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# *Elo Entuitive Touchmonitor User Guide 1229L(WWW)*

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For 12.1" LCD Touchmonitors with Optional Magnetic Stripe Reader,  
Finger Print Reader and Rear Facing Customer Display

**entuitive**  
Touchmonitors



*Revision A*

# Elo Entuitive Touchmonitor

## User Guide

12.1" LCD Touchmonitor with Optional Mag  
Stripe Reader, Finger Print Reader and Rear  
Facing Customer Display  
ET1229L Series



### Revision A

P/N E799279

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# INTRODUCTION

## Product Description

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The 1229L is a retail terminal designed to present information to the operator and the customer. The 1229L is available in serial and USB versions. The 1229L functionally consists of a 12.1" LCD main display with a touchscreen, an optional vacuum fluorescent display (VFD) Customer Display, an optional fingerprint reader (USB version only), an optional credit card reader, and a 6 port USB (USB version only) Hub. The main display element is a 12.1 inch diagonal SVGA resolution (800x600) LCD display. The main display will consist of an LCD Display and touchscreen. Three types of touchscreens can be selected in the 1229L as options. They are AccuTouch, Intellitouch, and IR. The Customer Display is a twenty character two line vacuum fluorescent display (VFD). The VFD can display 40 characters in a 20 character 2 row format. Each character is made by various fonts using a 5x7 pixel format matrix. The fingerprint reader translates illuminated images of fingerprints into digital code for further software processing, e.g. enrollment (fingerprint registration) and verification (authentication of registered users). The fingerprint reader uses the SEIR method and CMOS image sensor to capture high contrast, high resolution fingerprint images. A series of algorithms extracts minutiae data from the image, mapping the distinguishing characteristics of fingerprint ridge ends, splits, dots, and arches. To identify or verify a fingerprint, a proprietary matching algorithm compares the extracted minutiae points from the input fingerprint on the optical module to a previously stored sample. The entire matching process takes roughly one second. There is a fingerprint reader available in the USB version of the 1229L and none in the serial version of the 1229L.

The credit card reader reads all three stripes on a standard credit card or drivers license. The credit card is read by sliding the credit card, stripe side toward the display through the credit card reader forward or backward. There is a serial credit card reader and a USB credit card reader.

The Hub provides 4 internal USB ports to be used by the credit card reader, the fingerprint reader, the touchscreen, and the customer display. The hub also supplies two USB ports to the outside of the back of the 1229L for external use. The hub is only used by the USB version of the 1229L. The 1229L is powered by 12 VDC from a universal type power supply brick.

## Detailed LCD Display Performance Requirements

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### 12.1" TFT LCD Display Panel

Display Format:	800 x 600
Display area	12.1" 246.0mm (H) x 184.5mm (V)
Pixel Pitch	12.1" 0.3075mm (H) x 0.3075mm (V)
Contrast Ratio	450 typical
Brightness	350 nits typical with no touchscreen; 287 nits with AccuTouch; 322 nits with IntelliTouch; 322 nits with IR
Accutouch Transmission	82% typical
IntelliTouch Transmission	92% typical
IR Touchscreen Transmission	92% typical
Response Time	Tr = 15 msec/Tf =30 msec typical
Display Color	16.2 million colors with dithering
Horizontal Viewing Angle	+/- 65 degrees typical at CR=10
Vertical Viewing Angle	-50/+45 degrees typical at CR=10

Video Interface Connector	The video interface connector is a High density 15 pin type HD-15.
Indicator Lamps	The LCD display shall provide an indicator lamps to give the status of the Power Management System
Audio Jack	Provides for audio input signal to the stereo speakers mounted in the 1229L.

## Customer Display

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The Customer Display is a twenty character two line vacuum fluorescent display (VFD). It consists of a VFD and VFD controller. There is a serial version controller and a USB controller. The actual VFD is common to the serial and USB versions.

### Serial Version

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#### Optical Parameters

Characters per row	20
Number of rows	2
Character configuration	5x7 dot matrix
Character Height	9.5 mm
Character width	6.2 mm
Character configuration	ASCII
Character color	Blue green
MTBF	300,000 hours

## Fingerprint Reader

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There is a fingerprint reader in the USB version and none in the serial version. General Description-FDU01B is a PC peripheral FRD (Fingerprint Recognition Device) for USB (Universal Serial Bus) connections.

