![Elo TouchSystems logo]

![Tyco Electronics logo]

Touchmonitor User Guide

1928L 19" LCD Desktop Touchmonitor

5000 Series

 elo
TOUCHSYSTEMS

Tyco Electronics

Our commitment. Your advantage.

User Guide

1928L 19" LCD Desktop Touchmonitor

Revision C

P/N E116103

Warnings and Cautions

⚠️ Warning

- Danger - Explosion hazard. Do not use in the presence of flammable anesthetics, and other flammable materials.
- To prevent fire or shock hazards, do not immerse the unit in water or expose it to rain or moisture.
- Do not use the unit with an extension cord receptacle or other outlets unless the prongs of the power cord can be fully inserted.
- RISK OF ELECTRICAL SHOCK - DO NOT OPEN. To reduce the risk of electrical shock, DO NOT remove the back of the equipment or open the enclosure. No user-serviceable parts are inside. Refer servicing to qualified field service engineers only.
- Uninsulated voltage within the unit may have sufficient magnitude to cause electrical shock. Avoid contact with any part inside the unit.
- This device complies with all applicable electromagnetic emission and immunity standards for medical device equipment. This device is designed to not cause harmful interference, and to accept any interference received, including interference that may cause undesired operation. The performance of this device is limited to the emission and immunity standards that have been applied. Other device which are not designed to withstand emission levels as specified in the medical device standards may be susceptible to interference from this device. Subjecting the device to conditions beyond the rated performance capabilities may result in emissions in excess of the standard. If it is determined that this device produces electromagnetic or other interference it must be disconnected from power until the cause of the problem has been determined and resolved. If it is determined that this device is functioning improperly due to electromagnetic and other interference it must be disconnected from power until the cause of the problem has been determined and resolved.
- Elo TouchSystems recommends that after its useful life (or after sustaining unrepairable damage), customers dispose of the touchmonitor and its power supply in an environmentally sound manner. Acceptable methods include the reuse of parts or whole products and the recycling of products, components, and materials. Please consult and obey national state, and local laws and ordinances governing the safe disposal of electronic equipment.
  Note that the fluorescent lamps inside this product contain mercury and must be recycled or disposed of according to local, state, or national laws. For more information, contact the Electronic Industries Alliance at www.eiae.org.

This product consists of devices that may contain mercury, which must be recycled or disposed of in accordance with local, state, or federal laws. (Within this system, the backlight lamps in the monitor display contain mercury.)

Caution

- Power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord.
- This unit must follow the national requirement and local state laws to dispose unit.
- Before connecting the cables to your Elo touchmonitor, make sure all components are powered OFF.
  Only approved components complying with IEC60601-1 series can be connected to ET1928L in Patient Environment. The use of ACCESSORY equipment not complying with the equivalent safety requirements of this equipment may lead to a reduced safety of the resulting system. Consideration relating to the choices of accessory equipment should include:· Use of accessory in the patient environment.· Evidence that the safety certification of the accessory has been performed in accordance to the appropriate IEC 60601-1 and/or IEC 60601-1-1 har monized national standard.
- For continued safety -
  - This unit only complies to the above standards if used with a medical grade power cord.
  -A medical grade power supply, such as the one specified, is required for use in a medical application.

Note:
- This symbol alerts the user to important information concerning the operation and maintenance of this unit, which should be read carefully to avoid problems.
- This symbol means DC Current.
- This symbol means ON/OFF stand-by switch.

⚠ CAUTION-Life Support

Care must be taken when this touchmonitor is a critical component of a life support system or device. In case of failure of this touchmonitor, appropriate redundant systems should be incorporated into the system or device to prevent injury to the user or patient.

The following should be an integral part of the safety design of a life support system or device using this touchmonitor for a critical function.
• An alternate interface or fail-safe must be available should the touchscreen fail to operate.
• The touchscreen interface must not be the only means of control of a critical function.
• An alternate video display should be incorporated into the safety design if used to monitor a critical function.
• The internal speakers of this touchscreen monitor must not be the sole method of warning of a critical function.

Critical functions are:
1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reason ably expected to result in significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

Definitions:
" PATIENT ENVIRONMENT"
any environment in which intentional or unintentional contact can occur between a PATIENT and parts of the ME EQUIPMENT or ME SYSTEM or between a PATIENT and other persons touching parts of the ME EQUIPMENT or ME SYSTEM.

Classification

UL 60601-1
CAN/CSA C22.2 No.601.1

E230760
07EG

With respect to electrical shock, fire in accordance with UL60601-1 and CAN/CSA C22.2 No. 60601-1

This monitor is a Class I (GROUNDED) DEVICE.

These displays are classified NO APPLIED PARTS EQUIPMENT.

Protection against harmful ingress of water:

INGRESS PROTECTION (IPX1)

This monitor shall be classified as ORDINARY EQUIPMENT, not intended or evaluated for use in the presence of flammable anesthetic mixture with air, oxygen, or nitrous oxide.

Mode of Operation: CONTINUOUS OPERATION.

Environmental conditions for transport and storage

Temp.	Operating	0°C to 40°C
	Storage / Transportation	-20°C to $+60^{o}$C

Humidity (non-condensing)

	Operating	30% to 70%
	Storage / Transportation	10% to 90%

Altitude	Operating	1060hpa.
	Storage / Transportation	0 to 40,000ft(12,192m)
		Equivalent to 1013-303 hP.A
		(14.7 to 4.4 psia)

For full Product Specifications refer to Appendix C

European Standards and Classifications

Standards: EN 60601-1-2: 2001

The EMC limits and test methods are referred to the following standards:

Emission:	Immunity
CISPR 11: 2003+A1:2004	IEC 61000-4-2: 2001
AS/NZS CISPR 11:2004	IEC 61000-4-3: 2002+A1:2002
(Group 1, Class B)	IEC 61000-4-4: 2004
	IEC 61000-4-5: 2001
EN55011: 1998+A1: 1999+	IEC 61000-4-6: 2003+A1:2004
A2: 2002, (Group 1, Class B)	IEC 61000-4-8: 2001
	IEC 61000-4-11: 2004
IEC 61000-3-2: 2000,	
(Refer to note * below)	
IEC 61000-3-3; 1995+A1: 2001	

Note *: The power consumption of EUT is 50.474W, which is less than 75W and no limits apply. Therefore it is deemed to comply with IEC 61000-3-2: 2000 without any testing.

