

# FUJITSU, TOUCH PANELS

## simple solutions in a complex world



Fujitsu touch panels feature:

- High operating temperature for automotive
- Film/Glass and Film/Film/Glass
- Transparency up to 92%
- Various coatings
- Polarizer options for sunlight readability
- Anti-Newton ring technology
- Pen and finger input
- Sizes up to 17 inch

### Fujitsu Touch Panels

Fujitsu is one of the leading touch panel manufacturers. Our production process is based on the best choice of industry materials, achieving an outstanding optical and mechanical performance.

We have developed a wide range of touch panels to fit many applications for various operating environments. We can supply touch panels suitable for heavy industrial environment, computing or the POS world. For mobile phones and PDAs we can offer panels that are shock resistant with various thicknesses, which are important factors when designing mobile applications. Fujitsu also manufactures panels that can withstand high temperatures, suitable for automotive applications.

Fujitsu offers all of their resistive touch panel products in RoHS-compliant versions.

### The Benefits

Fujitsu touch panels offer various major advantages:

- **High optical quality**
  - Standard transparency 80% to 82%
  - Anti-Glare coating standard
  - Anti-Newton ring technology
  - Micro dot spacer almost invisible
- **High mechanical quality**
  - Sealed construction preventing dirt and dust entering the panel
  - Hard top coating preventing scratches
- **Customization options**
  - All sizes from 2 to 17 inch
  - Anti-Reflective coating for 87% and 92% transparency
  - Clear coating
  - Chemically strengthened glass
  - Thick glass for shock resistance
  - Linear polarizer for sunlight readability
  - Anti-Smudge coating allowing easy cleaning and avoiding fingerprints on the screen

## CAPABILITY OVERVIEW

### RESISTIVE TOUCH PANELS

#### Select The Touch Panel Type That Fits Your Needs

##### OVERVIEW OF TOUCH PANEL TYPES

| Material              | Wires  | Description                                                                    | Pen / finger | Life time          | Size     | Transparency             |
|-----------------------|--------|--------------------------------------------------------------------------------|--------------|--------------------|----------|--------------------------|
| Film/Glass            | 7-wire | Long life time<br>Auto-calibration<br>Little aging<br>Little temperature drift | Pen & finger | 10 Million touches | 5 - 17"  | 80% standard<br>90% max. |
| Film/Glass            | 4-wire | Industry standard                                                              | Pen & finger | 1 Million touches  | 2 - 17"  | 80% standard<br>92% max. |
| Film/Glass automotive | 4-wire | High temperature range                                                         | Finger       | 1 Million touches  | 3.5 - 8" | 80% standard             |
| Film/Film/Plastic     | 4-wire | Unbreakable<br>Protecting the LCD screen                                       | Pen & finger | 1 Million touches  | 1 - 7"   | 77% standard<br>85% max. |

All touch panels can be offered with customized sizes and optical options to fit customers' requirements. For those looking for small quantities or fast development Fujitsu can offer a selection of standard touch panels that can be ordered from the shelf. Furthermore controller boards and drivers are available making integration easier.

##### CHARACTERISTICS 7-WIRE & 4-WIRE TOUCH PANELS, FILM/GLASS

| Item          | Description           | 7-wire (550 SERIES) | 4-wire (554 SERIES) |
|---------------|-----------------------|---------------------|---------------------|
| Optical       | Transparency          | 80% - 82%           | 80% - 82%           |
|               | Haze                  | 5% typical          | 5% typical          |
| Mechanical    | Hardness              | 3 H min             | 3 H min             |
|               | Linearity             | 1.5% to 3.5%        | 1.5% to 3.5%        |
|               | Writing life          | 1 million           | 100,000 words       |
|               | Knocking life         | 10 million          | 1 million words     |
| Electrical    | Power supply          | +5 V or 3.3 VDC     | +5 V or 3.3 VDC     |
|               | Resolution            | 0.1 mm (0.004 in)   | 0.1 mm (0.004 in)   |
|               | Sampling              | 192 pps (variable)  | 192 pps (variable)  |
|               | Transmission rate     | 9,600 bps           | 9,600 bps           |
|               | Consumption           | 20 mA max.          | 20 mA max.          |
|               | Insulation resistance | 10M Ohm             | 10M Ohm             |
| Environmental | Operation temperature | -5°C - +60°C        | -2°C - +55°C        |
|               | Storage temperature   | -30°C - +70°C       | -20°C - +70°C       |
|               | Operating humidity    | 20% - 90%           | 20% - 85%           |
|               | Storage humidity      | 10% - 90%           | 10% - 90%           |

#### 7-Wire Touch Panels, Film/Glass

Fujitsu's 7-wire touch panels are available from 5 to 17 inch. Our 7-wire touch panels can handle up to 10 million plus touches with an operating temperature of -5°C to +60°C and storage from -30°C to +70°C. This unique technology has been developed especially for high demanding applications such as heavy industry, or car diagnostics tools. It combines the advantages of the 5- and 8-wire technologies: the resistance to a higher number of input and compensation of temperature and aging drift. Even when the top layer would be cut, our 7-wire touch panel still functions. The panels have the same high optical quality as our 4-wire touch panels, standard sizes are 8.4, 10.4, 12.1, 15 and 17 inch.

