Elo Entuitive Touchmonitor User Guide

17" LCD Desktop Touchmonitor

1725L Series

entuitive
Touchmonitors

Revision A

P/N 008541

Elo TouchSystems, Inc.

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CHAPTER

1

INTRODUCTION

Congratulations on your purchase of an Elo TouchSystems Entuitive LCD desktop touchmonitor. Your new high-resolution industrial touchmonitor combines the reliable performance of Elo's touch technology with the latest advances in LCD display design. This combination of features creates a natural flow of information between you and your touchmonitor.

Precautions

Follow all warnings, precautions and maintenance as recommended in this user's manual to maximize the life of your unit. See Appendix B for more information on touchmonitor safety.

About the Product

Your LCD desktop touchmonitor is a 17" TFT color display with the following features:

- Direct analog RGB input
- 17.0" diagonal screen size
- 16.7 million displayable colors
- 1280 x 1024 resolution
- DOS/ VGA/ SVGA/ XVGA/ SXGA/ EGA/ CGA/ Mac compatible
- Frequency H-sync: 30-80k Hz; V-sync: 50-85kHz (up to 75khz @ 1280 x 1024)

- Plug & Play
- High quality full screen re-scaling
- VESA DDC 1/2B data communication
- VESA DPMS power saving
- Worldwide agency approvals that include UL, CUL, TÜV- Bauart, FCC, CE, C-Tick, VCCI
- IntelliTouch or AccuTouch Technology

For full Product Specifications refer to Appendix C.

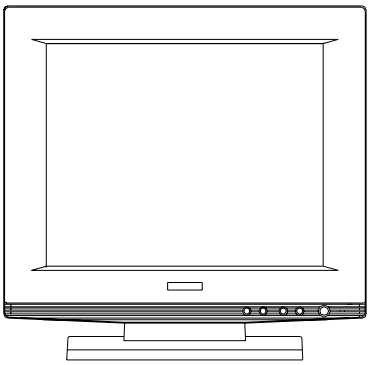
CHAPTER

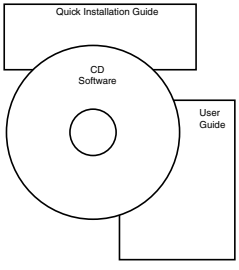
2

INSTALLATION AND SETUP

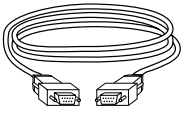
This chapter discusses how to setup your LCD desktop touchmonitor and how to install Elo TouchSystems driver software.

Please make sure that the following items are included in the carton and are in good condition.

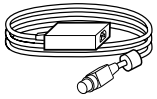




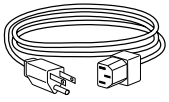
Video cable



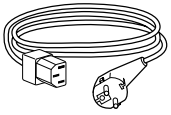
Serial touchscreen cable



Brick power supply



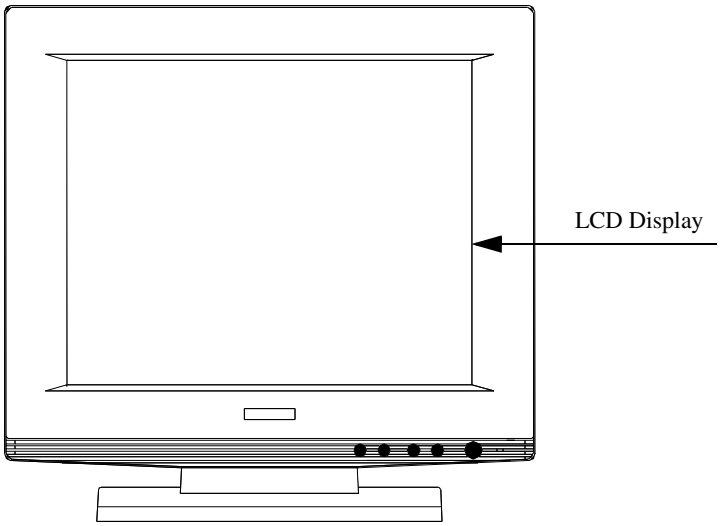
Monitor power cable (US/Canada)



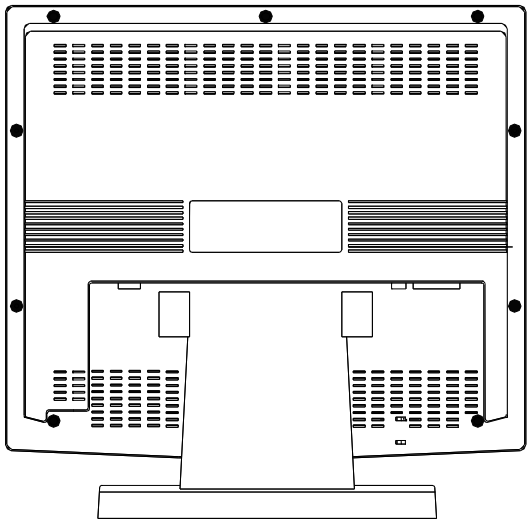
European monitor power cable

Product Overview

Main Unit



Rear View



Connecting Your Touchmonitor

Before connecting the cables to your touchmonitor and computer, be sure that the touchmonitor and computer are off.

