

Electronic Pressure Switch

EDS 8000

(Menu navigation according to VDMA)

User Manual

(Translation of original instructions)



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Foreword

This manual provides you, as user of our product, with key information on the operation and maintenance of the equipment.

It will help you to familiarise yourself with the product and assist you in obtaining maximum benefit in the applications for which it is designed.

Keep the manual in the vicinity of the instrument for immediate reference.

Please note: the specifications outlined in this documentation for the instrument technology are correct at the time of publishing. Deviations in technical specifications, illustrations and dimensions are therefore possible.

Should you find any errors whilst using this manual, or have any suggestions for improvements, please contact:

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The editorial team looks forward to hearing from you.

“Putting experience into practice”

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 Exclusion of liability

This operating manual was made to the best of our knowledge. Nevertheless and despite the greatest care, it cannot be excluded that mistakes could have crept in. Therefore please understand that in the absence of any provisions to the contrary hereinafter our warranty and liability – for any legal reasons whatsoever – are excluded in respect of the information in this operating manual. In particular, we shall not be liable for lost profit or other financial loss. This exclusion of liability does not apply in cases of intent and gross negligence. Moreover, it does not apply to defects which have been deceitfully concealed or whose absence has been guaranteed, nor in cases of culpable harm to life, physical injury and damage to health. If we negligently breach any material contractual obligation, our liability shall be limited to foreseeable damage. Claims due to the Product Liability shall remain unaffected.

In the event of translation, only the original version of the operating manual in German is legally valid.

3 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

4 Installation

The EDS 8000 can be mounted directly via the pressure connection or indirectly on a hydraulic block using a hose or a minimesse 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 minimesse hose, the housing must be earthed separately (e.g. with a screened cable).



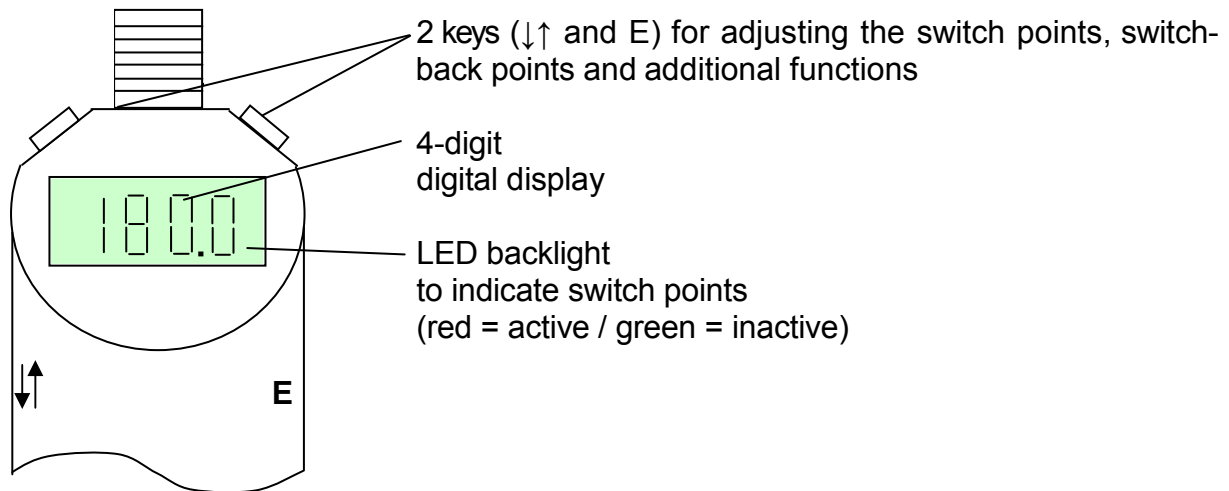
CAUTION:

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

5 Controls of the EDS 8000

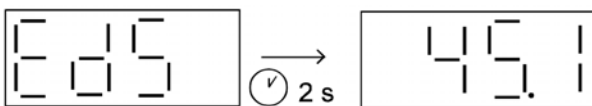


Use the keys to select the next menu point, or alternatively to adjust the values.

