



TouchInternational

Surface Capacitive Touch Screen
(Flat and Curved)
Specification Guide

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1.0 Scope (Range of Application)

This specification document applies to analog capacitive touch sensors designed for finger input only. This specification applies to a glass construction.

2.0 Mechanical/Electrical Characteristics

This document applies to 5-wire capacitive sensors. Standard sensor drawings are available on the Touch International website. For custom designs, contact Touch International at 877.832.8292 for a specific sensor dimensioned drawing to meet your needs.

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

- Single bottom all-glass conductive layer

2.1 Optical Characteristics

Total Visible Light Transmittance

- Standard top sheet layer: >83% typical
- Enhanced anti-reflective top sheet layer: >88% typical

Note: Other anti-reflective configurations are available. Please consult your Touch International sales person to determine the optimum configuration to meet your needs.

2.2 Durability Characteristics

Touch Durability: exceeds 50 million touches at a single point with 350 grams force.

Cosmetic Durability: 225 million touches at single point with 350 grams force.

Surface Hardness: 6H ASTM D3363-92 and 3H or higher with JIS-K5400 standard

2.3 Electrical Characteristics

Insulation Resistance: exceeds 20M ohm or more @DC 25V

Operation Voltage: 5V to 12V DC

Chattering Time: 10 msec or less

Linearity: 99% with calibrated electronics;

± 1.5%; 3% maximum @90% active area with uncalibrated electronics

Sheet Resistance of Conductive Glass— within one screen: All values in any 12"x12" square must be within 10% of the average value in that square.

Sheet Resistance of Conductive Glass Variation— sensor to sensor: 1000~250 ohms/sq.

Touch Activation Force: typical 80 grams; refer to the "Touch Screen Illustrations" section.

2.4 Environmental Characteristics

Operating Conditions:

- High temperature and relative humidity (RH): tested at +50°C at 90% RH non-condensing for 240 hours
- Low and high temperature: -20°C~50°C, <50% relative humidity, non-condensing

Storage Conditions: -40°C~ 75°C, < 50% relative humidity, non-condensing for 10 continuous days.

2.5 Activation Characteristics

In addition to the previously noted parameters, the specification data below applies to touch screens with spacer dot array: .003" and typical X: .14"

Touch Activation: finger simulated stylus: 50 grams typical force

2.6 Chemical Resistance

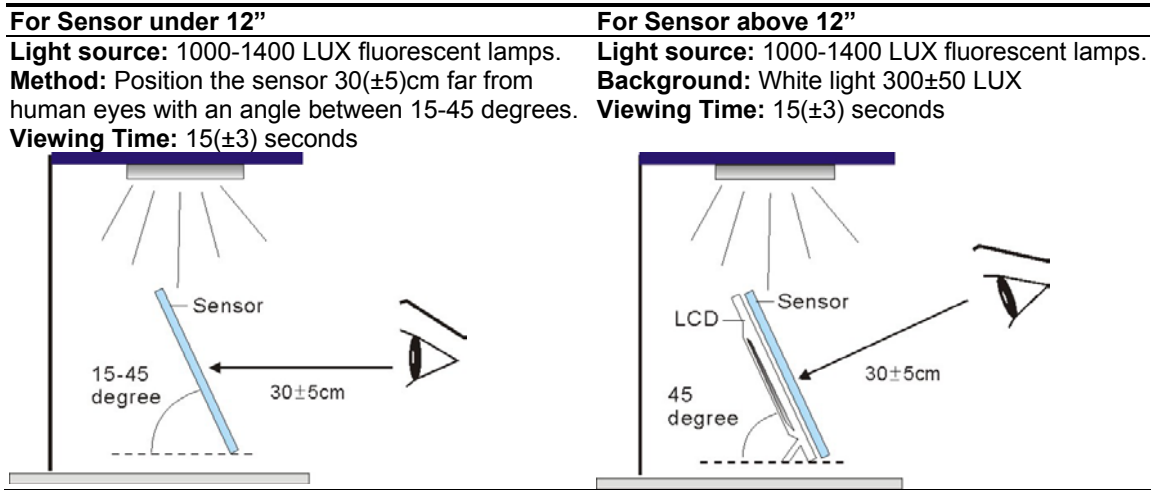
Chemical compounds: 6% HC1, 40% H2SO4, 10% NaOH and 70% HNO3

- **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.

