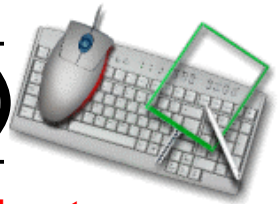
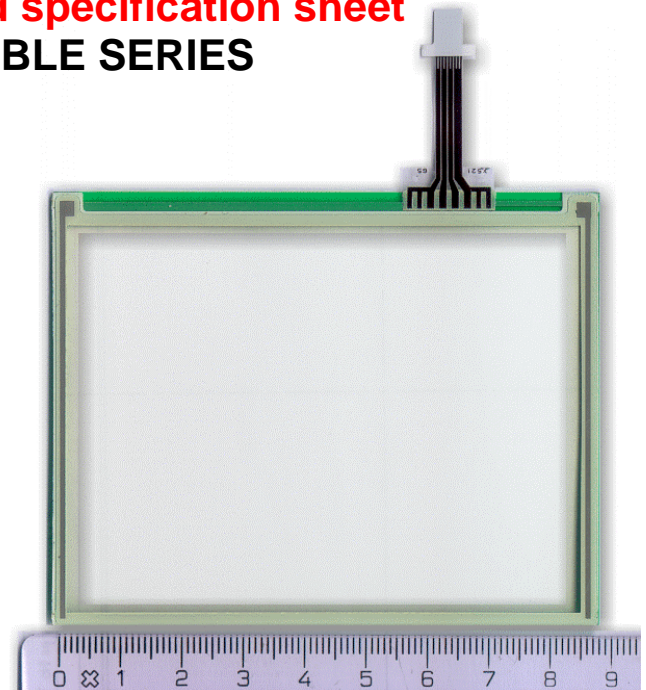
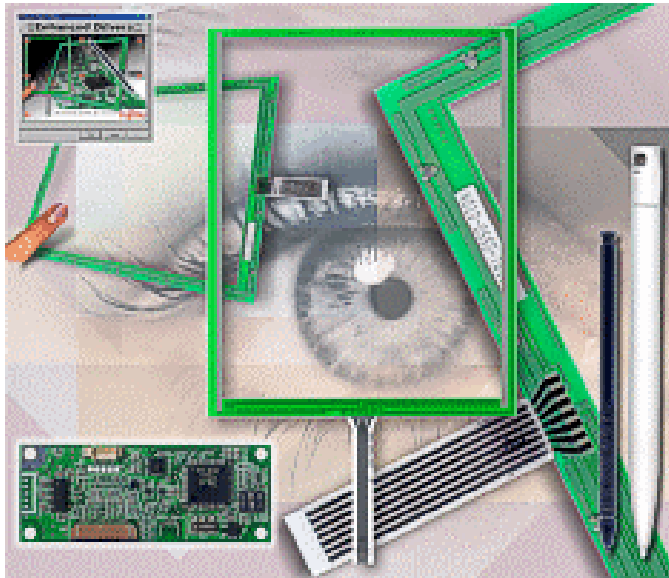


4 Wire Touch Panel Specification(s)



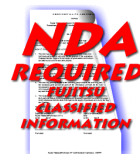
5.7" & 10.4" Panel Enhanced specification sheet 4 WIRE INDUSTRY COMPATIBLE SERIES



FEATURES

The FID-554 is a series of resistive touch panels that combine low power consumption and excellent operating life with improved optical materials in an industry standard 4 wire outline. The panels offer OEMs a cost-effective input component for a variety of portable and handheld PCs and Internet appliances. The FID-554 series have a maximum power consumption of 20mA (15mA typical) in 5V operating mode. The FID-554 series features a industry standard input detection technology that uses both upper and lower resistive layers to give a writing life of 1 million touches and it has an operating temperature range of 0 to 50°C. Panels are available in pen/finger input models. Transmissive measurements and clarity for these panels are rated at 80 percent (typical) transparency with a 5 percent (typical) haze. Clarity is further enhanced with Anti-Newton ring technology and surface hardness is rated at 2H (min.) with 1.5% (max.) linearity, and with our 10 bit controller/board option resolution is specified at 0.1mm (0.004-inch).

