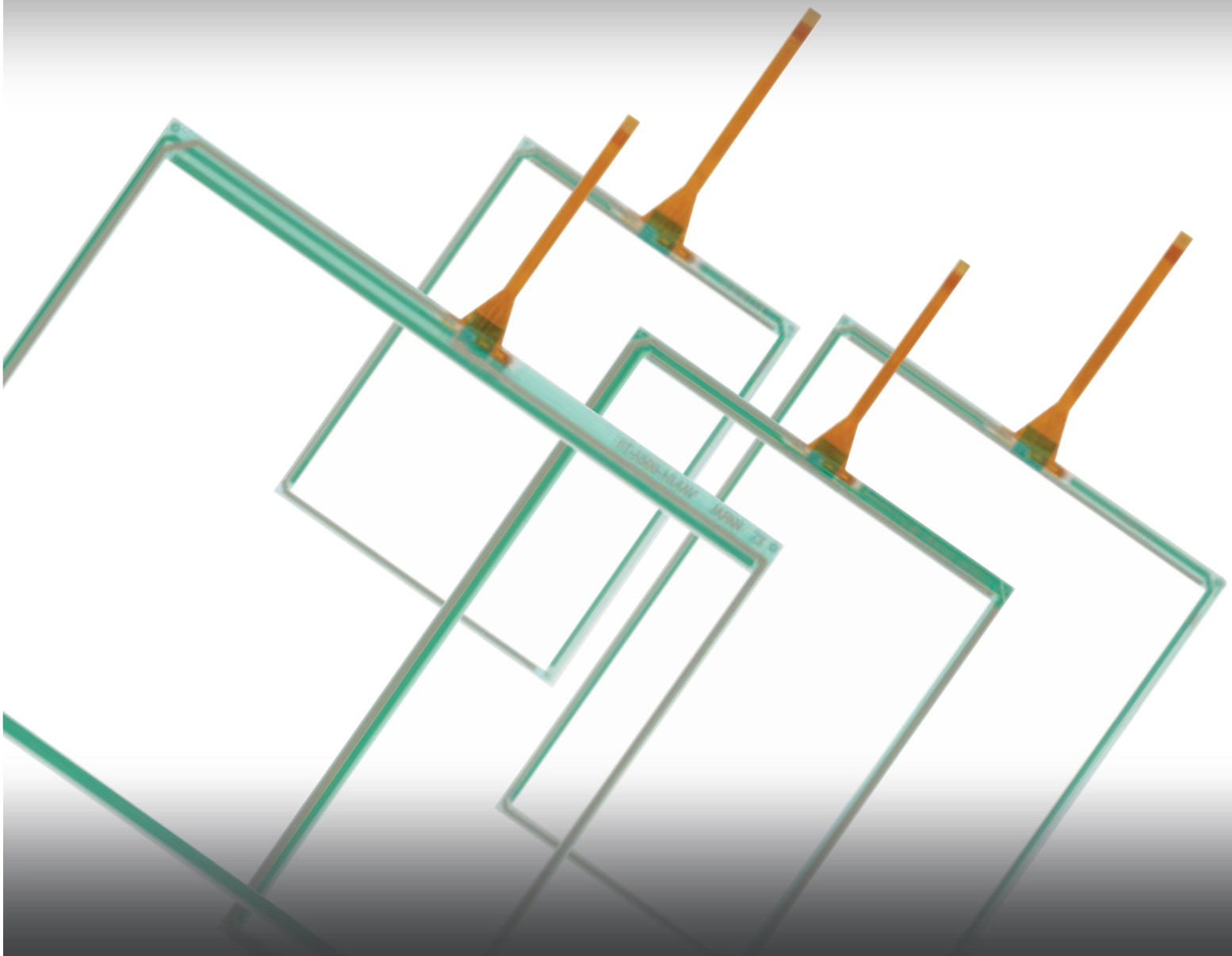
New Product

CN-0320

FT Series

4-Wire Analog Resistive Touch Screens

with Gold Plated Tails



Exceptional Continuity and Reliability

2017-10-23

NKK SWITCHES

Innovation Driving Quality

DISTINCTIVE CHARACTERISTICS



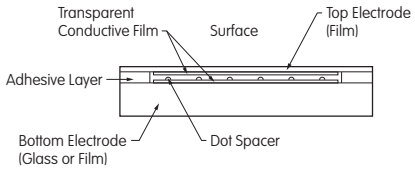
- Expansion of FT Series includes wider, larger, narrow frame types with gold plated tails, offering increased continuity and reliability
- Touch screens with gold plated tails have decreased tail width; connector pins change from 8 pin with 1.25mm pitch to 4 pin with 1.0mm pitch
- Tail material upgraded to polyimide resin from polyethylene terephthalate (PET), ensuring advanced flexibility, strength and resilience against heat
- Construction of film and glass with superior durability and flexibility
- Choice of input methods: finger or stylus
- Wide range of panel sizes and tail positions, including 5.7", 6.5", 8.4", 10.4", 10.6", 12.1", 15", 15.6" and 19"
- Anti-Newton Ring (ANR) Technology eliminates many of the typical visual artifacts
- Operator can easily direct the device without specialized technical training or computer knowledge by combining touch screen to LCD panel, plasma EL or other display
- Touch screens support flexible design, including digital and analog, in a variety of sizes and relatively low cost
- Anti-glare surface reduces reflection from fluorescent lighting, sunlight; hard resin coating ensures excellent protection against scratches or damage
- Adhesive layer between glass and film has improved durability to withstand diverse environmental conditions

APPLICATIONS

- Office Automation
- Industrial Automation
- Information Technology
- Banking Systems
- Broadcast
- Hospitality
- Gaming/Entertainment
- Medical Equipment

Note: Contact NKK Switches regarding use of FT Touch Screens for medical equipment.

