

# DS 4

## OEM Pressure Switch for Pneumatics / Vacuum

- ▶ 1 or 2 switching outputs
- ▶ switching outputs freely configurable via adapter or programming device
- ▶ nominal pressure ranges from 0 ... 1 bar up to 0 ... 10 bar also -1 ... 0 bar

The electronic pressure switch DS 4 has been designed for pneumatics and vacuum applications.

Due to the materials aluminium for the pressure port and silicon for the pressure sensor the DS 4 is suited for use with gases or compressed air. The housing for the switching electronics consists of PA 6.6.

The new microcontroller switching electronics offers - besides standard functions - many additional features for optimal adaption to the measuring requirements.

The 1 or 2 freely programmable switching outputs whose status is indicated by differently coloured LED's can be configured quickly and comfortable either by means of the optionally available tools P-set (PC software and programming adapter) or via the programming device P6.

- ▶ compact design
- ▶ mechanical connection flange or G1/8"
- ▶ electrical connection M8x1 4-pin
- ▶ optional: analogue output (1 ... 5 V / 3-wire)
- ▶ customer specific versions on request

Characteristics



**DS 4**  
OEM Pressure Switch

### Input pressure range

Nominal pressure gauge [bar]	-1 ... 0	1	3.5	10
Permissible overpressure [bar]	2	2	7	13

### Supply

Supply Voltage $V_s$	12 ... 30 V <sub>DC</sub>
Current consumption	max. 14 mA (without switching outputs)

### Output signal

#### Switching output

Number	standard: 1 optional: 2
Type	PNP
Switching performance	max. 300 mA, short-circuit proof
Accuracy of switching points	$\leq \pm 1\%$ FSO (BFSL: $\leq \pm 0.5\%$ FSO)
Repeatability	$\leq \pm 0.2\%$ FSO
Status indication	SP 1: green      SP 2 : yellow
Switching function <sup>1</sup>	standard: n/o optional: n/c
Switching mode <sup>1</sup>	standard: hysteresis mode optional: window mode
Switch on point <sup>1</sup>	standard: factory setting 80 % FSO others: specify on order; adjustable range 0 ... 100 % FSO
Switch off point <sup>1</sup>	standard: factory setting 75 % FSO others: specify on order; adjustable range 0 ... 100 % FSO
Switch on / switch off delay <sup>1</sup>	standard: off others: specify on order, adjustable range from 10 ms to 90 s (step 10 ms)
Switching frequency	200 Hz (without switching delay)
Switching cycles	$> 100 \times 10^6$

#### Analogue output

Analogue output	standard:                  without optional:                  1 ... 5 V / 3-wire
accuracy <sup>2</sup>	$\leq \pm 2\%$ FSO
Permissible load	$R_{min} = 10 \text{ k}\Omega$

### Thermal errors (Offset and Span)

Tolerance band	$\leq \pm 2\%$ FSO
TC, average	$\pm 0.4\%$ FSO / 10 K
in compensated range	0 ... 50 °C

### Electrical protection

Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326

<sup>1</sup> Parameters can be programmed by customer either with the programming kit (consisting of: PC interface "Adapt 3", power supply, cable connections for PC-interface and pressure switch-interface, configuration software "P-Set") or with the programming device P6. Configuration kit or programming device P6 are not part of supply and have to be ordered separately. For more detailed information see last page of this data sheet.