- Industry standard 4 wire interface configuration.
- Low power consumption.
- Excellent specification and high quality
 - High reliability materials



■ DETAILED SPECIFICATION

■ 1.0 Drawing Information

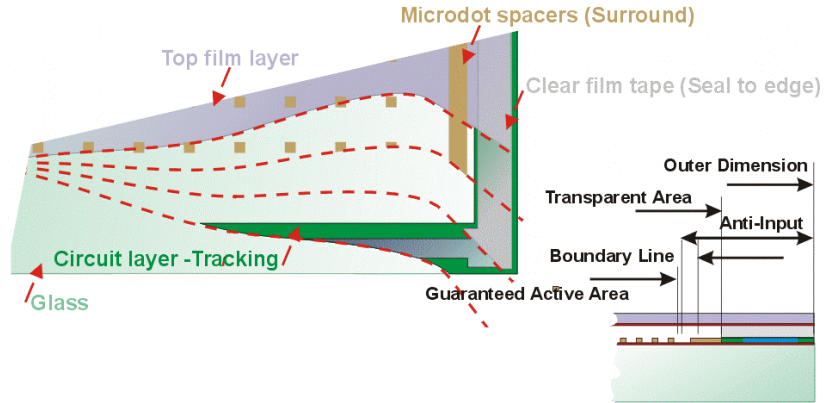
Definitions of the major dimensions indicated on the .pdf drawings are shown here.

Guaranteed Active Area is the area guaranteed to meet all the characteristics detailed in this specification

Boundary Line is the boundary line of the top enclosure suggested by Fujitsu. This is not rigidly stipulated/fixed, but is a suggested line for consideration in the design.

Transparent Area This is the area inside the adhesive zone or electrode pattern.

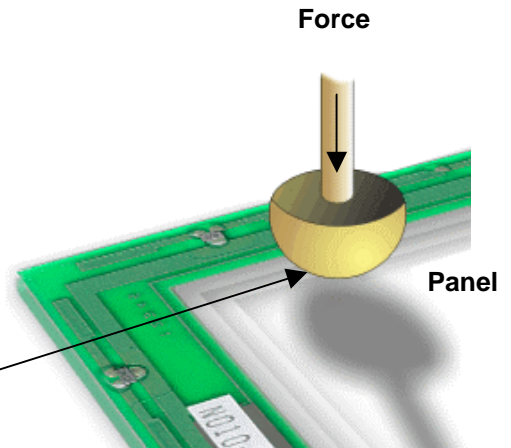
Anti-input Area This is an insulating area allowed to protect the touch panel from giving false readings when an enclosure touches the panel. (See fixing instructions)



■ 2.0 Characteristics

■ 2.1 Mechanical

| | |
|----------------------------|--|
| Operating Force | Normal Touch Pen/Finger Panels have an operating force of 0.05~0.49 N (5 ~ 50gF) Measured with a Silicon Measurement Rod R 8 (Round type 8mm) Silicon Rubber Hardness 60° |
| Hardness of Surface | Pencil hardness 2H minimum against specification JIS K-5400 |



■ 2.2 Optical

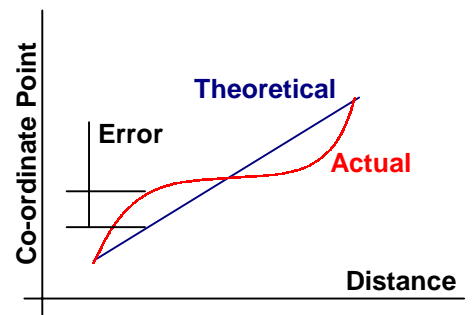
| | |
|---------------------|--|
| Transparency | 78% min measured in the effective input area to JIS K-7105 using a MURAKAMI SHIKISAI KENKYUSHO type IIR 100 meter. Typically 80%. |
| Haze | 5% type measured in the effective input area using a MURAKAMI SHIKISAI KENKYUSHO type IIR 100 meter with an Anti Glare treated surface |

■ 2.3 Electrical

| | |
|-------------------------------------|---|
| Rated Voltage- | DC 7V max |
| Resistance X axis - | 400 ~ 900 Ω (At the connector) |
| Resistance Y axis - | 200 ~ 500 Ω (At the connector) |
| Switch Bounce (Chattering) - | 20ms min when using the silicon rubber measurement rod. |
| Insulation resistance - | 10MΩ minimum at 25KV DC |
| Dielectric Strength - | No problems when at 25KV DC for 1 minute |
| Linearity - | 1.5% max |

$$L = (V_{\max} - V_t) / V_s \quad \text{or} \quad L = (V_{\min} - V_t) / V_s$$

| | |
|-------------------------------------|--|
| L | : Linearity |
| V _s | : Voltage difference between electrodes |
| V _t | : Theoretical voltage of the line position |
| V _{max} , V _{min} | : maximum and minimum voltage actually detected on the line. |