Guidance and manufacturer's declaration-electromagnetic immunity-for all EQUIPMENT AND SYSTEMS

Guidance and manufacturer's declaration-electromagnetic emissions		
The ET1928L is intended for use in the electromagnetic environment specified below. The customer or the user of the ET1928L should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment-guidelines
RF emissions CISPR 11	Group 1	The ET1928L uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The ET1928L is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonics emissions IEC 61000-3-2	Not applicable	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacturer's declaration-electromagnetic immunity-
for all EQUIPMENT AND SYSTEMS

Guidance and manufacturer's declaration-electromagnetic immunity

The ET1928L is intended for use in the electromagnetic environment specified below. The customer or the user of the ET1928L should assure that it is used in such an environment.

Immunity test test level	IEC 60601	Compliance level	Electromagnetic environment-guidelines
Electrostatic discharge(ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical Fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines	Mains power quality should be that of a typical commerical or hospital environment.
Surge IEC 61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	Mains power quality should be that of a typical commerical or hospital environment.
Voltage dips, short interruption and voltage variations on power supply input lines IEC 61000-4-11	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 25 cycles	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60 % dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 25 cycles	Mains power quality be that of a typical commerical or hospital environment. If the user of the ET1928L requires continued operation during power mains interruptions, it is recommended that the ET1928L be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commerical or hospital environment.

NOTE U_T is the a.c. mains voltage prior to application of the test level.

Guidance and manufacturer's declaration-electromagnetic immunity- for all EQUIPMENT AND SYSTEMS that are not LIFE-SUPPORTING

Guidance and manufacturer's declaration-electromagnetic immunity			
The ET1928L is intended for use in the electromagnetic environment specified below. The user of the ET1928L should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment-guidelines**
Conducted RF Radiated RF IEC 61000-4-3	3 Vrms 3 V/m 80 MHz to 2.5 GHz	3 Vrms 3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of theET1928L, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d=1.2\sqrt{P}$ $d=1.2\sqrt{P}$ 80MHz to 800 MHz $d=2.3\sqrt{P}$ 800 NHz to 2.5GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres(m) Filed strengths from fixed RF transmitters, as determined by an electromagnetic site survey [3], should be less than the compliance level in each frequency range[4]. Interference may occur in the vicinity of equipment marked with the following symbol:
NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies. NOTE 2 These guidelines may not apply in all situation. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
[3.] Filed strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured filed strength in the location in which the ET1928L is used exceeds the applicable RF compliance level above, the ET1928L should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the ET1928L. [4.] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 Vrms.			

Recommended separation distance between portable and mobile RF communications equipment and the ET1928L for all EQUIPMENT AND SYSTEMS that are not LIFE-SUPPORTING

Recommended separation distances between portable and mobile RF communications equipment and the ET1928L			
The ET1928L is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the ET1928L can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications (equipment) and the ET1928L as recommended below according to the maximum output power of the communications equipment.			
	Separation distance according to frequency of transmitter		
Rated maximum output power of transmitter W	150 kHz to 80 MHz $d=1.2\sqrt{P}$	80MHz to 800 MHz $d=1.2\sqrt{P}$	800 MHz to 2.5 GHz $d=2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.74
1	1.2	1.2	2.3
10	3.7	3.7	7.4
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres(m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts(W) according to the transmitter manufacturer. NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies. NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

Table of Contents

1

INTRODUCTION

Product Description

The 1928L is a medical display designed to present information to the operator and the customer. The 1928L is available in serial and USB(combo) touch interface as well as non-touch. The 1928L functionally consists of a 19" LCD main display with a touchscreen. The main display element is a 19" diagonal SXGA resolution (1280 x 1024) LCD display. The display consists of an LCD display and touchscreen. The 1928L is powered by 12 VDC from an external medical grade power source.

LCD Display Performance Features

19" TFT LCD Display Panel

Display format	1280 x 1024
Display area	376.32 mm (H) x 301.056 mm (V)
Pixel pitch	0.294 mm (H) x 0.294 mm (V)
Contrast Ratio	1300:1(typical)
Brightness	
LCD	300 cd/m² (typical)
AccuTouch	246 cd/m² (typical)
IntelliTouch	276 cd/m²(typical)
Accutouch transmission	82% (typical)
Intellitouch transmission	92% (typical)
Response time	Tr = 15 msec / Tf = 5 msec typical;
	12 ms gray to gray response
Display color	16.7 million colors
Typical vertical viewing angle	89 deg (down) / 89 deg (up)
Typical horizontal viewing angle	89 deg (left) / 89 deg (right)

External Medical Grade Power Supply

The 1928L is powered by an external medical grade universal input AC power source.

Power supply:

- AC power: Input voltage 100 -240 VAC, 1.0A
- Input frequency 50/60 Hz
- DC output Voltage/Current: 12 VDC/4.0A
- Load regulation: ±5% Max.
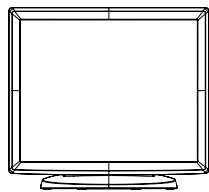- Line regulation: ±1% Max.