<sup>2</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

# DS 4

## OEM Pressure Switch

## Technical Data

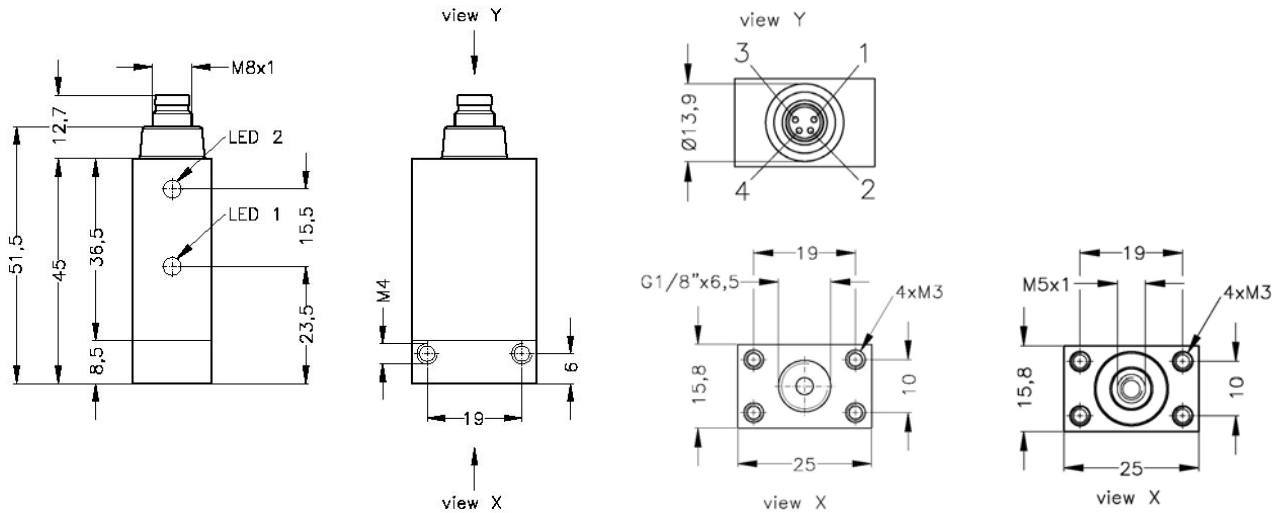
### Mechanical stability

Vibration	10 g RMS (20 ... 2000 Hz)	Shock	100 g / 11 ms
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### Permissible temperatures

Medium	-25 ... 85 °C	Electronics / environment	-25 ... 85 °C	Stock	-40 ... 85 °C
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### Dimensions / Connections



### Materials

Pressure port: aluminium	Housing: PA 6.6 black	Seals: NBR	Sensor: silicon, RTV
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Media wetted parts: pressure port, seals, sensor

### Miscellaneous

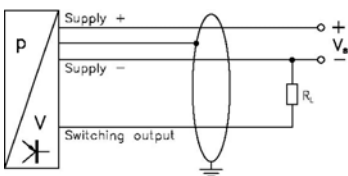
Media	compressed air, non-aggressive gases
Weight	approx. 25 to 35 g
Installation position	any
Ingress protection	IP 54

### Pin configuration

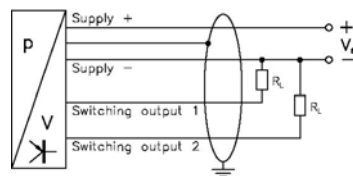
Electrical connection	M8x1 (4-pin) 1SP	M8x1 (4-pin) 2SP	M8x1 (4-pin) 1SP + analogue	cable colours (DIN 47100)
Supply +	1	1	1	white
Supply -	3	3	3	brown
Signal +	-	-	2	green
Switching output 1	4	4	4	grey
Switching output 2	-	2	-	pink
Ground	-	-	-	cable shield

### Wiring diagrams

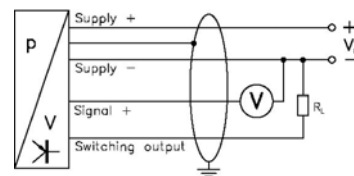
1 switching output  
(without analogue output)



2 switching outputs  
(without analogue output)



1 switching output  
(with analogue output)



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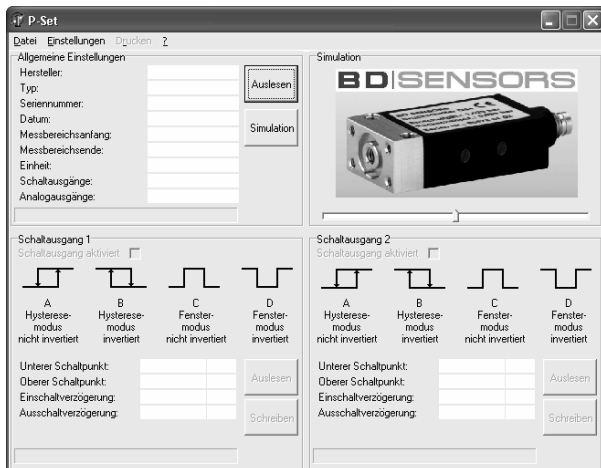
## Configuration

The DS 4 can be connected to a PC via a programming adapter and configured by software. Setting of following parameters is possible:

- ▶ switching mode (hysteresis or window mode)
- ▶ inversion of switching output
- ▶ switch on / lower switching point
- ▶ switch off / upper switching point
- ▶ switch on / switch off delay

The programming adapter is part of a programming kit containing also power supply, cable, and a CD-ROM with the configuration software P-Set.

All cables required for connecting the pressure switch have to be plugged to the programming adapter. The user requires only a Windows® PC with serial interface.



Installation of configuration software P-Set is very easy. P-Set is running on all Windows® PC's (95, 98, ME, 2000, NT, XP). After software installation the adapter only has to be connected with the serial interface of the PC, the power supply, and the pressure switch. You can find more information on the software functions in the software manual.

Alternatively to PC programming BD SENSORS offers the programming device P6. It is simply plugged between DS 6 and the female connector. Via of two push-buttons and a 4-digit LED display all possible settings can be made.



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