

# Bergquist

Touch Screen Technology



## Bergquist Touch Screen Value Proposition

- Quick prototype turnarounds
- Design flexibility
- Application engineering
- Market leader for combination touch and membrane switch applications
- Market leader in Military, Medical, Agriculture and Industrial Markets
- Custom solutions
- Value-added services

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## Bergquist 5-Wire Product Differentiation



- Extreme durability in harsh environments
- Precise linearity through product design
- Superior product quality via automated workmanship and process controls
- Enhanced optical performance utilizing innovative material technology

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## Bergquist 5-Wire Product Differentiation

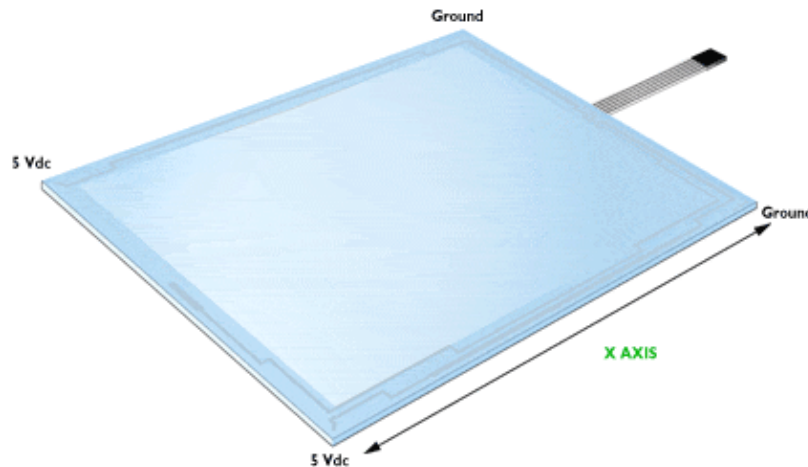
- Meets Commercial, Automotive, Industrial and Military <sup>(1)</sup> Temperature and Humidity specifications
- Driver and Controller software handshakes with most Resistive Touch Screen technologies
- Footprints from 2.5" - 23"
- Most rugged 5-Wires available on the market today

(1) LBKC and NBCC Compliant

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## 5-Wire Functionality



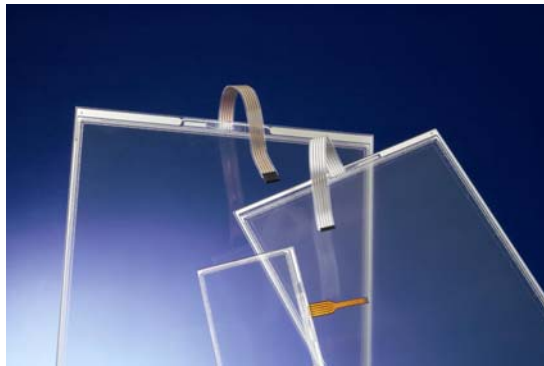
- When the top layer (fifth wire) is depressed it makes contact with the base layer, picking up the voltage data and carrying it to the electronics. Because the top film is working only as a pick-up layer, it can withstand temperature, humidity and mechanical stresses without impacting the reliability of the touch points' accuracy from the base layer.

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## Bergquist 5-Wire – Harsh Environment Durability



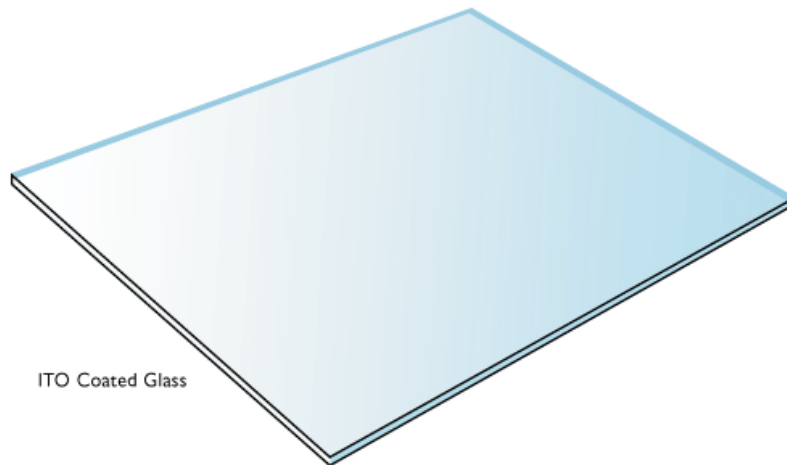
- Drift-free operation during temperature changes
- Ability to withstand 35 million activations in a single touch-point area
- Continued functionality, even with damage to the top film

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## 4-Wire Touch Screen Construction



ITO Coated Glass

The 4-wire touch screen is comprised of two separate layers, the X and Y axis'. It relies on a conductive coating and uniform resistance for each layer in order to accurately determine the touch location. The top layer is particularly susceptible to physical damage, oxidation and temperature fluctuations which ultimately make the 4-Wire vulnerable to linearity or drift problems.

