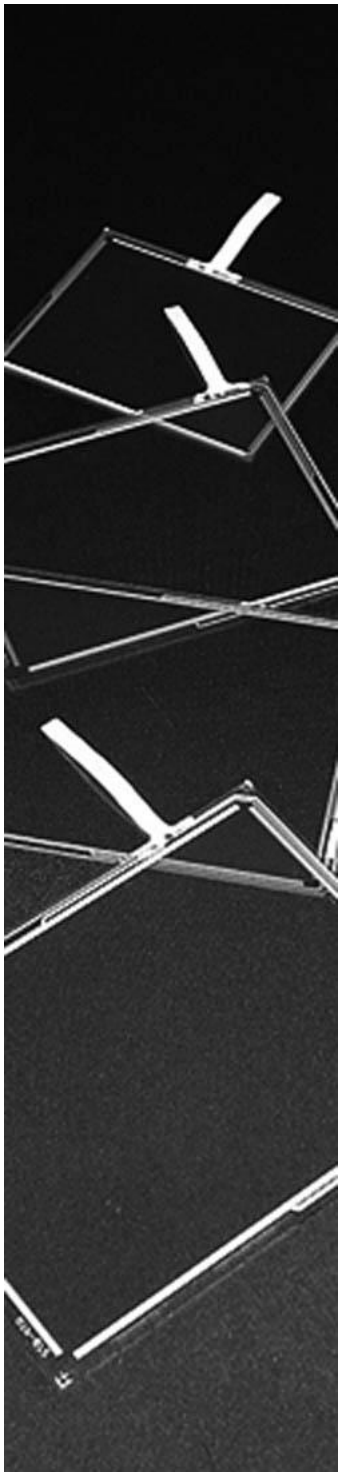

DMC Co., Ltd.

Projected Capacitive Touchscreen
DUS-U Series Product Specification

Document No. DEP-S0020A

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1. Product Specifications

1-1. Product Applicable

§ This specification is applied to the Projected Capacitive Touch Screen, DUS-U series.

1-2. Structure

§ For Dimensional and structural information, refer to the product drawing.

§ The ITO Glass is index-matching type.

1-3. Environmental Specifications

Specification	Value
Operating Temperature	-20°C to 70°C (no condensation)
Operating Humidity	90%RH or lower (no condensation) at temperature of -20°C to 60°C 133.8g/kg or lower (no condensation) at temperature exceeding 60°C
Storage Temperature	-40°C to 75°C (no condensation)
Storage Humidity	95%RH or lower (no condensation) at temperature of -40°C to 60°C 142.9g/kg or lower (no condensation) at temperature exceeding 60°C
Chemical Resistance (top surface)	Toluene, Trichloroethylene, Acetone, Alcohol, Gasoline, Machine Oil, Ammonia, Glass Cleaner, Mayonnaise, Ketchup, Wine, Salad Oil, Vinegar, Lipstick, etc.

1-4. Mechanical Characteristics

Specification	Value	
Operating Life	Input (finger)	50,000,000 taps
Light Transmittance	91% (typical value at full wavelength)	
Surface Hardness	Over 5H (by JIS pencil hardness)	
Electrode Matrix Pitch	Refer to the product drawing	
FPC Bending	R=3mm / Up to one time	

1-5. Electrical Characteristics

§For the electrical characteristics, refer to the product specification sheet of the controller boards.

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 regarded as follows:

Temperature: 20°C±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 then wiping it off by cloth.

Judgement: Must be no effect in appearance.

2-3. Mechanical Characteristics

§ Operating Life Test

Condition: Testing rod: Refer to Figure 1
Load: 3N
Cycle: 2 hits/sec

Judgement: Must operate properly after the test

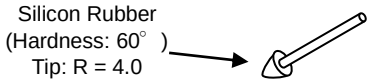

Figure 1. Testing rod 1

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 angle of over 60° to surface of the product.

Judgement: Must satisfy the specifications described in the separate document, [Visual Inspection Criteria].

3. Reliability Condition

3-1. Temperature Condition

§ Temperature Condition Test

Following test 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 75°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±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 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.

Judgement: Must satisfy the following:

Function : Operate properly.

Appearance: Must satisfy the specifications described in the separate document, [Visual Inspection Criteria].

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 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.).

4-2. Handling Notes

§ Do not press 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 use the product under the direct sunlight if a film material is used on it.

§ 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 with chemicals, wipe them off immediately with caution not to cause injury to human body.

§ The edge of the glass is not rounded and may cause injury.

4-3. Construction Notes

§ The environmental specifications, mechanical characteristics, and electrical characteristics are only applied to the Active Area.

§ Do not use the touchscreen when the condensation occurs. The condensation inside of the touchscreen is a natural phenomenon and should disappear after the touchscreen is warmed up.

4-4. Electrical & Software Notice

§ Please use DMC's touch controller. Our projected capacitive touchscreen is designed to work with our controller board.

4-5. Mounting Notes

§ Projected capacitive touchscreen detects the touched locations by measuring the increased amount of the capacitance value between its electrodes at inputs. Once it is built into a system, capacitance couplings are continually yielded among the touchscreen, FPC tail, controller board and metal Chassis. When turned on, our projected capacitive touchscreen will automatically adjust its sensitivity level to the surrounding environment at the standby state in order to avoid the affects by the surrounding capacitance couplings. If surrounding environment changes or materials to alter the electrical field (a large capacitor, power-supply unit, LCD panel, or materials with high dielectric constant) is near, these external factors will adversely affect the function of the touch screen to detect the correct input positions.

At structure design, please refer to the separate document, [Projected Capacitive Touch Screen DUS-U Series, Mounting Guidance of Touch Screen], and ensure enough gap distances among each component in order to avoid the external factors described above.

§ Refer to the drawing of the touch screen, and take into account the tolerances at structure design.

§ The FPC tail must not be forcibly stressed or bent too hard. The conduction in the insulated area and/or wire breaking may be caused. For the specifications of FPC bending, refer to the section 1-4.[Mechanical Characteristics] in this document.

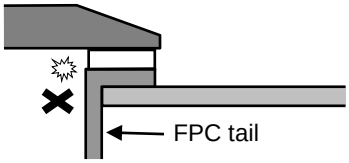

Fig.4-5

5. Warranty

5-1. Warranty Period

§ The warranty period is limited to 1 year from the date of shipment. The warranty for the initial defects such as appearance defection is limited to 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 caused by the supplier.

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

5-2. 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 defect, but the warranty for the production line is not covered.

§ Capacitive touchscreens are structurally not repairable. All defected parts are subject to replacement.

5-3. Warranty Exceptions

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 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 remodeled, 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.

5-4. Tools

§ 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 due to administrative reason.

5-5. 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 does 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.

6. Revision History

Rev 1.0(June 25, 2015)
Initial release

Rev 2 (January 17, 2023)
Website address change
Change of the document number.

Rev3(November 15, 2023)
1-3. Environmental Specifications Corrected the unit [g/㎥=> g/kg]
5-4 Tools Delete comment.

Projected Capacitive Touchscreen DUS-U series Product Specification
Rev. 3, November 15, 2023

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