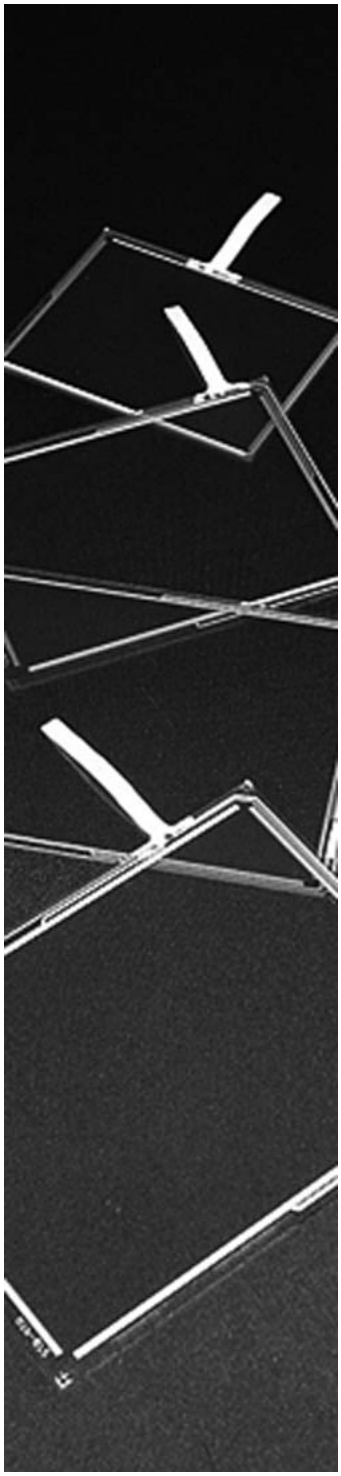


DMC Co., Ltd.

Surface Capacitive Touchscreen
CST/YCS Series Product Specifications

Table of Contents

1. Product Specifications

1-1. Applicable Products

§ This specification is applied to the Surface capacitive touch screen: CST/YCS Series.

1-2. Structure

§ Regarding dimensions, structure, and shape, please refer to the drawings.

1-3. Environmental Specifications

Specification	Value
Operating Temperature	-20°C to 70°C (no condensation)
Operating Humidity	-20°C to 60°C less than 90%RH (no condensation) Exceeding 60°C Less than 133.8g/m^3 (no condensation)
Storage Temperature	-40°C to 80°C (no condensation)
Storage Humidity	-40°C to 60°C less than 95%RH (no condensation) Exceeding 60°C Less than 142.9g/m^3 (no condensation)
Chemical Resistance (top surface)	Toluene, Trichloroethylene, Atherton, Alcohol, Gasoline, Machine Oil, Ammonia, Mayonnaise, Ketchup, Wine, Salad Oil, Vinegar, Lipstick, etc.

1-4. Mechanical Characteristics

Specification	Value	
Operating Life	Input (finger)	50,000,000 hits
Light Transmittance	CST: Over83% / YCS:Over90% (typical value at full wavelength)	
Surface Hardness	5H (by JIS pencil hardness)	

1-5. Electrical Characteristics

Specification	Value	
Maximum Voltage	DC6V	
Maximum Current	Between Electrodes (driving electrode)	200mA
Linearity	Within ±2.0% (10% inside of View area after 9 points calibration.)	

1-6. Appearance

§ Scratch, dust（W = Width、L = Length、D = Diameter = (Long diameter＋Short diameter)/2）

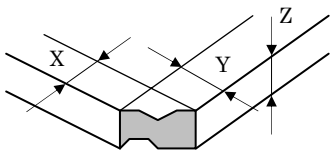
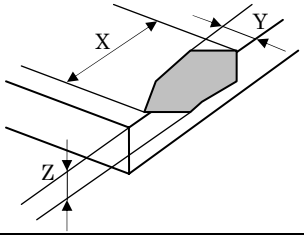
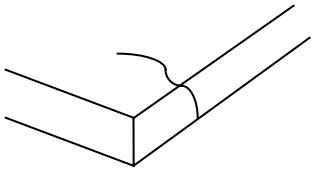
Item	Width (mm)	Length (mm)	Acceptable Numbers	Max Acceptable Numbers
Linear (Scratch) Over 0.2mm is judged by Circular	0.2≧W＞0.05	6＞L	1pc in φ30mm	Within 5pcs per product
	0.05≧W＞0.025	10＞L	Neglect	
	0.025≧W	20＞L	Neglect	
Linear (Dust) Over 0.2mm is judged by Circular	0.2≧W＞0.05	6＞L	1pc in φ30mm	
	0.05≧W	10＞L	Neglect	
Circular（Scratch, Dust）	1.0≧D＞0.5			
	0.5≧D			
	D = Diameter = (Long diameter＋Short diameter)/2）			

Applied only in the Viewing Area. Scratches or dusts in the outside of the Viewing Area are acceptable unless the electrical characteristics are affected.

