IntelliTouch® Zero-Bezel Integration Guide

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Chapter 1: Introduction

About This Manual

This Elo Touch Solutions, Inc. (“Elo”) manual guides the user through the successful implementation of an IntelliTouch Zero Bezel touchscreen into a monitor, touchcomputer, or other electronic device. The intention of the manual is to make integration straightforward while optimizing IntelliTouch Zero Bezel functionality. The intended audience of this manual includes: mechanical design engineers, system engineers, electrical engineers, manufacturing engineers, and product/project managers. Though some of the concepts here may be applicable to other Elo touchscreens, this manual is specific to IntelliTouch Zero Bezel, Surface Acoustic Wave (SAW) technology.

Chapter 1 explains the technology behind an IntelliTouch Zero Bezel touchscreen. Chapter 2 describes how to design and integrate IntelliTouch Zero Bezel touchscreens into monitor systems with proper mounting, sealing, and spacing. Chapter 2 also provides information on appropriate materials and installation techniques. In Chapter 3, a variety of customization options are presented. After reading through this manual, if you still have questions or need help getting your system up and running, please contact an Elo Sales Representative.

Introducing IntelliTouch Zero Bezel

IntelliTouch Zero Bezel technology is a SAW solution that keeps all touch detection hardware on the backside of the touchscreen. The result is a completely flat touch surface. IntelliTouch Zero Bezel SAW enables a seamless and frameless design. Industrial designers are no longer limited by the bezel inherent to other touch technologies.

When properly integrated, IntelliTouch Zero Bezel technology can pass the Microsoft Windows® 7 multi-touch additional qualification (AQ) testing requirements. Elo Touch Solutions has optimized a trusted technology – SAW – to enhance industrial design, touch performance and reliability, and bill of material cost.

IntelliTouch Zero Bezel delivers the same robust performance as Elo’s original IntelliTouch Zero Bezel technology. Touch response is fast, accurate, and drift-free. Pure glass construction provides high light transmission without compromising durability or functionality.

IntelliTouch Zero Bezel features include:

- Completely flat touchscreen that offers sleek, refined appearance
- Pure glass construction allows IntelliTouch Zero Bezel to offer excellent image clarity (up to 92% light transmission) and durability (Mohs hardness of 6.5)
- Extremely fast, sensitive, and high resolution touchscreen
- Activated by soft stylus, finger, and gloved hand

The IntelliTouch Zero Bezel Touchscreen

Figure 1-1 below illustrates how IntelliTouch Zero Bezel technology enables a zero-bezel design by placing all necessary components on the backside of the screen. Each axis of the touchscreen has a transmitting and receiving piezoelectric transducer, and arrays of reflector stripes.

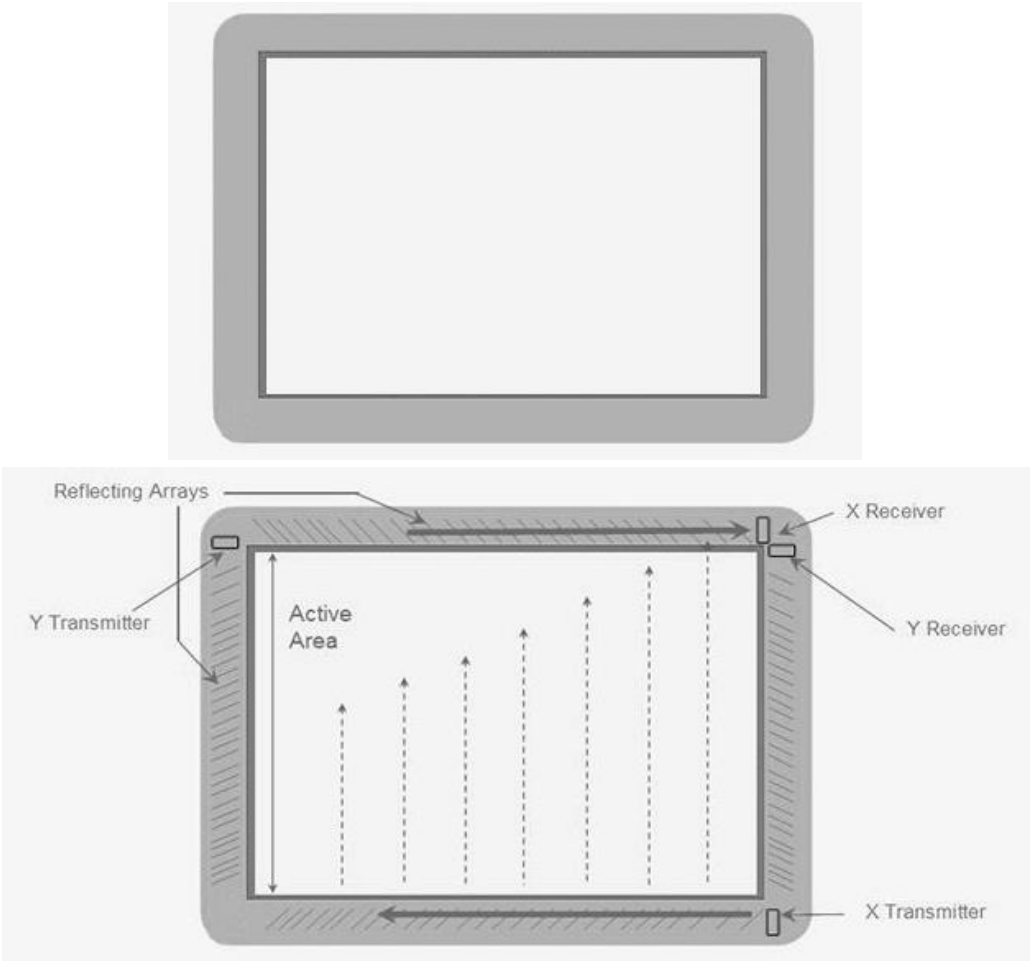

Figure 1-1. Front and Back of IntelliTouch Zero Bezel Touchscreen

Surface waves are generated by the transmitting transducers mounted in the corners of the

touchscreen. The touchscreen controller sends an excitation burst to the transmitting transducer which generates surface waves, represented by the solid arrows over the arrays in Figure 1-1. The array of reflector stripes located on the lower edge of the glass reflects these waves towards the edge of the glass. The waves are then transferred to the front touch surface via propagation around the glass edge. After traversing the touch area, the waves reach the opposite edge and return to the backside of the screen. Reflector stripes at the top gather the reflected waves and direct them to the receiving transducer which reconverts the surface waves into an electrical signal.