## Specifications

Sensor	SecuGen FOR
Image Capture Speed	600ms / frame
Image Transfer Speed	500Byte / ms
Pixel Resolution	356 x 292
USB Signaling Type	Full Speed Type

## Theory of Operation

The USB host initiates communication with the FDU01 using operation commands (Sensor LED On, Fingerprint Capture Start and Stop). Fingerprint data are then captured by the CMOS sensor at a total image size of 356 x 292 with 8-bit gray level. The image frame transfer speed is 500 bytes/ms. It takes about 600 milliseconds to send one frame of image data over USB protocols.

FDU01 uses the SecuGen FOR (Fingerprint Optic Reader).

## Sensor Specifications

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Sensor	CMOS Image Sensor
Resolution	500dpi
Verifying Time	< 1sec
Image Capture Error Rate	< 0.1%
Life Time Typically	40,000Hrs

## Credit Card Reader

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There is a serial credit card reader and a USB credit card reader.

The USB version is available in HID and Keyboard emulation versions. The reader reads all three stripes on a standard credit card or drivers license. A green LED provides the operator with continuous status of the reader operations.

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Reference Standards-Conform to applicable standards	International Standards Organization, American National Standards Institute, California Drivers License, American Association of Motor Vehicle Administrators
Message Format	ACCII
Card Speed	3 to 50 IPS
MTBF	Electronics 125,000 hrs; Head 1,000,000 passes

## **Six Port USB Hub**

The Hub provides 4 internal USB ports to be used by the credit card reader, the fingerprint reader, the touchscreen, and the customer display. The hub also supplies two USB ports to the outside of the back of the 1229L for external use. The hub is only used by the USB version of the 1229L. The hub meets the following requirements:

### **Specification**

Full compliance with USB specification 1.0, 1.1 and HID Class Definition Rev 1.0.

Hub shall be self powered

Hub shall provide 2 external and 4 internal downstream ports with individual port over current detection, protection and recovery. Supports both Open Host Controller Interface (OHCI) and Universal Host Controller Interface (UHCI).

Supports Suspend and Resume operation.

Bus fault detection and recovery.

## **External 12 VDC Power Supply**

The 1229L shall be powered by 12 VDC from a universal type power supply brick. The power supply shall provide the following capability:

Input voltage 100 to 240 vac

Input frequency 47 to 63 hz

Output voltage 12 vdc

Output line and load regulation +/- 2%



## INSTALLATION AND SETUP

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

### Unpacking Your Touchmonitor

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



Touchmonitor



Brick power supply



VGA cable



Serial cable  
(one for each option)

OR



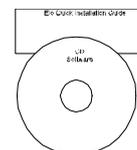
USB cable



Power cable US/Canada



European power cable



CD and Quick Install  
Guide

# Product Overview

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## Main Unit

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## Rear View

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## Side View

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## Base Bottom View

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## Kensington™ Lock

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

## Serial Interface Connection

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Your touchmonitor comes with one of the following touchscreen connector cables: **Serial** (RS-232) cable *or* **USB** cable. (For Windows 98, 2000, Me and XP systems only.)

To set up the display, please refer to the following figures and procedures:

## Remove the Back Cover

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The cables are connected at the back of the monitor.



- To remove the cover, grasp the lip of the cover and pull towards you until it snaps off.

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



**NOTE:** Before connecting the cables to the touchmonitor, route all the cables through the hole in the stand as shown in the picture above.

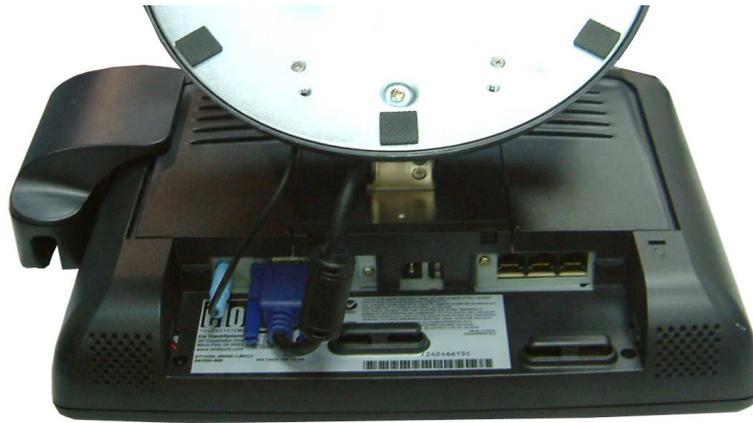
## Serial Connection Option

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The following illustrations guide you step by step in connecting your touchmonitor using a serial cable connection.



- Connect one end of the **video cable** to the rear side of computer and the other to the LCD monitor. Tighten by turning the two thumb screws clockwise to ensure proper grounding.



