

## Membrane keypads technical datasheet & User manual

### 1) User surface mechanical resistance

- **Flexibility:** > 5 million flex (ASTM D2176)
- **Scratch resistance:** 2H (pencil test), in case of coated window: 1H



### 2) User surface chemical and environment resistance



- **Chemical resistance:** The keypad surface protected from most chemicals, includes: alcohols, diluted acid, diluted alkalis, esters, hydrocarbons, ketones, household cleaners. (DDIN 42 115)
- **UV stability:**
  - a) Basic overly foil has not or limited UV stability
  - b) UV stable overlay foil: High UV radiation resistance. Tested after 12 months intense sunshine with 5 million button press (1600 hours UVCON lamp test / 12 months, placed to 45° in Miami/Florida sunshine.)
- **Application temperature:** -25 °C – 100 °C
- **IP protection:**
  - a) basic construction (filler foil under the flex output cable): IP63 (possible to increase with special assembly)
  - b) through type keypad: IP67 (possible to increase with special assembly)
  - c) closed frame type: IP68

### 3) Electrical properties:



- **User surface dielectric strength:** > 15.6 kV, surface resistance:  $10^{13}$  Ohm/m<sup>2</sup> 500VDC.
- **Output flexible cable dielectric strength (from 4 mm from contact area):**
  - a) UV ink coated flex output: 5 kV
  - b) Laminated flex output: 8 kV

- c) UV ink coated + laminated flex output: 10 kV



- **Buttons switch resistance** (in case of max. 300 mm length, min. 0.8 mm thickness conductive wires):

- a) Touch type buttons: <300 Ohm
- b) Non plated metal domes assembly buttons: <500 Ohm
- c) Nickel plated metal domes assembly buttons: <200 Ohm
- d) Gold plated metal domes assembly buttons: <100 Ohm



- **Switch power** (in case of max. 300 mm length, min. 0.8 mm thickness conductive wires):

- a) Touch type buttons: <12V / <100 mA
- b) Non plated metal domes assembly buttons: <12 V / <100 mA
- c) Nickel plated metal domes assembly buttons: <12 V / 150 mA
- d) Gold plated metal domes assembly buttons: <12 V / 250 mA

- 4) Switch life time: > 5 million presses (if the buttons pressed on rigid back support, with maximum 400 grams / cm<sup>2</sup> switch force.)**

**Attention! The buttons can be damaged / flipped easy until the keypad has not stick to rigid support. Until this don not press the buttons!**

## 5) Rear adhesives properties:

Good adhesion to high surface tension materials, cleaned plastics (ABS, PVC, Polycarbonate, etc.), metals, woods, stones.



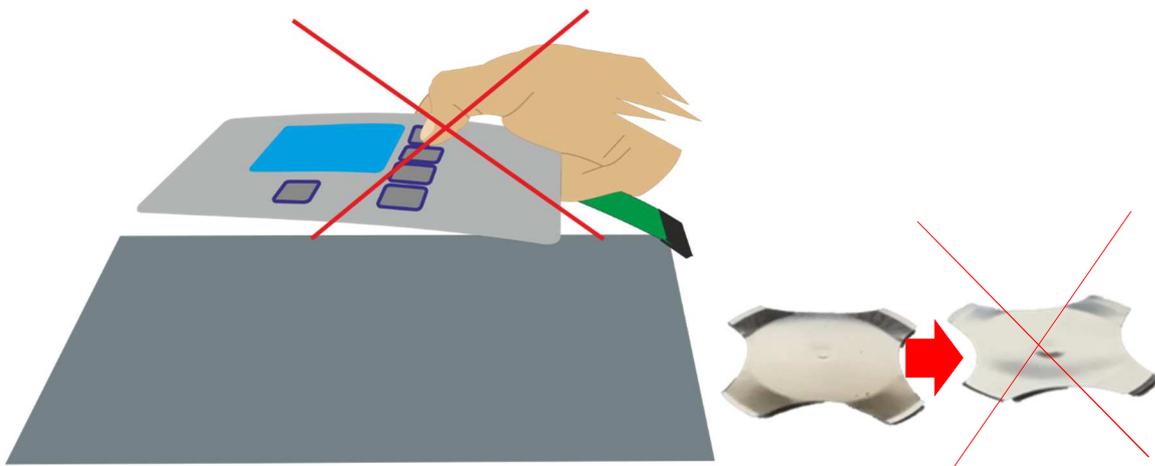
- a) RI600 basic adhesive: 9N/25 mm (FINAT MT M2), surface maximum roughness: 5 micron. Possible to stick to properly cleaned and degreasing surface. Removing: Possible to remove with minimal adhesive remain.
- b) D3XX stiffened adhesive: Surface maximum roughness: 25 micron. Possible to stick to properly cleaned and degreasing surface. Removing: Possible to remove with minimal adhesive remain.
- c) 3M 467MP: Surface maximum roughness: 30 micron. Possible to stick to properly cleaned and degreasing surface. Removing: Possible to remove with more adhesive remain.
- d) 3M 468MP: Surface maximum roughness: 80 micron. Possible to stick to properly cleaned and degreasing surface. Removing: Possible to remove with more adhesive remain.

