

Mechanical Pressure Switches

Catalogue

Mechanical Pressure Switches





Overview

Control
every move

Barksdale
CONTROL PRODUCTS
CRANE Barksdale, Inc./Barksdale GmbH
A Subsidiary of Crane Co.

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Applications

Mechanical pressure switches, also known as hydro-electric pressure monitors, are used to connect or disconnect electric circuits. A pressure switch can serve as a control unit and as an optical or acoustic monitor or indicator. Barksdale pressure switches are chiefly used in hydraulic systems for monitoring minimum pressures, such as protecting pumps from dry operation or as protection for oil lubrication systems. They can also be used for monitoring maximum pressures, such as automatic switch-off or warning device before a pressure relief valve reaches its limit pressure (fig. 1).

Another application for Barksdale pressure switches is the control of storage loading processes. After the storage capacity is reached (Pmax) the flow is stopped and the pump shuts down. When the storage pressure drops below a defined minimum value (Pmin), the pump is automatically started again. The switch hysteresis (Pmax - Pmin) can be freely selected with two pressure switches and one solenoid valve (fig. 2).

Within certain pressure ranges the storage process can be controlled with only one pressure switch, the KD1 compact pressure switch which Barksdale specifically designed for this application. The pressure set points Pmax and Pmin are factory set according to your requirements.

Life Span and Accuracy

The life span and accuracy of pressure switches depend on the frequency and peaks of pressure changes, the number of load cycles and temperature influences. For proportional operation pressure switches the highest accuracy is achieved above 70 %, the longest life span below 30 % of the performance range (fig. 3). The best combination of life span and accuracy is, however, between 30% and 70% of the performance range.

Contact Materials

Barksdale pressure switches have silver contact micro switches. On request we also supply micro switches with gold-plated contacts. Gold-plated are almost exclusively used on micro switches that are only exposed to low electrical loads.

Fig. 4 depicts the standard values for the use of silver or gold-plated contacts. We are happy to assist you in the selection of the material best suited for your application.

Summary:

The product of current and voltage should not exceed 0.12 VA. Recommended values: current should range at < 400 mA and voltage at < 30 V. If operated on alternating current the above values are peak values.

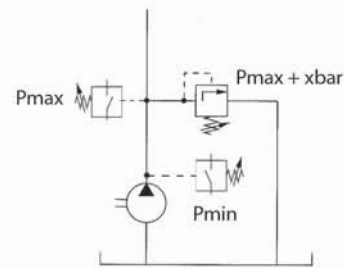


Fig. 1

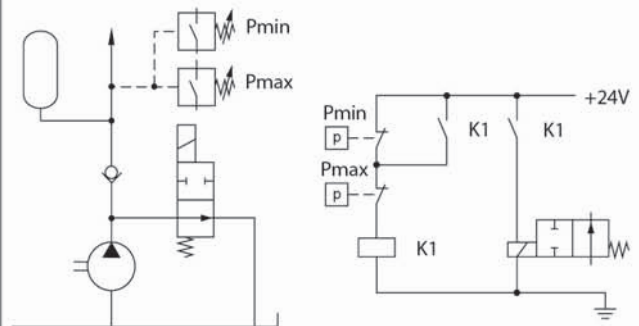


Fig. 2

| | Adjustment ranges | | |
|-----------|-------------------|------|--------------|
| | 30% | 70% | 100% |
| Accuracy | satisfactory | good | excellent |
| Life Span | excellent | good | satisfactory |

Fig. 3

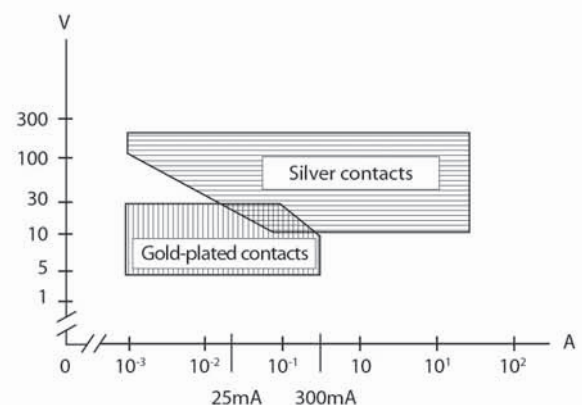


Fig. 4: Range of application of the various contact materials

Introduction

Contact Protection

The micro switches (MS) used in the pressure switches are normally suitable for both direct and alternating current operation. Inductive, capacitive and lamp loads may, however, considerably reduce the life span of a micro switch and, under extreme circumstances, even damage the contacts.

Contact Protection

The micro switches (MS) used in the pressure switches are normally suitable for both direct and alternating current operation. Inductive, capacitive and lamp loads may, however, considerably reduce the life span of a micro switch and, under extreme circumstances, even damage the contacts.

Capacitive Loads and Lamp Loads

Capacitive and lamp loads may be accompanied by very high discharge rates or start-up current rushes 15 times higher than the rated value. Under such circumstances, current limiters (for instance a protective resistance) should be used (fig. 5 and 6).

Inductive Loads

High inductive peak loads during disconnection may considerably reduce the life span of a micro switch. The electric circuit can be protected by following the wiring diagram in figure 7 and 8. The ratings of the individual elements (diode, varistor etc.) are determined by the corresponding application.

Pulsation and Vibrations within the System?

How to remedy the problem:

Pulsation and vibrations within the system can affect the function of the pressure switch. There are two different types of pressure switches: one type is sufficiently protected against pulsation and vibrations occurring during operation due to its solid design, the others are designed for precision adjustment which, consequently, makes them more sensitive to such influences. Please refer to the summary for compact pressure switch values regarding vibration resistance. To ensure proper functioning of the pressure switch, please observe the following recommendations:

Mechanical Vibrations

Use rubber buffers between units and wall for wall mounted units.

Pulsation/Vibration of the Medium

Use flexible hoses instead of pipes.

If this is technically not possible, place "pulsation restrictors" in front of the pressure switch, for example:

- helical pipes
- commercial pulsation snubbers
- diaphragm accumulators

As air pockets can enhance pulsation, please ensure that the hydraulic system is properly vented.

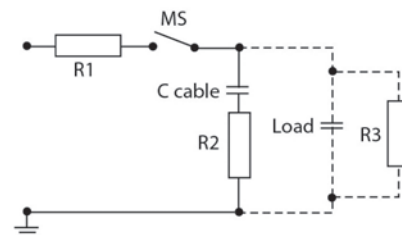


Fig. 5: Protection in case of capacitive loads
R1 - Protection against start-up current rushes
R2, R3 - Protection against high discharge currents

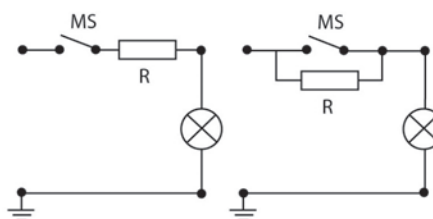


Fig. 6: Lamp load provided with resistance in parallel or series connection to switch

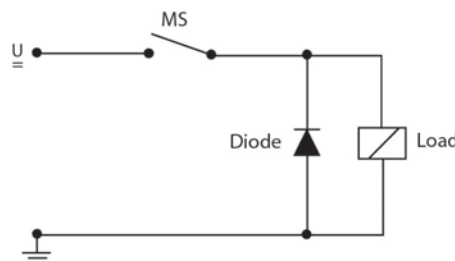


Fig. 7: Protection in case of continuous current and inductive load by recovery diode

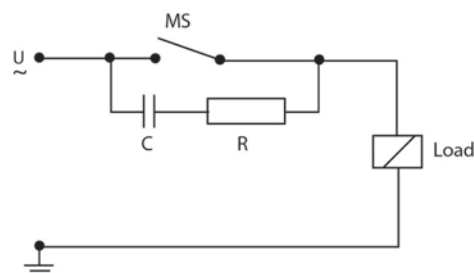


Fig. 8: Protection in case of alternating current and inductive load by RC-link

Metal Diaphragm

Metal diaphragm pressure switches with direct-acting pressure sensor and the snap-acting micro switch provide very high accuracy and long life span.

Applications

Machine and tool engineering,
Autoclave,
Pump control,
Refrigerant monitoring,
Petrochemical industry,
Process technology,
Filter monitoring,
Hydraulic power units

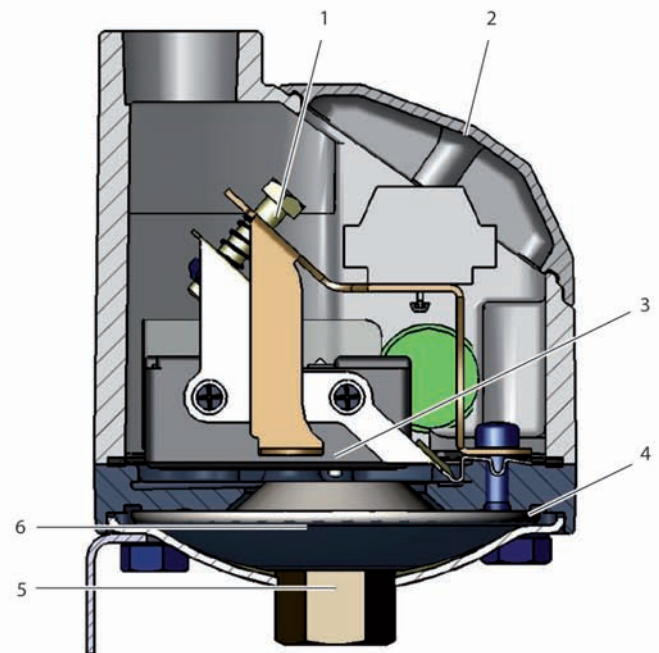
Adjustment ranges

-1 ... 10.3 bar

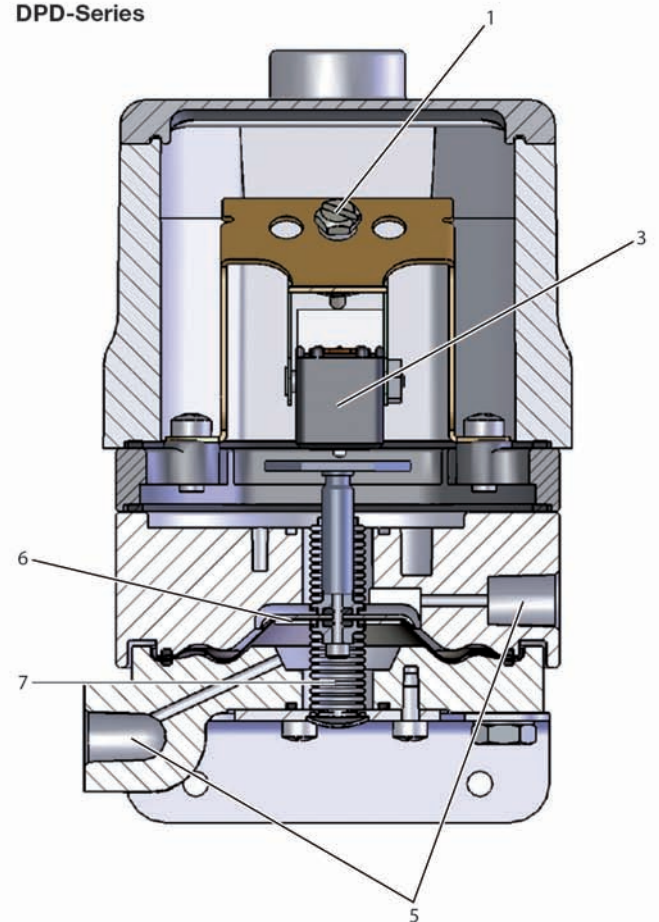
Summary of main components

| | |
|--------|---|
| Item 1 | Fine-pitch screw allows precise set point adjustment |
| Item 2 | Various housing types allow many applications in normal and hazardous installations; also Exi, Exd and UL |
| Item 3 | Large variety of micro switches with different accuracy and switching voltages |
| Item 4 | Wetted parts:DT: 1.4504/1.4564/14568*DPDT: Aluminium/1.4504/1.4564/1.4568* * = (17.7-PH) |
| Item 5 | Pressure connections with NPT thread |
| Item 6 | Stainless steel diaphragm |
| Item 7 | Differential pressure switches:two bellows for sealing without friction |

D-Series



DPD-Series



Bourdon Tube

Bourdon tube pressure switches with direct-acting pressure sensor and the snap-acting micro switch provide very high accuracy and long life span.

Applications

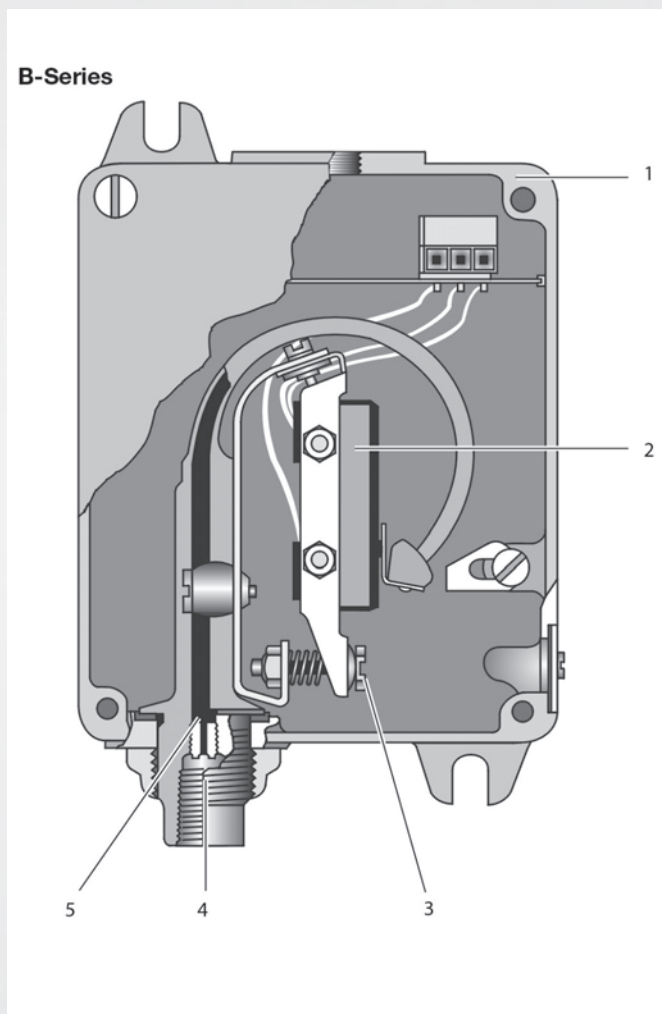
Pump control,
Die-casting machines,
Press control,
Power plants,
Petrochemical industry,
Process technology

Adjustment ranges

4.8 ... 950 bar

Summary of main components

| | |
|---------|---|
| Item 1 | Various housing types allow many applications in normal and hazardous installations; also Exi, Exd and UL |
| Item 2: | Large variety of micro switches with different accuracy and switching voltages |
| Item 3: | Fine-pitch screw allows precise set point adjustment |
| Item 4: | Pressure connections with NPT thread, |
| Item 5: | Wetted parts made of stainless steel |



Approvals

For approvals and options please refer to the summary below.

Pressure switches with a diaphragm or piston-type spring-loaded pressure element and snap-acting micro switch are characterized by their compact design.

Applications

OEM applications,
Mobile and industrial hydraulic and pneumatic systems,
Test bed and apparatus engineering, Heavy industry

Adjustment ranges

Series 8000: 0.6...600 bar

Series 9000: 10...400 bar

Summary of main components

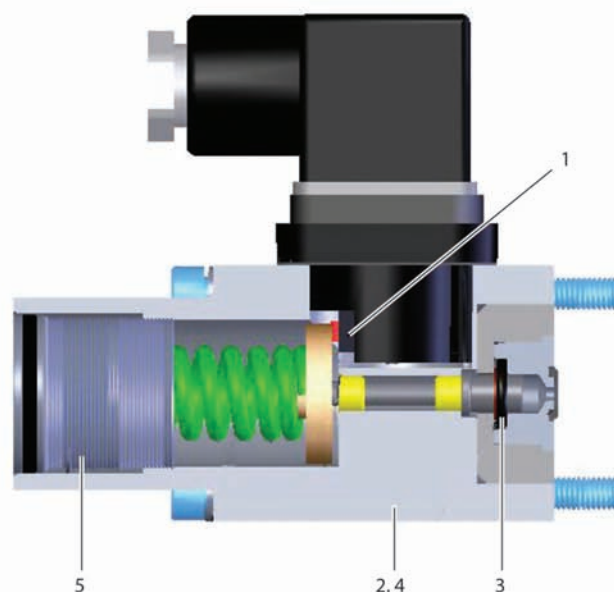
– Option: factory set individual set points

| | |
|---------|---|
| Item 1: | High-accuracy micro switch. Silver or gold-plated contacts dependent on the application-specific requirements. Approvals: Exi |
| Item 2: | Housing parts made of stainless steel and aluminium. |
| Item 3: | Elastomer diaphragm or low-friction piston seal |
| Item 4 | Same housing design for diaphragm and piston types allow many applications. |
| Item 5 | Various pressure ranges allow precise setting between 0.6 and 600 bar or 10...400 bar respectively. – Adjustment of set points through hexagon socket (5mm) – Option: factory set individual set points |

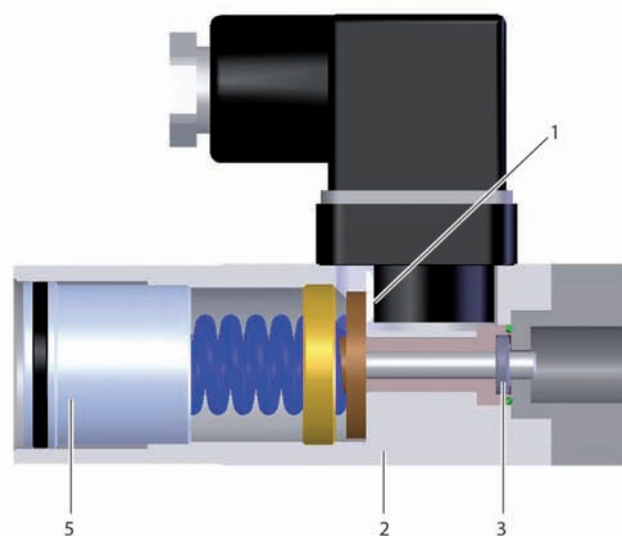
Approvals

For approvals and options please refer to the summary below.

Series 8000



Series 9000



Compact

Pressure switches with a diaphragm or piston-type spring-loaded pressure element and snap-acting micro switch are characterized by their compact design.

Applications

Mobile hydraulics,
Motor control,
Hydraulic clamping,
Building and agricultural machines,
Brake system control,
Hydraulic accumulator control

Adjustment ranges

KLM: 1 ... 40 bar

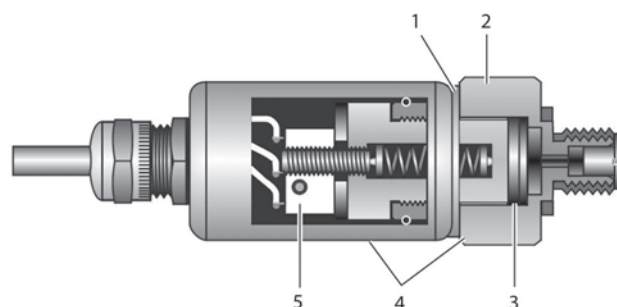
KLK: 30 ... 400 bar

KD1: 30 ... 300 bar

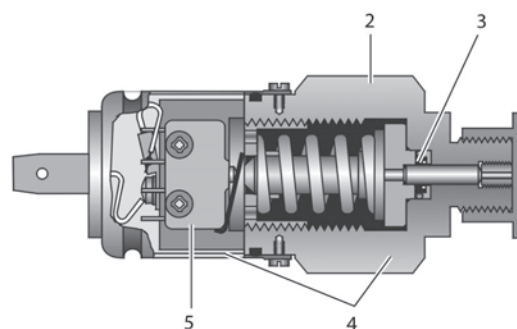
Summary of main components

| | |
|---------|---|
| Item 1: | <ul style="list-style-type: none"> – KD1 and KL series only available with factory – setting, unauthorized adjustment excluded – Silver and gold-plated contacts for KD1 series. – Approvals KLM/KLK: Exi |
| Item 2: | Same housing design for diaphragm and piston types allow many applications. |
| Item 3: | Elastomer diaphragm or low-friction piston seal |
| Item 4: | Housing parts made of stainless steel and aluminium or of stainless steel and brass or stainless steel. |
| Item 5: | <p>KLM/KLK: High-accuracy micro switch. Silver or gold-plated contacts dependent on the application-specific requirements.</p> <p>KD1: Adjustable hysteresis</p> |

KLM/KLK



KD1



Approvals

For approvals and options please refer to the summary below.

Diaphragm Seal Piston

Due to their design diaphragm seal piston pressure switches provide high accuracy, long life span and high proof pressure.

Applications

Hydraulic/pneumatic systems,
Shipbuilding applications,
Machine and tool engineering,
Dosing machines, plant engineering,
Sprinkler control

Adjustment ranges

-1 ... 42 bar

Summary of main components

| | |
|---------|--|
| Item 1: | Large variety of micro switches with different accuracy and switching voltages. |
| Item 2: | Wetted parts: Diaphragm: NBR, FKM or PTFE (E-Series + EPDM, CR) Fitting: aluminium, polysulfone, (stainless steel), or nickel-plated aluminium |
| Item 3: | Pressure connections with NPT or G threads |
| Item 4: | Fine-pitch screw allows precise set point adjustment Several pressure ranges allow following set points: E series: - 0.9 ... 34 bar P series: 0.1 ... 107 bar MSPS series: 0.1 ... 6.8 bar |
| Item 5: | For many applications in normal and hazardous installations; also Exi and explosion proof housing acc. to CSA and UL. |
| Item 6: | Visual indication of set point for E1S and E1H |

Special Functions

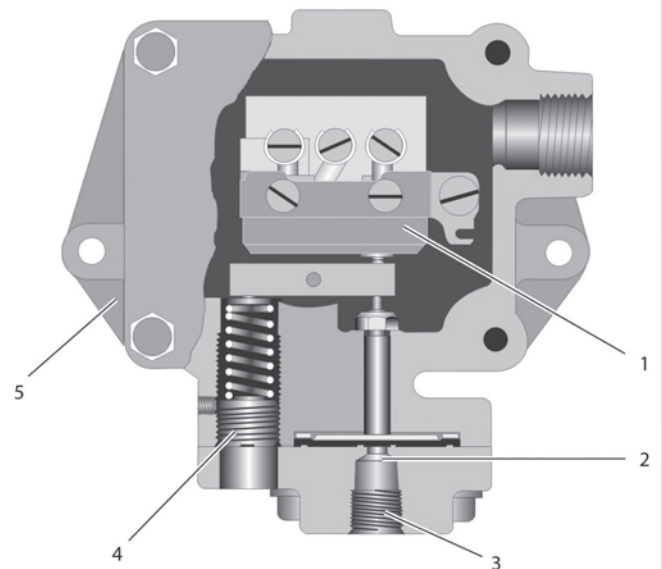
Type E1H can be equipped with manual reset for alarm functions with G-Micro switch option.

