

# HYDAC INTERNATIONAL



## Pressure switches

### EDS 3400

Up to 2 switch outputs  
Analogue output

Relative pressure

Display



#### 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 is a compact electronic pressure switch with integrated digital display for relative pressure measurement in the low and high-pressure range.

The instrument has a stainless steel measurement cell with thin-film 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 3400 is that the display 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 device automatically converts all the switching settings to the new unit of measurement.

The EDS 3400 is also available in a variant with menu navigation in accordance with VDMA.

#### Application fields

The main applications of the EDS 3400 are mainly in hydraulics, pneumatics and in refrigeration and air-conditioning technology.

## Technical details

Input data													
Measuring ranges <sup>1)</sup>	bar	-1..1	2.5	6	10	16	25	40	100	250	400	600	1000
Overload pressures	bar	5	5	12	20	32	50	80	200	500	800	1000	1200
Burst pressure	bar	100	100	100	100	100	200	200	500	1250	2000	2000	3000
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 Seal: copper (G1/2) / FKM												
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                      load resist.: max. 500 Ω 0 .. 10 V                         load resist.: min. 1 kΩ												
Accuracy acc. to DIN 16086, terminal based	≤ ± 0.5 % FS typ. ≤ ± 1.0 % 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												
CE mark	EN 61000-6-1 / 2 / 3 / 4												
UL mark <sup>2)</sup>	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 type to DIN EN 60529 <sup>3)</sup>	IP 67												
Other data													
Supply voltage	9 .. 35 V DC without analogue output 18 .. 35 V DC with analogue output												
when applied acc. to UL specifications	-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	~ 120 g												

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

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

<sup>1)</sup> 1000 bar only with mech. connection: G1/4A ISO 1179-2

<sup>2)</sup> Environmental conditions according to 1.4.2 UL 61010-1; C22.2 no. 61010-1

<sup>3)</sup> With mounted mating connector in corresponding protection type

## Setting options: Standard design

All settings offered by the EDS 3400 are grouped 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	0.03 .. 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 .. 40.0	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
0 .. 1000	16 .. 1000	6 .. 990	2

#### 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
0 .. 1000	16 .. 982	24 .. 990	2

\* All ranges shown 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 3400 as well as the menu structure comply with the specifications in the VDMA Standard (VDMA 24574-1) for pressure switches.

The EDS 3400 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	Min. difference betw. RP and SP & FL and FH	Increment* in bar
-1 .. 1	-0.98	1.00	0.02	0.01
0 .. 2.5	0.025	2.500	0.025	0.005
0 .. 6	0.06	6.00	0.06	0.01
0 .. 10	0.10	10.00	0.10	0.02
0 .. 16	0.20	16.00	0.20	0.05
0 .. 25	0.25	25.00	0.25	0.05
0 .. 40	0.4	40.0	0.4	0.1
0 .. 100	1.0	100.0	1.0	0.2
0 .. 250	2.5	250.0	2.5	0.5
0 .. 400	4	400	4	1
0 .. 600	6	600	6	1
0 .. 1000	10	1000	10	2

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

SP = switch point; RP = switch-back point

FL = temperature window lower value; FH = temperature window upper value

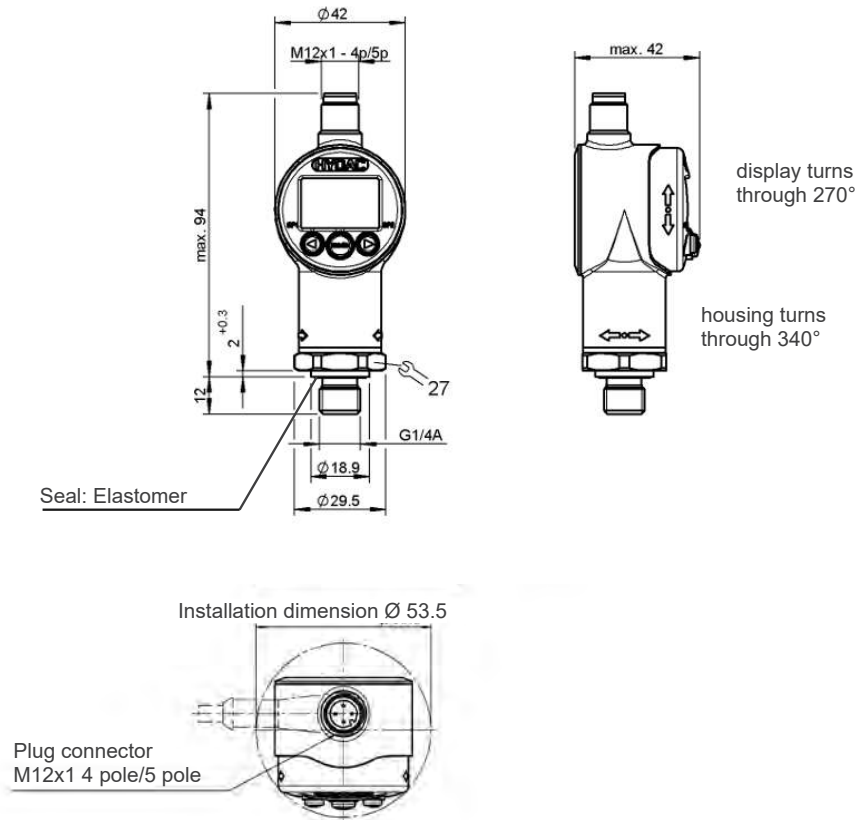
### Additional functions

- 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
- 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.

### Additional features of 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

### Dimensions



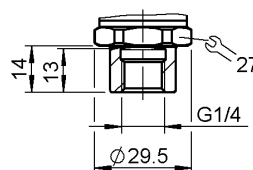
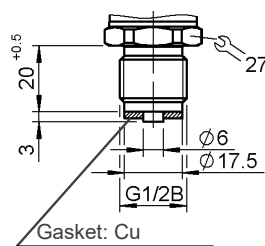
### Mechanical Connection Variants

G1/2 B DIN EN 837

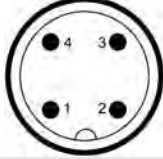

Tightening torque, recommended 45 Nm

Threaded port DIN 3852-G1/4

Tightening torque, recommended: 20 Nm



## Pin connections

M12x1, 4 pole	Pin	Output: 1	Output: 2	Output: 3
	1	+U <sub>B</sub>	+U <sub>B</sub>	+U <sub>B</sub>
	2	n.c.	SP2	Analogue
	3	0 V	0 V	0 V
	4	SP1	SP1	SP1
M12x1, 5 pole	Pin	Output: 5		
	1	+U <sub>B</sub>		
	2	Analogue		
	3	0 V		
	4	SP1		
	5	SP2		

## Model code

EDS 3 4 X X - X - XXXX - 000

### Mechanical connection

1 = G1/2 B DIN EN 837 <sup>1)</sup>  
 4 = G1/4 A ISO 1179-2  
 9 = Threaded port DIN 3852-G1/4

### 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" 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

0001 (-1 .. 1); 02.5; 0006; 0010; 0016; 0025; 0040; 0100; 0250; 0400; 0600  
 1000 only mech. connection type "4"

### Modification number

000 = Standard  
 V00 = Menu navigation in accordance with the VDMA (standard sheet 24574)

### Note:

<sup>1)</sup> Mechanical connection type "1" only for measuring ranges up to 40 bar.

### 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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