

Relative and absolute pressure switch type 529

Pressure range
-1 ... 0 – 60 bar



The compact type 529 pressure switch is based upon the Huba Control developed unique ceramic technology used for the last 20 years in millions of applications.

Switching points set in factory are available both N/C and N/O function. Various electrical and pressure connections are available to suit given applications.

- Compact, rugged construction
- Negligible temperature influence on accuracy
- Large selection of connections available.
- Saving time by quick cable mounting by the customer with swift connector

Technical overview

Pressure range

| | |
|----------|-------------------|
| Relative | -1 ... 0 – 60 bar |
| Absolute | 0 ... 1 – 16 bar |

Operating conditions

| | | |
|---------------------------------------|---------|-------------------------|
| Medium | | Liquids and gases |
| | | FPM -15 ... +125 °C |
| | | EPDM -40 ... +125 °C |
| | | NBR -20 ... +100 °C |
| | | MVQ -40 ... +125 °C |
| Temperature | Medium | Ambient -30 ... +85 °C |
| | | Storage -50 ... +100 °C |
| Tolerable overload / Rupture pressure | ≤ 4 bar | 3.0 x fs |
| | > 4 bar | 2.5 x fs |

Materials

| | | |
|----------------------------------|---------------------|--|
| Pressure Connection | | Stainless steel 1.4404 / AISI 316L |
| Plug accommodation | | Polyarylamide 50% GF UL 94 V-0 |
| Materials in contact with medium | Pressure connection | Stainless steel 1.4404 / AISI 316L |
| | Sensor | Ceramic Al ₂ O ₃ (96%) |
| | Sealing material | FPM, EPDM, NBR, MVQ |

Electrical overview

| | | |
|---------------------|------------------------|--------------------------------|
| Output | | Semiconductor (open collector) |
| Switching contact | High-Side Switch (PNP) | N/C contact or N/O contact |
| Switch load | High-Side Switch (PNP) | max. 200 mA |
| Power supply | | 7 ... 33 VDC |
| Current consumption | | < 4 mA |
| Insulation voltage | | 500 VDC |

Dynamic response

| | |
|---------------|-------------------|
| Response time | < 2 ms, 1 ms typ. |
| Load cycle | < 100 Hz |

Adjustment of switching points (factory set)

| | |
|-----------------------|---------------|
| Upper switching point | 8 ... 100% fs |
| Lower switching point | 5 ... 97% fs |
| Hysteresis | ≥ 3 % fs |

Electrical connection

| Electrical connection | Protection standard | Protection class |
|---|---------------------|------------------|
| Swift connector with or without cable 1.5 m | IP 67 | III |
| Connector M12x1 | IP 67 | III |

Pressure connection

| | | |
|----------------|---------------|--|
| Inside thread | G ¼ | with O-Ring seal FPM (-30 ... +135 °C) |
| | ½ -14 NPT | |
| | 7/16 - 20 UNF | |
| Outside thread | 7/16 - 20 UNF | sealing cone |
| | ¼ -18 NPT | |
| | G ¼ | sealed at back DIN 3852-E with Profile seal ring in FPM (-30 ... +135 °C) |
| | R ¼ | EN 10226 |
| | G ½ | sealed at back and manometer (combi) with Profile seal ring in FPM (-30 ... +135 °C) |
| | M20x1.5 | sealed at front and manometer (combi) |
| | G ½ | sealed at front |

Installation arrangement

| | |
|--------------|---|
| Unrestricted | Recommendation: Pressure connection facing downwards |
|--------------|---|

Tests / Admissions

| | |
|---------------------------------|---|
| Electromagnetic compatibility | CE conformity acc. EN 61326-2-3 and 50121-3-2 |
| Shock acc. IEC IEC 68-2-27 | 100 g, 11 ms half sine wave, all 6 directions, free fall from 1 m on concrete (6x) |
| Constant shock acc. IEC 68-2-29 | 40 g for 6 ms, 1000x all 3 directions |
| Vibration acc. IEC 68-2-6 | 20 g, 15 ... 2000 Hz, 15 ... 25 Hz with amplitude ± 15 mm, 1 Octave/min. all 3 directions, 50 constant load |
| UL | ANSI/UL 61010-1 acc. E325110 |
| EAC | |