- Connect one end of the **brick power supply** to the monitor and the other end to the connector of the power cable.
- Connect the **power cable** to the power port in the monitor.
- After connecting the power cable, secure the cable under the cable



- Connect one end of the **speaker cable** to the speaker port in the computer and the other end to the port in the monitor
- After connecting the speaker cable, secure it under the cable management clip.



- Connect one end of the **serial touchscreen cable** to the rear side of computer and the other to the LCD monitor. Secure the cable under the cable management clip



- Connect one end of the **MSR cable** to the computer and the other end to the monitor.



Connect one end of the **customer display cable** to the computer and the other end to the monitor. Secure the cable under the cable management clip.

- Press the **power button** on front panel to turn the monitor power on.

## USB Interface Connection

The following illustrations guide you step by step in connecting your touchmonitor using a USB cable connection.



- Connect one end of the **video cable** to the rear side of computer and the other to the LCD monitor. Tighten by turning the two thumb screws clockwise to ensure proper grounding.



- Connect one end of the **brick power supply** to the monitor and the other end to the connector of the power cable.
- Connect the power cable to the power port in the monitor.
- After connecting the power cable, secure it under the cable management clip.



- Connect one end of the **speaker cable** to the speaker port in the computer and the other end to the port in the monitor. After connecting the speaker cable, secure it under the cable management clip.



- Connect one end of the **USB cable** to the rear side of the computer and the other to the LCD monitor. Secure the cable under the cable management clip.
- The USB cable is for optional touch, MSR, CD and Finger Print Reader. Only one USB cable is needed because the device contains a self powered USB 1.1 Hub. Two self powered ports are available for running other USB devices. For touch only, no USB Hub is present.

## Replace the Back Cover

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- When you have attached all the cables to the monitor, gently bring all the cables toward the stand so they fit under the cover lip.
- Snap the back cover in place over the connections.  
back cover lip cables

## Optimizing the LCD Display

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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 800 x 600 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 Peripheral Device Drivers

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### Finger Print Reader

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**NOTE:** This driver is for MS Windows 9x through XP.

**1** On the TouchTools CD, browse to **Touch Monitor Peripherals\Finger Print Readers\driver\EasyInstall\FDP02**.

**2** Double-click **setup.exe**

Follow the Install Shield Wizard procedure to complete the installation.

For a detailed software development kit, browse to **Touch Monitor Peripherals\Finger Print Readers** and open the following files:

- HDxSDKforWindows1 .20.zip
- SecuBSPSDK for Windows2 .10.zip

You will need to enter the serial number specific to your operating system. The serial number can be found in the ET1229L User Guide on the Touch Tools CDs.

Once the driver setup is complete, the demo program can be run from **Touch Monitor Peripherals\Finger Print Readers\FPR Demo\BSPDemo.exe**

## Magnetic Stripe Reader

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No drivers are needed.

### Testing the Serial Version:

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- 1 Insure the MSR serial is connected. (Make a note of the serial port, COM1, COM2, etc. it is connected to.)
- 2 Launch **HyperTerminal**
- 3 Go to **file>new connection** and type “**MSR**” then select **OK**.
- 4 In the **Connect to Menu** select **Com port** used in step one, then select **OK**.
- 5 In the **Connection Property** box set the following values:
  - Bits per second to 9600
  - Data Bits to 8
  - Parity to None
  - Stop bits to 1
  - Flow control to Hardware

The device will immediately display the serial number. Slide any credit card through the MSR to view the data.

### Testing the USB MSR Keyboard Emulation

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- 1 Plug in the device.
- 2 Open MS Word.
- 3 Slide the card through the MSR to view the data.

### Testing the USB-HID Class MSR

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- 1 On the CD, browse to **Touch Monitor Peripherals\Magnetic Stripe Card Readers\Demo**.
- 2 Open the **Readme.txt** and follow instructions to test the unit.

## Rear Facing Customer Display

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### Serial Customer Display

The serial customer displays do not need drivers. To get an image on the display:

- 1 Plug the DB-9 connector into serial port COM1 of computer.
- 2 Plug the RJ-45 cable into display.
- 3 In windows click on **Start > Run**
- 4 Enter **cmd > OK**
- 5 Type **MODE COM1 96,N,8,1 > Enter**
- 6 Type **TYPE CON > COM1 > Enter**
- 7 Type **ELO > Enter**

The display will show ELO.

### USB Customer Display

Plug in the USB cable attached to the Customer Display unit. The New Hardware Wizard dialog box will appear.

- 1 Choose **Next** and select “**Search for the best driver for your device (Recommended)**” then choose **Next**.
- 2 When a list of search locations is displayed, place a checkmark on the drive containing the driver package:

Touch Monitor Peripherals\Rear Facing Customer Displays\Drivers\xxx\LCLD9.sys, where xxx is Win98 for a Windows 98 based system or 2000 for a Windows XP/2000 based system.