Cross Section View of Touch Screen



Specializing in Custom Products

- Custom sizes for Resistive Touch Screens
- Capability to attach touch screens to LCDs or other components
- Specializing in custom construction such as film plus film combinations
- Fingerprint resistant, high transmittance films
- Availability of metallic tails (i.e., copper pattern plus gold plate)

Control Board for Analog Touch Panels

- Combining an analog touch panel with a controller board device driver on a computer enables performing the same operations as with a mouse by touching the touch panel screen
- NKK offers controller boards compatible with USB or with RS232C

TYPICAL TOUCH SCREEN ORDERING EXAMPLE

FT	AS	00	–	10.6	A	W	–	4	A

Number of Keys

00	Analog
225	*Digital

Screen Size

5.7	5.7″
6.5	6.5″
8.4	8.4″
10.4	10.4″
10.6	10.6″
12.1	12.1″
15	15.0″
15.6	15.6″
19	19.0″

*Digital type only applicable to FTAS225-5.7A-N (printed tail)

Input Method

A	Finger or Stylus

**Position of Tail (Analog)

No Code	Left or Right (Horizontal)
V	Top or Bottom (Vertical)
S	Narrow Frame Type 1 (Horizontal)
N	Narrow Frame Type 2 (Horizontal)
W	Wide Type (Horizontal)

**Aspect Ratio:
Narrow Frame: 4:3
Wide Frame: 16:9

Type

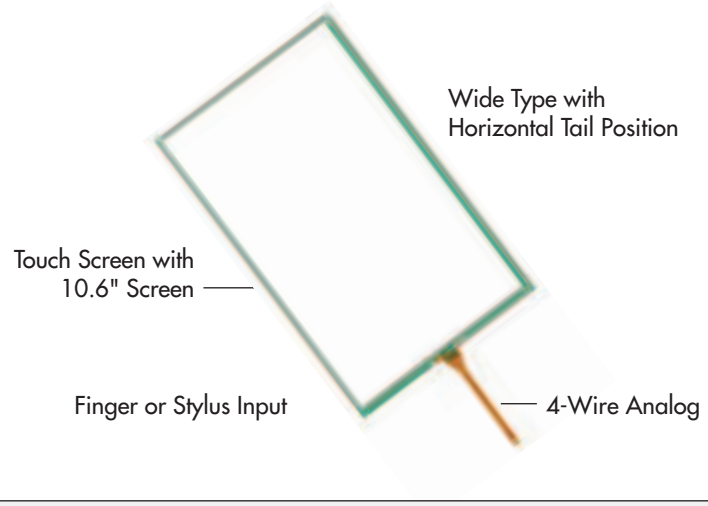
4	4-Wire
N	Digital

Tail

No Code	Printed Tail 1.25mm Pitch
A	Gold Plated Tail 1.0mm Pitch

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

FTAS00–10.6AW–4A



GENERAL SPECIFICATIONS

4-Wire Analog Resistive Touch Screens	
Power Level	1mA @ 5V DC (resistive load)
XY Resistive Value	Narrow: 250 ~ 850Ω Wide: 120 ~ 1,500Ω
Linearity	±1.5% maximum
Insulation Impedance	10MΩ minimum @ 25V DC
Expected Operational Life	Writing: 50,000 operations minimum (approximately 30mm movement with stylus)
	Tapping: 1,000,000 operations minimum (pressing force 4.9N using silicone rubber, hardness 60°)
Touch Activation Force	1.47N maximum
Chattering Time	10 milliseconds maximum
Relative Humidity	+60°C (+140°F), humidity 90%, 240 hours
Operating Temperature Range	–20°C ~ +70°C (-4°F ~ +158°F)
Storage Temperature Range	–40°C ~ +80°C (–40°F ~ +176°F)
Light Transmission	80% standard (Touch Panel portion)
Surface Hardness	2H minimum (JIS K5600)

Note: Values are determined by NKK's individual specification tests in a controlled environment, and do not certify that the product supports simultaneous multiple conditions.