§ Dirt

Acceptable if not noticeable on a black mat.

§ Chip, crack (t = glass thickness) (applicable only to the glass)

Item	Size (mm)			Acceptable Numbers
Corner		X	≦3	2 pcs /panel
		Y	≦3	
		Z	≦t	
Side		X	≦5	2 pcs /side
		Y	≦3	
		Z	≦t	
Crack				0 pc (unacceptable)

2. Testing Conditions

2-1. Testing Conditions

§ If the condition is not specified, the test is performed under the supplier's standard testing condition.

§ Tests are performed under the room temperature unless specified. The room temperature is referred as follows:

Temperature: 20℃±5℃
Humidity: 65%±10%RH

2-2. Environmental Specifications

§ Chemical Resistance Test

Condition: Tested after leaving the chemical on the surface for 12 hours being wiped off by cloth.

Judgment: Must be no effect in appearance.

2-3. Mechanical Characteristics

§ Operating Life Test (Finger)

Condition: Testing rod: Refer to Figure 1
Load: 3.0N
Cycle: 2 hits/sec

Judgment Must satisfy the following:
Linearity: Must satisfy the specification.

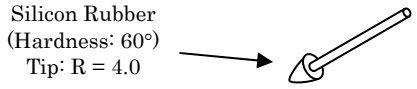


Figure 1: Testing rod

2-4. Appearance

§ Appearance Test

Condition: Tested by an examiner with over 1.0 eyesight at 30cm away from the product under the transmittable light at an angle over 60° to the surface of the product.

Judgment: Must satisfy the specification.

3. Reliability Condition

3-1. Temperature Condition

§ Temperature Condition Test

Following tests are performed in the condition with no dew condensation:

Cold Test: Tested after leaving the parts in -40°C±3°C for 240 hours and in the room temperature for 2 hours.

Heat Test: Tested after leaving the parts in 80°C±3°C for 240 hours and in the room temperature for 2 hours.

Humidity Test: Tested after leaving the parts in the temperature 60°C±2°C, humidity 90 to 95%RH for 240 hours and in the room temperature for 2 hours.

Cycle Test: Tested after 5 cycles of leaving the parts in the temperature -30°C±3°C for 1 hour and in the room temperature for 0.5 hours, then leaving the parts in the temperature 70°C±3°C for 1 hour and in the room temperature for 0.5 hours.

Judgment: Must satisfy the following :
Linearity: Must satisfy the specification.
Appearance: Must satisfy the specification.

4. Recommended Connector

4-1. Recommended Connector

Part No.	Manufacturer	Pitch	Remarks
RE-H052SD-1110	J.S.T. Mfg Co., Ltd	2.54mm	Similar product is applicable
5-104935-6	AMP	2.54mm	

The connector of Touch screen and its specification is subject to change without notice.

Regarding the connector to mount, please use a general-purpose pin header for a control board.

5. Handling Notes

5-1. Precautions

§ This product is intended for use in standard applications (computers, office automation, and other office equipment, industrial, communications, and measurement equipment, personal and household devices, etc.) Please avoid using this product for special applications where failure or abnormal operation may directly affect human lives, or cause physical injury or property damage, or where extremely high levels of reliability are required (such as aerospace systems, vehicle operating control, atomic energy controls, medical devices for life support, etc.).

5-2. Handling Notes

§ Do not depress or scratch the product with any object with a sharp edge or end.

§ Do not forcibly bend or fold the product.

§ When the product is stored, make sure it is packed in a packing box and stored in a storage temperature range, eliminating any outside load.

§ Do not use or store the product under a condition where the product will be exposed to water, organic solution or acid.

§ Do not disassemble the product.

§ When you handle the product, hold the product by its body. Do not hold by the tail.

§ Clean the product with a soft cloth or a soft cloth with neutral detergent or alcohol. When contaminated by chemicals, wipe them off immediately with caution not to cause injury to human body.

§ The edge of the glass may cause injury.

5-3. Construction Notes

§ Do not use the touch screen when the condensation occurs. The condensation on the touch screen is a natural phenomenon and should disappear after the touch screen is warmed up.

§ The capacitive touch screen can not be used with overlay film and with glove.

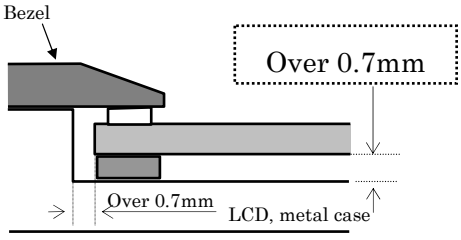
5-4. Electrical & Software Notice

The best performance can be obtained when used with the surface capacitive touch screen controller, “ETP” Series. If the touch screen controller or controller software is to be developed by the customer, please contact our sales engineer.

