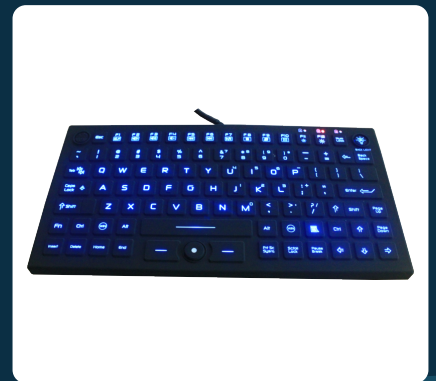


**BAOSHENGDA**

Advanced HMI & Functional Film Solutions

# Backlit Membrane Switch & Light Guide

LED / LGF / EL illuminated HMI solutions for low-light operation



**1989**

since

Manufacturing experience

**LED/LGF**

available

Backlight options

**Multi-zone**

support

Lighting design

**Global**

project-based

B2B support

# Backlit Membrane Switch Manufacturer

Baoshengda manufactures custom backlit membrane switches, LED membrane keypads and light guide film keypad solutions for medical equipment, industrial control panels, automotive electronics, outdoor devices, instruments and security systems.

Our solutions can integrate PET / PC graphic overlays, printed circuits, tactile keys, metal domes, adhesive structures, LED backlighting, LGF light guide films, display windows and dead-front effects into one compact HMI module.



### Typical product role

- Illuminated user interface for low-light operation
- Combines switch, circuit, graphics and lighting
- Supports icons, key areas, windows and dead-front effects
- Designed for compact OEM equipment integration

## Main Advantages

**Uniform illumination**

LED, LGF and customized light guide structures support clearer key and icon visibility.

**Multiple lighting effects**

Single-color, multi-color, multi-zone and dead-front effects are available based on requirements.

**Integrated HMI design**

Overlay, circuit, adhesive, tactile keys and backlighting can be combined in one assembly.

**Application ready**

Suitable for medical, industrial, automotive, outdoor and instrumentation environments.

# Layer Breakdown

**Graphic Overlay**

PET / PC visual surface with icons, windows and symbols

**Translucent / Dead-front Ink**

Selected areas allow light transmission or hidden graphics

**Adhesive / Spacer**

Controls assembly thickness, key travel and bonding

**Switch / Circuit Layer**

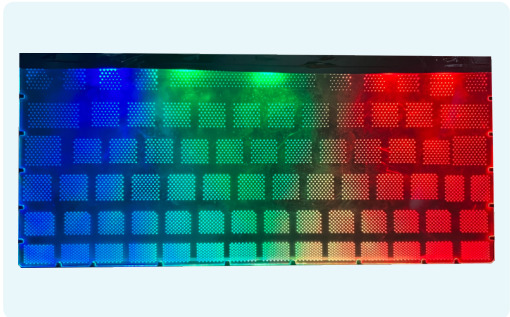
Printed circuit, FPC or PCB with tactile or non-tactile keys

**LED / LGF / EL Backlight**

Light source and guide layer for illumination

**Rear Adhesive**

Mounting layer for equipment housing or panel



## Backlighting Options

- LED backlighting for strong local brightness
- LGF light guide film for thin, uniform illumination
- EL backlighting for very thin surface illumination where suitable
- Dead-front effects for hidden icons and display areas
- Multi-zone lighting with different colors or brightness levels

# Technical Specifications

| Item             | Options / Description                                                                                           |
|------------------|-----------------------------------------------------------------------------------------------------------------|
| Product Type     | Backlit membrane switch, LED membrane keypad, LGF membrane switch, light guide keypad, backlit HMI panel        |
| Overlay Material | PET, PC, PMMA or customized materials based on project requirements                                             |
| Backlight Type   | LED, LGF, EL, dead-front lighting or customized backlight structure                                             |
| Lighting Effect  | Single-color, multi-color, multi-zone, icon lighting, key area lighting, display window lighting                |
| Circuit Type     | Silver printed circuit, carbon printed circuit, FPC circuit, PCB integration or LED circuit design              |
| Key Type         | Tactile, non-tactile, metal dome, embossed key, flat key                                                        |
| Surface Finish   | Matte, glossy, textured, anti-scratch, anti-glare, anti-fingerprint                                             |
| Printing Process | Reverse screen printing, translucent printing, light-blocking ink, dead-front printing                          |
| Adhesive         | 3M adhesive, industrial adhesive or customized adhesive solution                                                |
| Applications     | Medical devices, industrial control, automotive electronics, outdoor equipment, instruments, security terminals |
| Certification    | ISO 9001, IATF 16949, ISO 14001; RoHS / SGS material support where applicable                                   |