PART NUMBERS & DESCRIPTIONS



FTAS00-5.7AS-4A



FTAS00-6.5AS-4A



FTAS00-8.4AS-4A



FTAS00-10.4AS-4A



FTAS00-10.4AV-4A



FTAS00-10.6AW-4A



FTAS00-12.1AN-4A



FTAS00-12.1AW-4A



FTAS00-15AN-4A



FTAS00-15.6AW-4A



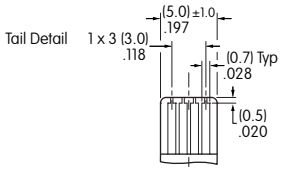
FTAS00-19AN-4A

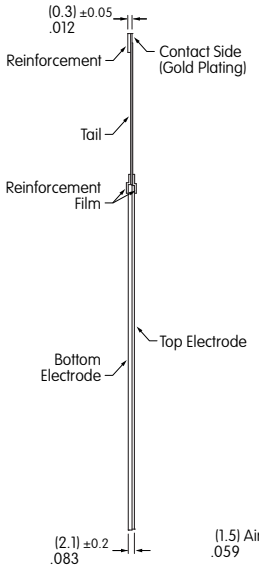
4-Wire Analog Touch Screens

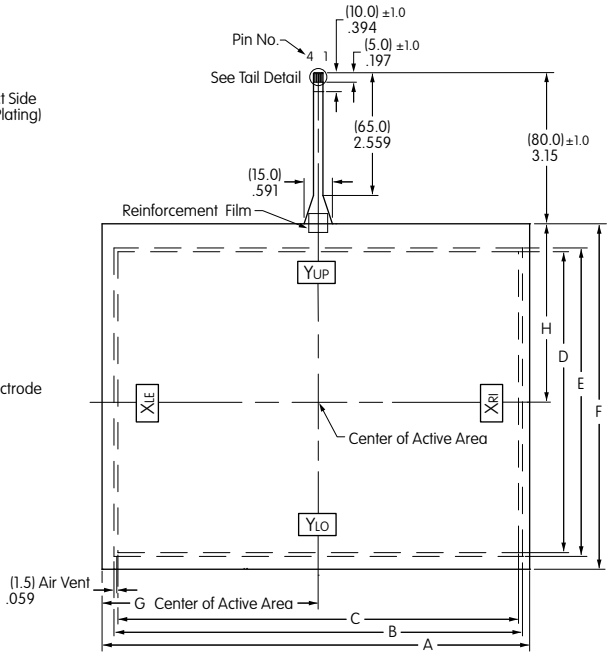
Tail	Part Number	Screen Size in Inches	Key Area Dimensions	Viewing Area Dimensions	External Dimensions	Panel Thickness	Terminal Detail 4 Pin .039″ (1.0mm) Pitch
Narrow Frame Type 1 Horizontal Tale	FTAS00-5.7AS-4A	5.7	4.535″ x 3.402″ (115.2mm x 86.4mm)	4.764″ x 3.606″ (121.0mm x 91.6mm)	5.157″ x 3.976″ (131.0mm x 101.0mm)	.055″ (1.4mm)	Length 3.150″ (80.0mm)
	FTAS00-6.5AS-4A	6.5	5.197″ x 3.898″ (132.0mm x 99.0mm)	5.433″ x 4.134″ (138.0mm x 105.0mm)	5.906″ x 4.567″ (150.0mm x 116.0mm)	.055″ (1.4mm)	Length 3.150″ (80.0mm)
	FTAS00-8.4AS-4A	8.4	6.728″ x 5.102″ (170.9mm x 129.6mm)	6.949″ x 5.331″ (176.5mm x 135.4mm)	7.343″ x 5.685″ (186.5mm x 144.4mm)	.083″ (2.1mm)	Length 3.150″ (80.0mm)
	FTAS00-10.4AS-4A	10.4	8.315″ x 6.236″ (211.2mm x 158.4mm)	8.465″ x 6.394″ (215.0mm x 162.4mm)	8.882″ x 6.748″ (225.6mm x 171.4mm)	.083″ (2.1mm)	Length 3.150″ (80.0mm)
Vertical Tale	FTAS00-10.4AV-4A	10.4	8.354″ x 6.276″ (212.2mm x 159.4mm)	8.520″ x 6.433″ (216.4mm x 163.4mm)	8.917″ x 7.205″ (226.5mm x 183.0mm)	.083″ (2.1mm)	Length 3.150″ (80.0mm)
Narrow Frame Type 2 Horizontal Tale	FTAS00-12.1AN-4A	12.1	9.677″ x 7.256″ (245.8mm x 184.3mm)	9.827″ x 7.406″ (249.6mm x 188.1mm)	10.236″ x 7.795″ (260.0mm x 198.0mm)	.083″ (2.1mm)	Length 3.150″ (80.0mm)
	FTAS00-15AN-4A	15.0	11.972″ x 8.980″ (304.1mm x 228.1mm)	12.130″ x 9.138″ (308.1mm x 232.1mm)	12.669″ x 9.665″ (321.8mm x 245.5mm)	.083″ (2.1mm)	Length 3.150″ (80.0mm)
	FTAS00-19AN-4A	19.0 -	14.815″ x 11.850″ (376.3mm x 301.0mm)	15.039″ x 12.102″ (382.0mm x 307.4mm)	15.571″ x 12.638″ (395.5mm x 321.0mm)	.083″ (2.1mm)	Length 3.150″ (80.0mm)
Wide Type Horizontal Tale	FTAS00-10.6AW-4A	10.6	9.071″ x 5.441″ (230.4mm x 138.2mm)	9.189″ x 5.563″ (233.4mm x 141.3mm)	9.756″ x 6.094″ (247.8mm x 154.8mm)	.083″ (2.1mm)	Length 3.150″ (80.0mm)
	FTAS00-12.1AW-4A	12.1	10.280″ x 6.425″ (261.12mm x 163.2mm)	10.404″ x 6.551″ (264.26mm x 166.4mm)	10.827″ x 6.929″ (275.0mm x 176.0mm)	.083″ (2.1mm)	Length 3.150″ (80.0mm)
	FTAS00-15.6AW-4A	15.6	13.551″ x 7.618″ (344.2mm x 193.5mm)	13.681″ x 7.748″ (347.5mm x 196.8mm)	14.276″ x 8.433″ (362.6mm x 214.2mm)	.083″ (2.1mm)	Length 3.150″ (80.0mm)

TYPICAL DIMENSIONS

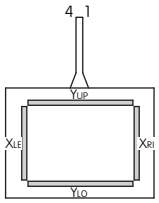
Vertical Frame







Pins	Signal
1	Y_{UP}
2	Y_{LO}
3	X_{LE}
4	X_{RI}



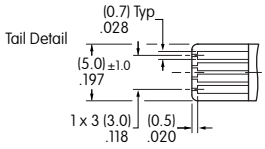
Y_{UP}, Y_{LO}: Bottom Electrode Terminal
X_{LE}, X_{RI}: Top Electrode Terminal

