

# FUJITSU TOUCH PANELS

## Years of experience



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### Multi input or dual input resistive touch panel

Pen & finger input  
Gesture recognition  
Light touch

#### 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.

#### Applications

- Automotive (GPS, car infotainment (first mount), bus, truck, taxi)
- Mobile devices (UMPC, PDA, smart phone)
- Factory automation (HMI, industrial PC)
- Measuring instruments and industrial control (car diagnostic, oscilloscope, etc.)
- Medical (blood test, dentist appliances, etc.)
- POS, cash register
- Gaming, lotto terminal

#### Features

- Multi input or single input
- Dual input 4 wire panel
- Gesture recognition
- Light touch
- Flush surface (customized film added to the panel for a completely flat front design)
- 4, 5 and 7 wire resistive panels
- Film/Glass, Film/Film or Film/Film/Plastic resistive panels
- Pen, finger, glove input
- High optical quality:
  - From 80 to 92% transparency
  - From 18 down to 3% reflection
  - Anti-glare, clear or anti finger print
  - Anti-Newton ring technology
- High mechanical quality
  - Sealed construction
  - Scratch resistant
  - Shock resistant option
- High temperature and high reliability version (storage 95°C)
- Sizes from 2 to 17 inches (standard or customized sizes)

#### Select the touch panel that fits your needs

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

## OVERVIEW OF TOUCH PANEL TYPES

Type	Features	Pen / finger	Life time	Size	Transparency	Application examples
Film/Glass - <b>Multi input</b>	Multiple finger or pen input can be done simultaneously	Pen & finger	1 million touches	5.6 - 12.1"	80-83% standard 90% max.	Mobile tablet PC PDA
Film/Glass - <b>4-wire Dual and single input</b>	Industry standard	Pen & finger	1 million touches	2 - 17"	80% standard 90% max.	Measuring instruments Phone HMI
Film/Glass - <b>5-wire</b>	Long life time	Pen & finger	> 10 million touches	Custom size (10 - 17")	80% standard 90% max.	POS Cash register
Film/Glass - <b>7-wire</b>	Long life time Auto-calibration Temperature compensation Drift and aging	Pen & finger	10 million touches	5 - 17"	80% standard 90% max.	Factory automation Car diagnostic POS
Film/Glass - <b>4-wire Automotive</b>	High temperature range	Finger	1 million touches	3.5 - 8"	80% standard 90% max.	GPS, car infotainment
<b>Film/Film/Plastic</b>	Unbreakable LCD screen protection	Pen & finger	1 million touches	2 - 7"	77% standard 85% max.	Logistic terminal Smart security meter

## CHARACTERISTICS 7-WIRE, 4-WIRE AND MULTI-INPUT TOUCH PANELS

Item	Description	7-wire (550 SERIES)	4-wire (554 SERIES)	Multi-input (1530 SERIES)
Optical	Transparency	80% - 82%	80% - 82%	83%
	Haze	5% typical	5% typical	6% typical
Mechanical	Hardness	3 H min	3 H min	3 H min
	Linearity	1.5% to 3.5%	1.5% to 3.5%	+/- 3%
	Writing life	1 million words	100,000 words	100,000 words
	Knocking life	10 million touches	1 million touches	1 million touches
Electrical	Power supply	+5 V or 3.3 VDC	+5 V or 3.3 VDC	4.5 - 5.5V
	Resolution	0.1mm (0.004 in)	0.1mm (0.004 in)	0.1mm
	Sampling	192 pps (variable)	192 pps (variable)	192 pps
	Transmission rate	9,600 bps	9,600 bps	19,200 bps
	Consumption	20 mA max.	20 mA max.	50 mA (4 points)
	Insulation resistance	10M Ohm	10M Ohm	-
Environmental	Operation temperature	-5°C - +60°C	-2°C - +55°C	-2°C - +55°C
	Storage temperature	-30°C - +70°C	-20°C - +70°C	-20°C - +70°C
	Operating humidity	20% - 90%	20% - 85%	20% - 85%
	Storage humidity	10% - 90%	10% - 90%	10% - 90%

Note: Please check individual specification sheets for exact specifications of each part number

### Multi Input Touch Panels - 1530 Series

Fujitsu's resistive multi-input panels can process single-tap and multiple simultaneous inputs from nearly any object using varying pressure e.g., a heavy gloved finger, credit card edge, standard pens, a light finger touch, etc. This capability results in accurate, stylus-handwriting input and enables two-finger manipulation, including pinch, push, rotate and scroll functionality (to zoom or rotate pictures). Both finger and stylus actions can be performed simultaneously. The panels are splash- and dust proof. Its resolution and linearity is comparable to classic resistive panels. The multi input touch panels can be supplied in large sizes up to 12.1 inches. For easy integration, Fujitsu offers the controller (ICs) and driver (Win7 and Android). Control boards (PCB) can be supplied for evaluation.