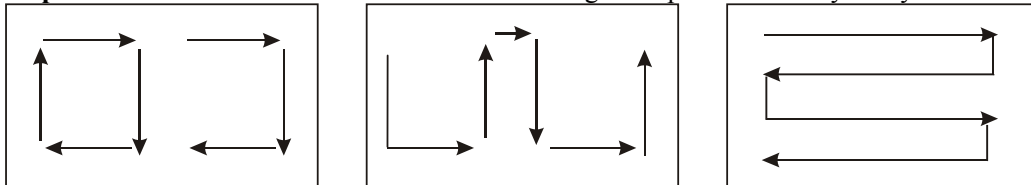
Cleaning Instructions: lightly wipe the surface of the touch panel with methyl alcohol, perspiration of your hand or household neutral cleanser

3.0 Cosmetic/ Visual Specifications

3.1 Inspection Condition



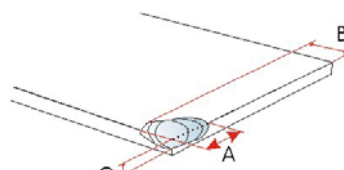
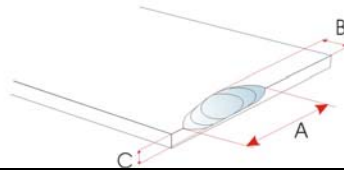
Inspection condition: use either one of the following three patterns to aid your eye.



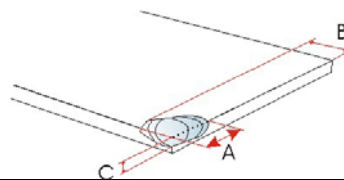
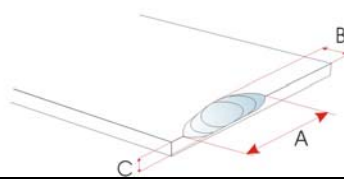
3.2 Inspection Criteria

The following apply to viewing area. Any defects **not** visible shall be ignored, unless they affect electrical performance. This section applies only to inspection of the VA (viewable area). If a defect is found outside of the VA, the screen is still considered acceptable.

The table below shows the visual inspection for sensors below 12”:

Items/Type	Specifications	Explain
Scratch	Width / Length	
	<0.05mm / < 3mm	Allow 2 and min distance above 20mm is Qualified (PASS)
]0.05mm /]3mm	Unqualified (NG)
Foreign Objective	(Width+ Length)/2	
	*0.2 mm	Qualified (PASS)
	Polish film 0.2mm ~ 0.3mm Anti-grate film 0.2mm~0.4mm	Qualified (PASS) & allow 4 points interval distance above 20mm
	Polish film > 0.3 mm Anti-grate film > 0.4 mm	Unqualified (NG)
Linear Foreign Objective	Width / Length	
	*0.05mm / *3mm	Allow 2 and min distance above 20mm is Qualified (PASS)
	> 0.05mm / >3 mm	Unqualified (NG)
Puffiness	Height under 0.4 mm:	Qualified (PASS)
Film Surface Flat	Film from reflect light the shape like C	Qualified (PASS)
	Film from reflect light the shape like S	Unqualified (NG)
Glass Fragment	Corner Fragment	 <p>a * 2.0mm, b * 2.0mm and c * t mm, (t: Glass Thickness) No more than 2 is qualified (PASS)</p>
	Side Fragment	 <p>a * 3mm , b * 2.0mm and c * 1/2 t mm, (t: Glass Thickness) Allow 3 fragments interval distance above 20mm every side is qualified (PASS)</p>
Newton Ring	No Newton rings are allowed in sensors that specify “anti-Newton ring” materials. Otherwise, Newton rings are acceptable.	

The table below shows the visual inspection for sensors above 12”:

Items/Type	Specifications Explain	
Scratch	Width / Length	Judgment
	<0.1mm / < 30mm	Allow 2 and min distance above 20mm is Qualified (PASS)
] 0.1mm /] 30mm	Unqualified (NG)
Foreign Objective	(Width Length)/2	Judgment
	*0.2 mm	Qualified (PASS)
	0.2 mm~0.5 mm	Qualified (PASS) & allow 4 points interval distance above 20mm
	> 0.5 mm	Unqualified (NG)
Linear Foreign Objective	Width / Length	Judgment
	*0.05mm /*3mm	Allow 2 and min distance above 20mm is Qualified (PASS)
	> 0.05mm / >3 mm	Unqualified (NG)
Puffiness	Height under 0.4 mm:	Qualified (PASS)
Film Surface Flat	Film from reflect light the shape like C	Qualified (PASS)
	Film from reflect light the shape like S	Unqualified (NG)
Glass Fragment	Corner Fragment	 <p>a* 2.0mm, b* 2.0mm and c * t mm, (t: Glass Thickness) No more than 2 is qualified (PASS)</p>
	Side Fragment	 <p>a * 3mm , b * 2.0mm and c * 1/2 t mm, (t: Glass Thickness) Allow 3 fragments interval distance above 20mm every side is qualified (PASS)</p>
Newton Ring	No Newton rings are allowed in sensors that specify “anti-Newton ring” materials. Otherwise, Newton rings are acceptable.	

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 your Touch International touch screen

- 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.
- Avoid exposing the touch screen to direct sunlight.

