

BAOSHENGDA

Advanced HMI & Functional Film Solutions

Waterproof Membrane Switch & IP-Rated HMI Panels

Sealed membrane keypads and custom HMI panels for industrial, medical, automotive and outdoor equipment.



1989

Manufacturing experience since

IP-rated

Sealing design support available

PET/PC

Overlay options custom

Global

B2B support project-based

Waterproof Membrane Switches for Harsh HMI

Baoshengda manufactures custom waterproof membrane switches and IP-rated HMI panels for equipment that must operate in wet, dusty, washable or harsh environments.

A waterproof membrane switch combines a PET or PC graphic overlay, sealed switch structure, circuit layer, adhesive system and optional backlighting into one thin and reliable interface module.



Typical product role

- Sealed user interface for wet or dusty environments
- Protects printed circuits and control electronics
- Supports tactile, non-tactile and backlit key designs
- Designed around customer housing, gasket and adhesive needs

Main Advantages

Water and dust protection

Sealed construction can be designed for IP-rated equipment applications.

Easy-clean surface

PET/PC overlay options can support medical and industrial cleaning requirements.

Thin HMI integration

Switch, overlay, circuit, adhesive and lighting can be integrated in one module.

Project-based design

Sealing method, tail exit, adhesive and key feel are customized per project.

Waterproof Structure and Sealing Design

Waterproof performance depends on the complete structure rather than a single material. Overlay design, adhesive selection, tail exit position, gasket compression and assembly method should be reviewed together.

Protective PET / PC graphic overlay

Reverse printing and display window areas

Top adhesive / spacer structure

Tactile or non-tactile switch layer

Printed circuit / FPC / PCB integration

Rear adhesive / gasket sealing structure

Key sealing considerations

Tail exit sealing, edge bonding, gasket design and housing fit have direct influence on waterproof performance.

Application review

Final IP level should be confirmed with customer product structure, test method and assembly conditions.

Technical Options

Specifications are customized according to project drawings, application environment, sealing target and assembly requirements.

Item	Options / Description
Product type	Waterproof membrane switch, IP-rated HMI panel, sealed membrane keypad
Overlay material	PET, PC, PMMA or customized film materials
Sealing design	Edge sealing, gasket structure, sealed tail exit and adhesive bonding
IP rating	IP-rated design available based on project requirements and validation method
Key type	Tactile, non-tactile, metal dome, embossed key or flat key
Circuit type	Silver printed circuit, carbon circuit, FPC or PCB integration
Surface finish	Matte, glossy, textured, anti-scratch, anti-glare, anti-fingerprint
Backlighting	LED, LGF, EL, dead-front effect or customized lighting structure
Adhesive	3M adhesive, industrial adhesive or customized bonding solution
Applications	Industrial control, medical devices, outdoor equipment, instruments and automotive electronics
Certification support	ISO 9001, IATF 16949, ISO 14001; RoHS / SGS support where applicable

Designed Around Your Equipment

Baoshengda supports project-based customization from artwork and material selection to sealing structure, circuit layout, connector and mounting adhesive.

Appearance & overlay

Custom colors, logos, icons, windows, dead-front graphics, matte/glossy/textured surfaces and selective embossing.

Sealing & assembly

Gasket design, edge sealing, tail exit sealing, waterproof adhesive and housing fit review.

Electrical & key design

Tactile or non-tactile keys, metal domes, FPC or printed circuits, connectors and EMI shielding options.

Lighting options

LED, LGF, EL and dead-front backlighting for key areas, icons, display windows and nighttime operation.

Typical Development Flow



Applications for Waterproof HMI Panels

Waterproof membrane switches are used when a device needs a thin, reliable, sealed and easy-to-clean user interface.

Industrial control

Machinery panels, automation equipment, operating terminals and measuring instruments.

Medical equipment

Control panels for diagnostic, monitoring, rehabilitation and easy-clean medical devices.

Outdoor devices

Security terminals, outdoor controllers and equipment exposed to dust, moisture or rain.



Automotive electronics

Interior switch modules, control panels and vehicle HMI systems requiring durable interfaces.

Instrumentation

Laboratory, testing and measurement equipment with compact sealed keypad requirements.

Engineering note

For outdoor, medical or high-cleaning-frequency projects, confirm waterproof test method, adhesive bonding surface, cleaning chemicals and operating temperature before sampling.

Quality Control and Common Questions

Quality & testing support

- Appearance and dimensional inspection
- Key function and actuation feel testing
- Electrical continuity and resistance check
- Adhesive and bonding structure review
- Backlight function and light leakage inspection
- Temperature, humidity and salt spray evaluation where applicable
- RoHS / SGS material support where applicable

What IP rating can be supported?

IP-rated design can be developed based on project structure, sealing method and validation requirements.

Can it be backlit?

Yes. LED, LGF, EL and dead-front lighting options can be considered based on thickness and brightness targets.

Can it be used for medical devices?

Yes. Easy-clean surfaces, sealed structures and chemical resistance can be reviewed for medical HMI projects.

What data is needed for quotation?

Drawing, artwork, sealing target, application environment, adhesive surface, connector and estimated quantity are helpful.

Send Us Your Requirements

To help us provide a faster and more accurate quotation, please send the following information if available.

Design files

- 2D drawing or 3D structure file
- Artwork, logo, icon and color requirements
- Product size and thickness target
- Waterproof or sealing requirement
- Application environment and cleaning method
- Backlight requirement if any

Engineering details

- Circuit diagram or key function layout
- Tactile or non-tactile key requirement
- Connector type and tail direction
- Adhesive and bonding surface information
- Estimated annual quantity
- Sample or existing product photos

Need a custom waterproof membrane switch?

Send us your drawing, sample, artwork or application requirements. Baoshengda can help review sealing structure and support prototype to mass production.

Website: <https://www.baoshengda-tech.com>

Request Quote: </request-quote/>