When a finger or stylus touches the IntelliTouch Zero Bezel screen, a portion of this signal is blocked thus allowing the touchscreen controller to determine the touch location. Once X, Y, and Z coordinates have been determined, the controller transmits the data to the computer.

The controller maintains a no-touch reference signal. This reference signal is continuously updated to adapt to electronic drift and effects of contamination such as dirt and scratches. The live signal is compared to the reference signal to detect touches.

The IntelliTouch Zero Bezel Controllers

IntelliTouch Zero Bezel controllers are available with a USB or serial RS-232 interface for Single/multi touch.

Spatial resolution of the IntelliTouch Zero Bezel system is defined by the controller resolution of 4096 x 4096 and physical screen dimensions. Controller documentation is available from an Elo Sales Representative. For IntelliTouch Zero Bezel single-touch applications, look for the Elo 2701 controller. Multi-touch applications will use an Elo 2515 controller or equivalent HID controller, as shown in Chapter 2.

Driver Software

Drivers are generally written to match the operating system of the computer. Elo provides driver programs for common operating systems, including: Microsoft Windows 8/7/Vista/XP, Linux®, Android™, and Mac®. Additional drivers may be available for other operating systems. All drivers are available on the Elo website at

http://www.elotouch.com/Support/Downloads/dnld.asp.

Help with driver installation and calibration can be found in the Driver Read-Me document that comes with the Elo driver software.

Chapter 2: Integration Design Guide

This section of the manual is intended to help design your monitor, touchcomputer, or other electronic device with an Elo Touch Solutions touchscreen. Details are given on mounting and sealing the touchscreen, routing cables, and connecting the controller.

Definition of Terms

- **VIEWABLE AREA:** The area of a screen where images can be seen.
- **ACTIVE AREA** (AA): The area of a screen which is responsive to touch.
- **BORDER AREA**: The area surrounding the Viewable Area.
- **ARRAYS**: Acoustically reflecting line segments that act as beam splitters and deflect surface acoustic waves into or out of the active area. The location of these arrays can be seen in Figure 2-1.
- **TRANSDUCER**: A touchscreen subassembly that converts electrical energy and surface acoustic wave energy. The transducer may be a “transmit” or a “receive” transducer depending on the direction of conversion.
- **SYSTEM**: Touch monitor, computer, or other electronic device being integrated with the touch screen.
- **CHASSIS:** The supporting frame of a system.
- **HOUSING OR ENCLOSURE OR CASE**: The molded plastic cabinet of the system. The case normally covers the top, sides, back, and bottom of the system.
- **BEZEL:** Depending on the industrial design, the part of the enclosure that may cover the Border Area. IntelliTouch Zero Bezel does not require a traditional bezel, but rather may use a fixture that attaches to the backside of the screen to avoid covering the Border Area.
- **ZERO BEZEL:** Zero bezel is a touch screen overlay method which is comprised of a fully flat front surface, and no associated front surface protrusions. A zero bezel can include an edge perimeter bezel which can protect the edge of the touch overlay.
- **LCD:** Liquid Crystal Display is a flat panel display that uses liquid crystals to modulate the light.
- **DISPLAY:** Typically, a Liquid Crystal Display. Also referred to as a panel.
- **CONTROLLER:** The electronic device that converts analog touch signals into digital touch information that is communicated to a Host Computer.
- **HOST COMPUTER**: The computer system in communication with the controller and in communication with the display, often running an operating system and application programs that make use of touch information.
- **IPX-1**: Ingress protection rating that covers system protection against falling water equivalent to 3-5mm rainfall per minute for 10 minutes. System is placed in its normal operating position.
- **MOUNTING TAPE:** Double-sided tape used to attach the touchscreen to a surface. The mounting area of the tape is shown in Figure 2-1.

- **SEALING FOAM:** Foam applied around the edges of the touchscreen to keep spills or dust build-up from affecting the reflector arrays. The foam must be adhered to the rear housing or sub-bezel, not to the touchscreen. The allowable sealing area is shown in Figure 2-1.
- **PARALLAX:** The difference in the apparent location of an object versus the exact location of an object when viewed at varying distances and angles. This is the difference between the perceived touch location and the actual touch location due to touchscreen thickness and the distance between touchscreen and LCD.
- **VHB:** 3M® Very High Bonding pressure-sensitive adhesive (or equivalent). Touchscreen is delivered with tape attached in the Mounting Area as shown in Figure 2-1.
- **HID:** Human Interface Device. Standardized protocol that eliminates the need for a specialized driver.

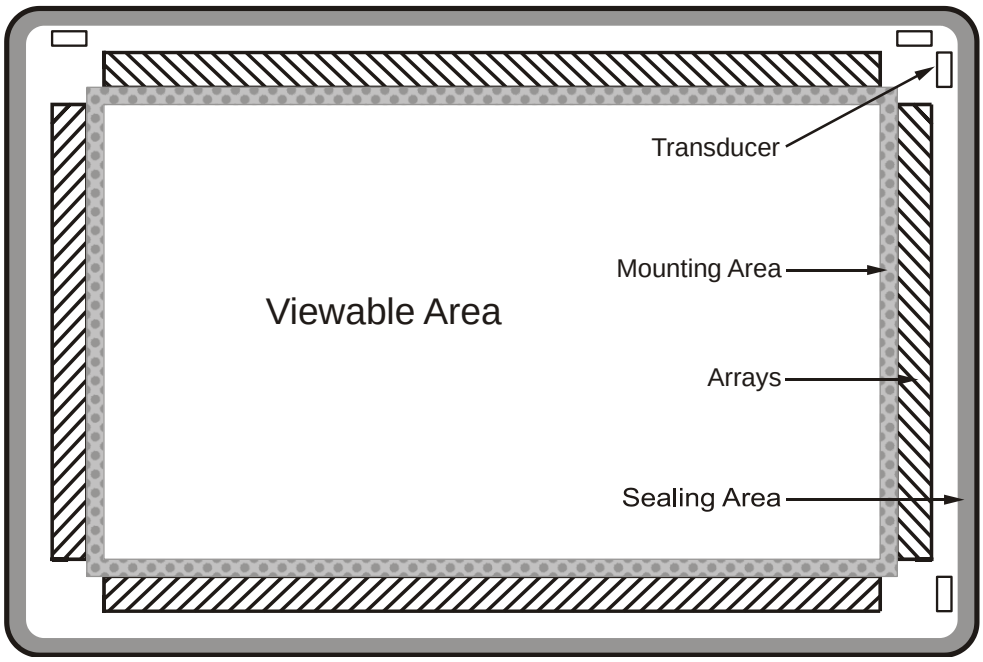

Figure 2-1. Important regions of the IntelliTouch Zero Bezel screen

Integration Design

Several options exist for mounting and sealing the screen. The cross-section of a reference integration design for an IntelliTouch Zero Bezel touchscreen is illustrated in Figure 2-2. It is the simplest method of integrating a standard off-the-shelf or custom IntelliTouch Zero Bezel screen. Important elements of the integration are described in the sections that follow.