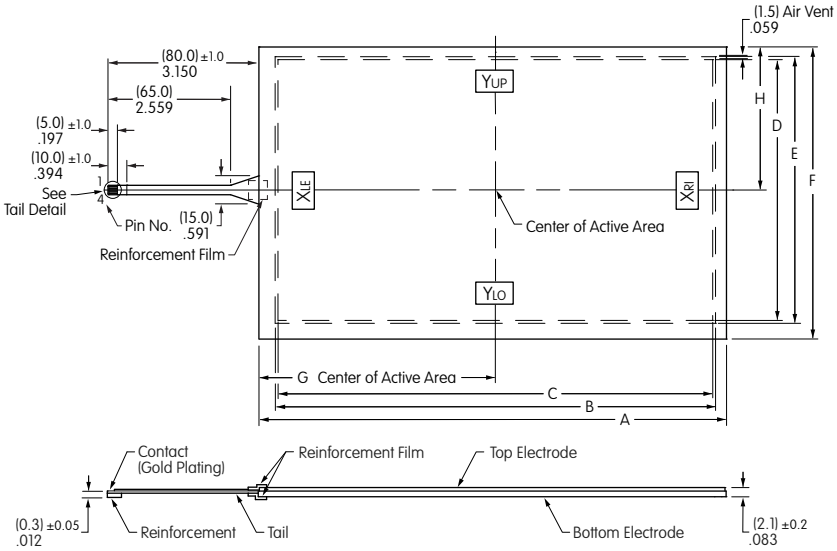
Typical Dimensions for Vertical Frame

Part Number	Screen Size in Inches	Dim A	Dim B Viewable Area	Dim C Active Area	Dim D Active Area	Dim E Viewable Area	Dim F	Dim G Center of Active Area (Horizontal)	Dim H Center of Active Area (Vertical)
FTAS00-10.4AV-4A	10.4	8.917″ (226.5±0.3mm)	8.520″ (216.4mm)	8.354″ (212.2mm)	6.276″ (159.4mm)	6.433″ (163.4mm)	7.205″ (183.0±0.3mm)	4.508″ (114.5mm)	3.720″ (94.5mm)

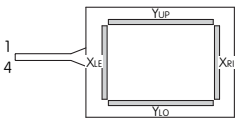
TYPICAL DIMENSIONS

Wide Horizontal Frame





Pins	Signal
1	Y_{UP}
2	Y_{LO}
3	X_{LE}
4	X_{RI}



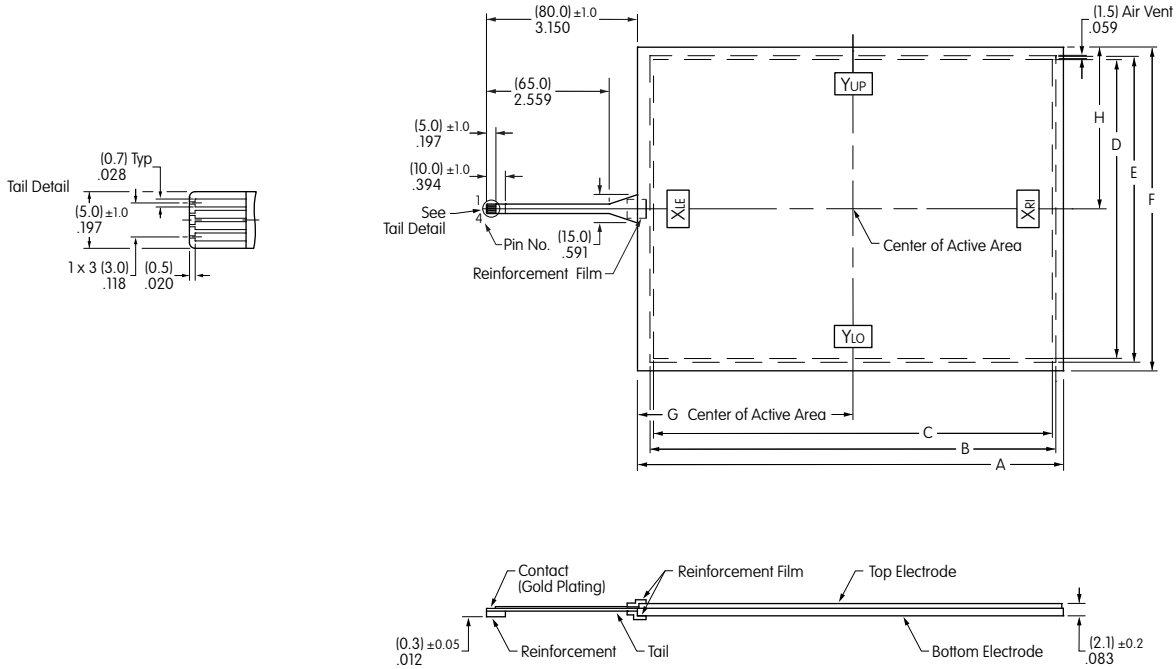
Y_{UP}, Y_{LO}: Bottom Electrode Terminal
X_{LE}, X_{RI}: Top Electrode Terminal

Typical Dimensions for Wide Horizontal Frame

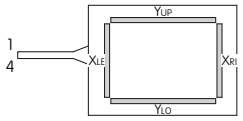
Part Number	Screen Size in Inches	Dim A	Dim B Viewable Area	Dim C Active Area	Dim D Active Area	Dim E Viewable Area	Dim F	Dim G Center of Active Area (Horizontal)	Dim H Center of Active Area (Vertical)
FTAS00-10.6AW-4A	10.4	8.917″ (247.8±0.3mm)	8.520″ (233.4mm)	8.354″ (230.4mm)	6.276″ (138.2mm)	6.433″ (141.3mm)	7.205″ (154.8±0.3mm)	4.508″ (125.3mm)	3.720″ (75.8mm)
FTAS0012.1AW-4A	12.1	10.827″ (275.0±0.3mm)	10.404" (264.26mm)	10.280" (261.12mm)	6.425" (163.2mm)	6.551" (166.4mm)	6.929" (176±0.3mm)	5.468" (138.89mm)	—
FTAS0015.6AW-4A	15.6	14.276" (362.6±0.3mm)	13.681" (347.5mm)	13.551" (344.2mm)	7.618" (193.5mm)	7.748" (196.8mm)	8.433" (214.2±0.3mm)	7.138" (181.3mm)	—