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <ul style="list-style-type: none"> • To scroll through the menu • To increase the value • Hold the key down to fast-scroll through the parameter values |  <ul style="list-style-type: none"> • To select the menu point • To confirm value |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

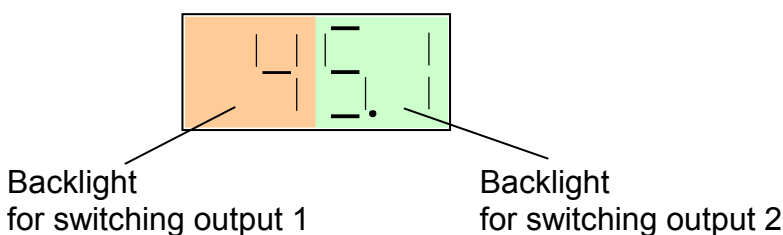
6 Digital display

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
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 1</i>	Uni
Units in bar	<i>bAr</i>	Bar
Units in MPa	<i>nPA</i>	MPa
Units in psi	<i>pS 1</i>	psi
Maximum value	<i>H 1</i>	HI
Error indication	<i>Err</i>	ERR
Delete	<i>---</i>	---
Extended functions	<i>EF</i>	EF

Description	Representation on 7-segment display	ASCII representation
Yes	YES	Yes
No	no	No
Reset Min-/Max-value	rS.HL	rS.HL
Programming lock	PrG	PrG
Calibrations of sensors zero point	cALi	cALi
New	nEU	nEU
Version	VEr	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 by "reset Min-/Max-value" (re.HL) or "reset" (rES).
- If the actual pressure is less than 0.6 % of the nominal range, 0 bar is displayed.

7 Output function

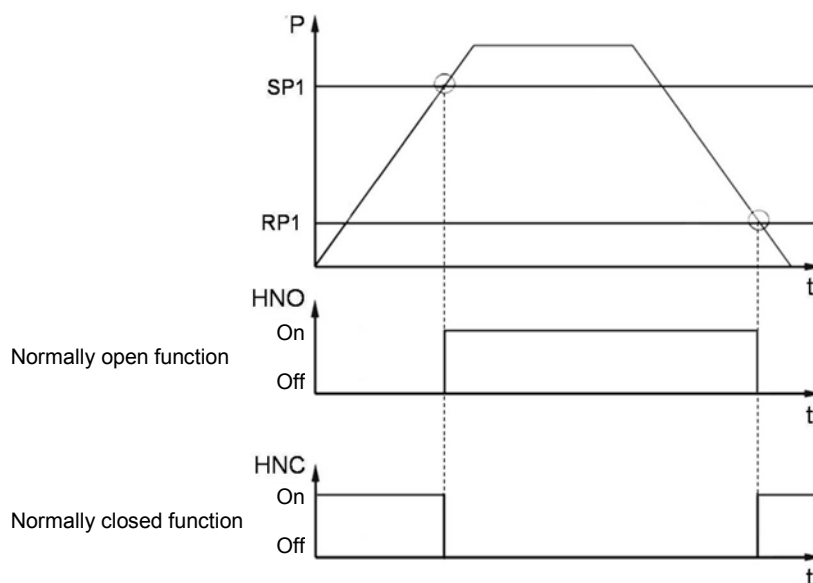
7.1 Switching Outputs

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

7.1.1 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):



Abbreviations:

"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.

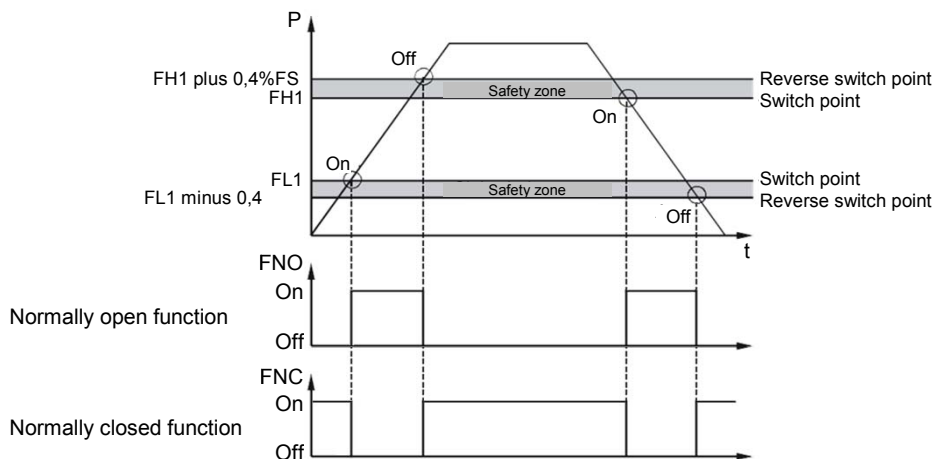
7.1.2 Window function setting (Fno / Fnc)

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.

