

# Electronic Dual Differential Pressure Switch

# BDS3000

## Features

- ▶ Measuring ranges: differential press. 0...350 mbar to 0...35 bar
- ▶ Enclosures Rating Type 4X (IP65) / Type 6 (IP67)
- ▶ Two switch points
- ▶ Analogue output 4 - 20 mA or 0 - 10 V
- ▶ Superior EMI protection
- ▶ Rotatable 320° display & electrical connection
- ▶ IO-Link communication interface

## Applications

- ▶ Filtration
- ▶ Machine tool industry
- ▶ Factory Automation
- ▶ Lubrication monitoring
- ▶ Pumps and compressors

## Technical Data

|                               |  |
|-------------------------------|--|
| <b>Sensor element:</b>        | piezoresistive sensor  |
| <b>Materials:</b>             |  |
| Wetted parts:                 | Stainless steel, mat. No. 1.4301.                                |
| Electronics housing:          | Stainless steel, mat. No. VA2, PA / PC                           |
| Seals:                        | FKM, EPDM  |
| <b>Operating elements:</b>    | 3 easy-response pushbuttons                                      |
| <b>System of protection:</b>  | Type 4X (IP65) / Type 6 (IP67)                                   |
| <b>Protection class:</b>      | III  |
| <b>Electrical connection:</b> | Plug M12 x 1, 4/5 pin  |
| <b>Process connection:</b>    | see order code   |
| <b>Dimensions:</b>            | 76 x 41 x 122 mm   |
| <b>Weight:</b>                | Approx. 600 g  |
| <b>A/D-Converter:</b>         |  |
| Resolution:                   | 12 bit<br>(4096 steps per measuring span)                        |
| Scanning rate:                | 1000 / s   |
| <b>Linearity error:</b>       | < ± 0.5 % v. f. s. at +25 °C                                     |
| <b>Temperature influence:</b> | TC zero < ±0.2 % FSO / 10K<br>TC span < ±0.3 % FSO / 10K         |
| <b>Compensation range:</b>    | 0°C to +50°C (32°F to 122°F)                                     |
| <b>Repeatability:</b>         | ±0.1 % FSO   |
| <b>Temperature range:</b>     |  |
| Media:                        | -25°C to +100°C (-13°F to 212°F)                                 |
| Electronics:                  | -10°C to + 70°C (14°F to 158°F)                                  |
| Storage:                      | -30°C to +80°C (-22°F to 176°F)                                  |
| <b>Power supply:</b>          | 15 ... 32 V DC, reversed polarity protected (SELV, PELV) Class 2 |
| <b>Digital display:</b>       | 4-digit 14-segment LED red display, digit height 9 mm            |
| <b>Display rate:</b>          | 20/s   |
| <b>Power consumption:</b>     | Approx. 50 mA (without load)                                     |
| <b>Error display:</b>         | LED RED and alphanumeric display                                 |
| <b>Analog output:</b>         |  |
| Current output:               | 4...20 mA  |
| Load:                         | max. RI = (Ub-12V) / 20 mA<br>RI = 600 Ohm at Ub = 24 V DC       |
| Scanning rate:                | 2 ms   |
| Voltage output:               | 0... 10 V DC   |
| Rating:                       | max 10 mA  |
| Adjustment range:             | 25 % ... 100 f. s.   |