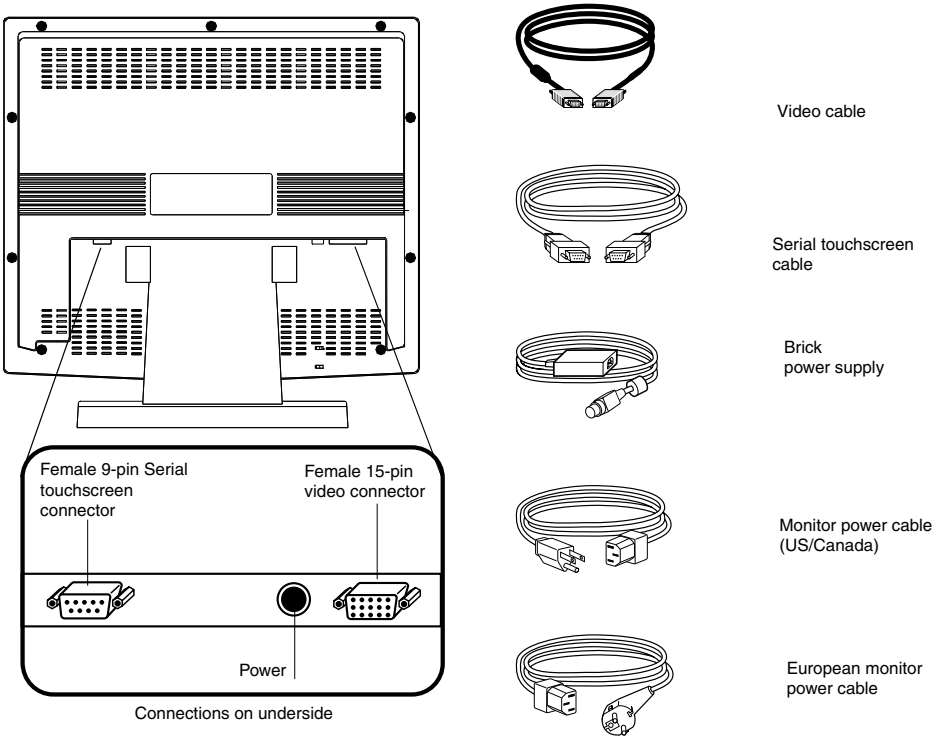
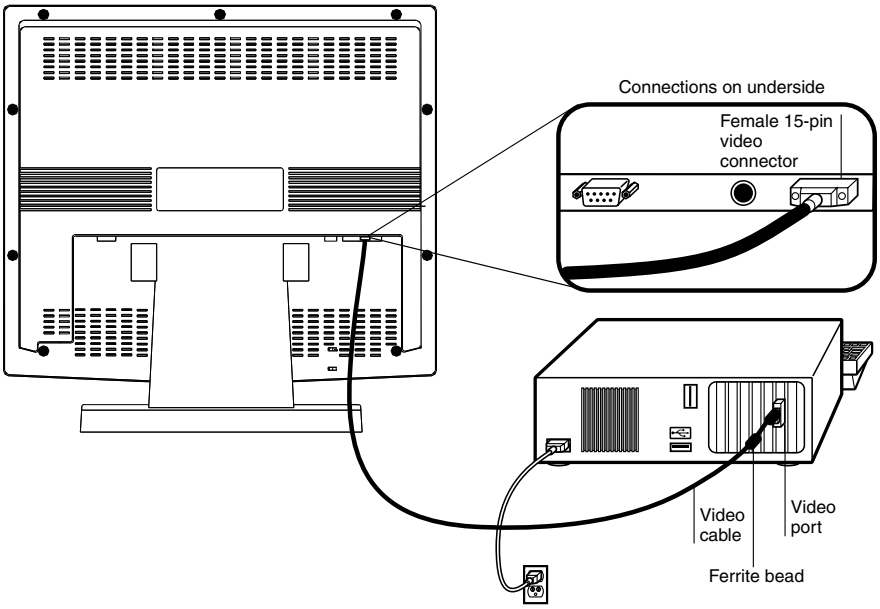


Figure 2.1 Touchmonitor cables and connections

Video Cable Connection

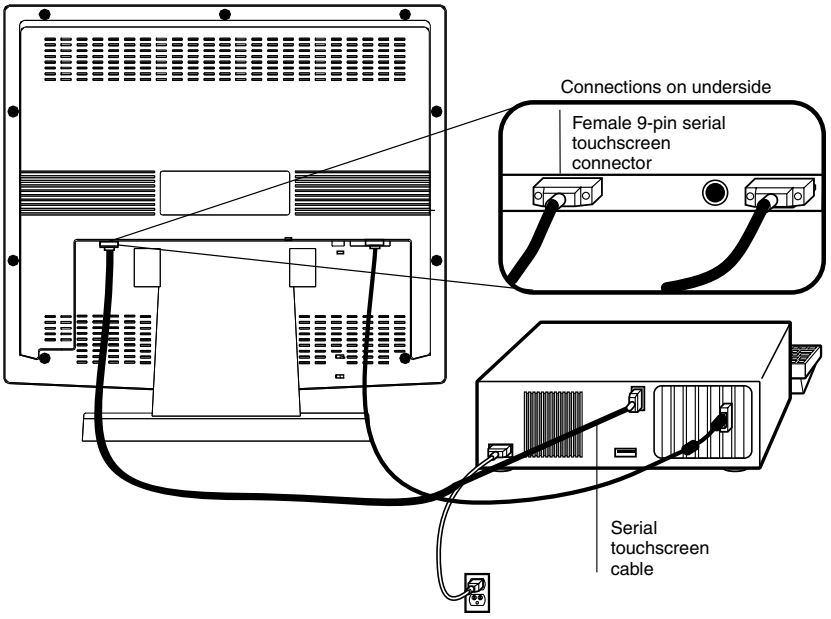


1 Set the touchmonitor on a solid horizontal surface, such as a table or desk.

2 Connect the female end of the video cable connector to the back of the LCD monitor, and connect the other end to the back of the computer.