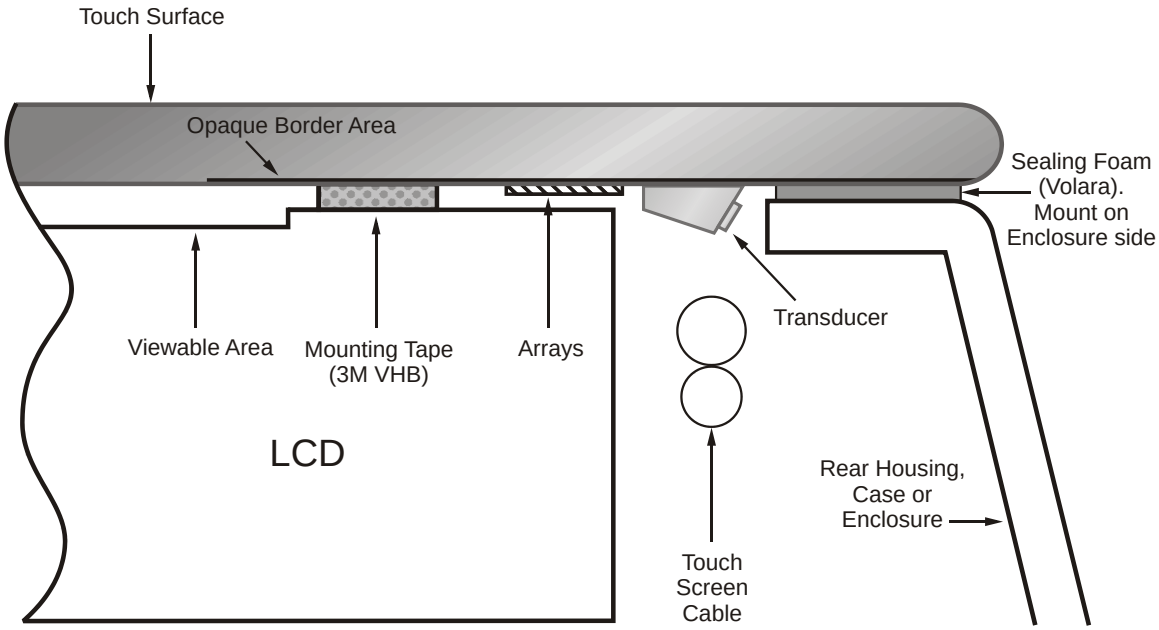

Figure 2-2. Reference Integration Design (not to scale)

Design Considerations

The following design considerations are based on the integrated design in Figure 2-2.

Mounting

IntelliTouch Zero Bezel touchscreens are provided with double-sided VHB tape or equivalent to use for mounting the touchscreen to the LCD or enclosure. The mounting tape is located inside the arrays (i.e. between the viewable area and the arrays). Mounting tape applied by Elo Touch Solutions should never be removed or tampered. The screen has been designed so that the mounting area is adequate to minimize creep under normal operating conditions.

In the integrated design shown in Figure 2-2, the IntelliTouch Zero Bezel screen is mounted directly onto the metal of the LCD. This design minimizes the space between the touch screen and the LCD, thus minimizing parallax. Please note that the tape applied by Elo is intended for this mounting solution. VHB adheres well to metal, so a touchscreen can be securely mounted onto an LCD.

An alternative solution is to mount the touchscreen onto a plastic sub-bezel. Sub-bezels make the units easier to replace in the field, but add to the thickness of the unit and make good adhesion harder to achieve. VHB does not bond readily to plastic, so if you are interested in mounting the touchscreen to a sub-bezel, a primer will be needed to get proper adhesion. Elo suggests a 3M primer with curing step. Please notify your Elo Applications Specialist if you plan to use a plastic sub-bezel, as the design may require optimization.

Glass

Standard IntelliTouch Zero Bezel screens have a glass thickness of 2.8mm.

Touchscreen Reflector Arrays

The reflector arrays are located outside of the mounting tape. It is important that no soft material or adhesive touch the arrays or the area between the arrays and the edge of the glass. Contact with these materials will have a negative impact on performance. While immediate touch function may not appear to be impacted, long term acoustic signal performance may be at risk.

Transducers

IntelliTouch Zero Bezel touchscreens have transducers at the end of each array. There is some variation in transducer location on each screen. Elo recommends leaving a 1 mm clearance gap around each transducer to prevent damage by inadvertent contact. This clearance gap is highlighted in Figure 2-3. The transducers protrude about 3mm above the surface of the glass. The transducer area includes transducer and strain relief gel, shown in Figure 2-3 as the blue rectangle.

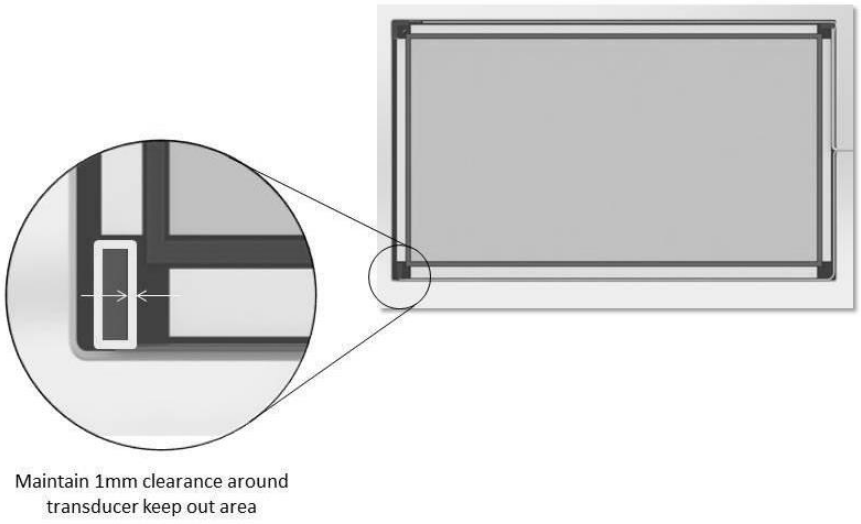

Figure 2-3. Clearance gap around transducers

Cable Routing

Cable routing is important for proper screen function and should be determined prior to integration. IntelliTouch Zero Bezel touchscreens come with cables connected to transducers and routed into a single connector that interfaces with the controller. These cables hang loosely from the touchscreen. Care must be taken with their routing so that they are not pinched or cut. Cables should not be routed over or near sources of RF noise, heat, or sharp objects.

