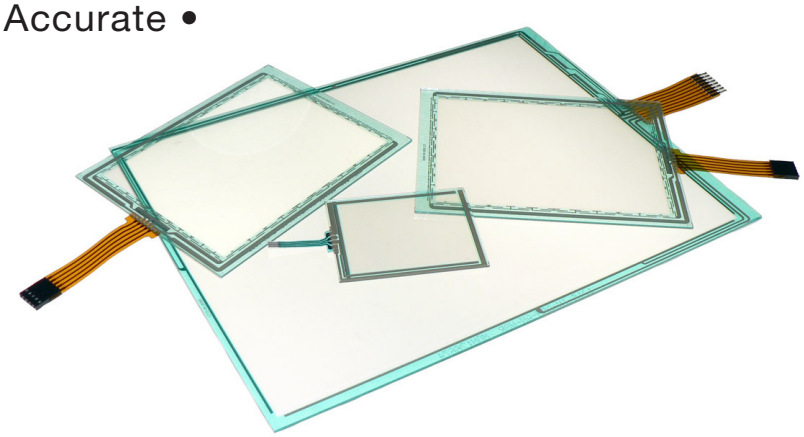
DawarTouch®

Resistive Touchscreen Integration Guide

• Durable • Reliable • Accurate •



DawarTouch®
1016 North Lincoln Avenue, Pittsburgh, PA 15233 U.S.A.
412.322.9900 / 1.800.366.1904 / Fax: 412.322.9958
email: touchscreens@dawar.com
www.dawartouch.com

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CHAPTER 1: Preparation For Installation

Opening Your Container

Before installation, please open and check the shipping container for the following necessary components.

- Resistive Touch Screen
- Touch Controller (upon request)
- Serial (RS-232) Cable or USB Cable
- CD-ROM, which includes driver software and documentation.

Remove all tape from package. Handle the Touch Screen carefully and place on a clean anti-static pad. Remove the protective film and wipe the Touch Screen with neutral cleaner and soft cloth.

Preparing the LCD Display

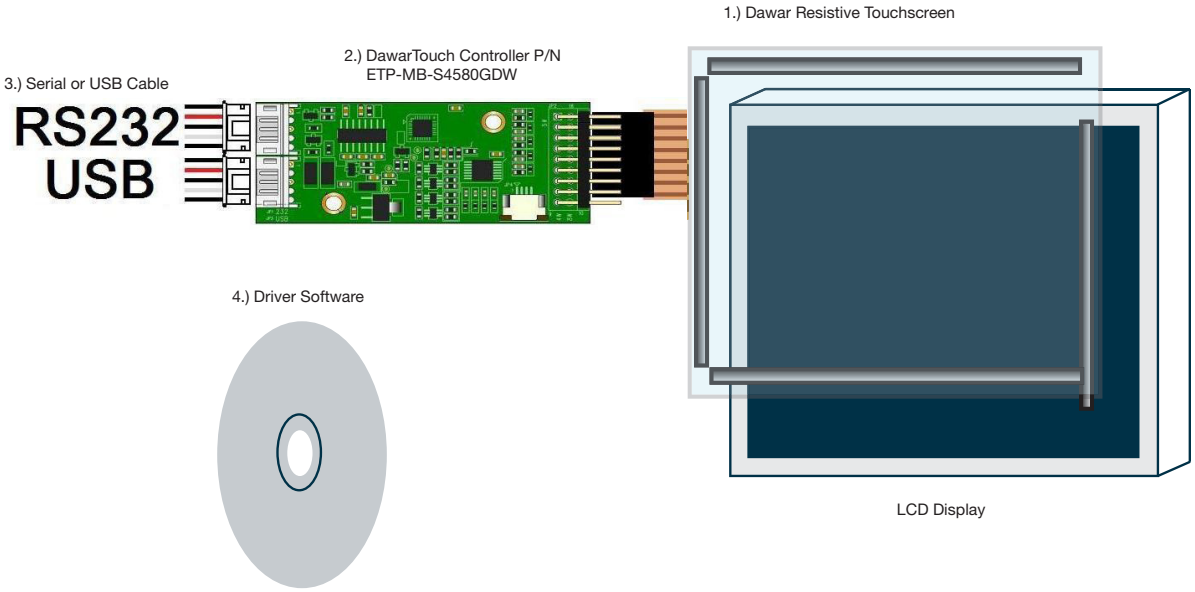
First, please check the condition of the display before you install the Touch Screen. If the display is working properly, turn off the power and disconnect all cables and power plugs. Disassemble the display, then prepare all tools and material needed for installation.