2

INSTALLATION AND SETUP

This chapter discusses how to install your LCD touchmonitor and how to install Elo TouchSystems driver software.
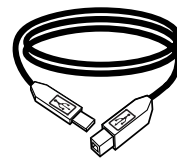
Unpacking Your Touchmonitor

Check that the following items are present and in good condition:

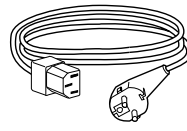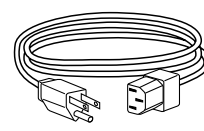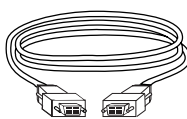|		
LCD monitor	VGA cable	USB cable
Serial Cable	European power cable	Power cable US/Canada
DVI Cable	CD and Quick Install Guide	Power adaptor
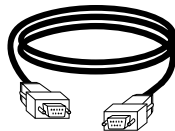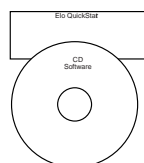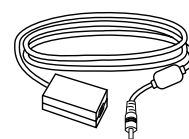
Product Overview

Main Unit
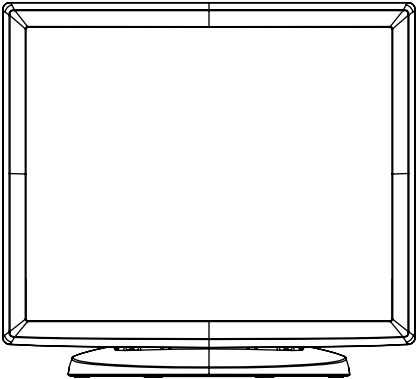
Back Unit
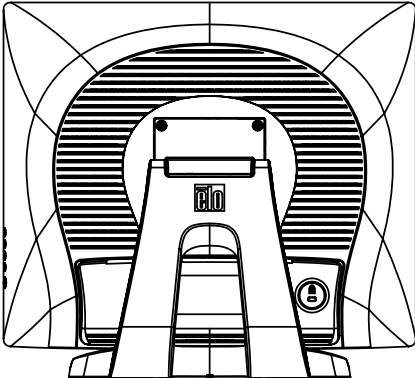
Side View
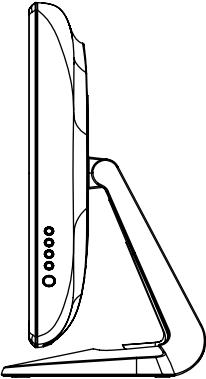
Base Bottom View
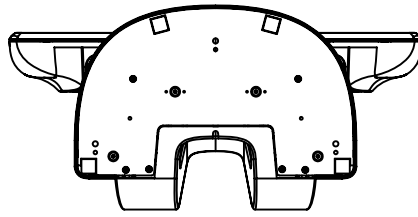
Kensington™ Lock

The Kensington™ lock is a security device that prevents theft. To find out more about this security device, go to http://www.kensington.com.

Touch Interface Connection

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

STEP 1-Connecting the Video Cable
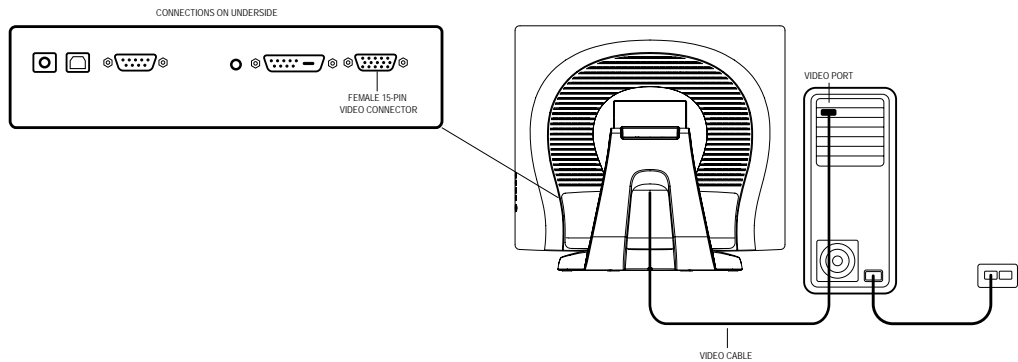
- Tilt the screen up and back to access the connection ports.
- Connect the 15-pin video cable (the ferrite bead end) or 24-pin DVI-D cable to the video port on your PC.
- Connect the other end of the video cable to the video connector on your touchmonitor.
- Secure the cable to your touchmonitor and PC by turning the screws on the connector clockwise.

STEP 2-Connecting the Serial and USB Touchscreen Cable
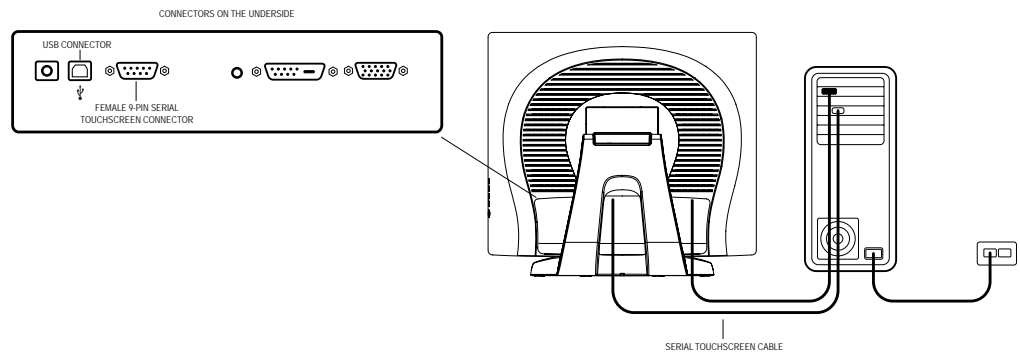
- Connect the female end of the serial (RS-232) cable to the serial port on your PC, or connect the USB(ψ) touchscreen cable to the USB(ψ) touchscreen connector on the back of your touchmonitor.
- Connect the male end of the cable to the serial touchscreen connector on your touchmonitor, or connect the other end of the USB(ψ) touchscreen cable to your PC.
- Secure the cable to your touchmonitor and PC by turning the screws on the connector.
- Please note that you can only have the usb or the serial feature connected. You can not have both connected at the same time.