3 Secure the cable to your touchmonitor and computer by tightening the screws on the connector clockwise.

Touchscreen Cable Connection

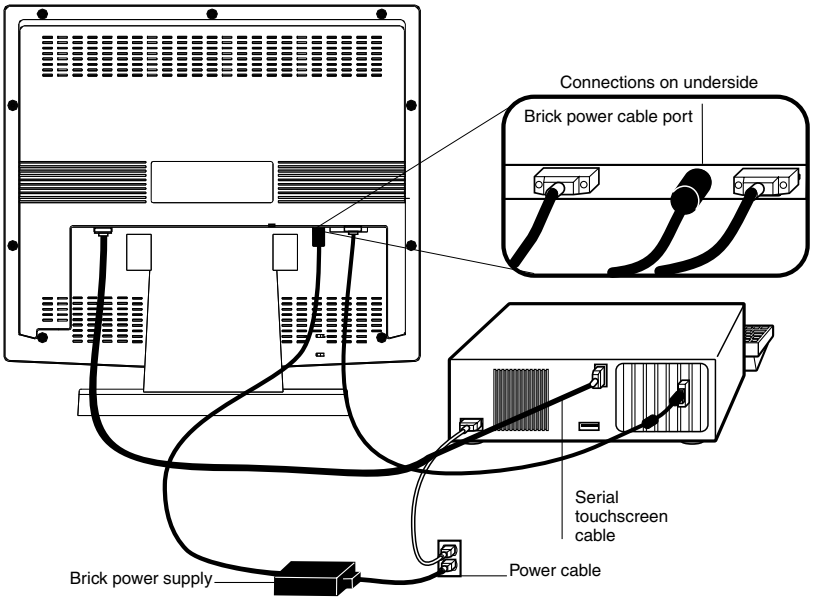


1 Connect the female end of the 9-pin touchscreen cable to the serial port on the back of your computer.

2 Connect the male end of the cable to the serial touchscreen connector on your touchmonitor.

3 Secure the cable to your touchmonitor and computer by tightening the screws on the connector clockwise.

Power Cable Connection



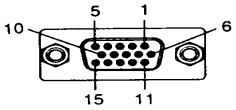
1 Depending on where you live, you will use either the European or US/Canadian power cable. Connect the female end of the power cable to the Brick power supply.

2 Connect the Brick power supply into the power port on the touchmonitor.

To protect your equipment against risk of damage from electrical surges in the power line, plug the Brick supply's power cord into a surge protector, and then connect the surge protector to a grounded (three-pronged) AC electrical outlet.

Video Input Pin Assignment

This section describes the pin assignment of the LCD's 15 Pin Mini D-sub (video cable) connector.



Pin No.	Signal Connector
1	Red Video Signal
2	Green Video Signal
3	Blue Video Signal
4	N.C.
5	Ground
6	Ground for red video signal
7	Ground for green video signal
8	Ground for blue video signal
9	N.C.
10	Ground
11	N.C.
12	DDC data
13	Horizontal sync signal
14	Vertical sync signal
15	DDC clock

Installing the Driver Software

Elo TouchSystems provides driver software that allows your touchmonitor to work with your computer. Drivers are located on the enclosed CD-ROM for the following operating systems:

- Windows 2000
- Windows Me
- Windows 98
- Windows 95
- Windows NT 4.0

Additional drivers and driver information for other operating systems (including MS DOS, Windows 3.*x,* OS/2, Macintosh and Linux) are available on the Elo TouchSystems web site at www.elotouch.com.

Your Elo touchmonitor is plug-and-play compliant. Information on the video capabilities of your touchmonitor is sent to your video display adapter when Windows starts. If Windows detects your touchmonitor, follow the instructions on the screen to install a generic plug-and-play monitor.

Refer to the appropriate following section for driver installation instructions.

Installing the Touch Driver for Windows 2000, Me, 95/98 and NT 4.0

NOTE: For Windows 2000 and NT 4.0 you must have administrator access rights to install the driver.

1. Insert the Elo CD-ROM in your computer's CD-ROM drive.

   If the AutoStart feature for your CD-ROM drive is active, the system automatically detects the CD and starts the setup program.

2. Follow the directions on the screen to complete the driver setup for your version of Windows.

If the AutoStart feature is not active:

1. Click **Start** > **Run**.
2. Click the **Browse** button to locate the EloCd.exe program on the CD-ROM.
3. Click **Open**, then **OK** to run EloCd.exe.
4. Follow the directions on the screen to complete the driver setup for your version of Windows.

CHAPTER

3

OPERATION

Variations in video output and application will likely require you to adjust your touchmonitor to optimize the quality of the display.

For best performance, your monitor should be operating in native resolution; that is, 1280 x 1024 at 75 Hz. Use the Display control panel in Windows to choose 1280 x 1024 resolution.

Operating in other resolutions will degrade video performance. For further information, please refer to Appendix A.