Preparing Your Tools and Material

Have ready all parts of the touch system and tools which include:

- Screwdriver
- Screws for Controller
- Neutral Cleaner and Soft Cloth
- Single-sided Closed Cell Foam tape
- Double-sided Adhesive
- Plastic Washers or Spacers
- Knife
- Mounting Poles for Controller

CHAPTER 2: System Integration



Dawar Touch Systems are made up of four different components:

1) Resistive Touch Screen (available in 4, 5 and 8 wire configurations)
2) Touch Controller
3) Serial (RS-232) Cable or USB Cable
4) CD-ROM, which includes driver software and documentation.

The Touchscreen is mounted to the front of the LCD. It sends the analog touch information to the controller board. The controller board then translates the analog information to digital signal for the computer to interpret. The connection between the controller board and the computer is either Serial RS-232 or a USB interface. The driver software allows the controller to communicate to the computer and supports a variety of operating systems. (See appendex A)

Compatible with the following operating systems.

Appendex A:

OS supported	Version	Interfaces
Windows	Windows 7, Vista, XP, 2000, ME, 9x Windows CE 2.12/3.0/.net/5.0/6.0 Windows Embedded Windows XP Tablet PC edition	RS232/USB
Windows	Windows NT4	RS232
Linux	Supports most of the Linux distribution 32/64 bit version, including Ubuntu, Debian, SuSE (openSuSE), Fedora Core, Mandriva, Slackware, etc.	RS232/USB (up to Kernel 2.6.x with xorg 1.7.x)
DOS	DOS	RS232
Mac	Mac OS, Mac OS X (IBM, Intel CPU)	USB
QNX	QNX RTOS v6.3	RS232/USB

CHAPTER 3: Mounting Guidelines

Appearance

To enhance the appearance of your integrated touch screen do not allow the circuit traces to show. The bezel should be designed in such a way that the traces are effectively hidden behind the bezel.

General Guidelines

- The bezel should be 0.030 inches to 0.060 inches (0.8 mm to 1.5mm) away from the touch screen's active area and 0.030 inches to 0.060 inches (0.8 mm to 1.5 mm) inside the screen's viewing area.
- For touch screens less than 12 inches (300mm), the layer-to-layer assembly tolerance of the screen is 0.030 inches (0.8 mm).
- For touch screens 12 inches (300mm) and larger, the layer-to-layer assembly tolerance of the screen is 0.050 inches (1.3mm).

WARNING: Do not mount the touch screen to the rear of the bezel with aggressive adhesive. Doing so will cause the touch screen to pillow and eventually affect the operation of the touch screen. Please reference pages 7 and 8 for proper touch screen integration methods.

Front and Rear Mounting

Resistive touch screens can be mounted from the front or rear of the bezel. Rear mounting is the most convenient method for most applications.

A front mounting application works well if you need a uniformly smooth surface on the front of your product. Front mounting requires that the bezel be specifically designed for the application.

CHAPTER 4: Assembly Tolerances And Clearances

Assembly Tolerance

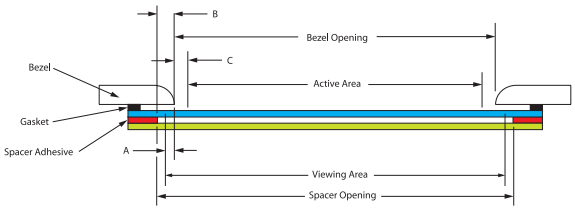
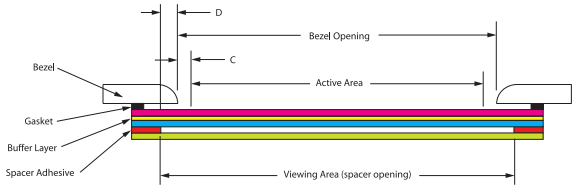
For touch screens with outer dimensions less than 12 inches (300mm), the layer-to-layer assembly tolerance of the screen is 0.030 inches (0.8 mm). For Touch screens with outer dimensions that are 12 inches (300 mm) or larger, the layer-to-layer assembly tolerance of the screen is 0.050 inches (1.3 mm). These tolerances are factored into the dimensions shown in Table A.

Bezel clearances

The bezel clearances recommended in Table A are intended to prevent accidental activation of or damage to the touch screen when clamping force is applied. The recommended clearances depend on two factors:

- Whether or not the touch screen has a buffer layer. The mechanical drawing will indicate if there is a buffer layer.
- Size of the touch screen.

