HYDAC INTERNATIONAL

Pressure switches

EDS 3400

Flush membrane
Up to 2 switch outputs
Analogue output

Features

- With display
- The display can be moved in two planes.
- Any installation position
- Measured value can be displayed in bar, psi or MPa

Description

The EDS 3400 with flush membrane is a compact electronic pressure switch with integrated digital display for relative pressure measurement in the low and high-pressure range.

The pressure connection is achieved with a fully sealed stainless steel front membrane filled internally with a pressure transfer fluid. The process pressure is transmitted hydrostatically to the measurement cell via the pressure transfer fluid.

Like the standard model, the EDS 3400 with flush membrane has a stainless steel measurement cell with a thin film strain gauge. The instrument can have one or two switching outputs, and there is the option of a reversible analogue output signal (4 .. 20 mA or 0 .. 10 V).

The display of the EDS 3400 can be moved in two planes. The device can be installed in almost any position and the display can be turned to the optimum position without the usual additional expense of a mechanical adapter.

The 4-digit display can indicate the pressure in bar, psi or MPa. The user can select the particular measurement unit. When changing to a different measurement unit, the instrument automatically converts all the switching settings to the new unit of measurement.

Application fields

The electronic pressure switch EDS 3400 with a flush membrane was designed specifically for applications in which a standard pressure connection could become blocked, clogged or frozen by the particular fluid used.

Further applications include processes where the medium changes regularly and any residues could cause mixing or contamination of the media.

Technical details

Input data												
Measurement ranges	bar	-1..1	2.5	6	10	16	25	40	100	250	400	600
Overload pressures	bar	5	5	12	20	32	50	80	200	500	800	1000
Burst pressure	bar	100	100	100	100	100	200	200	500	1250	2000	2000
Mechanical connection		See model code										
Tightening torque, recommended		20 Nm (G1/4); 45 Nm (G1/2)										
Parts in contact with fluid		Connector: stainless steel Seal: FKM O-ring: FKM										
Pressure transfer fluid		Silicone-free oil										
Output variables												
Switching outputs		1 or 2 PNP transistor outputs Switching current: max. 1.2 A per output Switching cycles: > 100 million										
Analogue output, permitted load resistance		Selectable: 4 .. 20 mA 0 .. 10 V				load resist.: max. 500 Ω load resist.: min. 1 kΩ						
Accuracy acc. to DIN 16086, terminal based		≤ ± 0.5 % FS typ. ≤ ± 1.0 % FS max.										
Temperature compensation zero point		≤ ± 0.015 % FS / °C typ. ≤ ± 0.025 % FS / °C max.										
Temperature compensation span		≤ ± 0.015 % FS / °C typ. ≤ ± 0.025 % FS / °C max.										
Repeatability		≤ ± 0.25 % FS max.										
Reaction time		< 10 ms										
Long-term drift		≤ ± 0.3 % FS typ. / year										
Ambient conditions												
Compensated temperature range		-10 .. +70 °C										
Operating temperature range		-25 .. +80 °C (-25 to +60 °C acc. to UL spec.)										
Storage temperature range		-40 .. +80 °C										
Fluid temperature range		-25 .. +80 °C / -25 .. +150 °C with cooling body										
CE mark		EN 61000-6-1 / 2 / 3 / 4										
cULus mark [1]		Certificate no.: E318391										
Vibration resistance acc. to DIN EN 60068-2-6 at 10 .. 500 Hz		≤ 10 g										
Shock resistance acc. to DIN EN 60068-2-27 (11 ms)		≤ 50 g										
Protection class acc. to DIN EN 60529 [2]		IP 67										
Other data												
Supply voltage when applied acc. to UL specifications		9 .. 35 V DC without analogue output 18 .. 35 V DC with analogue output -limited energy- according to 9.3 UL 61010; Class 2; UL 1310 / 1585; LPS UL 60950										
Residual ripple of supply voltage		≤ 5 %										
Current consumption		≤ 2.455 A total ≤ 35 mA with inactive switching output ≤ 55 mA with inactive switching output and analogue output										
Display		4-digit, LED, 7 segment, red, height of digits 7 mm										
Weight		~ 150 g										

Note: Reverse polarity protection of the supply voltage, overvoltage, override and short circuit protection are provided.

FS (**F**ull **S**cale) = relative to complete measuring range

[1] Environmental conditions according to 1.4.2 UL 61010-1; C22.2 no. 61010-1

[2] With mounted mating connector in corresponding protection type

Setting options

All the settings available on the EDS 3400 are combined in 2 easy-to-navigate menus. In order to prevent unauthorised adjustment of the device, a programming disable can be set.

