

Resistive Touch Screens

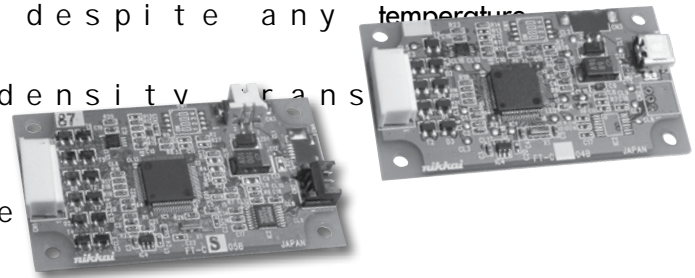
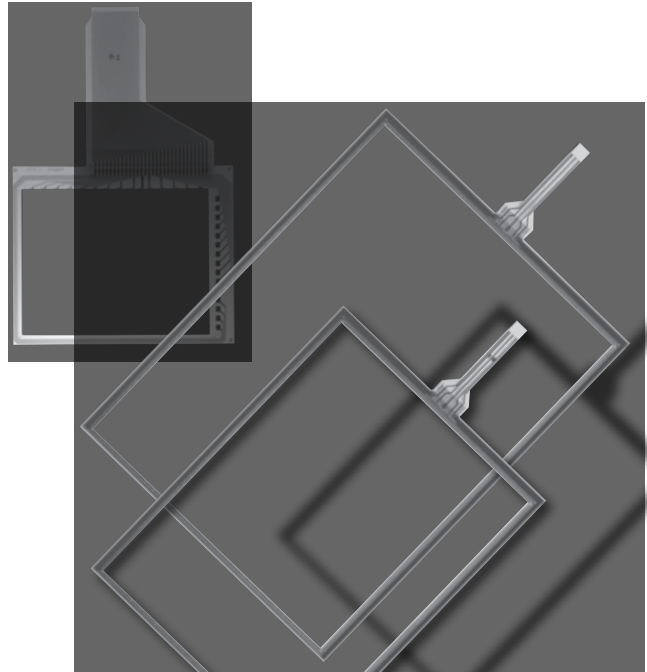
5-Wire, 4-Wire & Digital Solutions

NKK's transparent touch screens are engineered to complement the application of choice while offering superior durability and flexibility. With options in multiple sizes, and choices of input by finger, gloved finger or stylus, we maintain a consistent focus on impeccable quality and value added solutions with the diverse needs of our customers at the forefront.

Whether an application requires the 5- or 4-wire technology, the features include metal tails (analog), contact reliability with a connector, and ANR film, eliminating many of the typical visual artifacts. The film surface is non-glare and hard coated for ease of use and integrity of the surface.

Additional benefits of NKK's 5-wire touch screens include:

- Screens highly resistant to static electricity and noise pollution
- Drift-free operation despite any temperature fluctuation
- Greater touch point density translates to more precision and reduction of false actuations
- Quicker response time



DISTINCTIVE CHARACTERISTICS

- Wide Range of Available Sizes
- Custom Solutions available
- Digital and Analog Solutions
- Controllers Available
- Anti-Newton Ring (ANR) Technology
- Design Minimizes Visual Artifacts
- RoHS Compliant

APPLICATIONS

- Medical
- Industrial
- Banking, Exchange
- Management Systems
- Broadcast
- Gaming
- Office Automation

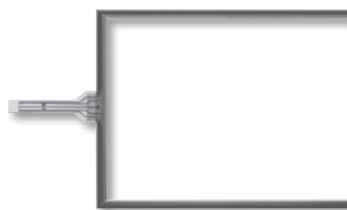
Customization Options

Parameter	Notes & Options
Resistive Analog Touch Screen	4-Wire or 5-Wire
Integrate LCD & Touch Screen	Yes - No
5 - Wire - Screen Size	Standard 10.4, 12.1, 11.5 (min 10.4, max 19)
4 - Wire - Screen Size	Standard 5.7, 6.5, 8.4, 10.4, 12.1, 15 (min 2.5, max 19)
Data Entry Area mm	Same as the dimensions of the display area
Viewable Area mm x mm	Same as the dimensions of the bezel opening
Perimeter Dimensions mm x mm	
Tail Type	PCB standard, FPC option
Tail Pitch	1.25mm is standard
Tail Pins	8 is standard, 4 is option
Tail Length	2 standard options: 65mm or 80mm
Tail Base Width	28.2mm is standard
Tail Location	Left side is standard, non-std options top or bottom
Tail Material	Carbon-coated silver is standard, option is
Glass Thickness	1.1 and 1.8mm are standard (note: total thickness = glass thickness + 0.3mm)
Hardcoat Treatment	Standard
Anti-Newton Ring Treatment	Standard
Optical Transmittance	80% is standard
Controller	Yes - No (no = customer will supply)
Communication	USB or RS232
Operating System	Windows 7 or Windows XP