Weight

| |
|--------|
| ~ 90 g |
|--------|

Packaging (Please state on order)

| | |
|--|------------------------|
| Single packaging in cardboard | accessories integrated |
| Multiple packaging in cardboard (25 pcs) | |

Accuracy

| Parameter | | Unit | |
|---|------|----------|--------|
| Switching points ¹⁾ | | % fs | ± 0.5 |
| Resolution | | % fs | 0.1 |
| Thermal characteristic ²⁾ | max. | % fs/10K | ± 0.2 |
| Long term stability acc. IEC EN 60770-1 | max. | % fs | ± 0.25 |

Test conditions: 25°C, 45% RH, power supply 24 VDC

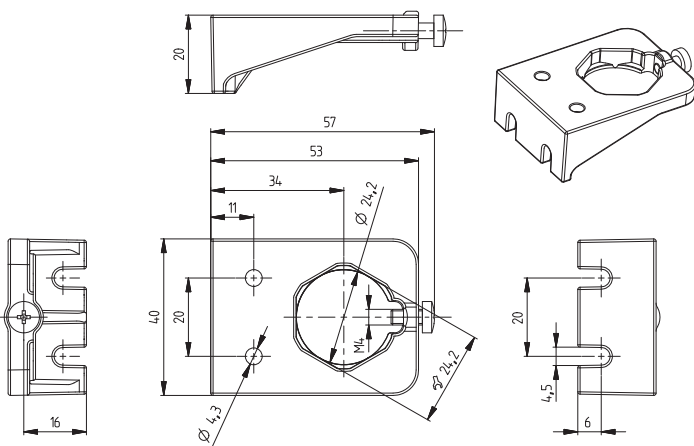
¹⁾ typ. ; max. 1.0% fs (incl. hysteresis and repeatability)