Setting ranges for the switching outputs

Switch point function

Measuring ranges in bar	Switch point in bar	Hysteresis in bar	Increment* in bar
-1 .. 1	-0.97 .. 1.00	-0.99 .. 0.98	0.01
0 .. 2.5	0.040 .. 2.500	0.015 .. 2.475	0.005
0 .. 6	0.09 .. 6.00	0.30 .. 5.94	0.01
0 .. 10	0.16 .. 10.00	0.06 .. 9.90	0.02
0 .. 16	0.25 .. 16.00	0.10 .. 15.80	0.05
0 .. 25	0.40 .. 25.00	0.15 .. 24.75	0.05
0 .. 40	0.6 .. 4.0	0.2 .. 39.6	0.1
0 .. 100	1.6 .. 100.0	0.6 .. 99.0	0.2
0 .. 250	4.0 .. 250.0	1.5 .. 247.5	0.5
0 .. 400	6 .. 400	2 .. 396	1
0 .. 600	9 .. 600	3 .. 594	1

Window function

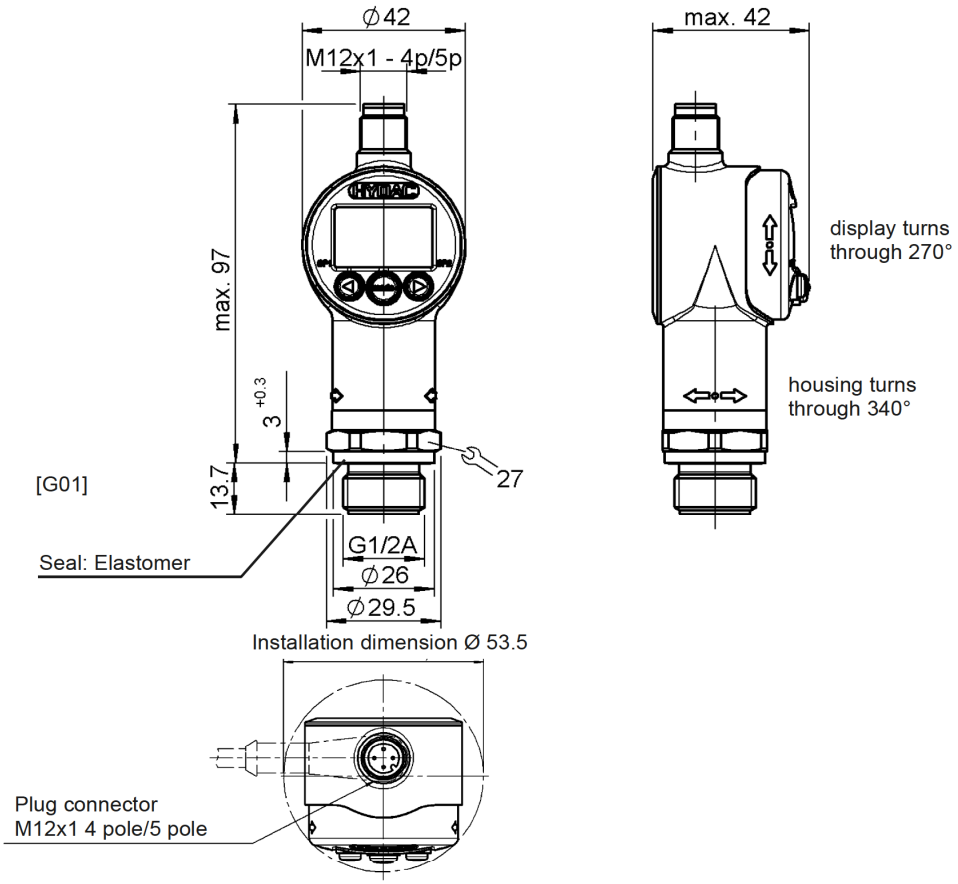
Measuring range in bar	Lower switch value in bar	Upper switch value in bar	Increment* in bar
-1 .. 1	-0.97 .. 0.96	-0.95 .. 0.98	0.01
0 .. 2.5	0.040 .. 2.455	0.060 .. 2.475	0.005
0 .. 6	0.09 .. 5.89	0.14 .. 5.94	0.01
0 .. 10	0.16 .. 9.82	0.24 .. 9.90	0.02
0 .. 16	0.25 .. 15.70	0.40 .. 15.80	0.05
0 .. 25	0.40 .. 24.55	0.60 .. 24.75	0.05
0 . 40	0.6 .. 39.2	0.9 .. 39.6	0.1
0 .. 100	1.6 .. 98.2	2.4 .. 99.0	0.2
0 .. 250	4.0 .. 245.5	6.0 .. 247.5	0.5
0 .. 400	6 .. 392	9 .. 396	1
0 .. 600	9 .. 589	14 .. 594	1

