

Technical Data Sheet - Membrane Keypad Specifications

Mechanical Properties

Dimensional tolerances As agreed & confirmed on RHTI drawings Typical +/- 0.20mm

	Non-Tactile	Tactile Metal Dome	Tactile Polydome	Comments
Operational force	≤ 2N	≤ 5N	≤ 5N	ASTM F1597-02
Typical key travel	0.30mm	8mm dia – 0.35mm 12mm dia – 0.60mm	0.50 to 0.80mm	ASTM F1682-02
Options:				
Contact surface	<input type="checkbox"/> Flexible upper & lower circuit printed with conductive silver or carbon. <input type="checkbox"/> PCB tin/lead lower circuit, carbon or gold plated. <input type="checkbox"/> Nickel or gold plated metal domes.			
Actuation Life				
Polyester overlay	> 3 x 10 ⁶	> 1 x 10 ⁶	> 1 x 10 ⁶	@ 20°C, 50%RH
Polycarbonate overlay	100,000	Not recommended	Not recommended	@ 20°C, 50%RH
Emboss height	≤ 0.50mm	≤ 0.50mm	0.50 – 0.80mm	Polydome constructed to suit requirement
Emboss diameter			6.00 – 10.00mm	
Emboss spacing	> 3.00mm	> 3.00mm	> 3.00mm	Minimum width of rim embossing 1.00mm
Minimum bend on tail	4.00mm radius			

Electrical Properties

Contact bounce	< 3ms	<10ms	<20ms	ASTM F1661-96
Closed switch loop resistance	≤ 5kΩ	≤ 5kΩ	≤ 5kΩ	ASTM F1680-02
Typical loop resistance	≤ 100Ω	≤ 100Ω	≤ 100Ω	ASTM F1680-02
Insulation Resistance				
Without circuit crossovers	≥ 10mΩ	≥ 10mΩ	≥ 10mΩ	ASTM F1689-02
With circuit crossovers	≥ 100mΩ	≥ 100mΩ	≥ 100mΩ	ASTM F1996-01
Dielectric Strength				
125μ Polyester	15kV	15kV	15kV	
175μ Polyester	18kV	18kV	18kV	
250μ Polyester	21kV	21kV	21kV	
Capacitance	<25pF	<25pF	<25pF	
Operating switched voltage	Min 0.50V Max 30V	Min 0.50V Max 30V	Min 0.50V Max 30V	
Operating switched current	≤ 50mA	≤ 50mA	≤ 50mA	
Operating switched power	Max 1W	Max 1W	Max 1W	Resistive circuit
LED typical operating voltage	1.9 to 4.0V	1.9 to 4.0V	1.9 to 4.0V	

Environmental Properties

	Non-Tactile	Tactile Metal Dome	Tactile Polydome (cold formed)	Tactile Polydome (heat formed)												
Operating temperatures	-20°C to +70°C	-20°C to +70°C	0°C to +40°C	0°C to +60°C												
Storage temperatures	-40°C to +80°C	-40°C to +80°C	-30°C to +50°C	-30°C to +70°C												
<table border="1"> <thead> <tr> <th></th> <th>Non-Tactile</th> <th>Tactile Metal Dome</th> <th>Tactile Polydome</th> </tr> </thead> <tbody> <tr> <td>Operating humidity</td> <td>≤ 90%RH</td> <td>≤ 90%RH</td> <td>≤ 90%RH</td> </tr> <tr> <td>Storage humidity</td> <td>≤ 90%RH</td> <td>≤ 90%RH</td> <td>≤ 90%RH</td> </tr> </tbody> </table>						Non-Tactile	Tactile Metal Dome	Tactile Polydome	Operating humidity	≤ 90%RH	≤ 90%RH	≤ 90%RH	Storage humidity	≤ 90%RH	≤ 90%RH	≤ 90%RH
	Non-Tactile	Tactile Metal Dome	Tactile Polydome													
Operating humidity	≤ 90%RH	≤ 90%RH	≤ 90%RH													
Storage humidity	≤ 90%RH	≤ 90%RH	≤ 90%RH													
UV Exposure	Standard Polyester not resistant. Special UV resistant grades available on request.															
Shielding & Protection																
Environmental	IP 67 sealing can be achieved subject to design considerations.															
EMI / RFI / ESD	Subject to requirements. Refer to RHTI.															

Membrane Keypad Design Options & Features

RHTI offers a wide range of options and features to enhance your membrane keyboard.

Construction

	Non-Tactile	Tactile Metal Dome	Tactile Polydome	Elastomeric
Flexible without support	9	9	9	9
Flexible with support panel	9	9	9	9
Flexible with PCB	9	9	9	9
PCB	9	9	9	9

Overlays & Graphics

Polyester	Standard & UV resistant grades - self-textured, gloss, semi-gloss and matt - antibacterial protection
Embossing	Rim, emboss, de-boss and dome.
Locator plate	Machined finger locator plate laminated on top surface of graphic overlay.

Printing

Selective surface lacquers	Texture, gloss, semi-gloss and matt.
Image graphics	Matched to requirements.
Display windows	Translucent and transparent windows to accommodate LED, LCD, CRT, VFD, etc displays, dead front and secret until lit features.
EMS	A variety of printed and laminated options are available to meet EMC and ESD requirements.

Other Features

Integral components	Surface mount LED's, resistors, diodes, electro-mechanical switches, etc.
Electro-luminescence (EL)	Solid state, cool even illumination for displays, graphics and switches used in low ambient light conditions.
Support panels	Aluminium, steel, plastic and PCB fibreboard.
Insert legend	Insert labelling to provide flexibility of information and a degree of product standardisation.
Chemical resistance	A combination of materials and coatings can enhance resistance to a variety of chemicals, solvents and cleaning fluids.
Environmental sealing	Sealing can be improved subject to design considerations.