About Piezo Switches

Conventional electromechanical switches have moving parts that inevitably wear out. The reliability of the electromechanical switches can be reduced by contaminants such as moisture and dust that will foul contact points. The solution is a Piezo Switch with no moving parts.

How a Piezo switch works:

Finger pressure is applied to the surface of the switch-housing which deflects about 2 microns. This pressure activates the piezo crystal that converts this pressure to an electrical signal that is amplified by electronics imbedded within the housing. The duration of the electrical signal depends on the speed, force and duration of actuation. The output of the switch is closed for a specified pulse duration depending on the electrical function chosen (see next page).

LANGIR Piezo Technology:

The LANGIR technology is based on a single VPM (Versatile Piezo Module) mechanically assembled without the use of adhesives nor soldering. The VPM is encapsulated in a metal, one piece construction housing, custom designed or as per industry standard, creating the most reliable and durable switch and keypad. The LANGIR product line spans from single switches via a variety of keypads and control panels to full size keyboards. Virtually indestructible the LANGIR product line is rugged, sealed, tamper and vandal proof, with metal housing and solid state electronics featuring unprecedented durability and reliability.

Main Applications:

- Bath
- Car wash
- Shower
- Marine
- Medical
**FINGER PRESSURE**

applied to switch

\[
1 = \text{pressure} \\
0 = \text{no pressure}
\]

**OUTPUT**

- **Momentary NO (pulse)**
  No external power supply required

- **Momentary NC (pulse)**
  No external power supply required

- **Momentary NO prolonged pulse**
  No external power supply required

- **Latching (ON - OFF)**
  Requires external power supply

1 = closed output  
0 = open output

**Wiring diagrams**

<table>
<thead>
<tr>
<th></th>
<th>Non-illuminated</th>
<th>1 LED *</th>
<th>2 LEDs</th>
<th>3 LEDs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Momentary NO</strong></td>
<td><img src="image1" alt="Diagram" /></td>
<td><img src="image2" alt="Diagram" /></td>
<td><img src="image3" alt="Diagram" /></td>
<td><img src="image4" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>Momentary NC</strong></td>
<td><img src="image5" alt="Diagram" /></td>
<td><img src="image6" alt="Diagram" /></td>
<td><img src="image7" alt="Diagram" /></td>
<td><img src="image8" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>Momentary NO prolonged pulse</strong></td>
<td><img src="image9" alt="Diagram" /></td>
<td><img src="image10" alt="Diagram" /></td>
<td><img src="image11" alt="Diagram" /></td>
<td><img src="image12" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>Latching (ON - OFF)</strong></td>
<td><img src="image13" alt="Diagram" /></td>
<td><img src="image14" alt="Diagram" /></td>
<td><img src="image15" alt="Diagram" /></td>
<td><img src="image16" alt="Diagram" /></td>
</tr>
</tbody>
</table>

Legend: B = black, A = same colour as LED

* LED colour is indicated by the bottom of the product.
- Sealed to IP 68 and IP69K (switches mounted on panel)
- Easy to clean metal surface
- Very long life expectancy
- Ring or dot illumination

**ENVIRONMENTAL SPECIFICATIONS**

- Sealing: IP68 per IEC 529, IP69K per DIN 40050-9 (switches mounted on panel or not)
- Vibration resistance: 10-500 Hz / 10 g per IEC 60068-2-6
- Operating temperature: -40°C to +75°C
- EMC compatibility according to EN 61058-1 for the whole range
- EMC compatibility according to EN 61000-4 & EN61000-6-2 for model 1A (code 002)

**ELECTRICAL AND GENERAL SPECIFICATIONS**

- Max. current/voltage rating: 200mA 5–24VAC/DC
- Switch resistance ON: 100Ω max.
- Switch resistance OFF: 5MΩ min.
- Operating force: 6 to 15N
- Life expectancy: 50 million cycles
- LED consumption: Illuminated dot: 10mA - Illuminated ring: 20mA

**MATERIALS**

- Case: aluminium, anodized or stainless steel 316L or brass, chrome plated
- Multi-wire leads section AWG24
- Cable, length 300 mm, twisted by pair depending on switch model
- PC terminals: Gold or Tin plated

**SEALING IP68**

- One-piece bushing
- Epoxy sealed terminals
- O-ring

**SEALING IP69K**

- Continuous immersion in water
- High pressure, high temperature wash down

**IP68 test conditions**

- Continuous immersion in water (1m, 24 hours)

**IP69K test conditions**

- Pressure: 80 - 120 bars
- Distance: 15 cm
- Temperature: 80°C ± 5°C
- Flow: 14 - 16 l/min
- Duration: 30 seconds per position