7.2 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 psi	in psi	in psi	in psi
0.. 500	5	500	5	1
0..1000	10	1000	10	2
0..3000	30	3000	30	5
0..6000	60	6000	60	10
0..9000	90	9000	90	20

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

8 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.

The function "Cali" enables the calibration of the sensor zero point. The current pressure is saved as the new zero point. This is possible in the range +/- 3% of the instrument rated pressure. "neW" appears in the display when a calibration is carried out in the permitted range, otherwise "Err" is displayed.

This function is useful, for example, if there is always a residual pressure left in the system which should be displayed as 0 bar.

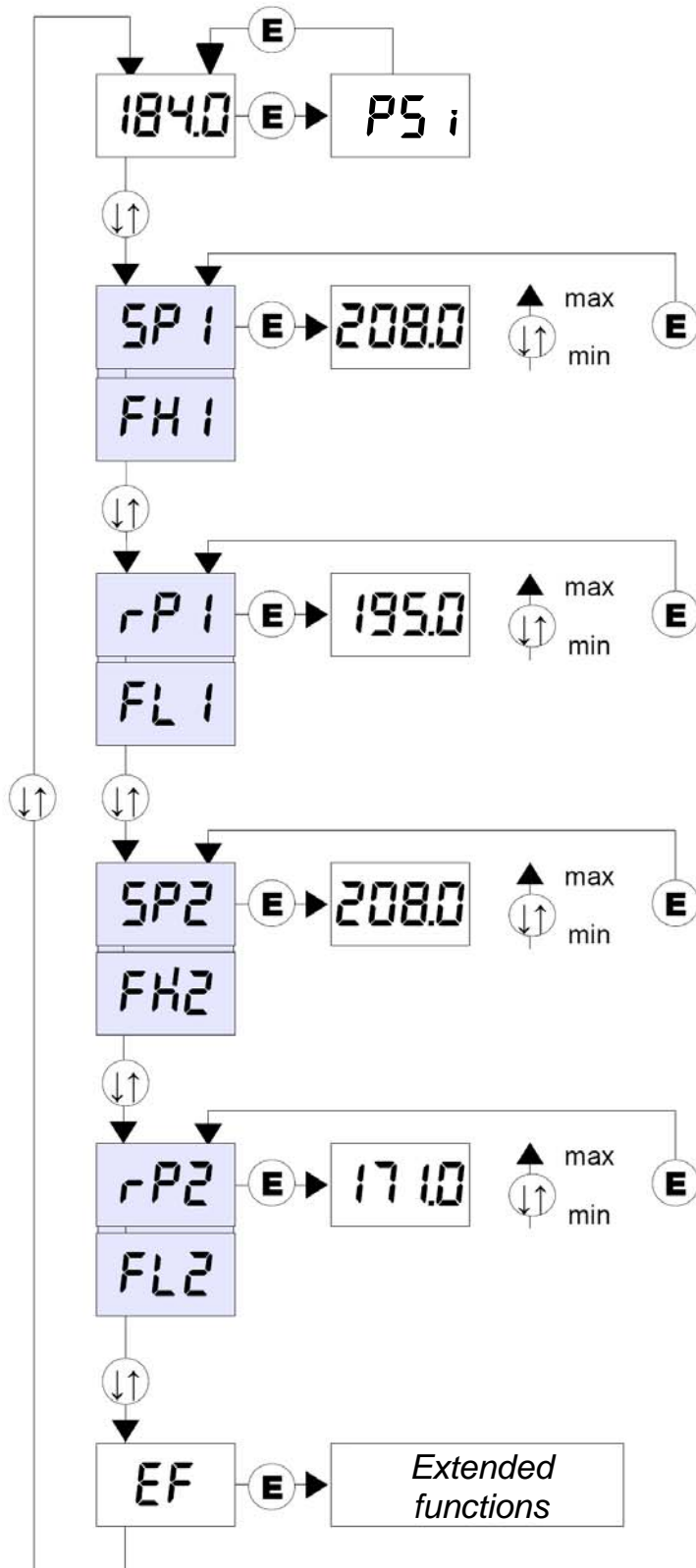


CAUTION:

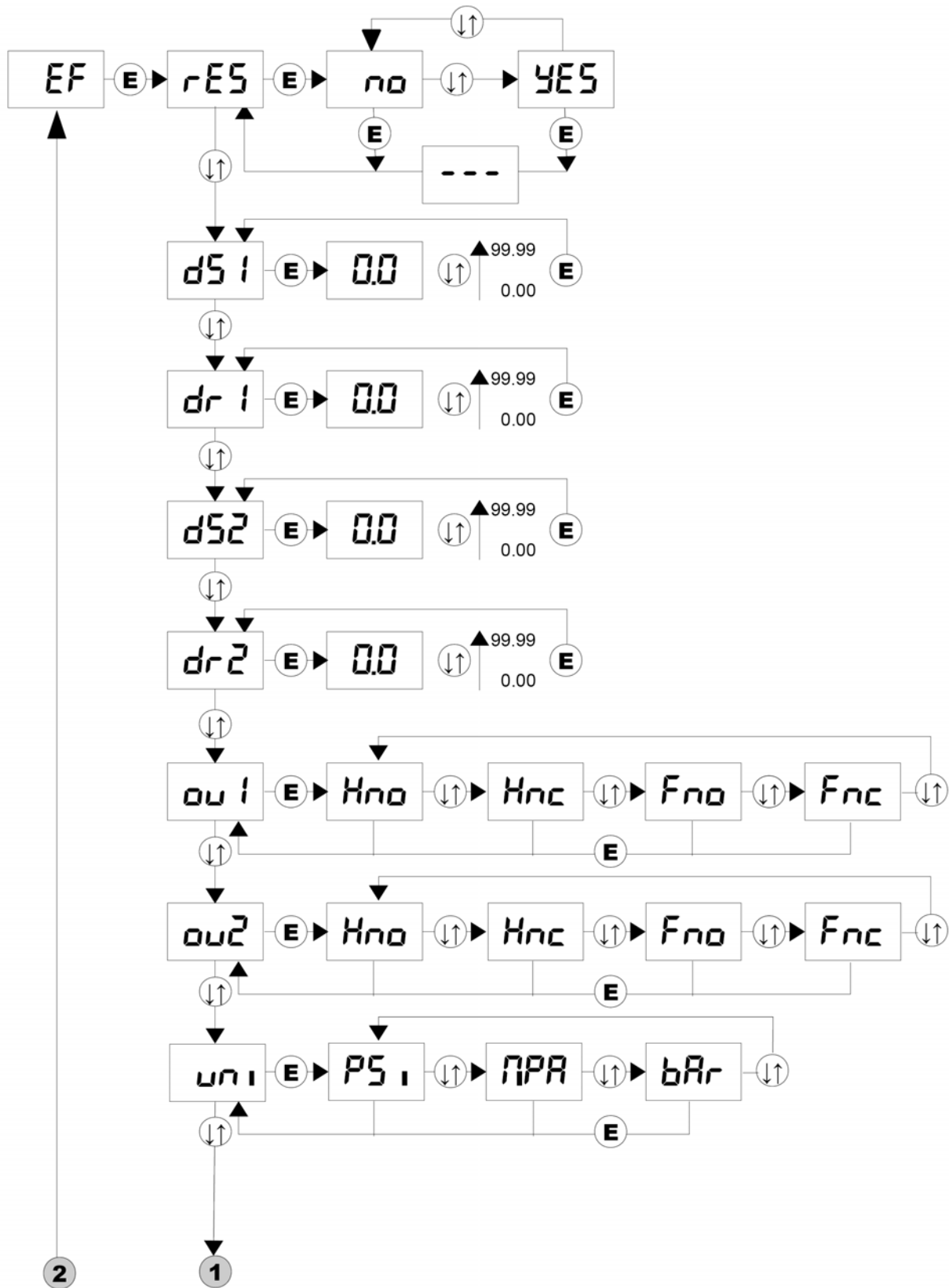
Following a zero point adjustment, for example on a 600 bar instrument, a pressure of up to 18 bar will be displayed as 0 bar. Before any work is carried out on the hydraulic system, ensure that the system is depressurised.

