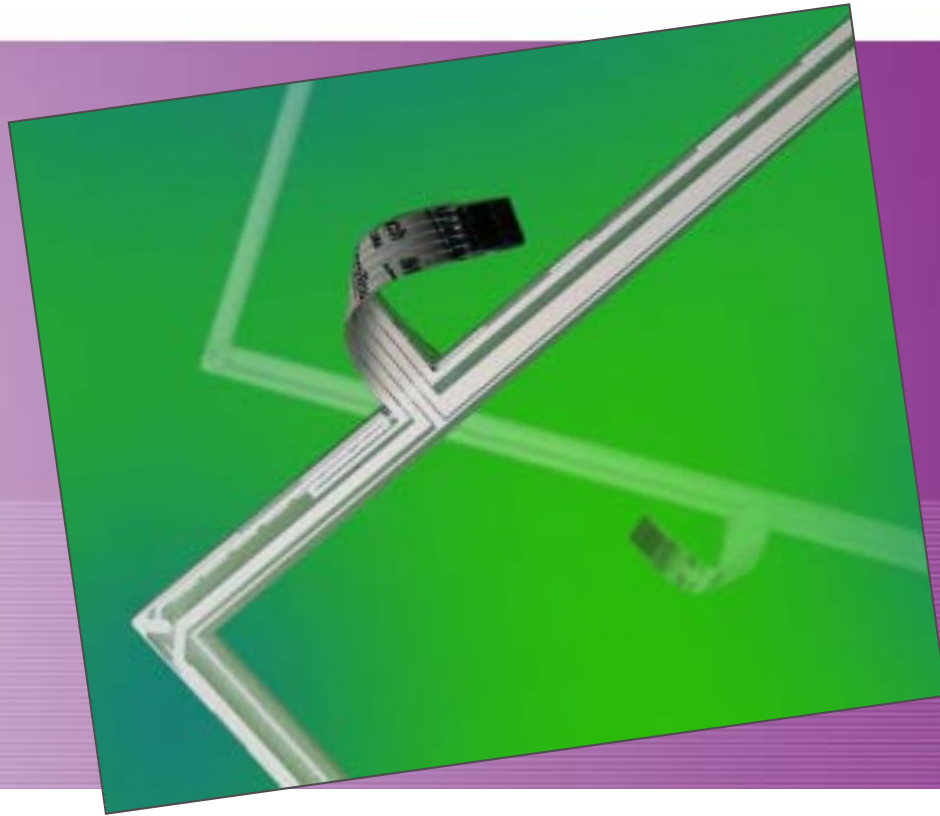


## MicroTouch™ 5-wire Resistive Touch Screen



### ***Product Highlights***

- Recognizes touch input from stylus, finger, gloved hand, pen or tool
- Integral tail design built for durability
- Environmentally robust with insulator layers protecting circuitry in high temperatures and humidity
- Fast response time
- Offered in current driven mode or voltage gradient mode providing choices in electronics

### **Touch Solutions for Point of Sale, Hospitality, and Industrial Applications**

Fast, accurate, and affordable, MicroTouch™ 5-wire FG (Film on Glass) resistive technology from 3M Touch Systems is the preferred solution for applications that require input flexibility and fast response time.

Point of Sale, Hospitality, and Industrial environments benefit from an environmentally robust solution and the 5 year warranty. Built with durability in mind, MicroTouch 5-wire resistive touch screens incorporate progressive design procedures that include a robust insulated layered construction and integral tail design.

### **Making the Difference**

3M Touch Systems has committed to perfecting the science of building resistive touch screens. By taking a hands-on approach to coating, printing, and processing its own conductive film, 3M is confident it has built accuracy and reliability into every resistive product.

