

Membrane Switches

Versatile, Low Cost, Reliable

Typical Applications

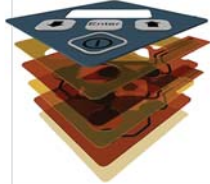

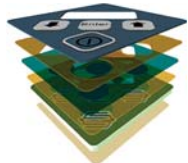
- Medical
- Industrial
- Commercial
- Beverage and Food
- Command and Control

Features and Benefits

- Cost effective
- Switch legend decorating
- Embossed overlay
- Colorful graphic overlay
- Embedded LED's
- Easy to clean
- Special coatings to enhance durability
- Chemical resistant
- High-actuation life
- Tactile and non-tactile
- Sealability
- Low-profile keys
- Multiple key sizes and shapes
- Low cost solution
- Backlighting available



Membrane switches are a versatile, low cost, and reliable technology that offers developers of human machine interface solutions an alternative to bulky mechanical switches. Due to advancements in conductive and light producing inks, graphic inks and material technology options, membrane switches can replace more expensive technologies such as copper etch circuits, printed circuit boards and clear conductive materials. Membrane switches are thin, environmentally sealed, and robust as well as assembly friendly.

Technology	Description	
Tactile	Tactile feedback in a membrane switch is actually an enhancement, which provides the user feedback when they press the key location. Typically the switch consists of a top and bottom layer of polyester with a tactile actuator that when pressed momentarily completes the circuit while providing the user a degree of response based on the switch's construction.	
Non-Tactile	Non-tactile membrane switches rely on a sensory response other than tactile touch, such as an audio or visual stimuli that alerts the user to switch closure. Non-tactile switches perform well in abusive environments and are more conducive in applications where large, hidden or irregular shaped keys are a requirement	
PCB Hybrid	Printed circuit board switches are typically utilized in two situations: <ol style="list-style-type: none"> 1. Where there are trace routing limitations with traditional membrane switches, or 2. The customer would like to utilize the PCB as a rigid backer that can also be populated with active and passive components 	

SPECIFICATIONS

ELECTRICAL

Operating Current	30mA Maximum
Operating Voltage	30V Maximum
Resistance with graphite	200 to 500 Ω
Operating circuit resistance for circuit boards	<100 Ω
Contact resistance	<100 Ω with silver shorting pads <200 to 300 Ω with carbon pills
Circuit resistance	<10 Ω
Contact configuration, normally open momentary contact	<100 Ω (Ω depends on size / configuration of circuits) SPST (DPST available non-tactile)
Contact Bounce, milliseconds	<10 with stainless steel domes

MECHANICAL

	Tactile	Non-Tactile
Life expectancy, cycles	2,000,000	5,000,000
Actuation force (typical range)	15 oz ± 3 oz	9 oz ± 3 oz

ENVIRONMENTAL

Operating Temperature	-20°C to +70°C
Storage Temperature	-40°C to +85°C
Relative humidity	0-95%RH (max non-condensing)

DURABILITY

Dielectric strength	1,200V per mil of U.V. curable printed dielectric
Polyester	2,600 to 3,100V per mil (2850 avg. per mil)
Polycarbonate	1,500 to 1,700 per mil (1,600 avg. per mil)
Polyester abrasion resistance	slight polishing, very little scratching
Polycarbonate abrasion resistance	moderate scratching

Esterline Interface Technologies is a global group of companies specializing in the design and manufacture of innovative touch, sensing, and control human interface systems for leading original equipment manufacturers. We define the user experience for specialized medical equipment, advanced military and security solutions, industrial equipment, high tech gaming applications, and custom designed input components.

Esterline Interface Technologies consists of Advanced Input Systems, Gamesman, LRE Medical, and Memtron. Interface Technologies has manufacturing facilities in the US, UK, Germany, and China.



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