

Electronic Pressure Switch

EDS 8000

(Menu navigation according to VDMA)

User Manual

(Translation of original instructions)



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1 Safety Information

Before commissioning,

- check the instrument and any accessories supplied
- read the operating instructions
- ensure that the instrument is suitable for your application.

If the instrument is not handled correctly, or if the operating instructions and specifications are not adhered to, damage to property or personal injury can result.

2 Functions of the EDS 8000

Depending on which model you have, the instrument offers the following functions:

- Display of the actual pressure in **psi, Mpa or bar**
- Switching of the switch outputs in accordance with the pressure and the pre-set switching parameters
- Menu navigation in accordance with the VDMA standard 24574-1
- Coloured LED backlight indicates the switching status

3 Installation

The EDS 8000 can be mounted directly via the pressure connection or indirectly on a hydraulic block using a hose or a minimess line (for torque value, see Chapter 9 - Technical specifications).

For optimum alignment, we recommend connecting the EDS 8000 mechanically using a rotating adapter (for Mechanical Accessories see Chapter 12.2).

The electrical connection must be carried out by a qualified electrician according to the relevant regulations of the country concerned (VDE 0100 in Germany). The housing of the pressure switch must be properly earthed. When fitting into a hydraulic block, it is sufficient if the block is earthed via the hydraulic system. When installing with a minimess hose, the housing must be earthed separately (e.g. with a screened cable).



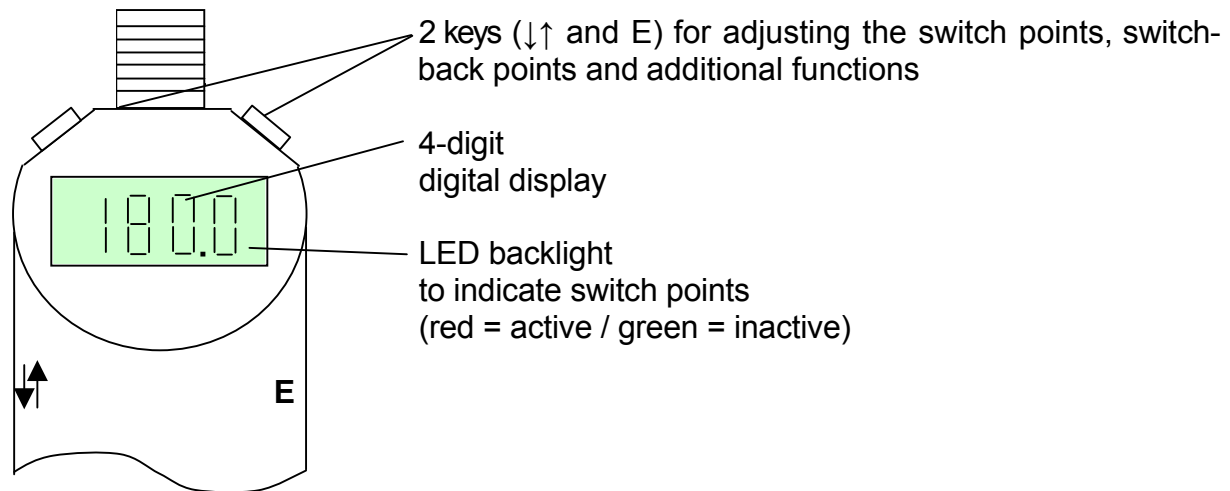
CAUTION:

The EDS 8000 must be fitted using a suitable open-end wrench (across flats 27) on the hexagon nut of the pressure connection. Do not install the EDS 8000 by gripping the housing, as this would damage the housing or the entire instrument.

Additional installation suggestions which, from experience, reduce the effect of electromagnetic interference:

- Make line connections as short as possible
- Use screened cabling (e.g. LIYCY 4 x 0.5 mm²)
- The cable screening must be fitted by qualified personnel subject to the ambient conditions and with the aim of suppressing interference
- Keep the unit well away from the electrical supply lines of power equipment, as well as from any electrical or electronic equipment causing interference

4 Controls of the EDS 8000



Use the keys to select the next menu point, or alternatively to adjust the values.