All adjustments you make to the controls are automatically memorized. This feature saves you from having to reset your choices every time you unplug or power your touchmonitor off and on. If there is a power failure, your touchmonitor settings will *not* default to the factory specifications.

Touchmonitor Controls

All adjustments are made using the on-screen display (OSD) controls.

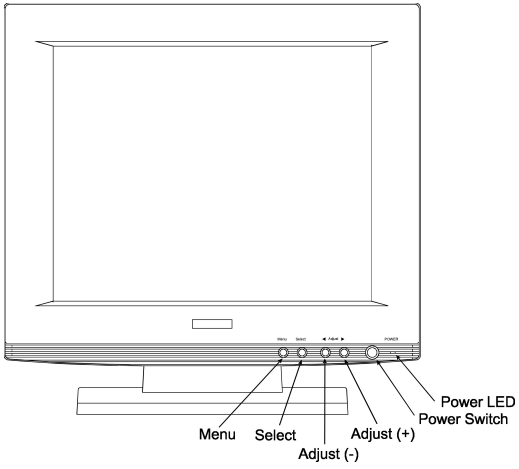


Figure 3.1 Touchmonitor Controls

Control	Function
Power	Press the power key to turn the monitor on. Press it again to turn the monitor off.
Menu	Enable or disable the OSD adjustment menu. Move from the submenu back to the previous menu.
Select	To select the adjustment items from the OSD menu.
Adjust ▶	To scroll up in the menu or to increase the value of the selected item.
Adjust ◀	To scroll down in the menu or to decrease the value of the selected item.
Power LED	The LED will be green when the monitor is in the normal ON mode, and will be orange when it is in the power saving mode.

Screen Adjustments

The setting switches are normally in stand-by mode.

1. Push the **MENU** button once to display the main menu of the screen adjustment. The adjustable items will be displayed in the main menu.
2. Use the **ADJUST** ▶ and **ADJUST** ◀ buttons to select the desired setting icon.
3. Push the **SELECT** button to enter the sub-menu.
4. Once the sub-menu appears, use the **ADJUST** ▶ and **ADJUST** ◀ buttons to change the setting values.
5. After making the adjustment, push the **SELECT** button to memorize the setting.
6. Select **YES** at EXIT item of main menu after making the adjustment.
7. Return and exit the main menu.

To go back to the previous menu, push the **MENU** button.

Exit the screen adjustment, go to the EXIT item and select **YES** or **NO**.

If no adjustments are made within 20 seconds (default OSD time out), the monitor goes back to the stand-by mode. To make adjustments press the **MENU** button to display the main menu.

Main Menu

The OSD main menu (Figure 3.2 below) is displayed on screen when the **MENU** button is pressed. The OSD menu is a combination of graphic and text display. The column inside the OSD menu will show information of input image. Second column beneath OSD menu shows the item selected.

The LEFT and RIGHT keys are used to scroll through items within the menu. The selected item is highlighted as the scrolling move along. The **SELECT** key is used to activate the highlighted item during this state.

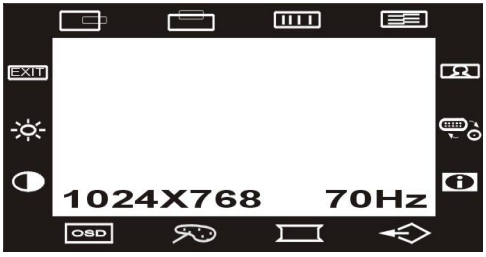


Figure 3.2 OSD Main Menu

H-POSITION

H-Position is used to adjust the horizontal image position. A slider with the current value is displayed.

V-POSITION

V-Position is used to adjust the vertical image position manually. A slider with the current value is displayed.

CLOCK

Reduce vertical stripes in the screen image.

PHASE

Reduce horizontal stripes in the screen image.

AUTO CONFIG Adjustment

This function will automatically set the parameters of **PHASE, CLOCK, H-POSITION,** and **V-POSITION.**

NOTE: To manually change the AUTO CONFIG adjustments, you can adjust PHASE, CLOCK, H-POSITION, and V-POSITION in the OSD.

1. Click the Windows **Start** button and choose the **Shut Down** option.

NOTE: The background wallpaper color cannot be black.

2. Press the **Menu** button and select the **AUTO CONFIG** option.
3. Choose the **AUTO ADJUST** option then press **SELECT**. The picture will auto-adjust by itself. After 8 seconds, you can exit the OSD and SHUT DOWN the frame.
4. If you are not satisfied with the picture quality, adjust the **CONTRAST** option, see page 3-16.

Use the **ADJUST** ▶ and **ADJUST** ◀ key to scroll up and down in menu, then press the **SELECT** key to start this function. If the **MENU** key is pressed, the main menu is re-displayed and no changes have been made.

Control	Function
AUTO ADJUST	Used to perform automatic configuration of the phase, clock, vertical, and horizontal positioning.
AUTO TRACKING	It can tune the clock & phase to the best condition automatically.
AUTO POSITION	It is used to center the image automatically. Both horizontal and vertical position is adjusted such that the image is centered on the panel.
AUTO COLOR	It is used to adjust the gain and offset of the Red, Green and Blue channels on the ADC automatically.
RETURN	Returns to main menu.

INPUT (D-Sub input source only)

Not applicable.

SYSTEM INFORMATION

This menu provides the user with detailed information regarding the current input format and version (include resolution, vertical /horizontal frequency, pixel clock and software version).

