

## **HYDAC** INTERNATIONAL

# Electronic Pressure Switch EDS 3000

### Description:

The EDS 3000 is a compact, electronic pressure switch with integral digital display. The unit can have one or two switching outputs, and there is the option of an additional analogue output signal (4 .. 20 mA or 0 .. 10 V can be selected).

A special design feature of the EDS 3000 is that the display can be moved in two planes. The unit can be installed in almost any mounting position and the display can be turned to the optimum position without the normally additional expense of a mechanical adaptor.

The 4-digit digital display can indicate the pressure in **bar**, **PSI** or **MPa**. The user can select the individual measurement unit. When changing to a different measurement unit, the EDS 3000 converts all the switching settings to the new unit of measurement.

In the standard model, measuring ranges for relative pressure and absolute pressure are available. In addition the EDS 3000 is also available in a DESINA® version.

The main applications of the EDS 3000 are primarily in hydraulics and pneumatics, and in refrigeration and air conditioning technology.

### Special features:

- One or two PNP transistor switching outputs, up to 1.2 A load per output
- Repeatability 0.25 % max.
- 4 .. 20 mA or 0 .. 10 V analogue output can be selected
- 4-digit digital display
- Optimum alignment - can be rotated in two planes (axes)
- Measured value can be displayed in bar, PSI, MPa
- Output configuration conforms to DESINA® for active self-monitoring
- User friendly due to key programming
- Switching points and switch-back hystereses can be adjusted independently
- Many useful additional functions



## Setting options:

All the settings available on the EDS 3000 are combined in two easy-to-follow menus. To prevent unauthorised re-setting of the unit, a program disable can be activated.

## Setting ranges of the switching points and/or switch-back hystereses:

Measuring range in bar	Switching point in bar	Hysteresis in bar	In-crement* in bar
-1 .. 1	-0.97 .. 1	-0.99 .. 0.98	0.01
0 .. 1	0.016 .. 1	0.006 .. 0.99	0.002
0 .. 2.5	0.04 .. 2.5	0.015 .. 2.475	0.005
0 .. 6	0.09 .. 6	0.03 .. 5.94	0.01
0 .. 10	0.16 .. 10	0.06 .. 9.9	0.02
0 .. 16	0.25 .. 16	0.1 .. 15.8	0.05
0 .. 40	0.6 .. 40	0.2 .. 39.6	0.1
0 .. 100	1.6 .. 100	0.6 .. 99	0.2
0 .. 250	4 .. 250	1.5 .. 247.5	0.5
0 .. 400	6 .. 400	2 .. 396	1
0 .. 600	9 .. 600	3 .. 594	1

\* All ranges given in the table are adjustable by the increments shown.

## Additional functions:

- Switching mode of the switching outputs adjustable (switching point function or window function)
- Switching direction of the switching outputs adjustable (N/C or N/O function)
- Switch-on delay and switch-back delay adjustable between 0.00 .. 99.99 seconds
- Choice of display (current pressure, pressure peak value, switching point 1, switching point 2, display switched off)
- Display filter for smoothing the display value during pressure pulsations
- Analogue output signal adjustable to either 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.

## EDS 3000 for self-monitoring:

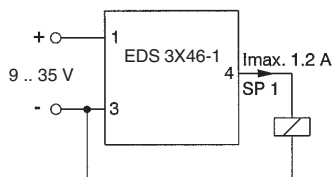
The pressure switch which conforms to DESINA® has been specially developed for customers in the machine tool and mechanical engineering sectors and corresponds to the DESINA® specification.

A diagnostic signal enables errors to be detected and an "ERROR" message also appears in the display. The electrical connection is a round 5-pole M12x1 in accordance with DESINA® requirements.

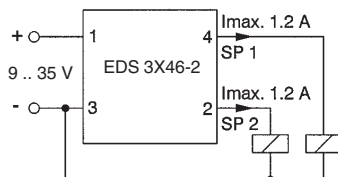


## Circuit diagram:

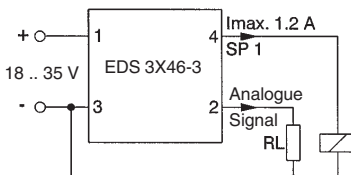
Model with 1 switching output:  
4 pole plug, M12x1



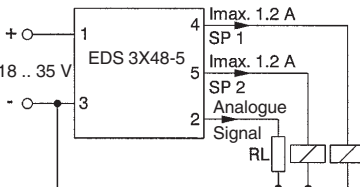
Model with 2 switching outputs:  
4 pole plug, M12x1



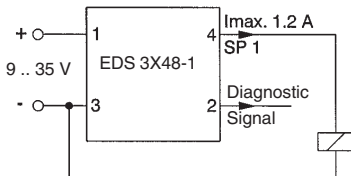
Model with 1 switching output and 1 analogue output:  
4 pole plug, M12x1