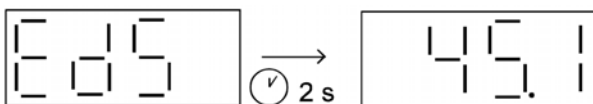
- To scroll through the menu
- To increase the value
- Hold the key down to fast-scroll through the parameter values



- To select the menu point
- To confirm value

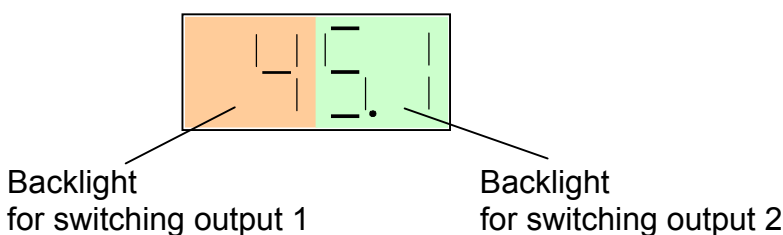
5 Digital display

Once the power supply has been switched on, the device briefly flashes "EdS", and then begins to show the actual pressure.



To check the unit of measurement being used for the pressure indication, press the right-hand key. Depending on the setting, bar, psi or MPa will be shown.

The backlight changes colour according to the settings of the switch outputs and their switch points, i.e. when the switch output is inactive or low-level, the relevant backlight is "green", when the switch output is active or high-level, the relevant backlight is "red".



Reading the digital display

Description	Representation on 7-segment display	ASCII representation
Switch point, output 1	<i>SP 1</i>	SP1
Switch-back point, output 1	<i>rP 1</i>	RP1
Switch point, output 2	<i>SP 2</i>	SP2
Switch-back point, output 2	<i>rP 2</i>	RP2
Pressure window upper value, output 1	<i>FH 1</i>	FH1
Pressure window lower value, output 1	<i>FL 1</i>	FL1
Pressure window upper value, output 2	<i>FH 2</i>	FH2
Pressure window lower value, output 2	<i>FL 2</i>	FL2
Extended functions	<i>EF</i>	EF
Reset	<i>rES</i>	RES
Switch delay time, output 1	<i>dS 1</i>	dS1
Switch delay time, output 2	<i>dS 2</i>	dS2
Switch-back delay time, output 1	<i>dr 1</i>	dR1
Switch-back delay time, output 2	<i>dr 2</i>	dR2
Output 1	<i>ou 1</i>	Ou1
Output 2	<i>ou 2</i>	Ou2
Normally open when hysteresis function is active	<i>Hno</i>	HNO
Normally open when window function is active	<i>Fno</i>	FNO
Normally closed when hysteresis function is active	<i>Hnc</i>	HNC
Normally closed when window function is active	<i>Fnc</i>	FNC
Unit conversion	<i>Un i</i>	Uni
Units in bar	<i>bAr</i>	Bar
Units in MPa	<i>mPA</i>	MPa
Units in psi	<i>pS i</i>	psi
Maximum value	<i>HI</i>	HI
Error indication	<i>Err</i>	ERR
Delete	<i>---</i>	---
Extended functions	<i>EF</i>	EF
Yes	<i>YES</i>	Yes
No	<i>no</i>	No
Version	<i>UEr</i>	Ver

**NOTE:**

- If the actual pressure exceeds the instrument's nominal pressure it can no longer be displayed. The nominal pressure flashes in the display. As a result, when the menu point Max Value (Hi) is selected, the value of the highest measured pressure which has been stored flashes until the instrument is reset (rES).
- If the actual pressure is less than 0.6 % of the nominal range, 0 bar is displayed.