Type E1S and E1H are available with R-Micro switch for adjustable hysteresis (adjustable deadband).

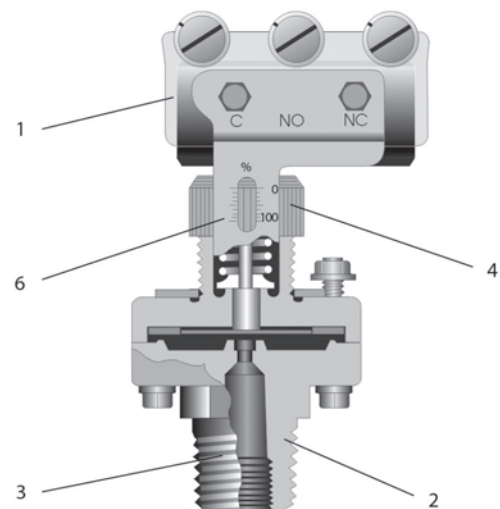
Approvals

For approvals and options please refer to the summary below.

P-Series



E-Series



Overview



| Model | D1S, D2S | D1T, D2T | D1X / D2X |
|--------------------------------------|--|--|--|
| Measuring element | Stainless steel diaphragm | Stainless steel diaphragm | Stainless steel diaphragm |
| Features | Adjustable switch contacts for vacuum and overpressure | Adjustable switch contacts for vacuum and overpressure | Adjustable switch contacts for vacuum and overpressure |
| Applications | Machine-tool industry, autoclave, pump control, refrigerant monitoring | Machine-tool industry, autoclave, pump control, refrigerant monitoring | Petrochemicals industry, process technology |
| Adjustment ranges | -0.006 ... -1 bar up to 0.005 ... 10.3 bar | -0.006 ... -1 bar up to 0.005 ... 10.3 bar | -0.006 ... -1 bar up to 0.012 ... 10.3 bar |
| Number of contacts | 1 or 2 | 1 or 2 | 1 or 2 |
| Max. switch frequency/min | 20 | 20 | 20 |
| Accuracy | ±1 % | ±1 % | ±1 % |
| Temperature range | -40 °C... +75 °C | -40 °C... +75 °C | -40 °C... +75 °C |
| Vibration tolerance | satisfactory | satisfactory | satisfactory |
| Process connection (without adaptor) | 1/4" NPT female, 1/2" NPT female, stainless steel | 1/4" NPT female, 1/2" NPT female, stainless steel | 1/4" NPT female, 1/2" NPT female, stainless steel |
| Electrical connection: | lead wires, PVC 1.5 mm ² | Cable gland | Terminal strip |
| Max. electrical rating | up to 480 V AC / 250 V DC | up to 480 V AC / 250 V DC | acc. to ATEX |
| Options | Gold-plated contacts, hermetically sealed contacts | Gold-plated contacts, hermetically sealed contacts | Gold-plated contacts, hermetically sealed contacts |
| Housing | without | aluminium | Aluminium, pressure proof |
| Protection class | IP00 | IP65 | IP65 |
| Approvals | Exi | Exi | Exi and Exd, UL |

Overview



| Model | DPD1T / DPD2T | B1S, B2S | B1T, B2T |
|--------------------------------------|---|---|---|
| Measuring element | Stainless steel diaphragm | Bourdon tube | Bourdon tube |
| Features | Adjustable switch contacts for vacuum and overpressure | Adjustable switch contacts, for high pressure | Adjustable switch contacts, for high pressure |
| Applications | Filter monitoring, hydraulic power units | Pump control, die-casting machines, press control, power plants | Pump control, die-casting machines, press control, power plants |
| Adjustment ranges | 0.02 ... 10.2 bar | 4.8 ... 950 bar | 4.8 ... 950 bar |
| Number of contacts | 1 or 2 | 1 or 2 | 1 or 2 |
| Max. switch frequency/min | 20 | 20 | 20 |
| Accuracy | ±1 % | ±1% | ±1% |
| Temperature range | -40 °C... +75 °C | -40 °C... +75 °C | -40 °C... +75 °C |
| Vibration tolerance | satisfactory | satisfactory | satisfactory |
| Process connection (without adaptor) | 1/8" NPT female, stainless steel | 1/4" NPT female, high pressure G 1/4 female, stainless steel | 1/4" NPT female, high pressure G 1/4 female, stainless steel |
| Electrical connection: | Cable gland, plug DIN EN 175 301-803-A (prev. DIN 43650) Form A | lead wires, PVC 1.5 mm ² | cable gland, plug DIN EN 175 301-803-A (prev. DIN 43650) |
| Max. electrical rating | up to 480 V AC / 250 V DC | up to 480 V AC / 250 V DC | up to 480 V AC / 250 V DC |
| Options | Gold-plated contacts, hermetically sealed contacts | Gold-plated contacts, hermetically sealed contacts | Gold-plated contacts, hermetically sealed contacts |
| Housing | Aluminium | without | aluminium |
| Protection class | IP65 | IP00 | IP65 |
| Approvals | Exi | Exi | Exi |

Overview



| Model | B1X / B2X | E1S | E1H |
|--------------------------------------|--|--|--|
| Measuring element | Bourdon tube | Plastic diaphragm / piston | Elastomer diaphragm / piston |
| Features | Adjustable switch contacts, for high pressure | Adjustable switch contacts, for vacuum and overpressure | Adjustable switch contacts, for vacuum and overpressure |
| Applications | Petrochemicals industry, process technology | Machine-tool industry, dosing machines, plant engineering, lubricant monitoring | Machine-tool industry, dosing machines, plant engineering, sprinkler control |
| Adjustment ranges | 5.3 ... 496 bar | -0.28 ... -0.9 bar up to 0.1 ... 34bar | -0.28 ... -0.9 bar up to 0.1 ... 34 bar |
| Number of contacts | 1 or 2 | 1 | 1 |
| Max. switch frequency/min | 20 | 30 | 30 |
| Accuracy | ±1% | ±2% | ±2% |
| Temperature range | -40 °C... +75 °C | -30 °C... +70 °C | -30 °C... +70 °C |
| Vibration tolerance | good | good | good |
| Process connection (without adaptor) | 1/4" NPT female, high pressure G 1/4 female, stainless steel | 1/4" NPT female, 1/8" NPT female, 1/2" NPT male, G 1/4 female, aluminium / polysulfone / stainless steel | 1/4" NPT female, 1/8" NPT female, 1/2" NPT male, G 1/4 female, Aluminium / polysulfone / stainless steel |
| Electrical connection | Terminal strip | Screw terminals | Plug DIN EN 175 301-803-A (prev. DIN 43650) Form A |
| Max. electrical rating | acc. to ATEX | up to 480 V AC / 250 V DC | up to 480 V AC / 250 V DC |
| Options | Gold-plated contacts, hermetically sealed contacts | Gold-plated contacts, adjustable hysteresis | Gold-plated contacts, manual reset, adjustable deadband |
| Housing | Aluminium, pressure proof | without | Aluminium, cap polycarbonate or stainless steel |
| Protection class | IP65 | IP00 | IP65 |
| Approvals | Exi and Exd, UL | Exi | Exi |

Overview



| Model | P1H | P1X | MSPS |
|--------------------------------------|---|--|--|
| Measuring element | Elastomer diaphragm / piston | Elastomer diaphragm / piston | Elastomer diaphragm / piston |
| Features | Adjustable switch contacts, rugged housing | Adjustable switch contacts | Compact construction, adjustable switch contacts, via adjustment screw |
| Applications | Hydraulic / pneumatic power units, shipbuilding applications | Hydraulic / pneumatic power units, shipbuilding applications | Air conditioning ventilation control steam ejectors |
| Adjustment ranges | 0.1 ... 107 bar | 0.1 ... 107 bar | 0.1...6.8 bar |
| Number of contacts | 1 | 1 | 1 |
| Max. switch frequency/min | 30 | 30 | 30 |
| Accuracy | ±2% | ±2% | ±2% |
| Temperature range | -30 °C... +70 °C | -30 °C... +70 °C | -5 °C... +70 °C |
| Vibration tolerance | good | good | good |
| Process connection (without adaptor) | 1/4" NPT female, 1/2" NPT female, aluminium or stainless steel | 1/4" NPT female, 1/2" NPT female, aluminium or stainless steel | 1/8" NPT male, stainless steel |
| Electrical connection | Cable gland, plug DIN EN 175 301-803-A (prev. DIN 43650) Form A | Cable gland | Spade connectors |
| Max. electrical rating | up to 480 V AC / 250 V DC | up to 250 V AC / 250 V DC | up to 250 V AC / 125 V DC |
| Options | Gold-plated contacts, hermetically sealed contacts | Gold-plated contacts, hermetically sealed contacts | --- |
| Housing | Aluminium | Aluminium | without |
| Protection class | IP65 | IP65 | IP00 |
| Approvals | Exi, Nace | Exi and Exd, CSA, UL, Nace | Exi |

Overview



| Model | 9671X / 9681X | 9692X |
|--------------------------------------|---|---|
| Measuring element | Elastomer diaphragm / piston | Elastomer diaphragm / piston |
| Features | Compact construction, adjustable switch contacts, via adjustment wheel, Ex vers. acc. to ATEX | Compact construction, adjustable switch contacts, via adjustment wheel, Ex vers. acc. to ATEX |
| Applications | Process industry, petrochemical plants, machine tool industry, compressors | Process industry, petrochemical plants, machine tool industry, compressors |
| Adjustment ranges | -0.17 ... -1 bar up to 0.33 ... 34.4 bar | 17.2 ... 571 bar |
| Number of contacts | 1 switch contact | 1 switch contact |
| Max. switch frequency/min | 30 | 30 |
| Accuracy | ±2% | ±2% |
| Temperature range | -30 °C... +70 °C | -30 °C... +70 °C |
| Vibration tolerance | good | good |
| Process connection (without adaptor) | 1/4" NPT female | 1/4" NPT female |
| Electrical connection | Leads 450 mm PVC, conduit connection 1/2" NPT male | Leads 450 mm PVC, conduit connection 1/2" NPT male |
| Max. electrical rating | up to 250 V AC / 125 V DC acc. to ATEX | up to 250 V AC / 125 V DC acc. to ATEX |
| Options | 1 switching contact with DPDT function, gold-plated contacts | 1 switching contact with DPDT function, gold-plated contacts |
| Housing | Stainless steel, explosion proof enclosure | Stainless steel, explosion proof enclosure |
| Protection class | IP65 | IP65 |
| Approvals | Exi and Exd, UL, CSA, ATEX | Exi and Exd, UL, CSA, ATEX |

Overview



| Model | Series 8000 | Series 8000 | Series 9000 |
|---|--|--|--|
| Measuring element | Elastomer diaphragm | Steel piston | Steel piston |
| Features | Compact construction, Adjustable switch contact | Compact construction, Adjustable switch contact | Compact construction, Adjustable switch contact |
| Applications | OEM applications, mobile- and industrial- hydraulics and pneumatics, test bed and apparatus engineering, heavy industry | OEM applications, mobile- and industrial- hydraulics and pneumatics, test bed and apparatus engineering, heavy industry | OEM applications, mobile- and industrial- hydraulics and pneumatics, test bed and apparatus engineering, heavy industry |
| Adjustment ranges | 0.6 ... 45 bar | 5.0 ... 600 bar | 10 ... 400 bar |
| Number of contacts | 1 | 1 | 1 |
| Max. switch frequency/min | 30 | 60 | 60 |
| Accuracy | ±2% | ±1% | ±2% |
| Temperature range | -20 °C... +80 °C | -40 °C... +80 °C | -20 °C... +80 °C |
| Vibration tolerance | good | good | good |
| Process connection (without adaptor) | CETOP 40 x 40 mm | CETOP 40 x 40 mm | |
| Electrical connection | Plug DIN EN 175 301-803-A (prev. DIN 43650) | Plug DIN EN 175 301-803-A (prev. DIN 43650) | Plug DIN EN 175 301-803-A (prev. DIN 43650) |
| Max. electrical rating | up to 250 V AC / 250 V DC | up to 250 V AC / 250 V DC | up to 250 V AC / 24 V DC |
| Options | Gold-plated contacts, various process and electrical connections | Gold-plated contacts, various process and electrical connections | --- |
| Housing | Aluminium or stainless steel | Aluminium or stainless steel | Aluminium |
| Protection class | IP65 | IP65 | IP65 |
| Approvals | GL, Exi, cULus | GL, Exi, cULus | GL |

Overview



| Model | KLK | KLM | KD1 |
|--------------------------------------|--|--|---|
| Measuring element | Steel piston | Elastomer diaphragm | Steel piston |
| Features | Compact construction, adjustable factory set switch contacts | Compact construction, factory set switch contacts | Compact construction, adjustable factory set switch contacts |
| Applications | Mobile hydraulics, Motor control, hydraulic clamping | Mobile hydraulics, motor control, hydraulic clamping | Building and agricultural machines, brake system control, hydraulic accumulator control |
| Adjustment ranges | 30 ... to 400 bar | 1... to 40 bar | 30... to 300 bar |
| Number of contacts | 1 | 1 | 1 |
| Max. switch frequency/min | 60 | 30 | 60 |
| Accuracy | ±1 % | ±2% | ±1 % |
| Temperature range | -40 °C... +80 °C | -20 °C... +80 °C | -40 °C... +80 °C |
| Vibration tolerance | excellent | excellent | excellent |
| Process connection (without adaptor) | M12 x 1.5 male G 1/4 male, brass | M12 x 1.5 male G 1/4 male, stainless steel | M12 x 1.5 male, brass |
| Electrical connection | Cable gland with cable, plug DIN EN 175 301-803-A (prev. DIN 43650) Form C | Cable gland with cable, plug DIN EN 175 301-803-A (prev. DIN 43650) Form C | Spade connector, cable gland with cable |
| Max. electrical rating | up to 60 V AC / 60 V DC | up to 60 V AC / 60 V DC | up to 60 V AC / 60 V DC |
| Options | Gold-plated contacts | Gold-plated contacts, high pressure version, up to 150 bar | Gold-plated contacts, large hysteresis |
| Housing | Stainless steel and brass | Stainless steel | Stainless steel and brass |
| Protection class | Plug IP65, cable IP67 | Plug IP65, cable IP67 | Plug IP65, cable IP67 |
| Approvals | Exi | Exi | Exi |

Metal Diaphragm Pressure Switches

D1S/D2S

Mechanical single/dual pressure switch
Repeatability ± 1.0 % at constant temperature

Features

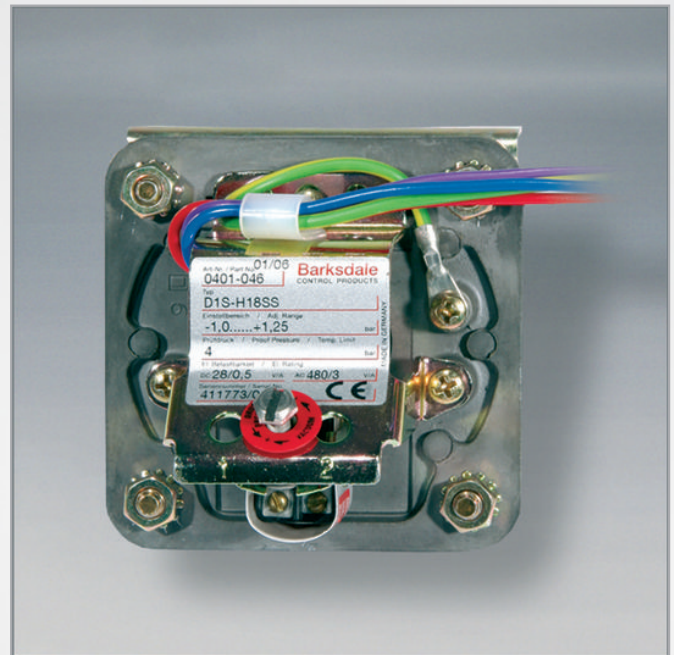
Metal diaphragm pressure switch
Wetted parts welded.
Direct action, no friction, high accuracy

Adjustment ranges

0.005 ... 10.3 bar and
-0.006 ... -1 bar (Vacuum)

Applications

Machine and tool engineering,
Autoclaves,
Pump control,
Refrigerant monitoring



Technical Data

| | |
|----------------------------|---|
| Wetted parts: | Stainless steel 17 - 7PH/SS304 |
| Repeatability: | ± 1 % at constant temperature |
| Switching rate: | max. 20/min |
| Temperature range: | -40 °C... +75 °C |
| Protection class: | IP00 |
| Housing: | Without housing for installation in control panels |
| Process connection: | 1/4" NPT female thread Optional: 1/2" NPT female thread (P2) |

| | |
|---|---|
| Electrical connection: | Lead wire PVC 1.5 mm ² , length appr. 450 mm |
| Electrical ratings and hysteresis: | A large variety of micro switches offers different electrical ratings and hysteresis for many applications. |
| Weight: | D1S-...: approx. 0.6 kg D2S-...: approx. 0.7 kg |
| Set point adjustment: | Turn the adjustment screw clockwise to decrease the set point |
| Approval: | --- |

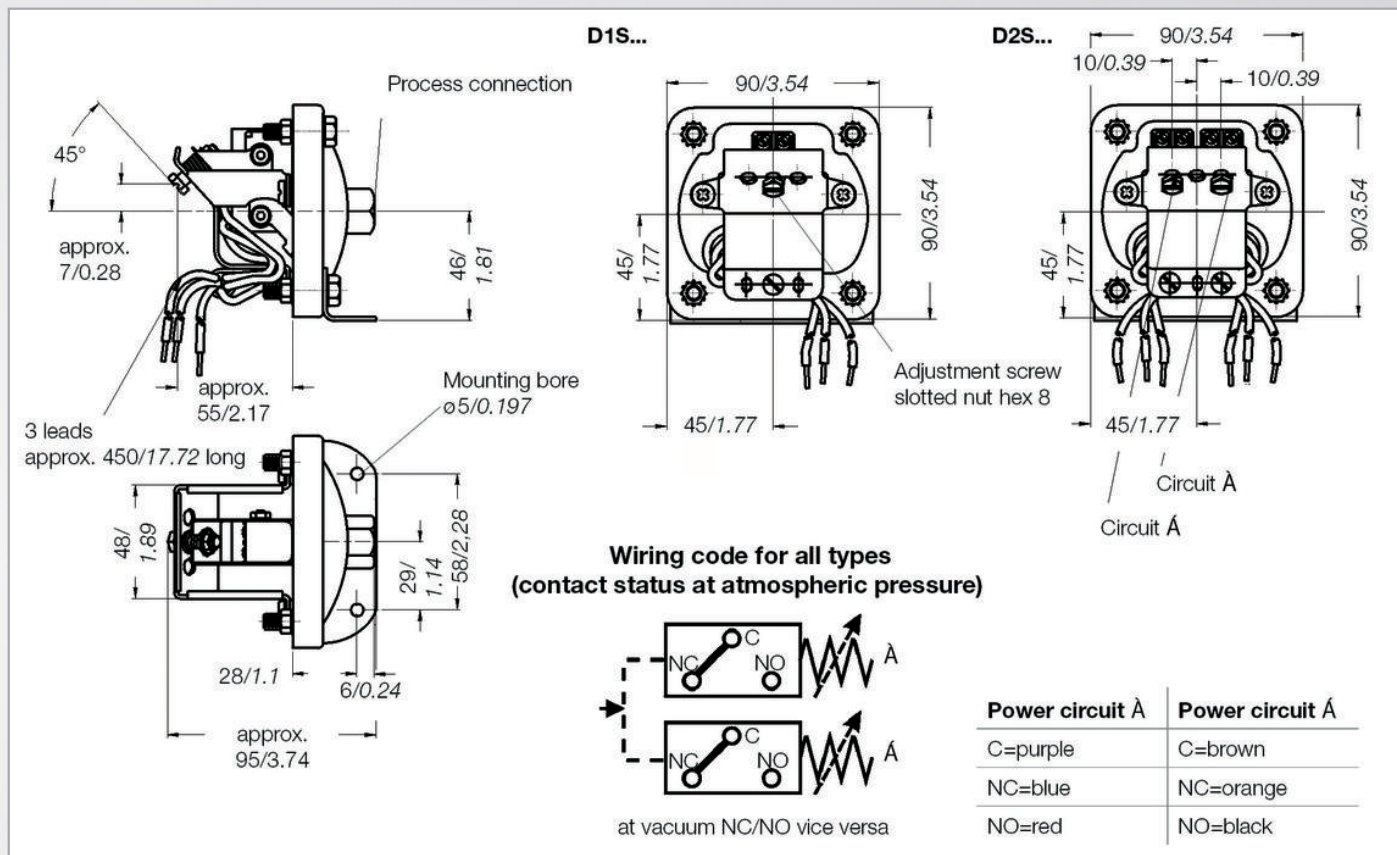
Pressure Ranges

| Pressure range code | Adjustment range [bar] | | Max. operating pressure [bar] | Proof pressure [bar] | Max. hysteresis of switch types in bar (end of range) | |
|---------------------|------------------------|-------------------|-------------------------------|----------------------|---|-------------|
| | Increasing press. | Decreasing press. | | (short term) | H, GH [bar] | M, GM [bar] |
| Overpressure | | | | | | |
| 2SS | 0.005 ... 0.11 | 0.001 ... 0.11 | 0.15 | 0.2 | 0.004 | 0.006 |
| 3SS | 0.012 ... 0.20 | 0.002 ... 0.196 | 0.5 | 0.7 | 0.004 | 0.010 |
| 18SS | 0.050 ... 1.20 | 0.030 ... 1.20 | 3.0 | 4.0 | 0.010 | 0.040 |
| 80SS | 0.300 ... 5.50 | 0.030 ... 5.30 | 8.0 | 10.7 | 0.110 | 0.240 |
| 150SS | 0.500 ... 10.30 | 0.100 ... 9.90 | 15.0 | 20.0 | 0.180 | 0.420 |
| Vacuum | | | | | | |
| 3SS | -0.006 ... -0.20 | -0.002 ... -0.196 | 0.15 | 0.2 | 0.004 | 0.009 |
| 18SS | -0.040 ... -1.00 | -0.020 ... -0.970 | 0.5 | 1.00 | 0.020 | 0.060 |