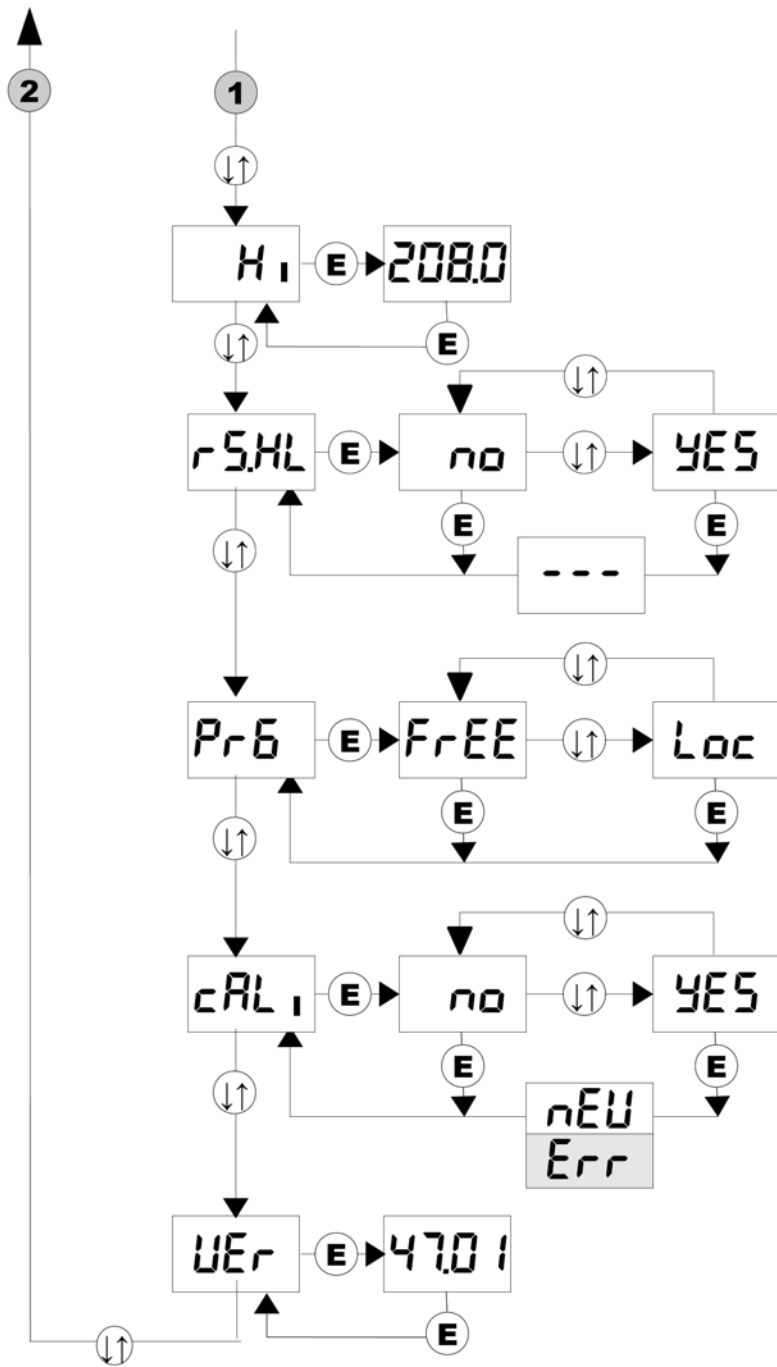
In order to prevent unauthorised adjustment of the device, a programming lock can be set. If the menu item "PrG" is set to "Loc" in the extended menu, the programming lock is set. All values can still be read but can't be edited. When trying to edit a value by means of the arrow keys, "Loc" is displayed as long as the key is pressed. The functions "reS" and "Rs.HL" are locked as well.

8.1 Main menu



8.2 Extended functions





9 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.