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## Bergquist 5-Wire – Slim Perimeters



- With some of the slimmest perimeters in the industry, Bergquist 5-Wire touch screens readily fit almost any application.
- Bergquist 5-Wires allow conversion from 8-Wire to 5-Wire without changing the 8-pin connector housing or outside perimeter.

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## Bergquist 5-Wire – Film Selection



- Bergquist standard films come with a 4H rated hard coat, the toughest commercially available coating.
- Conductive top films include high contrast, gloss, diffused and several enhanced transmission types.
- Custom films are also available.
- The best film choice depends on your application and:
  - Typical lighting conditions
  - Brightness and type of display
  - Viewing angle desired
  - Separation space from touch screen to display

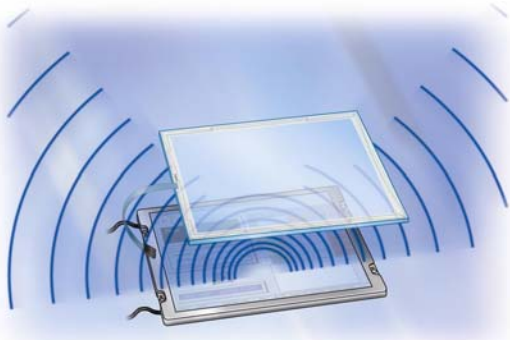


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## Touch Screen – Shielding Options

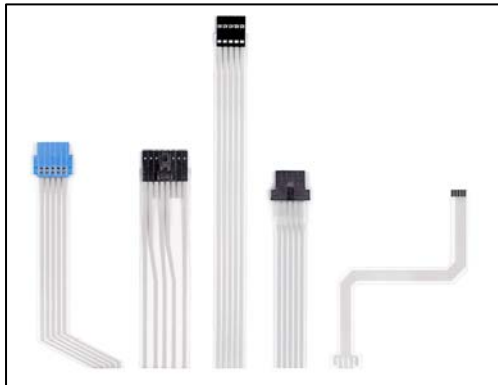


- We offer a variety of shielding options which can be applied to the touch screen. Selection depends on the type of shielding required:
  - EMI - Electro-Magnetic Interference
  - RFI - Radio Frequency Interference
  - ESD - Electro-Static Discharge

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## Bergquist 5-Wire Custom Solutions



Pin out and tails custom designed

- Right angle tails
- ZIF or pin connectors
- Variable position and length

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## Bergquist 5-Wire Integrated Touch and Membrane Solutions: Resistive Touch Systems (RTS)



- Ranked in the top 5 North American membrane switch manufacturers
- HeatSeal process for long-term reliability
- Custom-designed and suited for harsh environments and critical applications requiring complete redundancy
- Provides redundancy of critical controls
- Superior optical clarity, durability and accuracy
- One-piece unit for easier assembly and cleaning
- Custom designs and sizes

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## Markets Served

- Portable Ultra Rugged Computers – Military
- Industrial Hand-Held Devices
- Medical Devices
- Laboratory Equipment
- Industrial Controls



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## Military – Rugged Touch Screens

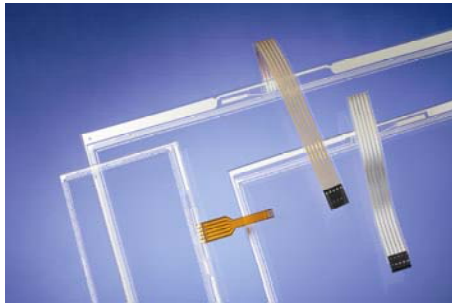


- Here's just one of many rugged environments you'll find Bergquist 5-Wire technology.
- Bergquist rugged 5-Wire touch screens are proven in critical applications from the warehouse to the battlefield.
- Bergquist's touch solutions have been found beneficial to the level of inclusion in customer marketing campaigns.

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## Bergquist Delivers:



- Exemplary product engineering, application and logistical service.
- Competitive pricing though multi-up production processing.
- Value-add and custom solutions.
- Quick prototype turnarounds and design flexibility

**We partner with customers to deliver rugged designed-in solutions for custom applications**