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MONITOR INSTALLATION AND USER'S GUIDE

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PRODUCT WARRANTY

Product warranty is provided by a separate document and is not conveyed by this *Installation and User's Guide*

OWNER'S RECORD

Model and serial numbers are located at the rear of your monitor. Record the numbers in the space provided below. Refer to these numbers when you call upon your dealer regarding your monitor.

MODEL NUMBER:

SERIAL NUMBER:

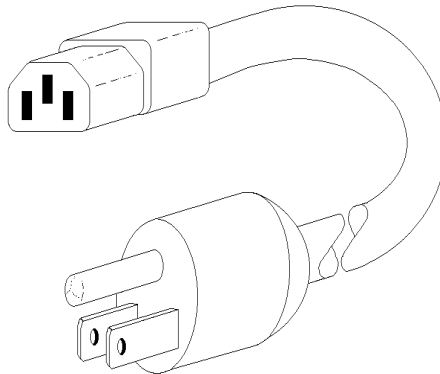
POWER CORDS

For your safety, your monitor is provided with a power cord, selected according to the country of destination and separately packed. The cord has a grounded attachment plug. To avoid electrical shock, always use the power cord and plug with a properly grounded power outlet. Proper power source characteristics for your monitor appear in the insert to this guide. If it is necessary to replace the original cord set, use the following guidelines.

For attachment to the monitor, the female receptacle of the cord set must meet IEC 320 requirements and appears as shown below.

In the United States and Canada:

**FEMALE RECEPTACLE
(ATTACH TO MONITOR)**



**MALE PLUG
(U.S. & CANADA,
115 VAC)**

For units operated at 115 volts, use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT, three-conductor cord, a maximum of 8 feet in length and a NEMA 5-15 parallel blade, grounding-type attachment plug rated 15 amperes, 125 volts.

Not all models are designed for 230-volt operation (see insert). For models operated at 230 volts (U.S. use), use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT, three-conductor cord, a maximum of 8 feet in length and a tandem blade, grounding-type attachment plug rated 15 amperes, 250 volts.

Outside the United States and Canada:

For models operated at 230 volts (outside U.S.), use a cord set with a grounding-type attachment plug rated 15 amperes (minimum), 250 volts. The cord set should be HAR-certified and marked <HAR> and have the appropriate safety approvals for the country in which the monitor will be installed.

FCC COMPLIANCE STATEMENT

FCC Section 15.105

NOTE:

This monitor has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment. The monitor generates, uses and can radiate radio frequency energy; and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Section 15.27


To insure compliance with FCC regulations, the monitor and any other peripheral devices, such as modems or printers, must be connected to the system with high quality **shielded** cables and I/O cords.

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ABOUT THIS GUIDE

This *Installation and User's Guide* and the accompanying **Insert** provide information you need to install and use your new monitor. They contain important information regarding safety precautions and installation requirements and describes how to adjust the monitor controls for your viewing preferences. The insert provided with this *Installation and User's Guide* provides technical details pertinent to your particular monitor model. Retain this *Installation and User's Guide* and the insert for future reference.

When referring to this *Installation and User's Guide*, note that information preceded by the symbol  is especially important. Please read it carefully.

CHAPTER 1: INTRODUCTION

FEATURES

Congratulations on your purchase of a new high resolution monochrome monitor. It provides many features that make it ideal for a host of applications; e.g., document imaging, CAD, spreadsheets, and desktop publishing.

Continuous Sync

Your new monitor displays crisp images when synchronization is provided anywhere within a continuum of ranges for the horizontal and vertical scan frequencies. Performance is expanded beyond the conventional set of a few fixed sync combinations. The monitor is factory set to operate with horizontal and vertical synchronization anywhere in the ranges shown in the insert to this guide. High vertical scan rates available in conjunction with high resolution modes provide ergonomically satisfying images. Video image formats are factory optimized for specific combinations of horizontal and vertical timing as shown in the insert.

Digital Controls

Your monitor's performance is set and maintained by a microprocessor based digital control subsystem. This provides you with versatile, highly stable and reliable operation.

Visual Satisfaction

The appealing black on white image mimics the appearance of a printed page. If you purchased a model with a flat profile screen, your viewing experience is further enhanced.

Energy Conservation

Your new monitor is capable of 2 states of reduced power consumption. By sensing the absence of horizontal and vertical sync from the Video Controller, it will reduce power consumption as follows.

VESA State	Power Consumption	LED Indicator	H sync state	V sync state
Normal operation	approx. 105 W	Green	on	on
Standby	approx. 10 W	LED Off	off	on
Suspend/Off	approx. 5 W	LED Off	off	off

Note: It is recommended that the AC power switch on the monitor be turned off when not in use for an extended period of time.