5-5. Mounting Notes

§ Gap between LCD and Touch screen

A gap of approximately 0.7mm is needed between LCD and Touch screen. It may cause unexpected input if the gap is too narrow. Even greater distance will be needed if influence of noise is large.



§ Tail

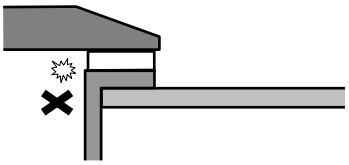
Secure the distance of approximately 0.2mm between the tail and LCD. Fix the tail firmly as the change of distance between tail and LCD may affect position accuracy of input.

§ Tolerance

There is 0.2-0.3mm tolerance for the dimensions of the touch screen and tail. A gap must be made to absorb the tolerance in the case and the connector.

§ Tail

The tail must not be forcibly stressed or bent too hard to avoid the conduction in the insulated area and wire breaking.



§ Mounting

Touch screen must be held from the bottom just like the structure gluing the touch screen onto the display. If the touch screen is glued on the bezel, the adhesion gets stressed and may cause damage to touch screen.

Moisture may form circuit with metal bezel and cause unintended input under outdoor and/or humid environments. It is recommended to use a non-metal bezel in that case.

Avoid acidic matters from getting into gaps. They may form circuits as well as cause corrosion.

§ Grounding of peripheral metals

Metal parts in the periphery of the touch screen and the controller board must be properly grounded. Otherwise, position accuracy will be significantly affected.

6. Warranty

6-1. Warranty Period

§ The warranty period is limited to one (1) year from the date of shipment. The warranty for the initial defect such as appearance defect is limited to one (1) month.

§ Any defected parts under proper use will be examined by the supplier and replaced by the new parts if the defect is considered to be attributed to the supplier.

§ The replacement is subject to be included in the next production lot.

6-2. Warranty Target

§ The warranty only covers the product itself and does not cover any damage to others caused by using this product. Onsite repair or replacement is not supported.

§ We will do our best for delivery problem and product defects, but the warranty for the production line is not covered.

§ Capacitive touch screen are structurally not repairable. All defect products are subject to replacement.

6-3. Warranty Exceptions

Warranty is not applicable, and replacement will be made at the customer's expense under the following conditions.

§ Any malfunctions and damages during transportation and transfer by the user.

§ Any malfunctions and damages caused by a natural disaster or a fire.

§ Any malfunctions and damages caused by static electricity

§ Any malfunctions and damages caused by the failure of the associated equipment.

§ If the product is modified, disassembled or repaired by the user.

§ If the product is glued onto the equipment and uninstalled.

§ Any malfunctions and damages caused by an improper usage and handling against the specifications and notes.

6-4. Tools

§ To maintain the quality, the printing screen and the die-cut plates are generally limited to use up to one (1) year. Reorders after one (1) year from the initial order or from the last renewal are subject to the tooling charge for replacing the printing screen and the die-cut plates. Reorders for the discontinued standard parts are also subject to tooling charge.

§ All the tools, such as CAD data (except for the drawing for approval), block copies (films), printing screens, and die-cut plates are not to be provided for administrative purpose.

6-5. Changes

§ Because of the manufacturing process, changing the dimensions, circuit pattern, and the tail position requires replacing most of the tools and is subject to high tooling charge. Please be careful when ordering and approving the drawing.

§ Circuit pattern and the materials that do not affect the environmental, electrical, and mechanical characteristics such as film, glass, ink and glue are subject to change for the supplier's reason or for improvement within the specifications.

§ Standard products are subject to change for improvement without notice.

7. Revision history

Rev. 1.00 (Jun, 23, 2009) Initial release

Rev. 2.00 (Jan, 18, 2010)

1-5 Linearity specification was changed 'Under 2.0' ⇒'Within ±2.0%''

2-3 300g⇒3.0N (Unit changed)

3-1 −30℃⇒ −40℃(Clerical error corrected)

Rev.3.00 (Jun, 30, 2010)

1-1 CST Series and YCS Series were merged.

1-4 Light Transmittance of both CST and YCS Series are described.
Surface Hardness was changed from '6H' to '5H'

1-5 Linearity specification was changed from 'within ±2.0% to 'within±1.5%

1-6 Appearance specification of CST and YCS were unified.

2-3 DC5V was deleted.

5-4 Product names was change from 'Analog capacitive' to 'Surface capacitive'

Rev.4.00 (Feb, 25, 2011)

1-5 Linearity specification was changed from "within ±1.5% after 25 points calibration" to "within ±2,0% after 9 points calibration"

CST/YCS Series Product Specifications
Rev. 4.00, Feb 25, 2011

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