|   |  |                     |
|---|--|---------------------|
| <b>Transistor switching outputs:</b>                        |  |                     |
| <b>Switching function:</b>                                  | Normally open/normally closed, standard / windows mode and diagnosis function adjustable |                     |
| <b>Switching output:</b>                                    | PNP<br>IO-Link: PNP / NPN / PP   |                     |
| <b>Adjustment range for switching point and hysteresis:</b> | 0% to 125% f. s.   |                     |
| <b>Switching frequency:</b>                                 | Max. 100 Hz  |                     |
| <b>Load:</b>  | Max. 500 mA (250 mA IO-Link units)<br>short-circuit-proof                                |                     |
| <b>Delay:</b>   | 0.0 s to 50.0 s adjustable   |                     |
| <b>Status display(s):</b>                                   | LED(s) red   |                     |
| <b>Interfaces</b>   |  |                     |
| <b>Communication interface</b>                              | IO-Link  |                     |
| <b>Transmission type</b>                                    | COM2 (38,4 kBaud)  |                     |
| <b>IO-Link revision:</b>                                    | 1.1  |                     |
| <b>SDCI standard:</b>                                       | IEC 61131-9  |                     |
| <b>Profiles:</b>  | Smart Sensor   |                     |
| <b>SIO mode:</b>  | yes  |                     |
| <b>Devices type:</b>  | Class A  |                     |
| <b>Process data variable:</b>                               | 1  |                     |
| <b>Binary data channel:</b>                                 | 2  |                     |
| <b>Min. process cycle time [ms]</b>                         | 2.5  |                     |
| <b>Device ID:</b>   | 0X071  |                     |
| <b>EMV /ESD</b>   | EN 61000-4-2 ESD   | 4 kV CD / 8 kV AD   |
|   | EN 61000-4-3 HF radiated   | 10 V/m              |
|   | EN 61000-4-4 Burst   | 2 kV                |
|   | EN 61000-4-5-Surge   | 1/2 kV              |
|   | EN 61000-4-6 HF conducted  | 10 V                |
| <b>Shock resistance</b>                                     | DIN EN 60028-2-27  | 50 g (11 ms)        |
| <b>Vibrations resistance</b>                                | DIN EN 60028-2-26  | 20 g (10...2000 Hz) |

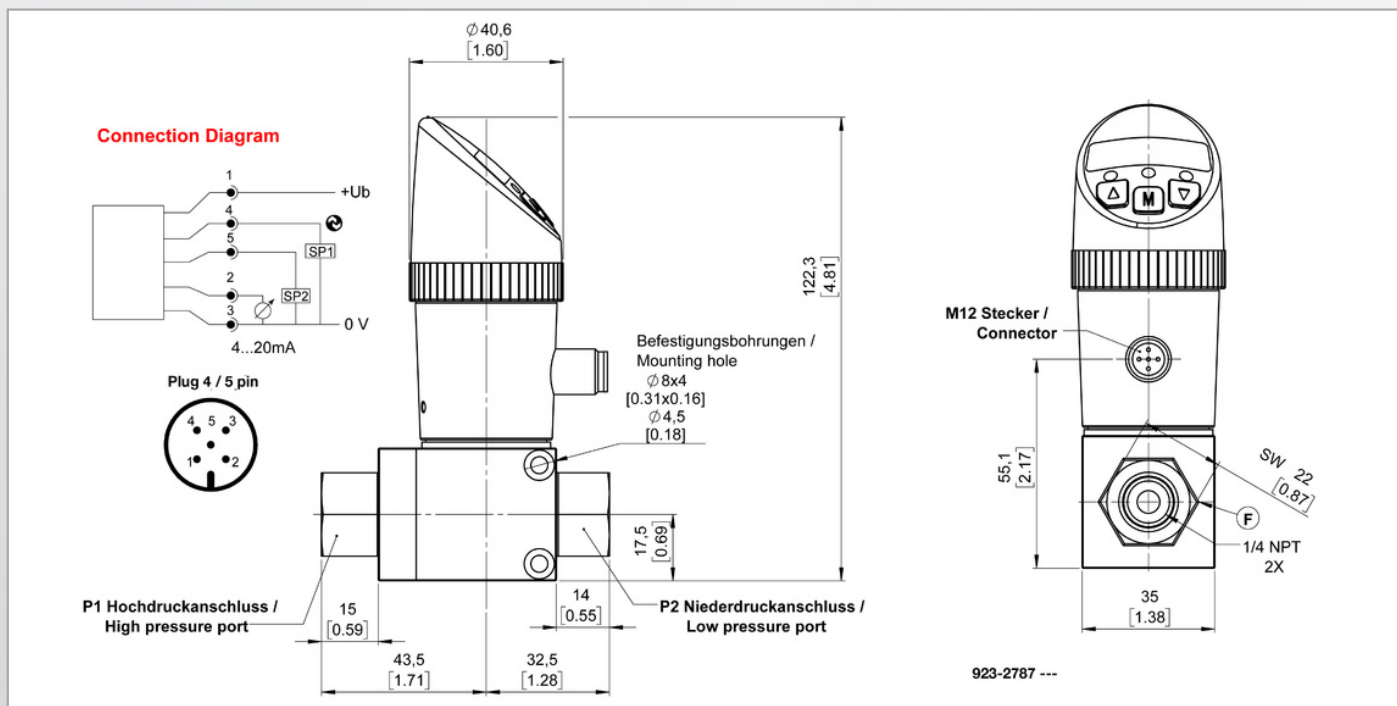
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**BDS3000**