4.2 Unpacking your Touch International touch screen

- Do not hold or pull the FPC/Copper 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 your Touch International touch screen

- 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 FPC/Copper tail.
- Never add stress on touch film.
- Never place heavy objects or material on top of the touch screen.
- Never stack touch screens on top of each other.

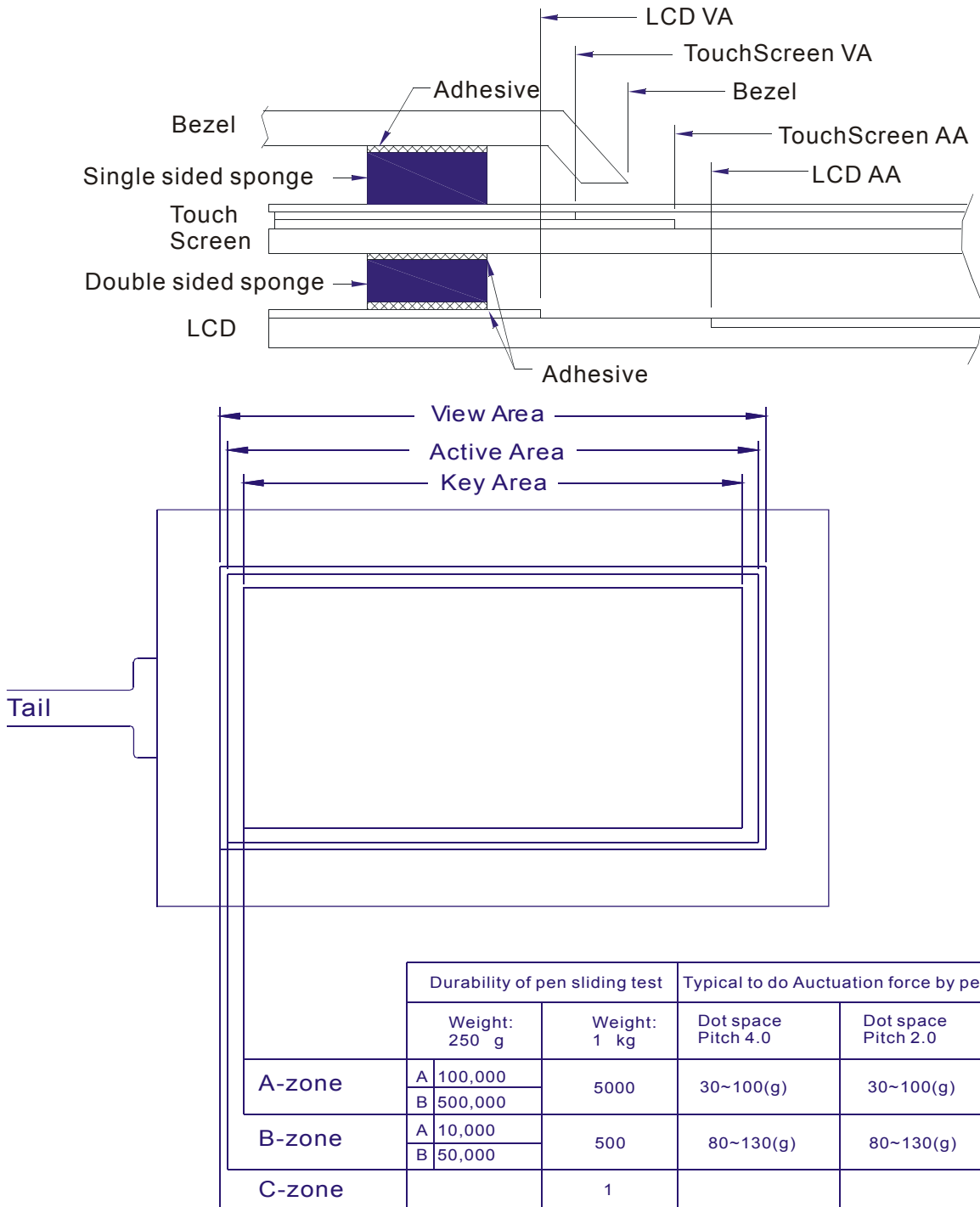
4.4 Cleaning your Touch International touch screen

- 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.

4.4 Assembling your Touch International touch screen

- The bezel or enclosure must not overlap with the viewing area.
- Avoid applying excessive pressure, weight or force on the touch screen.
- Avoid unnecessary strain to the FPC/Copper tail on assembling.
- Do not submerge the touch screen in water.
- The edge of the enclosure must be located between the viewing area and the active area.

5.0 Touch Screen Illustrations



6.0 Warranty Policy

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

6.1 Warranty Period

Touch International guarantees this product for five year from the date of purchase

6.2 Warranty Exclusions

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