- 3 Insert the disk into your drive. (If the driver files have been copied to your hard drive or have been distributed on CD, place a checkmark on “Specify a location” and browse to select the directory containing the driver files.)
- 4 Choose **Next**. Once the Customer Display driver has been detected choose **Next** again.
- 5 Wait while driver files are copied to your computer.
- 6 Insert your Windows CD if prompted and choose **Finish**

To test the drivers:

- 1** In windows click on **Start > Run**
- 2** Enter **“cmd” > OK**
- 3** Type **“ECHO ELO>.\LCLD9\” > Enter**

The display will show ELO.

## Installing the Touch Driver Software

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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
- MSDOS
- 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](http://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.

## Installing the Serial Touch Driver

### Installing the Serial Touch Driver for Windows XP, 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.
- 2 If the AutoStart feature for your CD-ROM drive is active, the system automatically detects the CD and starts the setup program.
- 3 Follow the directions on the screen to complete the driver setup for your version of Windows.
- 4 If the AutoStart feature is not active:
- 5 Click **Start > Run**.
- 6 Click the **Browse** button to locate the EloCd.exe program on the CD-ROM.
- 7 Click **Open**, then **OK** to run EloCd.exe.
- 8 Follow the directions on the screen to complete the driver setup for your version of Windows.

## Installing the Serial Touch Driver for MS-DOS and Windows 3.1

You must have a DOS mouse driver (MOUSE.COM) installed for your mouse if you wish to continue using your mouse along with your touchmonitor in DOS.

To install Windows 3.x and MS-DOS from Windows 95/98, follow the directions below:

- 1 Insert the Elo CD-ROM in your computer's CD-ROM drive.
- 2 From DOS, type `d:\EloDos_W31` to change to the correct directory on the CD-ROM (your CD-ROM drive may be mapped to a different drive letter).
- 3 Type `install` and press **Enter** to start the installation.
- 4 Align the touchscreen.

You must have already completed Steps 1 and 2 before proceeding. Refer to Chapter 2 of the Elo DOS and Windows Driver Guide as necessary for additional installation information.

To run the INSTALL program:

- 1 Type `INSTALL` at the DOS prompt in the directory containing the driver install files.
- 2 `INSTALL` asks you to select the software to install. Then choose `d:\EloDos_W31` from the displayed list.
- 3 `INSTALL` also asks you for the paths to use during installation, or you may use its defaults. `INSTALL` creates directories as necessary, and warns you if they exist.

If you are updating your software, you may wish to specify the paths containing the earlier versions, and overwrite the obsolete files. All executable programs are upward compatible. For a list of differences from each previous version of the drivers, be sure to select "Differences from Previous Versions" during the installation process.

`INSTALL` updates your `AUTOEXEC.BAT` file with the drivers you select.

`INSTALL` makes a copy of your original `AUTOEXEC.BAT` file, called `AUTOEXEC.OLD`. If you already have Elo driver commands in your `AUTOEXEC.BAT` file, they will be commented out.

When `INSTALL` is finished, it leaves a file called `GO.BAT` in the subdirectory you specified. `GO` loads the touchscreen driver, runs the calibration program `ELOCALIB`, and gives you some final instructions.

If you are using Windows 3.1, you will also calibrate the touchscreen within Windows 3.1 with the Touchscreen Control Panel.

## Installing the USB Touch Driver

---

### Installing the USB Touch Driver for Windows XP, Windows 2000, Me and 98

- 1 Insert the Elo CD-ROM in your computer's CD-ROM drive.  
If Windows XP, Windows 2000, Windows 98, or Windows Me starts the Add New Hardware Wizard:
- 2 Choose **Next**. Select "Search for the best driver for your device (Recommended)" and choose **Next**.
- 3 When a list of search locations is displayed, place a checkmark on "Specify a location" and use **Browse** to select the \EloUSB directory on the Elo CD-ROM.
- 4 Choose **Next**. Once the Elo TouchSystems USB touchscreen driver has been detected, choose **Next** again.
- 5 You will see several files being copied. Insert your Windows 98 CD if prompted. Choose **Finish**.

If Windows XP, Windows 2000, Windows 98, or Windows Me does not start the Add New Hardware Wizard:

**NOTE:** For Windows XP and Windows 2000 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.

## 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 800x600 at 60-75 Hz. Use the Display control panel in Windows to choose 800x600 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 3-35.



