



TouchInternational

MULTI-Touch

Projected Capacitive Touch Screen Specification

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Revision	Page	Content	Revised By	Date
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1.0 Scope (Range of Application)

This specification document applies to Projected Capacitive touchscreen products designed for finger input. This specification applies to a glass/glass sensor with or without a cover glass or a glass/film/film sensor with an integrated tail.

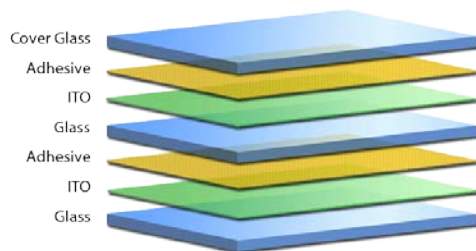
Note: Projected Capacitive touch sensors are offered with a customer defined choice of a first surface substrate. Therefore sensor thickness, cosmetic durability, flammability, chemical resistance and light transmission will differ based on the first surface material.

2.0 Mechanical / Electrical Characteristics

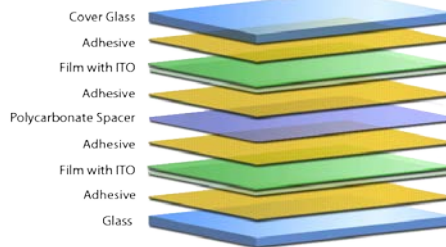
The specification data below applies to touch screens with the following properties:

- Customer defined first surface substrate. **See note above.*

MULTI-Touch Glass/Glass Touch Screen



MULTI-Touch Film/Film Touch Screen



2.1 Optical Characteristics

Total Visible Light Transmittance	Glass/Film/Film – 82% ± 3 (Typical)** Glass/Glass – 89% ± 3 (Typical)**
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2.2 Durability Characteristics

Touch Durability	300 Million Touches in a Single Location (Electrically) 250 Million Touches in a Single Location (Cosmetically)
Surface Hardness	Dependent Upon First Surface Substrate

2.3 Electrical Characteristics

Insulation Resistance	Exceeds 20M Ohm or More at DC 10V
Operation Voltage	3.3V to 5V DC

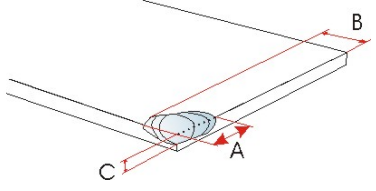
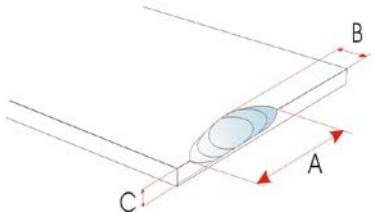
**Data is subject to change

2.0 Mechanical / Electrical Characteristics (Continued)

2.4 Environmental Characteristics		
Operation Conditions	Low and High Temperature: -15°C~70 °C, 50% Relative Humidity, Non-Condensing **	
Storage Conditions	Low and High Temperature: - 40°C~80 °C, 50% Relative Humidity, Non-Condensing **	
2.5 Touch Activation Characteristics		
Finger Simulated Stylus	25~50 Grams of Force	
Pen Stylus (Active)	25~50 Grams of Force	
2.6 Chemical Resistance		
Chemical Compounds: 6% HCL, 40% H2SO4, 10% NaOH, and 70% HNO3	Per ASTM F 1598-95	Industrial Chemicals: acetone, methyl chloride, methyl ethyl ketone, isopropyl alcohol, hexane, turpentine, mineral spirits, unleaded gas, diesel fuel, motor oil, transmission fluid, anti-freeze, etc.
	Per ASTM D 1308-87	Food service chemicals: vinegar, coffee, tea, grease, cooking oil, and salt, etc. Household and commercial cleansers, including ammonia-based glass cleaner and laundry detergent.
Cleaning Instructions	Lightly wipe the surface of the touch panel with isopropyl alcohol or neutral household cleaning solvent (ammonia-free).	

**Data is subject to change

3.0 Cosmetic/Visual Specifications

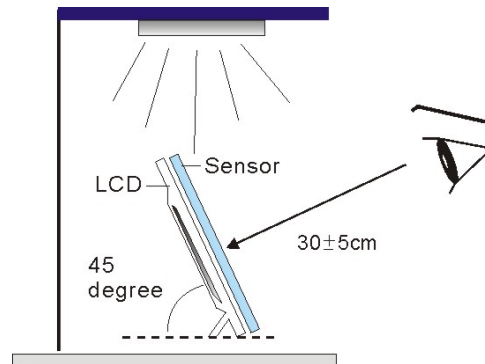
Defect	Condition	Decision
Scratch	$W \leq 0.002''$	Ignore
	$W > 0.002'' - 0.004'' \quad L \leq 0.5''$ $W > 0.004'' - 0.005'' \quad L \leq 0.3''$	Max 5 Separated by 1.0''
Pits, Bubbles	$< 0.005''$	Ignore
	$< 0.02''$	Max 5 Separated by 1.0''
Translucent Defects	$< 0.005''$	Ignore
	$< 0.03''$	Max 5 Separated by 1.0''
Linear Foreign	$\leq 0.002''$	Ignore
	$W > 0.002'' - \leq 0.004'' \quad L \leq 0.125''$	Max 5 Separated by 1.0''
Defects less than 0.005" not counted.		
	Condition	Decision
Glass Fragment	 <p>Corner Fragment</p>	$a \leq .08''$
		$b \leq .08''$
		$c \leq t$ inch
		(t : Glass Thickness)
		No more than 2 is qualified (PASS)
	 <p>Corner Fragment</p>	$a \leq .12''$
		$b \leq .08''$
		$c \leq \frac{1}{2} t$ inch
		(t : Glass Thickness)
		Allow 3 fragments interval distance above .80" every side is qualified (PASS)