MULTI INPUT TOUCH PANEL				MULTI INPUT TOUCH PANEL		
<u>Panel</u>				<u>Controller</u>		
Size inches (mm)	Part number	Glass thickness (mm)	Flex tail length (mm)	ICs	PCB	Interface
12.1 (281 x 179.2)	NC1531-T061	1.1	100	NC41120-0035	N01B-0558-B800	USB
7 (141.3 x 84)	NC1531-T081	1.1	100	NC41120-0025	N01B-0558-B810	UART
5.6	NC1531-T041	1.1	100	Under development	Under development	I <sup>2</sup> C

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

Fujitsu's 7-wire touch panels can be manufactured in 5 to 17 inch. The 7-wire touch panels can handle up to 10 million plus touches with an operating temperature from -5°C to +60°C and storage from -30°C to +70°C. This unique technology has been developed especially for highly 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 high number of inputs and compensation of temperature and aging drift. Even when the top layer is cut, the Fujitsu 7-wire touch panel still functions. Fujitsu's 7 wire touch panels have the same high optical quality as the 4-wire touch panels, available in standard sizes 8.4, 10.4, 12.1, 15 and 17 inch.


7-WIRE SERIES, FILM/GLASS				
Glass	Part number	Size	FPC tail	Input
1.8 mm	N010-0551-T642	10.4"	100 mm	Pen & finger, light touch
	N010-0551-T256	12.1"	100 mm	Pen & finger, light touch
	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
	N010-0550-T627	10.4"	100 mm	Pen & finger, light touch
	N010-0551-T255	12.1"	100 mm	Pen & finger, light touch
	N010-0510-T216	15.0"	100 mm	Pen & finger

**Control board:**

- N16B-0558-B280 (Serial)
- N16B-0558-B740 (USB)

**Control chip:**

- N010-0559-V036 (Serial)
- NC41120-0017 (USB)  
(PS2 optional)



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

Fujitsu's 4-wire touch panels can be manufactured in 2 to 17 inch and can handle up to 1 million touches with an operating temperature from -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 to avoid the mirror effect. The standard transparency for these touch panels is 82%. The technology allows pen and finger inputs which makes the touch panels suitable for PDA's, cash registers and many other applications.

STANDARD 4-WIRE RESISTIVE PANEL							
Diagonal in inches	Ratio	Part number ROHS compliant	Outer size mm	Glass thickness mm	Tail (Flex) length mm	Transparency %	Top coat
17	4x3	N010-0554-T442A	353.5x287.5	1.8	120	80	AG
15	4x3	N010-0554-T902A	323.5x245.2	1.1	61	80	AG
12.1	4x3	N010-0554-T813A	261.4x198.8	1.1	120	80	AG/AS.
12.1	4x3	N010-0554-T805A	261.4x198.8	1.1	75	82	AG
10.4	4x3	N010-0554-T348A	228.2x175.4	1.1	120	86	Clear
10.4	4x3	N010-0554-T347A	228.2x175.4	1.1	75	82.5	AG
8.4	4x3	N010-0554-T507A	182.7x142.65	1.8	75	80	AG
8.4	4x3	N010-0519-T742A	182.7x142.65	1.1	120	86	Clear
8.4	4x3	N010-0554-T511A	182.7x142.65	1.1	120	80	AG/AS.
8.4	4x3	N010-0554-T504A	182.7x142.7	0.7	75	80	AG
6.4	4x3	N010-0554-T043A	144x111	1.1	61	82	AG
6.4	4x3	N010-0518-T342A	144x111	1.1	120	78	Polarized
6.4	4x3	N010-0554-T048A	144x111	1.1	120	86	Clear
5.7	4x3	N010-0554-T009A	132.5x104.7	1.1	50	80	AG
4.3	4x3	N010-0554-T241A	105x67	1.1	75	86	AG/AS.
3.8	4x3	N010-0554-T703A	87.6x69.5	0.7	21	80	AG


**Control board:**

- N16B-0558-B270 (Serial)
- N16B-0558-B730 (USB)

**Control chip:**

- N010-0559-V036 (Serial)
- NC41120-0018 (USB)  
(PS2 optional)