²⁾ -15 ... 85 °C

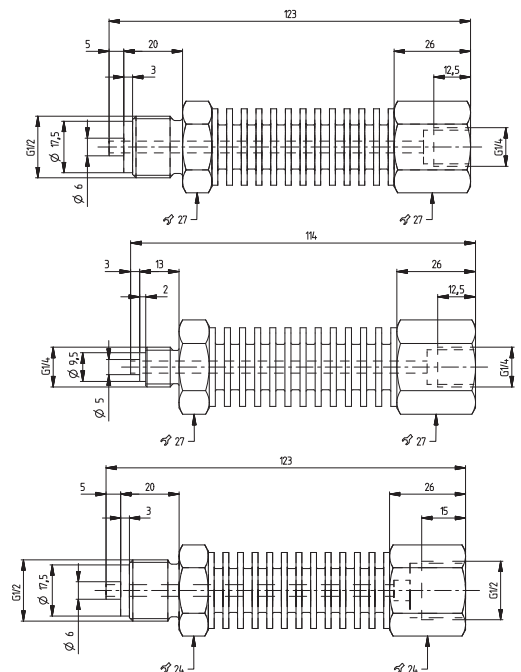
| Order code selection table in bar | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|--|--|---|---|---|---|---|---|---|---|----|----|
| | | 529. | X | X | X | X | X | X | X | X | X | X |
| Pressure range (relative) ¹⁾ | -1 ... 0 bar | 9 | 0 | 1 | | | | | | | | |
| | 0 ... 1 bar | 9 | 1 | 1 | | | | | | | | |
| | 0 ... 1.6 bar | 9 | 1 | 2 | | | | | | | | |
| | 0 ... 2.5 bar | 9 | 1 | 4 | | 0 | | | | | | |
| | 0 ... 4 bar | 9 | 1 | 5 | | 0 | | | | | | |
| | 0 ... 6 bar | 9 | 1 | 7 | | 0 | | | | | | |
| | 0 ... 10 bar | 9 | 3 | 0 | | 0 | | | | | | |
| | 0 ... 16 bar | 9 | 3 | 1 | | 0 | | | | | | |
| | 0 ... 25 bar | 9 | 3 | 2 | | 0 | | | | | | |
| | 0 ... 40 bar | 9 | 3 | 3 | | 0 | | | | | | |
| 0 ... 60 bar | 9 | 4 | 0 | | 0 | | | | | | | |
| Pressure range (absolute) ¹⁾ | 0 ... 1 bar | 8 | 1 | 1 | | | | | | | | |
| | 0 ... 1.6 bar | 8 | 1 | 2 | | | | | | | | |
| | 0 ... 2.5 bar | 8 | 1 | 4 | | | | | | | | |
| | 0 ... 4 bar | 8 | 1 | 5 | | | | | | | | |
| | 0 ... 6 bar | 8 | 1 | 7 | | | | | | | | |
| | 0 ... 10 bar | 8 | 3 | 0 | | | | | | | | |
| 0 ... 16 bar | 8 | 3 | 1 | | | | | | | | | |
| Sealing material | FPM Fluoro elastomer | | | | | 0 | | | | | | |
| | EPDM Ethylene propylene | | | | | 1 | | | | | | |
| | NBR Butadiene Acrylonitrile | | | | | 2 | | | | | | |
| | MVQ Silicone polymer | | | | | 3 | | | | | | |
| Application | standard | | | | | 0 | | | | | | |
| | for oxygen applications | | | | | 0 | 1 | | | | | |
| Switching contact | Contact N/O High-Side-Switch PNP | | | | | | | 1 | | | | |
| | Contact N/C High-Side-Switch PNP | | | | | | | 2 | | | | |
| Electrical connection | Swift connector without cable | | | | | | | | 0 | | | |
| | Connector M12x1 ²⁾ | | | | | | | | 3 | | | |
| | Swift connector with cable 1.5 m | | | | | | | | L | | | |
| Pressure connection ³⁾ | Inside thread | G ¼ with O-Ring seal FPM | | | | | | | | 1 | | |
| | | ½ -14 NPT | | | | | | | | D | | |
| | | 7/16 -20 UNF | | | | | | | | | K | |
| | Outside thread | 7/16 -20 UNF | | | | | | | | | 2 | |
| | | ¼ -18 NPT | | | | | | | | | 3 | |
| | | G ¼ sealed at back DIN 3852-E with Profile seal ring in FPM | | | | | | | | | 4 | |
| | | R ¼ acc. to EN 10226 | | | | | | | | | 7 | |
| | | G ½ sealed at back and manometer with Profile seal ring in FPM | | | | | | | | | 8 | |
| | | M20x1.5 sealed at front and manometer (combi) | | | | | | | | | E | |
| G ½ sealed at front | | | | | | | | | 9 | | | |
| Pressure orifice | without | | | | | | | | | | 1 | 1 |
| | with | | | | | | | | | | 2 | 1 |
| Switching points | Indicate W and state switching points on order (e.g.: W40/30bar) | | | | | | | | | | | W |

| Accessories (Accessories supplied loose) | Order number |
|---|--------------|
| Swift connector | 117312 |
| Corner-wire box for connector M12x1 with cable 2.0 m | 114604 |
| Straight-wire box for connector M12x1 | 114570 |
| Straight-wire box for connector M12x1 with cable 2.0 m | 114605 |
| Mounting bracket with screw | 118716 |
| Heat sink with outside thread G ½ sealed at front - inside thread G ½ | 105631 |
| Heat sink with outside thread G ½ sealed at front - inside thread G ¼ | 105073 |
| Heat sink with outside thread G ¼ sealed at front - inside thread G ¼ | 105074 |
| Calibration certificate (at factory set switching points) | 104551 |

