

DMC Co., Ltd.

Multi-touch Resistive Touch Screen (MTR-G Series) Product Specification

Table of Contents

1. Product Specifications	2
1-1. Applicable Products	2
1-2. Structure	2
1-3. Environmental Specifications	$\dots 2$
1-4. Mechanical Characteristics	2
1-5. Electrical Characteristics	3
1-6. Appearance	3
2. Testing Conditions	5
2-1. Testing Conditions	5
2-2. Environmental Specifications	5
2-3. Mechanical Characteristics	5
2-4. Appearance	5
3. Reliability Condition	6
3-1. Temperature Condition	6
4. Handling Notes	7
4-1. Precautions	7
4-2. Handling Notes	7
4-3. Construction Notes	7
4-4. Electrical and Software Notice	8
4-5. Mounting Notes	8
5. Warranty	9
5-1. Warranty Period	9
5-2. Warranty Scope	9
5-3. Disclaimer	9
5-4. Tools	9
5-5. Changes	9
5-6. Regarding RoHS	9
6. Revision history	10
6-1. Revision history	10

1. Product Specifications

1-1. Applicable Products

§ This specification sheet is applied to the Multi-touch Resistive touch screen, MTR-G series.

1-2. Structure

§ As to dimensions, structure, and shape, please refer to the drawing.

1-3. Environmental Specifications

Specification	Value		
Operating Temperature	-20°C to 80°C (no condensation)		
Operating Humidity	-20°C to 60°C Less than 90%RH (no condensation) Exceeding 60°C 133.8g/kg (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 142.9g/kg (no condensation)		
Chemical Resistance (top surface)	Toluene, Tricholoroethylene, Athetone, Alcohol, Gasoline, Machine Oil, Ammonia, Glass Cleaner, Mayonnaise, Ketchup, Wine, Salad Oil, Vinegar, Lipstick, etc.		

1-4. Mechanical Characteristics

Specification	Value		
Activation Force	0.03N~0.3N		
	Input (finger) 10,000,000 hits		,000,000 hits
Operating Life	Character Input (pen)	100,	000 characters
Light Transmittance (Film/Glass)	Typ. 79% (typical value at full wavelength)		
Surface Hardness	Over 3H (by JIS pencil hardness)		
Tail Bending Endurance	R=1 bended at 180 degrees (figure 1) Bending Prohibited Area (figure 2) Refer to the drawing for detailed dimensions of the area		≦10 times





Figure 2 Bending Prohibited

Figure 1 bended at 180 degrees

1-5. Electrical Characteristics

Specification	Value			
Maximum Voltage	DC6V			
	Upper electrode	100mA/ division number		
Maximum Current	Lower electrode	100mA/ division number		
	Between Upper and Lower	$0.5 \mathrm{mA}$		
Linearity	$\pm 2.5\%$ or less (after 4-point calibration) *1			
Chattering	10msec or less at ON/OFF.			

*1: The linearity value is guaranteed after calibration using our company's controller and driver

1-6. Appearance

§ Scratch, dust (W = width, L = length, D = average diameter = (longest + shortest) /2)

Item	Width (mm)	Length (mm)	Acceptable Numbers	Total	
Linear (Scratch/Dust)	$0.05 \le W \le 0.1$	L≦4	1pc. in φ30mm		
For over 0.1mm in	$0.03 \le W \le 0.05$	L≦10	2pcs. φ20mm	Within 5pcs.	
diameter, refer to the Circular.	W≦0.03	L≦20	Acceptable		
Circular	0.3 <d≦0.4 *1<="" td=""><td>1pc in viewing area *1</td><td>/Panel</td></d≦0.4>		1pc in viewing area *1	/Panel	
(Scratch/Dust)	0.2 <d≦0.3< td=""><td>2pcs in φ30mm</td><td></td></d≦0.3<>		2pcs in φ30mm		
	D≦0.2		Acceptable		

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

*1 Applied to the size of 14 inches or larger

§ Dirt

Acceptable if not noticeable on a black mat

Item	Size (mm)			Acceptable Numbers
		Х	≦ 3	
Corner		Y	≦ 3	2pcs /Panel
	Ζ	≦t		
	Side X X Y Z	Х	≦5	
Side Z		Y	≦3	2pcs /Side
		≦t		
Crack				Not acceptable

 $\$ Chip, crack (t = glass thickness) (applicable only if glass is used in the product)

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°C 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



Condition: Measured by depressing the point between the dots to the conduction by the testing rod (Figure 1).