Dimensions: first dimensions are in mm while inches are shown as bracketed numbers.
Tolerance: The general tolerance for dimensions in this brochure is ± 0.3 (.012).
Dimensions, specifications and data shown in this brochure are subject to change without notice.
**Piezo switch Ø 12 (.480)**

<table>
<thead>
<tr>
<th><strong>Switch size</strong></th>
<th>12 mm</th>
</tr>
</thead>
</table>

**Colours / Materials:**
- 0: Natural anodized
- 1: Blue anodized
- 2: Black anodized
- 3: Green anodized
- 5: Gold anodized
- 6: Red anodized
- B: Stainless steel 316L

**Ratings:**
- 1: 200mA 24VAC/DC
- 2: 1A 24VAC/DC

**Switch function:**
- M: Momentary

**Operator:**
- R5: Operator with finger location, height 4.50
- Blank: Flat operator, height 1.30

**Switch status:**
- NO: Normally open
- K: NO prolonged pulse

---

**Colours / Materials:**

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>B</th>
</tr>
</thead>
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<tr>
<td></td>
<td>Natural anodized</td>
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<td>Red anodized</td>
<td>Stainless steel 316L</td>
</tr>
</tbody>
</table>

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**Non-illuminated**

**Flat**

**Finger location**

PZ1251NOM

**NOTICE:** please note that not all combinations of above numbers are available.
Refer to the following pages for further information.

Mounting accessories standard hardware supplied: 1 hex nut and 1 O-ring

Packaging unit: 20 pieces

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**For options not listed above, please contact LANGIR.**

The appearance of the products listed on this file, color, parameters are for reference only, issued a kind of LANGIR Company shall prevail.
LANGIR Company reserves the right to modify or cancel the relevant parameters of this file does not advance notice.
If in doubt, please contact customer service hotline.

++LANGIR Electric Co., LTD. + T 86 (577) 62737672 F 86 (577) 62737671 + sunshine@sunshinele.com + www.PIEZO-SWITCH.com ++
Piezo switch Ø 16 (.630)

**Switch size**
| 16 | 16mm |

**Terminals**
- F Flyingleads
- C Cable

**Ratings**
1. 200mA 24VAC/DC
2. 1A 24VAC/DC

**Switch function**
- M Momentary
- L Latching
- latching for single & double color only

**Colours / Materials**
- 0: Natural anodized
- 1: Blue anodized
- 2: Black anodized
- 3: Green anodized
- 4: Gold anodized
- 6: Red anodized
- B: Stainless steel 316L

**LED colours**
- RBG
- YW

**Operator**
- RS: Operator with finger location, height 4.50
- R6: Operator with finger location, height 1.30
- R1: Flat operator, height 4.50
- Blank: Flat operator, height 1.30

**LED colours (continued)**
- 3A: Red/green/blue
- 3B: Red/green/yellow
- 3D: Red/green/white
- 3E: Red/blue/yellow
- 3F: Red/blue/white
- 3G: Red/yellow/white
- 3H: Green/blue/yellow
- 3I: Green/blue/white
- 3J: Green/yellow/white
- 3K: Blue/yellow/white

**Switch status**
- NO: Normally open
- NC: Normally closed
- K: NO prolonged pulse

**Type of illum. / Voltage**
- Blank: Non-illuminated
- A: Standard ring-5VDC
- N: Standard ring-12VDC
- K: Standard ring-24VDC
- D: Standard dot-5VDC
- E: Standard dot-12VDC
- S: Standard dot-24VDC

**NOTICE:** please note that not all combinations of above numbers are available. Refer to the following pages for further information.

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**Piezo switch Ø 16 (.630)**

Shown with flying lead terminals.

**Non-illuminated**

- **Flat**

![Non-illuminated Flat](image)

- **Finger location**

PZ166F1NOM

**Dot-illuminated**

- **Flat**

![Dot-illuminated Flat](image)

PZ16BFS1NOMR

**Ring illuminated**

- **Flat operator, height 4,50 (.177)**

![Ring illuminated Flat](image)

PZ160R1FN1NOMAG

++LANGIR Electric Co., LTD. + T 86 (577) 62737672 F 86 (577) 62737671 + sunshine@sunshinele.com + www.PIEZO-SWITCH.com ++
Piezo switch Ø 19 (.748)

**Switch function**
- M Momentary
- L Latching
  - latching for single & double color only

**Switch status**
- NO Normally open
- NC Normally closed
- K NO prolonged pulse

**LED colours**
- Blank: Non-illuminated
- B: Blue
- G: Green
- R: Red
- Y: Yellow
- W: White
- RG: Red/green
- RY: Red/yellow
- RB: Red/blue
- RW: Red/white
- GB: Green/blue
- GY: Green/yellow
- GW: Green/white
- BW: Blue/white
- YW: Yellow/white