Housing

The integrated design (Figure 2-2) has an enclosure beneath the surface of the touch screen so that the edge of the touchscreen is exposed. This is the simplest solution and makes the touch system easy to seal and clean.

An alternative option is an enclosure that surrounds the edge of the screen and lies flush with the screen face. This design protects the edges and functionality of the touchscreen, but requires a larger border width and tighter tolerances between the glass and the bezel to avoid interference with the signal.

Sealing

A seal is recommended around the edge of the touchscreen to keep dust and spills from affecting array functionality. In the integrated design, a seal is created with low density foam (Figure 2-2). The foam should be adhesive on one side only; the foam must be adhered to the rear housing or sub-bezel, not to the touchscreen. Elo Touch Solutions recommends Volara® 2A, 2E, 4A, and 4E manufactured by Voltek®. A hard stop is advised to control the maximum compression of the seal (Figure 2-4). The screen can be sealed to IPX-1 rating with this foam.

Alternatively, a seal can be achieved with certain rubber wiper blades. The rubber material absorbs more acoustic signal than low-density foam, but is an acceptable solution due to its narrow contact area. Wiper blade sealing allows for narrower borders, but requires a careful design that incorporates a wiper mounting groove.

Installation Notes

Cables can be strained and damaged during installation. Damaged cables are a common cause of functionality failures, so it is important to protect them. The cables should be routed away from the LCD panel inverter, lamps, and power module. The cables should never be crimped. The cable can be bent with a radius of 10 mm or greater. Most importantly, cables must not be used as handles for picking up the touchscreen.

Care must also be taken to protect the transducers during installation. Transducers are fragile and should not be bumped during installation. The transducers should have at least 1mm space between them and other items in the display. Appropriate spacing is shown in Figure 2-3.

Additional installation considerations are as follows:

- Do not leave any substance along the surface wave path, as this will affect the function of the touchscreen.
- The arrays are fired glass frit and should not be brought in contact with any acid or alkali.
- Do not remove the clear or black tape on the back of the touchscreen
- A fixture to help align the touchscreen with the LCD is recommended.
- Before mounting the touchscreen, clean the face of the display and the back of the touchscreen within the viewable area with household glass cleaner applied first to a disposable wipe. Never apply cleaners directly to the touchscreen. Be sure to remove all fingerprints. A compressed air nozzle with clean, dry air may be used to remove the dust on the sensor and on the monitor. The space between the touchscreen and the display face must be clean and free of any foreign objects.
- Sealing material dimensions recommended are 2-4 mm wide and 2-3 mm thick. For a foam seal, the foam should compress to a level that is between twenty and fifty percent of its initial height. Uniform compression around the touchscreen is ideal. A hard stop should be molded into your housing to control compression. See the example below in Figure 2-4.
- The Microsoft Paint application may be used to confirm the functionality of the touchscreen after installation.

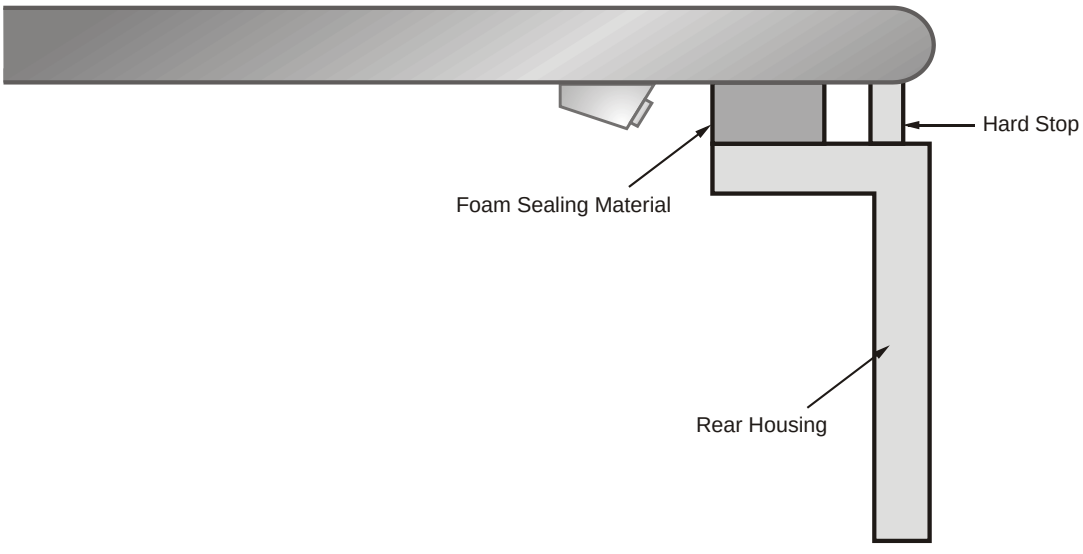

Figure 2-4. Integration with a hard stop

Controller Considerations

Elo will recommend the best controller for your application. The touchscreen has a cable to connect to the controller. The connection between the controller and computing system depends on the controller selected.