RECALL

Recall is used to reload all factory default parameters.

SHARPNESS

Sharpness adjusts the video quality to be sharp or blurry (for text mode).

COLOR

COLOR is a sub-menu which contains items to adjust the PC graphic imaging.

Menu Item	Function
RED	RED is used to adjust the gain of the red channel in ADC. A slider with the current value is displayed.
GREEN	GREEN is used to adjust the gain of the green channel in ADC. A slider with the current value is displayed.
BLUE	BLUE is used to adjust the gain of the blue channel in ADC. A slider with the current value is displayed.
RETURN	Return to the Main menu

OSD ADJUST

Control	Function
OSD H POSITION	Used to setup the OSD menu H position.
OSD V POSITION	Used to setup the OSD menu V position.
OSD BLENDING	Adjusts the blending of the OSD menu.
RETURN	Return to the Main menu.

CONTRAST

Contrast allows you to adjust the difference between black and white shades for image sharpness.

BRIGHTNESS

Allows you to set the brightness of the panel.

EXIT

Exit the OSD functions. Select **YES** to memorize the setting and exit or select **NO** to exit without saving the parameters.

NOTE: If a button is not pressed within 20 seconds, the OSD menu will disappear and parameter changes will not be saved.

CHAPTER

4

TROUBLESHOOTING TIPS

If you are experiencing trouble with your touchmonitor, refer to the following table. If the problem persists, please contact your reseller or our technical support at 1-800-557-1458.

Problem	Suggestion(s)
No image appears on screen.	Check that the video cable and power connectors are properly connected as described in Chapter 2.
	Make sure the pins of the connectors are not crooked or broken.
	Check that power switch of the touchmonitor has been pressed and LED on the front of touchmonitor is lit.
	Test the power supply by trying different cables, or a different wall outlet or plug another appliance into the outlet.
	Make certain the video cable is properly connected and that it is not damaged. Check for bent pins on the cable connectors.
	Ensure that your computer and video card are properly configured (consult video card documentation) and the video card is firmly seated in the card slot of the computer motherboard.
Partial image or incorrectly displayed image	Check whether the resolution of your computer is higher than that of the LCD touchmonitor.
	Check that the video cable from the monitor has been securely and correctly connected to the video connector at the rear of the computer.
	Reconfigure the resolution of your computer to make it less than or equal to 1280 x 1024. See Appendix A for more information on resolution.
Image is unstable and flickering	Use the Auto Tracking function to make an adjustment. See Chapter 3 for more information.
	Check and reconfigure the touchmonitor mode of the vertical refresh rate of your graphic card to make it compatible with the LCD touchmonitor.
Image is scrolling	Make sure the VGA signal cable (or adapter) is well connected.
	Check and reconfigure the display mode of the vertical refresh rate of your graphic card to make it compatible with the LCD touchmonitor.
Touch does not work	Make sure the touchscreen cable is securely connected at both ends.

APPENDIX

A

NATIVE RESOLUTION

The native resolution of a monitor is the resolution at which the LCD panel is designed to perform best. In almost all cases, screen images look best when viewed at their native resolution. You can lower the resolution setting of a monitor but not increase it. For the Elo LCD touchmonitor, SXGA-17 inch, the native resolution is 1280 x 1024.

Input Video	17" LCD
640 x 480 (VGA)	Transforms input format to 1280 x 1024 size
800 x 600 (SVGA)	Transforms input format to 1280 x 1024 size
1024 x 768 (XGA)	Transforms input format to 1280 x 1024 size
1280 x 1024 (SXGA)	Displays in native resolution

The native resolution of an LCD is the resolution that matches the LCD's pixels. Video performance is always best at native resolution settings. The various standard LCD resolutions are usually represented as follows:

VGA	640 x 480
SVGA	800 x 600
XGA	1024 x 768
SXGA	1280 x 1024

For example, a SVGA resolution LCD panel displays 800 pixels horizontally and 600 pixels vertically. Input video is also represented by the same terms. XGA input video has a format of 1280 pixels horizontally by 1024 pixels vertically. When the input pixels contained in the video input format match the native resolution of the panel, there is a one-to-one correspondence of mapping of input video pixels to LCD pixels. For example, the pixel in 45 column and 26 row of the input video is in 45 column and 26 row of the LCD. When the input video is set at a lower resolution than the native resolution of the LCD, the direct correspondence between the video pixels and the LCD pixels is lost. The LCD controller can compute the correspondence between video pixels and LCD pixels using algorithms contained in the controller. The accuracy of the algorithms determines the fidelity of conversion of video pixels to LCD pixels. Poor fidelity conversion can result in artifacts in the LCD display, such as characters of varying width.

APPENDIX

B

TOUCHMONITOR SAFETY

This manual contains information that is important for the proper setup and maintenance of your touchmonitor. Before setting up and powering on your new touchmonitor, read through this manual, especially Chapter 2 (Installation), and Chapter 3 (Operation).

1. Turn off the touchmonitor before cleaning.
2. Your brick supply is equipped with a 3-wire, grounding power cord. The power cord plug will only fit into a three-prong safety ground outlet. Do not attempt to fit the plug into an outlet that has not been configured for this purpose. Do not use a damaged power cord. Use only the power cord that comes with your Elo TouchSystems touchmonitor. Use of an unauthorized power cord may invalidate your warranty.