Metal Diaphragm Pressure Switches

D1S/D2S

Dimensions (mm / inch)



Electrical Ratings

| Micro switch | Special features | Volt AC 50/60 Hz | Ind. load A | Res. load A | Volt DC | Ind. load A | Res. load A | Comments |
|--------------|---|--------------------|---------------|---------------|-----------------|----------------------|--------------------|---|
| H | Micro switch with silver contacts | 125 250 480* | 10 10 3 | 10 10 3 | 6 to 24 | 0.50 | 0.5 | Small hysteresis; High AC-/low DC-load |
| M | Micro switch with silver contacts | 125 250 480* | 10 10 3 | 10 10 3 | 12 24 250 | 5.00 1.00 0.25 | 15.0 2.0 0.4 | Medium hysteresis; High AC- and DC-loads |
| GH | Micro switch with gold contacts for low voltage and low current | 125 | 1 | 1 | 24 | 1.00 | 1.00 | Small hysteresis |
| GM | | 30 | 0.1 | 0.1 | 30 | 0.10 | 0.1 | Medium hysteresis |

Options

P2 = 1/2" NPT F SS Process connection

Order Code

Example for order number

| Type | Micro switch | Pressure range code | Options |
|------------|--------------|---------------------|---------|
| D1S or D2S | H | 3SS | P2 |

Your order number

| Type | Micro switch | Pressure range code | Options |
|------|--------------|---------------------|---------|
| | | | |

Metal Diaphragm Pressure Switches

D1T/D2T

Mechanical single/dual pressure switch
Repeatability ± 1.0 % at constant temperature

Features

Metal diaphragm pressure switch
Wetted parts welded.
Direct acting, no friction, high accuracy

Adjustment ranges

0.005 ... 10.3 bar and
-0.006 ... -1 bar (Vaccum)

Applications

Machine and tool engineering,
Autoclaves, pump control,
Refrigerant monitoring, chemical industry
Ship building applications



Technical Data

| | |
|------------------------|--|
| Wetted parts: | Stainless steel 17 - 7PH / SS304 |
| Repeatability: | ± 1 % at constant temperature |
| Switching rate: | max. 20/min |
| Temperature range: | -40 °C... +75 °C |
| Protection class: | IP65 |
| Housing: | Top part: aluminium powder coated bottom part: aluminium anodized |
| Process connection: | 1/4" NPT female thread Optional: 1/2" NPT female thread (P2) |
| Electrical connection: | WAGO terminal and cable gland M20 x 1.5; clamping range \varnothing 5 ... 11 mm |

| | |
|--|--|
| Electrical load capacity and hysteresis: | Many micro switch versions with different switching powers and hysteresis are available and make it possible to make customized changes. |
| Weight: | D1T-....: approx. 1.0 kg D2T-....: approx. 1.1 kg |
| Set point adjustment: | Turn the adjustment screw clockwise to decrease the set point |
| Intrinsically safe: | The switches are also available for intrinsically safe applications. Add "Exi" in case of ordering. Maximum rating according to ATEX: $U_{max} = 28$ V $I_{max} = 50$ mA |
| Approval: | --- |

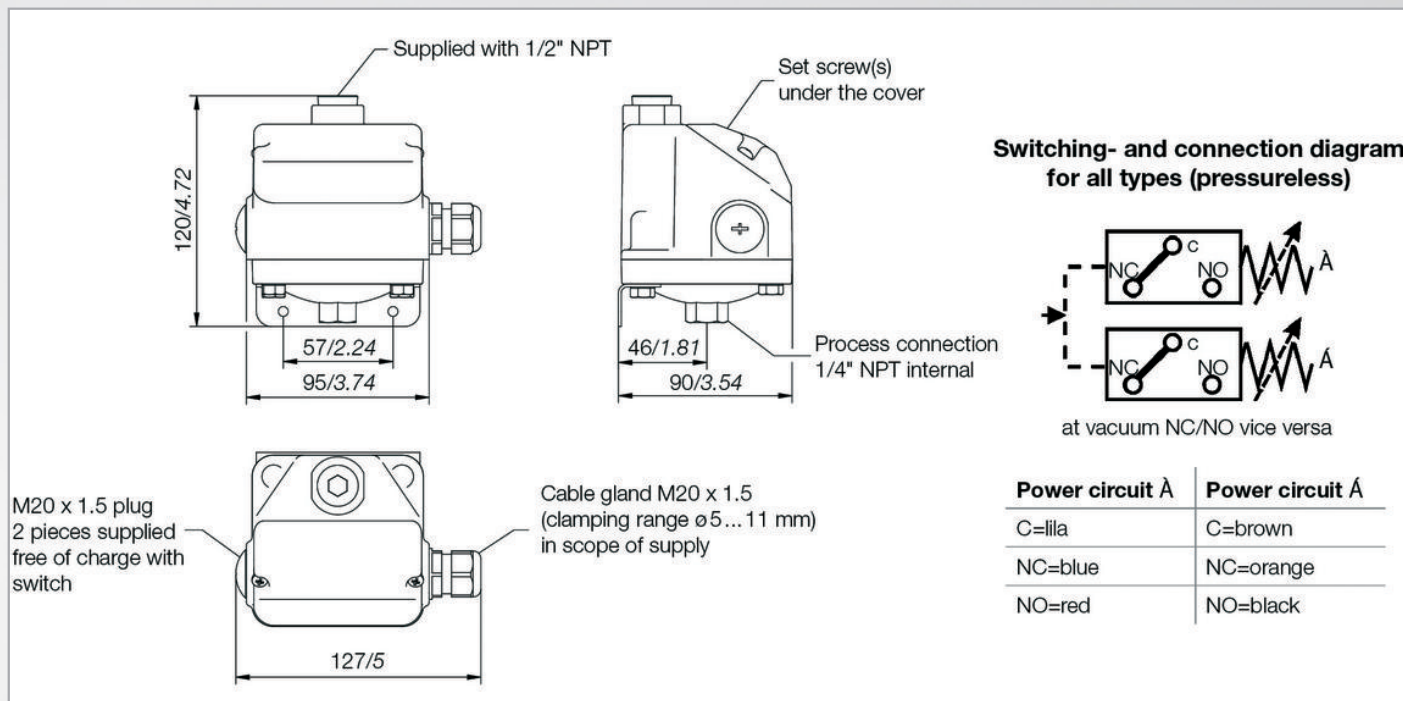
Pressure Ranges

| Pressure range code | Adjustment range [bar] | | Max. operating pressure [bar] | Proof pressure [bar] | Max. hysteresis of switch types in bar (end of range) | |
|---------------------|------------------------|-------------------|-------------------------------|----------------------|---|-------------|
| | Increasing press. | Decreasing press. | | short term | H, GH [bar] | M, GM [bar] |
| Overpressure | | | | | | |
| 2SS | 0.005 ... 0.11 | 0.001 ... 0.11 | 0.15 | 0.2 | 0.004 | 0.006 |
| 3SS | 0.012 ... 0.20 | 0.002 ... 0.196 | 0.5 | 0.7 | 0.004 | 0.010 |
| 18SS | 0.050 ... 1.20 | 0.030 ... 1.20 | 3.0 | 4.0 | 0.010 | 0.040 |
| 80SS | 0.300 ... 5.50 | 0.030 ... 5.30 | 8.0 | 10.7 | 0.110 | 0.240 |
| 150SS | 0.500 ... 10.30 | 0.100 ... 9.90 | 15.0 | 20.0 | 0.180 | 0.420 |
| Vacuum | | | | | | |
| 3SS | -0.006 ... -0.20 | -0.002 ... -0.196 | 0.15 | 0.2 | 0.004 | 0.009 |
| 18SS | -0.040 ... -1.00 | -0.020 ... -0.970 | 0.5 | 1.0 | 0.020 | 0.060 |

Metal Diaphragm Pressure Switches

D1T/D2T

Dimensions (mm / inch)



Electrical Ratings

| Micro switch | Special features | Volt AC 50/60 Hz | Ind. load A | Res. load A | Volt DC | Ind. load A | Res. load A | Comments |
|--------------|---|------------------|-------------|-------------|-----------------|----------------------|--------------------|---|
| H | Micro switch with silver contacts | 125 250 | 10 10 | 10 10 | 6 to 24 | 0.50 | 0.5 | Small hysteresis; High AC-/ low DC-load |
| M | Micro switch with silver contacts | 125 250 | 10 10 | 10 10 | 12 24 250 | 5.00 1.00 0.25 | 15.0 2.0 0.4 | Medium hysteresis; High AC- and DC-loads |
| GH | Micro switch with gold-plated contacts for low voltage and/or low current | 125 | 1 | 1 | 24 | 1.00 | 1.00 | Small hysteresis |
| GM | | 30 | 0.1 | 0.1 | 30 | 0.10 | 0.1 | Medium hysteresis |

Options

| | D1T-... | | D2T-... |
|-----|---|-----|------------------------------------|
| ST1 | Plug, 3-pin + E, DIN EN 175 301-801-A (prev. DIN 43650) | ST3 | Plug, 6-pin + E, DIN 43651 |
| ST2 | Amphenol plug 4-pin + E | EXI | for intrinsically safe application |
| EXI | for intrinsically safe application | | |

Order Code

Example for order number

| Type | | | | Micro switch | | Pressure range code | | Options | | Approval |
|------|----|-----|---|--------------|--|---------------------|---|---------|---|----------|
| D1T | or | D2T | - | H | | 3SS | - | ST2 | - | EXI |

Your order number

| | | | | | | | | |
|------|----|--------------|---|---------------------|--|---------|---|----------|
| Type | | Micro switch | | Pressure range code | | Options | | Approval |
| | or | | - | | | | - | |

Metal Diaphragm Switches

D1X/D2X

Mechanical single/dual pressure switch
Repeatability ± 1.0 % at constant temperature

Features

Metal diaphragm pressure switch
 Wetted parts welded.
 Direct action, no friction, high accuracy

Adjustment ranges

0.012 ... 10.3 bar and
 -0.006 ... -1 bar (Vacuum)

Applications

Petrochemical industry,
 Process technology



Technical Data

| | |
|---|---|
| Wetted parts: | Stainless steel 17 - 7PH/SS304 |
| Repeatability: | ± 1 % at constant temperature |
| Switching rate: | max. 20/min |
| Temperature range: | -40 °C... +75 °C |
| Protection class: | IP65 |
| Housing: | Explosion proof housing, aluminum anodized and lacquered |
| Process connection: | 1/4" NPT female thread Optional: 1/2" NPT female thread (P2) |
| Electrical connection: | Internal terminal strip (0.5 - 2.5 mm ²), approved cable gland has to be provided by the customer |
| Electrical ratings and hysteresis: | A large variety of micro switches offers different electrical ratings and hysteresis for many applications. |

| | |
|------------------------------|--|
| Weight | D1X-....: approx. 2.7 kg D2X-....: approx. 2.8 kg |
| Set point adjustment: | Turn the adjustment screw clockwise to decrease the set point |
| Intrinsically safe: | The switches are designed for intrinsically safe applications. Please add "Exi" to your ordering details when placing an order. To comply with the intrinsically safe approval following max. ratings must not be exceeded: U _{max} = 28 V I _{max} = 50 mA |
| Approval: | Ex: Ex d II C T6 acc. to ATEX cULus: Class I, Groups B, C, D Class II, Groups E, F, G acc. to Underwriter Laboratories Inc. and Canadian Standard Assn. |

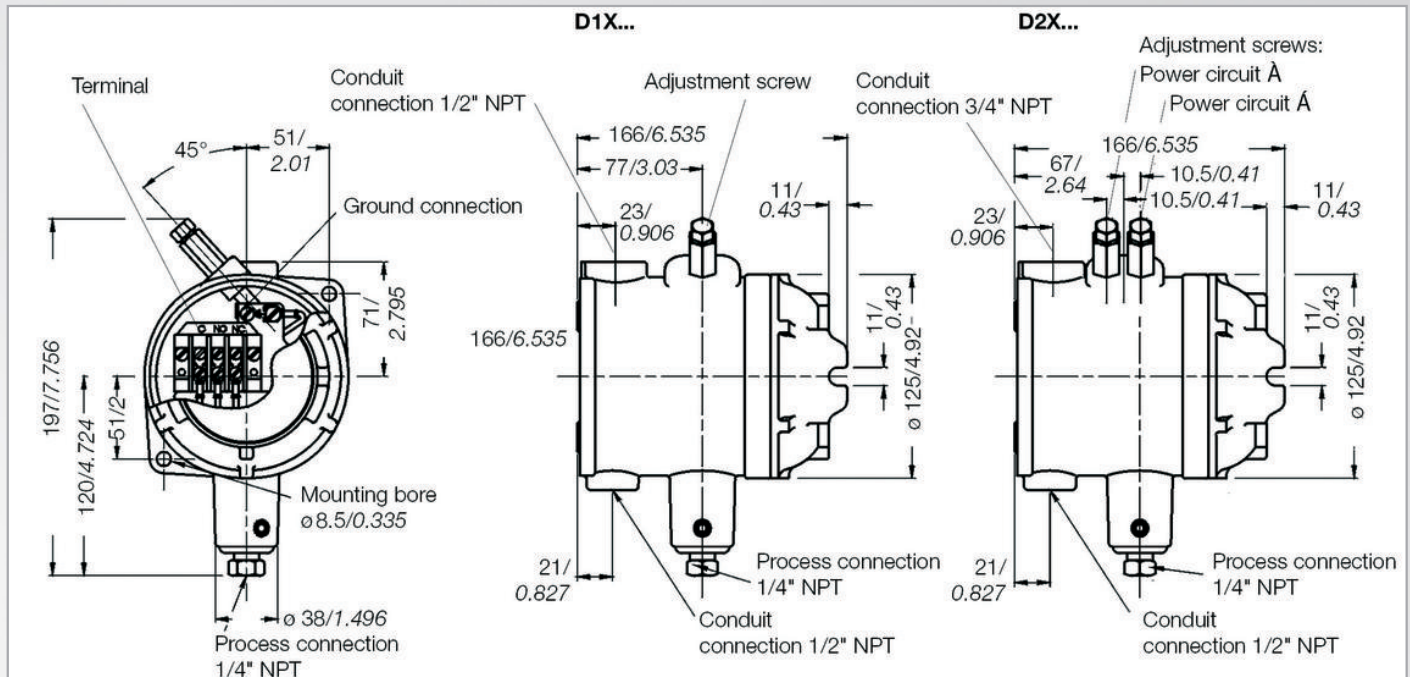
Pressure Ranges

| Pressure range code | Adjustment range [bar] | | Max. operating pressure [bar] | Proof pressure [bar] | Max. hysteresis of switch types in bar (end of range) | |
|---------------------|------------------------|-------------------|-------------------------------|----------------------|---|-------------|
| | Increasing press. | Decreasing press. | | (short term) | H, GH [bar] | M, GM [bar] |
| Overpressure | | | | | | |
| 3SS | 0.012 ... 0.2 | 0.002 ... 0.196 | 0.5 | 0.7 | 0.004 | 0.010 |
| 18SS | 0.050 ... 1.2 | 0.030 ... 1.2 | 3.0 | 4.0 | 0.010 | 0.040 |
| 80SS | 0.300 ... 5.5 | 0.030 ... 5.3 | 8.0 | 10.7 | 0.100 | 0.220 |
| 150SS | 0.500 ... 10.3 | 0.100 ... 9.9 | 15.0 | 20.0 | 0.180 | 0.400 |
| Vacuum | | | | | | |
| 3SS | -0.006 ... -0.2 | -0.002 ... -0.196 | 0.15 | 0.2 | 0.004 | 0.009 |
| 18SS | -0.040 ... -1.0 | -0.020 ... -0.970 | 0.5 | 1.0 | 0.020 | 0.060 |

Metal Diaphragm Switches

D1X/D2X

Dimensions (mm / inch)



Approvals

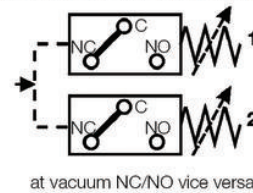
| | |
|-----|----------------|
| EX | Ex d approval |
| UL | cULus approval |
| EXI | Ex i approval |

Options

P2 = 1/2" NPT F SS Process connection

Wiring Code 1

Wiring code for all types (contact status at atmospheric pressure)



| Power circuit 1 | Power circuit 2 |
|-----------------|-----------------|
| C=purple | C=brown |
| NC=blue | NC=orange |
| NO=red | NO=black |

Electrical Ratings

| Micro switch | Special features | Volt AC 50/60 Hz | Ind. load A | Res. load A | Volt DC | Ind. load A | Res. load A | Comments |
|--------------|---|---------------------|----------------|----------------|-----------------|----------------------|--------------------|--|
| H | Micro switch with silver contacts | 125 250 480* | 10 10 3 | 10 10 3 | 6 to 24 | 0.50 | 0.5 | Small hysteresis; High AC / low DC loads |
| M | Micro switch with silver contacts | 125 250 480* | 10 10 3 | 10 10 3 | 12 24 250 | 5.00 1.00 0.25 | 15.0 2.0 0.4 | Medium hysteresis; High AC and DC loads |
| GH | Micro switch with gold-plated contacts for low voltage and/or low current | 125 | 1 | 1 | 24 | 1.00 | 1.00 | Small hysteresis |
| GM | | 30 | 0.1 | 0.1 | 30 | 0.10 | 0.1 | Medium hysteresis |

Order Code

Example for order number

| Type | Micro switch | Pressure range | Options | Approval |
|------------|--------------|----------------|---------|----------|
| D1X or D2X | H | 3SS | P2 | EX |

Your order number

| Type | Micro switch | Pressure range | Options | Approval |
|------|--------------|----------------|---------|----------|
| | | | | |

Metal Diaphragm Diff. Press. Switches

DPD1T/DPD2T

Mechanical single/dual pressure switch
Repeatability ± 1.0 % at constant temperature

Features

Metal diaphragm pressure switches
Wetted parts welded.
Direct action, no friction, high accuracy

Adjustment ranges

0.02 ... 10.2 bar, differential pressure

Applications

Machine and tool engineering,
Autoclaves,
Pump control,
Refrigerant monitoring,
Ship building applications



Technical Data

| | |
|-------------------------------|---|
| Wetted parts: | Stainless steel 17 - 7PH Aluminium, nickel-plated O-rings: FKM |
| Repeatability: | ± 1 % at constant temperature |
| Switching rate: | max. 20/min |
| Temperature range: | -40 °C... +75 °C |
| Protection class: | IP65 |
| Housing: | Top part: aluminium powder coated Bottom part: aluminium nickel-plated |
| Process connection: | 1/8" NPT female thread |
| Electrical connection: | Internal terminal strip (0.5 - 2.5 mm ²) Standard: WAGO terminal and cable gland M20 x 1.5; clamping range $\varnothing 5$... 11 mm |

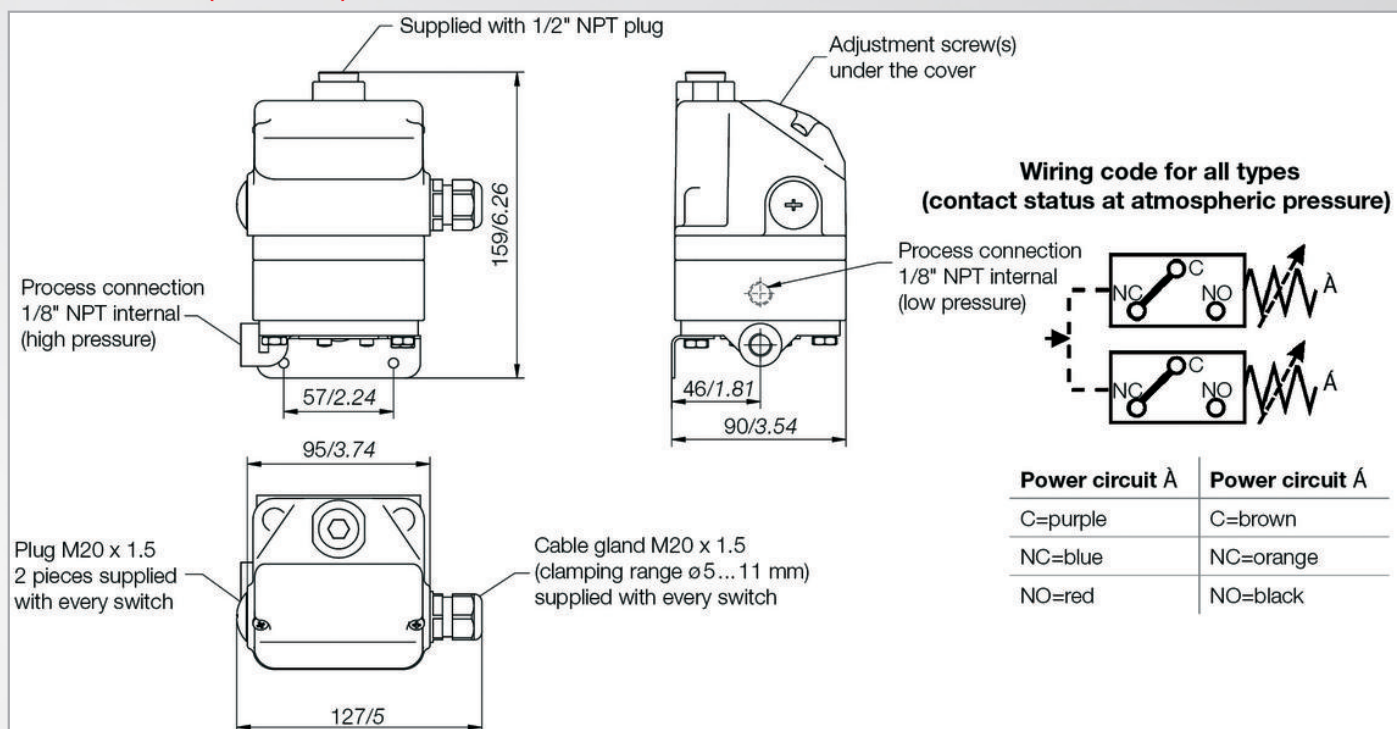
| | |
|---|--|
| Electrical ratings and hysteresis: | A large variety of micro switches offers different electrical ratings and hysteresis for many applications. |
| Weight: | DPD1T-....: approx. 1.6 kg DPD2T-....: approx. 1.7 kg |
| Set point adjustment: | Turn the adjustment screw clockwise to decrease the set point |
| Intrinsically safe: | The switches are designed for intrinsically safe applications. Please add "Exi" to your ordering details when placing an order. To comply with the intrinsically safe approval following max. ratings must not be exceeded: $U_{max} = 28$ V $I_{max} = 50$ mA |
| Approval: | --- |