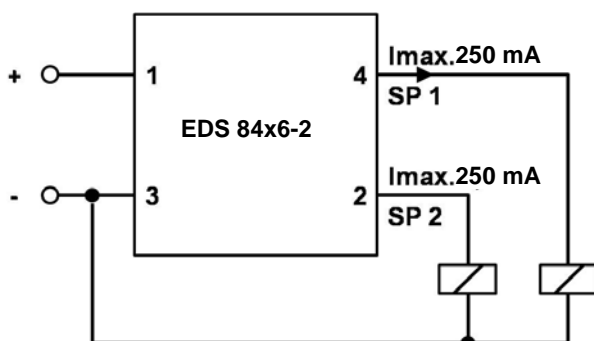
E.21 A communication error was detected within the instrument. This could be due to strong electromagnetic interference or a component fault.

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.

10 Pin assignment

Version with 2 switch outputs:

Male 4 pole, M12x1



11 Technical specifications

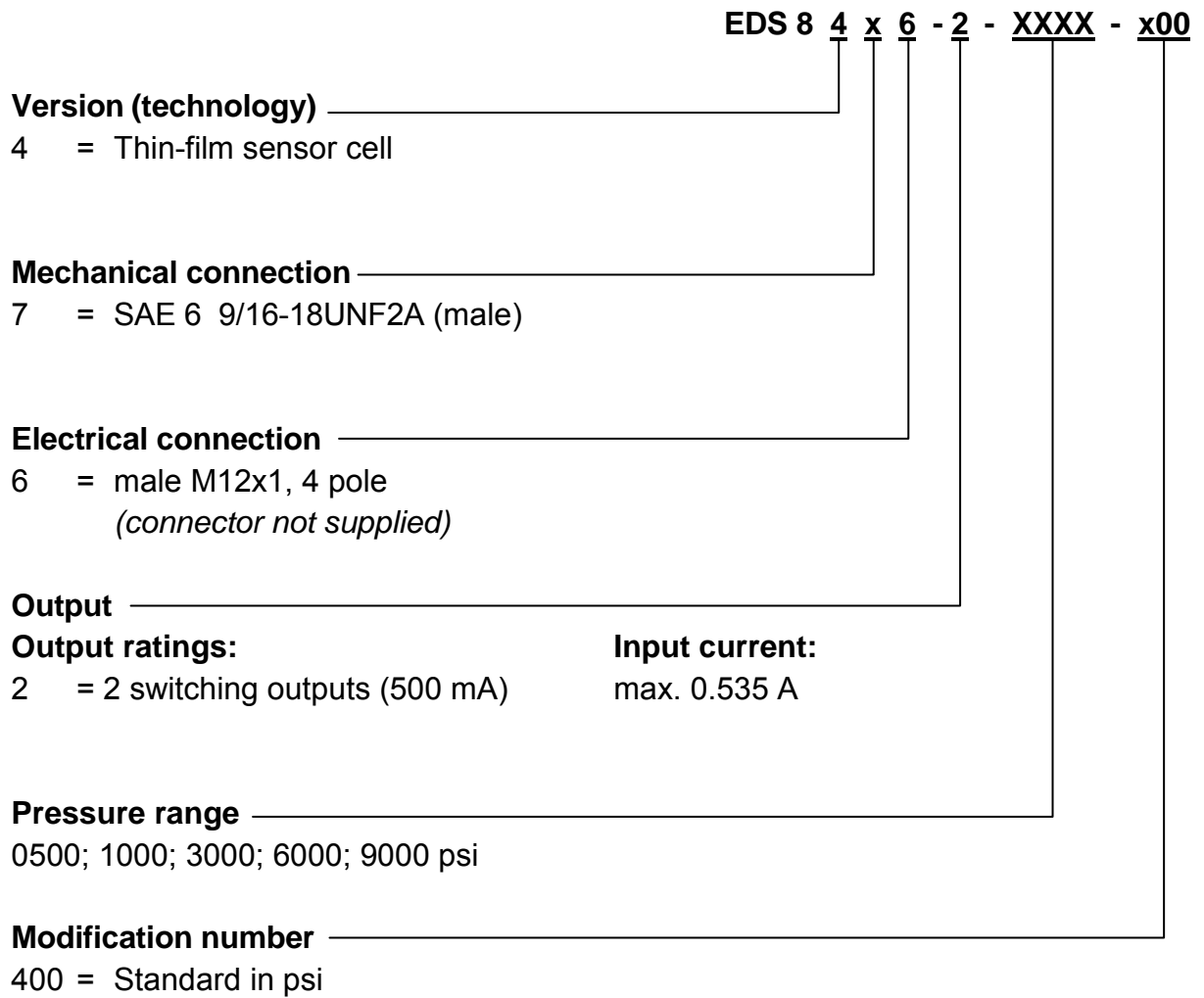
Input data	
Measuring ranges	500; 1000; 3000; 6000; 9000 psi
Overload pressures	1160; 2900; 7250; 11600; 14500 psi
Burst pressure	2900; 7250; 14500; 29000; 29000 psi
Mechanical connection	SAE 6 9/16-18UNF2A
Torque value	15 lb-ft (20 Nm)
Parts in contact with fluid:	Mechanical connection: stainless steel 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	> 10 million
Reaction time	< 10 ms
Ambient Conditions	
Compensated temperature range	-13 .. +185 °F [-25 .. + 85 °C]
Operating temperature range ¹⁾	-40 .. +212 °F [-40 .. + 100 °C] / -13 .. +212 °F [-25 .. + 100 °C]
Storage temperature range	-40 .. +185 °F [-40 .. + 85 °C]
Fluid temperature range ¹⁾	-40 .. +257 °F [-40 .. + 125 °C] / -13 .. +257 °F [-25 .. + 125 °C]
Nominal temperature range of display (read-out)	+5 .. +158 °F [-15 .. + 70 °C]
CE mark	EN 61000-6-1 / 2 / 3 / 4
UL mark ²⁾	Certificate-No.: E318391
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 IEC 60529	IP 67 (when an IP 67 connector is used)
Other data	
Supply voltage for use acc. to UL spez.)	9.6 .. 32 V DC - limited energy – according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950
Current consumption	max. 0.535 A total max. 35 mA (with inactive switching outputs)
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