TYPICAL DIMENSIONS

Narrow Frame & Horizontal Tail



Pins	Signal
1	Y_{UP}
2	Y_{LO}
3	X_{LE}
4	X_{RI}



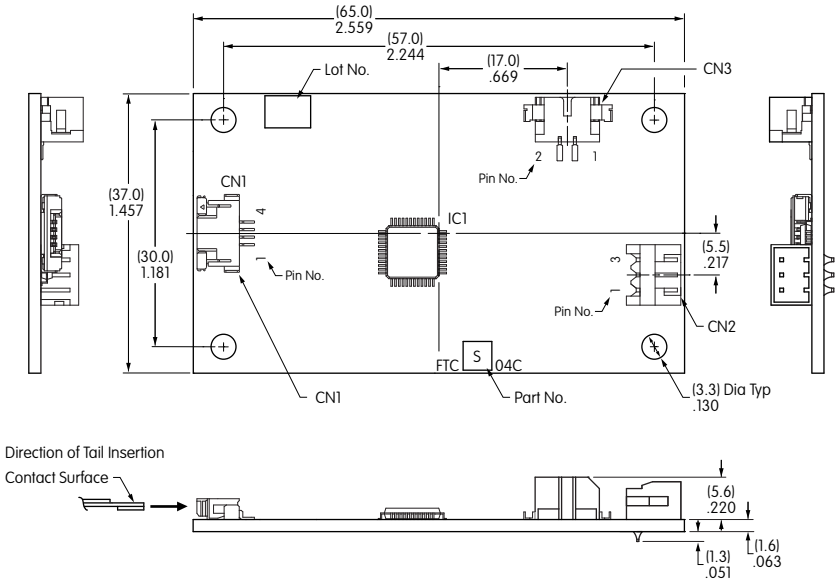
Y_{UP}, Y_{LO}: Bottom Electrode Terminal
X_{LE}, X_{RI}: Top Electrode Terminal

Typical Dimensions for Narrow Frame

Part Number	Screen Size in Inches	Dim A	Dim B Viewable Area	Dim C Active Area	Dim D Active Area	Dim E Viewable Area	Dim F	Dim G Center of Active Area (Horizontal)	Dim H Center of Active Area (Vertical)
FTAS00-5.7AS-4A	5.7	5.157″ (131.0.±0.3mm)	4.764″ (121.0mm)	4.535″ (115.2mm)	3.402″ (86.4mm)	3.606″ (91.6mm)	3.976″ (101.0±0.3mm)	2.648″ (67.25mm)	—
FTAS00-6.5AS-4A	6.5	5.906″ (150.0.±0.3mm)	5.433″ (138.0mm)	5.197″ (132.0mm)	3.898″ (99.0mm)	4.134″ (105.0mm)	4.567″ (116.0±0.3mm)	3.031″ (77.0mm)	—
FTAS00-8.4AS-4A	8.4	7.343″ (186.5.±0.3mm)	6.949″ (176.5mm)	6.728″ (170.9mm)	5.102″ (129.6mm)	5.331″ (135.4mm)	5.685″ (144.4±0.3mm)	3.734″ (94.85mm)	—
FTAS00-10.4AS-4A	10.4	8.882″ (225.6.±0.3mm)	8.465″ (215.0mm)	8.315″ (211.2mm)	6.236″ (158.4mm)	6.394″ (162.4mm)	6.748″ (171.4±0.3mm)	4.492″ (114.1mm)	—
FTAS00-12.1AN-4A	12.1	10.236″ (260.0.±0.3mm)	9.827″ (249.6mm)	9.677″ (245.8mm)	7.256″ (184.3mm)	7.406″ (188.1mm)	7.795″ (198.0±0.3mm)	5.177″ (131.5mm)	3.850″ (97.8mm)
FTAS00-15AN-4A	15.0	12.669″ (321.8.±0.3mm)	12.130″ (308.1mm)	11.972″ (304.1mm)	8.980″ (228.1mm)	9.138″ (232.1mm)	9.665″ (245.5±0.3mm)	6.398″ (162.5mm)	—
FTAS00-19AN-4A	19.0	15.571″ (395.5.±0.3mm)	15.039″ (382.0mm)	14.815″ (376.3mm)	11.850″ (301.0mm)	12.102″ (307.4mm)	12.638″ (321.0±0.3mm)	7.799″ (198.1mm)	—

Controller Board for RS232C

FTCS04C



CN1 4-Wire Analog Touch Screen Connector - 4 Pins

Pin No.	Symbol	Description
1	Y0	For Y_{UP} or Y_{LO}
2	Y1	
3	X0	For X_{RI} or X_{LE}
4	X1	

CN2 RS232C Header Connector - 3 Pins

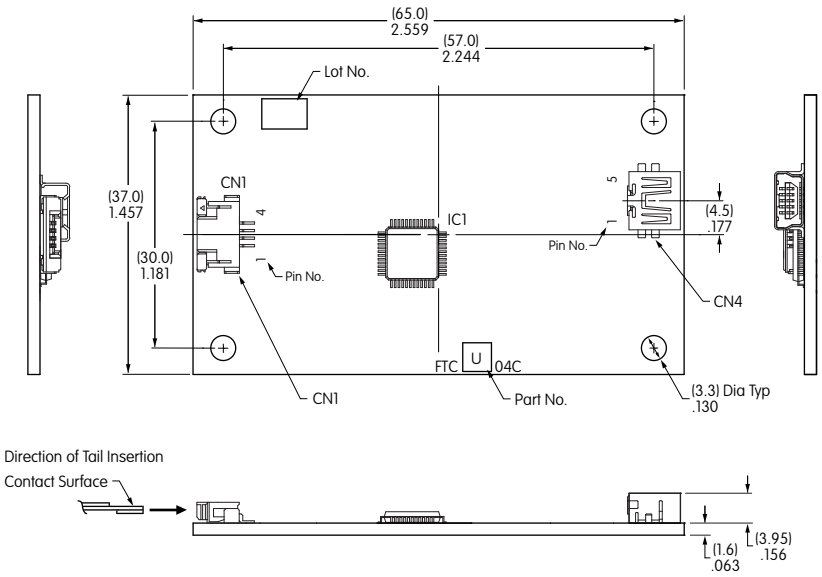
Controller Board Side			
Pin No.	Symbol	Description	Computer Side
1	RD	Receiving Data (IN)	Sending Data
2	SD	Sending Data (OUT)	Receiving Data
3	GND	GND	GND