6 Output function

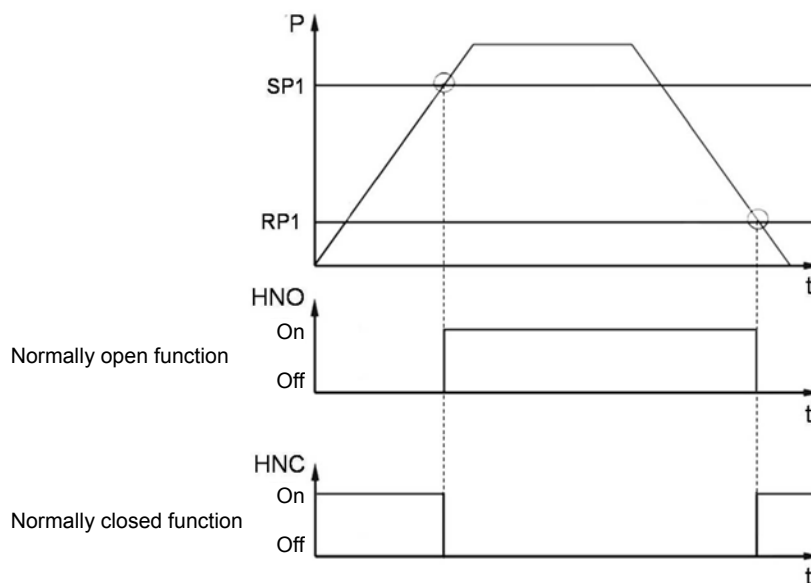
6.1 Switching Outputs

The EDS 8000 has 2 switching outputs. The following settings can be made under the basic settings:

6.1.1 Switch point setting (SP)

One switch point and one switch-back point can be set for each switching output. The particular output will switch when the set switch point is reached and switch back when the pressure drops below the switch-back point.

Example for switch point 1 (normally closed and normally open function):



<u>Abbreviations:</u>	"SP1", "SP2"	= switch point 1 / switch point 2
	"RP1", "RP2"	= switch-back point 1 / switch-back point 2
	"HNO",	= normally open when hysteresis function is active
	"HNC"	= normally closed when hysteresis function is active



NOTE:

- It is only possible to set the switch point (SP) if it is higher than the respective switch-back point (RP). In the case of low SPs we recommend setting the RP first.

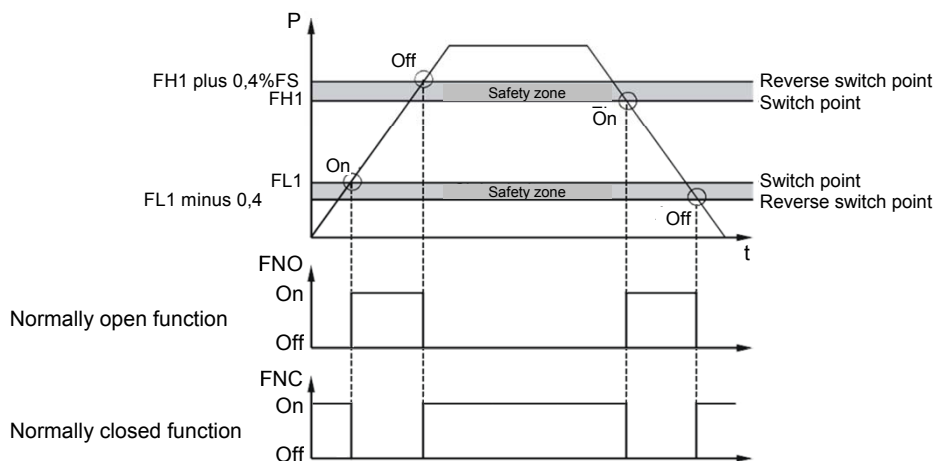
6.1.2 Window function setting (Fno / Fnc)

The window function allows you to monitor a range. An upper and a lower switch value can be entered for each switch output. These values determine the range.

The relevant output will then switch when the pressure enters this range.

When the pressure leaves this range, i.e. when the switch-back point has been reached, the output switches back. The lower switch-back value is just below the lower switch value. The upper switch-back value is just above the upper switch value. The range between the switch value and the switch-back value forms a safety margin which prevents unwanted switching operations from being triggered (such as those triggered by the pulsations of a pump).

Example for switch output 1 (normally closed and normally open function):



Abbreviations: "FH1", "FH2" = upper switch value 1 / upper switch value 2
 "FL1", "FL2" = lower switch value 1 / lower switch value 2
 "FNO" = normally open when window function is active
 "FNC" = normally closed when window function is active



NOTE:

- It is only possible to set the switch point (SP) if it is higher than the respective switch-back point (RP). In the case of low SPs we recommend setting the RP first.
- The window function only works properly (switching on and off) if all switch values (including the safety margin) are above 0 bar and below the nominal pressure range.