2.4 Environmental

Operating Temperature -

0°C ~ 50°C

Storage Temperature -

-20°C ~ 70°C

Operating Humidity -

20% ~ 85% RH with a Maximum wet bulb temperature of 38°, non condensing

Storage Humidity -

10% ~ 90% RH with a Maximum wet bulb temperature of 38°, non condensing

Chemical Resistance -

A 5µm hard coat acrylic coating is applied on top of the PET PolyEthylene Tererephtalate film for chemical resistance and antiglare properties, which also prevents problems with the following chemicals (Test is storing at room temperature for 2 hours). 10% Nacl-water solution, ethyl-acetate, ethyl-alcohol, toluene, methyl-ethyl-ketone

2.4.1 Pen life

Note taking life -

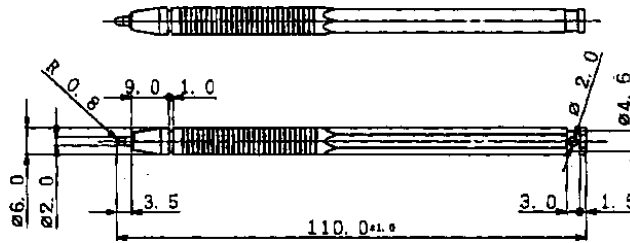
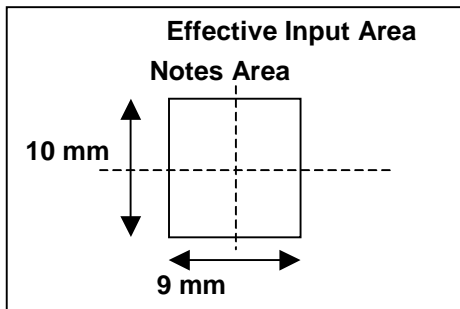
100,000 words minimum

Input life -

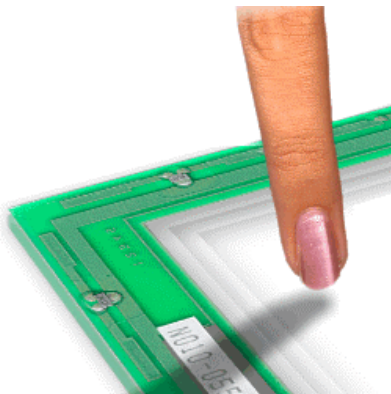
1,000,000 times minimum

Note 1

Words are written in the notes area and the size of the word is 7.5mm x 6.75mm. A word is any Alphabet / Number / Mark. The pen is as shown below and applies a force of 250g. A failure is judged to happen when the current consumption or insulation resistance or dielectric strength are not met as shown in the following sections.



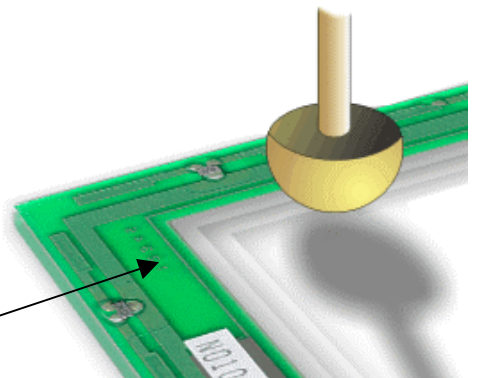
2.4.2 Finger life



A finger is simulated by a silicon rubber plunger R8 (Round type 8mm size) hardness 60° at 200g at frequency 5Hz.

Note

A failure is judged to happen when the current consumption or insulation resistance or dielectric strength are not met as shown the previous sections.