Judgment: Must satisfy the specification.

- § Operating Life Test (Finger)
 - Condition:Testing rod:Refer to Figure 1Voltage:DC5VLoad:3NCycle:2 hits/secJudgment:Must satisfy the following:Activation Force:Must satisfy the specification.Linearity:Must satisfy the specification.



Condition: Testing rod: Refer to Figure 2 Voltage: DC5V Load: 2.5N Input size: 10 x 10 mm Input character: A to Z/minute Judgment: Must satisfy the following:



2-4. Appearance

- § Appearance Test
 - Condition: A healthy adult with a visual acuity of 1.0 or higher (glasses, etc., are allowed) will inspect the product at 30 cm from the eyes.

Visual inspection will be performed using both transmitted and reflected light.

Judgment: Must satisfy the specification.



Figure1. Testing rod



Figure2. Testing rod

3. Reliability Condition

3-1. Temperature Condition

§ Temperature Condition Test

The following tests are performed in the condition with no dew condensation:

- Cold Test: Tested after leaving the products in -40±3°C for 240 hours and in the room temperature for 2 hours.
- Heat Test: Tested after leaving the products in 80±3°C for 240 hours and in the room temperature for 2 hours.
- Humidity Test: Tested after leaving the products in the temperature 60±3°C, humidity 90 to 95% for 240 hours and in the room temperature for 2 hours.
- Cycle Test: Tested after 5 cycles of leaving the products in the temperature $-30\pm3^{\circ}$ C for 1 hour and in the room temperature for 0.5 hours, then leaving the products in the temperature 70 $\pm3^{\circ}$ C for 1 hour and in the room temperature for 0.5 hours.
- Judgment: Must satisfy the following: Activation Force: Must satisfy the specification. Linearity: Must satisfy the specification.

4. Handling Notes

4-1. 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 operations 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.).

4-2. Handling Notes

- § Do not depress or scratch the product with any object with a sharp edge or hard end.
- § Do not apply pressure to the film surface when handling the product.
- § Do not put this product close to fire.
- § Do not wipe this product with too much load nor strongly rub this product locally. It may cause the product to malfunction.
- § Do not hit the product with a hard object.
- § Do not forcibly bend or fold the product. (Include tail and overlay, etc.)
- § 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 stack the products.
- § Do not use nor store the product under a condition where the product will be exposed to water, organic solution or acid.
- § Do not use the product under the direct sunlight.
- § 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 the human body.
- § The edge of the glass is not rounded and may cause injury. It is recommended to wear gloves when touching the touch panel.

4-3. Construction Notes

- § The environmental specifications, mechanical characteristics, and electrical characteristics are only applied to the Active Area.
- § Do not use the touch screen when the condensation occurs. The condensation inside of the touch screen is a natural phenomenon and should disappear after the touch screen is warmed up.
- § The resistive touch panel maintains electrical insulation between the upper and lower electrodes by keeping an air gap between them. If the customer applies a protective or decorative film on the touch panel, the weight of the film may compromise the insulation between the upper and lower layers.
- § This product is designed for light-load applications. Due to the potential for insulation failure between the upper and lower electrodes, our FV film cannot be used with this product.

4-4. Electrical and Software Notice

The best performance can be obtained when used with the original analog resistive touch screen controller, [MTR200x] series. If the controller software is to be developed by the customer, please note the following:

- § There is a contact resistance between the top and bottom electrodes, and it changes by the pressure of a finger or a pen. The data must be read after the contact resistance becomes stabilized.
- § For drawing operations, the line may be intermittent when the pen comes on the dot spacers. Software compensation is needed.

4-5. Mounting Notes

At mounting the touch screen, refer to the separate document, [Resistive Touch Screen Mounting

Guidance]. The appropriate structure differs according to touchscreen size, LCD, chassis design,

usage environment and so on. Please conduct the evaluation with actual user's products at the trial

stage and confirm that your structure is appropriate prior to fixing the structure design.