Table A: Recommended bezel clearances

Touch screen type	Clearance areas [2,3]	Small screens [4]	Large screens [5]
Non-buffer layer [1] 	**A** Between edge of viewing area and bezel.	0.03” 0.8 mm	0.05” 1.3 mm
Graphic/Buffer layer [1] 	**B** Between edge of spacer and bezel (for non-buffer layer touch screen).	0.09” 1.3 mm	0.11” 2.8 mm
	C Between edge of active area and bezel.	0.03” 0.8 mm	0.05” 1.3 mm
	D Between edge of spacer and bezel (for buffer layer touch screen).	0.03” 0.8 mm	0.05” 1.3 mm

1 The mechanical drawing of the part will indicate whether it includes a buffer layer. A buffer layer could be made of glass or film.

2 For non-buffer layer touch screens, two edges have the same dimensions for the spacer opening and the viewing area and two edges have different dimensions. Different bezel clearances apply as shown in Table A. The mechanical drawing will indicate to which edges each dimension applies.

3 For buffer layer touch screens, the dimensions of the spacer opening and the viewing area are the same on all edges.

4 Small screens outer dimensions: less than 12 inches.

5 Large screens out dimensions: 12 inches or larger.

CHAPTER 5: Rear Mounting Procedure

Below is an example of a rear mounted touchscreen with mounting plate.

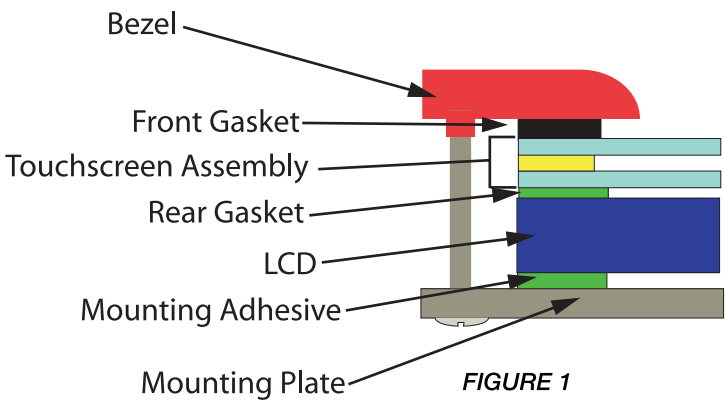


FIGURE 1

DawarTouch Resistive Touch Screens fit most displays from 5 inches to 21 inches.

Rear mounting the Touchscreen to the Bezel.

The 2 things that are required:

1. Allow the top surface of the Touchscreen to expand and contract.
2. Support the Touchscreen around the entire perimeter as shown in figure 1.

Dawar recommends using a single sided adhesive closed cell foam for the front gasket.

Dawar also recommends using a double sided adhesive for mounting the Touchscreen directly to the LCD. Dawar Touch has stock gasket options for both the front and rear gaskets. Please see our gasket material sheet in Appendix A for details.

CHAPTER 6: Front Mounting Procedure

Below is an example of a front mounted touchscreen.

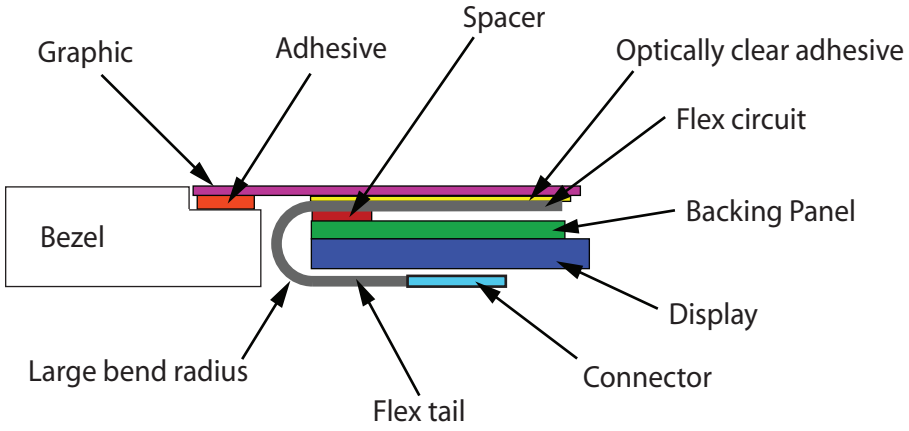


FIGURE 2

The touch screen tail must be designed to fold back gently. If the tail is sharply bent, it could cause a bulge in the graphic layer.

Be sure to include an overhanging graphic area with a rear mounting adhesive.