Pressure Ranges

* Static operating pressures up to 28 bar possible. Differential pressure of the adjustable range must not be exceeded.

| Pressure range code | Adjustment range [bar] * | | Max. operating pressure [bar] | Proof pressure [bar] | Max. hysteresis of switch types in bar (end of range) | |
|---------------------|--------------------------|-------------------|-------------------------------|----------------------|---|-------------|
| | Increasing press. | Decreasing press. | | (short term) | H, GH [bar] | M, GM [bar] |
| Overpressure | | | | | | |
| 3SS | 0.02 ... 0.2 | 0.002 ... 0.2 | 0.5 | 0.7 | 0.004 | 0.01 |
| 18SS | 0.05 ... 1.2 | 0.030 ... 1.2 | 3,0 | 4.0 | 0.010 | 0.04 |
| 80SS | 0.40 ... 5.4 | 0.030 ... 5.2 | 8,0 | 10.7 | 0.100 | 0.22 |
| 150SS | 0.70 ... 10.2 | 0.100 ... 9.7 | 15,0 | 20.0 | 0.180 | 0.40 |

Dimensions (mm / inch)



Electrical Ratings

| Micro switch | Special features | Volt AC 50/60 Hz | Ind. load A | Res. load A | Volt DC | Ind. load A | Res. load A | Comments |
|--------------|--|---------------------|----------------|----------------|-----------------|----------------------|--------------------|---|
| H | Micro switch with silver contacts | 125 250 | 10 10 | 10 10 | 6 to 24 | 0.50 | 0.5 | Small hysteresis; High AC-/low DC-load |
| M | Micro switch with silver contacts | 125 250 | 10 10 | 10 10 | 12 24 250 | 5.00 1.00 0.25 | 15.0 2.0 0.4 | Medium hysteresis; High AC- and DC-loads |
| GH | Micro switch with gold-plated contacts for low voltage | 125 | 1 | 1 | 24 | 1.00 | 1.00 | Small hysteresis |
| GM | and/or low current | 30 | 0.1 | 0.1 | 30 | 0.10 | 0.1 | Medium hysteresis |

Options

| | DPD1T-... | | DPD2T-... |
|-----|---|-----|------------------------------------|
| ST1 | Plug, 3-pin + E, DIN EN 175 301-801-A (prev. DIN 43650) | ST3 | Plug, 6-pin + E, DIN EN 43651 |
| ST2 | Amphenol plug 4-pin + E | EXI | for intrinsically safe application |
| EXI | for intrinsically safe application | | |

Order Code

Example for order number

| Type | Micro switch | Pressure range code | Options | Approval |
|----------------|--------------|---------------------|---------|----------|
| DPD1T or DPD2T | H | 3SS | ST2 | EXI |

Your order number

| Type | Micro switch | Pressure range code | Options | Approval |
|------|--------------|---------------------|---------|----------|
| | | | | |

Bourdon Tube Pressure Switches

B1S/B2S

Mechanical single/dual pressure switch
Repeatability ± 1.0 % at constant temperature

Features

Bourdon tube pressure switch
All welded parts wetted.
Direct acting, no friction, high accuracy

Adjustment ranges

4.8 ... 950 bar

Applications

Pump control,
Die-casting machines,
Press control,
Power plants,
Alarm functions



Technical Data

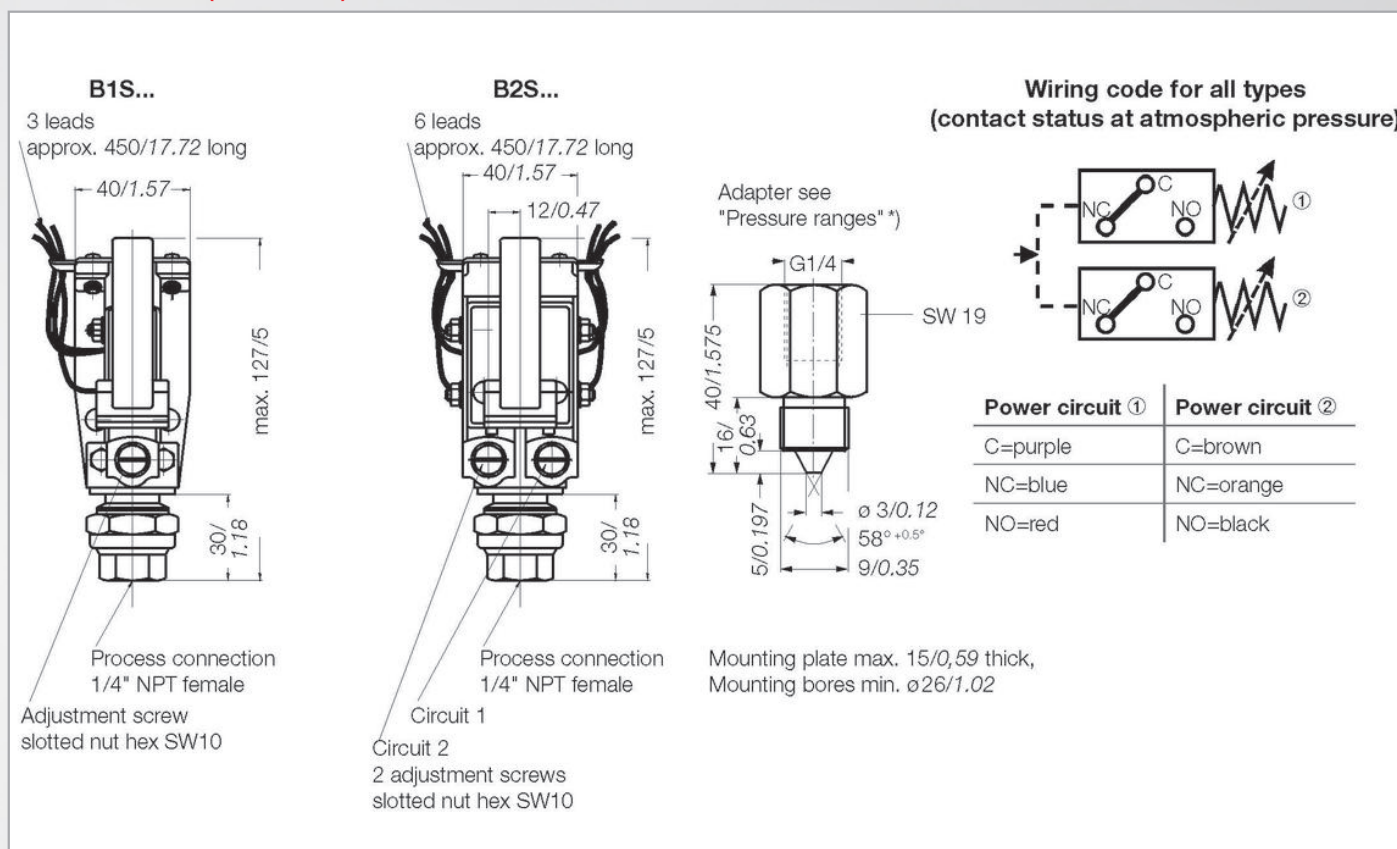
| | |
|-------------------------------|---|
| Wetted parts: | |
| Process connection: | Stainless steel 1.4401 |
| Bourdon tube: | Stainless steel 1.4401 |
| Repeatability: | ± 1 % at constant temperature |
| Switching rate: | max. 20/min |
| Temperature range: | -40 °C... +75 °C |
| Protection class: | IP00 |
| Housing: | Without housing for installation in control panels: |
| Process connection: | 1/4" NPT female thread except ranges marked with *). These switches have proof pressures above 500 bar and are provided with high pressure thread with adapter "G1/4 female". |
| Electrical connection: | Lead wire PVC 1.5 mm ² , length appr. 450 mm |

| | |
|---|--|
| Electrical ratings and hysteresis: | A large variety of micro switches offers different electrical ratings and hysteresis for many applications. |
| Weight: | B1S-...: approx. 0.6 kg B2S-...: approx. 0.7 kg |
| Set point adjustment: | Turn the adjustment screw clockwise to decrease the set point |
| Intrinsically safe: | The switches are designed for intrinsically safe applications. Please add "Exi" to your ordering details when placing an order. To comply with the intrinsically safe approval following max. ratings must not be exceeded: Umax = 28 V Imax = 50 mA |
| Approval: | --- |

Connection Chart

| Pressure range code | Adjustment range [bar] | | Max. operating pressure [bar] | Test pressure [bar] (short term) | Max. hysteresis of switch types in bar (end of range) | |
|---------------------|------------------------|-------------------|-------------------------------|-------------------------------------|---|-------------|
| | Increasing press. | Decreasing press. | | | H, GH [bar] | M, GM [bar] |
| 12SS | 4.8 ... 82 | 3.4 ... 81 | 90 | 100 | 0.96 | 1.86 |
| 32SS | 13.7 ... 220 | 11.0 ... 217 | 250 | 280 | 2.68 | 5.44 |
| 48SS | 22.4 ... 330 | 16.5 ... 325 | 370 | 415 | 2.75 | 5.90 |
| 65SS* | 30.3 ... 448 | 22.5 ... 440 | 500 | 560 | 3.58 | 7.92 |
| 120SS* | 79.3 ... 827 | 41.4 ... 790 | 850 | 1035 | 16.90 | 37.90 |
| 180SS* | 79.3 ... 950 | 41.4 ... 950 | 999 | 1380 | 16.90 | 37.90 |

Dimensions (mm / inch)



Electrical Ratings

| Micro switch | Special features | Volt AC 50/60 Hz | Ind. load A | Res. load A | Volt DC | Ind. load A | Res. load A | Comments |
|--------------|---|--------------------|---------------|---------------|------------------|----------------------|--------------------|---|
| H | Micro switch with silver contacts | 125 250 480* | 10 10 3 | 10 10 3 | 6 to 24 | 0.50 | 0.5 | Small hysteresis; High AC-/low DC-load |
| M | Micro switch with silver contacts | 125 250 480* | 10 10 3 | 10 10 3 | 12 24 250* | 5.00 1.00 0.25 | 15.0 2.0 0.4 | Medium hysteresis; High AC- and DC-loads |
| GH | Micro switch with gold-plated contacts for low voltage and/or low current | 125 | 1 | 1 | 24 | 1.00 | 1.00 | Small hysteresis |
| GM | | 30 | 0.1 | 0.1 | 30 | 0.10 | 0.1 | Medium hysteresis |

* on request

Order Code

Example for order number

| | | | | | | |
|------|----|-----|---|--------------|--|---------------------|
| Type | | | | Micro switch | | Pressure range code |
| B1S | or | B2S | - | H | | 48SS |

Your order number

| | | | | | | |
|------|----|--|---|--------------|--|---------------------|
| Type | | | | Micro switch | | Pressure range code |
| | or | | - | | | |

Bourdon Tube Pressure Switches

B1T / B2T

Mechanical single/dual pressure switch
Repeatability ± 1.0 % at constant temperature

Features

Bourdon tube pressure switch
All welded parts wetted.
Direct acting, no friction, high accuracy

Adjustment ranges

4.8 ... 950 bar

Applications

Pump control,
Die-casting machines,
Press control,
Power plants,
Alarm functions



Technical Data

| | |
|-------------------------------|---|
| Wetted parts: | |
| Process connection: | Stainless steel 1.4401 |
| Bourdon tube: | Stainless steel 1.4401 |
| Repeatability: | ± 1 % at constant temperature |
| Switching rate: | max. 20/min |
| Temperature range: | -40 °C... +75 °C |
| Protection class: | IP65 |
| Housing: | Aluminium, anodized |
| Process connection: | 1/4" NPT female thread except ranges marked with *). These switches have proof pressures above 500 bar and are provided with high pressure thread with adapter "G1/4 female". |
| Electrical connection: | Internal terminal strip (0.5 ... 2.5 mm ²) Standard: WAGO terminal and cable gland M20 x 1,5 |

| | |
|---|--|
| Electrical ratings and hysteresis: | A large variety of micro switches offers different electrical ratings and hysteresis for many applications. |
| Weight: | B1T-....: approx. 1.1 kg B2T-....: approx. 1.2 kg |
| Set point adjustment: | Turn the adjustment screw clockwise to decrease the set point |
| Intrinsically safe: | The switches are designed for intrinsically safe applications. Please add "Exi" to your ordering details when placing an order. To comply with the intrinsically safe approval following max. ratings must not be exceeded: U _{max} = 28 V I _{max} = 50 mA |
| Approval: | --- |

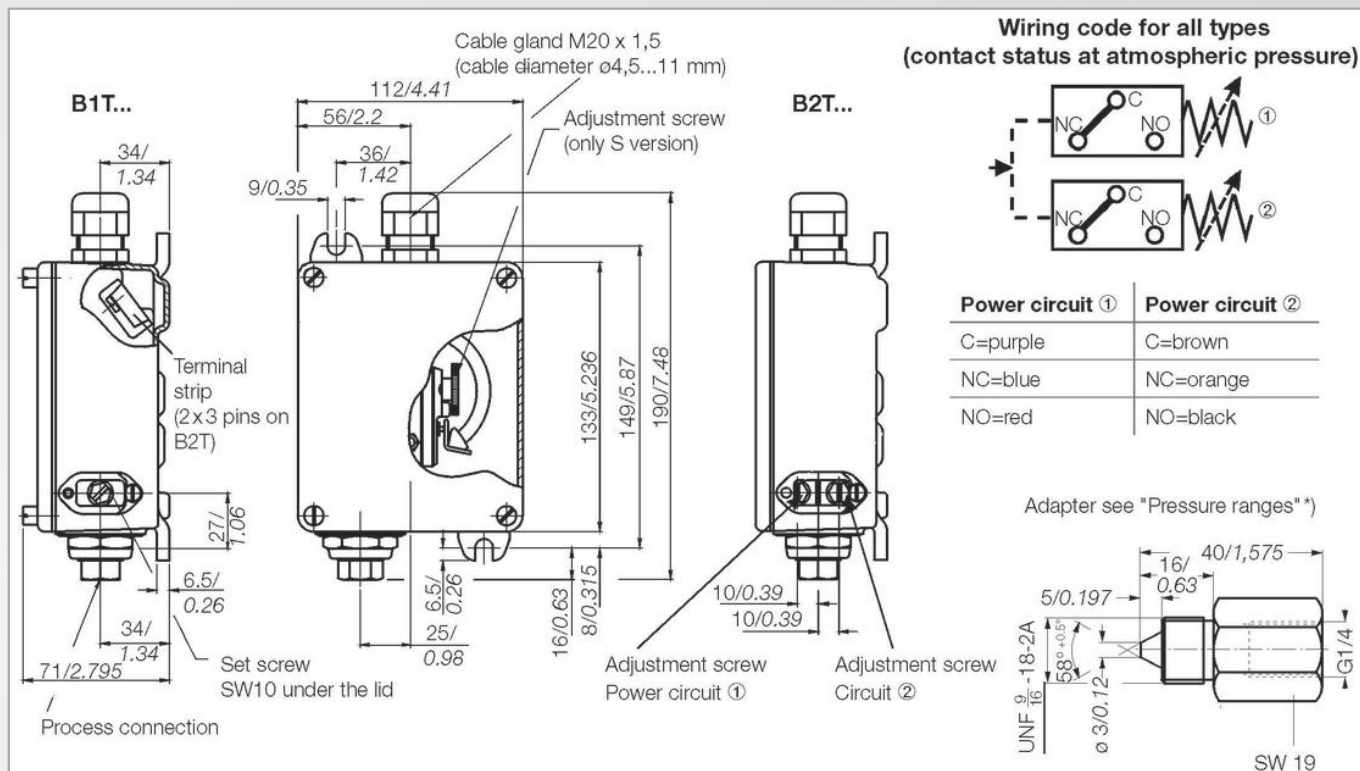
Pressure Ranges

| Pressure range code | Adjustment range [bar] | | Max. operating pressure [bar] | Proof pressure [bar] (short term) | Max. hysteresis of switch types in bar (end of range) | |
|---------------------|------------------------|-------------------|-------------------------------|--------------------------------------|---|-------------|
| | Increasing press. | Decreasing press. | | | H, GH [bar] | M, GM [bar] |
| 12SS | 4.8 ... 82 | 3.4 ... 81 | 100 | 120 | 0.96 | 1.86 |
| 32SS | 13.7 ... 220 | 11.0 ... 217 | 250 | 330 | 2.68 | 5.44 |
| 48SS | 22.4 ... 330 | 16.5 ... 325 | 400 | 500 | 2.75 | 5.90 |
| 65SS* | 30.3 ... 448 | 22.5 ... 440 | 550 | 670 | 3.58 | 7.92 |
| 120SS* | 79.3 ... 827 | 41.4 ... 790 | 900 | 1200 | 16.90 | 37.90 |
| 180SS | 79.3 ... 950 | 41.4 ... 950 | 999 | 1600 | 16.90 | 37.90 |

Bourdon Tube Pressure Switches

B1T / B2T

Dimensions (mm / inch)



Electrical Ratings

| Micro switch | Special features | Volt AC 50/60 Hz | Ind. load A | Res. load A | Volt DC | Ind. load A | Res. load A | Comments |
|--------------|---|--------------------|---------------|---------------|------------------|----------------------|--------------------|---|
| H | Micro switch with silver contacts | 125 250 480* | 10 10 3 | 10 10 3 | 6 to 24 | 0.50 | 0.5 | Small hysteresis; High AC-/low DC-load |
| M | Micro switch with silver contacts | 125 250 480* | 10 10 3 | 10 10 3 | 12 24 250* | 5.00 1.00 0.25 | 15.0 2.0 0.4 | Medium hysteresis; High AC- and DC-loads |
| GH | Micro switch with gold-plated contacts for low voltage and/or low current | 125 | 1 | 1 | 24 | 1.00 | 1.00 | Small hysteresis |
| GM | | 30 | 0.1 | 0.1 | 30 | 0.10 | 0.1 | Medium hysteresis |

* on request

Options

| | B1T-... | | B2T-... |
|-----|---|-----|------------------------------------|
| ST1 | Plug, 3-pin + E, DIN EN 175 301-801-A (prev. DIN 43650) | ST3 | Plug, 6-pin + E, DIN EN 43651 |
| ST2 | Amphenol plug 4-pin + E | EXI | for intrinsically safe application |
| EXI | for intrinsically safe application | | |

Order Code

Example for order number

| Type | Micro switch | Pressure range code | Options |
|------------|--------------|---------------------|---------|
| B1T or B2T | H | 48SS | ST2 |

Your order number

| Type | Micro switch | Pressure range code | Options |
|------|--------------|---------------------|---------|
| | | | |

Bourdon Tube Press. Switches

B1X/B2X

Mechanical single/dual pressure switch
Repeatability ± 1.0 % at constant temperature

Features

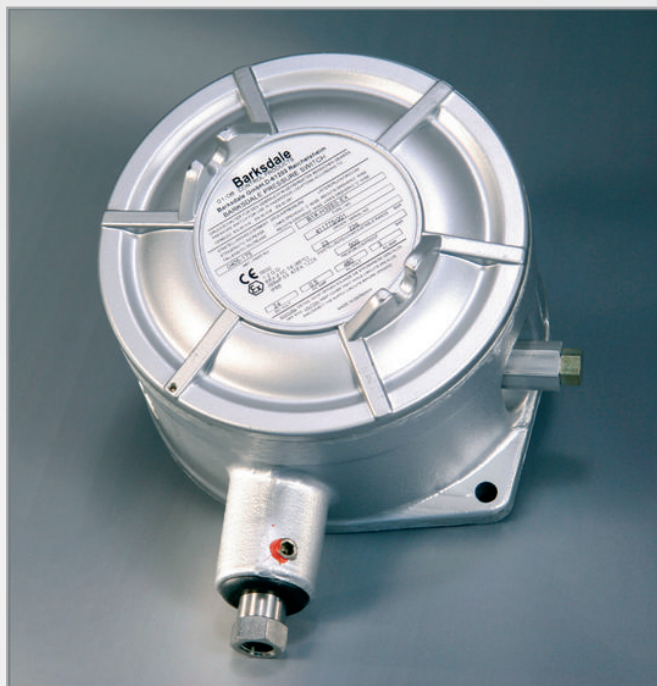
Bourdon tube pressure switch
All welded parts wetted.
Direct acting, no friction, high accuracy

Adjustment ranges

5.3 ... 496 bar

Applications

Petrochemicals industry,
Process technology,
Shipbuilding technology,
Alarm applications