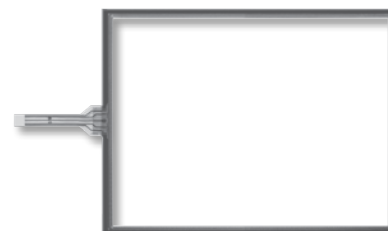
GENERAL SPECIFICATIONS FOR 5-WIRE

5-Wire Resistive Analog Touch Screens

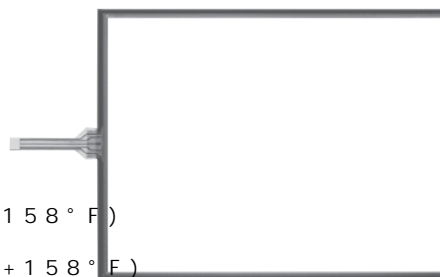
Optical	
Light Transmission	80% standard
Film Options	Anti-glare, anti-Newton ring standard
Electrical	
Power Level	5 . 5 V D C
X Y Resistive Value	20 ~ 80Ω
Insulation Impedance	1 0 MΩ m i n i m u m @ 2 5 V D C
Linearity	±2% maximum (after adjustment made by control board or device driver)
Chattering Time	10 milliseconds maximum
Mechanical	
Touch Activation Force	1.47N
Available Sizes	10.4", 12.1" and 15.0"
Durability	
Surface Hardness	2 H (J I S K 5 6 0 0)
Expected Operational Life	Writing: 50,000 minimum operations (approximately 30mm movement with stylus)
	Tapping: 10,000,000 operations minimum (using silicon rubber)
Environmental	
Operating Temperature Range	- 2 0 ° C ~ + 7 0 ° C (- 4 ° F ~ + 1 5 8 ° F)
Storage Temperature Range	- 4 0 ° C ~ + 8 0 ° C (- 2 2 ° F ~ + 1 5 8 ° F)
Relative Humidity	+ 6 0 ° C (+ 1 4 0 ° F) , h u m i d i t y 9 0 % , 2 4 h u r s



FTAS00-104A5



FTAS00-121A5



FTAS00-150A5

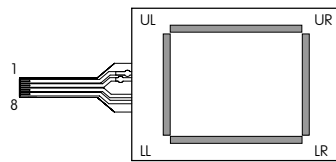
PART NUMBERS & DESCRIPTIONS FOR 5-WIRE

5-Wire Analog Touch Screens						
Part Number	Screen Size in Inches	Key Area Dimensions	Viewing Area Dimensions	External Dimensions	Panel Thickness	Terminal Detail 8 Pin .049" (1.25mm) Pitch
FTAS00-104A5	10.4	8.5" x 6.45" (215.9mm x 163.9mm)	8.66" x 6.61" (219.9mm x 167.9mm)	9.31" x 7.22" (236.5mm x 183.3mm)	.083" (2.1mm)	Length 3.15" (80.0mm)
FTAS00-121A5	12.1	9.8" x 7.37" (249.0mm x 187.2mm)	9.94" x 7.50" (252.4mm x 190.6mm)	10.52" x 8.1" (267.1mm x 205.8mm)	.083" (2.1mm)	Length 3.15" (80.0mm)
FTAS00-150A5	15.0	12.05" x 9.06" (306.1mm x 230.1mm)	12.19" x 9.19" (309.5mm x 233.5mm)	12.79" x 9.79" (324.8mm x 248.7mm)	.083" (2.1mm)	Length 3.15" (80.0mm)

Note: See web site for dimensioned drawings for all 5-Wire Analog Touch Screens.