Control	Function
1 <b>Power Switch</b>	Turns the display system power <b>on</b> or <b>off</b> .
2 <b>Select</b>	Displays the OSD menus on the screen and used to select (“Up” and “Down” direction) the OSD control options on the screen.
3 ◀	(1) Adjusts the decreasing value of the selected OSD control option.
4 ▶	(1) Adjusts the increasing value of the selected OSD control option.
5 <b>Menu</b>	Menu display and menu exit.

# Controls and Adjustment

---

## OSD Lock/Unlock

---

You are able to lock and unlock the OSD feature. The monitor is shipped in the unlocked position.

To lock the OSD:

- 1 Press the Menu button and ► button simultaneously for 2 seconds. A window will appear displaying “OSD Unlock”. Continue to hold the buttons down for another 2 seconds and the window toggles to “OSD Lock”.

## Power Lock/Unlock

---

You are able to lock/unlock the Power feature. The monitor is shipped in the unlocked position.

To lock the power:

- 1 Press the Menu button and ◀ the simultaneously for 2 seconds. A window will appear displaying “Power Unlock”. Continue holding the buttons down for another 2 seconds and the window toggles to “Power Lock”.

## OSD Menu Functions

---

To display the OSD Menu press the **Menu** button.

- 1 Press the ► button to select the different OSD control option.
- 2 When the function you want to change is displayed, press the **Select** button.

To adjust the Value of the function:

- 1 Pressing the ► button increases the value of the selected OSD control option.
- 2 Pressing the ◀ button decreases the value of the selected OSD control option.

After adjusting the values, the monitor will automatically save the changes.

**NOTE:** The OSD screen will disappear if no input activities are detected for 10 seconds.



	<b>Phase</b>	Controls the vertical fine adjustment.
	<b>Clock</b>	Controls the horizontal fine adjustment.
	<b>OSD H-Position</b>	Adjusts the horizontal position of the OSD menu.
	<b>OSD V-Position</b>	Adjusts the vertical position of the OSD menu.
	<b>OSD Time</b>	Determines how long (in seconds) the OSD menu waits before closing automatically after no action has been performed.
	<b>Auto Adjust</b>	Automatically selects the optimal settings for image parameters (image position, phase, clock).
	<b>OSD Language</b>	Selection of the OSD menu language: English, French, German, Spanish, Japanese.
	<b>Image Information</b>	Displays the current graphics mode.
	<b>Power</b>	When the unit is on and unplugged then plugged back in, the monitor shall be on. When the unit is off and unplugged then plugged back in, the monitor shall be off.

## Power LED Display & Power Saving

---

### General Power Saving Mode

When the power switch are switch **on**, this LED lights in **green**.

The LED indicates the different power status with altered LED colors when monitor operates in different modes (see following table).

Mode	Power			
	Consumption	H-Sync.	V-Sync.	Indicator
<b>On</b>	30W max.	Pulses	Pulses	Green
<b>Standby</b>	4W max.	No	Pulses	Orange
<b>Suspend</b>	4W max.	Pulses	No	Orange
<b>Off</b>	2W max.	No	No	Yellow

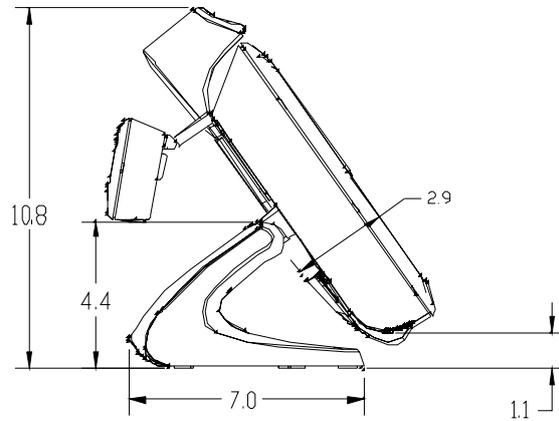
---

We recommend switching the monitor off when it is not in use for a long period of time.

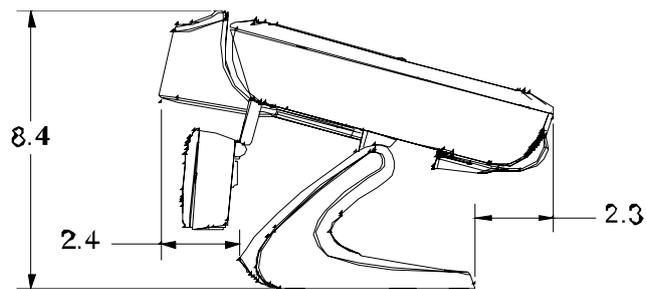
# Display Angle

---

For viewing clarity, you can tilt the LCD forward (up to -5 degrees) or backward (up to 60 degrees.)