Technical Data

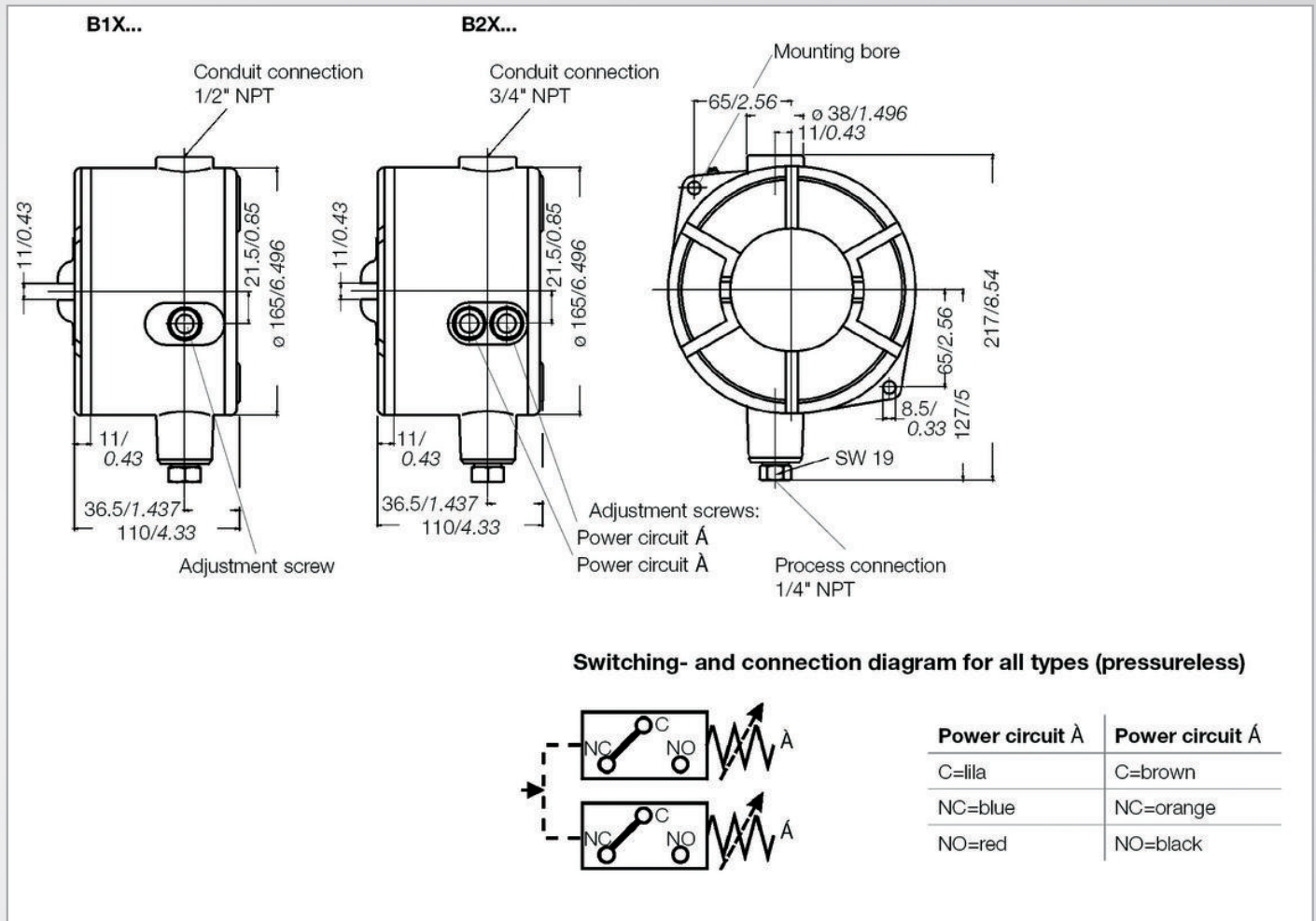
| | |
|--|--|
| Wetted parts: | |
| Process connection: | Stainless steel 1.4401 |
| Bourdon tube: | Stainless steel 1.4401 |
| Repeatability: | ± 1 % at constant temperature |
| Switching rate: | max. 20/min |
| Temperature range: | -40 °C... +75 °C |
| Protection class: | IP65 |
| Housing: | Explosion proof housing, aluminum anodized and lacquered |
| Process connection: | 1/4" NPT female thread except ranges marked with*). These switches have proof pressures above 500 bar and are provided with high pressure thread with adapter G1/4 IG. |
| Electrical connection: | Internal terminal strip (0.5 - 2.5 mm ²), approved cable gland has to be provided by the customer |
| Electrical rating and hysteresis: | Many micro switch versions with different switching powers and hysteresis are applicable and make it possible to make customized changes. |

| | |
|------------------------------|---|
| Weight: | B1X-....: approx. 3.9 kg B2X-....: approx. 3.9 kg |
| Set point adjustment: | Turn the adjustment screw clockwise to decrease the set point. |
| Intrinsically safe: | The switches are designed for intrinsically safe applications. Please add "Exi" to your ordering details when placing an order. To comply with the intrinsically safe approval following max. ratings must not be exceeded: U _{max} = 28 V I _{max} = 50 mA |
| Approval: | Ex: Ex d II C T6 acc. to ATEX cULus: Class I, Groups B, C, D Class II, Groups E, F, G acc. to Underwriter Laboratories Inc. and Canadian Standard Assn. |

Pressure Ranges

| Pressure range code | Adjustment range [bar] | | Max. operating pressure [bar] | Proof pressure [bar] | Max. hyst. of the different switches in bar (end of range) | |
|---------------------|------------------------|-------------------|-------------------------------|----------------------|--|-------------|
| | Increasing press. | Decreasing press. | | (short term) | H, GH [bar] | M, GM [bar] |
| 12SS | 5.3... 83 | 3.4... 81 | 100 | 125 | 0.96 | 1.86 |
| 20SS | 13.7... 137 | 11.0... 134 | 250 | 330 | 2.68 | 5.44 |
| 32SS | 22.4... 220 | 16.5... 215 | 400 | 500 | 2.75 | 5.90 |
| 72SS* | 79.3... 496 | 41.4... 459 | 600 | 950 | 16.90 | 37.90 |

Dimensions (mm / inch)



Electrical Ratings

| Micro switch | Special features | Volt AC 50/60 Hz | Ind. load A | Res. load A | Volt DC | Ind. load A | Res. load A | Comments |
|--------------|--|--------------------|---------------|---------------|------------------|----------------------|--------------------|---|
| H | Micro switch with silver contacts | 125 250 480* | 10 10 3 | 10 10 3 | 6 to 24 | 0.50 | 0.5 | Small hysteresis; High AC-/ low DC-load |
| M | Micro switch with silver contacts | 125 250 480* | 10 10 3 | 10 10 3 | 12 24 250* | 5.00 1.00 0.25 | 15.0 2.0 0.4 | Medium hysteresis; High AC- and DC-loads |
| GH | Micro switch with gold-plated contacts for low voltage and/ or low current | 125 | 1 | 1 | 24 | 1.00 | 1.00 | Small hysteresis |
| GM | | 30 | 0.1 | 0.1 | 30 | 0.10 | 0.1 | Medium hysteresis |

* on request

Order Code

Example for order number

| Type | Micro switch | Pressure range code | Options | Approval |
|------------|--------------|---------------------|---------|----------|
| B1X or B2X | H | 72SS | P2 | UL |

Your order number

| Type | Micro switch | Pressure range code | Options | Approval |
|------|--------------|---------------------|---------|----------|
| | | | | |

Approvals

| | |
|-----|----------------|
| EX | Ex d approval |
| UL | cULus approval |
| EXI | Ex i approval |

Options

P2 = 1/2" NPT F SS Process connection

Diaphragm Seal Piston Press. Switches

E1S
Mechanical single switch
Repeatability ± 2.0 % at constant temperature

Features

Diaphragm seal piston pressure switch,
scale for setpoint reference

Adjustment ranges

-0.28 ... -0.9 bar, vacuum

0.1 ... 34 bar, pressure

Applications

Machine and tool engineering,
Dosing machines,
Plant engineering,
Lubricant monitoring



Technical Data

| | |
|--|---|
| Wetted parts: Diaphragm: | NBR |
| Process connection: | Optional: FKM, PTFE, EPDM, CR anodized aluminium Optional: brass, polysulfone, aluminium nickel-plated |
| Repeatability: | ± 1 % at constant temperature |
| Switching rate: | max. 20/min |
| Temperature range: | -30 °C... +70 °C |
| Protection class: | IP00 |
| Housing: | Without housing for installation in control panels |
| Process connection: Pressure switches: | 1/4" NPT female Optional: 1/8" NPT female + 1/2" NPT male (P6) G1/4 female (P7) |
| Vacuum switches (VAC): | 1/4" NPT female (P4) 1/8" NPT female + 1/2" NPT male (P6) |

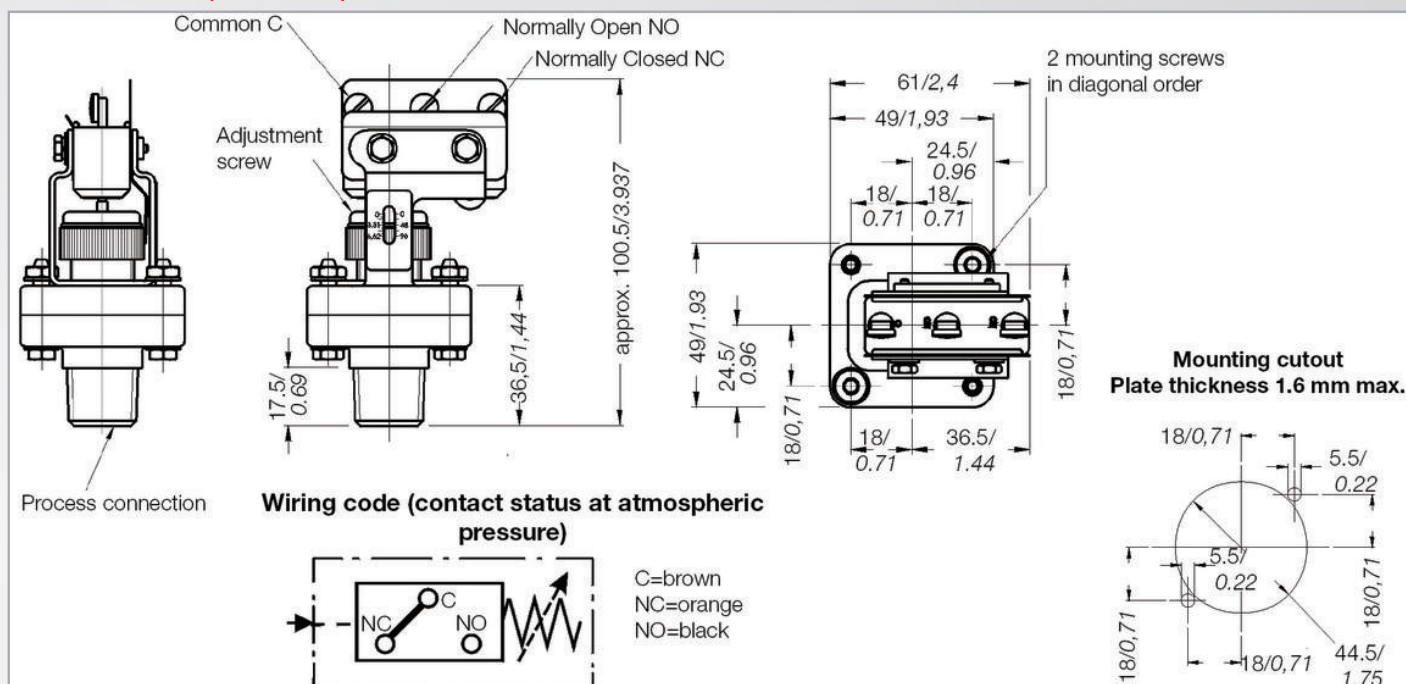
| | |
|--|--|
| Electrical connection: | Screw terminals |
| Electrical rating and hysteresis: | Many micro switch versions with different switching powers and hysteresis are applicable and make it possible to make customized changes. |
| Weight: | E1S-....: approx. 0.35 kg |
| Set point adjustment: Pressure switches: | Turn the adjustment screw clockwise to increase the set point. |
| Vacuum switches: | Switching point lowers by turning the adjustment screw clockwise. |
| Intrinsically safe: | The switches are designed for intrinsically safe applications. Please add "Exi" to your ordering details when placing an order. To comply with the intrinsically safe approval following max. ratings must not be exceeded: U _{max} = 28 V I _{max} = 50 mA |
| Approval: | --- |

Pressure Ranges

* Designed for 70 bar proof pressure, for practical production reasons, however, the standard proofing pressure is 30 bar.

| Pressure range code | Adjustment range [bar] | | Max. operating pressure [bar] | Proof pressure [bar] * | Max. hysteresis of switch types in bar (end of range) | |
|---------------------|------------------------|-------------------|-------------------------------|------------------------|---|----------|
| | Increasing press. | Decreasing press. | | (short term) | H, GH [bar] | M, [bar] |
| Pressure switches | | | | | | |
| 15 | 0.10 ... 1.0 | 0.04 ... 1.0 | 46 | 30 / 70 | 0.08 | 0.080 |
| 90 | 0.80 ... 6.0 | 0.20 ... 5.0 | 46 | 30 / 70 | 0.55 | 0.680 |
| 250 | 2.10 ... 17.0 | 0.70 ... 16.0 | 46 | 30 / 70 | 1.37 | 1.440 |
| 500 | 3.70 ... 34.0 | 1.72... 32.0 | 46 | 30 / 70 | 1,93 | 2.750 |
| Vacuum switches | | | | | | |
| VAC | -0.28 ... -0.9 | -0.20... -0.82 | 2.0 | -1.0 | 0.08 | 0.077 |

Dimensions (mm / inch)



Electrical Ratings

| Micro switch | Special features | Volt AC 50/60 Hz | Ind. load A | Res. load A | Volt DC | Ind. load A | Res. load A | Comments |
|--------------|---|---------------------|----------------|----------------|-----------------|----------------------|--------------------|--|
| H | Micro switch with silver contacts | 125 250 | 10 10 | 10 10 | 6 to 24 | 0.50 | 0.50 | Small hysteresis; High AC / low DC loads |
| M | Micro switch with silver contacts | 125 250 | 10 10 | 10 10 | 12 24 250 | 5.00 1.00 0.25 | 15.0 2.0 0.4 | Medium hysteresis; High AC and DC loads |
| GH | Micro switch with gold-plated contacts for low voltage and/or low current | 125 | 1 | 1 | 24 | 1.00 | 1.00 | Small hysteresis |

Process Connection / Diaphragm

| Process connection | | Diaphragm | |
|--|--------------------------------------|-----------|------------|
| Pressure switches | Vacuum switches | VAC | not VAC |
| (P4) 1/4" NPT female | (P4) 1/4" NPT female | () NBR | () NBR |
| (P6) 1/8" NPT female + 1/2" NPT male | (P6) 1/8" NPT female + 1/2" NPT male | (V) FKM | (V) FKM |
| (P6-PLS) material PLS, up to 17 bar only | | | (T) PTFE |
| (P7) G1/4 female | | | (N) CR * |
| | | | (E) EPDM * |

* on request

Order Code

Example for order number

| | | | | |
|------|--------------|---------------------|--------------------|-----------|
| Type | Micro switch | Pressure range code | Process connection | Diaphragm |
| E1S | H | 250 | P6 | V |

Your order number

| | | | | |
|------|--------------|---------------------|--------------------|-----------|
| Type | Micro switch | Pressure range code | Process connection | Diaphragm |
| | | | | |

Diaphragm Seal Piston Press. Switches

E1H
Mechanical single switch
Repeatability ± 2.0 % at constant temperature

Features

 Diaphragm seal piston pressure switch,
scale for setpoint reference

Adjustment ranges

 -0.28 ... -0.9 bar and
0.1 ... 34 bar

Applications

 Machine and tool engineering,
Dosing machines,
Plant engineering,
Sprinkler control


Technical Data

| | |
|--|---|
| Wetted parts: Diaphragm: | NBR Optional: FKM, PTFE, EPDM, CR anodized aluminium |
| Process connection: | Optional: brass, polysulfone, aluminium nickel-plated |
| Repeatability: | ± 1 % at constant temperature |
| Switching rate: | max. 20/min |
| Temperature range: | -30 °C... +70 °C |
| Protection class: | IP65 |
| Housing: | Without housing for installation in control panels |
| Process connection: Pressure switches: | 1/4" NPT female (P4) Optional: 1/8" NPT female 1/2" NPT male (P6) G1/4 female (P7) |
| Vacuum switches (VAC): | 1/4" NPT female (P4) 1/8" NPT female + 1/2" NPT male (P6) |

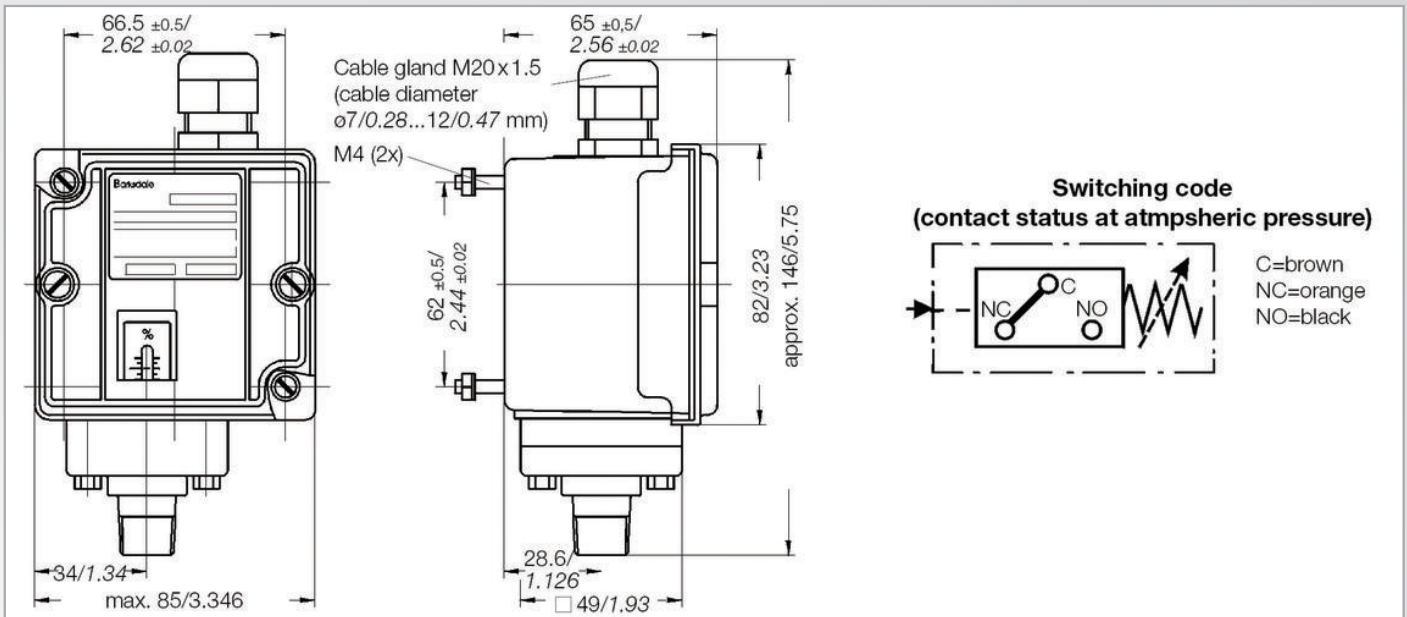
| | |
|--|--|
| Electrical connection: | Screw terminals and cable gland M20x1.5 mm |
| Electrical ratings and hysteresis: | A large variety of micro switches offers different electrical ratings and hysteresis for many applications. |
| Weight: | E1H-...: approx. 0.7 kg |
| Set point adjustment: Pressure switches: Vacuum switches: | Turn the adjustment screw clockwise to increase the set point. Turn the adjustment screw clockwise to decrease the set point. |
| Intrinsically safe: | The switches are designed for intrinsically safe applications. Please add "Exi" to your ordering details when placing an order. To comply with the intrinsically safe approval following max. ratings must not be exceeded: U _{max} = 28 V I _{max} = 50 mA |
| Approval: | --- |

Pressure Ranges

* Designed for 70 bar proof pressure, for practical production reasons, however, the standard proofing pressure is 30 bar.

| Pressure range code | Adjustment range [bar] | | Max. operating pressure [bar] | Proof pressure [bar] * | Max. hysteresis of switch types in bar (end of range) | |
|------------------------|------------------------|-------------------|----------------------------------|---------------------------|--|----------|
| | Increasing press. | Decreasing press. | | (short term) | H, GH [bar] | M, [bar] |
| Pressure switches | | | | | | |
| 15 | 0.10 ... 1.0 | 0.04 ... 1.0 | 46 | 30 / 70 | 0.08 | 0.080 |
| 90 | 0.80 ... 6.0 | 0.20 ... 5.0 | 46 | 30 / 70 | 0.55 | 0.680 |
| 250 | 2.10 ... 17.0 | 0.70 ... 16.0 | 46 | 30 / 70 | 1.37 | 1.440 |
| 500 | 3.70 ... 34.0 | 1.72... 32.0 | 46 | 30 / 70 | 1.93 | 2.750 |
| Vacuum switches | | | | | | |
| VAC | -0.28 ... -0.9 | -0.20 ... -0.82 | 2.0 | -1.0 | 0.08 | 0.077 |

Dimensions (mm / inch)



Electrical Ratings

| Micro switch | Special features | Volt AC 50/60 Hz | Ind. load A | Res. load A | Volt DC | Ind. load A | Res. load A | Comments |
|--------------|---|---------------------|----------------|----------------|-----------------|----------------------|--------------------|--|
| H | Micro switch with silver contacts | 125 250 | 10 10 | 10 10 | 6 to 24 | 0.50 | 0.5 | Small hysteresis; High AC / low DC loads |
| M | Micro switch with silver contacts | 125 250 | 10 10 | 10 10 | 12 24 250 | 5.00 1.00 0.25 | 15.0 2.0 0.4 | Medium hysteresis; High AC and DC loads |
| GH | Micro switch with gold-plated contacts for low voltage and/or low current | 125 | 1 | 1 | 24 | 1.00 | 1.00 | Small hysteresis |

Process Connection / Diaphragm

| Process connection | | Diaphragm | |
|--|--------------------------------------|-----------|-----------|
| Pressure switches | Vacuum switches | VAC | not VAC |
| (P4) 1/4" NPT female | (P4) 1/4" NPT female | () NBR | () NBR |
| (P6) 1/8" NPT female + 1/2" NPT male | (P6) 1/8" NPT female + 1/2" NPT male | (V) FKM | (V) FKM |
| (P6-PLS) material PLS, up to 17 bar only | | | (T) PTFE |
| (P7) G1/4 female | | | (N) CR * |
| | | | (E) EPDM* |

* on request

Options

| | |
|-----|---|
| ST1 | Plug, 3-pin + E, DIN EN 175 301-801-A (prev. DIN 43650) |
| ST2 | Amphenol plug 4-pin + E |
| EXI | for intrinsically safe application |
| RD | Manual reset with G-Micro switch |

Order Code

Example for order number

| Type | | Micro switch | Pressure range code | | Process connection | | Diaphragm | | Option |
|------|---|--------------|---------------------|---|--------------------|---|-----------|---|--------|
| E1H | - | H | 250 | - | P6 | - | V | - | ST2 |

Your order number

| Type | | Micro switch | | Pressure range code | | Process connection | | Diaphragm | | Option |
|------|---|--------------|--|---------------------|---|--------------------|---|-----------|---|--------|
| | - | | | | - | | - | | - | |