##### 7-WIRE SERIES, FILM/GLASS

| Glass  | Part number    | Size  | FPC tail | Input                     | Control board:            |  |
|--------|----------------|-------|----------|---------------------------|---------------------------|---------------------------------------------------------------------------------------|
| 1.8 mm | N010-0551-T642 | 10.4" | 100 mm   | Pen & finger, light touch | - N16B-0558-B280 (Serial) |                                                                                       |
|        | N010-0551-T253 | 12.1" | 100 mm   | Pen & finger, light touch | - N16B-0558-B740 (USB)    |                                                                                       |
|        | N010-0510-T236 | 15.0" | 100 mm   | Pen & finger              |                           |                                                                                       |
|        | N010-0510-T303 | 17.0" | 220 mm   | Pen & finger              |                           |                                                                                       |
| 1.1 mm | N010-0550-T345 | 8.4"  | 46 mm    | Pen & finger              | Control chip:             |                                                                                       |
|        | N010-0550-T627 | 10.4" | 100 mm   | Pen & finger, light touch | - N010-0559-V026 (Serial) |                                                                                       |
|        | N010-0551-T255 | 12.1" | 100 mm   | Pen & finger, light touch | - NC41120-0017 (USB)      |                                                                                       |
|        | N010-0510-T216 | 15.0" | 100 mm   | Pen & finger              | (PS2 optional)            |                                                                                       |

## 4-Wire Touch Panels, Film/Glass

Fujitsu's 4-wire touch panels are available from 2 to 17 inch and can handle up to 1 million touches with an operating temperature of -2°C to +55°C and storage from -30°C to +70°C. The 4-wire technology comes in a standard version with anti-scratch hard-top coating, an anti-glare finish avoiding the mirror effect. The standard transparency for these touch panels is 82%. The technology used allows pen and finger input making the touch panels suitable for PDA's, cash registers and many other applications.

### 4-WIRE SERIES, FILM/GLASS

| Glass  | Part number    | Size  | FPC tail | Input        | Control board:<br>- N16B-0558-B270 (Serial)<br>- N16B-0558-B730 (USB)                |  |
|--------|----------------|-------|----------|--------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 0.7 mm | N010-0554-T703 | 3.8"  | 21 mm    | Pen & finger |                                                                                      |                                                                                     |
|        | N010-0554-T504 | 8.4"  | 75 mm    | Pen & finger |                                                                                      |                                                                                     |
| 1.1 mm | N010-0554-T009 | 5.7"  | 50 mm    | Pen & finger | Control chip:<br>- N010-0559-V036 (Serial)<br>- NC41120-0018 (USB)<br>(PS2 optional) |                                                                                     |
|        | N010-0555-T043 | 6.4"  | 61 mm    | Pen & finger |                                                                                      |                                                                                     |
|        | N010-0555-T943 | 7.9"  | 61 mm    | Pen & finger |                                                                                      |                                                                                     |
|        | N010-0554-T347 | 10.4" | 75 mm    | Pen & finger |                                                                                      |                                                                                     |
|        | N010-0554-T805 | 12.1" | 75 mm    | Pen & finger |                                                                                      |                                                                                     |
|        | N010-0554-T902 | 15.0" | 61 mm    | Pen & finger |                                                                                      |                                                                                     |

## Automotive 4-Wire Touch Panels, Film/Glass

The automotive film/glass touch panels are available from 3.5 to 8 inch, they can handle 1 million finger touches (not made for intensive pen application) and have a high operating temperature range of -30°C to +85°C, the storage temperature range is -40°C to +95°C. Our standard product sizes are 6.5 and 7 inch in 16/9 format. They have the same optical quality as our standard 4-wire products including an anti-scratch hard top coating with an anti-glare finish avoiding mirror effect. To solve the problem of sunlight decreasing legibility, experienced in the automotive applications, Fujitsu developed a linear polarizer that significantly reduces sunlight reflection.