- § For touch panels with a film-type upper electrode, the film may expand and contract due to temperature changes in the surrounding environment. If a cushioning material is placed between the inner bezel of the customer's enclosure and the touch panel, it may fail to absorb this expansion and contraction, causing the film to warp and affect appearance and functionality. Avoid mounting methods that restrict film movement. Additionally, to prevent glass breakage and ensure the film can expand and contract freely, use elastic cushioning materials between the bezel and touch panel.
- § Some touch panels have exposed transparent electrodes at the edges. Ensure the design prevents contact with other conductive materials.
- § Do not bend the tail forcefully. This may cause insulation failure or disconnection. Avoid excessive stress, particularly at the boundary of the reinforcement plate near the connector insertion area and at the glass boundary near the base.

5. Warranty

5-1. Warranty Period

- § The warranty period is one year from the date of shipment by the supplier. However, replacements for initial defects are limited to within one month from the shipment date. (excluding transport)
- § Any supposedly defected products under proper use will be examined by the supplier and replaced with new products if the alleged defection is determined to be caused by the supplier. Additionally, failure analysis will only be conducted for products within the warranty period. For products exceeding the warranty period, the supplier may charge a fee for failure analysis.
- § The replacement is subject to be included in the next production lot.

5-2. Warranty Scope

- § The warranty only covers the product itself and does not cover any secondly damage caused by using the product concerned. Onsite repairs or replacement is not supported.
- $\$ We will do our best for delivery problems and product defects, but the warranty for the production line is not covered.
- $\$ Resistive touch screens are structurally not repairable. All defective products are subject to replacement.

5-3. Disclaimer

Following conditions are not covered with the warranty and subject to charge.

- § Any malfunctions and damages during transportation and transfer by the user.
- § Any malfunctions and damage caused by a natural disaster or a fire.
- § Any malfunctions and damage caused by static electricity.
- § Any malfunctions and damage caused by the failure of the associated equipment.
- § If the product is remodeled, disassembled or repaired by the user.
- $\$ If the product is glued onto an equipment and then unglued.
- § Any malfunctions and damage caused by improper usage and handling against the specifications and notes.

5-4. Tools

§ All the tools and design information, such as CAD data, printing screens, and die-cut plates are not to be provided by the client for proprietary and/or administrative reasons.

5-5. Changes

- § During the manufacturing process, any changes to dimensions, circuits, or tail positions may require modifications to production tools, which could incur additional development costs. Please review drawings carefully when placing an order and approving designs.
- § Materials such as film, glass, ink, adhesives, packaging, and circuit routing may be subject to minor modifications that do not affect specifications, due to supplier circumstances or quality improvements.
- § Standard products are subject to change for improvement without notification.

5-6. Regarding RoHS

§ This product is RoHS compliant.

6. Revision history

6-1. Revision history

Rev1 .0 (Mar 14, 2018) Initial release

Rev2.0 (June 11, 2019) Change Product Numbers, Surface hardness, Activation force, writing of Appearance.

Rev3.0 (August 24, 2020) Change Product Numbers

Rev4.0 (November 10, 2020) Change Operating Temperature -20° C to 70° C $\rightarrow -20^{\circ}$ C to 80° C Change writing of Light Transmittance $79\% \rightarrow$ Typ.79%

Rev5 (January 17, 2023) Website address change Change of the document number.

Rev6(November 15, 2023) 1-3. Environmental Specifications Corrected the unit [g/m²=> g/kg] 5-4 Tools Delete comment.

Rev7 (2025.04.07)
1-5 Electrical Characteristics: Partial content modification
4 Handling Precautions: Partial content modification
5 Warranty: Partial content modification

Multi-touch Resistive Touch Screen MTR-G Series Product Specification Rev 7 April 7, 2025 ©2025 DMC Co., Ltd.

This document can be freely distributed, but any alteration to this document is prohibited.

DMC Co., Ltd.

https://www.dush.co.jp/english 11F Takanawa Sengakuji Ekimae Bldg., 2-18-10 Takanawa, Minato-ku, Tokyo 108-0074, Japan Phone: +81-3-6721-6731 (Japanese), 6736 (English) Fax: +81-3-6721-6732