¹⁾ -25°C [-13 °F] with FPM seal, -40°C [-40 °F] on request

²⁾ Environmental conditions to 1.4.2 UL 61010-1; C22.2 No. 61010-1

12 Ordering details

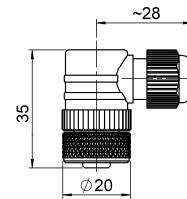


13 Accessories

13.1 For electrical connection

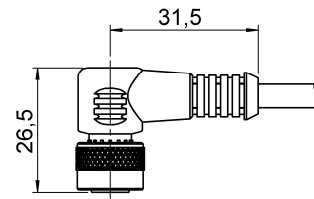
ZBE 06 (4 pole)

Female connector, right-angle
Part No.: 6006788



ZBE 06-02-4 (4 pole)

Female connector, right-angle with
2m cable,
Part No.: 02701196



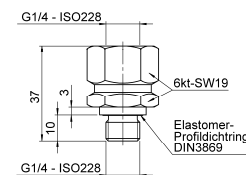
ZBE 06-05-4 (4 pole)

Female connector, right-angle
with 5m cable
Part No.: 02701197
Colour code: Pin 1: brown
Pin 2: white
Pin 3: blue
Pin 4: black

13.2 For mechanical connection

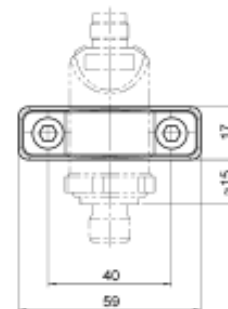
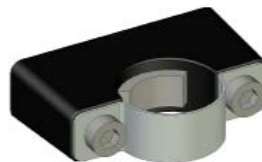
ZBM 14

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



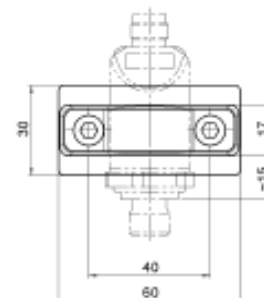
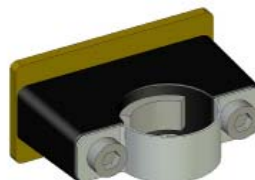
ZBM 8000

Clamp for wall-mounting
- screw-type fitting -
(Material of lower section:
TPE Santoprene 10187
Material of top section:
Steel strip DIN 95381-1.4571)
Part No.: 3546755