2.5 Information on the Panel

Part number, production year and month are shown. (■ indicates May and October)

| | | | |
|--------|-------|---------------------|--------------------------------------|
| 54-301 | 0 1 2 | . . . ■ . . . ■ . . | = N010-0554-T301 Year 2000 May |
| 50-611 | 1 2 | . . . ■ . . . ■ . . | = N010-0550-T611 Year 2001 September |
| 54-301 | 2 | . . . ■ . . . ■ . . | = N010-0554-T301 Year 2002 June |

Note

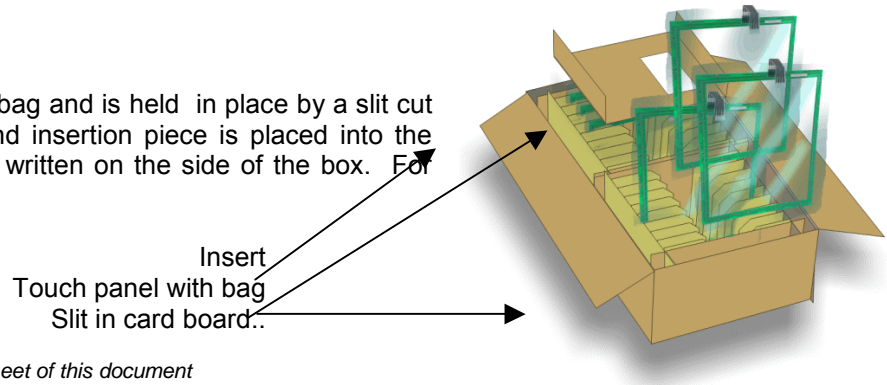
The part number is a shortened version of the part number and production month is the next point to be erased.

2.6 Packing Specification

Vibration - 10~55 Hz at 1 Octave per minute 10G 20 cycles with one side 0.75mm
Drop test - 60cm Drop 1 corner, 3 crease lines and 6 faces. 1 each 1 time
After the test no glass- flaw or crack is seen, and no dent or scratch on the film. Also glass and film must not separate.

2.7 Packing details

Each touch panel is placed into a plastic bag and is held in place by a slit cut into the side of the cardboard. A second insertion piece is placed into the carton to again add stability. The qty is written on the side of the box. For example the T001 has 90 pieces per box.

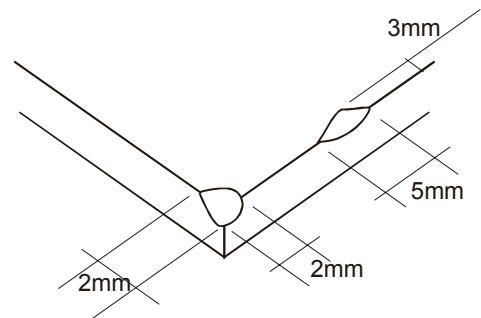


Note
Box qty for each panel type is shown on the front sheet of this document

2.8 Reject Criteria

| Description | | Reject Criteria |
|--|------------------|--|
| Film Dent | | Area $\geq 0.1\text{mm}^2$: To be zero Area $\geq 0.05\text{mm}^2$ & Area $< 0.1\text{mm}^2$: To be max 5 points Area $< 0.05\text{mm}^2$: None-specified |
| Foreign material between glass and film | Dot type | Area $> 0.1\text{mm}^2$: To be zero Area $\geq 0.05\text{mm}^2$ & Area $< 0.1\text{mm}^2$: To be max 5 points Area $< 0.05\text{mm}^2$: None-specified |
| | Line type | Width $\geq 0.1\text{mm}$: To be zero Width $\geq 0.03\text{mm}$ & Width $< 0.1\text{mm}$ and Length $< 10\text{mm}$: To be max 1 point Width $< 0.03\text{mm}$: None-specified |
| Scratch | | Width $\geq 0.1\text{mm}$: To be zero Width $\geq 0.03\text{mm}$ & Width $< 0.1\text{mm}$ with Length $< 80\text{mm}$: To be max 1 point Width $< 0.03\text{mm}$ & Width $< 0.1\text{mm}$ with Length $< 30\text{mm}$: None-specified |
| Dot blur or hard coat missing | | Area $\geq 0.5\text{mm}^2$: To be zero Area $\geq 0.3\text{mm}^2$ & Area $< 0.5\text{mm}^2$: To be max 5 points Area $< 0.3\text{mm}^2$: None-specified |

| | |
|--------------------|--|
| Newton Ring | These must not be seen from Panel film side under a fluorescent lamp (3 wavelength type lamp). Not to be verified from glass side. |
| Glass Flaw | To be no flaw which is bigger than that shown in the following diagram. The number of flaws is not specified. |