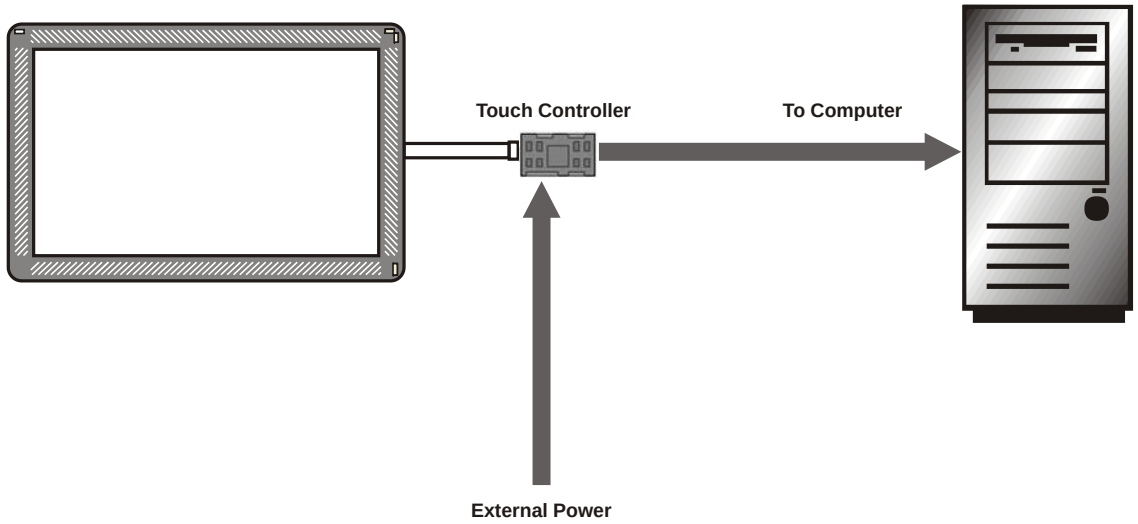

Figure 2-5. Basic system overview

IntelliTouch Zero Bezel controllers should be securely mounted to a metal bracket with good grounding and mechanical support. At least two of the plated mounting holes must be grounded. For the best EMI characteristics, ground all 4 holes. The controller should also be mounted at least 100 mm away from sources of electrical noise.

It is recommended that the power for the controller be linked with the display power to prevent accidental computer inputs in the event that the controller is powered, but the display is off.

For single touch applications, see specifications for the 2701 controller. For dual touch applications, see specifications for the 2515 controllers. For dual touch applications with HID compliance, see specifications for the 2520 and 2521 controllers. HID compliant devices eliminate the need for a driver.

2701 Controller (PN D68054-000)

The 2701 controller, CTR-270100-IT-RSU-00R, measures 53.3mm (2.1 inches) by 83.82mm (3.30 inches). Mounting holes located in each of the four corners have a diameter of 4.0mm (0.157 inches) and are centered 3.81mm (0.15 inches) from adjacent edges. The total height is 10.16mm (0.40 inches). Dimensional tolerances and further details are documented in the Elo Touch Solutions specification for the particular printed circuit card.

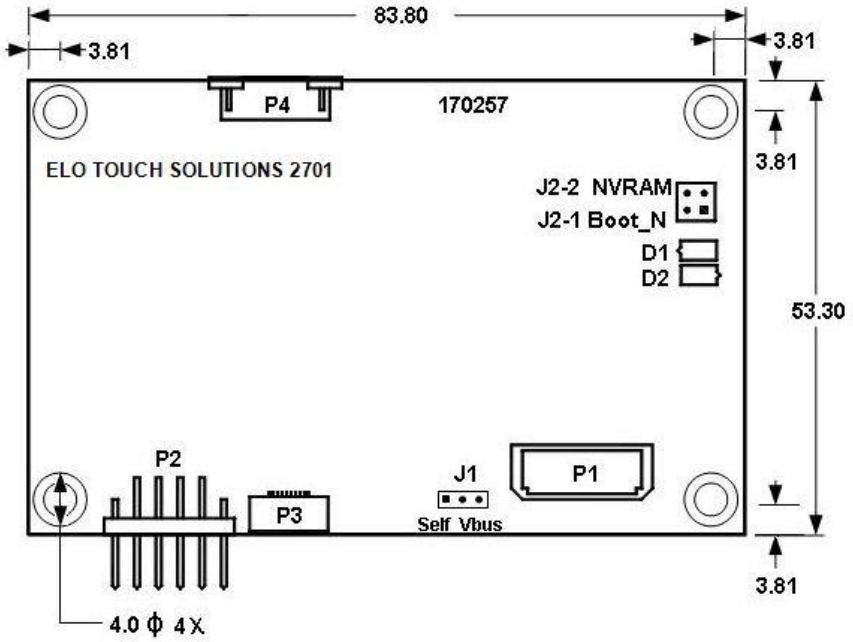

Figure 2-6. 2701 Dimensions: Top View (CTR-270100-IT-RSU-00R)

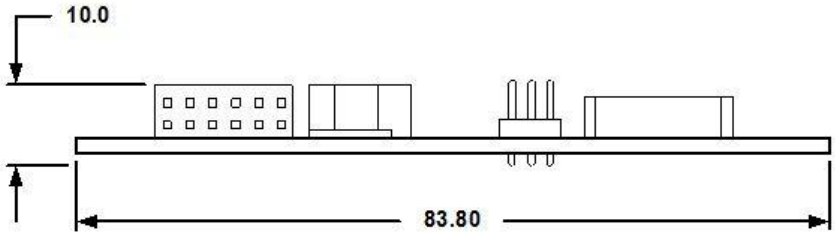

Figure 2-7. 2701 Dimensions: Side View (CTR-270100-IT-RSU-00R)

2515 Controllers (PN E545441, E096415)

CTR-251500-IT-USB-07-R measures 53.34mm (2.10 inches) by 83.82mm (3.30 inches) overall, while the small form factor version CTR-251500-IT-USB-05-R measures 40.00mm (1.57 inches) by 83.82mm (3.30 inches) overall.

Mounting holes located in each of the four corners have a diameter of 3.96mm (0.156 inches) and are centered 3.81mm (0.15 inches) from adjacent edges. Dimensional tolerances and further details are documented in the Elo Touch Solutions specification for the particular printed circuit card.

Total height of CTR-251500-IT-USB-07-R and CTR-251500-IT-USB-05-R is less than 15.62mm, broken down as follows: Components may extend a maximum of 11.5mm (0.45 inches) above the top of the p.c. board. Leads and bottom-side components may extend a maximum of 2.54mm (0.1 inch) below the bottom of the p.c. board. The PCB thickness is nominally 1.58mm (0.062 inches).

Type and location of connectors varies by model. See figures below for details.