Toggles
Rockers
Pushbuttons
Illuminated PB
Programmable
Keylocks
Rotaries
Slides
Tactiles
Tilt
Touch
Indicators
Accessories
Supplement

GENERAL SPECIFICATIONS FOR 5-WIRE



UL, LL, UR, LR: Bottom Electrode Terminal
SENSE: Top Electrode Terminal

Pins	Signal
1	UR
2	UL
3	N C
4,5	S E N S E
6	N C
7	LL
8	LR

5-Wire Analog Touch Screen Dimensions

Part Number	Screen Size in Inches	Dim A	Dim B Viewable Area	Dim C Active Area	Dim D	Dim E Viewable Area	Dim F Active Area	Dim G Center of Active Area
FTAS00-104A5	10.4	9.31 (236.5) +/-0.3	8.66 (219.9)	8.50 (215.9)	7.22 (183.3) +/-0.3	6.61 (167.9)	6.45 (163.9)	4.79 (121.55)
FTAS00-121A5	12.1	10.52 (267.1) +/-0.3	9.94 (252.4)	9.80 (249.0)	8.10 (205.8) +/-0.3	7.50 (190.6)	7.37 (187.2)	5.37 (136.4)
FTAS00-150A5	15.0	12.79 (324.8) +/-0.3	12.19 (309.5)	12.05 (306.1)	9.79 (248.7) +/-0.3	9.19 (233.5)	9.06 (230.1)	6.49 (164.95)

Toggles

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5-Wire Touch Screen Controller Boards & Drivers

DISTINCTIVE CHARACTERISTICS

- High Quality and Reliability
- Easy Integration Replacing Mouse Functionality
- Compatible with Control Board USB/RS2
- Device Driver Compatible with Vista and Windows XP Operating Systems

Controller Boards Available for RS232C



Controller Boards Available for USB



NKK offers controller boards compatible with USB or with RS232C. See web site or contact factory for technical data.

Controller Boards		
Type	Part No.	Communication Protocol
5-Wire	FTCS05B	RS232C
5-Wire	FTCU05B	USB

See web site for dimensioned drawings or technical data for any of the controller boards and drivers.

IC & Accessories

DISTINCTIVE CHARACTERISTICS

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



IC FTCSU564

The IC is for use with the 5-wire and is available for those who prefer to design their own controller boards. When the screen is touched, it recognizes the position of the touch by the level of the 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.

See web site or contact factory for technical data.

OPTIONAL ACCESSORIES

AT713 Receptacle Connector

This Receptacle Connector with communication of the controller boards.



AT714 Receptacle Connector

AT714 is a Receptacle Connector with power source of the control boards.



For more details and dimensioned drawings, go to the web site or call our engineering support personnel.

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Below are some general precautions for the 5-wire & 4-wire touch

Installation (4-wire, 5-wire)

- Do not pull on the tail. Do not apply stress to the tail area.
- Avoid vibration or shock.
- The touch screen mounting should not be loose.
- Ensure there are no burrs around the edges of the case or housing not enter the keying area.
- The case or housing and upper electrode should have a space of 0.5mm 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 above the screen.
- To secure the touch screen, secure the lower portion with an adhesive double-sided tape or similar items to avoid stress that can damage the upper or lower electrode.
- In order to balance upper and lower pressure, an air vent may

Handling Precautions (4-wire, 5-wire)

- When opening product, take precaution with up/down and front/back 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.

Operating Precautions (4-wire, 5-wire)

- Only operate with fingers or a touch screen stylus.
- Do not press hard with pen or similar objects between viewing

Design Precautions (4-wire, 5-wire)

- With analog type, resistive value change can dislocate the input
- When installing on top of a LCD, noise from the display device grounding the display device frame.
- Do not create software for two point touch as analog type will
- When used to draw a line, analog type will have a break at dot

Other Precautions (4-wire, 5-wire)

- Clean with a soft cloth and ethanol. Do not use any cleaning agent
- Store product in original package and store at the temperature
- Do not store in an environment with acids or other corrosive gas
- Not suited for use in critical control systems such as nuclear power proper failsafe design consideration.

Handling Precautions (5-wire)

- NKK warrants the 5-wire touch panel when it is used with the
- 5-wire devices can misalign cathode position or touch position
- Create a larger input area. If you have the input button at the
- Complete 9 point calibration with NKK driver. If more precise

Handling of Controller Board (5-wire)

- Warranty for one year after delivery. We do not warrant the
- Use arc prevention to protect device from static electricity.
- Power source should be activated after host and touch panel are
- When inserting connector CN1 and touch panel tail, be sure the
- Do not alter the product.
- Do not use any commands other than the ones specified in specification
- Place the product away from noise source (such as inverter from
- If device driver (USB) does not work after installation, reboot
- This product does not support suspended mode (USB).
- Protocol of USB transmission is one frame per one transaction.
- Contact factory if not using protocol above.

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