Pressure Switch
EDS 3100

Absolute pressure | **Display**

Up to 2 switching outputs
Analogue output

Description:

The EDS 3100 is a compact electronic pressure switch with integrated digital display for absolute pressure measurement in the low pressure range.

It has a ceramic measurement cell with thick-layer strain gauge. Depending on the particular version, the instrument can have one or two switching outputs, and there is the option of an additional switchable analogue output signal (4 .. 20 mA or 0 .. 10 V).

A special design feature of the EDS 3100 is that the display can be moved in two planes. The device can be installed in almost any mounting 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 device automatically converts all the switching settings to the new unit of measurement.

The EDS 3100 is also available in a variant with menu navigation in accordance with VDMA.

The main applications of the EDS 3100 are primarily in low-pressure ranges in hydraulics and pneumatics, as well as in refrigeration and air conditioning technology.

Technical data:

Input data			
Measuring ranges	bar	1	2.5
Overload pressures	bar	3	8
Burst pressure	bar	5	12
Mechanical connection		See model code	
Tightening torque, recommended		20 Nm (G1/4); 45 Nm (G1/2)	
Parts in contact with fluid		Mech. connection: Stainless steel Sensor cell: Ceramic Seal: Copper (G1/2) / FKM / EPDM (as per model code)	
Output data			
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 load resist. max. 500 Ω 0 .. 10 V load resist. min. 1 kΩ	
Accuracy acc. to DIN 16086, terminal based		≤ ± 0.5 % FS typ. ≤ ± 1 % 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	
Environmental conditions			
Compensated temperature range		-10 .. +70 °C	
Operating temperature range		-25 .. +80 °C (-25 .. +60 °C for UL spec.)	
Storage temperature range		-40 .. +80 °C	
Fluid temperature range		-25 .. +80 °C	
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 – acc. to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950	
Residual ripple of supply voltage		≤ 5 %	
Current consumption		max. 2.455 A total max. 35 mA with inactive switching output max. 55 mA with inactive switching output and analogue output	
Display		4-digit, LED, 7 segment, red, height of digits 7 mm	
Weight		~ 120 g	

Note: Overvoltage, override, short circuit protection are provided
FS (**F**ull **S**cale) = relative to complete measuring range

[1] Environmental conditions acc. to 1.4.2 UL 61010-1; C22.2 No 61010-1
[2] With mounted mating connector in corresponding protection class

Setting options, standard design:

All settings offered by the EDS 3100 are grouped in 2 easy-to-navigate menus.
In order to prevent unauthorised adjustment of the device, a programming lock can be set.

Setting ranges for the switching outputs:

Switch point function

Meas. range in bar	Switch point in bar	Hysteresis in bar	Increment* in bar
0 .. 1	0.016 .. 1	0.006 .. 0.99	0.002
0 .. 2.5	0.04 .. 2.5	0.015 .. 2.475	0.005

Window function

Meas. range in bar	Lower switch value in bar	Upper switch value in bar	Increment* in bar
0 .. 1	0.016 .. 0.982	0.024 .. 0.99	0.002
0 .. 2.5	0.04 .. 2.455	0.06 .. 2.475	0.005

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

Setting options menu navigation acc. to VDMA:

All terms and symbols used for setting the EDS 3100 as well as the menu structure comply with the specifications in the VDMA Standard (VDMA 24574-1) for pressure switches.

The EDS 3100 can easily be adjusted via three buttons.

Setting ranges for the switching outputs:

Measuring range in bar	Lower limit of RP / FL in bar	Upper limit of SP / FH in bar
0 .. 1	0.010	1.000
0 .. 2.5	0.025	2.500

Measuring range in bar	Min. difference betw. RP and SP & FL and FH	Increment* in bar
0 .. 1	0.010	0.002
0 .. 2.5	0.025	0.005

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

SP = switch point
RP = switch-back point
FL = pressure window lower value
FH = pressure window upper value

Additional functions:

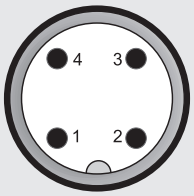
- Switching mode of the switching outputs adjustable (switch point function or window function)
- Switching direction of the switching outputs adjustable (N/C or N/O function)
- Switch-on and switch-off delay adjustable from 0.00 .. 99.99 seconds
- Analogue output signal selectable 4 .. 20 mA or 0 .. 10 V
- Pressure can be displayed in measurement units bar, psi, MPa. The scaling can also be adapted to indicate force, weight, etc.