## Handling

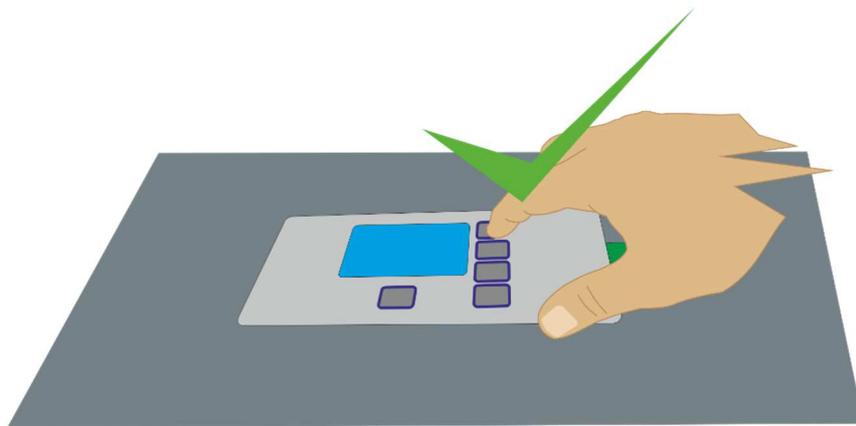
To stick the keypads to rigid support is mandatory, the buttons proper bottom support is required. Otherwise the metal domes in keypad will be flipped, deformed which will result shorted buttons or insufficient working at the future.

**Please handling the keypad with care until and during the installation because till they can be damaged easy.**

- 1) To press the buttons without rigid bottom support is not allowed. This case the buttons can be flipped or deformed and keypad will be damaged.



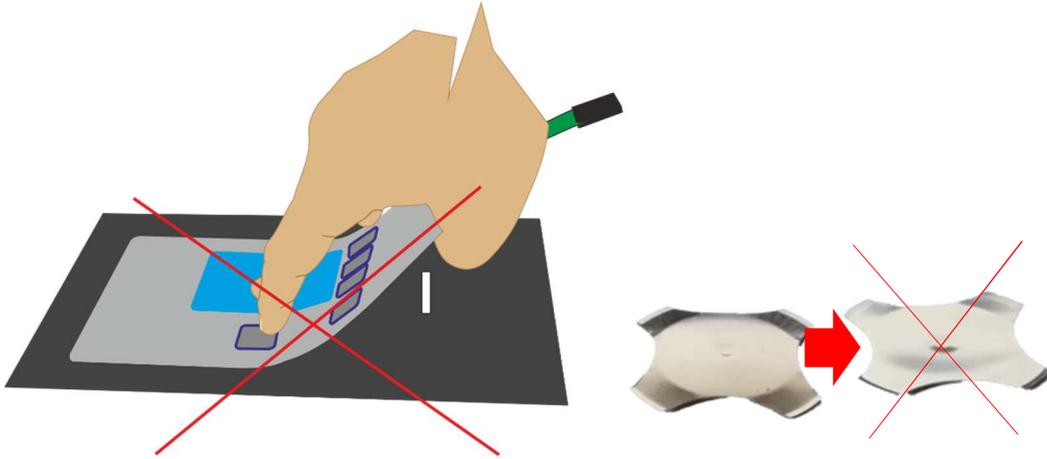
- 2) If the keypads electrical testing is required before the installation (final stick) place the keypad to rigid, flat surface where the buttons will be properly supported. Thanks to it, you can press buttons safely.



- 3) During installation don not curve the keypad in sharp angle. This case the buttons can be flipped or deformed and keypad will be damaged.

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Allowed minimum radius:  $R=150\text{ mm}$



- 4) In case of IP63 basic type keypads installation, do not forget to remove the small silicon paper from filler (under the flex output). If this paper has been left on the keypad it can dome and leak at the future.