6.2 Setting ranges for the switching outputs

Measuring range		Lower limit of RP / FL		Upper limit of SP / FH		Min. difference between RP and SP or FL and FH		Increment	
in psi	in bar	in psi	in bar	in psi	in bar	in psi	in bar	in psi	in bar
0.. 500	0.. 25	5	0,25	500	25	5	0,25	1	0,05
0..1000	0.. 40	10	0,40	1000	40	10	0,40	2	0,10
0..3000	0..100	30	1,00	3000	100	30	1,00	5	0,20
0..6000	0..250	60	2,50	6000	250	60	2,50	10	0,50
0..9000	0..400	90	4,00	9000	400	90	4,00	20	1,00
	0..600		6,00		600		6,00		1,00

* All ranges given in the table can be adjusted by the increments shown.

7 Menu navigation

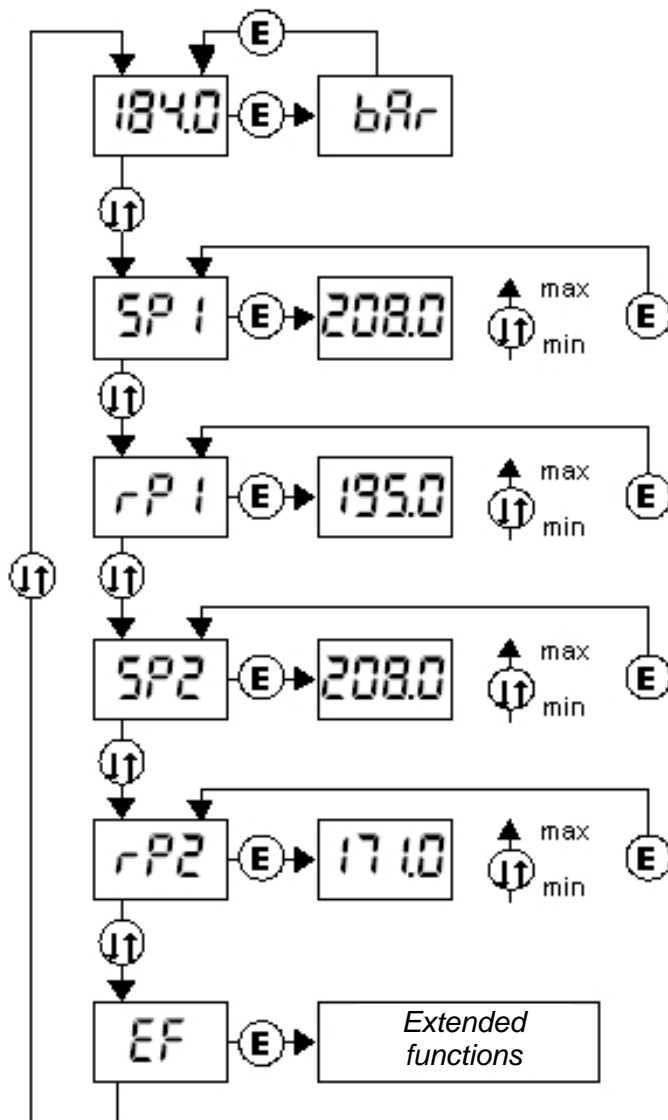
The EDS 8000 can be adapted to suit the particular application as required by changing multiple settings. These settings are combined in a single menu.