Power factor correction circuits conforming to IEC 555-2 specifications minimize harmonic distortions and peak currents from the AC power source.

EQUIPMENT COMPATIBILITY

A display controller, which supports the monitor, must be installed in your system. An appropriate cable is required to connect the controller and the monitor. See insert for technical details.

CHAPTER 2: INSTALLING THE HARDWARE

PRODUCT PACKAGE

Your new product package includes the following items:

- High Resolution Monitor with tilt and swivel base
- Standard Power Cord
- This *Installation and User's Guide* with insert for your model

If any item is missing or damaged, contact your dealer or distributor.

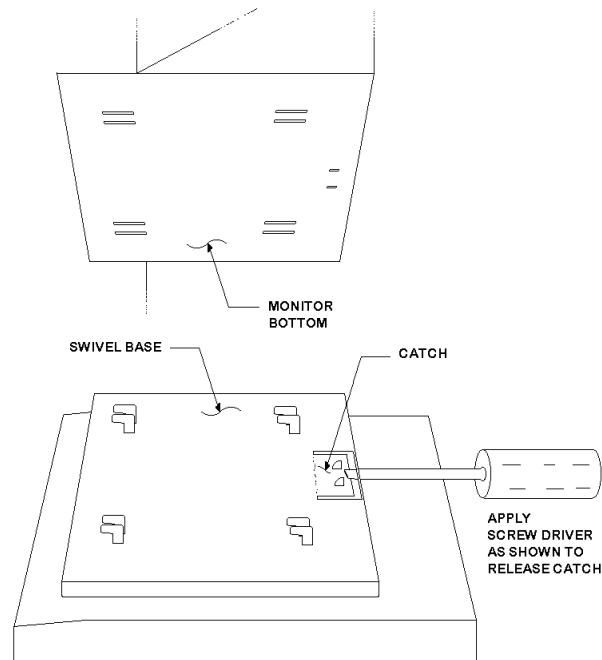
PRECAUTIONS

Before unpacking and installing your monitor please read and observe the following precautions:

- ✪ There are no user serviceable parts inside the monitor. All service must be performed by an authorized service agent. To avoid electrical shock, do not remove or disassemble any part of the monitor enclosure, except the swivel base. Any other disassembly of the enclosure voids your warranty.
- ✪ Verify AC power supply before installation. The power cord supplied with your monitor meets applicable safety standards for the shipping destination. If you do not use the supplied power cord, you must use one that meets the electrical standards for your area.
- ✪ Beware of static electricity on the CRT (picture tube) surface. To avoid static shock, particularly when moving the monitor, wait at least 30 seconds after turning power off to disconnect the power cord.
- ✪ Install the monitor on a sturdy, level surface where you can view it comfortably while having convenient access to other essential system elements (keyboard, mouse, disk and CD-ROM drives, etc.).
- ✪ Proper ventilation protects your monitor from overheating. Do not obstruct ventilation panels. Recommended room temperature operating range for the monitor is 68° F to 74° F.
- ✪ Do not place the monitor in direct sunlight or near sources of heat.
- ✪ Do not place the monitor in a damp area.
- ✪ Do not place objects and/or equipment which produce static or dynamic magnetic fields near the monitor. Doing so may cause distracting motion or distortion of the displayed image.
- ✪ Your monitor may have an anti-glare, anti-static coating applied to the front of the viewing screen. Use only water or alcohol based solvents or mild ammonia solutions and a soft cloth to clean the viewing surface. Abrasive cleaners or highly concentrated ammonia will severely and permanently damage the coating. Avoid contacting the viewing surface with any hard or sharp items (e.g., pens, pencils, hand tools, belt buckles, and jewelry) as they may scratch/abrade the coating.
- ✪ Your monitor comes factory aligned to best present images corresponding to the display controller(s) mentioned in the insert. Since image geometry is influenced by the local geomagnetic field and orientation of the monitor, you will probably want to make adjustments for your unique environment and viewing preferences. Follow the procedures in Chapter 3 of this user guide.

UNPACKING YOUR MONITOR

- Take care when unpacking and moving the monitor not to scratch the viewing surface or enclosure with tools, belt buckles, jewelry, etc.
- Place the shipping carton on a clear area of the floor near the location where you plan to install the monitor. Allow sufficient space around the carton for unimpeded movement while you are unpacking the monitor.
- Open the top of the shipping carton. With some models, the base swivel assembly is shipped unattached to the main enclosure. In that case, remove it from the carton and set it aside.
- Carefully invert the carton so that its open side is on the floor. Be careful to prevent the internal packing and monitor from sliding out while doing this. Lift the carton off the monitor packing material.