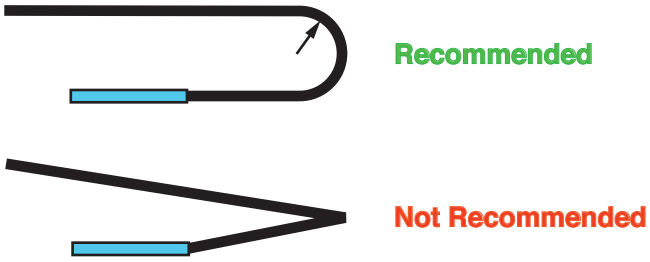
Planning and designing are critical for an overhanging graphic layer for a front mounted Touchscreen. The bezel, overhanging graphic, and touchscreen need to work as a system.

The Graphic overlay is bonded directly to the bezel as shown in figure 2 above. Dawar recommends using a pressure sensitive adhesive that is appropriate for the bezel material.

The Touchscreen and LCD will need to be supported from the back side to withstand touches.

CHAPTER 7: Tail Considerations

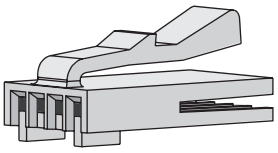
- Never pick up the Touch Screen by holding the tail.
- If necessary, the tail can be bent only once.
- Never bend the tail within 5mm from the panel edge.
- After the assembly of the Touch Screen and LCD panel, affix the tail to the LCD panel chassis.
- Do not route the tail near the backlight inverter of the LCD panel.
- If necessary, the tail can be extended by an optional extension cable.
- Position the touch screen tail so that its minimum bend radius is greater than 0.125 inches (3.3 mm). The tail can be damaged and the warranty voided if the tail is creased. Avoiding sharp bends and multiple bends in the tail will provide the best performance of your touch screen.



CHAPTER 8: Termination Alternatives

Nicomatic

Flex Tail Connectors



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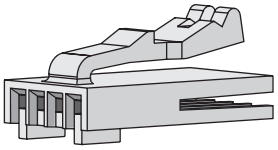

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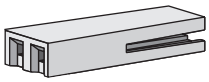

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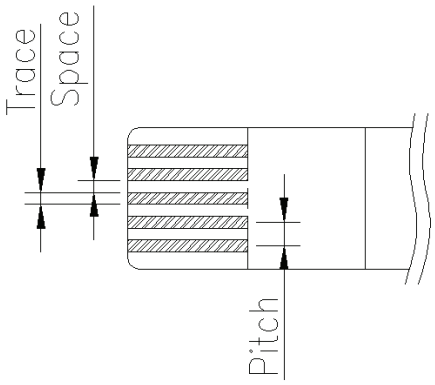
ZIF connector and FPC cable

Optional ZIF Pitch

Pitch (mm)	0.5	1.0	1.25
Space (mm)	0.2	0.5	0.55
Trace (mm)	0.3	0.5	0.7



CHAPTER 9: Basic Mounting Steps

1. Align the center of the viewing area of the Touch Screen to the center of the LCD display area.

2. Use neutral cleaner and soft cloth to clean the Touch Screen.

3. Apply the double-sided foam adhesive to the perimeter of the LCD panel surface without any gaps.

4. Attach the Touch Screen to LCD panel carefully. Make sure there is no dirt, dust or particles between them, and align for the correct position.

Materials:

- Front Display Housing
- Sealing Tape
- Touch Screen
- Double-sided Foam Tape
- LCD Panel and Chassis
- Touch Controller
- Rear Display Casing
- Anti-ESD Wrist Strap

DawarTouch® TOUCH SCREEN GASKET MATERIALS

Gasket Number	Base Material	Type	Adhesion Level	Thickness	Example of Application
Double-sided adhesive gaskets					
A	Supported Adhesive - 3M 7945	Rear	Medium - Ideal for most applications	.005" (.127mm)	Secure touch screen to display
B	Non-Supported Adhesive 3M 7955	Rear	Medium	.005" (.127mm)	Secure touch screen to display
C	3M 9415	Rear	Low	.003" (.0762mm)	Secure touch screen to display and allows disassembly
D	3M 9495MP	Rear	Very High	.0057" (.1447mm)	Strongly secure touch screen to display
Double-sided adhesive gaskets with foam					
E	Foam F with permanent adhesive on one side and removable adhesive on the other side	Rear	Low	.035" (.89mm)	Secure touch screen to display and allows disassembly
Single-sided adhesive gaskets with foam					
F	Black closed cell polyethylene	Front or Rear	Medium	.031" (.79mm)	Seal touch screen to bezel; and allows disassembly
G	Black closed cell polyethylene	Front or Rear	Medium	.064" (1.63mm)	Seal touch screen to bezel; and allows disassembly

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