Dawar Technologies

5-Wire Resistive FG Touch Screen Specifications

1. Product Features:

1.1 Type: 5 Wire Analog Resistive Touch Screen 5.7” – 24”

1.2 Construction: Film on Glass (FG)

1.3 Input Methods: Finger, Pen or Stylus

1.4 Connector: FPC/FFC

2. Specifications

2.1 Electrical

2.1.1	Maximum Voltage:	5V DC
2.1.2	Loop Resistance:	X: 20-500Ω
		Y: 20-500Ω
2.1.3	Insulation Impedance:	> 20MΩ @25V DC
2.1.4	Linearity:	5.7” to 7.0” X ≤ 1.5%; Y ≤ 2.0%
		8.0” to 24.0” X ≤ 1.5%; Y ≤ 1.5%
2.1.5	Chattering Time:	≤ 15ms
2.1.6	Endurance:	No acting damage at DC50V/60sec.

2.2 Mechanical

2.2.1	Operation Force:	≤ 50g (Stylus = R0.8mm)
2.2.2	Surface Hardness:	≥ 3H (pressure 750g/45°, ASTM D3363)
2.2.3	Impact:	No damage (25.0mm diameter steel ball/67g
		Height = 50cm, one time)
2.2.4	Static Load:	5000g within $10cm^2$ area for 30 sec
2.2.5	Tail Peeling:	800g by vertical 90°
2.2.6	Tail Bending:	90° 10 times up and down

2.3 Optical

2.3.1	Light Transmission:	80% ± 3% (Measured by BYK-Gardner)
2.3.2	Haze:	Antiglare hard coat - 8% +/-3%
		Clear hard coat - 4% ± 3%

2.4 Environment & Storage Conditions

2.4.1	Operating Temperature:	-10°C ~ +70°C
2.4.2	Operating Humidity:	20%-80% RH, non-condensing for the product
2.4.3	Storage Temperature:	-40°C ~ +80°C
2.4.4	Storage Humidity:	20%-90% RH, non-condensing for the product

2.5 Reliability

2.5.1 Hitting Durability: > 35,000,000

3. Testing Condition

3.1 Scope

The standard testing environment is 23°C, 65%RH and 1013kPa. The testing shall be done at normal temperature (5°C to 35°C) and humidity (45%RH to 85%RH) with normal atmospheric pressure (860kPa to1060kPa).

3.2 Mechanical

3.2.1 Pen Hitting Durability

Hit more than 35million times with 150g load and 3 touches per second frequency by a 16Ømm 60° rubber testing pen. Actuation must not exceed 300 grams after test and linearity must satisfy:

Dimensions	Original	After Test
FG5, 5.7” to 7.0”	X ≤ 1.5%, Y ≤ 2.0%	X ≤ 2.5%, Y ≤ 3.0%
FG5, 8.0” and above	X ≤ 1.5%, Y ≤ 1.5%	X ≤ 2.5%, Y ≤ 2.5%

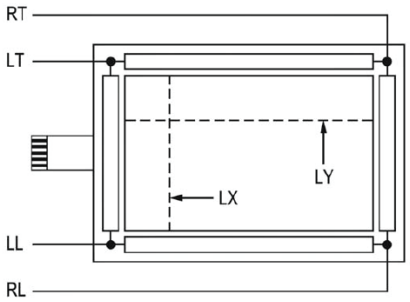
3.2.2 Activation Force: ≤ 50g.

3.2.3 Chemical Resistance

Chemicals	**Concentration (%)**	**Emersion Time (Hours)**
Ammonia	2.0	1.0
Caustic Soda	5.0	0.5
Hydrochloric Acid	2.5	10.0
Nitric Acid	2.5	1.0
Sulfuric Acid	5.0	2.0
Acetic Acid	10.0	10.0
Ethanol	50.0	10.0
Methanol	50.0	10.0
Gasoline	100.0	10.0
Kerosene	100.0	10.0
Acetone	100.0	1.0
Toluene	100.0	1.0
Salt Solution	3.0	10.0
Boiling Water	100.0	.25
Detergent (Kao Mypet)	100.0	10.0
Artificial Perspiration (JIS K6772)	100.0	10.0

3.3 Electrical

3.3.1 Loop Resistance



Loop Resistance X = short RT and RL, short LT and LL.

Measure the resistance between RT and LT.

Loop Resistance Y = short RT and LT, short RL and LL.

Measure the resistance between RT and RL.

3.3.2 Linearity

Step 1: Short RT and RL (or short RL and LL).