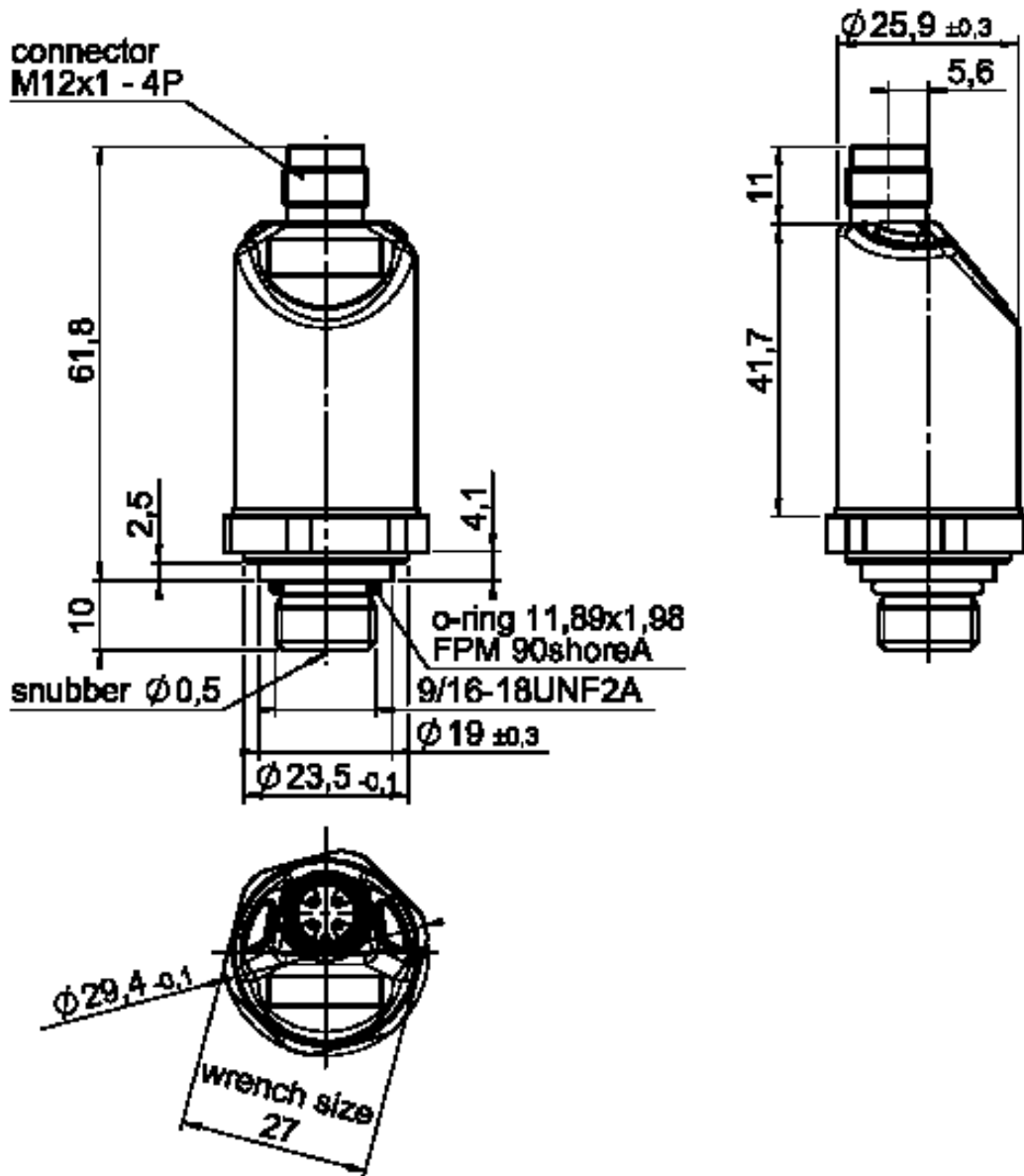


ZBM 8000

Clamp for wall-mounting
- weld-type fitting -
(Material of welding bridge:
QSTE340TM, zink coating
EN 12329 FE/ZN8/B
Material of lower section:
TPE Santoprene 10187
Material of top section:
Steel strip DIN 95381-1.4571)
Part No.: 3546757



14 Instrument dimensions



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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.