Tilt 35° from vertical



Tilt 75° from vertical

**CAUTION** In order to protect the LCD, be sure to hold the base when adjusting the LCD, and take care **not** to touch the screen.

# TROUBLE SHOOTING

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 the last page of this manual.

## Solutions to Common Problems

---

Problem	Suggestion(s)
The monitor does not respond after you turn on the system.	Check that the monitor's Power Switch is on.  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 <i>Controls and Adjustments</i> 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 <i>Controls and Adjustments</i> section to adjust the brightness.
OSD or power buttons don't work	Check to see that they are not locked out. See page 3-33.
"Out of Range" display	check to see of the resolution 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 1024x768. 800x600 is optimal. See Appendix A for more information on resolution.
Touch doesn't work	Make sure cable is securely attached at both ends.





## NATIVE RESOLUTION

The native resolution of a monitor is the resolution level at which the LCD panel is designed to perform best. For the Elo LCD touchmonitor, the native resolution is 800 x 600 for the 12.1 inch size. 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	12.1" LCD
640x480 (VGA)	Transforms input format to 800x600
800x600 (SVGA)	Displays 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	640x480
SVGA	800x600
XGA	1024x768

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 1024 pixels horizontally by 768 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, 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 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 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





# TECHNICAL SPECIFICATIONS

## Display Modes

---

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

Item	Resolution	Type	H. Scan(KHz)	V. Scan(Hz)	Pol.
1	640X350	VGA	31.469	70.087	+ / -
2	720X400	VGA	31.469	70.087	- / +
3	640X480	VGA	31.469	59.940	- / -
4	640X480	VESA72	37.861	72.809	- / -
5	640X480	VESA75	37.500	75.000	- / -
6	800X600	SVGA	35.156	56.250	+ / +
7	800X600	SVGA	37.879	60.317	+ / +
8	800X600	VESA72	48.077	72.188	+ / +
9	800X600	VESA75	46.875	75.000	+ / +

---

# Touchmonitor Specifications

---

<b>Model</b>	<b>ET1229L</b>	
<b>LCD Display</b>	12.1" TFT Active Matrix Panel	
<b>Display Size</b>	246(H) x 184.5(V) mm	
<b>Pixel Pitch</b>	0.3075(H) x 0.3075(V) mm	
<b>Display Mode</b>	VGA 640 x 350 (70 Hz) VGA 720 x 400 (70Hz) VGA 640 x 480 (60 / 72 / 75Hz) SVGA 800 x 600 (56 / 60 / 72 / 75Hz)	
<b>Native</b>	SVGA 800 x 600	
<b>Max. Resolution</b>	SVGA 1024 x 768	
<b>Contrast Ratio</b>	450 : 1 (typical)	
<b>Brightness</b>	350 Cd/m <sup>2</sup> with AT 287 cd/m <sup>2</sup> , IT 322 cd/m <sup>2</sup> , IR 322 cd/m <sup>2</sup>	
<b>Response Time</b>	Tr= 15 msec, Tf= 30 msec; 30 ms (min.) / 100 ms (max.)	
<b>Display Color</b>	16.2M	
<b>Viewing Angle</b>	(L/R)= -65°/+65° (typical), (U/D) +50°/-45° (typical);	
<b>Input Signal</b>	Video	R.G.B. Analog 0.7V peak to peak
	Sync	TTL Positive or Negative
<b>Signal Connector</b>	15 Pin Mini D-Sub	
<b>Front Control</b>	Power on / off with LED, Menu / Select (up, down), Adjustment(+, -) Contrast, Brightness, V-Position, H-Position, Recall Defaults, Color Temperature, Volume, Sharpness, Phase, Clock, OSD H-Position, OSD V-Position, OSD Time, Auto Adjust, OSD Language, Image Information	
<b>OSD</b>		
<b>Plug &amp; Play</b>	DDC1 / 2B	
<b>Touch Panel (optional)</b>	AccuTouch, IntelliTouch and CarrollTouch	
<b>Power Adapter</b>	Input AC 100-240V, 50-60Hz, Output DC 12V/5A (max.)	
<b>Operating Conditions</b>	Temp	0°C ~ 40°C (41°F ~ 95°F)
	Humidity	20% ~ 80% (No Condensation)
	Altitude	To 12,000 Feet
<b>Dimensions (HxWxD)</b>	310 x 312 x 146mm	
<b>Weight (Net)</b>	19.84lbs., monitor weight 11.90 lbs.	
<b>Certifications</b>	UL,C-UL, FCC-A, CE, TUV-GS, VCCI, MPRII, C-TICK	