**LED colours (continued)**
- 3A: Red/green/blue
- 3B: Red/green/yellow
- 3D: Red/green/white
- 3E: Red/blue/yellow
- 3F: Red/blue/white
- 3G: Red/yellow/white
- 3H: Green/blue/yellow
- 3I: Green/blue/white
- 3J: Green/yellow/white
- 3K: Blue/yellow/white

**Operator**
- RA: Operator with finger location, height 3.00
- R2: Flat operator, height 3.00
- Blank: Flat operator, height 1.30

The operator can be customized

**LED Colours:**
- B
- G
- R
- Y
- W

**Colours / Materials:**
- 0: Natural anodized
- 1: Blue anodized
- 2: Black anodized
- 3: Green anodized
- 5: Gold anodized
- 6: Red anodized
- B: Stainless steel 316L

**Type of illum. / Voltage**
- Blank: Non-illuminated
- A: Standard ring-5VDC
- N: Standard ring-12VDC
- K: Standard ring-24VDC
- D: Standard dot-5VDC
- E: Standard dot-12VDC
- S: Standard dot-24VDC

**NOTICE:** Please note that not all combinations of above numbers are available. Refer to the following pages for further information.

**Mounting accessories standard hardware supplied:** 1 hex nut and 1 O-ring

**Packaging unit:** 20 pieces

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Shown with flying lead terminals.

Non-illuminated

Flat

Chamfer

Dot-illuminated

Flat

Ring illuminated

Flat

Chamfer
Piezo switch
Ø 22(.866), Ø 25(.984) and Ø 30(1.181)

Switch size
- 22: 22mm
- 25: 25mm
- 30: 30mm

Terminals
- F: Flyingleads
- C: Cable

Ratings
- 1: 200mA 24VAC/DC
- 2: 1A 24VAC/DC

Switch function
- M: Momentary
- L: Latching

Colours / Materials
- 0: Natural anodized
- 1: Blue anodized
- 2: Black anodized
- 3: Green anodized
- 5: Gold anodized
- 6: Red anodized
- B: Stainless steel 316L

LED colours
- Blank: Non-illuminated
- A: Red/green/blue
- N: Red/green/yellow
- K: Red/green/white
- P: Red/yellow/white
- J: Green/blue/white
- Y: Green/yellow/white
- D: Red/white/white
- E: Red/white/yellow
- S: Red/white/green

Operator
- R2: Flat, operator height 3 mm (.118)
- R6: With finger location, operator height 3mm (.118)
- RY: With chamfer, operator height 4.5 mm (.177)
- RZ: Flat, operator height 4.5 mm (.177)
- Blank: Flat operator, height 1.30

Type of illum. / Voltage
- A: 13.5 Large ring-5VDC
- N: 13.5 Large ring-12VDC
- K: 13.5 Large ring-24VDC
- P: 16.5 Thin ring-5VDC
- J: 16.5 Thin ring-12VDC
- Y: 16.5 Thin ring-24VDC
- D: Standard dot-5VDC
- E: Standard dot-12VDC
- S: Standard dot-24VDC

NOTICE: please note that not all combinations of above numbers are available. Refer to the following pages for further information.

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If in doubt, please contact customer service hotline.
Shown with flying lead terminals.

Non-illuminated

Flat

Finger location

PZ226F1NOM

Dot illuminated

Flat

Finger location

PZ22BR2FD1NOMR

Ring illuminated

Flat

Chamfer

 Thin ring

 Large ring

 PZ22BRYFJ1NOMR

++LANGIR Electric Co., LTD. + T 86 (577) 62737672 F 86 (577) 62737671 + sunshine@sunshinele.com + www.PIEZO-SWITCH.com ++
Piezo switch Ø 25 (.984)

Shown with flying lead terminals.

**Non-illuminated**

Flat

Finger location

PZ25BF1NOM

**Dot illuminated**

Flat

Finger location

PZ25BR2FS1NOMR

**Ring illuminated**

Flat

Chamfer

Thin ring

Large ring

PZ25BRYFN1NOMR

++LANGIR Electric Co., LTD. + T 86 (577) 627 3767 2 F 86 (577) 627 3767 1 + sunshine@sunshinele.com + www.PIEZO-SWITCH.com ++
Shown with flying lead terminals.

**Non-illuminated**

PZ300R2F1NOM

**Dot-illuminated**

PZ30BFE1NOMG

**Ring illuminated**

PZ30BRZF1NOMR