

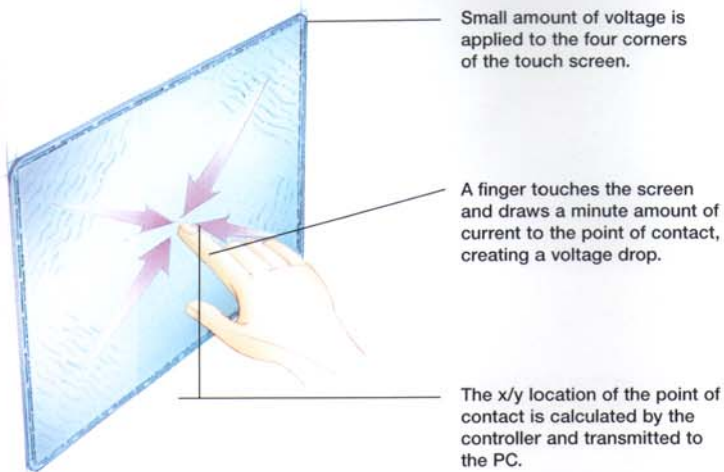


ClearTek™ Capacitive Solutions

ClearTek is 3M Touch Systems' flagship capacitive touch solution, offering exceptional durability, reliability, and clarity. With a transparent protective overcoat that minimizes reflection and maximizes light transmission, ClearTek capacitive touch screens provide dramatic scratch resistance and physical robustness. ClearTek shrugs off on-screen contaminants such as, chemicals, grease, dirt, and water without interrupting operation.

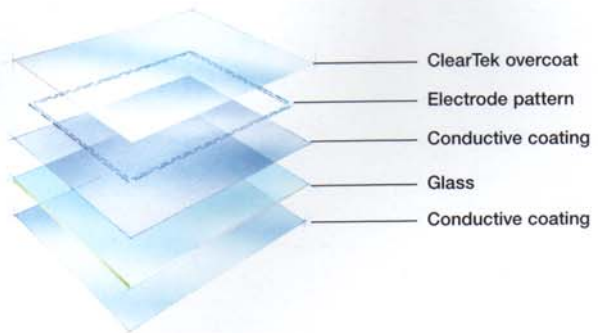
But that ruggedness doesn't mean you sacrifice accuracy or speed; ClearTek easily recognizes fast, light touches. ClearTek is the preferred choice in many applications because it can keep up with fast-paced use without a hitch.

Capacitive – How it works



If you need a capacitive touch screen for a flat CRT or LCD panel, 3M Touch Systems offers ClearTek Profile touch screens. These screens incorporate the same exceptional durability, reliability, and clarity of ClearTek, while incorporating advanced design and production techniques for a sleek and easy-to-integrate touch screen with a narrow border and wide viewing area.

Capacitive – Layer construction



ClearTek's Exceptional Design

At the core, every ClearTek touch screen is an all-glass touch screen with a transparent, conductive coating fused to its surface. Along the edges, a narrow, precisely printed electrode pattern uniformly distributes a low-voltage field over the conductive layer.



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Brilliant solutions with the human touch.

When you're ready to deploy sophisticated touch applications, you can't afford design compromises. With MicroTouch™ capacitive touch screens manufactured by 3M Touch Systems, you have it all — durability, clarity, speed, accuracy, and a broad range of options to meet almost any touch requirement.

Now, across numerous industries, your applications shine with consistently excellent quality, performance, and simplicity — for you and your users.



INNOVATION YOU
CAN TOUCH

Public Access and Entertainment – With remarkable touch screen endurance and the ability to take public-use punishment, MicroTouch capacitive touch screens are the de facto standard in these applications. That means fewer worries over spilled drinks, dirty fingers, scratches from jewelry, vibration, or static. What's more, only human touches register — ensuring less chance of false touches from jewelry, clothing, or liquids.

Point-of-Sale and Hospitality – Service staffs depend on MicroTouch capacitive touch screens for fast and reliable operation using light, quick touches. Their ability to withstand just about any on-screen contaminants — condiments, soda, grease, and more — makes capacitive touch screens a food service favorite.

Kiosks – Offering durability, reliability, and clarity — in all types of lighting — MicroTouch capacitive touch screens are ideal for unattended kiosk applications in high-traffic environments.

Finance – Whether it's an ATM machine, a stock-trader's desktop, or a self-service kiosk, banks and brokerages value the simplicity and reliability that MicroTouch capacitive touch screens provide.

Industrial – With the high-impact resistance and touch responsiveness of Near Field Imaging™ industrial applications' tough requirements are fulfilled.

Technical Data

ClearTek Capacitive Touch Screens

ELECTRICAL

Input Method	Finger, TouchPen available with qualified sensor, attachments and electronics
Accuracy and Precision Area	Reported touch coordinates are within 1.0% of true position (based on viewing area dimensions) when linearized and used in conjunction with 3M Touch Systems electronics.

OPTICAL

Touch Screen Resolution	1024 x 1024 or greater touch point per axis within the calibrated area.
Optical Clarity	Up to 88% light transmission at 550 nm; dependant on specific surface finish choosen. Equipment used: BYK Gardner Haze Gard Plus
Surface Finishes	Industrial and Polished etch for flat or curved. True etch for curved only. True AR etch for flat only.
Coating	ClearTek is a protective glass overcoat that protects the sensor by resisting scratches and increasing durability.

MECHANICAL

Linearization	Factory linearization values are stored in the touchscreen NOVRAM, attached controller or 2D bar-code
Touch Contact Requirement	3 ms for finger input.
Glass Thickness	0.125" (± 0.01 ") / 3.18mm ($\pm .25$ mm) typical. (Glass only, not including tape, wires and solder if used)
Size and Shape	Hundreds of curved (spherical and cylindrical) and flat sizes offered. Custom sizes also available.
Surface Scratch Hardness ¹	Can not be scratched using any stylus with Mohs' rating of less than 6.5. Exceeds severe abrasion test per MIL-C-675C. Withstands 105 Newtons of force per Balance Beam Scrape Adhesion Mar Tester. MicroScratch tester with 10 micron radius tungsten carbide indenter takes a force of 1.8 Newtons.
NEMA Rating	NEMA sealable.
Gasketing	Complete water-resistant seal obtainable with polyethylene gasket. Consult Sensor Integration guide for additional information.
Cleaning	Water, isopropyl alcohol, and similar non-abrasive cleaners.

RELIABILITY

Endurance Test ²	A ClearTek sensor with Industrial etch has been tested in a laboratory environment to withstand over 225 million mechanical touches without noticeable degradation to the surface.
Surface Obstructions	Touch screen's operation unaffected by surface obstructions such as dirt, dust, grease, smoke, peanut butter, etc.
Chemical Resistance	ClearTek is highly resistant to corrosives, in accordance with ASTM-D-1308-87 (1993) and ASTM-D-F-1598-95.
Liquid Resistance	Liquids on screen do not impede touchscreen performance.
Liquid Repellence	Contact angle of 94° and greater measured using Sessile Drop Contact Angle Method. This renders the screen extremely water repellent.
Operating Temperature Range	-15°C to 70°C for touch screen.
Storage Temperature	Always store the touch screen sensor in its original shipping container between -50° C and 85° C (MIL-STD-810E). Never store the touch sensors in an environment where condensation may form.

¹ Paul N. Gardner Co. model PA-2197 using a loop stylus (0.128 in. O.D. Rockwell Hardness 55-61)

² Mechanical touch activation in a single x,y location using a finger-like stylus of 45 durometer, shore "A" hardness, 0.5 diameter with a load of 0.46 pounds, +/- .01 pounds of force.