Diaphragm Seal Piston Press. Switches

P1H
Mechanical single switch
Repeatability ± 2.0 % at constant temperature

Features

 Mechanical pressure switches,
external setpoint adjustment

Adjustment ranges

0.1 ... 107 bar

Applications

 Hydraulic and pneumatic power units,
Shipbuilding applications


Technical Data

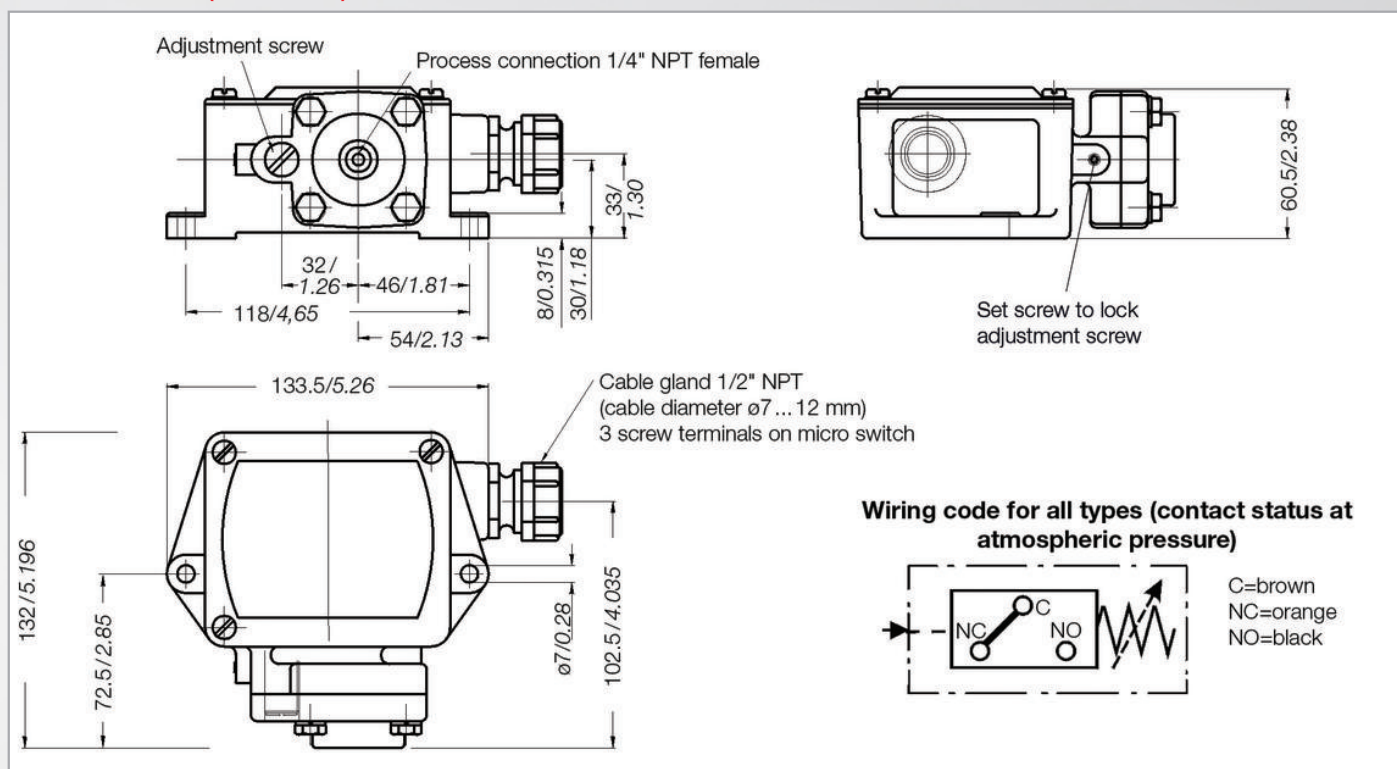
| | |
|----------------------------|---|
| Wetted parts: | |
| Diaphragm: | NBR Optional: FKM, PTFE |
| Process connection: | Aluminium, anodized Optional: stainless steel 1.4401 |
| Repeatability: | ± 2 % at constant temperature |
| Switching rate: | max. 20/min |
| Temperature range: | -30 °C... +70 °C |
| Protection class: | IP65 |
| Housing: | |
| Housing: | Aluminium, anodized |
| Cap: | Steel, galvanized |
| Process connection: | 1/4" NPT female thread Optional: 1/2" NPT female thread (P2) |

| | |
|---|--|
| Electrical connection: | Screw terminals and cable gland 1/2" NPT, cable diameter $\varnothing 7$... 12 mm |
| Electrical ratings and hysteresis: | A large variety of micro switches offers different electrical ratings and hysteresis for many applications. |
| Weight: | P1H-...: approx. 1.2 kg |
| Set point adjustment: | Turn the adjustment screw clockwise to increase the set point |
| Intrinsically safe: | The switches are designed for intrinsically safe applications. Please add "Exi" to your ordering details when placing an order. To comply with the intrinsically safe approval following max. ratings must not be exceeded: Umax = 28 V Imax = 50 mA |
| Approval: | NACE |

Pressure Ranges

| Pressure range code | Adjustment range [bar] | | Max. operating pressure [bar] | Proof pressure [bar] (short term) | Max. hysteresis of switch types in bar (end of range) | | |
|---------------------|------------------------|-------------------|-------------------------------|--------------------------------------|---|-------------|---------|
| | Increasing press. | Decreasing press. | | | B | H, GH [bar] | K [bar] |
| 30 | 0.1 ... 2.1 | 0.03 ... 2.0 | 91 | 137 | 0.14 | 0.06 | 0.17 |
| 85 | 0.4 ... 6.0 | 0.2 ... 5.8 | 91 | 137 | 0.50 | 0.17 | 0.58 |
| 340 | 0.8 ... 23.4 | 0.4 ... 23.0 | 91 | 137 | 1.50 | 0.41 | 1.83 |
| 600 | 2.9 ... 41.0 | 1.7 ... 40.0 | 91 | 137 | 2.00 | 1.17 | 2.42 |
| 1600 | 32.0... 107.0 | 27.0... 101.0 | 110 | 165 | 7.00 | 4.80 | 8.60 |

Dimensions (mm / inch)



Electrical Ratings

| Micro switch | Special features | Volt AC 50/60 Hz | Ind. load A | Res. load A | Volt DC | Ind. load A | Res. load A | Comments |
|--------------|---|---------------------|----------------|----------------|-----------------|-----------------------|--------------------|--|
| H | Micro switch with silver contacts | 125 250 480 | 10 10 3 | 10 10 3 | 6 to 28 | 0.50 | 0.5 | Small hysteresis; High AC / low DC loads |
| GH | Micro switch with gold contacts for low voltage and low current | 125 | 1 | 1 | 24 | 0.10 | 1.00 | Small hysteresis |
| K, B | Micro switch with silver contacts K: with sealed plunger and stainless steel blade | 125 250 480 | 10 | 10 | 12 24 250 | 10.00 5.00 0.03 | 10.0 6.0 0.2 | Medium hysteresis; High AC and DC loads |

Material / Options / Diaphragm

| Material | Options | Diaphragm |
|----------------------|-------------------------|-----------|
| ()... Aluminium | (P2) 1/2" NPT female SS | () NBR |
| (SS) Stainless steel | | (V) FKM |
| | | (T) PTFE |

Order Code

Example for order number

| Type | | Micro switch | | Pressure range code | | Material | | Options | | Diaphragm |
|------|---|--------------|--|---------------------|---|----------|---|---------|---|-----------|
| P1H | - | H | | 85 | - | SS | - | P2 | - | V |

Your order number

| Type | Micro switch | Pressure range code | Material | Options | Diaphragm |
|------|--------------|---------------------|----------|---------|-----------|
| | - | | | - | |

Diaphragm Seal Piston Press. Switches

P1X
Mechanical single switch
Repeatability ± 2.0 % at constant temperature

Features

Mechanical pressure switches,
Switching point can be adjusted with corresponding
reference unit during operation

Adjustment ranges

0.1 ... 107 bar

Applications

Hydraulic and pneumatic power units,
Autoclaves,
Shipbuilding applications



Technical Data

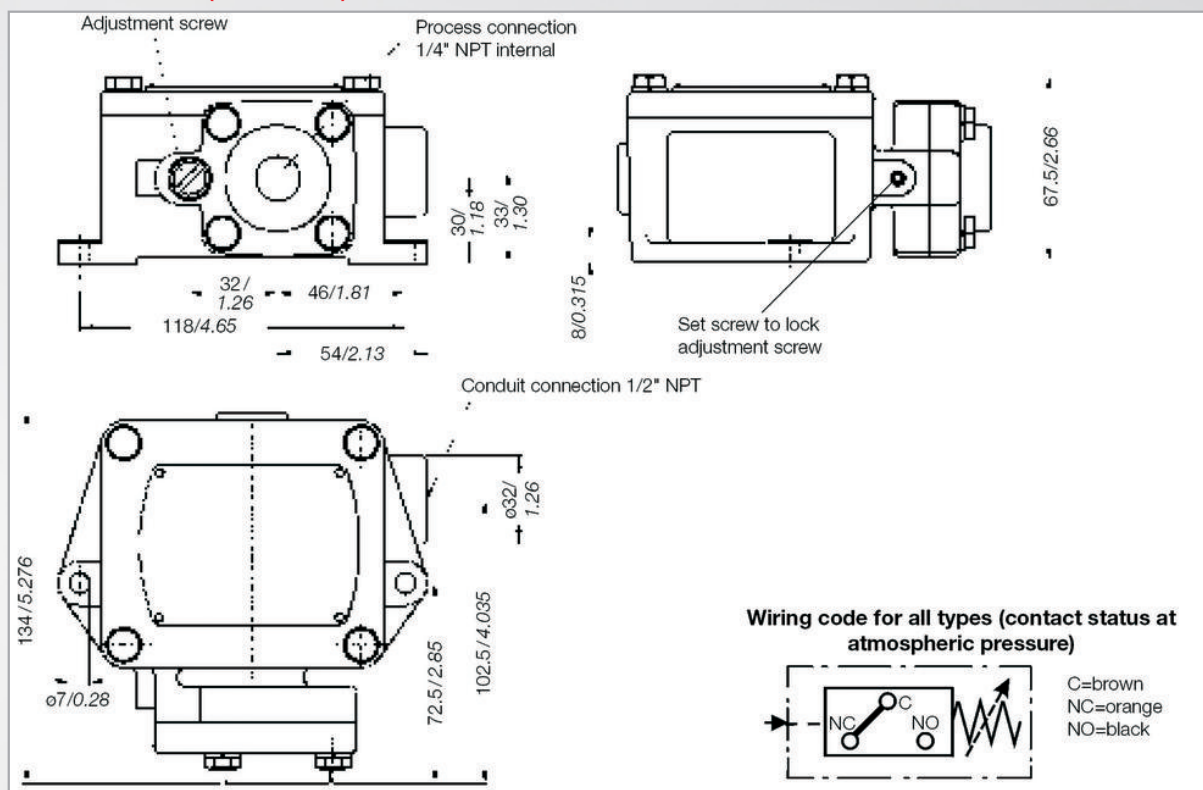
| | |
|------------------------------------|--|
| Wetted parts: Diaphragm: | NBR |
| Process connection: | Optional: FKM, PTFE Aluminium, anodized Optional: stainless steel 1.4401 |
| Repeatability: | ± 2 % at constant temperature |
| Switching rate: | max. 20/min |
| Temperature range: | -30 °C... +70 °C |
| Protection class: | IP65 |
| Housing: | Explosion proof housing acc. to CSA and cULus |
| Housing: Cap: | Aluminium, anodized Aluminium, anodized |
| Process connection: | 1/4" NPT female thread Optional: 1/2" NPT female thread |

| | |
|---|--|
| Electrical connection: | Screw terminals and cable gland 1/2" NPT female thread |
| Electrical ratings and hysteresis: | A large variety of micro switches offers different electrical ratings and hysteresis for many applications. |
| Weight: | P1X-...: approx. 1.3 kg |
| Set point adjustment: | Turn the adjustment screw clockwise to increase the set point |
| Intrinsically safe: | The switches are also applicable for inherent safety applications. Add "Exi" in case of ordering. The following max. values are valid when using those switches: Umax = 28 V Imax = 50 mA |
| Approval: | CSA, UL File No. E37043, NACE |

Pressure Ranges

| Pressure range code | Adjustment range [bar] | | Max. operating pressure [bar] | Proof pressure [bar] (short term) | Max. hysteresis of switch types in bar (end of range) | | |
|------------------------|------------------------|----------------------|----------------------------------|---|--|-------------|---------|
| | Increasing press. | Decreasing press. | | | B | H, GH [bar] | K [bar] |
| 30 | 0.1... 2.1 | 0.03... 2.0 | 91 | 137 | 0.14 | 0.06 | 0.17 |
| 85 | 0.4... 6.0 | 0.2... 5.8 | 91 | 137 | 0.50 | 0.17 | 0.58 |
| 340 | 0.8... 23.4 | 0.4... 23.0 | 91 | 137 | 1.50 | 0.41 | 1.83 |
| 600 | 2.9... 41.0 | 1.7... 40.0 | 91 | 137 | 2.00 | 1.17 | 2.42 |
| 1600 | 32.0... 107.0 | 27.0... 101.0 | 110 | 165 | 6.8 | 4.8 | 8.6 |

Dimensions (mm / inch)



Electrical Ratings

| Micro switch | Special features | Volt AC 50/60 Hz | Ind. load A | Res. load A | Volt DC | Ind. load A | Res. load A | Comments |
|--------------|--|-------------------|---------------|---------------|-----------------|-----------------------|--------------------|--|
| H | Micro switch with silver contacts | 125 250 480 | 10 10 3 | 10 10 3 | 6 to 28 | 0.50 | 0.5 | Small hysteresis; High AC / low DC loads |
| GH | Micro switch with gold-plated contacts for low voltage and low current | 125 | 1 | 1 | 24 | 0.10 | 1.0 | Small hysteresis |
| K, B | Micro switch with silver contacts K: with sealed plunger and/ or stainless steel blade | 125 250 480 | 10 | 10 | 12 24 250 | 10.00 5.00 0.03 | 10.0 6.0 0.2 | Medium hysteresis; High AC and DC loads |

Material / Options / Diaphragm

| Material | Options | Diaphragm |
|---------------------|------------------------|-----------|
| () Aluminium | (P2)1/2" NPT female SS | (-) NBR |
| (SS)Stainless steel | | (V) FKM |
| | | (T) PTFE |

Order Code

Example for order number

| Type | | Micro switch | | Pressure range code | | Material | | Options | | Diaphragm |
|------|---|--------------|--|---------------------|---|----------|---|---------|---|-----------|
| P1X | - | H | | 85 | - | SS | - | P2 | - | V |

Your order number

| Type | Micro switch | Pressure range code | Material | Options | Diaphragm |
|------|--------------|---------------------|----------|---------|-----------|
| | - | | | - | |

Diaphragm Seal Piston Press. Switches

MSPS
Mechanical single switch
Repeatability ± 2.0 % at constant temperature

Features

Metal diaphragm pressure switch,
Set point can be adjusted with corresponding reference unit
during operation

Adjustment ranges

0.1 ... 6.8 bar

Applications

Air conditioning,
Ventilation control,
Steam ejectors



Technical Data

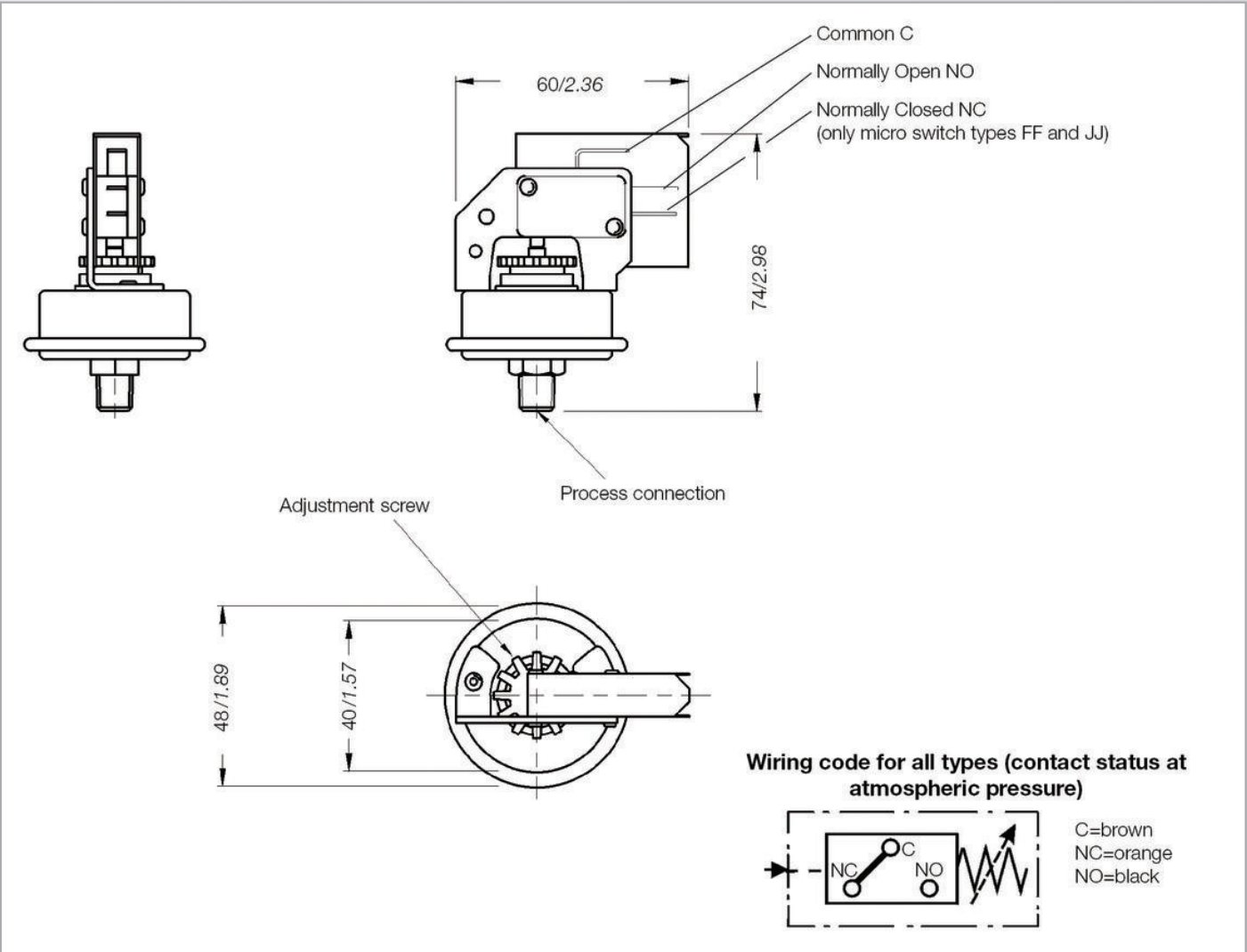
| | |
|---|---|
| Wetted parts: | |
| Diaphragm: | NBR |
| Process connection: | Stainless steel 1.4401 |
| Repeatability: | ± 1 % at constant temperature |
| Switching rate: | max. 20/min |
| Temperature range: | -5 °C... +70 °C |
| Protection class: | IP00 |
| Housing: | --- |
| Process connection: | 1/8" NPT male thread |
| Electrical connection: | Spade connector 6,3 DIN 46244 |
| Electrical ratings and hysteresis: | Many micro switch versions with different switching powers and hysteresis are applicable and make it possible to make customized changes. |

| | |
|------------------------------|---|
| Weight: | MSPS-...: approx. 0.2 kg |
| Set point adjustment: | Turn the adjustment screw clockwise to increase the set point |
| Intrinsically safe: | The switches are designed for intrinsically safe applications. Please add "Exi" to your ordering details when placing an order. To comply with the intrinsically safe approval following max. ratings must not be exceeded: U _{max} = 28 V I _{max} = 50 mA |
| Approval: | --- |

Pressure Ranges

| Pressure range code | Adjustment range [bar] | | Max. operating pressure [bar] | Proof pressure [bar] (short term) | Max. hysteresis of switch types in bar (end of range) | |
|---------------------|------------------------|-------------------|-------------------------------|--------------------------------------|---|--------------|
| | Increasing press. | Decreasing press. | | | EE, FF [bar] | DD, JJ [bar] |
| 5SS | 0.1 ... 0.34 | 0.04 ... 0.305 | 4.6 | 6.9 | 0.035 | 0.040 |
| 15SS | 0.2 ... 1.00 | 0.10 ... 0.900 | 4.6 | 6.9 | 0.055 | 0.068 |
| 100SS | 1.2 ... 6.80 | 0.70 ... 6.300 | 6.8 | 10.0 | 0.540 | 0.620 |

Dimensions (mm / inch)



Electrical Ratings

| Micro switch | Special features | Volt AC 50/60 Hz | Ind. load A | Res. load A | Volt DC | Ind. load A | Res. load A | Comments |
|--------------|-----------------------------------|---------------------|----------------|----------------|------------|----------------|----------------|---------------------------------------|
| EE, FF | Micro switch with silver contacts | 125 250 | 3 | 3 | --- | --- | --- | Medium hysteresis; High AC voltage |
| DD, JJ | Micro switch with silver contacts | 125 250 | 15 | 15 | 125 250 | 0.50 0.25 | 0.50 0.25 | Medium hysteresis; High AC voltage |

Order Code

Example for order number

| Type | | Micro switch | | Pressure range code |
|------|---|--------------|---|---------------------|
| MSPS | - | FF | - | 15SS |

Your order number

| Type | | Micro switch | | Pressure range code |
|------|---|--------------|---|---------------------|
| | - | | - | |

Compact Pressure Switches

9671X/9681X

Diaphragm seal piston sensor in explosion proof housing,
for hazardous areas,
accuracy class 2% f. s.