### SPECIFICATION AUTOMOTIVE TOUCH PANELS, FILM/GLASS

| Item                                       |                          | Transparency 82%                                       | Transparency 88%                                       | Linear Polarizer                                      |
|--------------------------------------------|--------------------------|--------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------|
| Minimum frame size (one side of film side) |                          | 2.5mm and 4.0mm                                        | 2.5mm and 4.0mm                                        | 4.4mm                                                 |
| Electrode is an object)                    |                          |                                                        |                                                        |                                                       |
| Flex tail side                             |                          | 7.0mm                                                  | 7.0mm                                                  | 7.0mm                                                 |
| Optical                                    | Transparency             | 82% typical*                                           | 88% typical*                                           | -                                                     |
|                                            | Transparency (luminance) | -                                                      | -                                                      | 77% typical*                                          |
|                                            | Reflection               | 18%                                                    | 10%                                                    |                                                       |
|                                            |                          | at 550 nm: 13%                                         | at 550 nm: 8%                                          | at 550 nm: 8%                                         |
|                                            | Haze                     | 5.5%                                                   | 5.5%                                                   | 7%                                                    |
| Mechanical                                 | Operation force          | initial: 0.05 - 0.78N<br>after the test: 0.05 - 1.49N  | initial: 0.05 - 0.78N<br>after the test: 0.05 - 1.49N  | initial: 0.05 - 0.78N<br>after the test: 0.05 - 1.96N |
|                                            | Surface Hardness         | ≥ 3H                                                   | ≥ 3H                                                   | ≥ 3H                                                  |
|                                            | Linearity                | initial: ≤ 1.5%<br>after the test: ≤ 3.0%              | initial: ≤ 1.5%<br>after the test: ≤ 3.0%              | initial: ≤ 1.5%<br>after the test: ≤ 3.0%             |
|                                            | Chatterring              | ≤ 20m sec                                              | ≤ 20m sec                                              | ≤ 20m sec                                             |
|                                            | Insulation resistance    | ≥ 10M Ohm                                              | ≥ 10M Ohm                                              | ≥ 10M Ohm                                             |
| Environmental                              | Operating temperature    | -30° - 85°C                                            | -30° - 85°C                                            | -30° - 80°C                                           |
| (maximum wet bulb                          | Operation humidity       | 10% - 90% RH                                           | 10% - 90% RH                                           | 10% - 90% RH                                          |
| temperature 38°C)                          | Storage temperature      | -40° - 95°C                                            | -40° - 95°C                                            | -40° - 85°C                                           |
|                                            | Storage humidity         | 10% - 90% RH                                           | 10% - 90% RH                                           | 10% - 90% RH                                          |
| Reliability                                | High temperature storage | 95°C,192hrs                                            | 95°C,192hrs                                            | 85°C,192hrs                                           |
|                                            | Low temperature storage  | -40°C,192hrs                                           | -40°C,192hrs                                           | -40°C,192hrs                                          |
|                                            | High humidity storage    | 2.5mm: 60°C,90% RH,192hrs<br>4.0mm: 85°C,85% RH,192hrs | 2.5mm: 60°C,90% RH,192hrs<br>4.0mm: 85°C,85% RH,192hrs | 60°C,90% RH,192hrs                                    |
| Note: *JIS K-7105                          |                          |                                                        |                                                        |                                                       |

## CAPABILITY OVERVIEW RESISTIVE TOUCH PANELS

THE POSSIBILITIES ARE INFINITE

### 4-WIRE AUTOMOTIVE SERIES, FILM/GLASS

| Glass  | Part number    | Size | Transparency | Size ratio | Input  | Control board:                                                  |
|--------|----------------|------|--------------|------------|--------|-----------------------------------------------------------------|
| 1.1 mm | N010-0514-T003 | 6.5" | 82%          | 16/9       | Finger | - similar to 4-wire series (film/glass)                         |
|        | N010-0514-T005 | 6.5" | 88%          | 16/9       | Finger |                                                                 |
|        | N010-0514-T101 | 7.0" | 82%          | 16/9       | Finger |                                                                 |
|        |                |      |              |            |        | <b>Control chip:</b><br>- similar to 4-wire series (film/glass) |

### 4-Wire Touch Panels, Film/Film/Plastic

Fujitsu has developed special film/film/plastic touch panels. Available in sizes from 1 to 7 inch operating from -10°C to 60°C. The panels are flexible and cannot break even when dropped. The film/film/plastic touch panels are based on strong polycarbonate plate, offering the additional advantage to protect the LCD in case of shock.

### Control Engineering's Editors' Choice Award

Fujitsu's line of high-transparency touch panels was awarded the 2005 Editors' Choice Award in the Human-Machine Interface category by Control Engineering magazine. Fujitsu's high-transparency touch panels were among 45 products from various categories selected as the most significant innovations from the thousands featured in the 2005 North American print edition of Control Engineering, in its monthly and weekly e-mailed newsletter, and on its [www.controleng.com](http://www.controleng.com) website. Editors judged the products based on service to the industry, technological advancement and market impact.

### About Fujitsu Components Europe B.V.

Fujitsu Components Europe B.V. is responsible for managing the sales, marketing and distribution of its connectors, relays, KVM switches, touch panels, thermal printer mechanisms, keyboards, and pointing and input devices, in Europe, Middle East and Africa.

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