CN3 Header Connector for Power Supply - 2 Pins

Pin No.	Symbol	Description
1	V_{CC}	Supply Voltage
2	GND	GND

Controller Board for USB

FTCU04C



CN1 4-Wire Analog Touch Screen Connector - 4 Pins

Pin No.	Symbol	Description
1	Y0	For Y_{UP} or Y_{LO}
2	Y1	
3	X0	For X_{RI} or X_{LE}
4	X1	

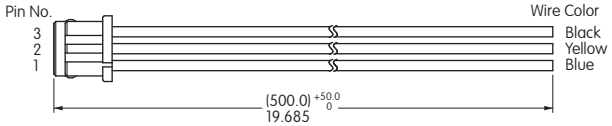
CN4 Header Connector for USB - 5 Pins

Pin No.	Symbol	Description
1	V_{CC}	USB V_{CC}
2	D –	USB D –
3	D +	USB D +
4	GND	USB GND
5	GND	Shield GND

OPTIONAL ACCESSORIES

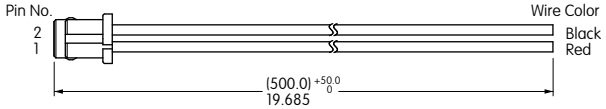
Receptacle Connector & Wire Assembly for RS232C

AT713 is the Receptacle Connector with code to connect to RS232C communication of the controller boards. It is compatible with FTCS04C. The cable length is adjustable.



Receptacle Connector & Wire Assembly for Power Supply

AT714 is a Receptacle Connector with code to connect to FTCS04C power source of the control boards. The cable length is adjustable.



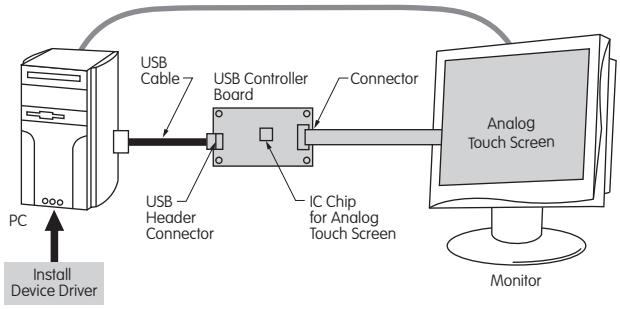
4-Wire Touch Screen Controller Boards & Drivers

DISTINCTIVE CHARACTERISTICS

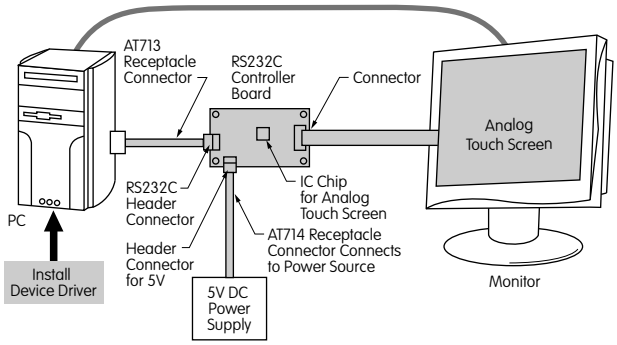
- Compatible with Control Board USB/RS232C
- Equipped with EPROM for Saving Setting Data
- Device Drivers are Windows 7, 8 & 10 Compatible

Controller Boards		
Type	**Part No.**	**Communication Protocol**
4-Wire	**FTCS04C**	RS232C
4-Wire	**FTCU04C**	USB

System Configuration for USB



System Configuration for RS232C



Available through NKK Switches

Touch panels can be operated the same as PC mouse functions by combining a control board or device driver and analog touch screen. For specifications or technical data for the controller boards and drivers, see NKK's web site or call our engineering support personnel.

General Specifications		
Items	**FTCS04C**	**FTCU04C**
Interface	RS232C	USB 2.0 Full Speed
Clock	16MHz	16MHz
Supply Voltage	5.0V	5.0V (Bus Power)
Resolution	10bit	10bit
Current Consumption	40mA maximum	100mA maximum
Communication Speed	9600 bps	———
Communication Format	Data Length: 8bit Parity: None Stop Bit: 1	———

The controller board is designed specifically for touch screens with the gold plated tails. Refer to the product data sheet for detailed specifications, available by contacting NKK Switches.

Absolute Maximum Ratings

Items	Symbols	Minimum	Maximum	Notes
Supply Voltage	V_{CC}	−0.3V	+5.5V	——
Input Voltage	V_{TP}	——	V_{CC}	Touch Panel Input
	*V_{RS}	−15V	+15V	RS232C
Operating Temperature	T_{OPR}	−20°C −4°F	+70°C +158°F	——
Storage Temperature	T_{STG}	−25°C −13°F	+85°C +185°F	——

*V_{RS}: Applies Only to RS232C

Recommended Values

Items	Symbols	Minimum	Typical	Maximum	Notes
Supply Voltage	V_{CC}	+4.75V	+5.0	+5.25V	——
Operating Temperature	T_{OPR}	−20°C −4°F	——	+70°C +158°F	No Condensation

IC Chip for Analog Touch Screens

DISTINCTIVE CHARACTERISTICS

- Interface: USB and RS232C
- High Speed and Accuracy
- Built-in Calibration Function
- Data Function Removal Built In to Eliminate Noise

The IC is for use with the 4-wire transparent touch screens. When the screen is touched, it recognizes the position of the touch by the level of analog voltage detected by the A/D. The A/D converter receives the value and sends a set of coordinate values as serial data or USB.