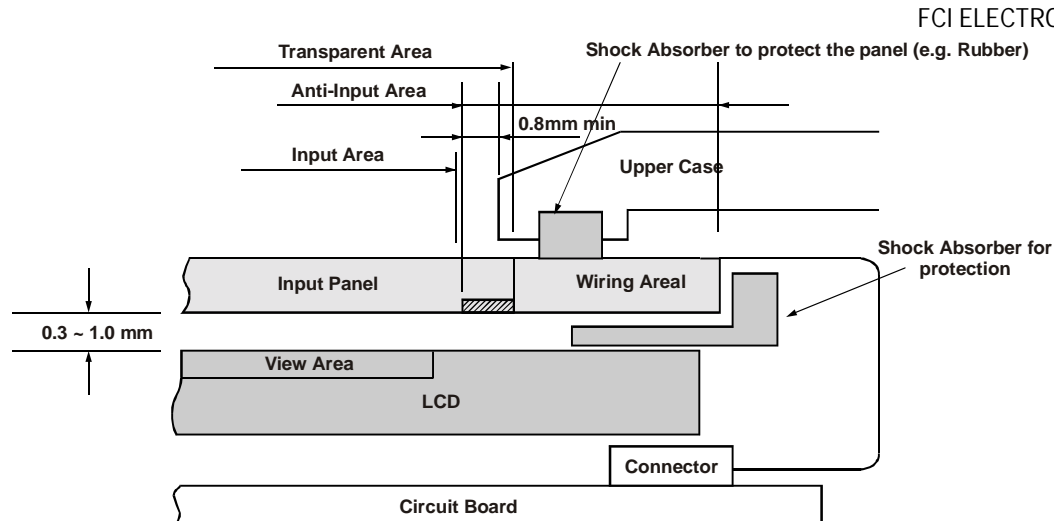
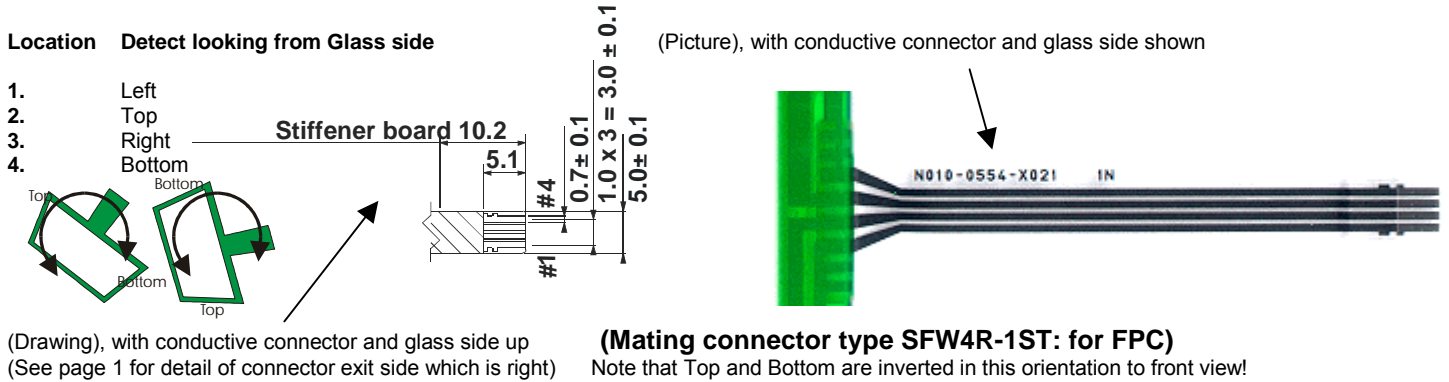
3 General Points of Caution

Touch panels are made of glass, so care must be taken in handling them. Do not stress, pile, bend, lift by the cable or put any stress on the film, for example moving by film face vacuum. In order to clean wring dry a cloth which has been emersed in a natural detergent. **DO NOT** use any organic solvent, acid or alkali solution. Watch the edge of the panel when cleaning, again for safety reasons.

4 Fixing information

The details below indicate the recommended mounting structure for panel and enclosure. The enclosure support to fix the touch panel must be over 1.0mm in width and must be outside the view (Transparent area). Also ensure that the enclosure does not cause miss input by touching the view area.

The diagram below shows that the enclosure edge must be between the View area and the guaranteed active area. We recommend that the material to fix the panel and enclosure is elastic. Special design would be required to stop water ingress. The corners of the touch panel are conductive so do not touch any metal parts after mounting.



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5 Panel Thickness