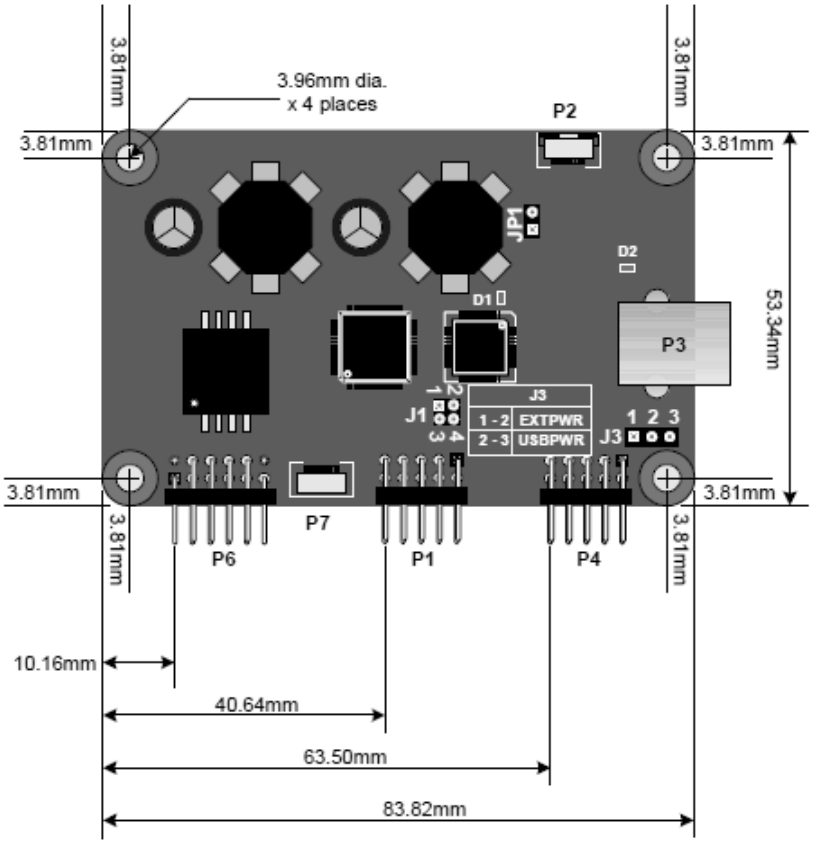

Figure 2-8. 2515 Dimensions (CTR-251500-IT-USB-07-R)

2520 Controller (PN E902552)

The Elo 2520 controller is a HID-compliant device that can be used for dual-touch applications.

The 2520 controller, CTR-252000-IT-USB-00-R, measures 40.00mm (1.57 inches) by 83.82mm (3.30 inches). Mounting holes located in each of the four corners have a diameter of 3.96mm (0.156 inches) and are centered 3.81mm (0.15 inches) from adjacent edges. Dimensional tolerances and further details are documented in Elo Touch Solutions specification for the particular printed circuit card.

Total height of CTR-252000-IT-USB-00-R is less than 13.8mm (0.54 inches). Components may extend a maximum of 9.5mm (0.45 inches) above the top of the p.c. board. Leads and bottom-side components may extend a maximum of 2.54mm (0.1 inch) below the bottom of the p.c. board.

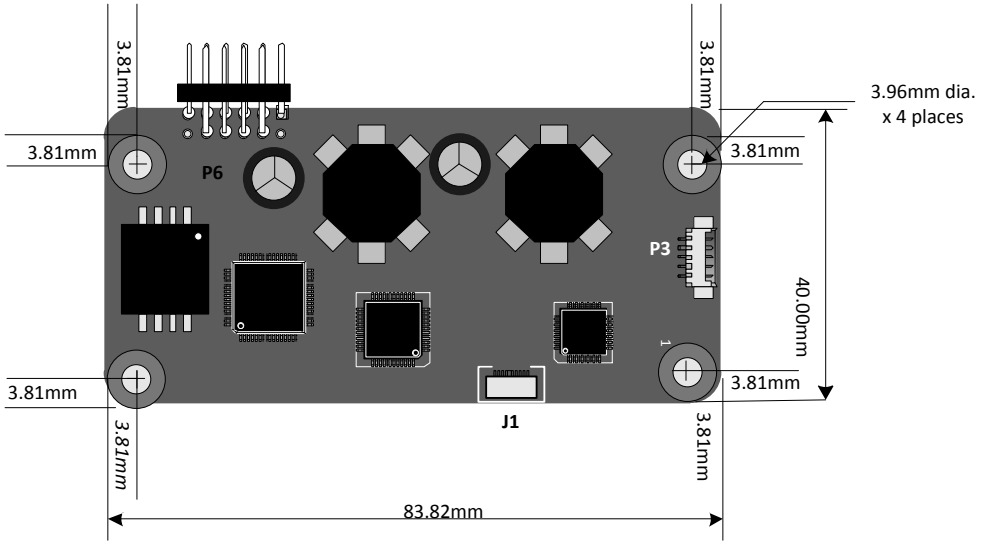

Figure 2-9. 2520 Dimensions (CTR-252000-IT-USB-00-R)

2521 Controller (PN E156921)

The Elo 2521 controller is a HID-compliant device that can be used for dual-touch applications. The main difference between the 2520 and the 2521 is form factor.

The 2521 controller, CTR-252100-IT-USB-00-R, measures 53.34mm (2.10 inches) by 83.82mm (3.30 inches). Mounting holes located in each of the four corners have a diameter of 3.96mm (0.156 inches) and are centered 3.81mm (0.15 inches) from adjacent edges. Dimensional tolerances and further details are documented in Elo Touch Solutions specification for the particular printed circuit card.

Total height of CTR-252100-IT-USB-00-R is less than 13.8mm (0.54 inches). Components may extend a maximum of 9.5mm (0.45 inches) above the top of the p.c. board. Leads and bottom-side components may extend a maximum of 2.54mm (0.1 inch) below the bottom of the p.c. board.

