Membrane Switch Products

ADVANCED INPUT SYSTEMS

AIS Membrane Switches offer an economical, compact, and robust alternative to traditional mechanical switch architectures. Using flexible plastic membrane layers and recent advancements in conductive inks, the versatility enables many configurations and functionality to support high-performing products.

The materials used are impermeable and durable, resulting in products that are **waterproof , easy to clean, chemical and UV resistant, and well suited to harsh environments**. This durability results in many years of reliable performance.

Contact AIS to learn more about how our expertise and experience can help you solve your Human Machine eXperience (HMX) challenges.

Applications

- Medical
- Industrial
- Commercial
- Aerospace
- Automotive
- Food and Beverage

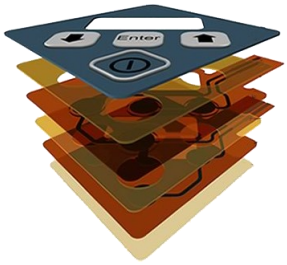
Technology Description

Membrane switches offer :

- Reliable Switch Life
- Custom Backlighting
- Cost Effective Materials
- User Specific Artwork
- Abrasion/Chemical Resistance
- Flexible Configurations

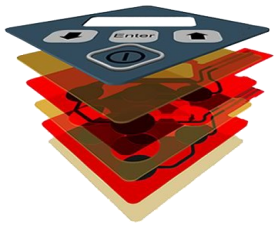
Tactile

Tactile switches provide feedback when the user presses the key location. Typically switches consist of one to two layers of polyester and a tactile actuator. When pressed, the actuator momentarily completes the circuit providing the user with a degree of tactile response that can be tuned based on the switch's construction.



Non-Tactile

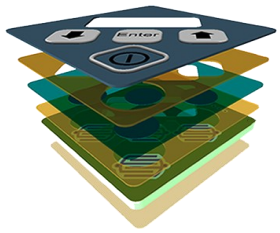
Non-tactile switches rely on alternative sensory feed-back such as audio or visual stimuli to alert the user to the switch closure. Non-tactile switches perform well in abusive environments or where irregular-shaped, large, or hidden keys are required.



PCB Hybrid

Printed circuit board switches typically provide benefit in the following applications:

1. Where trace routing limitations occur with traditional membrane switches, or
2. Where the PCB also serves as a rigid backer that can be populated with active and passive components



Features and Benefits

- Cost effective
- Low profile construction
- Easy to clean and seal
- Backlight capable
- Chemical resistance
- Durable surfaces
- Long life cycles
- Colorful graphics
- Multiple key sizes and shapes
- Tactile and non-tactile options
- Embedded LED's and electronics
- Elastomeric overlays

SPECIFICATIONS

ELECTRICAL

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

MECHANICAL

	Tactile	Non-Tactile
Life expectancy, cycles	1,000,000	5,000,000
Actuation force (typical range)	15 oz ± 3 oz	9 oz ± 3 oz

ENVIRONMENTAL

Standard Operating Temperature	-20°C to +70°C
Enhanced Operating Temperature	-40°C to +105°C
Standard Storage Temperature	-40°C to + 85°C
Relative Humidity	0-95% (maximum non-condensing)

DURABILITY

Dielectric strength	1,200V per mil of U.V. curable printed dielectric
Polyester	2,600 to 3,100V per mil (2,850 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

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