Note: Final specifications depend on drawing, backlight area, brightness requirement, color requirement, product thickness, circuit design and operating environment.

# Customization Options

Baoshengda supports customized backlit membrane switch development according to customer drawings, samples or application requirements.

**Graphic & appearance**

Custom icons, logos, symbols, transparent windows, matte/gloss/textured overlays, embossing and color alignment.

**Backlighting design**

LED, LGF, EL, single-color, multi-color, multi-zone, icon lighting, light leakage control and brightness review.

**Electrical function**

Tactile or non-tactile keys, metal domes, printed circuit, FPC, PCB integration, custom connector and tail direction.

**Mechanical environment**

Custom outline, housing fit, adhesive backing, waterproof edge sealing, UV resistance and harsh environment support.

**Design review focus**

- Backlight method and LED position
- Overlay transparency and light-blocking ink
- Power supply, circuit layout and connector direction
- Assembly thickness, adhesive and sealing requirement

- Light uniformity and light leakage
- Key feel and actuation force
- Application environment and cleaning requirement
- Prototype feasibility before mass production

# Applications

**Medical equipment**  
Diagnostic devices, monitoring equipment and rehabilitation products where clear operation and easy cleaning are required.

**Industrial control**  
Automation equipment, machinery panels, test instruments and operator terminals used in low-light environments.

**Automotive electronics**  
Vehicle control interfaces, interior switch modules, dashboard-related panels and electronic control systems.

**Outdoor equipment**  
Security devices, access control terminals and outdoor control panels that need night visibility.

**Instrumentation**  
Measuring instruments, laboratory equipment, handheld devices and testing systems requiring clear key identification.

**Smart devices**  
IoT devices, consumer electronics and compact HMI panels with illuminated icons or windows.

## Low-light readability matters

Backlit HMI panels help operators identify controls quickly in night operation, dark rooms, vehicles, outdoor terminals and industrial sites.

# Quality & Testing Support

## Inspection items

- Appearance and dimensional inspection
- Key function and key life testing
- LED / backlight function testing
- Light uniformity and light leakage inspection
- Electrical continuity testing

## Reliability review

- Adhesion and bonding review
- Color and transparency inspection
- Temperature and humidity evaluation
- Salt spray testing where applicable
- RoHS / SGS material support

### What backlighting options are available?

LED, LGF, EL and dead-front lighting effects are available based on brightness, thickness and power requirements.

### Can you make multi-color lighting?

Yes. Single-color, multi-color and multi-zone lighting can be designed according to customer requirements.

### What is an LGF membrane switch?

An LGF membrane switch uses a light guide film to distribute light from LEDs across selected key or icon areas.

### Can the switch be waterproof?

Yes. Sealed and IP-rated designs are available based on project structure and assembly method.

# Information Needed for Quotation

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

## Project files

- 2D drawing or 3D structure file
- Artwork, icons, logo and color requirements
- Product size and thickness requirements
- Backlight area and lighting effect requirements
- LED, LGF, EL or other lighting preference
- Brightness, color and multi-zone requirements

## Technical requirements

- Circuit diagram or functional key layout
- Tactile or non-tactile key requirement
- Connector type and tail direction
- Waterproof or sealing requirement
- Application environment
- Estimated annual quantity or sample photos

## Need a custom backlit membrane switch?

Send us your drawing, artwork, sample or application requirements. Baoshengda can support design re prototype development and mass production.

[Request Quote](#)