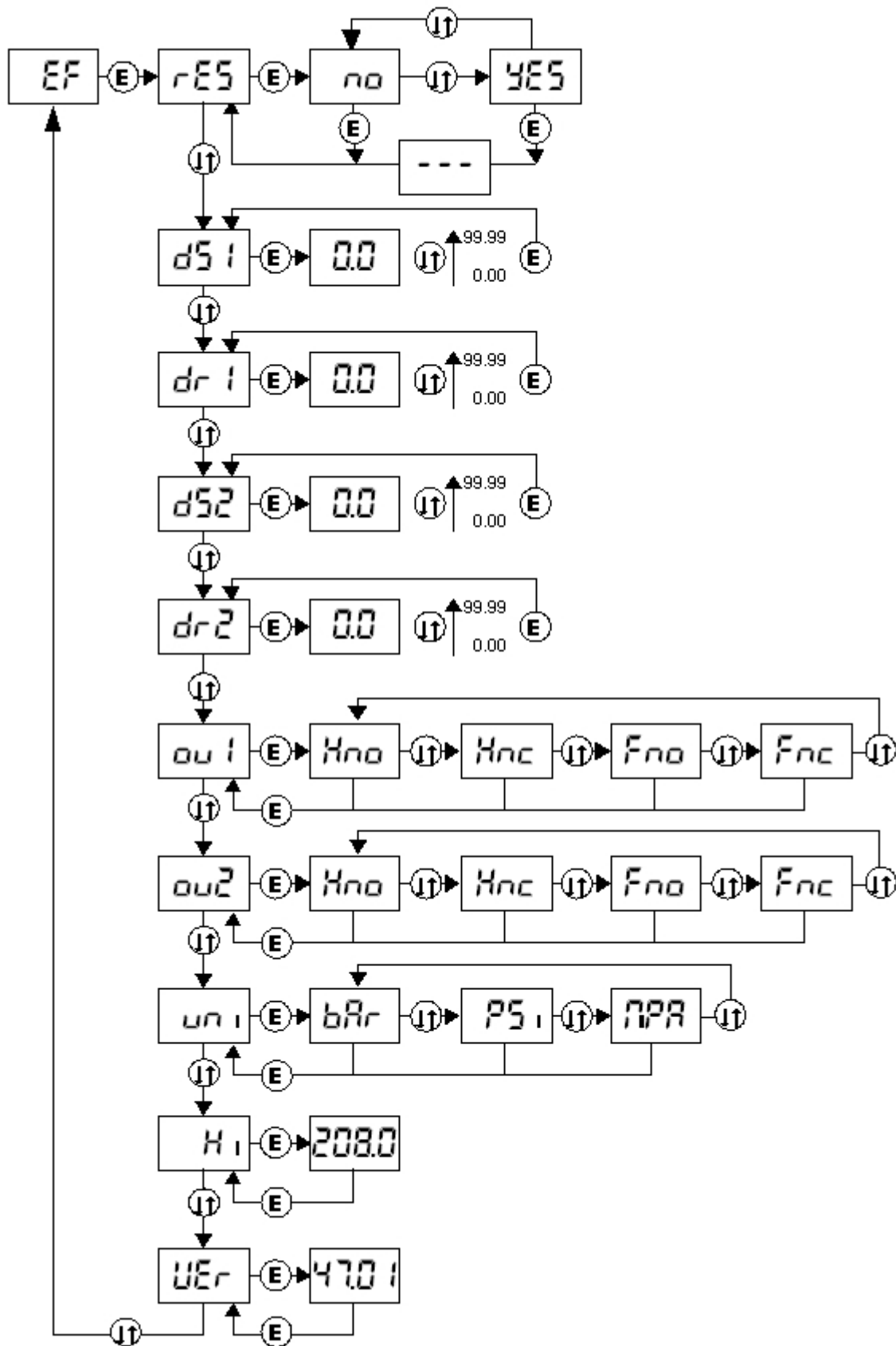
NOTE:

- If no key is pressed for approx. 60 seconds, the menu closes automatically, and any changes that may have been made will not be saved.
- If both keys are pressed at the same time, the menu closes automatically and any changes made are saved.
- When an adjusted parameter is confirmed, the set value is displayed for a second before returning to the relevant menu point.

7.1 Main menu



7.2 Extended functions



8 Error message

If an error is detected, a corresponding error message appears that must be acknowledged by pressing any key.

Possible error messages:

E.10 A data error was detected in the saved settings. This could be due to strong electromagnetic interference or a component fault.

Action: Press **(E)** and confirm "RES" by pressing "Yes". The factory settings will be restored for all adjustable parameters and all minimum and maximum values will be deleted. Enter the data again from the beginning.

E.12 An error was detected in the saved calibration data. This could be due to strong electromagnetic interference or a component fault.

Action: Disconnect then reconnect the supply voltage to the instrument. If the error persists, the instrument must be returned to the factory for recalibration or repair.

