

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
- Saving time by quick cable mounting by the customer with swift connector
- Large selection of connections available.

Technical overview

Pressure range

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

Operating conditions

| | | |
|---------------------------------------|---------|------------------------|
| Medium | | Liquids and gases |
| Temperature | Medium | FPM -15 ... +125 °C |
| | | EPDM -40 ... +125 °C |
| | | NBR -20 ... +100 °C |
| | | MVQ -40 ... +125 °C |
| | | 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 VO |
| 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 |

Protection class

| |
|----------------------|
| Protection class III |
|----------------------|

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 |

Protection standard

| |
|-------|
| IP 67 |
|-------|

Electrical connection

| |
|---|
| Swift connector without or with cable 1.5 m |
| Connector M12x1 |

Pressure connection

| | | |
|----------------|---------------|--|
| Inside thread | 7/16 - 20 UNF | |
| | 1/2 - 14 NPT | |
| | G 1/4 | with O-Ring seal FPM spec. (-30 ... +135 °C) |
| Outside thread | 7/16 - 20 UNF | |
| | 1/4 - 18 NPT | |
| | G 1/4 | sealed at back DIN 3852 form E with Profile seal ring in FPM spec. (-30 ... +135 °C) |
| | R 1/4 | DIN 2999 |
| | G 1/2 | sealed at back and manometer (combi) with Profile seal ring in FPM spec. (-30 ... +135 °C) |
| | M20x1.5 | |
| | G 1/2 | sealed at front |

Installation arrangement

| |
|--------------|
| Unrestricted |
|--------------|

Tests / Admissions

| | |
|---------------------------------|---|
| Electromagnetic compatibility | CE conformity acc. EN 61326-2-3 |
| 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 |

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

Order code selection table in bar

529. X X X X X X X X X X X

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|---|---|---|--|---|---|---|---|--|--|--|--|--|--|--|--|--|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|
| Pressure range (relative) ³⁾ | -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) ³⁾ | 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 | | | | | | | | | | | | | | | | | | | | 0 | | | | | | | | | | | | | | | | | | |
| | Connector M12x1 ⁴⁾ | | | | | | | | | | | | | | | | | | | | 3 | | | | | | | | | | | | | | | | | | |
| | Swift connector with cable 1.5 m | | | | | | | | | | | | | | | | | | | | L | | | | | | | | | | | | | | | | | | |
| Pressure connection ⁵⁾ | Inside thread | G ¼ with O-Ring seal FPM spec. (-30 ... +135 °C) | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | |
| | Inside thread | 7/16-20 UNF | | | | | | | | | | | | | | | | | | | K | | | | | | | | | | | | | | | | | | |
| | Inside thread | ½ -14 NPT | | | | | | | | | | | | | | | | | | | D | | | | | | | | | | | | | | | | | | |
| | Outside thread | 7/16 -20 UNF | | | | | | | | | | | | | | | | | | | 2 | | | | | | | | | | | | | | | | | | |
| | Outside thread | ¼ -18 NPT | | | | | | | | | | | | | | | | | | | 3 | | | | | | | | | | | | | | | | | | |
| | Outside thread | G ¼ sealed at back DIN 3852 form E with Profile seal ring in FPM spec. (-30 ... +135 °C) | | | | | | | | | | | | | | | | | | | 4 | | | | | | | | | | | | | | | | | | |
| | Outside thread | R ¼ acc. to DIN 2999 | | | | | | | | | | | | | | | | | | | 7 | | | | | | | | | | | | | | | | | | |
| | Outside thread | G ½ sealed at back and manometer (combi) with Profile seal ring in FPM spec. (-30 ... +135 °C) | | | | | | | | | | | | | | | | | | | 8 | | | | | | | | | | | | | | | | | | |
| | Outside thread | G ½ sealed at front | | | | | | | | | | | | | | | | | | | 9 | | | | | | | | | | | | | | | | | | |
| Outside thread | M20x1.5 ⁴⁾ | | | | | | | | | | | | | | | | | | | E | | | | | | | | | | | | | | | | | | | |
| Version | without pressure tip orifice | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | |
| | with pressure tip orifice | | | | | | | | | | | | | | | | | | | | 2 | | | | | | | | | | | | | | | | | | |
| Switching points | Indicate W and state switching points on order (e.g.: W40/30bar) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | W |

Accessories

| | Order number |
|--|--------------|
| Swift connector | 107359 |
| Straight-wire box for connector M12x1 | 114570 |
| Straight-wire box for connector M12x1 with cable | 114605 |
| Corner-wire box for connector M12x1 with cable | 114604 |
| Corner-wire box for connector M12x1 | 106975 |
| Calibration certificate | 104551 |