Features

Stainless steel body and parts,
Flameproof enclosure according to ATEX, UL, CSA,
Safe to adjust during operation,
1 switching contact (SPDT)

Adjustment ranges

Type 9671X: -0.17 bar ... -1 bar, vacuum

Type 9681X: 0.33 ... 34.4 bar, pressure

Applications

Process Industry,
Petrochemical Plants,
Machine Tool Industry,
Compressors

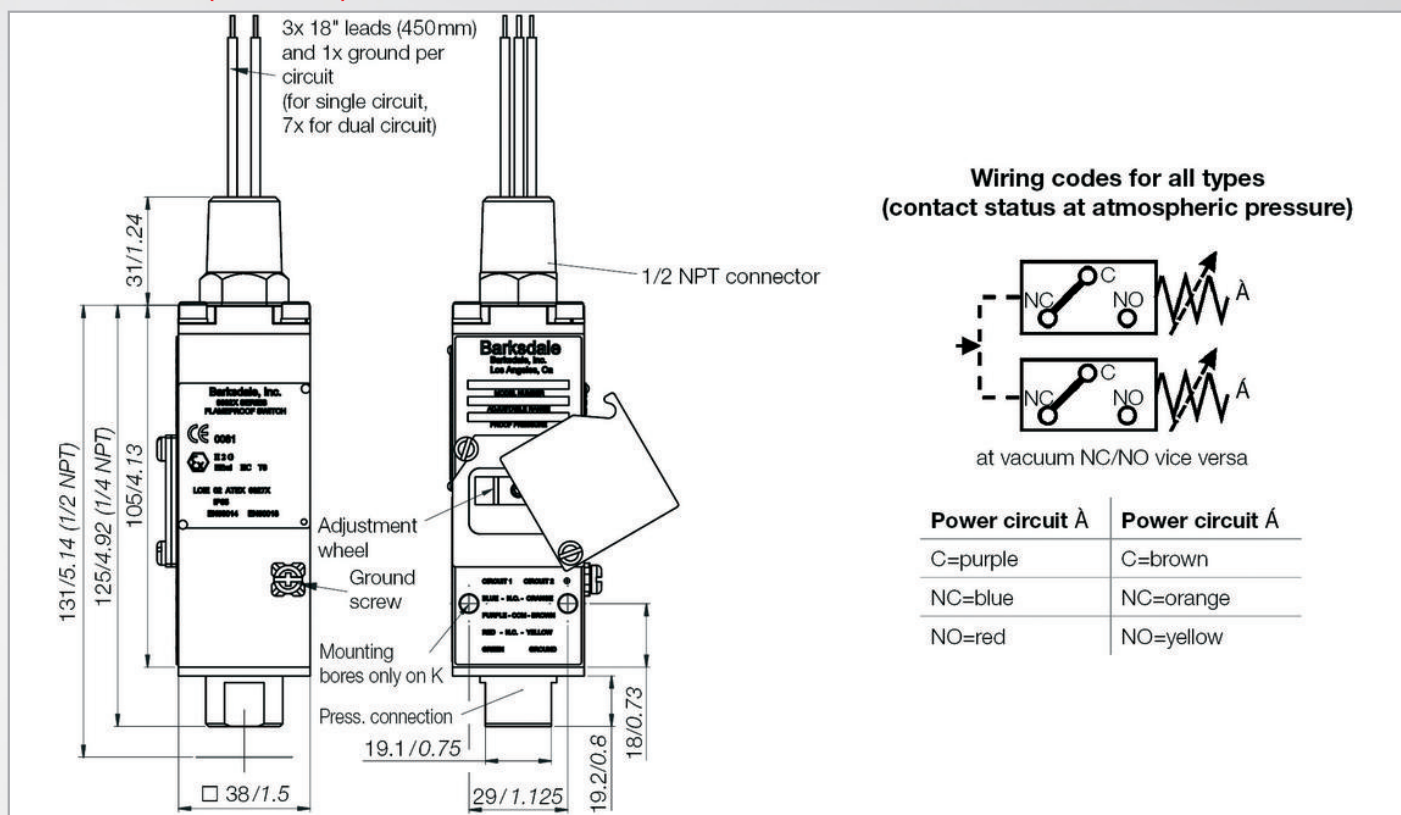


Technical Data

| | |
|-------------------------------|--|
| Wetted parts: | |
| Process fitting: | Stainless steel, material no. 1.4401 |
| Seals: | FKM, PTFE support ring |
| Diaphragm: | FKM |
| Repeatability: | ±2 % f. s. |
| Switching rate: | max. 30/min |
| Temperature range: | -30 °C... +75 °C |
| Protection class: | IP65 |
| Housing: | Stainless steel 1.4401, explosion proof |
| Process connection: | 1/4" NPT female thread |
| Electrical connection: | 1/2" NPT AG male conduit connector 18 AWG 18" (450 mm) lead wire, PVC jacket |
| Switch type: | Switch contact SPDT |
| Rating: | 11 A, 125 / 250 V AC 5 A, 30 V DC 1 A, 125 V DC |
| Option: | 1 switching contact, 1 x DPDT |

| | |
|------------------------------|--|
| Weight: | 375 g |
| Set point adjustment: | Turn the adjustment wheel clockwise to increase the set point |
| Vibration resistance: | 10 g, sine 10...500, MIL-STD 202F |
| Shock resistance: | 50 g, 11 ms, MIL-S-901C |
| Approvals: | CENELEC Ex d II C T6, UL #E37043, CSA #LR22354 and Division I Class I, Group A, B, C & D; Class II, Group E, F & G |
| Certificate no.: | LCIE 02 ATEX 6027X |
| Options: | Dual circuit 2 SPDT switches with DPDT function Gold contact switch, 1 A, 125 V AC Ex terminal box Tamper proof cover |

Dimensions (mm / inch)



Wiring code

| Function | Pressure 9681X | | Vacuum 9671X | | Option |
|----------------------|----------------|-----------|--------------|-----------|-----------------------|
| | Circuit 1 | Circuit 2 | Circuit 1 | Circuit 2 | |
| Normally Open / NO | red | yellow | blue | orange | K with mounting holes |
| Common / C | purple | brown | purple | brown | |
| Normally Closed / NC | blue | orange | red | yellow | |
| Earth | green | | green | | |

Pressure Ranges

| Ordering code 1 Switch contact SPDT (standard) | Ordering code 1 Switch contact DPDT (option) | Adjustment ranges [bar] | | | | Max. hysteresis (end of range) | Max. operating pressure | Proof pressure |
|--|--|-------------------------|-------|-------------------|-------|--------------------------------------|-------------------------------|-------------------|
| | | Increasing press. | | Decreasing press. | | | | |
| | | min. | max. | min. | max. | | | |
| 9681X-1CC-1 | 9681X-2CC-1 | 0.33 | 1.03 | 0.13 | 1.0 | 0.2 | 45 | 68 |
| 9681X-1CC-2 | 9681X-2CC-2 | 0.20 | 10.30 | 0.34 | 9.0 | 1.7 | 45 | 68 |
| 9681X-1CC-3 | 9681X-2CC-3 | 4.40 | 20.60 | 1.70 | 18.0 | 2.7 | 45 | 68 |
| 9681X-1CC-4 | 9681X-2CC-4 | 8.50 | 34.40 | 4.40 | 30.0 | 4.1 | 45 | 68 |
| Vacuum switches | | | | | | | | |
| 9671X-1CC | 9671X-2CC | -0.17 | -1.00 | -0.034 | -0.71 | 0.3 | --- | 2 |

Accessories

| Order Number | Description |
|--------------|--|
| 926-0811 | Ex d - Terminal box incl. terminal (drawing 923-1533 on request) |
| 999-0081 | Tamper proof cover |

Compact Pressure Switches

9692X

Piston pressure switch with explosion proof housing, for hazardous areas, accuracy class 2% f. s.

Features

Stainless steel body and parts,
Flameproof enclosure according to ATEX, UL, CSA,
Safe to adjust during operation,
1 switching contact (SPDT)

Adjustment ranges

17.2 ... 571 bar

Applications

Process Industry,
Petrochemical Plants,
Machine Tool Industry,
Compressors

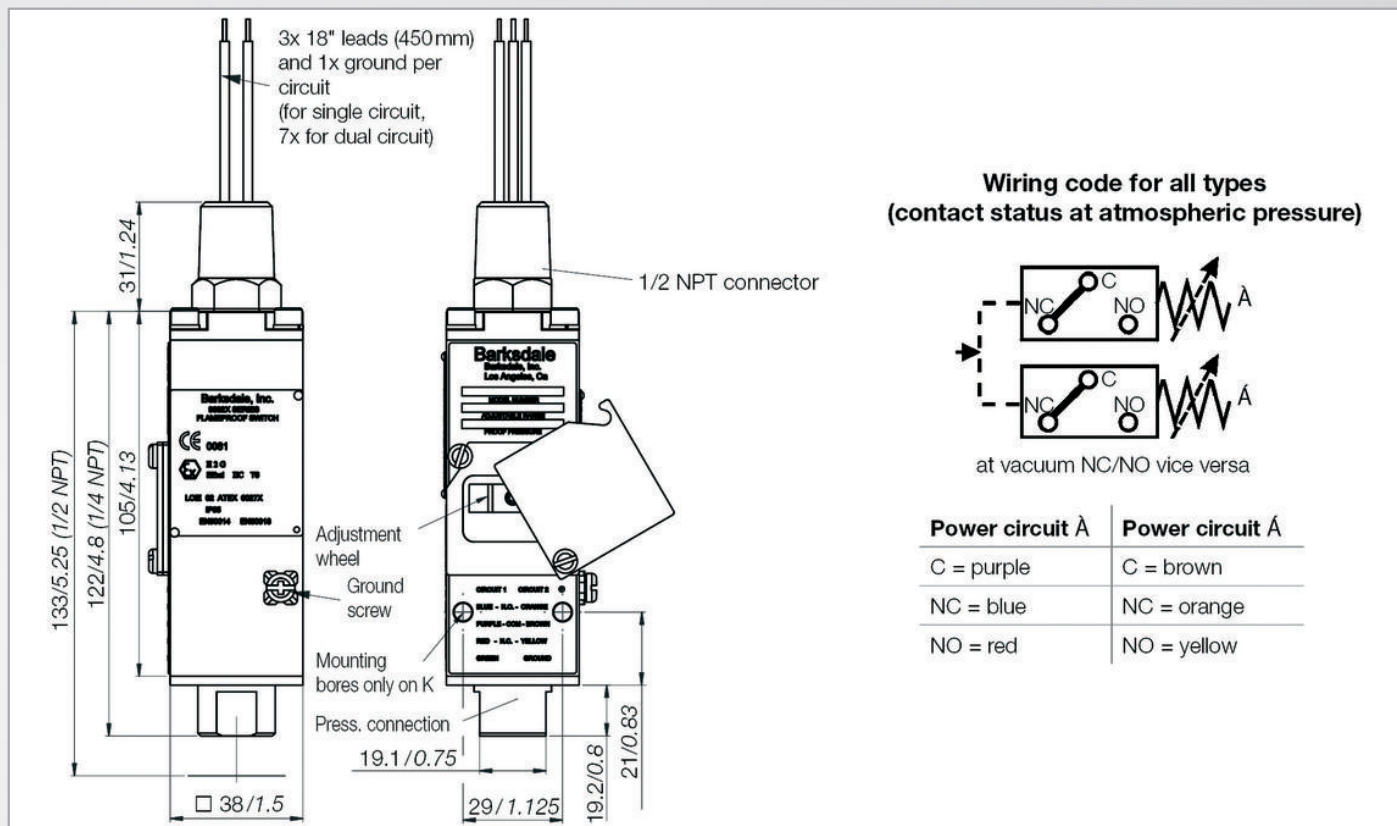
Technical Data

| | |
|-------------------------------|--|
| Wetted parts: | |
| Process connection: | Stainless steel, material no. 1.4401 |
| Seals: | FKM |
| Piston: | Material no. 1.4006 |
| Repeatability: | ±2 % f. s. |
| Switching rate: | max. 30/min |
| Temperature range: | -30 °C... +75 °C |
| Protection class: | IP65 |
| Housing: | Stainless steel 1.4401, explosion proof |
| Process connection: | 1/4" NPT female thread |
| Electrical connection: | 1/2" NPT AG male conduit connector 18 AWG 18" (450 mm) lead wire, PVC jacket |
| Switch type: | Switch contact SPDT |
| Rating: | 11 A, 125 / 250 V AC 5 A, 30 V DC 1 A, 125 V DC |
| Option: | 1 switching contact, 1 x DPDT |



| | |
|------------------------------|---|
| Weight: | 375 g |
| Set point adjustment: | Turn the adjustment wheel clockwise to increase the set point |
| Vibration resistance: | 10 g, sine 10...500, MIL-STD 202F |
| Shock resistance: | 50 g, 11 ms, MIL-S-901C |
| Approval: | CENELEC Ex d II C T6, UL #E37043, CSA #LR22354 and Division I Class I, Group A, B, C & D; Class II, Group E, F & G |
| Certificate no.: | LCIE 02 ATEX 6027X |
| Options: | Dual circuit 2 SPDT switches with DPDT function Gold contact switch, 1 A, 125 V AC Ex terminal box Tamper proof cover |

Dimensions (mm / inch)



Electrical Connection

| Function | Pressure | | Vacuum | | Option |
|----------------------|-----------|-----------|-----------|-----------|-----------------------|
| | Circuit 1 | Circuit 2 | Circuit 1 | Circuit 2 | |
| Normally Open / NO | red | yellow | blue | orange | K with mounting bores |
| Common / C | purple | brown | purple | brown | |
| Normally Closed / NC | blue | orange | red | yellow | |
| Earth | green | | green | | |

Pressure Ranges

| Ordering code 1 Switch contact SPDT (standard) | Ordering code 1 Switch contact DPDT (option) | Adjustment ranges [bar] | | | | Max. hysteresis (end of range) | Max. operating pressure | Proof pressure |
|--|--|-------------------------|-------|-------------------|------|---|-------------------------------|-------------------|
| | | Increasing press. | | Decreasing press. | | | | |
| | | min. | max. | min. | max. | | | |
| 9692X-1CC-1 | 9692X-2CC-1 | 17.2 | 51.7 | 6.9 | 41 | 10.3 | 600 | 1034 |
| 9692X-1CC-2 | 9692X-2CC-2 | 24.1 | 68.9 | 10.3 | 55 | 13.8 | 600 | 1034 |
| 9692X-1CC-3 | 9692X-2CC-3 | 55.0 | 206.0 | 27.5 | 179 | 27.5 | 600 | 1034 |
| 9692X-1CC-4 | 9692X-2CC-4 | 89.5 | 344.0 | 48.2 | 303 | 41.3 | 600 | 1034 |
| 9692X-1CC-5 | 9692X-2CC-5 | 124.0 | 571.0 | 68.9 | 462 | 55.1 | 600 | 1034 |

Accessories

| Order Number | Description |
|--------------|--|
| 926-0811 | Ex d - Terminal box incl. terminal (drawing 923-1533 on request) |
| 999-0081 | Tamper proof cover |

Compact Pressure Switches

Series 8000

Series 8000 - mechanical pressure switches in diaphragm or piston design. The successors of the product lines XTM, XTK, X1T and 96200 have the additional advantage of very low and precise switching point settings.

Features

Modular construction,
Versatile,
High-quality materials,
100% assays,
Long pressure spring

Adjustment ranges

0.6...600 bar

Applications

OEM applications,
Mobile- and industrial-hydraulics and pneumatics,
Test bed and apparatus engineering,
Heavy industry



Technical Data

| | |
|--|--|
| Wetted parts: standard: | NBR, PTFE with bronze and stainless steel 1.4301; |
| optional: | pistons: steel FKM, EPDM, CR instead of NBR |
| Repeatability: | ±1 % type, piston pressure switch ±2 % type, diaphragm pressure switch |
| Switching rate: | max. 60/min piston pressure switch max. 30/min diaphragm pressure switch |
| Temperature range: Piston switch: Diaphragm switch: | -40 °C ... +80 °C (-40 °F ... +176 °F) -20 °C ... +80 °C (-4 °F ... +176 °F) |
| Protection class: standard: | IP65 (plug connector), IP68 (cable) UL |
| optional: | Inherent safety Ⓢ II 1G Ex ia IIB T6 (DIN plug) - EXI Ex ia IIC T6 (cable version) - EXI Ⓢ II 1GD Ex ia D 20 T100 UL, Type 4, for indoor and outdoor use |

| | |
|---|---|
| Housing: standard: optional: | Aluminium diecast 230 Stainless steel 1.4305 / SS 304, Version - VA |
| Process connection: | CETOP flange Ø40x40 mm, (order code "1") see dimensions |
| Electrical connection: | see dimensions |
| Weight: CETOP flange version: | 350 g (0.77 lbs) |
| Micro switch: | Change-over contact (SPDT) |
| Set screw: | Stainless steel 1.4305 / SS304 (SW5), captive |
| Approvals: | GL, Ex ia, cULus, further approvals on request |

Pressure Ranges and Proof Pressures

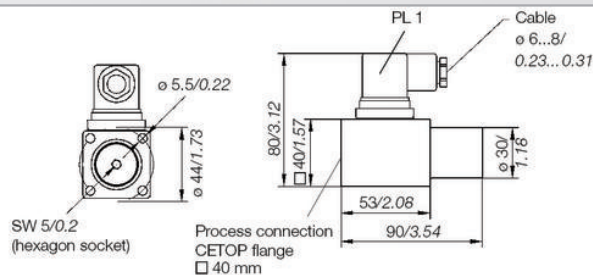
| Pressure range code | | Adjustment range (pressure increasing) | | Adjustment range (pressure decreasing) | | Max. operating pressure | | Proof pressure | | Max. hysteresis range end |
|---------------------|-------|--|-----------------|--|---------------|-------------------------|-------|----------------|----------|---------------------------|
| [bar] | [psi] | [bar] | [psi] | [bar] | [psi] | [bar] | [psi] | [bar] | [psi] | |
| | | Diaphragm | | Diaphragm | | | | | | |
| 1 | A | 0.6 ... 6.0 | (8.7...87) | 0.4... 5.7 | (5.8...82) | 50 | 725 | 80 * | (1,200) | ≤15% |
| 2 | B | 3.0... 20.0 | (45.0...250) | 2.0... 17.0 | (29...246) | 50 | 725 | 80 * | (1,200) | |
| 3 | C | 4.0... 45.0 | (60.0...650) | 3.0... 41.0 | (43...600) | 50 | 725 | 80 * | (1,200) | |
| | | Piston | | Piston | | | | | | ≤15% |
| 4 | D | 5.0... 180 | (75...2,600) | 3.0... 160 | (43...2,320) | 250 | 3600 | 600 | (8,700) | |
| 5 | E | 50.0... 350 | (750...5,000) | 30.0... 300 | (430...4,300) | 450 | 6500 | 600 | (8,700) | |
| 6 | F | 80.0... 600 | (1,200...8,700) | 55.0... 520 | (800...7,550) | 600 | 8700 | 900 | (15,000) | |

* Test pressure 200 bar (2,900 psi) upon request, results in less lifetime of the switch.

Compact Pressure Switches

Series 8000

Dimensions (mm / inch)

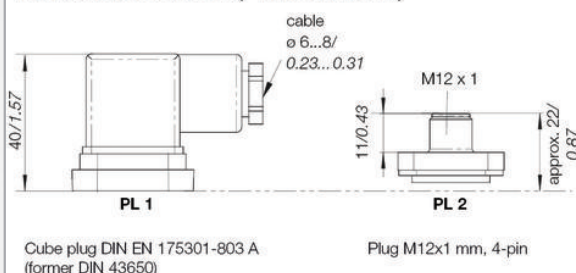


Up to pressure stage 5 or E every pressure switch is supplied with two fastening screws M5x60 mm according to DIN 912 (10.9, galvanized).
The pressure switches of pressure stage 6 or F are supplied with four screws.

Switching- and connection diagram (pressureless)

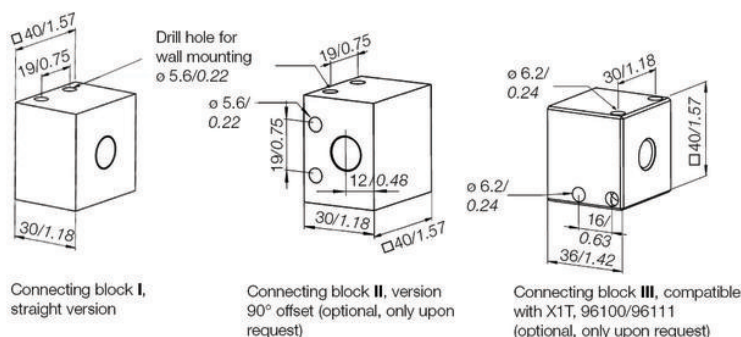
| | PL1 | PL2 |
|----|-----|-----|
| C | 1 | 1 |
| NC | 2 | 2 |
| NO | 3 | 4 |
| PE | --- | 3 |

Electrical connection (PL1 = standard)



Process connections

Complete assembly with pressure switch only upon request



Electrical Ratings

| Micro switch | Special features | Volt AC 50/60 Hz | Ind. Load A | Res. Load A | Volt DC | Ind. Load A | Res. Load A | Minimum capacitance | Intrinsic safety Ex ia |
|--------------|------------------|----------------------|-------------|-------------|------------------------|-------------|--------------------|---------------------|---|
| 1 | Silver contacts | 250 V ~ 125 V ~ | 2.0 3.0 | 5.0 5.0 | 30 V= 250 V= | 2.0 0.03 | 5.0 0.03 | 160 mA at 5 VDC | U _{max} = 28 V I _{max} = 50 mA |
| 2 | Gold contacts* | U x I = max. 0.12 VA | | | ≤ 300 mV = ≤ 30 V = | --- --- | ≤ 400 mA ≤ 4 mA | 0 mA / 0 VDC | |

* e.g. suitable for PLC and/or Ex ia

Seal

| Code | Seal |
|------|------|
| B | NBR |
| N | CR |
| E | EPDM |
| V | FKM |

Options

| Code | Housing |
|------|---------|
| VA | 1.4305 |

Approvals

| | |
|-----|--------------------|
| EXI | Ex ia |
| GL | Germanischer Lloyd |
| UL | cULus approval |

Order Code

Example for order number

| Type | Process connection | Pressure range | Micro switch Contact | Electrical connection | Seal | Options | Approvals |
|------|--------------------|----------------|----------------------|-----------------------|------|---------|-----------|
| 8 | 1 | 2 | 1 | PL1 | B | VA | GL |

Your order number

| | | | | | | | |
|---|---|--|--|--|--|--|--|
| 8 | 1 | | | | | | |
|---|---|--|--|--|--|--|--|

Accessories

| Connecting block no. | Order No. | Process connection | Designation | Material |
|----------------------|-----------|--------------------|-------------|---------------|
| I | 906-0953 | 1/4" NPT female | straight | St passivated |
| I | 906-0954 | G 1/4" female | straight | St passivated |
| I | 906-0946 | 1/4" NPT female | straight | 1.4301 |
| I | 906-0947 | G 1/4" female | straight | 1.4301 |
| II | 906-0926 | G 1/4" female | 90° offset | 1.4301 |
| II | 906-0927 | 1/4" NPT female | 90° offset | 1.4301 |
| III | 906-0919 | G 1/4" female | straight | AlMg4,5Mn0,7 |

Compact Pressure Switches

Series 9000

Mechanical pressure switch in piston design with 30 x 30 x 92 mm front face and precise switching point setting

Features

High-quality materials,
100% functional test,
Compact design,
Long pressure spring (precisely adjustable),
G1/4" female thread, Set screw captive

Adjustment ranges

10...400 bar

Applications

OEM applications,
Mobile and industrial hydraulics,
Test bed and apparatus engineering,
Heavy industry,
Shipbuilding