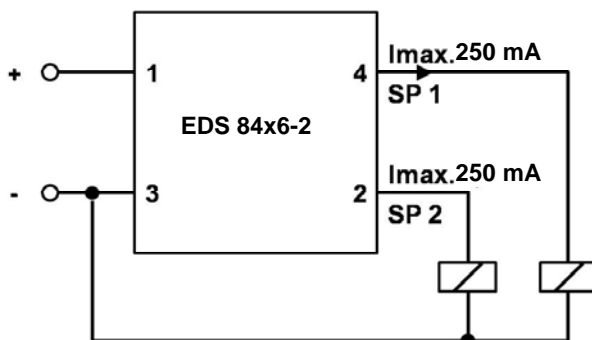
E.21 A communication error was detected within the instrument. This could be due to strong electromagnetic interference or a component fault.

Solution: Press **(E)**. If the error persists, disconnect then reconnect the supply voltage to the instrument. If the error still persists, please contact our service department.

9 Pin assignment

Version with 2 switch outputs:

Male 4 pole, M12x1



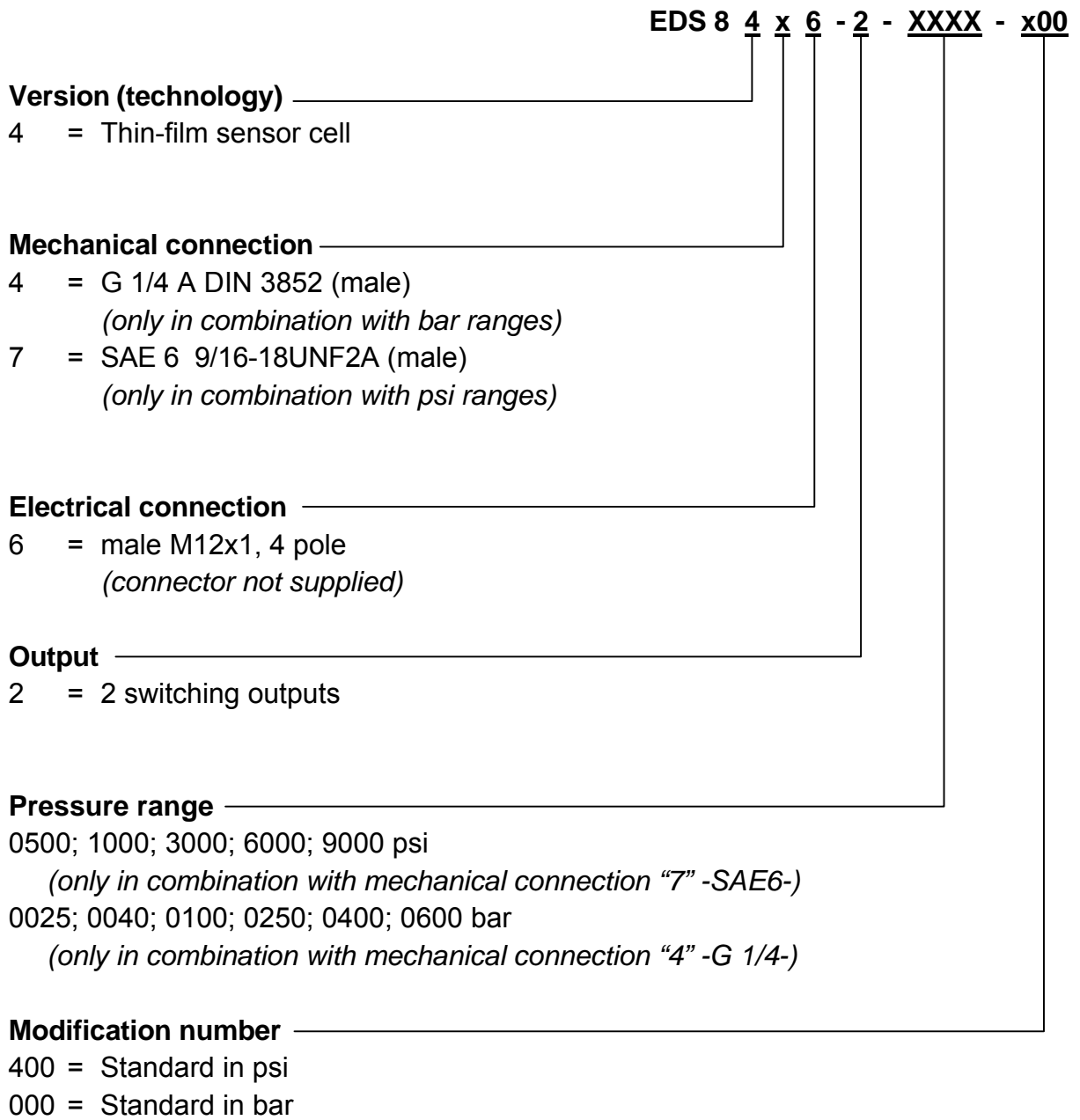
10 Technical specifications

Input data	
Measuring ranges	500; 1000; 3000; 6000; 9000 psi 25; 40; 100; 250; 400; 600 bar
Overload pressures	1160; 2900; 7250; 11600; 14500 psi 80; 80; 200; 500; 800; 1000 bar
Burst pressure	2900; 7250; 14500; 29000; 29000 psi 200; 200; 500; 1000; 2000; 2000 bar
Mechanical connection	SAE 6 9/16-18UNF2A; G1/4 A DIN 3852, Form E
Torque value	15 lb-ft (20 Nm)
Parts in contact with fluid:	Mechanical connection: stainless steel Sensor cell: stainless steel Seal: FPM
Output data	
Accuracy to DIN 16086, Max. setting (Display)	$\leq \pm 0.5$ % FS typ. $\leq \pm 1$ % FS max.
Repeatability	$\leq \pm 0.5$ % FS max.
Temperature drift	$\leq \pm 0.017$ % FS / °F [0.03 % / °C] max. zero point $\leq \pm 0.017$ % FS / °F [0.03 % / °C] max. range
Long-term stability	$\leq \pm 0.25$ % FS / year max.
Switch outputs	
Type	2 PNP transistor outputs