### Pressure Ranges

| Pressure Range Code | Differential Pressure | Proof Pressure | Proof Pressure | Common Pressure |
|---------------------|-----------------------|----------------|----------------|-----------------|
| [bar]               | P1>P2 [bar]           | P1>P2 [bar]    | P2>P1 [bar]    | P1=P2 [bar]     |
| 0.35                | 0-0,35                | 0.7            | 0.35           | 200             |
| 0.7                 | 0-0,7                 | 1.5            | 0.7            | 200             |
| 1                   | 0-1                   | 2              | 1              | 200             |
| 2                   | 0-2                   | 4              | 2              | 200             |
| 3.5                 | 0-3,5                 | 7              | 3.5            | 200             |
| 7                   | 0-7                   | 14             | 7              | 200             |
| 10                  | 0-10                  | 20             | 10             | 200             |
| 20                  | 0-20                  | 40             | 10             | 200             |
| 35                  | 0-35                  | 70             | 10             | 200             |

### Dimensions (mm / inch)



## Order Code

|       |   |   |   |   |  |                       |
|-------|---|---|---|---|--|-----------------------|
| BDS3  |   |   |   |   | Base Model*  | BDS3000               |
|       |   |   |   |   | Output   |                       |
| 1     |   |   |   |   | 2 switch points  |                       |
| 2     |   |   |   |   | 4...20mA 1 switch point                                  |                       |
| 3     |   |   |   |   | 0...10V 1 switch point                                   |                       |
| 4     |   |   |   |   | 4...20mA 2 switch points                                 |                       |
| 5     |   |   |   |   | 0...10V 2 switch points                                  |                       |
| 7     |   |   |   |   | IO-Link / 2 switch points (PNP, NPN, PP)                 |                       |
| 8     |   |   |   |   | IO-Link / 2 switch points (PNP, NPN, PP) / Analog Output |                       |
|       |   |   |   |   | Process Connection                                       |                       |
| 5     |   |   |   |   | G1/4" internal thread                                    |                       |
| F     |   |   |   |   | 1/4" NPT female  |                       |
|       |   |   |   |   | Sealing  |                       |
| V     |   |   |   |   | FKM  |                       |
| E     |   |   |   |   | EPDM   |                       |
|       |   |   |   |   | Electrical Connection                                    |                       |
|       |   |   |   |   | M12  |                       |
|       |   |   |   |   | Range  |                       |
| 0.35B |   |   |   |   | 0 ... 0.35 bar   |                       |
| 0.70B |   |   |   |   | 0 ... 0.7 bar  |                       |
| 0001B |   |   |   |   | 0 ... 1 bar  |                       |
| 0002B |   |   |   |   | 0 ... 2 bar  |                       |
| 3.50B |   |   |   |   | 0 ... 3.5 bar  |                       |
| 0007B |   |   |   |   | 0 ... 7 bar  |                       |
| 0010B |   |   |   |   | 0 ... 10 bar   |                       |
| 0020B |   |   |   |   | 0 ... 20 bar   |                       |
| 0035B |   |   |   |   | 0 ... 35 bar   |                       |
| 0005P |   |   |   |   | 0 ... 5 psi  |                       |
| 0010P |   |   |   |   | 0 ... 10 psi   |                       |
| 0015P |   |   |   |   | 0 ... 15 psi   |                       |
| 0030P |   |   |   |   | 0 ... 30 psi   |                       |
| 0050P |   |   |   |   | 0 ... 50 psi   |                       |
| 0100P |   |   |   |   | 0 ... 100 psi  |                       |
| 0150P |   |   |   |   | 0 ... 150 psi  |                       |
| 0300P |   |   |   |   | 0 ... 300 psi  |                       |
| 0500P |   |   |   |   | 0 ... 500 psi  |                       |
|       |   |   |   |   | Sensor element   |                       |
|       |   |   |   |   | P  | Piezoresistive sensor |
| BDS3  | X | X | X | X | XXXXX  | X                     |

\* Other configurations are available upon request.

## Accessories

| Order Number | Description   |
|--------------|---|
| 907-0357     | Plug connector M12 x 1, 4-pin, with screw terminals, angled (IP65)    |
| 907-0185     | Plug connector M12 x 1, 5-pin, with screw terminals, angled (IP65)    |
| 908-0361     | Plug connector M12 x 1, 5-pin, with moulded cable, (IP67), 2 m length |