- If the swivel base is not already attached, remove the packing to expose the bottom of the monitor and the swivel mounting point. Align the swivel base with the attachment points and slide the swivel forward until the catch clicks into place. The swivel base may be removed by using a screw driver to release the catch and sliding the base to the rear.
- Remove remaining packing material from the monitor. Identify and save the power cord provided for the monitor.
- Save all the packing material and the shipping carton for future transportation or storage of the monitor.
- Place the monitor on the sturdy, level surface you have selected for installation.

CABLE CONNECTIONS

Before installing the video cable, ensure that neither the monitor nor the display controller is powered. If a video cable has been supplied with your monitor, it is intended for use with the display controller(s) noted in the insert. This or another display controller must be properly installed in your system to provide imaging signals to the monitor. If you are using a cable and controller mentioned in the insert, simply install the cable by attaching the appropriate connectors to the monitor and the display controller. Be sure to engage any mechanisms that secure the connectors to the equipment. If you are attempting to use any other display controller, you must first verify that its output signals will properly drive your new monitor; you may also have to provide a video cable that is plug compatible with both the monitor and the display controller.

CONNECTING THE POWER SUPPLY

AC power requirements for your monitor are detailed in the insert. The power cord supplied with your monitor meets applicable safety standards for the shipping destination. If you do not use the power cord supplied, you must use one that meets the electrical standards where it is used.

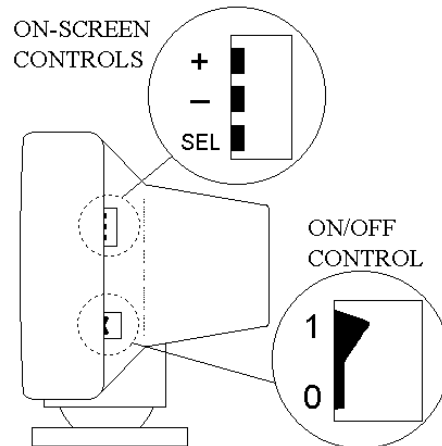
- Verify that the power switches on both the monitor and the computer are OFF.
- Connect the AC power cord to the AC inlet at the rear of the monitor.
- Connect the power cord plug to the AC power source.
- Verify that the computer is connected to a power source and switch the computer ON.
- Switch the monitor ON. If an image does not appear on the monitor within 30 seconds refer to Chapter 4 of this *Installation and User's Guide* for trouble shooting procedures.

CHAPTER 3: USING AND CONTROLLING THE DISPLAY

Your new monitor is factory aligned to optimize images corresponding to the particular combination(s) of horizontal and vertical synchronization signals detailed in the insert. You will probably want to adjust the monitor for your unique environment and viewing preferences. The user controls for your monitor model and how to change settings are explained below. Once the monitor has been adjusted while receiving a particular combination of horizontal and vertical sync timing, it will automatically recall the latest control settings corresponding to that sync combination whenever it is applied. The monitor stores control settings for up to twenty unique sync-timing combinations, including factory settings as separate entries.

USING THE DISPLAY CONTROLS

POWER Located on the lower right side of the display, the power switch turns power ON or OFF. The power indicator LED, located at the lower right front of the monitor bezel glows when power is on.

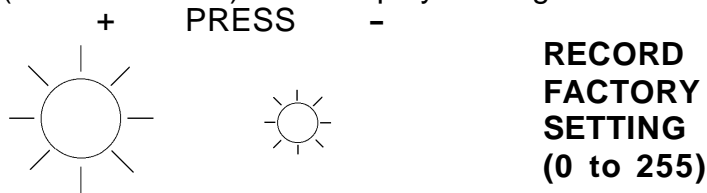


ON SCREEN CONTROLS Three momentary push buttons on the right hand side of the monitor are used to adjust image parameters (seven standard and four optional). Please note that, once changed, the alignment controlled by user accessible controls can only be uniformly reset to factory settings by a trained technician using devices not available to the typical user. Before making changes, you are encouraged to cycle through all of the on-screen user controls and record the factory settings in the space provided below for future reference. When the lower button is pushed, text generated internally by the monitor is superimposed on the screen. The text indicates a display parameter and its stored value (0 to 255), which may be increased (decreased) by pressing the upper (middle) button. Subsequent depressions of the lower button cause new parameters to appear in the order shown below.

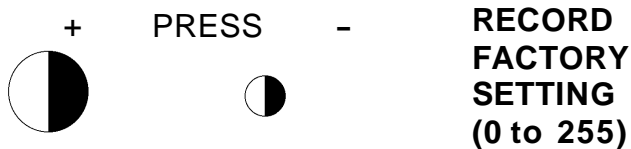
If the user has not pressed any of the three buttons for five seconds, monitor generated text disappears and the current parameter settings are stored. Controls numbered 3 through 11 below are used to adjust the geometric presentation of the image. Because the geomagnetic field varies by location and affects image geometry, you may wish to optimize image geometry for your particular locale.