STEP 3-Connecting the Speaker Cable
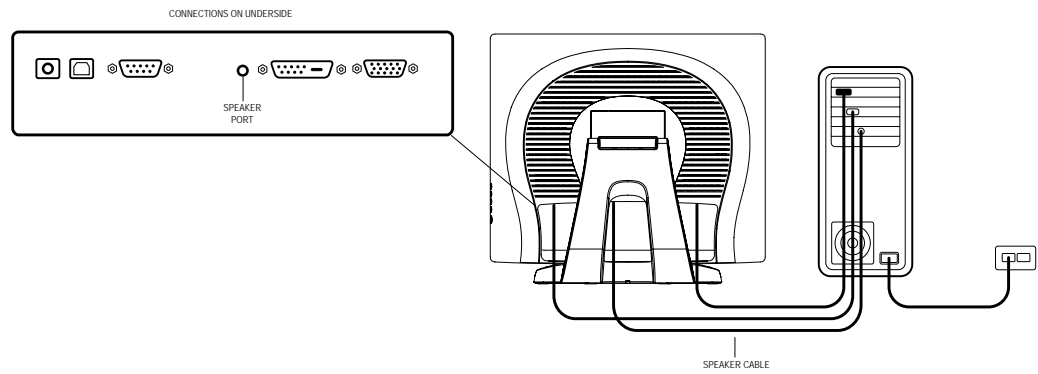
- Connect the light blue end of the speaker cable to the light blue speaker port to the monitor (audio in).
- Connect the lime (light green) end of the speaker cable to the lime speaker port on the computer (audio out).

STEP 4-Connecting the Power Cable

CONNECTIONS ON UNDERSIDE
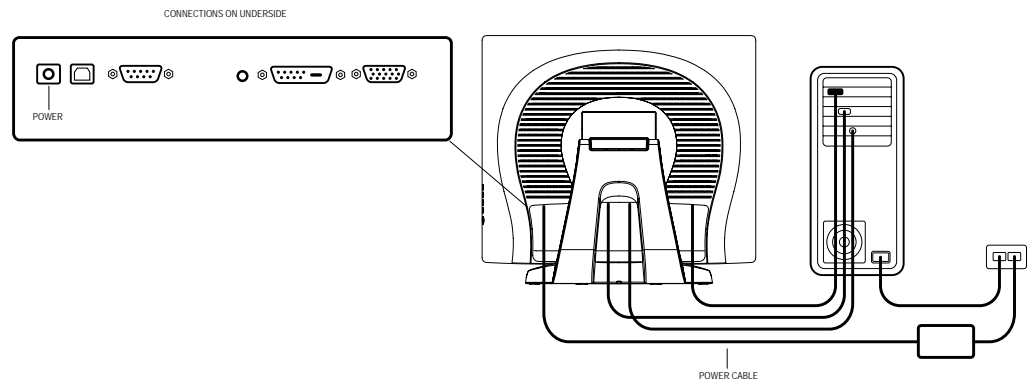
POWER

POWER CABLE

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 medical grade power adaptor.

• Connect the brick power cable into the power port on the touchmonitor.

• Route the cable through the cable management channel.

NOTE: *To protect your equipment against risk of damage from electrical surges in the power line, plug the touchmonitor's power cord into a surge protector, and then connect the surge protector to a grounded AC electrical outlet.*

Mounting the Display

Your medically certified touchscreen display conforms to the VESA Flat Panel Monitor Physical Mounting Interface (FPMPMI) standard. The FPMPMI standard defines a physical mounting interface for flat panel displays. Your display conforms to the corresponding standards for flat panel display mounting devices, such as for walls and table arms. The VESA mounting interface is located on the back of your touchscreen display and is pre-connected to the pedestal.
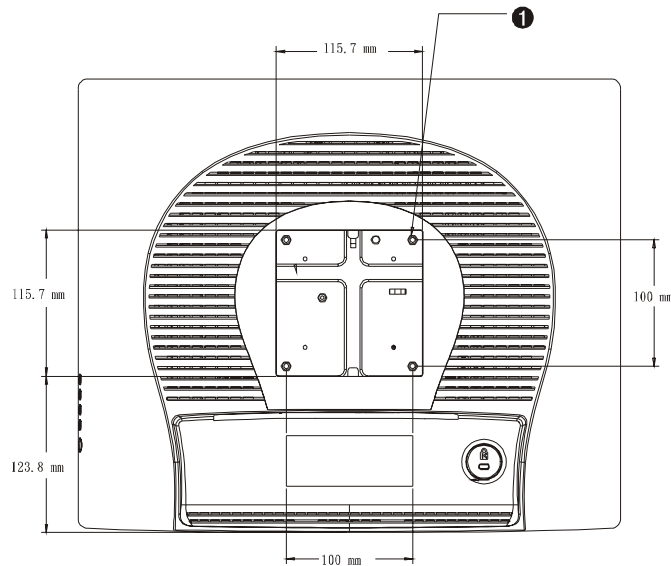
Figure : VESA mounting interface location, pedestal removed

❶ Screw location, M4 Phillips, ×4

Note:*You will need a Phillips screwdriver to mount the display or remove the pedestal.*

Rear Mounting Using the VESA Interface

1 If the display is already connected to a pedestal, remove the four screws that connect the pedestal to the display (refer to *Figure2-1* , item ❶). Separate the pedestal from the display.

2 Reinstall the four screws into the VESA interface mount. Ensure that the monitor is positioned with the correct side up.

3 Mount the monitor to the wall according to the template shown in *Figure 2-2*. Route the cables through the cable access opening (*Figure2-2*, item ❶).
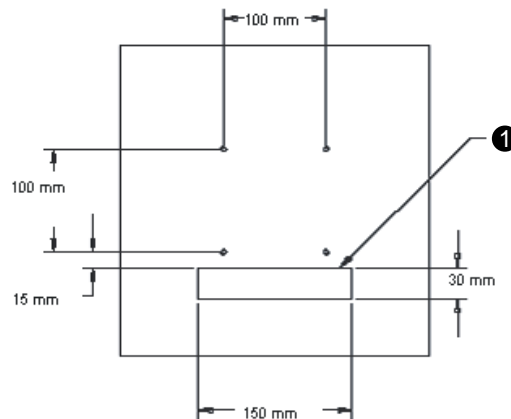
Figure 2-2: Rear mount template (not to scale)

VESA Mounting Options

The following companies provide VESA mounting devices compatible with your touchscreen monitor:

GCX
800-228-2555
707-773-1100
www.gcx.com

Ergotron
800-888-8458
651-681-7600
www.ergotron.com^

Innovative Office Products
800-524-2744
610-253-9554
www.innov-office-prod.com

MRI
800-688-2414
www.mediarecovery.com

Optimizing the LCD Display

To ensure the LCD display works well with your computer, configure the display mode of your graphic card to make it less than or equal to 1280 x 1024 resolution, and make sure the timing of the display mode is compatible with the LCD display. Refer to Appendix A for more information about resolution. Compatible video modes for your touchmonitor are listed in Appendix C.