Contact NKK Switches for the IC data sheet.

General Specifications for IC FTCSU548	
Package	LFQFP 48 Pins
Interface	Serial Interface (Asynchronous) or USB (Full Speed 2.0)
Supply Voltage	3.3/5.0V Typ; USB Available for 5V Only
*** Rated Output Current**	High Level: –170mA Low Level: +170mA
Operation Frequency	16MHz
A/D Converter Resolution	10bit
Operating Temperature	–20°C ~ +85°C (–4°F ~ +185°F)
Storage Temperature	–40°C ~ +125°C (–40°F ~ +257°F)
* Total Output Electric Current Amount of all the I/O Port	

STORAGE, HANDLING & INSTALLATION

Handling of Controller Board

- Use arc prevention to protect device from static electricity.
- Power source should be activated after host and touch panel are connected.
- When inserting connector CN1 and touch panel tail, be sure the slider of connector CN1 is pulled. Do not pull more than 10 times.
- Do not alter the product.
- Do not use any commands other than the ones outlined in the specifications.
- Place the product away from noise source (such as inverter from LCD operation) since tail can be affected by noise.
- If device driver (USB) does not work after installation, reboot the host computer while connected to the controller board.
- This product does not support suspended mode (USB).
- Protocol of USB transmission is one frame per one transaction.
- Contact factory if not using the protocol above.
- Warranty for one year after delivery. NKK warranties the 4-wire touch panel when it is used with the NKK control board and driver. Do not use third party control boards. NKK is not responsible for results of using damaged equipment with the controller boards.
- NKK Switches cannot assume responsibility for damages caused by software side during use of the touch screens.
- The touch screen pressed position may shift depending on various factors such as age, improper tail insertion or extreme temperatures. In such cases, recalibration is necessary.

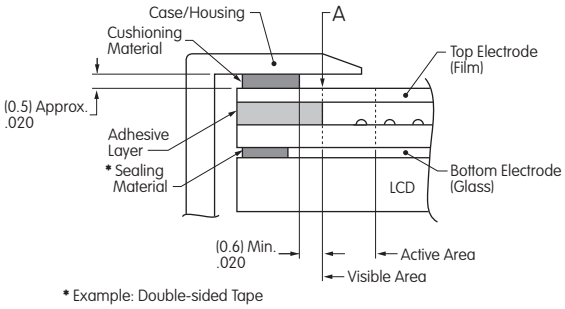
Installation

- Products are ESD sensitive and ESD protection is required.
- Do not pull on the tail. Do not apply stress to the tail area.
- Avoid vibration or shock. Avoid any force or stress that may cause deformation to the product.
- The touch screen mounting should not be loose. This may cause an adverse effect on detecting performance during operation.
- Ensure there are no burrs around the edges of the case or housing that can cause false actuation. The edges of the case or housing should not enter the keying area.

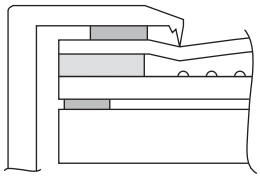
STORAGE, HANDLING & INSTALLATION

Installation (Continued)

- The case or housing and upper electrode should have a space of about 0.5 mm to accommodate expansion or shrinkage due to temperature variances. If a shock barrier is used, do not press hard on the upper electrode area. Any shock barrier should be installed more than 0.6 mm away from A.



* Example: Double-sided Tape



Example of Burr on Housing Interferes with Operation at Point A

- To secure the touch screen, secure the lower portion with a device such as the LCD display panel. Do not attach the upper electrode with double-sided tape or similar product to avoid stress that can damage the upper or lower electrode.
- In order to balance upper and lower pressure, an air vent may be installed. Ensure that no liquid or oil will enter into the device.
- Avoid air pressure applied to the touch screen as it may cause the top electrode to force air through the air vent, effecting electric endurance. If pressure inside of the touch panel is reduced through the air vent, it may cause interference fringes or may remain in ON status.
- Ensure that the glass is handled carefully to prevent breakage during installation.
- Moisture from condensation on tail connection or edges may result in migration, causing short circuit failure.

Handling Precautions

- When opening product, take precaution with up/down and front/back directions. Glass edges are not chamfered, and corners or edges can be sharp. Wear gloves when handling the product.
- Do not pick up the product by the tail or pull the tail area.
- Use gloves or finger cots to prevent fingerprints on surface.
- When handling the product, hold it outside of the viewing area.
- Avoid stacking multiple products or placing other items on the product.
- Remove protective film after installation is completed.
- When packing or storing, the glass should be positioned face up.

Operating Precautions

- Operate with fingers or a touch screen stylus only.
- Do not press hard with a pen or similar object between viewing area and key area.

Design Precautions

- With analog type, resistive value change (by aging or individual differences) can dislocate the input area. Input area can be calibrated with software.
- When installing on top of an LCD, noise from the display device can create misoperation. To avoid noise, implement actions such as grounding the display device frame.
- When used to draw a line, analog type will have a break at dot spacer. Compensate for this with software.
- Contact resistance may cause chatter depending on pressing condition. Software should detect signal after it stabilizes.

Other Precautions

- Clean with a soft cloth and ethanol. Do not use any cleaning agents other than ethanol.
- Store product in original package and store at the temperature and humidity range specified.
- Do not store in an environment with acids or other corrosive gases or where condensation may occur.
- Products are guaranteed based on evaluation of standards within the moisture tolerance and usage temperature range, but not guaranteed to operate perpetually at this temperature.
- Calibration data from one touch panel should not be applied to another panel; each should be calibrated individually.
- Recalibration is necessary if connector has been removed from the tail and reconnected.
- All specifications based on the tested touch screens only. Evaluate the products after installation with customer's equipment.