**4-wire light touch panel**  
Various standard sizes available, contact Fujitsu for details



SEMI STANDARD 4-WIRE RESISTIVE PANEL							
Diagonal in inches	Ratio	Part number ROHS compliant	Outer size mm	Glass thickness mm	Tail (Flex) length mm	Transparency %	Top coat
17	4x3	T010-1201-T200	362.5x285.7	1.8	150	82	AG
12.1	wide	T010-1201-T280	275.8x178	1.1	150	82	AG/AS.
10.2	wide	T010-1201-T270	235x145.8	1.1(+0.3DSA)	78	82	AG/AS.
10.4	4x3	N010-0554-T351A	228.2x175.4	1.1	120	86	AG/AS.
10.4	4x3	N010-0554-T352A	228.2x175.4	1.1	120	82	AG/AS.
7	wide	T010-1301-T320	165x104	1.1	70	82.5	AG
6.5	wide	T010-1301-T690	155x89.2	1.1	50	82	Clear
5.7	4x3	N010-0554-T015A	132.5x104.7	1.1	120	80	AG
3.9	4x3	N010-0556-T408A	91.2x27	1.1	61	86	Clear
3.7	4x3	N010-0516-T407A	84.8x70.8	0.7	21	80	AG

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

The automotive film/glass touch panels can be manufactured from 3.5 to 8 inch. They are designed for finger applications and can handle 1 million finger touches. They have a high operating temperature range of -30 °C to +85 °C and the storage temperature range is -40 °C to +95 °C. The standard product sizes are 6.5 and 7 inch in 16/9 format. The panels have the same optical quality as the standard 4-wire products including an anti-scratch hard top coating with an anti-glare finish to avoid the mirror effect. To solve the problem of sunlight decreasing legibility, often experienced in the automotive applications, Fujitsu has developed low reflection technologies based on AR coating or polarizer.

SPECIFICATION AUTOMOTIVE TOUCH PANELS, FILM/GLASS					
Item		Transparency 82%	Transparency 87%	Transparency 90%	Linear Polarizer
Minimum frame size		2.5 mm and 4.0 mm	2.5 mm and 4.0 mm	2.5 mm and 4.0 mm	4.4 mm
Flex tail side		7.0 mm	7.0 mm	7.0 mm	7.0 mm
Optical	Transparency	82% typical*	88% typical*	90% typical*	-
	Transparency (luminance)	-	-	-	84% typical*
	Reflection	at 550 nm: 13%	at 550 nm: 8%	at 550 nm: 5%	at 550 nm: 3%
	Haze	5.5%	5.5%	5%	7%
Mechanical	Operation force	initial: 0.05 - 0.78N	initial: 0.05 - 0.78N	initial: 0.05 - 0.78N	initial: 0.05 - 0.78N
		after the test: 0.05 - 1.49N	after the test: 0.05 - 1.49N	after the test: 0.05 - 1.49N	after the test: 0.05 - 1.96N
	Surface Hardness	≥ 3H	≥ 3H	≥ 3H	≥ 3H
	Linearity	initial: ≤ 1.5%	initial: ≤ 1.5%	initial: ≤ 1.5%	initial: ≤ 1.5%
		after the test: ≤ 3.0%	after the test: ≤ 3.0%	after the test: ≤ 3.0%	after the test: ≤ 3.0%
Chattering	≤ 20m sec	≤ 20m sec	≤ 20m sec	≤ 20m sec	
Insulation resistance	> 10M Ohm	> 10M Ohm	> 10M Ohm	> 10M Ohm	
Environmental (maximum wet bulb temperature 38°C)	Operating temperature	-30°- 85°C	-30°- 85°C	-30°- 85°C	-30°- 80°C
	Operation humidity	10% - 90% RH	10% - 90% RH	10% - 90% RH	10% - 90% RH
	Storage temperature	-40°- 95°C	-40°- 95°C	-40°- 95°C	-40°- 85°C
	Storage humidity	10% - 90% RH	10% - 90% RH	10% - 90% RH	10% - 90% RH
Reliability	High temperature storage	95°C, 720hrs	95°C, 720hrs	95°C, 720hrs	85°C, 192hrs
	Low temperature storage	-40°C, 720hrs	-40°C, 720hrs	-40°C, 720hrs	-40°C, 192hrs
	High humidity storage	4.0mm: 85°C, 85% RH, 720hrs	4.0mm: 85°C, 85% RH, 720hrs	4.0mm: 85°C, 85% RH, 720hrs	60°C, 90% RH, 192hrs

Note: \*JIS K-7105

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	<b>Control chip:</b> - similar to 4-wire series (film/glass)
	N010-0514-T101	7.0"	82%	16/9	Finger	

### 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 advantage of additional protection to the LCD in case of shock.

#### Flush surface panel

Fujitsu Components has developed a surface finish for consumer and industrial applications providing a completely flat front design. The flat and stylish surface finish can be achieved by placing a “top” film on the touch panel surface. The shape and size of the top sheet is customizable. Logos/icons can be printed on the top film.