3. This display should be installed on a solid horizontal base.
4. Adequate ventilation must be maintained to ensure reliable and continued operation and to protect the display from overheating. Do not block ventilation slots and openings with objects or install the display in a place where ventilation may be hindered.
5. This display should be operated from the type of power source indicated on the AC/DC adapter.
6. Do not install this display near a motor or transformer where strong magnetism is generated. Images on the display will become distorted and the color irregular.
7. Do not allow metal pieces or objects of any kind fall into the display from ventilation holes.
8. Do not attempt to service this unit yourself. Removal of the display cover may expose you to dangerous voltage or other risks. Refer all servicing to qualified service personnel.
9. Unplug this product from the wall outlet and refer servicing to qualified service personnel in the event that:
    1. Liquid is spilled into the product or the product is exposed to rain or water.
    2. The product does not operate normally when the operating instructions are followed.
    3. The product has been dropped or the cabinet has been damaged.
    4. The product exhibits a distinct change in performance, indicating a need for service.
    5. Power cord or plug is damaged or frayed.

Care and Handling of Your Touchmonitor

The following tips will help keep your Elo Entuitive touchmonitor functioning at the optimal level.

- To avoid risk of electric shock, do not disassemble the brick supply or display unit cabinet. The unit is not user serviceable. Remember to unplug the display unit from the power outlet before cleaning.
- Do not use alcohol (methyl, ethyl or isopropyl) or any strong dissolvent. Do not use thinner or benzene, abrasive cleaners or compressed air.
- To clean the brick supply or display unit cabinet, use a cloth lightly dampened with a mild detergent.
- Avoid getting liquids inside your brick supply or touchmonitor. If liquid does get inside, have a qualified service technician check it before you power it on again.
- Do not wipe the screen with a cloth or sponge that could scratch the surface.
- To clean the touchscreen, use window or glass cleaner. Put the cleaner on the rag and wipe the touchscreen. *Never* apply the cleaner directly on the touchscreen.

APPENDIX

C

TECHNICAL SPECIFICATIONS

Compatibility Modes

Your Elo Entuitive touchmonitor is compatible with the following standard video modes. All specifications are typical and subject to change.

VESA Modes

Mode	Resolution	Total	Horizontal Nominal Freq. +/- 0.5 kHz	Vertical Nominal Freq. +/- 1 Hz	Nominal Pixel Clock (MHz)
DOS	720 x 400@70Hz	900 x 449	31.469	70.087	28.322
VGA	640 x 480@60Hz	800 x 525	31.469	59.940	25.175
	640 x 480@72Hz	832 x 520	37.861	72.809	31.500
	640 x 480@75Hz	840 x 500	37.500	75.000	31.500
SVGA	800 x 600@56Hz	1024 x 625	35.156	56.250	36.000
	800 x 600@60Hz	1056 x 628	37.879	60.017	40.000
	800 x 600@72Hz	1040 x 666	48.077	72.188	50.000
	800 x 600@75Hz	1056 x 625	46.875	75.000	49.500
XGA	1024 x 768@60Hz	1344 x 804	48.363	60.004	65.000
	1024 x 768@70Hz	1328 x 806	56.476	70.069	75.000
	1024 x 768@75Hz	1312 x 800	60.023	75.029	78.750
	1152 x 864@75Hz	1600 x 900	67.500	75.000	108.00
SXGA	1280 x 1024@60Hz	1688 x 1066	63.981	60.020	108.00
	1280 x 1024@75Hz	1688 x 1066	79.976	75.025	135.00

Display Timing

IBM MODES					
Mode	**Resolution**	**Total**	**Horizontal Nominal Freq. +/- 0.5 kHz**	**Vertical Nominal Freq. +/- 1 Hz**	**Nominal Pixel Clock (MHz)**
EGA	640 x 350@70Hz	800 x 449	31.469	70.086	25.175
CGA	640 x 400@70Hz	800 x 449	31.469	70.086	25.175
DOS	720 x 400@70Hz	900 x 449	31.469	70.087	28.322
VGA	640 x 480@60Hz	800 x 525	31.469	59.940	25.175
XGA	1024 x 768@72Hz	1304 x 798	57.515	72.1	75.000

MAC MODES					
Mode	**Resolution**	**Total**	**Horizontal Nominal Freq. +/- 0.5 kHz**	**Vertical Nominal Freq. +/- 1 Hz**	**Nominal Pixel Clock (MHz)**
VGA	640 x 480@60Hz	800 x 525	31.469	59.940	25.175
	640 x 480@67Hz	864 x 525	35.000	66.667	30.240
SVGA	832 x 624@75Hz	1152 x 667	49.725	74.551	57.283
XGA	1024 x 768@60Hz	1312 x 813	48.780	60.001	64.000
	1024 x 768@75Hz	1328 x 804	60.241	74.927	80.000