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

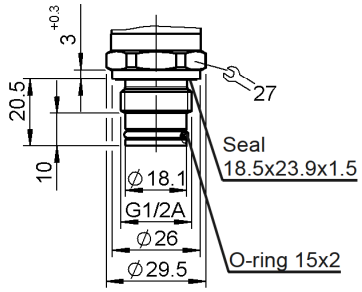
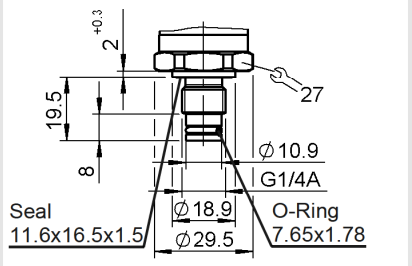
Additional functions

- Switching mode of the outputs adjustable (switch point function or window function)
- Switching direction of the switch outputs adjustable (N/C or N/O)
- Switch-on and switch-back delay adjustable from 0.00 .. 99.99 seconds
- Choice of display (actual pressure, peak value, switch point 1, switch point 2, display off)
- Display filter for smoothing the display value during pressure pulsations
- Analogue output signal selectable 4 .. 20 mA or 0 .. 10 V
- Pressure can be displayed in measurement units bar, psi, MPa; other units of force, weight, etc. can also be set by the user.

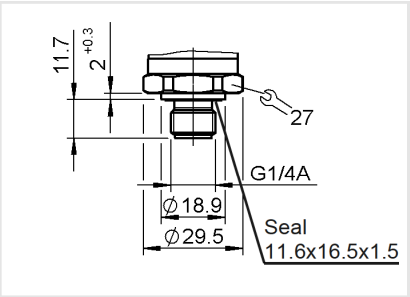
Dimensions



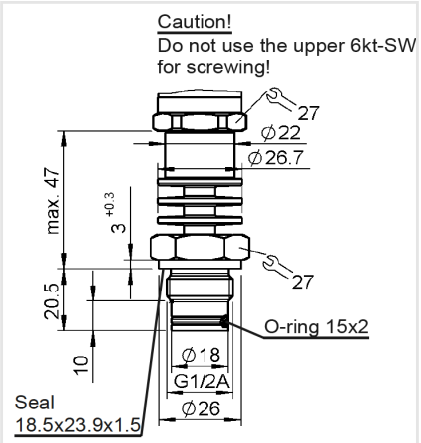
Mechanical Connection Variants

[G02] G1/2 with additional front O-ring seal tightening torque, recommended: 45 Nm	[G04] G1/4 with additional front O-ring seal tightening torque, recommended: 20 Nm
	

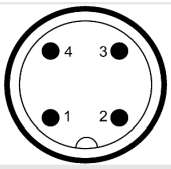
[G05]
G1/4 A ISO 1179-2
tightening torque, recommended: 20 Nm

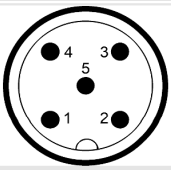


[G12]
G1/2 with additional front O-ring seal and cooling section
tightening torque, recommended: 45 Nm



Pin connections

M12x1, 4 pole	Pin	Output: 1	Output: 2	Output: 3
	1	$+U_B$	$+U_B$	$+U_B$
	2	n.c.	SP2	Analogue
	3	0 V	0 V	0 V
	4	SP1	SP1	SP1

M12x1, 5 pole	Pin	Output: 5
	1	$+U_B$
	2	Analogue
	3	0 V
	4	SP1
	5	SP2

Model code

EDS 3 4 Z X - X - XXXX - XXX - 000

Mechanical process connection
Z = Flush membrane

Electrical connection
6 = Plug connector M12x1, 4 pole (mating connector not included), only for output models "1", "2" and "3"
8 = Plug connector M12x1, 5 pole (mating connector not included), only for output model "5"

Output

1 = 1 switching output	only in conjunction with electrical connection type "6"
2 = 2 switching outputs	only in conjunction with electrical connection type "6"
3 = 1 switching output and 1 analogue output	only in conjunction with electrical connection type"6"
5 = 2 switching outputs and 1 analogue output	only in conjunction with electrical connection type "8" and modification "000"

Measuring ranges in bar
0001 (-1 .. 1); 02.5; 0006; 0010; 0016; 0025; 0040; 0100; 0250; 0400; 0600

Mechanical connection
G01 = G1/2 A ISO 1179-2
G02 = G1/2 with additional front O-ring seal
G04 = G1/4 with additional front O-ring seal
G05 = G1/4 A ISO 1179-2 (only for measuring ranges ≥ 40 bar)
G12 = G1/2 with additional front O-ring seal and cooling section

Modification number
000 = Standard

Accessories:
Appropriate accessories, such as mating connectors, can be found in the Accessories brochure.

Note

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