Installing the Touch 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 XP
- Windows 2000
- Windows Me
- Windows 98
- Windows 95
- Windows NT 4.0
- CE 2.x, 3.0, 4x
- Windows XP Embedded
- Windows 3.x
- MS DOS
- OS/2

Additional drivers and driver information for other operating systems (including Macintosh and Linux) are available on the Elo TouchSystems web site at www.elotouch.com. Your Elo USB 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.

3

OPERATION

About Touchmonitor Adjustments

Your touchmonitor will unlikely require adjustment. Variations in video output and application may require adjustments to your touchmonitor to optimize the quality of the display.

For best performance, your touchmonitor should be operating in native resolution, that is 1280 x 1024 at 60-75 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. To restore factory set up, choose it from the OSD. See page 14, Recall Defaults.

Side Panel Controls
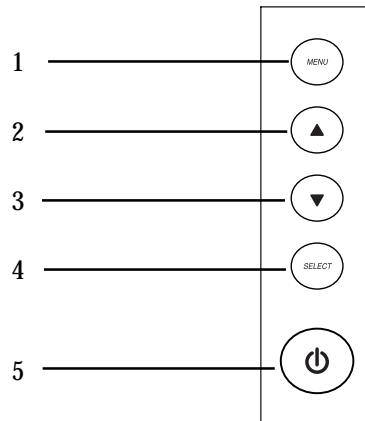
Control	Function
1 **Menu/Exit**	Display/Exits the OSD menus.
2 ▲	1. Enter contrast of the OSD.
	2. Increase value of the adjustment item.
	3. Shuffle item clockwise.
3 ▼	1. Enter audio volume adjustment.
	2. Decrease value of the adjustment item.
	3. Shuffle item counter-clockwise.
4 **Select**	1.Select the adjustment items from the OSD menu.
	2. Enter "Auto Adjust" feature. (VGA mode only)
5 **Power Switch**	Switches the power of the monitor from off to on to off.
	*(**Important note:** Includes integrated power down delay function, user must depress power button for five (5) seconds when powering off)*

Controls and Adjustment

OSD Menu Functions

To Display and Select the OSD Functions:

1 Press the Menu key to activate the OSD menu.
2 Use ▲ or ▼ to move clockwise or counterclockwise through the menu. Press the select key on the monitor. The parameter will be highlighted when selected.
3 To quit the OSD screen at any time during the operation, press the Menu key. If no keys are pressed for a short time period, the OSD automatically disappears.

NOTE: The OSD screen will disappear if no input activities are detected from 45 seconds to 255 seconds, depending on the OSD time setting on the OSD of the monitor. The monitor default is 45 seconds.

OSD Locking and Unlocking Feature

• To Lock OSD, hold Menu and Up Button for 2 seconds. A window pops up showing "OSD unlock" as you hold every 2 seconds the window toggles from "OSD is unlock" to "OSD Lock".

• To Lock Power, hold Menu and Down for 2 seconds. A window pops up showing "Power unlock" as you hold every 2 seconds the window toggles from "Power unlock" to "Power Lock".

• While the OSD and or Power is locked, when the OSD keys are pushed no window shall appear.

OSD Control Options

Control	Description
Contrast	Increases or decreases contrast.
Brightness	Increases or decreases brightness.
V-Position	Moves the screen up or down.
H-Position	Moves the screen left or right.
Recall Defaults	Returns the monitor to its default settings.
Color Balance	Press ▲ or ▼ and "Select" button to select 9300, 6500, 5500, 7500 and USER. Only when selecting USER can you make adjustments to the R/G/B content. Press Select to restore to factory default setting.
Audio Volume	Adjust audio volume of OSD menu.
Sharpness	Adjust Sharpness.
Phase	Increases or decreases the snow noise of the image after auto adjustment is made.
Clock	The dot clock is fine-adjusted after auto adjust.
OSD H-Position	Moves the OSD position horizontally on the screen. When the "SELECT" button and the ▲ button is pressed, the OSD control menu will move to the right side of the screen. Likewise, when the "Select" button and the ▼ button is pressed, the OSD control menu will move to the left side.
OSD V-Position	Moves the OSD position vertically on the screen. When the "SELECT" button and the ▲ button is pressed, the OSD control menu will move to the top side of the screen. Likewise, when the "Select" button and the ▼ button is pressed, the OSD control menu will move to the lower side.
OSD Time	Adjusts the time of OSD icon stays on monitor.
Auto-Adjust	(1)Press Auto to enable this function. The Auto-Adjust will automatically adjust V-Position, H-Position, Clock and Clock-Phase. (VGA only) (2)Indicates the current resolution, H-Frequency and V-Frequency. (DVI and VGA)
OSD Language	Select from English, French, German, Spanish, Japanese, Italian, Chinese, Polish and Swedish.
Input Select	Select video source from DSUB analog to DVI digital.

Power Display & Power Saving

General Power Saving Mode

Mode	Power Consumption
On	48w max.
Sleep	7w max.
Off	4w

Power-Save (No Input)
- The LCD panel background is cut when there is no signal input (AC line power consump tion of 7w or less).

Note: If the monitor is not to be used for an extended period of time, it is recommended that the monitor be turned off.

Display Angle

For viewing clarity, you can tilt the LCD forward (up to -5 degrees) or backward (up to 90 degrees).
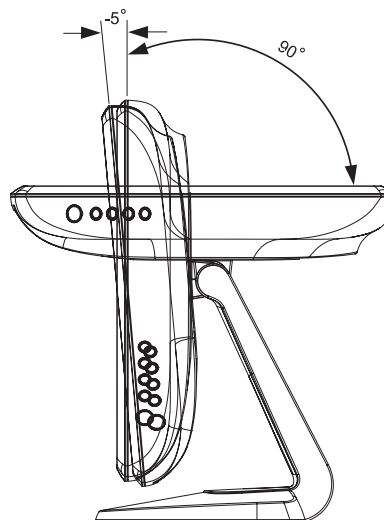
CAUTION
- In order to protect the LCD, be sure to hold the base when adjusting the LCD.
- For models without a touchscreen take care not to touch the screen.