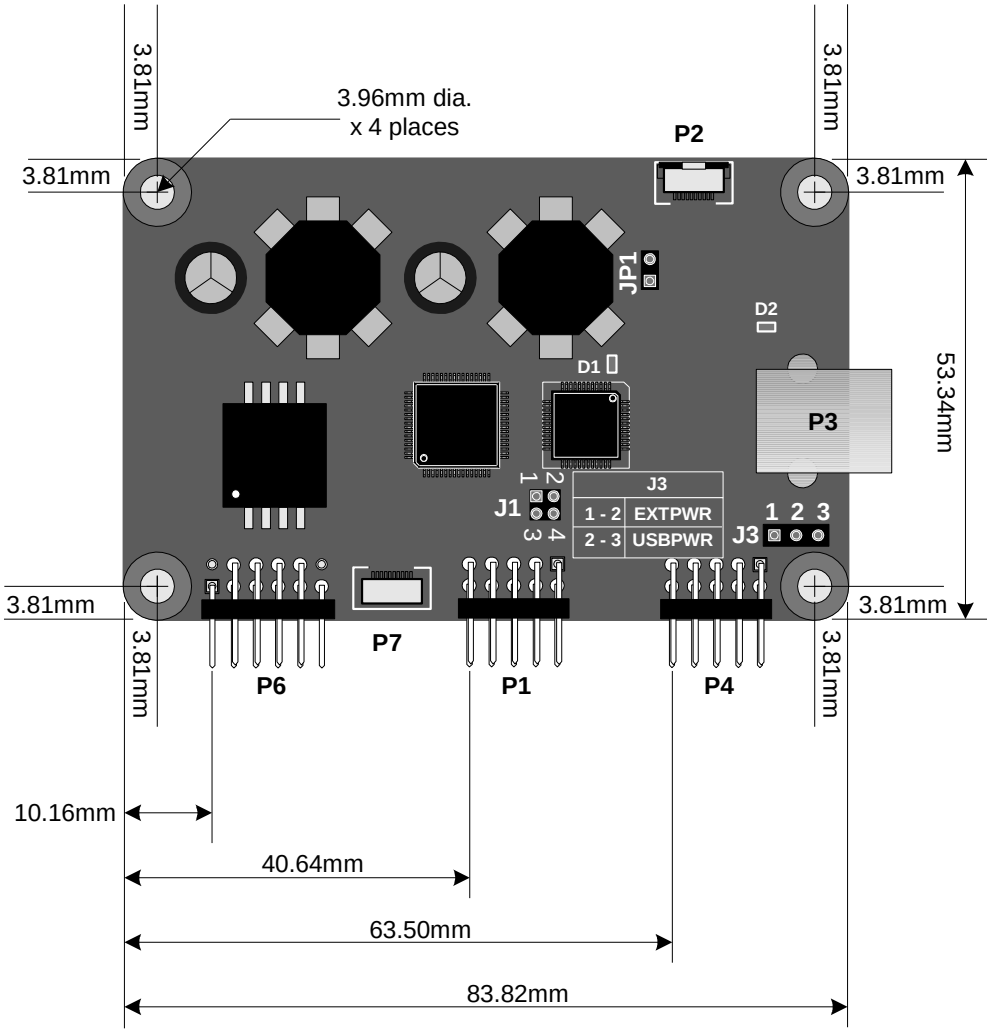

Figure 2-10. 2521 Dimensions (CTR-252100-IT-USB-00-R)

Chapter 3: Customization Options

This section of the manual provides a list of customization options and constraints.

Mounting Tape Alternatives

Elo Touch Solutions can change and optimize mounting tape for your application. In general, 3M VHB tape is recommended for mounting touchscreens. Other design considerations will be border width, mating material, touchscreen weight, and screen design. Tape thickness can be designed to accommodate different needs. Thinner tape minimizes the gap between the touchscreen and LCD, while a thicker tape can be used to conform to irregularities in the flatness of the LCD bezel or touchscreen. For very narrow border width, additional mechanical supports will be needed for the touchscreen.

Cable Routing Alternatives

There are a few options for securing cables to the touchscreen. When integrating without a bracket, limit the gap between the touchscreen and LCD to 1.5 mm. If the border width allows, the cables can be routed and adhered between the mounting tape and the arrays. The cables will not interfere with the acoustic signal in this area.

Alternatively, “L” brackets can be used to mount the cables outside of the arrays. In this case, the “L” brackets are attached to the glass inside of the arrays and the cable sits on the brackets outside of the LCD frame. Brackets add cost and thickness, but leaving cables loose increases the likelihood of them being pulled or cut during installation.

The screen can be designed so the cable exits from any side. The physical orientation of the transducers has no impact on the touch orientation. The touch orientation is manually configured in the 3-point calibration routine (provided with the driver) after the touchscreen has been integrated.

Transducer Locations

Each IntelliTouch Zero Bezel screen comes with transducers in three corners. The size of the transducers will vary according to the size of the touchscreen and the signal needed. These transducers must be aligned with the arrays; however, their locations can vary. Having transducers near the edge of the glass is useful in some instances because it places the transducers outside of the LCD frame. This is advantageous for decreasing the gap between the touchscreen and the LCD.

Curved Profile

Elo can design a flat screen with a curved profile to accommodate aesthetic needs.

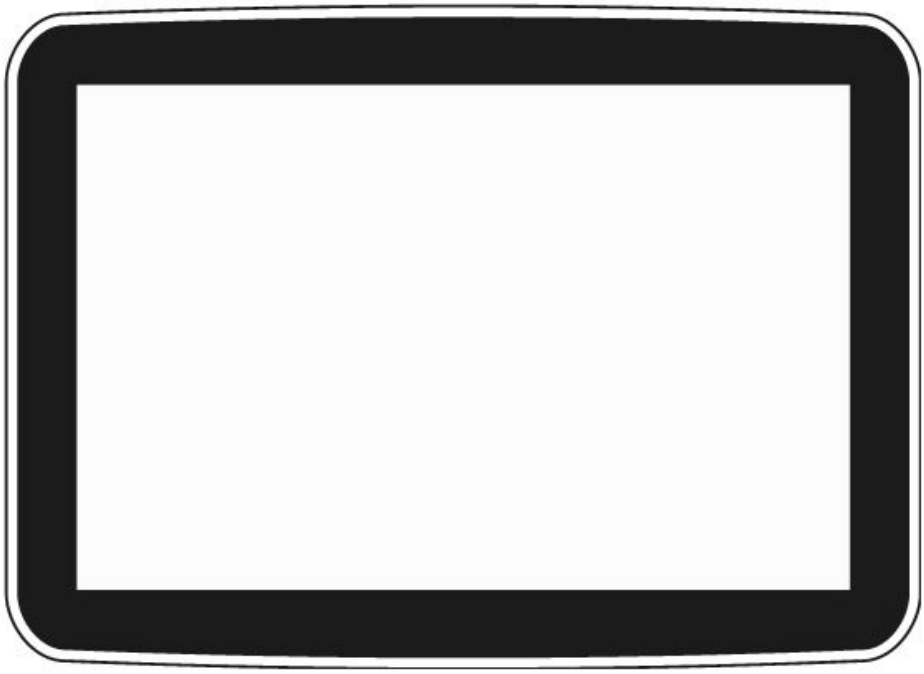

Figure 3-1. Custom screen with curved profile

Holes and Ink-Free Areas

If you need to create holes or ink-free areas, the preferred location is inside of the arrays. For drilled holes (e.g. microphone hole), a diameter between 0.5mm and 2mm is recommended. If a hole larger than 2 mm is desired, we recommend a circular, ink-free area instead of a drilled hole. The ideal location for the ink-free area (e.g. camera hole) is in the border between the arrays and the viewable area. The ink-free area cannot be located under the arrays.