# Technical Data

## MicroTouch™ 5-wire Resistive Touch Screen

ELECTRICAL	
Operating Voltage	2.5V to 5V DC
True Position Error	≤ 1% within Precision Area *Outside precision area, linearly increasing to 2% at the edge of the active area.
Isolation	≥ 15 M Ω Isolation is the minimum resistance between traces that are not connected in the design when the touch screen is not deliberately activated.
OPTICAL	
All values gained using BYK Gardner hazegard plus.	
Transmittance	Glass < 0.1" (2.54mm) thick: 82% ± 2    Enhanced option: 85% ± 2 Glass ≥ 0.1" (2.54mm) thick: 80% ± 2    Enhanced option: 83% ± 2
Haze and Clarity (Typical Values)	Hardcoat HCC01 – Haze 2%, Clarity 90% Hardcoat HCG12 – Haze 5%, Clarity 80% Hardcoat HCG10 – Haze 11%, Clarity 64%
ENVIRONMENTAL	
Operating	<i>High Temperature and Humidity:</i> +50 degrees C and 90% RH non-condensing (80% RH for FG parts with unpatterned ITO on glass layer. Parts using unpatterned glass will have this indicated on the drawing) <i>Low and High Temperature:</i> -20 degrees C to +50 degrees C, 20-50% RH, non-condensing
Storage	>2 weeks, integrated or non-integrated, 15 degrees C to 30 degrees C ambient conditions. -40 degrees C to -21 degrees C and +51 degrees C to +70 degrees C 20-50% RH, non-condensing limited for ten days continuous.
MECHANICAL	
Data is for .004" diameter separator dots on a 0.14" pitch. Tested using a 3M Touch Systems SMT3e controller.	
Activation Force	Stylus: < 25g average with plastic stylus with 1 mm radius, full hemispherical tip. Finger: < 50g average with 5/8" diameter silicone finger
Option	Custom activation force and palm rejection available.
DURABILITY	
Data is for .004" diameter separator dots on a 0.14" pitch. Tested using a 3M Touch Systems SMT 3e controller.	
Point Activation	>35,000,000 activations at a single point with a 5/8" diameter silicone finger with a 350g load at 2 touches per second.
Gouge Hardness	≥ 4H per ASTM D3363-92 for HCC01, HCG10, HCG12 Per ASTM D3363-92 for HCC02 and HCG13
CHEMICAL RESISTANCE	
The touch screen surface finish is unaffected by exposure to the following chemicals for a period of one hour at 22C, 45% relative humidity. ASTM-F-1598-95.	
Tea, Coffee, Ketchup, Mustard, Vinegar, Beer, Coca-Cola, Red Wine, Cooking Oil Wisk Laundry Detergent, Fantastik All Purpose Cleaner, Joy Dishwashing Liquid, Windex, Formula 409 Cleaner, Clorox Bleach (5.25%), Hydrogen Peroxide (3%), Lysol, Ethyl Alcohol, Isopropyl Alcohol Acetone, Methyl Ethyl Ketone (MEK), Toluene, Concentrated Hydrochloric Acid, Naptha, Mineral Spirits, Gasoline, 10W30 Motor Oil, Diesel Fuel, Transmission Fluid, Brake Fluid, Antifreeze, Hydraulic Oil	

\* Precision Area is the center 96% of the X and Y active area dimensions.

NOTE: FG (Film on Glass) resistive touch screen construction is defined as film on glass construction with nominal 350 ohm/sq or higher ITO on polyester resistance, and 375 to 650 ohm/sq nominal ITO on glass resistance, and an Anti-Newton Ring, no vent design.

**NOTICE:** Given the variety of factors that can affect the use and performance of a 3M Touch Systems Product (the "Product"), including that solid state equipment has operation characteristics different from electromechanical equipment, some of which factors are uniquely within User's knowledge and control, it is essential that User evaluate the 3M Touch Systems Product and software to determine whether it is suitable for User's particular purpose and suitable for User's method of application. 3M Touch Systems' statements, engineering/technical information, and recommendations are provided for User's convenience, but their accuracy or completeness is not warranted. 3M Touch Systems products and software are not specifically designed for use in medical devices as defined by United States federal law. 3M Touch Systems products and software should not be used in such applications without 3M Touch Systems' express written consent. User should contact its sales representative if User's opportunity involves a medical device application.

**IMPORTANT NOTICE TO PURCHASER:** Specifications are subject to change without notice. These 3M Touch Systems' Products and software are warranted to meet their published specifications from the date of shipment and for the period stated in the specification. **3M Touch Systems makes no additional warranties, express or implied, including but not limited to any implied warranties of merchantability or fitness for a particular purpose.** User is responsible for determining whether the 3M Touch Systems Products and software are fit for User's particular purpose and suitable for its method of production, including intellectual property liability for User's application. If the Product, software or software media is proven not to have met 3M Touch Systems' warranty, then 3M Touch Systems' sole obligation and User's and Purchaser's exclusive remedy, will be, at 3M Touch Systems' option, to repair or replace that Product quantity or software media or to refund its purchase price. 3M Touch Systems has no obligation under 3M Touch Systems' warranty for any Product, software or software media that has been modified or damaged through misuse, accident, neglect, or subsequent manufacturing operations or assemblies by anyone other than 3M Touch Systems. **3M Touch Systems shall not be liable in any action against it in any way related to the Products or software for any loss or damages, whether non-specified direct, indirect, special, incidental or consequential (including downtime, loss of profits or goodwill) regardless of the legal theory asserted. (7/02)**



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