4

TROUBLESHOOTING

If you are experiencing trouble with your touchmonitor, refer to the following table. If the problem persists, please contact your local dealer or our service center. Elo Technical Support numbers are listed on page 31 of this manual.

Solutions to Common Problems

Problem	Suggestion(s)
The monitor does not respond	Check that the monitor's Power Switch is on. You turn on the system.Turn off the power and check the monitor's power cord and signal cable for proper connection.
Characters on the screen are dim	Refer to the Controls and Adjustments section to adjust the brightness.
The screen is blank	During operation, the monitor screen may automatically turn off as a result of the Power Saving feature. Press any key to see if the screen reappears.
	Refer to the Controls and Adjustments section to adjust the brightness.
OSD or power buttons don't work	Check to see that they are not locked. See page 15.
"Out of Range" display"	Check to see of the resolution or vertical frequency of your computer is higher than that of the LCD display.
	Reconfigure the resolution of your computer to make it less than or equal to 1280 x 1024. 1280 x 1024 is optimal. See Appendix A for more information on resolution.
Touch doesn't work	Make sure cable is securely attached at both ends.
Power will not shut off immediately	Be sure to depress power button for five(5) seconds when powering off. Unit includes integrated power down delay function.

A

NATIVE RESOLUTION

The native resolution of a monitor is the resolution level at which the LCD panel is designed to perform best. 1928L native resolution is 1280 x 1024. 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.

Input Video	19.0" LCD
640 x 480 (VGA)	Transforms input format to 1280 x 1024
800 x 600 (SVGA)	Transforms input format to 1280 x 1024
1024 x 768 (XGA)	Transforms input format to 1280 x 1024
1280 x 1024 (SXGA)	Display in Native Resolution

The native resolution of an LCD is the actual number of pixels horizontally in the LCD by the number of pixels vertically in the LCD. LCD resolution is usually represented by the following symbols:

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

As an example, a SVGA resolution LCD panel has 800 pixels horizontally by 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. As an example, the pixel in column 45 and row 26 of the input video is in column 45 and row 26 of the LCD. For the case when the input video is at a lower or higher 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 on its 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 displayed image such as varying width characters.

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.   To reduce the risk of electric shock, follow all safety notices and never open the touchmonitor case.

2.   Turn off the product before cleaning

3.   Your new touchmonitor is equipped with a 3-wire, Hospital Grade grounding power cord. The power cord plug will only fit into a grounded 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.

4.   The slots located on the sides and top of the touchmonitor case are for ventilation. Do not block or insert anything inside the ventilation slots.

5.   It is important that your touchmonitor remains dry. Do not pour liquid into or onto your touchmonitor. If your touchmonitor becomes wet do not attempt to repair it yourself.

Care and Handling of Your Touchmonitor

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

- To avoid risk of electric shock, do not disassemble the external power adaptor 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 display unit cabinet, use a cloth lightly dampened with a mild detergent.
- Avoid getting liquids inside your 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 .

C

TECHNICAL SPECIFICATIONS

Display Modes

Your Elo touchmonitor is compatible with the following standard video modes:

Item	Resolution	Type	H.Scan(KHz)	V. Scan(Hz)	Polarity
1	640 x 350	VGA	31.47	70	+/-
2	720 x 400	VGA	31.47	70	-/+
3	640 x 480	VGA	31.47	60	-/-
4	640 x 480	MAC 66	35	66	-/ -
5	640 x 480	VESA 72	37.86	72	-/ -
6	640 x 480	VESA 75	37.5	75	-/-
7	800 x 600	VESA 56	35.16	56	+/+
8	800 x 600	VESA 60	37.88	60	+/+
9	800 x 600	VESA 75	46.88	75	+/+
10	800 x 600	VESA 72	48.08	72	+/+
11	832 x 624	MAC 75	49.72	75	-/-
12	1024 x 768	VESA 60	48.36	60	-/-
13	1024 x 768	SUN 65	52.45	65	-/-
14	1024 x 768	VESA 70	56.48	70	-/-
15	1024 x 768	VESA 75	60.02	75	+/+
16	1280 x 1024	SXGA	64	60	+/+
17	1280 x 1024	SXGA	80	75	+/+
18	1152 x 864	SXGA	67.5	75	+/+
19	1280 x 960	SXGA	60	60	+/+

Touchmonitor Specifications

Parameter	Value
LCD Display	19.0" TFT Active Matrix Panel
Pixel Pitch	0.294(H) x 0.294(V) mm
Display Mode	VGA 640 x 350 (70 Hz)
	VGA 720 x 400 (70 Hz)
	VGA 640 x 480 (60 / 72 / 75 Hz)
	SVGA 800 x 600 (56 / 60 / 72 / 75 Hz)
	SXGA 1280 x 1024 (60,70,75 Hz)
Native	SXGA 1280 x 1024
Contrast Ratio	1300 : 1 (typical)
Brightness	300 cd/m² with AT 246 cd/m², IT 276 cd/m², IR 276 cd/m²
LCD	300 cd/m² (typical)
AccuTouch	246 cd/m² (typical)
IntelliTouch	276 cd/m² (typical)
Response Time	Tr = 15 msec, Tf = 5 msec typical ; 12 ms gray to gray
Display Color	16.7 million color, 6 bit with dithering
Viewing Angle	(L/R)= -89°/+89° (typical), (U/D) -89°/+89° (typical)
Input Signal	VGA Analog Video R.G.B. Analog 0.7V peak to peak
	Sync TTL Positive or Negative, Composite Sync, Sync on green
	DVI Video Digital TMDS Input
Signal Connector	15 Pin D-Sub, DVI-D
Front Control	Power ON / OFF, Menu, Select OSD Contrast, Brightness, H/V-Position, Recall default, Color Temperature, Sharpness, Phase, Clock OSD H/V position, OSD Time, Auto Adjust, OSD Language, Input Select
Plug & Play	DDC1 / 2B
Touch Panel	AccuTouch , IntelliTouch
Power	
External Power Supply*	AC 100-240V, 50/60 Hz/1.0A
Monitor	DC 12V, 4A
Environmental	
Temp. Operating	0°C to 40°C
Storage/Transportation	-20°C to +60°C
Humidity (non-condensing)	
Operating	30% to 70%
Storage/Transportation	10% to 90%
Altitude Operating	1060hpa
Storage/Transportation	0 to 40,000ft (12,192m) Equivalent to 1013-303 hP.A (14.7 to 4.4 psia)
Dimensions (H x W x D)	429 x 390 x 212 mm
Weight (Net)	8.4kg.
Certifications	UL/cUL(UL 60601-1:2003), FCC, CE, VCCI, C-TICK, IPX1, CB, Argentina S-mark, Demko, Medical Directive, EN 60601-1:2001, CISPR II: 2003+ A1: 2004 Class B, IEC 60529:1989+ A1:1999