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# AccuTouch Touchscreen Specifications

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<b>Mechanical Construction</b>	Top: Polyester with outside hard-surface coating with clear or antiglare finish. Inside: Transparent conductive coating. Bottom: Glass substrate with uniform resistive coating. Top and bottom layers separated by Elo-patented separator dots.
<b>Positional Accuracy</b>	Standard deviation of error is less than 0.080 in. (2.03 mm). This equates to less than $\pm 1\%$ .
<b>Touchpoint Density</b>	More than 100,000 touchpoints/in <sup>2</sup> (15,500 touchpoints/cm <sup>2</sup> ).
<b>Touch Activation Force</b>	Typically less than 4 ounces (113 grams).
<b>Surface Durability</b>	Meets Taber Abrasion Test (ASTM D1044), CS-10F wheel, 500 g. Meets pencil hardness 3H.
<b>Expected Life Performance</b>	AccuTouch technology has been operationally tested to greater than 35 million touches in one location without failure, using a stylus similar to a finger.
<b>Optical Light Transmission (per ASTM D1003)</b>	Typically 85% at 550-nm wavelength (visible light spectrum).
<b>Visual Resolution</b>	All measurements made using USAF 1951 Resolution Chart, under 30 X magnification, with test unit located approximately 1.5 in. (38 mm) from surface of resolution chart. Antiglare surface: 6:1 minimum.
<b>Haze (per ASTM D1003)</b>	Antiglare surface: Less than 15%.
<b>Gloss (per ASTM D2457)</b>	Antiglare surface: 90 $\pm$ 20 gloss units tested on a hard-coated front surface.

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# IntelliTouch Touchscreen Specifications

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<b>Mechanical</b>	
<b>Positional Accuracy</b>	Standard deviation of error is less than 0.080 in. (2.03 mm). Equates to less than $\pm 1\%$ .
<b>Touchpoint Density</b>	More than 100,000 touchpoints/in <sup>2</sup> (15,500 touchpoints/cm <sup>2</sup> ).
<b>Touch Activation Force</b>	Typically less than 3 ounces (85 grams).
<b>Surface Durability</b>	Surface durability is that of glass, Mohs' hardness rating of 7.
<b>Expected Life Performance</b>	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.
<b>Sealing</b>	Unit is sealed to protect against splashed liquids, dirt, and dust.
<b>Light Transmission (per ASTM D1003)</b>	Optical 90%
<b>Visual Resolution</b>	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.
<b>Gloss (per ASTM D2457 using a 60-degree gloss meter)</b>	Antiglare surface: Curved: $60 \pm 20$ gloss units or $75 \pm 15$ gloss units.
<b>Environmental</b>	
<b>Chemical Resistance</b>	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
<b>Electrostatic Protection (per EN 61 000-4-2, 1995)</b>	Meets Level 4 (15 kV air/8 kV contact discharges).

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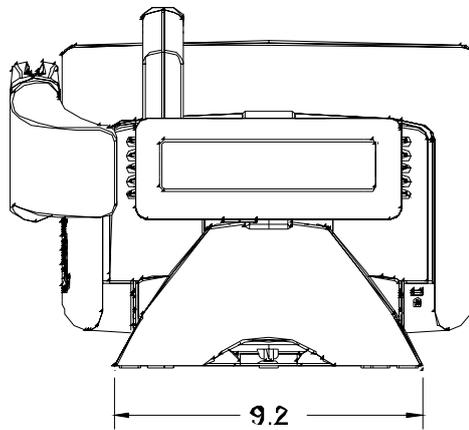
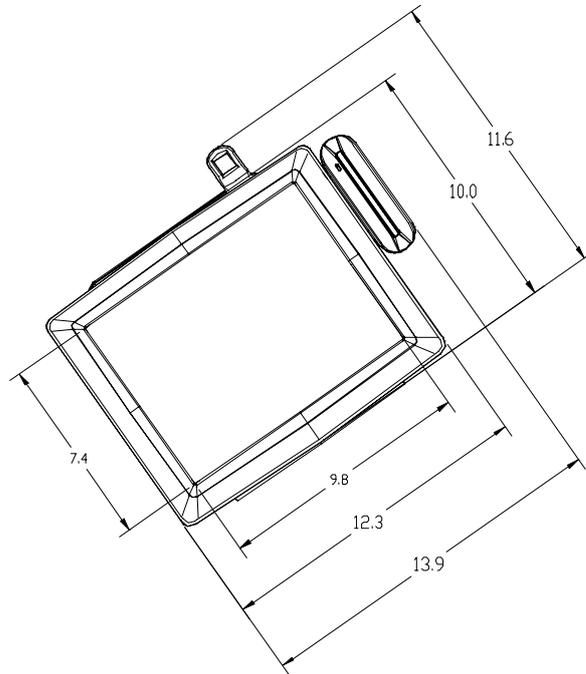
# Infrared Touchscreen Specifications