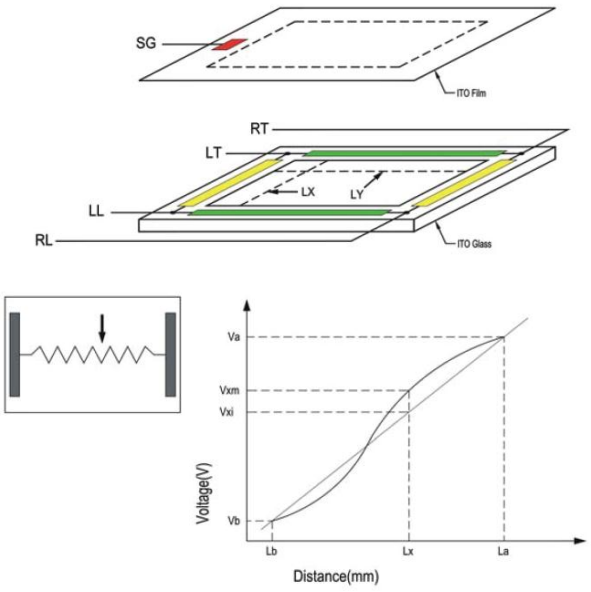
Step 2: Apply voltage DC 5V.

Step 3: Short LT and LL (or short RT and LT).

Step 4: Apply grounding.

Step 5: Draw points along LX and LY at 5.0mm intervals within pattern area and detect the voltage at SG.

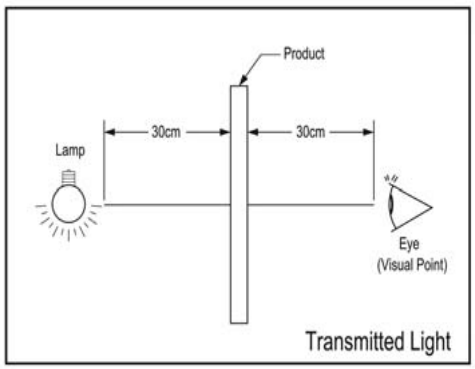
Step 6: measure the voltage differences between RT and LT (or RT and RL)



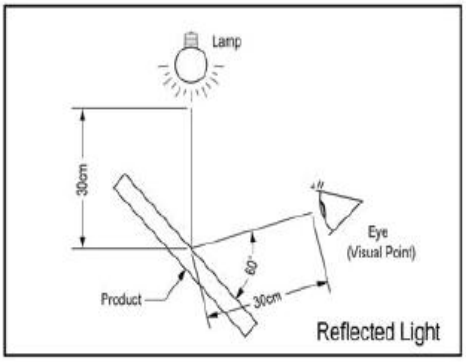
Linearity: [Vxm-Vxi] / (Va-Vb) X 100%

4. Appearance Criteria

An 18W fluorescent lamp is used for appearance inspection. Detail settings are shown in (Fig 4-1 and 4-2). Minor impurities outside viewing area are acceptable unless their existence affect electrical functions.

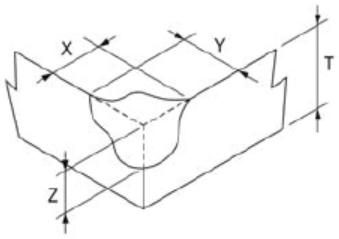
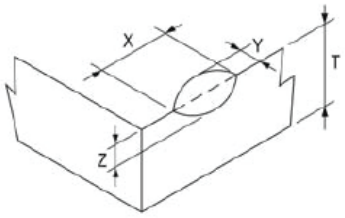
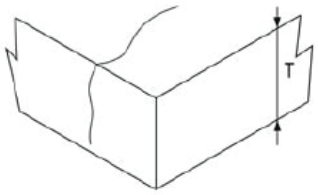


(Fig 4-1)



(Fig 4-2)

4.1 Glass Flaw

Item	Picture	Specification
Corner Flaw		X ≤ 3.0mm Y ≤ 3.0mm Z ≤ T
Edge Flaw		X ≤ 3.0mm Y ≤ 3.0mm Z ≤ T
Progressive Flaw		Not Allowed

Note: T = Glass thickness

4.2 Defect

Item	Specification / Unit: mm
Particle	(1) D ≤ 0.25 OK (2) 0.25 < D ≤ 0.4 (each area contains ≤ 3, total ≤ 5) OK (3) D > 0.40 NG
Linear Object	(1) W ≤ 0.05 OK (2) 0.05 < W ≤ 0.1 and L ≤ 5.0, total ≤ 3 OK (3) W > 0.10 NG
Scratch	(1) W ≤ 0.025 OK (2) 0.025 < W ≤ 0.05 and L ≤ 12.0, total ≤ 5 OK (3) 0.05 < W ≤ 0.10 and L ≤ 6, total ≤ 5 OK (4) W > 0.10 NG

Note: 1. D = Diameter

2. W = Width

3. L = Length

4. Each area contains = 20mmØ

Note: All appearance flaws outside active area are acceptable (Glass flaws, including corner flaws, edge flaws, and progressive flaws follow appearance specification).