* FOR CONTINUED SAFETY - Use only with Hitron Model HES49-12040 adaptor.

Power Supply Cord Selection

North America

Power Supply Cord Detachable, UL Listed, Type SJT 3 conductor, 18 AWG, configured load fittings terminating in molded on parallel blade. Grounding type hospital grade attachment plug, rated at a minimum of 3 amperes.

Basic Cord Type	Equivalent Types
SP-2	SPE-2, SPT-2
SP-3	SPE-3, SPT-3
SV	SVE, SVO, SVOO, SVT, SVTO, SVTOO
SJ	SJE, SJO, SJOO, SJT, SJTO, SJTOO
S	SE, SO, SOO, ST, STO, STOO

Grounding reliability can only be achieved when the EQUIPMENT is connected to an equivalent receptacle marked "Hospital Only" or "Hospital Grade".

Auxiliary Cable Selection

Europe and Asia

Only IEC 60601-1 EMC compliant cables may be used.

Power Supply

Use only a medical grade power supply such as HiTRON HES49-12040.

Accessory Kit

Item	Description	P/N
1	One(1) Elo TouchTools CD part number 450261-000(latest verision)	821500101801
2	One(1) black US medical power cable, 3.0M	5330030005F0
3	One(1) black European power cable, 1.8M	5330005203F0
4	One(1) black serial cable PC99 compliant	5313118016F0
5	One(1) black USB cable PC99 compliant	5313118023F0
6	One(1) black VGA video cable PC99 compliant	5313018028F0
7	One (1) DVI-D video cable PC99 compliant	5313118025F0
8	One(1) Quick Start Guide	821107600101
9	Two(2) desiccant/dryer packs-include one(1) in monitor bag and one(1) in accessory bag	810400200102 810400300102
10	One(1) black Medical grade power adaptor Primary source-Hitron	3316000022F0
11	One(1) black Audio cable	5313118019F0

Cord selection for other than North America

For 100 V ac or 220/230/240 V ac operation, the unit is provided with IEC 320 flexible power cords properly configured for the intended country other than North America. The NOMINAL cross-sectional area (mm2 Cu) must be 0,75. For assistance in selecting the proper power cord contact the Elo distributor in your area or contact Elo (see Appendix D, page 23)

Country	Cert. Agency	Mark	Cert Country	Agency	Mark
Argentina	IRAM		Ireland	NSAI	
Australia	SAA		Italy	IMQ	
Austria	OVE		Japan	MITI	
Beligum	CEBEC		Netherlands	KEMA	
Canada	CSA		Japan	MITI	
China	CCEE		Norway	NEMKO	
Denmark	DEMKO		Sweden	SEMKO	
Finland	FEI		Switzerland	SEV	
France	UTE		United Kingdom	ASTA	
Germany	VDE			BSI	

HAR FLEXIBLE CORD

Approval Organization	Printed or Embossed Harmonization Marking be Located On Jacket or Insulation of Internal Wiring)		Alternative Marking (May Utilizing Black-Red Yellow Thread (Length of color Section, mm)		
Comite Electrotechnique Belge (CEBEC)	CEBEC	<HAR>	10	30	10
Verband Deutscher Elektrotechniker (VDE) e.V. Prufstelle	<VDE>	<HAR>	30	10	10
Union technique de l'Electricite (UTE)	USE	<HAR>	30	10	30
Instituto Italiano del Marchio di Qualita (IMQ)	IEMMEQU	<HAR>	10	30	50
British Approvals Service for Electric Cables (BASEC)	BASEC	<HAR>	10	10	30
N> V. KEMA	KEMA-KEUR	<HAR>	10	30	30
SEMKO AB Svenska Elektriska Materielkontrollanstalter	SEMKO	<HAR>	10	10	50
Österreichischer Verband fur Elektrotechnik (ÖVE)	<ÖVE>	<HAR>	30	10	50
Danmarks Elektriske Materialkontroll	<DEMKO>	<HAR>	30	10	30
National Standards Authority of Ireland (NSAI)	<NSAI>	<HAR>	30	30	50
Norges Elektriske Materiellkontroll (NEMKO)	NEMKO	<HAR>	10	10	70
Asociacion Electrotecnica Y Electronica Espanola (AEE)	<UNED>	<HAR>	30	10	70
Hellenic Organization for Standardization (ELOT)	ELOT	<HAR>	30	30	70
Instituto Portages da Qualidade (IPQ)	np	<HAR>	10	10	90
Schweizerischer Elektro Technischer Verein (SEV)	SEV	<HAR>	10	30	90
Elektriska Inspektoratet	SETI	<HAR>	10	30	90

AccuTouch (resistive) 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/in²(15,500 touchpoints/cm²)
Touch Activation Force	Typical less than 3 ounces(85 grams)
Surface Durability Expected Life Performance	Surface durability is that of glass, Mohs'hardness rating of 7. 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. Clear surface: Excellent, with no noticeable degradation. Antiglare surface: 6:1 minimum.
Gloss (per ASTM D2457 using a 60-degree gloss meter)	Antiglare surface: Curved: 60± 20 gloss units or 75 ±15 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).

