver options, and drag it into the installed window. Do the same for your mouse and mouse port selection, and for the screen fonts. (The installation process is contained in Section 18 of the GEM Desktop Manual).
4. Save your GEMSETUP.
5. End GEM Desktop by returning to DOS.
6. Next time you reload GEM, your new ProSync driver will automatically be invoked.

### **Installation for Dual Floppy Drive Systems**

Follow these steps to install the high resolution 640x480 or 752x410 drivers if you run GEM on a computer that has only floppy disk drives.

1. Start up the Desktop as you normally do.
2. Place your back-up copy of the ProSync High Res Driver disk in floppy drive B and close the drive door. Display the contents of the disk by double clicking on the icon for drive B.

3. Double-click on the GEMSETUP.APP icon to start the GEM Setup program. From GEMSETUP choose one of the QuadEGA ProSync driver options, and drag it into the installed window. Do the same for your mouse and mouse port selection, and for the screen fonts. (The installation process is contained in Section in Section 18 of the GEM Desktop Manual).
4. Save your GEMSETUP.
5. End GEM Desktop by returning to DOS.
6. Next time you reload GEM, your new ProSync driver will automatically be invoked.

**NOTE:** Each time you run GEMSETUP and change the screen driver, don't forget to check your mouse, mouse port, and font selection. Some variable-scan monitors require realigning horizontally when running at higher resolution modes.