Touchmonitor Specifications

Display Type	17” TFT
Resolution	SXGA 1280 x 1024 Max.
Pixel dimension	0.264 mm (H) x 0.264 mm (V)
LCD display color	16.7M Colors max.
OSD controls	H/V Position, Clock, Phase, Auto Config, Input, Information, Recall, Sharpness, Color, OSD Adjust, Contrast, Brightness, Exit
Manual controls	Menu, Select, Adjust (3,4), Power.
Viewing angle	H: ± 60× max. V: ± 60× max.
Tilt	+30°, -5°
Contrast ratio	400:1Typ.
Brightness	250 cd/ m2/panel 225 cd/m2 IntelliTouch 220 cd/m2 AccuTouch
Response time	Rise time 45ms typ.
Active display area	337.9 mm(H) x 270.3 mm(V)
AC/DC adapter	Input AC 100 ~ 240V, 50 ~ 60Hz Output +12 V DC, 4-6A max.
Input signal	Video Analog 0.7 Vp-p. 75 ohms Sync. TTL Level, Positive/Negative, Separate Sync.
Input connector	15 Pin D-Sub.
Regulation	UL, CUL, TÜV- Bauart, FCC, CE, C-Tick, VCCI EMI FCC-B
Dimensions	445 mm (W) x 440 mm (H) x 190 mm (D).
Weight	8.7 Kgs. (unpacked)
Accessories	VGA cable, AC/DC adapter, US and European power cord, Mac adapter, touch cable.
Temperature	Operation 0 ~ 40°C Storage 20 ~ 60°C
Plug & Play	DDC 2B

AccuTouch Touchscreen Specifications

Mechanical	
Positional Accuracy	Standard deviation of error is less than 0.080 in. (2.03 mm). Equates to less than ±1%.
Touchpoint Density	More than 100,000 touchpoints/in^2 (15,500 touchpoints/cm^2).
Touch Activation Force	Typically less than 4 ounces (113 grams).
Surface Durability	Surface durability is that of glass, Mohs' hardness rating of 7.
Expected Life Performance	AccuTouch technology has been operationally tested to more than 35 million touches in one location without failure, using a stylus similar to a finger.
Sealing	Unit is sealed to protect against splashed liquids, dirt, and dust.
Optical	
Light Transmission	(per ASTM D1003) 80%; ±5%
Visual Resolution	All measurements made using USAF 1951 Resolution Chart, under 30X magnification, with test unit located approximately 1.5 in (38 mm) from surface of resolution chart. Antiglare surface: 6:1 minimum.
Gloss (per ASTM D2457 using a 60-degree gloss meter)	Antiglare surface: Flat: 90 ± 20 gloss units.
Environmental	
Chemical Resistance	The active area of the touchscreen is resistant to all chemicals that do not affect glass, such as: Acetone Methylene chloride Methyl ethyl ketone Isopropyl alcohol Hexane Turpentine Mineral spirits Unleaded Gasoline Diesel Fuel Motor Oil Transmission Fluid Antifreeze Ammonia based glass cleaner Vinegar
Electrostatic Protection (per EN 61 000-4-2)	The touchscreen withstands 20 discharges of 15KV, distributed randomly across the active area of the touchscreen with proper transient protection.

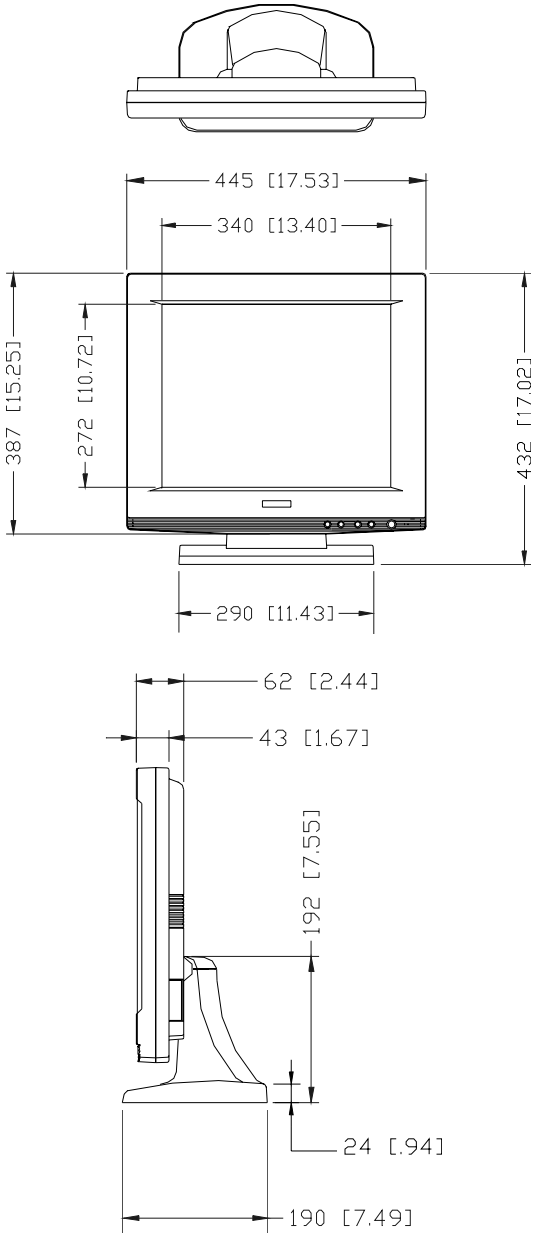
See http:/www.elotouch.com/products/accutec/accuspec.asp for complete and updated specifications.