IntelliTouch(acoustic) Touchmonitor 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/in² (15,500 touchpoints/cm²).
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)	IntelliTouch 92%, AccuTouch 82%.
Visual Resolution	All measurements made using USAF 1951 Resolution Chart, under 30X magnification, with test unit located approximately 1.5 in (38 mm) from sur face of resolution chart. Clear surface: Excellent, with no noticeable degradation. Antiglare surface: 6:1 minimum.
Gloss (per ASTM D2457 using a 60-degree gloss meter)	Antiglare surface: Curved: 60 ±20 gloss units or 75 ± 15 gloss units.

D

Contact Elo

Elo TouchSystems
301 Constitution Drive
Menlo Park, CA 94025
1-800-ELO-TOUCH
(1-800-356-8682)
www.elotouch.com

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 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 Medical Electrical Equipment 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 re quired by medical device Directive (MDD) 93/42/EEC indicated in European Standard EN60601-1 and EN60601-1-2 (including EN55011 Class B).

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.

WARRANTY

Except as otherwise stated herein or in an order acknowledgment delivered to Buyer, Seller warrants to Buyer that the Product shall be free of defects in materials and workmanship. The warranty for the touchmonitors and components of the product is 3 years.

Seller makes no warranty regarding the model life of components. Seller's suppliers may at any time and from time to time make changes in the components delivered as Products or components.

Buyer shall notify Seller in writing promptly (and in no case later than thirty (30) days after discovery) of the failure of any Product to conform to the warranty set forth above; shall describe in commercially reasonable detail in such notice the symptoms associated with such failure; and shall provide to Seller the opportunity to inspect such Products as installed, if possible. The notice must be received by Seller during the Warranty Period for such product, unless otherwise directed in writing by the Seller. Within thirty (30) days after submitting such notice, Buyer shall package the allegedly defective Product in its original shipping carton(s) or a functional equivalent and shall ship to Seller at Buyer's expense and risk.

Within a reasonable time after receipt of the allegedly defective Product and verification by Seller that the Product fails to meet the warranty set forth above, Seller shall correct such failure by, at Seller's options, either (i) modifying or repairing the Product or (ii) replacing the Product. Such modification, repair, or replacement and the return shipment of the Product with minimum insurance to Buyer shall be at Seller's expense. Buyer shall bear the risk of loss or damage in transit, and may insure the Product. Buyer shall reimburse Seller for transportation cost incurred for Product returned but not found by Seller to be defective. Modification or repair, of Products may, at Seller's option, take place either at Seller's facilities or at Buyer's premises. If Seller is unable to modify, repair, or replace a Product to conform to the warranty set forth above, then Seller shall, at Seller's option, either refund to Buyer or credit to Buyer's account the purchase price of the Product less depreciation calculated on a straight-line basis over Seller's stated Warranty Period.

THESE REMEDIES SHALL BE THE BUYER'S EXCLUSIVE REMEDIES FOR BREACH OF WARRANTY. EXCEPT FOR THE EXPRESS WARRANTY SET FORTH ABOVE, SELLER GRANTS NO OTHER WARRANTIES, EXPRESS OR IMPLIED BY STATUTE OR OTHERWISE, REGARDING THE PRODUCTS, THEIR FITNESS FOR ANY PURPOSE, THEIR QUALITY, THEIR MERCHANTABILITY, THEIR NONINFRINGEMENT, OR OTHERWISE. NO EMPLOYEE OF SELLER OR ANY OTHER PARTY IS AUTHORIZED TO MAKE ANY WARRANTY FOR THE GOODS OTHER THAN THE WARRANTY SET FORTH HEREIN. SELLER'S LIABILITY UNDER THE WARRANTY SHALL BE LIMITED TO A REFUND OF THE PURCHASE PRICE OF THE PRODUCT. IN NO EVENT SHALL SELLER BE LIABLE FOR THE COST OF PROCUREMENT OR INSTALLATION OF SUB-STITUTE GOODS BY BUYER OR FOR ANY SPECIAL, CONSEQUENTIAL, INDIRECT, OR INCIDENTAL DAMAGES.

Buyer assumes the risk and agrees to indemnify Seller against and hold Seller harmless from all liability relating to (i) assessing the suitability for Buyer's intended use of the Products and of any system design or drawing and (ii) determining the compliance of Buyer's use of the Products with applicable laws, regulations, codes, and standards. Buyer retains and accepts full responsibility for all warranty and other claims relating to or arising from Buyer's products, which include or incorporate Products or components manufactured or supplied by Seller. Buyer is solely responsible for any and all representations and warranties regarding the Products made or authorized by Buyer. Buyer will indemnify Seller and hold Seller harmless from any liability, claims, loss, cost, or expenses (including reasonable attorney's fees) attributable to Buyer's products or representations or warranties concerning same.

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Check out Elo TouchSystems Web site!

www.elotouch.com

Get the latest...

• **Product information**

• **Specifications**

• **News on upcoming events**

• **Press release**

• **Software drivers**

Getting in Touch with Elo

To find out more about Elo's extensive range of touch solutions, visit our Web site at www.elotouch.com or simply call the office nearest you:

North American	Europe	Belgium	Asia-Pacific
Elo TouchSystems, Inc.	Elo TouchSystems GmbH & Co. KG	Elo TouchSystems	Touch Panel Systems K.K
301 Constitution Drive,	Haidgraben 6	Diestsesteenweg 692	Sun Homada Bldg. 2F
Menlo Park, CA 94025	D-85521 Ottobrunn	B-3010 Kessel-Lo	1-19-20 Shin-Yokohama
USA	Germany	Belgium	Kanagawa 222-0033
			Japan
(800) ELO-TOUCH(800-356-8682)			
Tel 650-361-4700	Tel +49(89)60822-0	Tel +32(16)35-2100	Tel +81(45)478-2161
Fax 650-361-4747	Fax +49(89)60822-150	Fax +32(16)35-2101	Fax +81(45)478-2180
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elo
TOUCHSYSTEMS

Tyco Electronics
Our commitment. Your advantage.