5. Reliability Testing Condition

5.1 High Temperature Humidity

70°C @ 90% relative humidity for 240 hours

5.2 High Temperature

70°C for 240 hours

5.3 Low Temperature

-40°C for 240 hours

5.4 Thermal Cycle

The requirements in Section 2 (Except for linearity and actuation force) shall be satisfied after completion of 100 thermal cycles for each test condition. The first test condition begins at room temperature (room temperature = 25°C) to 70°C for 30 minutes, then back to room temperature. The test continues to -40°C for another 30 minutes and back to room temperature, this is one cycle. The temperature increases from -40°C to 70°C within 5 minutes, and decreases from 70°C to -40°C within 5 minutes. Each item is measured after exposing the samples at room temperature and

humidity for 4 hours.

All reliability tests meet the linearity and actuation force below after test. After each test, the panel is acclimated to room temperature before each test is performed. Reliability test may cause the film to pillow yet the electric characteristic remains.

(1) Linearity satisfies

Dimensions	Original	After Test
FG5, 5.7” to 7.0”	X ≤ 1.5%, Y ≤ 2.0%	X ≤ 2.5%, Y ≤ 3.0%
FG5, 8.0” and above	X ≤ 1.5%, Y ≤ 1.5%	X ≤ 2.5%, Y ≤ 2.5%

(2) Actuation force

Should not exceed 300g after reliability test, original spec does not exceed 100g.

6. Handling and Packing

The resistive touch screen is traditionally a glass product so please handle the touch screen with care. Keep touch screen surfaces clean and free of any dust and dirt. Small particles could scratch the touch screen. To prevent accidental damage to the product, please follow the instructions below when handling the touch screen. Mishandling product violates the warranty.

6.1 Storage

Store the touch screen under the temperature and humidity range specified above. Direct sunlight exposure should be avoided. Please ensure the front surface of touch screen is properly protected. Do not put heavy objects on the touch screen, and do not stack or pile touch screens.

6.2 Handling

Touch screens are traditionally glass products. Please wear gloves when handling a touch screen to avoid injury. Hold the touch screen outside the viewable area when handling the panel to prevent any fingers prints or stains before installation. Wear clean gloves and mask to protect the products from fingerprint or stain. Do not hold the product by the tail. Do not apply any force to the tail cable area. The tail cable must not be bent to less than 1.5mm radius during handling and assembly. Use a soft lint-free cloth dampened with isopropyl alcohol to clean any contaminates on the touch screen.

6.3 Installing and Assembly

(1) Gaskets must be placed outside the viewable area. Reserve enough clearance

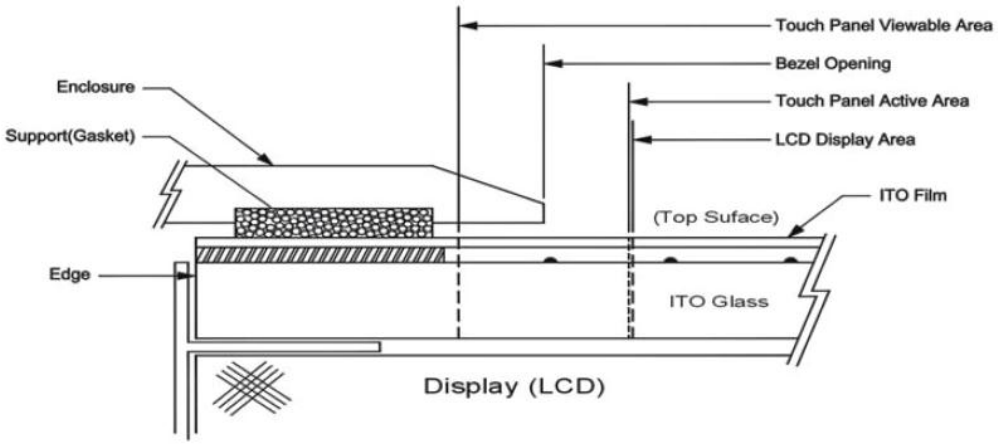
between the touch screen surface and enclosure for normal panel operation. To avoid a touch error, please retain enough space between surface touch screen and Bezel.

(2) Bezel opening must not touch viewable area. Bezel opening must be designed between viewable area and active area.

(3) Due to the conductive characteristic of the touch screen backside, prevent metal contact when mounting.

(4) Do not use adhesive to bond top surface (ITO Film) of touch screen with enclosure.

(5) Proper grounding of controller at all times assures normal operation.



7. Warranty Periods

Dawar warrants the products produced to this specification from date of shipment for 2 years. Please reference Dawar's standard terms and conditions for more information.

The limited warranty does not cover the following situations:

1. Damages caused by improper handling from clients, including shipping, installation and integration.
2. Damages caused by either natural or human factors after the produce leaves Dawar shipping dock.
3. Damage caused by self-repairs, modifications or disassembling of the product.