IntelliTouch Touchscreen Specifications

Mechanical	
Positional Accuracy	Standard deviation of error is less than 0.080 in. (2.03 mm). Equates to less than ±1%.
Touchpoint Density	More than 100,000 touchpoints/in^2 (15,500 touchpoints/cm^2).
Touch Activation Force	Typically less than 3 ounces (85 grams).
Surface Durability	Surface durability is that of glass, Mohs' hardness rating of 7.
Expected Life Performance	No known wear-out mechanism, as there are no layers, coatings, or moving parts. IntelliTouch technology has been operationally tested to more than 50 million touches in one location without failure, using a stylus similar to a finger.
Sealing	Unit is sealed to protect against splashed liquids, dirt, and dust.
Optical	
Light Transmission (per ASTM D1003)	90%
Visual Resolution	All measurements made using USAF 1951 Resolution Chart, under 30X magnification, with test unit located approximately 1.5 in (38 mm) from surface of resolution chart. Antiglare surface: 6:1 minimum.
Gloss (per ASTM D2457 using a 60-degree gloss meter)	Antiglare surface: Flat: 85 ± 20 gloss units.
Environmental	
Chemical Resistance	The active area of the touchscreen is resistant to all chemicals that do not affect glass, such as: Acetone Toluene Methyl ethyl ketone Isopropyl alcohol Methyl alcohol Ethyl acetate Ammonia-based glass cleaners Gasoline Kerosene Vinegar
Electrostatic Protection (per EN 61 000-4-2, 1995)	Meets Level 4 (15 kV air/8 kV contact discharges).

See http://www.elotouch.com/products/inteltec/intelspec.asp for complete and updated specifications.

17" LCD Desktop Touchmonitor (ET1725L-XSWA-1) Dimensions



NOTE: Dimensions in millimeters [inches]

REGULATORY INFORMATION

I. Electrical Safety Information:

A) Compliance is required with respect to the voltage, frequency, and current requirements indicated on the manufacturer's label. Connection to a different power source than those specified herein will likely result in improper operation, damage to the equipment or pose a fire hazard if the limitations are not followed.

B) There are no operator serviceable parts inside this equipment. There are hazardous voltages generated by this equipment which constitute a safety hazard. Service should be provided only by a qualified service technician.

C) This equipment is provided with a detachable power cord which has an integral safety ground wire and 3-prong connector intended for connection to a grounded safety outlet.

1) Do not substitute the cord with other than the provided approved type. Under no circumstances use an adapter plug to connect to a 2-wire outlet as this will defeat the continuity of the grounding wire.

2) The equipment requires the use of the ground wire as a part of the safety certification, modification or misuse can provide a shock hazard that can result in serious injury or death.

3) Contact a qualified electrician or the manufacturer if there are questions about the installation prior to connecting the equipment to mains power.

II. Emissions and Immunity Information

A) Notice to Users in the United States: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment 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.

B) Notice to Users in Canada: This equipment complies with the Class B limits for radio noise emissions from digital apparatus as established by the Radio Interference Regulations of Industrie Canada.

C) Notice to Users in the European Union: Use only the provided power cords and interconnecting cabling provided with the equipment. Substitution of provided cords and cabling may compromise electrical safety or CE Mark Certification for emissions or immunity as required by the following standards:

This Information Technology Equipment (ITE) is required to have a CE Mark on the manufacturer's label which means that the equipment has been tested to the following Directives and Standards:

This equipment has been tested to the requirements for the CE Mark as required by EMC Directive 89/336/EEC indicated in European Standard EN 55 022 Class B and the Low Voltage Directive 73/23/EEC as indicated in European Standard EN 60 950.

D) General Information to all Users: This equipment generates, uses and can radiate radio frequency energy. If not installed and used according to this manual the equipment may cause interference with radio and television communications. There is, however, no guarantee that interference will not occur in any particular installation due to site-specific factors.

1) In order to meet emission and immunity requirements, the user must observe the following:

a) Use only the provided I/O cables to connect this digital device with any computer.

b) To ensure compliance, use only the provided manufacturer's approved line cord.

c) The user is cautioned that changes or modifications to the equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

2) If this equipment appears to cause interference with radio or television reception, or any other device:

a) Verify as an emission source by turning the equipment off and on.

b) If you determine that this equipment is causing the interference, try to correct the interference by using one or more of the following measures:

i) Move the digital device away from the affected receiver.

ii) Reposition (turn) the digital device with respect to the affected receiver.

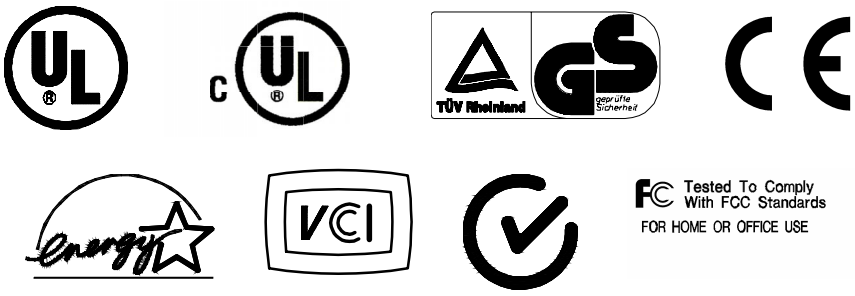
iii) Reorient the affected receiver's antenna.

iv) Plug the digital device into a different AC outlet so the digital device and the receiver are on different branch circuits.

v) Disconnect and remove any I/O cables that the digital device does not use. (Unterminated I/O cables are a potential source of high RF emission levels.)

vi) Plug the digital device into only a grounded outlet receptacle. Do not use AC adapter plugs. (Removing or cutting the line cord ground may increase RF emission levels and may also present a lethal shock hazard to the user.)

If you need additional help, consult your dealer, manufacturer, or an experienced radio or television technician.


Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

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