Additionally in the standard design:

- 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

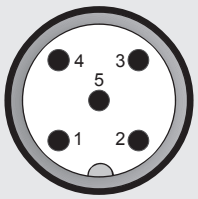
Pin connections:

M12x1, 4 pole



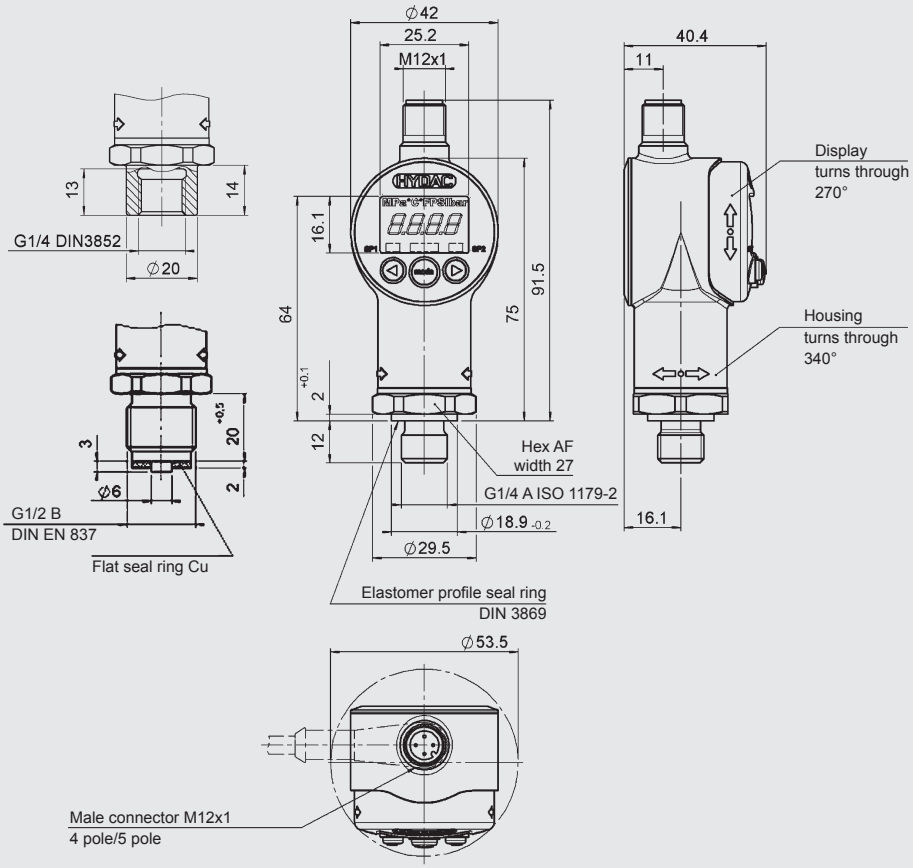
Pin	EDS 31X6-1	EDS 31X6-2	EDS 31X6-3
1	$+U_B$	$+U_B$	$+U_B$
2	n.c.	SP2	Analogue
3	0 V	0 V	0 V
4	SP1	SP1	SP1

M12x1, 5 pole



Pin	EDS 31X8-5
1	$+U_B$
2	Analogue
3	0 V
4	SP1
5	SP2

Dimensions:



Model code:

EDS 3 1 X X – X – XXXX – X00 – X 1

Mechanical connection
1 = G1/2 B DIN-EN 837
only for modification "000"
4 = G1/4 A ISO 1179-2
9 = threaded port DIN 3852-G1/4

Electrical connection
6 = male M12x1, 4 pole
only possible on output models "1", "2" and "3"
8 = male M12x1, 5 pole
only possible on output model "5" and modification "000"

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
01.0; 02.5

Modification number
000 = standard
V00 = menu navigation acc. to VDMA (standard sheet 24574)

Seal material (in contact with fluid)
F = FKM seal (e.g. for hydraulic oils)
E = EPDM seal (e.g. for water, refrigerants)

Connection material(in contact with fluid)
1 = stainless steel

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.

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