3.0 Cosmetic/Visual Specifications (Continued)

Light Source	1000-1400 LUX Fluorescent Lamps
Background	LCD: 15" 4:3 Aspect Ratio
White Light	250 +/- 50 cd/em ²
Black Light	250 +/- 50 cd/em ²

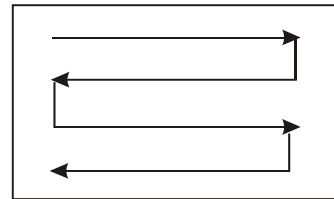
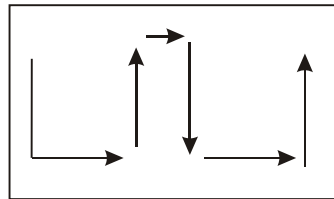
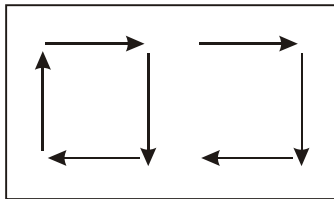
Viewing Time

15(±3) seconds on each cycle (Black / White)



Inspection Condition

Use either one of the following three patterns to aid your eye.



Note: Cosmetic defects outside of the viewing area are subject to graphic cosmetic spec Sec 3.5, barring electrical failure due to the cosmetic defect.

Adhesive Imperfections Contamination and Other Discolorations

Use TI Inspection LCD 2800633 fixture. If contamination or other defects (other than bubbles) cannot be seen using this fixture, parts are acceptable. Defects found outside of the viewing area use Graphic Area Spec (Section 3.5).



3.5 Graphic Area Cosmetic/Visual Specifications

Defect	Condition	Decision
Scratch	$W \leq 0.002''$	Ignore
	$W > 0.002'' - 0.004'' \quad L \leq 0.5''$ $W > 0.004'' - 0.005'' \quad L \leq 0.3''$	Max 3 Separated by 1.5'' for diag. 13.9'' or less Max 5 Separated by 1.5'' for diag. 22.9'' or less
Dimples, Bubbles	$< 0.005''$	Ignore
	$< 0.08''$	Max 3 Separated by 1.5'' for diag. 13.9'' or less Max 5 Separated by 1.5'' for diag. 22.9'' or less
Pin-holes	$W \leq 0.002''$	Ignore
	$W \geq 0.003''$	None Allowed

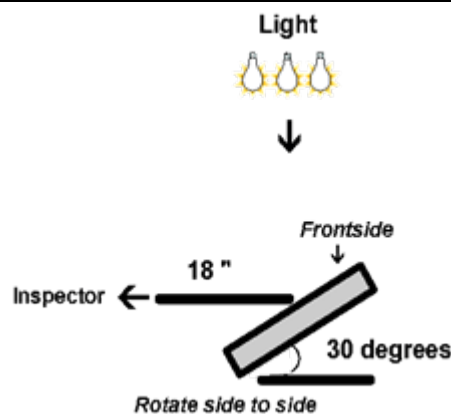
3.5.1. Product will be inspected visually under normal overhead lighting conditions found in a production or office setting. This condition corresponds to cool white fluorescent lighting.

3.5.2. All inspection will be performed visually without the aid of magnifying or additional lighting equipment. All inspectors will have normal vision (20/20) or will use corrective lenses that bring functional eyesight to normal (20/20).

3.5.3. All inspections will be performed in such a way to ensure that the part does not reflect a light source. Product will not be manipulated in any way during the inspection to accentuate the identification of surface flaws.

3.5.4. The operator is required to visually inspect the unit for no more than 10-12 seconds at a distance of 18 inches (45.72cm) from the person performing the inspection.

3.5.5. The units will be maintained at a 30° angle from the person performing the inspection. In cases where surface finish prevents a reasonable inspection, the part will be rotated 30° from side to side.



4.0 Materials Handling and Usage Instructions

In order to prevent accidental use and be guaranteed the performance of product, you are requested to keep the following:

4.1 Storing

- Store the products at specified temperature and humidity range, per the Environmental Conditions section of this document.
- Store the products in the original packing materials.

4.2 Unpacking

- Do not hold or pull the tail to facilitate the removal of the touch screen component from the package.
- Check and heed the “UP/DOWN” mark prior to opening the package.
- Do not subdue the touch screen to heavy duty shock or pressure.

4.3 Handling

- Wear gloves when handling the touch screen in order to prevent finger prints or stains and to avoid injury due to sharp edges.
- Never hold the touch screen by the tail.
- Never place heavy objects or material on top of the touch screen.
- Never stack touch screens on top of each other.

4.4 Cleaning

- Never use organic solvents on the touch screen, except alcohol.
- Use dry cloth or soft cloth with alcohol, neutral detergent or ethanol for clearing the touch panel in case of dirt or residue.

5.0 Warranty Policy

This warranty policy applies to Touch International’s Projected Capacitive touch screen components. Touch International warrants all products to be free of workmanship or material defects as specified under the terms of the limited warranty policy per the guaranty period stated below.

5.1 Warranty Period

Touch International guarantees this product for 10 years from the date of purchase.

5.2 Warranty Exclusions

- Failure to adhere to the handling, storage, operating, assembly or other procedures and parameters outlined in this delivery specification.
- Accidental or purposeful abuse, neglect or acts of nature.
- Breakage or physical scratches to the touch screen.
- Other factors beyond the control of Touch International.