Technical Data

| | |
|---------------------------|---|
| Wetted parts: | sealing: PTFE/FKM fitting: AlMg4,5Mn piston: steel (100Cr6) |
| Repeatability: | ±2% (typically) |
| Switching rate: | max. 60/min. |
| Temperature range: | |
| storage: | -40 °C ... +80 °C (-40 °F ... +176 °F) |
| piston switch: | -20 °C ... +80 °C (-4 °F ... +176 °F) |
| Protection class: | IP65 |

| | |
|-------------------------------|--|
| Material: | |
| housing: | AlMg4,5Mn |
| electrical plug: | Polyamid (PA) |
| adjustment screw: | Stainless Steel (1.4305) |
| Process connection: | G1/4" female thread DIN ISO 228-1 |
| Weight: | 175 g (0.39 lbs) |
| Electrical connection: | EN 175301-8013-A plug (formerly DIN 43650) |
| Micro switch: | (SPDT) silver contacts |
| Approvals: | GL, BV |
| (in preparation) | others on request |

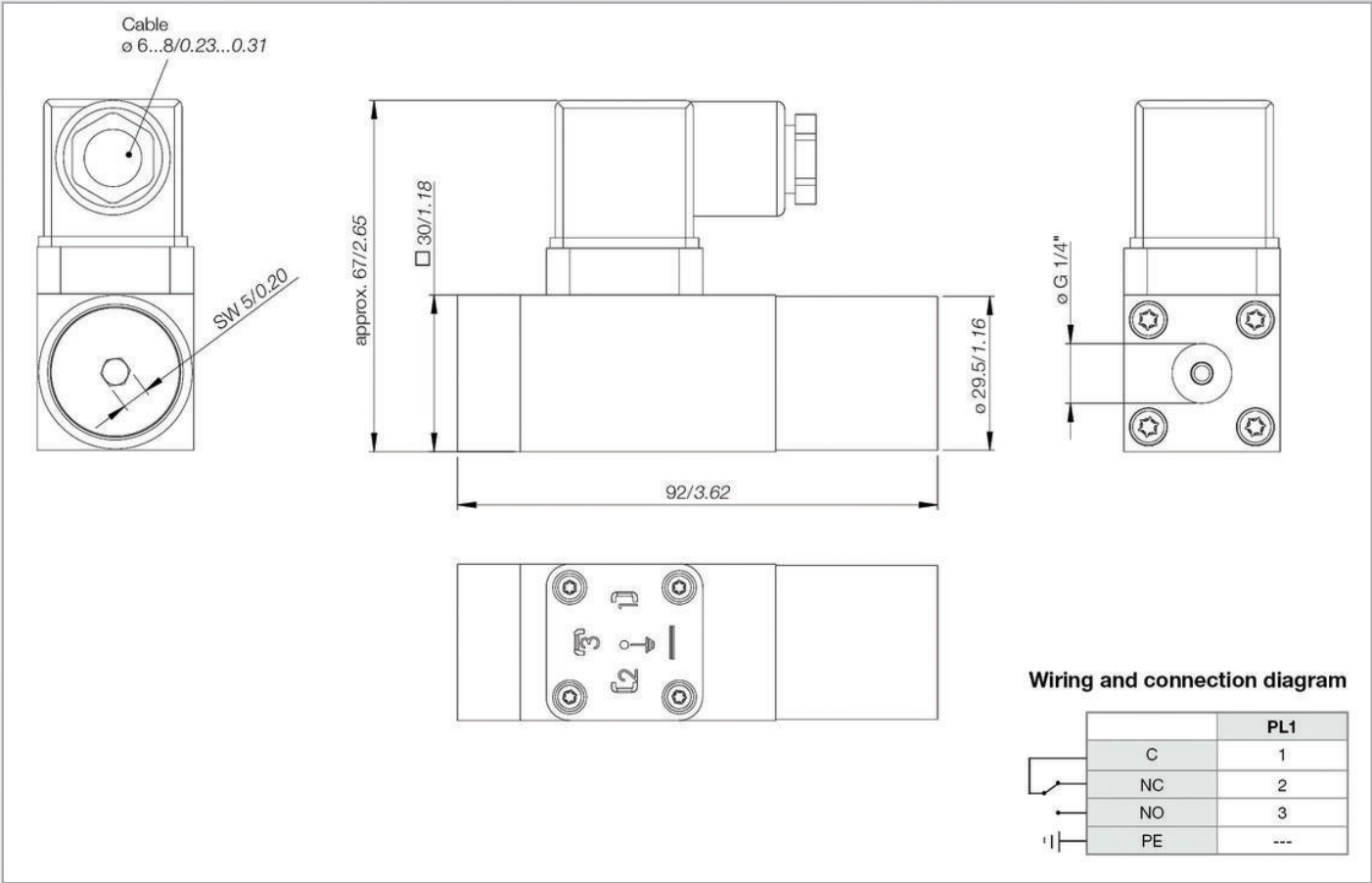
Pressure Ranges

| Pressure range code [bar] | Adjustment range | | Max. hysteresis at full range max % | Max. operating pressure [bar] | Proof pressure [bar] |
|---------------------------|-------------------------|-------------------------|-------------------------------------|-------------------------------|----------------------|
| | Decreasing press. [bar] | Increasing press. [bar] | | | (short term) |
| 1 | 6 ... 44 | 10 ... 50 | 10% | 250 | 300 |
| 2 | 15 ... 185 | 20 ... 200 | | 250 | 300 |
| 3 | 35 ... 360 | 40 ... 400 | | 500 | 600 |

Process Connection / Electrical Connection / Seal

| Process connection | Electrical connection | Seal |
|----------------------------|---|--------------------------------|
| (2) G1/4" IG DIN ISO 228-1 | (PL1) Plug, 4-pin acc. to EN 175301-803-A | (V) FKM (B) NBR (E) EPDM |

Dimensions (mm / inch)



Electrical Ratings

| Micro switch | Special features | Volt AC 50/60 Hz | Ind. Load A | Res. Load A | Volt DC | Ind. Load A | Res. Load A | Minimum capacitance |
|--------------|------------------|------------------|-------------|-------------|---------|-------------|-------------|---------------------|
| 1 | Silver contacts | 250 V~ | 2.5 | 10.0 | 24 V= | 1.0 | 6.0 | 20 mA at 24 VDC |

Approvals

| | |
|----|--------------------|
| GL | Germanischer Lloyd |
|----|--------------------|

Order Code

Example for order number

| Type | Process connection | Pressure range | Micro switch contact | Electrical connection | Seal | Approvals |
|------|--------------------|----------------|----------------------|-----------------------|------|-----------|
| 9 | 2 | 2 | 1 | PL1 | V | GL |

Your order number

| | | | | | | |
|---|---|--|---|-----|--|--|
| 9 | 2 | | 1 | PL1 | | |
|---|---|--|---|-----|--|--|

Compact Pressure Switches

KLK/KLM

Piston pressure switch Type KLK

Repeatability ± 1.0 % typical

Diaphragm seal pressure switch Type KLM

Repeatability ± 2.0 % typical

Features

OEM pressure switch series,

Compact design,

Threaded connection

Factory settings only fully tamper proof.

Adjustment ranges

1 ... 400 bar

Applications

Mobile hydraulics,

Motor control,

Hydraulic clamping



Technical Data

| | |
|--|---|
| Wetted parts: Type KLK: Type KLM: | NBR, PTFE Brass, roller bearing steel Stainless steel |
| Repeatability: Type KLK: Type KLM: | ± 1 % typical ± 2 % typical |
| Switching rate:Type KLK:Type KLM: | max. 60/min max. 30/min |
| Temperature range:Type KLK:Type KLM: | -40 °C... +80 °C -20 °C... +80 °C |
| Protection class:Silicone cable (K2):Plug connector (S1): | IP67 IP65 |
| Housing:Type KLK:Type KLM: | Brass and stainless steel Stainless steel |

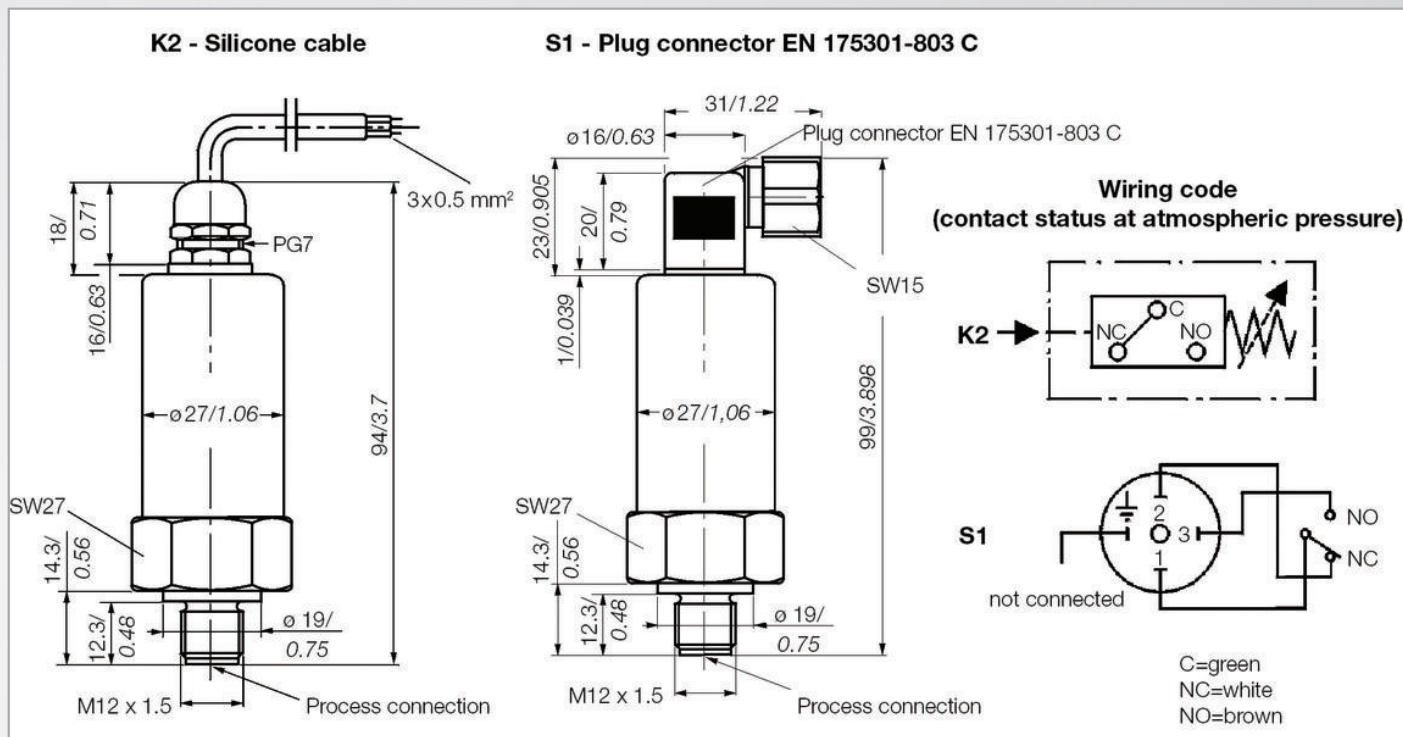
| | |
|--|---|
| Process connection: | M12 x 1.5 G1/4 male other connections on request |
| Electrical connection: | Silicone cable (K2) Plug connector (S1) |
| Electrical ratings capacity and hysteresis: | A large variety of micro switches offers different electrical ratings and hysteresis for many applications. |
| Weight: Type KLK: Type KLM: | 0.2 kg approx. 0.2 kg approx. |
| Set point adjustment: | Factory set |
| Intrinsically safe: | A large variety of micro switches offers different electrical ratings and hysteresis for many applications. |
| Approval: | EX iEx ia approval |

Pressure Ranges

* Higher operating pressure (up to 150 bar) (with proof pressure 200 bar) on request. Please add to your order!

| Pressure range code | Adjustment range [bar] | Proof pressure [bar] | Max. operating pressure [bar] | Max. hysteresis [bar] |
|---------------------|------------------------|----------------------|-------------------------------|-----------------------|
| | Increasing pressure | short term | | end of range |
| KLM-006 | 1 ... 6 | 80 /200* | 40* | 0.6 |
| KLM-025 | 5 ... 25 | 80 /200* | 40* | 2.6 |
| KLM-040 | 10 ... 40 | 80 /200* | 40* | 3.8 |
| KLK-100 | 30 ... 100 | 450 | 300 | 15 |
| KLK-300 | 60 ... 300 | 450 | 300 | 30 |
| KLK-400 | 150 ... 400 | 600 | 400 | 60 |

Dimensions (mm / inch)



Electrical Ratings

| Micro switch | Special features | Volt DC | Ind. Load A | Res. Load A | Comments |
|--------------|--|---------|-------------|-------------|------------------------------|
| 1 | Micro switch with silver contacts | 30 | 3.0 | 5.0 | More information on request. |
| 2 | Micro switch with gold-plated contacts | ≤ 30 | -- | ≤ 0.004 | (U x I = max. 0.12 VA) |

Process Connection / Electrical Connection

| Process connection | Electrical connection | Diaphragm |
|---------------------|---|---------------|
| (M1) M12 x 1,5 male | (S1) Plug connector, 3-pin + E, EN 175301-803 C | KLK: () NBR |
| (G1) G1/4 male | (K2) Silicone cable 3 x 0.5 mm²; 600 mm long | KLM: (V) FKM |
| | | KLM: (N) CR |
| | | KLM: (E) EPDM |

Options

| | |
|---------------|------------------------------------|
| EXI | for intrinsically safe application |
| HP (KLM only) | operating pressure up to 150 bar |

Order Code

Example for order number

| Type | Type | Pressure range code | Process connection | Electr. connection | Micro switch | Diaphragm | Option |
|------|--------|---------------------|--------------------|--------------------|--------------|-----------|--------|
| KLK | or KLM | 025 | G1 | S1 | 2 | V | EXI |

Your order number

| Type | Type | Pressure range code | Process connection | Electr. connection | Micro switch | Diaphragm | Option |
|------|--------|---------------------|--------------------|--------------------|--------------|-----------|--------|
| KLK | or KLM | | | | | | |

Compact Piston Pressure Switches

KD1

Mechanical piston pressure switch
Repeatability ± 1.0 % typical

Features

OEM pressure switch,
Factory setting only fully tamper proof.
Larger deadband for pump controlling

Adjustment ranges

30 ... 300 bar

Applications

Building and agricultural machines,
Brake system control,
Hydraulic accumulator control



Technical Data

| | |
|---|--|
| Wetted parts: | NBR, PTFE Brass, roller bearing steel |
| Repeatability: | ± 1 % typical |
| Switching rate: | max. 60/min |
| Temperature range: | -40 °C... +80 °C |
| Protection class: Silicone cable (K2): Spade connector (A1): | IP67 IP65 |
| Housing: | Compact housing made of brass and stainless steel |

| | |
|---|--|
| Process connection: | M12 x 1.5 male thread Other connections on request |
| Electrical connection: | Silicone cable (K2) Spade connector DIN 46244 (A1) |
| Electrical ratings and hysteresis: | Hysteresis factory set, see diagrams |
| Weight: | KD1-....: approx. 0.2 kg |
| Set point adjustment: | Factory set |
| Approval: | --- |

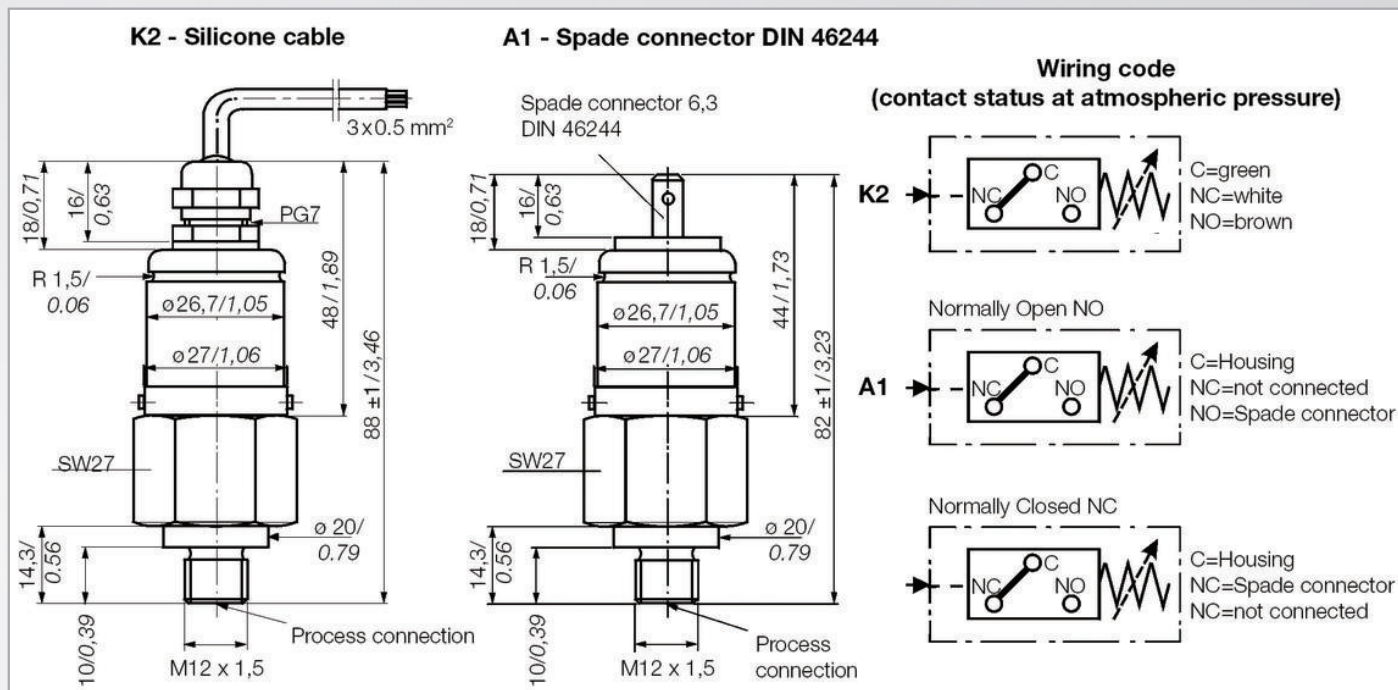
Pressure Ranges

| Pressure range code | Adjustment range [bar] | Proof pressure [bar] | Max. operating pressure [bar] | Max. hysteresis [bar] |
|---------------------|---------------------------|----------------------|----------------------------------|--------------------------|
| | Increasing pressure | short term | | end of range |
| KD1-30 / 100 | 30 ... 100 | 450 | 300 | 16.5 ... 19 |
| KD1-60 / 300 | 60 ... 300 | 450 | 300 | 34.0 ... 48 |

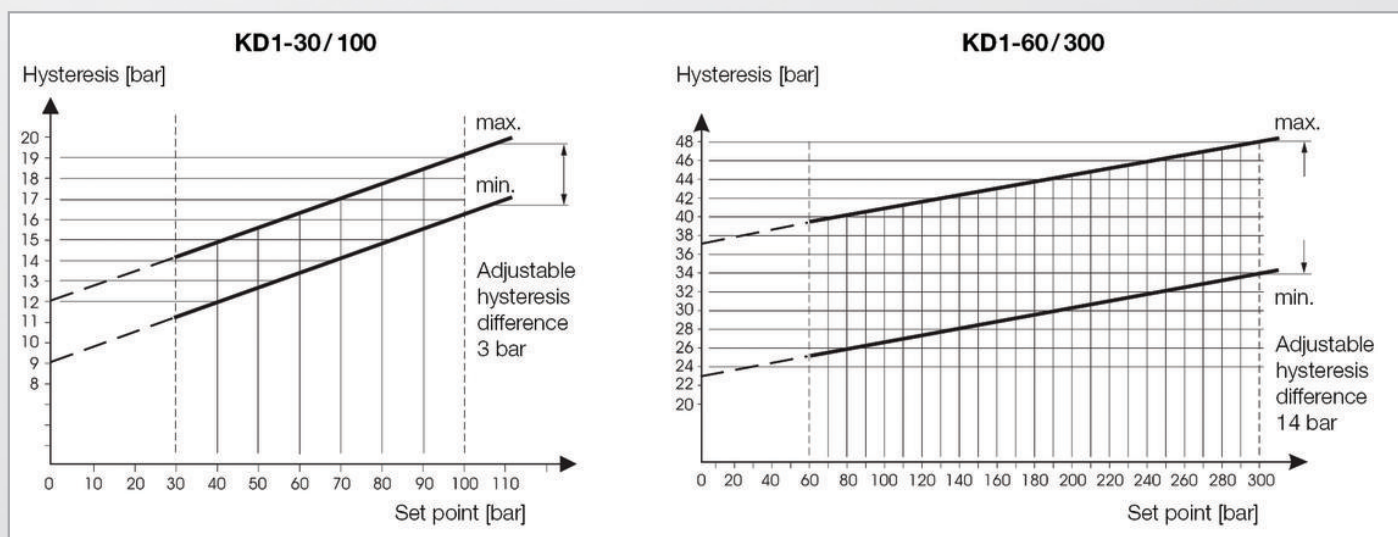
Compact Piston Pressure Switches

KD1

Dimensions (mm / inch)



Hysteresis Diagram KD1



Electrical Ratings

| Special features | Volt DC | Ind. load A | Res. load A | Comments |
|-----------------------------------|---------|-------------|-------------|------------------------------|
| Micro switch with silver contacts | 30 | 3 | 3 | More information on request. |

Electrical Connection

| Electrical connection | Options and accessories |
|---|--|
| (K2) Silicone cable 3 x 0.5 mm ² ; 600 mm long | (K1) EPD cable, 600 mm long |
| (A1) Spade connector 6,3 DIN 46244; green | (A2) Spade connector 6,3 DIN 46244; blue |

Notes

Notes

Experts

Specialists for monitoring
and control of

- ▶ Pressure
- ▶ Temperature
- ▶ Level
- ▶ Flow

Barksdale develops market-focused solutions for customers in the fluid power, transportation and industrial equipment markets focusing on applications that include:

Mobile and stationary hydraulics



Shipbuilding



Oil and gas exploration



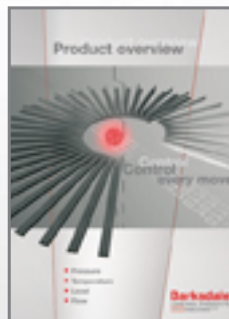
Truck, trailer and bus suspensions



Sensorics for hydraulic power packs



Product overview



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Fax: +91 1202 510 520
sales@barksdale.in
www.barksdale.in

Barksdale
CONTROL PRODUCTS
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Specifications are subject to changes
without notice.

Index: 923-0314 E