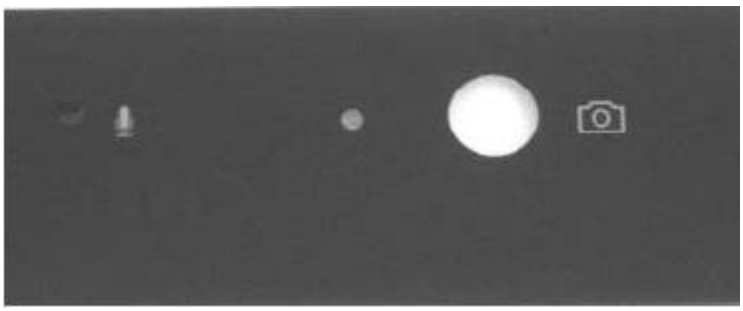

Figure 3-2. Holes and Ink-Free Areas

Windows

IR-transparent and semi-transparent windows are possible in the border as long as they are not under the arrays. These can be used for remote control functions.

Colored Borders

The border of an Elo touchscreen is available in a number of colors. Borders colors in green, blue, gray and black hues are possible. Please contact Elo for your specific needs.

Logos and Icons

Custom logos and icons can be printed or left ink-free on the touch screen. Logos or icons placed between the arrays and the viewable area have the most flexibility in color. Semi-transparent black and semi-transparent white allow for backlit icons within the border. Silver mirror ink is also possible. The transparent and silver mirror inks can only be used if the icons are not under the arrays.

Narrow Borders

Elo Touch Solutions design engineers make every effort to reduce border width. If needed, we can work with you to enable narrower borders. This may require the touchscreen to be supported mechanically.

Coatings

Several coatings are available to improve the drag feel of the screen and diffuse reflections.

Release Liner

A protective release liner can be added to the front and/or the back of the screen upon request.

For more help with customizing your IntelliTouch Zero Bezel touchscreens, contact your Elo Touch Solutions Sales Representative.

Chapter 4: Frequently Asked Questions

This section covers the most common questions concerning IntelliTouch Zero Bezel components.

1. What is needed for dual-touch applications?

IntelliTouch Zero Bezel Plus is the dual touch option for IntelliTouch Zero Bezel touchscreens, and can meet Windows7 AQ if needed. The controller will be the 2515 or similar controller. For single touch applications, IntelliTouch Zero Bezel touchscreens may use the 2701, 2515, or similar controller.

2. What thickness of glass can I expect?

The nominal glass thickness of IntelliTouch Zero Bezel and IntelliTouch Zero Bezel Plus screens is 2.8 mm. Thicker glass is available upon request.

3. Can I have anti-glare glass?

Technically, yes. However, anti-glare impacts costs and lead-time. Standard IntelliTouch Zero Bezel screens use clear glass. If you feel that anti-glare is essential to your application, please contact an Elo Sales Representative.

4. What border thickness can I expect from an IntelliTouch Zero Bezel touchscreen?

The thickness of the border is dependent on the dimensions of the touchscreen and/or active area. Elo touch solutions design engineers make every effort to reduce border width if required by the customer, while maintaining integrity of the touch response signal.

5. Can I choose the border color?

The border of an Elo touchscreen is available in a number of colors. Borders colors in green, blue, gray and black hues are possible. Please contact Elo for your specific needs.

6. What are the limitations of the corners?

The radius of the corners cannot be smaller than 1mm.

7. Can I have a drilled hole for a microphone or camera?

Absolutely. Elo can provide drilled holes with diameters between 0.5mm and 2.0mm. If you need a larger hole, Elo recommends a circular, ink-free area. For details, please see the Holes and Ink-Free Areas section of Chapter 3.

8. Can I have a smaller connector and thinner cable, like FPC material?

So far, it's difficult to use FPC material as the cable due to EMI issue. The current cable provides good EMI prevention.

9.What is the process to determine cable length and routing?
Cable length depends upon your application and request. The cable can be designed up to 750mm.

10.Can the plastic housing touch the SAW screen directly for better ID purpose?
Yes. The plastic housing can touch the screen if the housing is made of ABS or PC.

11.Can the reflecting array be damaged?
The array is cured frit glass, so it should avoid contact with alkali and acids.

12.Will the double-sided mounting tape be prepared by Elo?
Yes. The mounting tape is applied by Elo due to its effect on touch performance, and should not be changed or removed during integration.

13.What about sealing? What dimensions and materials should I use?
The sealing dimensions will depend on your application and the size of the touchscreen. Elo recommends Volara low-density, closed-cell polyolefin foam for sealing. Only one side of the foam should be adhesive. Adhesive should be applied to the rear-housing or bezel, not to the screen. During integration, expect to compress the foam to 20-50% of its initial height. Elo can help you seal to IPX1 standards. For more help with sealing, see the sealing section of Chapter 2.

14.Is there anything I should know about the transducers?
Elo recommends a 1mm clearance gap around each transducer. The transducers have been designed for optimal signal sending and receiving. The hardness, location, and size of transducers will depend upon the size and application of the touchscreen.

15.How can I fix the cables without using cable brackets?
It depends on the mechanical design of the whole system. It is possible to fix cables to the back of the LCD panel with tape. Another possibility is routing the cable around the sub-bezel with a hook. No matter how you choose to fix the cables, care should be taken with the cable arrangement to prevent the cable from snapping.

16.Can I pick the cable outlet location?
Yes, an IntelliTouch Zero Bezel screen can be designed with a cable that exits on any side you prefer.

17.Am I limited by the orientation of the screen?
IntelliTouch Zero Bezel touchscreens may have either portrait or landscape orientation. To orient your screen properly, you will need to complete the three point alignment which is included with the Elo driver software available on the Elo website.

18.How can I test functionality after integration?
The functionality will depend on the application used for the device. In general, Microsoft Paint is

helpful for ensuring that the system works properly after integration.

19.Where can I find more information if my questions aren't answered in the IntelliTouch Zero Bezel Integration Guide?

Contact Elo Touch Solutions Customer Sales and Support with any further questions about your IntelliTouch Zero Bezel application.

Check out our website

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Getting in Touch with Us

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

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