STANDARD CONTROLS:

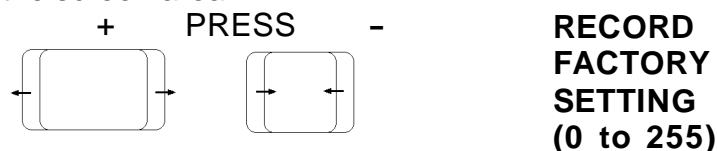
1 · BRIGHT Adjusts the brightness of the screen. Too much brightness may cause the background raster (scanning structure) to appear on the screen and wash out the picture. Too little brightness will suppress dimmer shades of gray (turn them black) in the displayed image.



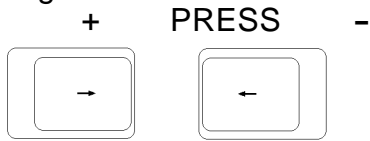
2 · CONTRAST Adjust the contrast between the highlights and the background of the image. Provides proportional changes to all shades of gray relative to the background. Too much contrast may cause image highlights to appear out of focus or smeared; too little contrast may cause the image to appear washed out.



3 · H SIZE Adjusts the width (horizontal size) of the displayed image within the screen area.

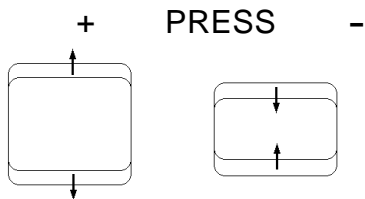


4 · H CENT Adjusts the left-to-right (horizontal) centering of the displayed image within the screen area.



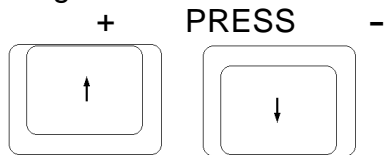
**RECORD
FACTORY
SETTING
(0 to 255)**

5 · V SIZE Adjusts the height (vertical size) of the displayed image within the screen area.



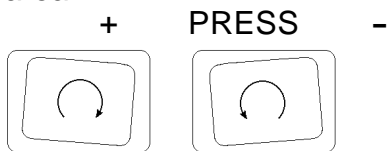
**RECORD
FACTORY
SETTING
(0 to 255)**

6 · V CENT Adjusts the top-to-bottom (vertical) centering of the displayed image within the screen area.



**RECORD
FACTORY
SETTING
(0 to 255)**

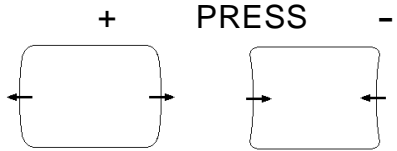
7 · ROTATE Adjusts the rotation of the displayed image within the screen area.



**RECORD
FACTORY
SETTING
(0 to 255)**

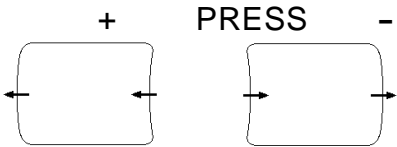
OPTIONAL CONTROLS:

8 · PIN Adjusts curvature (pincushion) at the left and right sides of the image. Both sides become more convex or more concave simultaneously.



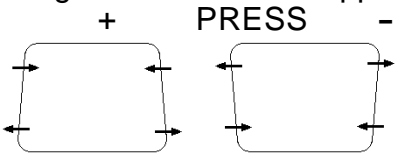
**RECORD
FACTORY
SETTING
(0 to 255)**

9 · BOW Adjusts curvature at the left and right sides of the image. One side becomes more convex as the other becomes more concave.



**RECORD
FACTORY
SETTING
(0 to 255)**

10 · TRAP Adjusts relative angular orientation of the left and right sides of the image. The two sides appear to tilt in opposite directions (trapezoidal effect)..



**RECORD
FACTORY
SETTING
(0 to 255)**

CHAPTER 4: TROUBLE SHOOTING

DARK BLANK SCREEN ON MONITOR

If the power indicator LED is not glowing :

- Verify the unit is plugged in and the power switch is in the ON position.
- Check that the power cord is properly seated at both the monitor and AC receptacle.

If the power indicator LED is glowing:

- Verify the video cable is properly installed
- Check that the source of video and sync signals is powered.
- If you are using two monitors, you may not have installed your high-resolution display as primary - the one which receives boot messages. Even if it is powered on, a secondary monitor screen initially remains blank since the primary monitor receives the boot message.
- Maximize the monitor's brightness and contrast control settings. Refer to the insert.

ILLUMINATED BLANK SCREEN ON MONITOR

If maximizing brightness and contrast produces background illumination, valid sync signals are present. You may do further system trouble shooting to determine if the proper video signal is reaching the monitor.