Mounting bracket



Heat sink



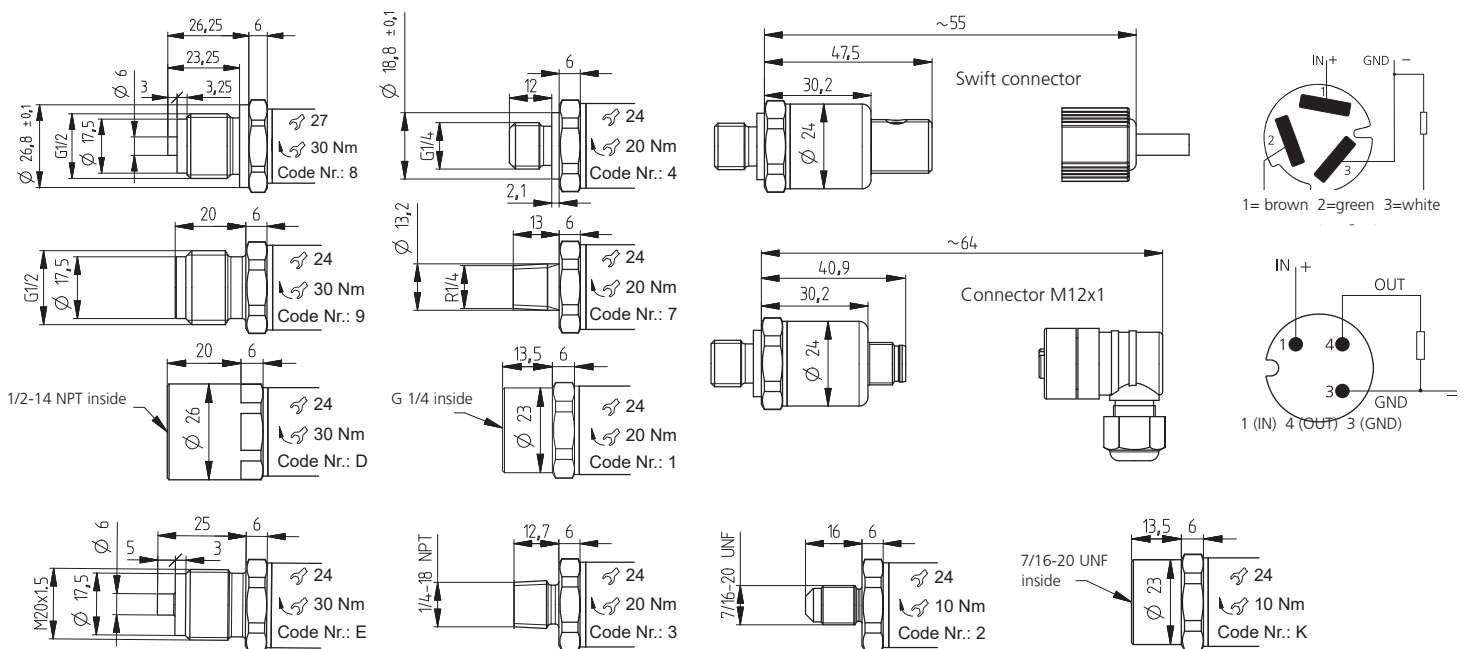
¹⁾ Other pressure ranges on request

²⁾ Delivery without female connector

³⁾ Other pressure connections on request

| Order code selection table in psi | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
|---|--|--|------|---|---|---|---|---|---|---|---|----|----|--|
| | | | 529. | X | X | X | X | X | X | X | X | X | X | |
| Pressure range (relative) ¹⁾ | -30 ... 0"hg | | 9 | B | 0 | | | | | | | | | |
| | 0 ... 15 psi | | 9 | B | 1 | | | | | | | | | |
| | 0 ... 20 psi | | 9 | B | 2 | | | | | | | | | |
| | 0 ... 30 psi | | 9 | B | 4 | | | 0 | | | | | | |
| | 0 ... 60 psi | | 9 | B | 5 | | | 0 | | | | | | |
| | 0 ... 100 psi | | 9 | B | 7 | | | 0 | | | | | | |
| | 0 ... 150 psi | | 9 | C | 0 | | | 0 | | | | | | |
| | 0 ... 200 psi | | 9 | C | 1 | | | 0 | | | | | | |
| | 0 ... 300 psi | | 9 | C | 2 | | | 0 | | | | | | |
| | 0 ... 500 psi | | 9 | C | 3 | | | 0 | | | | | | |
| 0 ... 750 psi | | 9 | D | 0 | | | 0 | | | | | | | |
| Pressure range (absolute) ¹⁾ | 0 ... 15 psi | | 8 | B | 1 | | | | | | | | | |
| | 0 ... 20 psi | | 8 | B | 2 | | | | | | | | | |
| | 0 ... 30 psi | | 8 | B | 4 | | | | | | | | | |
| | 0 ... 60 psi | | 8 | B | 5 | | | | | | | | | |
| | 0 ... 100 psi | | 8 | B | 7 | | | | | | | | | |
| | 0 ... 150 psi | | 8 | C | 0 | | | | | | | | | |
| 0 ... 200 psi | | 8 | C | 1 | | | | | | | | | | |
| Sealing material | FPM | Fluoro elastomer | | | | | | 0 | | | | | | |
| | EPDM | Ethylene propylene | | | | | | 1 | | | | | | |
| | NBR | Butadiene Acrylonitrile | | | | | | 2 | | | | | | |
| | MVQ | Silicone polymer | | | | | | 3 | | | | | | |