Switching current	max. 250 mA per switching output
Switching cycles	> 100 million
Reaction time	< 10 ms
Ambient Conditions	
Compensated temperature range	-13 .. +185 °F [-25 .. + 85 °C]
Operating temperature range *	-13 .. +212 °F [-25 .. + 100 °C]
Storage temperature range	-40 .. +185 °F [-40 .. + 85 °C]
Fluid temperature range *	-13 .. +257 °F [-25 .. + 125 °C]
Nominal temperature range of display (read-out)	+5 .. +185 °F [-15 .. + 70 °C]
CE mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to DIN EN 60068-2-6 at 0 .. 500 Hz	approx. 10 g
Shock resistance to DIN EN 60068-2-29 (11 ms)	approx. 50 g
Protection class to DIN 40050	IP 67 (when an IP 67 connector is used)
Other data	
Supply voltage	9.6 .. 32 V DC
Current consumption	max. 35 mA (inactive switch output)
Display:	4-digit, LED, 7-segment, Height of digits 4.5 mm
Life expectancy	> 10 million cycles (0 .. 100 %)
Weight:	approx. 70 g

FS (Full Scale) = relative to the complete measuring range

* extended temperature range possible. By separate request.

11 Ordering details

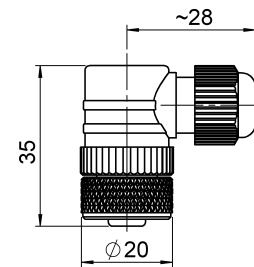


12 Accessories

12.1 For electrical connection

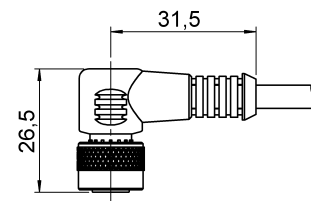
ZBE 06 (4 pole)

Female connector, right-angle
Part No.: 6006788



ZBE 06-02 (4 pole)

Female connector, right-angle with
2m cable,
Part No.: 6006790



ZBE 06-05 (4 pole)