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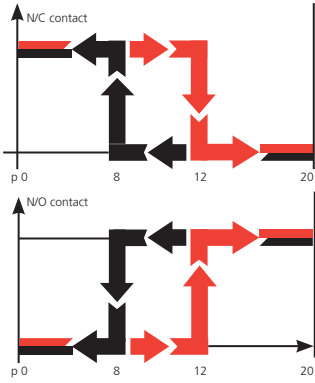
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¹⁾ typ. ; max. 1.0% fs (incl. hysteresis and repeatability)
⁴⁾ Delivery without female connector

²⁾ -15 ... 85 °C
⁵⁾ Other pressure connections on request

³⁾ Other pressure ranges on request

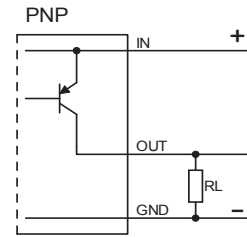
Function



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_0 20 bar
Upper switching point 12 bar
Lower switching point 8 bar
max. switching load 100 mA



Order code selection table in psi

| | | 529 | X | X | 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 | | | | | | | | | 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 spec. (-30 ... +135 °C) | | | | | | | | | | | 1 | | | | |
| | Inside thread 7/16-20 UNF | | | | | | | | | | | | K | | | |
| | Inside thread 1/2-14 NPT | | | | | | | | | | | | | D | | |
| | Outside thread 7/16-20 UNF | | | | | | | | | | | | | 2 | | |
| | Outside thread 1/4-18 NPT | | | | | | | | | | | | | 3 | | |
| | Outside thread G 1/4 sealed at back DIN 3852 form E with Profile seal ring in FPM spec. (-30 ... +135 °C) | | | | | | | | | | | | | | 4 | |
| | Outside thread R 1/4 acc. to DIN 2999 | | | | | | | | | | | | | | 7 | |
| | Outside thread G 1/2 sealed at back and manometer (combi) with Profile seal ring in FPM spec. (-30 ... +135 °C) | | | | | | | | | | | | | | | 8 |
| | Outside thread G 1/2 sealed at front | | | | | | | | | | | | | | | 9 |
| | Outside thread M20x1.5 ²⁾ | | | | | | | | | | | | | | | E |
| | Version | without pressure tip orifice | | | | | | | | | | | | | | 1 1 |
| with pressure tip orifice | | | | | | | | | | | | | | | 2 1 | |
| Switching points | Indicate W and state switching points on order (e.g.: W30/16psi) | | | | | | | | | | | | | | W | |



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¹⁾ Other pressure ranges on request

²⁾ Delivery without female connector

³⁾ Other pressure connections on request

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 | | | | | | | | | | | | | | | | | | |
| EPDM | | | | | | | | | | | | | | | | | | | | |
| NBR | | | | | | | | | | | | | | | | | | | | |
| MVQ | | | | | | | | | | | | | | | | | | | | |
| | | Fluoro elastomer | | | | | | | | | | | | | | | | | | |
| Application | standard | | | | | | | | | | | | | | | | | | | |
| | for oxygen applications | | | | | | | | | | | | | | | | | | | |
| Switching contact | Contact N/O | | | | | | | | | | | | | | | | | | | |
| | Contact N/C | | | | | | | | | | | | | | | | | | | |
| Electrical connection | Swift connector | | | | | | | | | | | | | | | | | | | |
| | Connector M12x1 ²⁾ | | | | | | | | | | | | | | | | | | | |
| | Swift connector with cable 1.5 m | | | | | | | | | | | | | | | | | | | |
| Pressure connection ³⁾ | Inside thread | | | | | | | | | | | | | | | | | | | |
| | Inside thread | | | | | | | | | | | | | | | | | | | |
| | Inside thread | | | | | | | | | | | | | | | | | | | |
| | Outside thread | | | | | | | | | | | | | | | | | | | |
| | Outside thread | | | | | | | | | | | | | | | | | | | |
| | Outside thread | | | | | | | | | | | | | | | | | | | |
| | Outside thread | | | | | | | | | | | | | | | | | | | |
| | Outside thread | | | | | | | | | | | | | | | | | | | |
| | Outside thread | | | | | | | | | | | | | | | | | | | |
| | Outside thread | | | | | | | | | | | | | | | | | | | |
| Version | without pressure tip orifice | | | | | | | | | | | | | | | | | | | |
| | with pressure tip orifice | | | | | | | | | | | | | | | | | | | |
| Switching points | Indicate W and state switching points on order (e.g.: W4/1.2MPa) | | | | | | | | | | | | | | | | | | | |

Dimensions in mm / Electrical connections