| Application | standard | | | | | | | 0 | | | | | | |
| | for oxygen applications | | | | | | | 0 | 1 | | | | | |
| Switching contact | Contact N/O | High-Side-Switch PNP | | | | | | | | 1 | | | | |
| | Contact N/C | High-Side-Switch PNP | | | | | | | | 2 | | | | |
| Electrical connection | Swift connector without cable | | | | | | | | | | 0 | | | |
| | Connector M12x1 ²⁾ | | | | | | | | | | 3 | | | |
| | Swift connector with cable 1.5 m | | | | | | | | | | L | | | |
| Pressure connection ³⁾ | Inside thread | G 1/4 with O-Ring seal FPM | | | | | | | | | | 1 | | |
| | | 1/2 -14 NPT | | | | | | | | | | D | | |
| | | 7/16 -20 UNF | | | | | | | | | | K | | |
| | | 7/16 -20 UNF | | | | | | | | | | 2 | | |
| | | 1/4 -18 NPT | | | | | | | | | | 3 | | |
| | Outside thread | G 1/4 sealed at back DIN 3852-E with Profile seal ring in FPM | | | | | | | | | | | 4 | |
| | | R 1/4 acc. to EN 10226 | | | | | | | | | | | 7 | |
| | | G 1/2 sealed at back and manometer with Profile seal ring in FPM | | | | | | | | | | | 8 | |
| | | M20x1.5 sealed at front and manometer (combi) | | | | | | | | | | | E | |
| | | G 1/2 sealed at front | | | | | | | | | | | 9 | |
| Pressure orifice | without | | | | | | | | | | | 1 | 1 | |
| | with | | w | | | | | | | | | 2 | 1 | |
| Switching points | Indicate W and state switching points on order (e.g.: W30/16psi) | | | | | | | | | | | | W | |

Dimensions in mm / Electrical connections



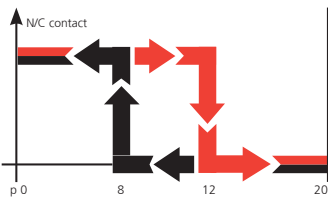
¹⁾ Other pressure ranges on request

²⁾ Delivery without female connector

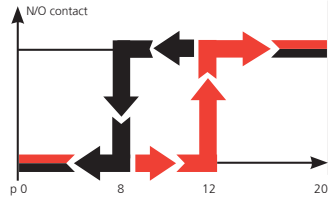
³⁾ Other pressure connections on request

| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
|---|--|--|------------------------------|---|---|---|---|---|---|---|---|----|----|---|
| Order code selection table in MPa | | | 529. X X X X X X X X X X X X | | | | | | | | | | | |
| Pressure range (relative) ¹⁾ | -0.1 ... 0 MPa | | 9 | G | 0 | | | | | | | | | |
| | 0 ... 0.1 MPa | | 9 | G | 1 | | | | | | | | | |
| | 0 ... 0.16 MPa | | 9 | G | 2 | | | | | | | | | |
| | 0 ... 0.25 MPa | | 9 | G | 4 | 0 | | | | | | | | |
| | 0 ... 0.4 MPa | | 9 | G | 5 | 0 | | | | | | | | |
| | 0 ... 0.6 MPa | | 9 | G | 7 | 0 | | | | | | | | |
| | 0 ... 1 MPa | | 9 | H | 0 | 0 | | | | | | | | |
| | 0 ... 1.6 MPa | | 9 | H | 1 | 0 | | | | | | | | |
| | 0 ... 2.5 MPa | | 9 | H | 2 | 0 | | | | | | | | |
| | 0 ... 4 MPa | | 9 | H | 3 | 0 | | | | | | | | |
| 0 ... 6 MPa | | 9 | K | 0 | 0 | | | | | | | | | |
| Pressure range (absolute) ¹⁾ | 0 ... 0.1 MPa | | 8 | G | 1 | | | | | | | | | |
| | 0 ... 0.16 MPa | | 8 | G | 2 | | | | | | | | | |
| | 0 ... 0.25 MPa | | 8 | G | 4 | | | | | | | | | |
| | 0 ... 0.4 MPa | | 8 | G | 5 | | | | | | | | | |
| | 0 ... 0.6 MPa | | 8 | G | 7 | | | | | | | | | |
| | 0 ... 1 MPa | | 8 | H | 0 | | | | | | | | | |
| | 0 ... 1.6 MPa | | 8 | H | 1 | | | | | | | | | |
| Sealing material | FPM | Fluoro elastomer | | | | | | 0 | | | | | | |
| | EPDM | Ethylene propylene | | | | | | 1 | | | | | | |
| | NBR | Butadiene Acrylonitrile | | | | | | 2 | | | | | | |
| | MVQ | Silicone polymer | | | | | | 3 | | | | | | |
| Application | standard | | | | | | | 0 | | | | | | |
| | for oxygen applications | | | | | | | 0 | 1 | | | | | |
| Switching contact | Contact N/O | High-Side-Switch PNP | | | | | | | | 1 | | | | |
| | Contact N/C | High-Side-Switch PNP | | | | | | | | 2 | | | | |
| Electrical connection | Swift connector without cable | | | | | | | | | | 0 | | | |
| | Connector M12x1 ²⁾ | | | | | | | | | | 3 | | | |
| | Swift connector with cable 1.5 m | | | | | | | | | | | L | | |
| Pressure connection ³⁾ | Inside thread | G ¼ with O-Ring seal FPM | | | | | | | | | | 1 | | |
| | | ½ -14 NPT | | | | | | | | | | | D | |
| | | 7/16 -20 UNF | | | | | | | | | | | K | |
| | Outside thread | 7/16 -20 UNF | | | | | | | | | | | 2 | |
| | | ¼ -18 NPT | | | | | | | | | | | | 3 |
| | | G ¼ sealed at back DIN 3852-E with Profile seal ring in FPM | | | | | | | | | | | | 4 |
| | | R ¼ acc. to EN 10226 | | | | | | | | | | | | 7 |
| | | G ½ sealed at back and manometer with Profile seal ring in FPM | | | | | | | | | | | | 8 |
| | | M20x1.5 sealed at front and manometer (combi) | | | | | | | | | | | | E |
| | G ½ sealed at front | | | | | | | | | | | | 9 | |
| Pressure orifice | without | | | | | | | | | | | 1 | 1 | |
| | with | | | | | | | | | | | 2 | 1 | |
| Switching points | Indicate W and state switching points on order (e.g.: W4/1.2MPa) | | | | | | | | | | | | | W |

Function

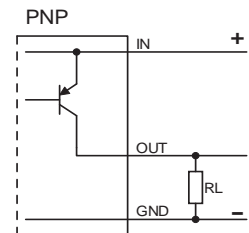


N/C contact: When pressure is applied ($p_0 \rightarrow p_{max}$) the switch will disconnect the applied load as soon as the upper switching point is reached. As the pressure falls ($p_{max} \rightarrow p_0$) the switch will connect the load as soon as the lower switching point is reached.



N/O contact: When pressure is applied ($p_0 \rightarrow p_{max}$) the switch will connect the applied load as soon as the upper switching point is reached. With a fall in pressure ($p_{max} \rightarrow p_0$) the switch will disconnect the load as soon as the lower switching point is reached.

Example: p_s 20 bar
 Upper switching point 12 bar
 Lower switching point 8 bar
 max. switching load 100 mA



¹⁾ Other pressure ranges on request

²⁾ Delivery without female connector

³⁾ Other pressure connections on request

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