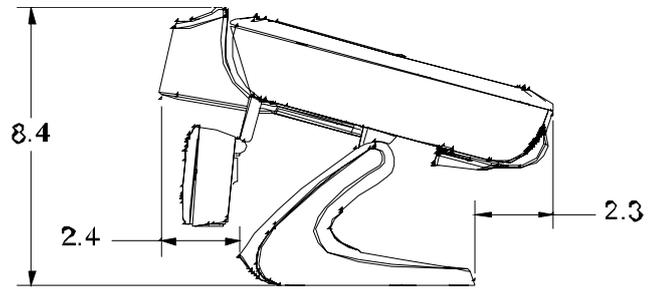
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Mechanical	
<b>Input Method</b>	Input Method Finger or gloved hand activation
<b>Electrical</b>	
<b>Positional Accuracy</b>	Typical centroid accuracy: 2 mm with 1 mm STD error
<b>Resolution</b>	Touchpoint density is based on controller resolution of 4096 x 4096
<b>Touch Activation Force</b>	No minimum touch activation force is required
<b>Controller</b>	Board: Serial (RS232) or USB 1.1
<b>Optical</b>	
<b>Light Transmission</b>	Glass overlay: 90% per ASTM D1003-92
<b>Environmental</b>	
<b>Chemical Resistance</b>	Glass overlays: The touch active area of the touchscreen is resistant to 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. Polycarbonate bezel: around perimeter of display has some sensitivity to hydrocarbons.
<b>Durability</b>	
<b>Surface Durability</b>	Glass filter option: Surface durability is that of glass, Mohs' hardness rating of 7.

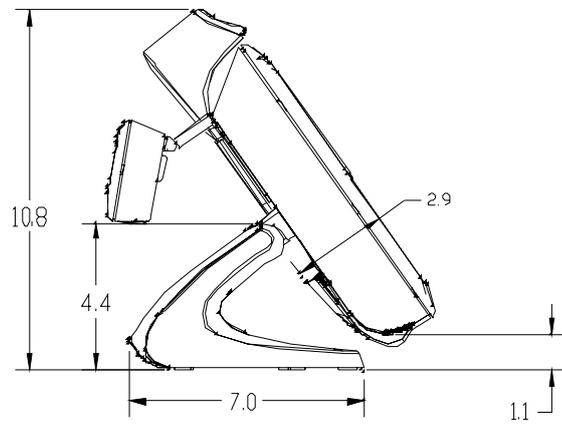
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## 12.1" LCD Touchmonitor (ET1229L-XXWA-1) Dimensions





Tilt 75° from vertical



Tilt 35° from vertical



# 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 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.

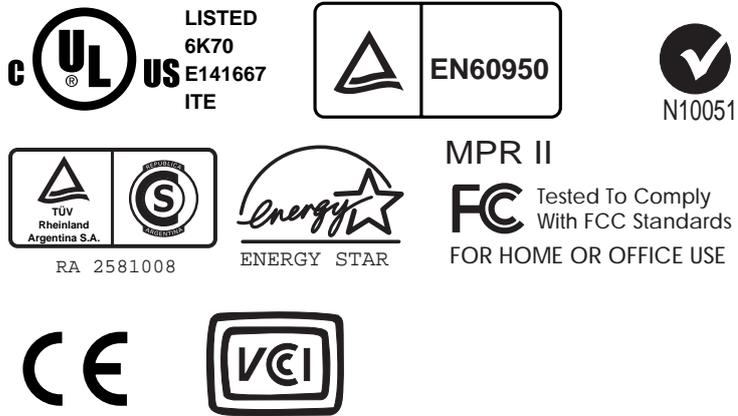
1) In order to meet emission and immunity requirements, the user must observe the following:

- 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.



This Class B digital apparatus complies with Canadian ICES-003.  
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.



# 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. With the exception of the negotiated warranty periods; the warranty for the touchmonitor and components of the product is 2 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 NON-INFRINGEMENT, 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 SUBSTITUTE 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's Web site!**

**[www.elotouch.com](http://www.elotouch.com)**

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**Get the latest...**

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- **Product information**

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  - **Specifications**

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  - **News on upcoming events**

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  - **Press release**

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  - **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](http://www.elotouch.com) or simply call the office nearest you:

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[www.tps.co.jp](http://www.tps.co.jp)

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# Recommended Disassembly Sequence