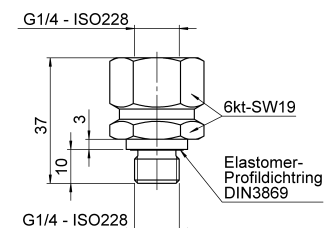
Female connector, right-angle
with 5m cable
Part No.: 6006789

Colour code: Pin 1: brown
Pin 2: white
Pin 3: blue
Pin 4: black

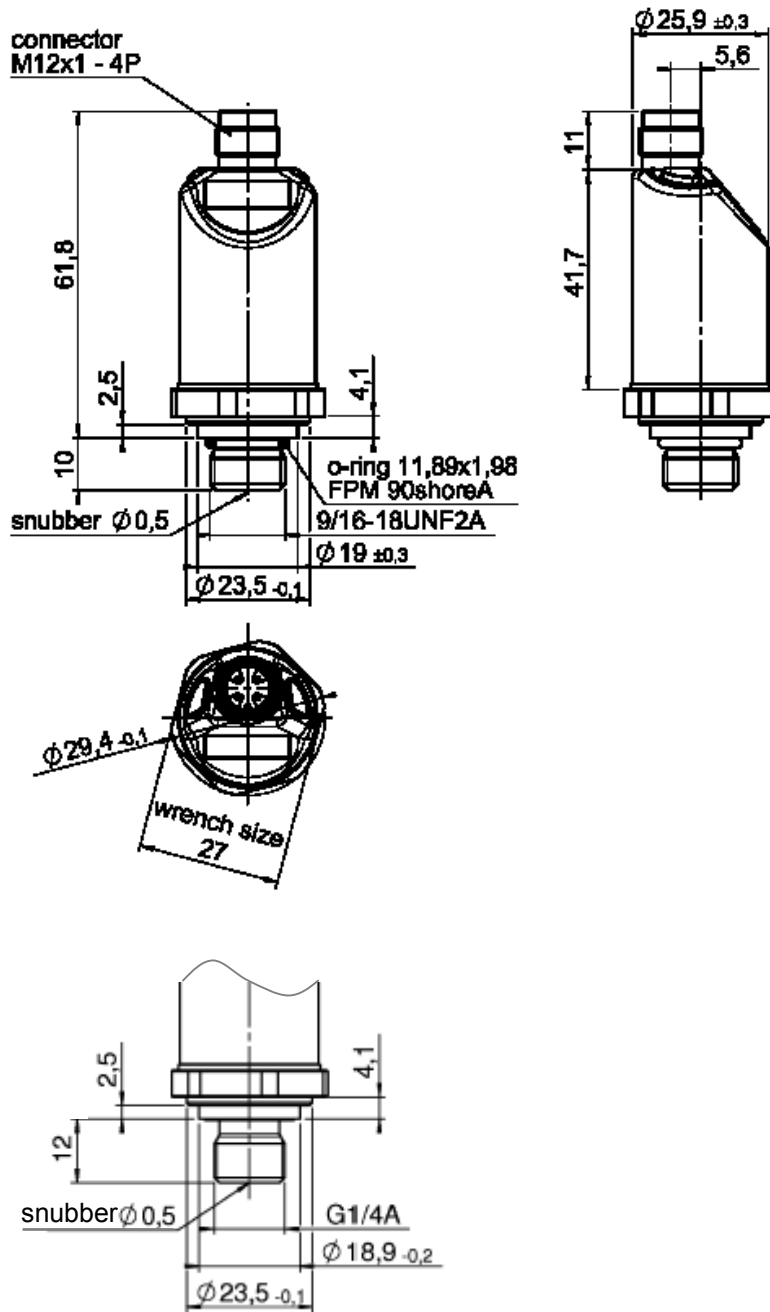
12.2 For mechanical connection

ZBM 14

Adapter female thread G1/4 - male
thread G1/4 (rotating)
Part No.: 907818



13 Instrument dimensions



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HYDAC Service

For enquiries about repairs or alterations, please contact HYDAC Service.

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Note

The information in this manual relates to the operating conditions and applications described. For applications and operating conditions not described, please contact the relevant technical department.

If you have any questions, suggestions, or encounter any problems of a technical nature, please contact your Hydac representative.

Subject to technical modifications.