NKK Meets Demands of the Marketplace &
Readily Offers Solutions & Expertise,
Integrating the Highest Caliber of Products &
Enhancing our Extensive Line of Touch Screens

Market Demand Increases for Touch Screens with Gold Plated Tail

↓

NKK Extends Lineup of Touch Screens & Adds Gold Plated Tail Option in Variety of Sizes

1mm Pitch Connector Features Extra Benefits

↓

Minimizes Size of PCB; Enables Utilization of Surface Mount Connector

Specific Needs Require Precise Solutions & Uncompromised Reliability

↓

Exceptional Contact Reliability Exceeds Expectations Vital to Critical Operations

Standard Size ◎ New Standard Size ◎ Custom Size ○

Series	Type	Sizes of Touch Screens in Inches																		
		3.5	5.7	6.2 Wide	6.5	7.0 Wide	8.4	8.5 Wide	10.4	10.5	10.6 Wide	12.1	12.1 Wide	14.0	15.0	15.6 Wide	17.0	17.1	18.1	19.0
FT	Digital	○	◎	○	○	○	○	○	○	○		○		○	○		○	○	○	○
	4-Wire Analog, Printed Tail	○	◎	○	◎	○	◎	○	◎	○	◎	◎	◎	○	◎	◎	○	○	○	◎
	4-Wire Analog, Gold Plated Tail	○	◎	○	◎	○	◎	○	◎	○	◎	◎	◎	○	◎	◎	○	○	○	◎
	5-Wire Analog, Printed Tail								◎			◎			◎					
	8-Wire Analog, Printed Tale	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TP01	4-Wire Analog, Gold Plated Tail	○	○	○	○	○	○	○	◎	○	◎	◎	◎	○	◎	◎	○	○	○	◎

Note: NKK Switches does not supply the IC for 8-wire touch screens.

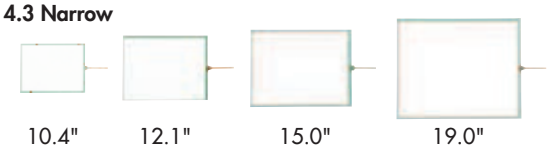
NKK Switches feature a wide variety of standard touch screens. We also have the capability and expertise to offer custom solutions that would enhance any application. We can furnish designs in both digital (matrix) and analog type touch screens; custom sizes and key numbers; attachment of touch screen to LCDs or incorporation into peripheral devices; availability of film plus film combinations and fingerprint resistant, high transmittance films. Contact our experts and let us provide a resolution for all of your touch screen requirements.

NKK Expands Offering of Touch Screen Solutions with Variety of Functions

Multi-Touch, Smooth Operation

TP01 Series 4-Wire Analog

4.3 Narrow



10.4" 12.1" 15.0" 19.0"

16.9 Wide

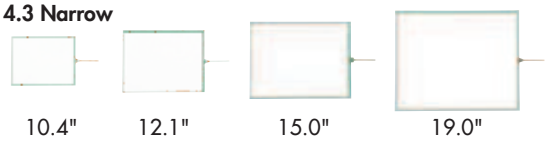


10.6" 12.1" 15.6"

Zoom In, Zoom Out or Writing Functions

TP01 Series 4-Wire Analog

4.3 Narrow



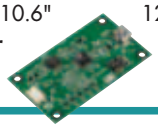
10.4" 12.1" 15.0" 19.0"

16.9 Wide



10.6" 12.1" 15.6"

Controller Board



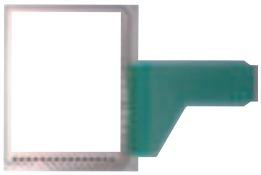
IC Chip



Touch Screen Without IC Chip

FT Series Digital

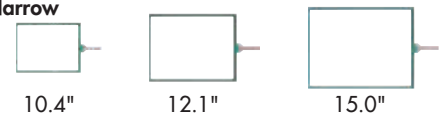
5.7"



Superior Durability

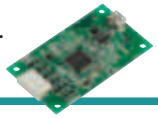
FT Series Analog 5- or 8-Wire Analog

4.3 Narrow



10.4" 12.1" 15.0"

Controller Board



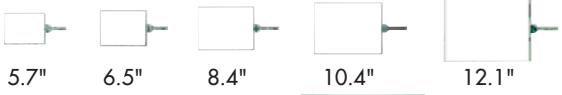
IC Chip



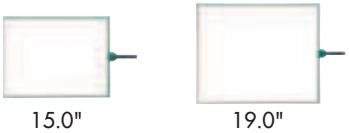
Variety of Sizes

FT Series 4-Wire Analog with Printed Tail

4.3 Narrow



5.7" 6.5" 8.4" 10.4" 12.1"



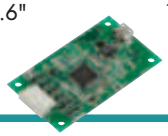
15.0" 19.0"

16.9 Wide



10.6" 12.1" 15.6"

Controller Board



IC Chip



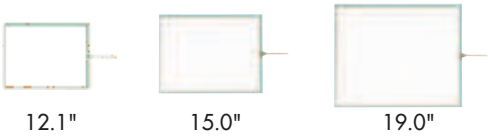
Exceptional Reliability

FT Series 4-Wire Analog with Gold Plated Tail

4.3 Narrow

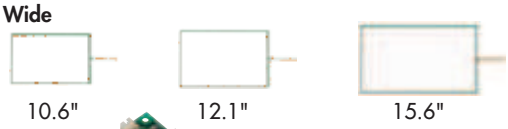


5.7" 6.5" 8.4" 10.4" 10.4"



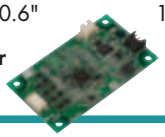
12.1" 15.0" 19.0"

16.9 Wide



10.6" 12.1" 15.6"

Controller Board



IC Chip



Effective Date October 23, 2017

NKK SWITCHES

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