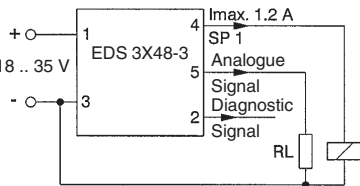
Model with 2 switching outputs and 1 analogue output:  
5 pole plug, M12x1



Model to DESINA® standard for self-monitoring:  
5 pole plug, M12x1



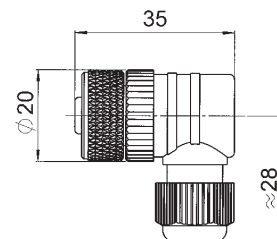
Model which can be connected to DESINA® for self-monitoring:  
5 pole plug, M12x1



## Electrical accessories:

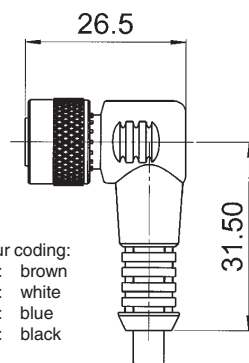
(Not included with the basic unit)

**ZBE 06** (4 pole) and **ZBE 08** (5 pole)  
Right-angled connector M12x1



**ZBE 06-02** (4 pole)  
Right-angled connector with 2m cable M12x1

**ZBE 06-05** (4 pole)  
Right-angled connector with 5m cable M12x1



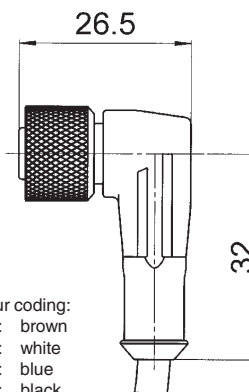
Colour coding:  
Pin 1: brown  
Pin 2: white  
Pin 3: blue  
Pin 4: black

**ZBE 08-02** (5 pole)  
Right-angled connector with 2m cable M12x1

**ZBE 08S-02** (5 pole)  
Right-angled connector with 2m screened cable M12x1

**ZBE 08-05** (5 pole)  
Right-angled connector with 5m cable M12x1

**ZBE 08S-05** (5 pole)  
Right-angled connector with 5m screened cable M12x1



Colour coding:  
Pin 1: brown  
Pin 2: white  
Pin 3: blue  
Pin 4: black  
Pin 5: grey

## Technical specifications:

<b>Input data:</b>	
<b>Ceramic sensor absolute pressure:</b>	
Measuring ranges:	1 2.5 bar
Overload pressures:	3 7.5 bar
Burst pressures:	5 12.5 bar
<b>Ceramic sensor relative pressure:</b>	
Measuring ranges:	-1 .. 1 1 2.5 6 10 16 bar
Overload pressures:	3 3 7.5 18 30 48 bar
Burst pressures:	5 5 12.5 30 50 80 bar
<b>Thin film DMS sensor relative pressure:</b>	
Measuring ranges:	40 100 250 400 600 bar
Overload pressures:	80 200 500 800 900 bar
Burst pressures:	200 500 1000 2000 2000 bar
<b>Output data:</b>	
Accuracy (display, analogue output):	≤ ± 0.5 % FS typ. ≤ ± 1 % FS max.
Repeatability:	≤ ± 0.25 % FS max.
Temperature drift:	≤ ± 0.25 % / 10 K zero point max. ≤ ± 0.25 % / 10 K range max.
<b>Analogue output:</b>	optionally 0 .. 10 V or 4 .. 20 mA
<b>Switching outputs:</b>	
Type:	PNP transistor output
Switching current:	max. 1.2 A
Switching cycles:	> 100 million
Reaction time:	< 10 ms
<b>DESINA Diagnostic Signal (Pin 2):</b>	
Function	OK: HIGH level; not OK: LOW level
Level	HIGH: approx. +U <sub>B</sub> ; LOW: < + 0.3 V
<b>Ambient conditions:</b>	
Temperature range of medium:	-25 .. + 80 °C
Ambient temperature range:	-25 .. + 80 °C
Storage temperature range:	-40 .. + 80 °C
Nominal temperature range:	-10 .. + 70 °C
CE mark:	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4
Vibration resistance:	≤ 10 g / 0 .. 500 Hz (IEC 60068-2-6)
Shock resistance:	≤ 50 g / 11ms (IEC 60068-2-29)
<b>Other data:</b>	
Supply voltage:	18 .. 35 VDC (Version with analogue output) 9 .. 35 VDC (Version without analogue output)
Current consumption:	≤ 35 mA (inactive switching output)
Protection class:	IP 67
Hydraulic connection:	G¼ A to DIN 3852 Form E   G½ B DIN-EN 837
Torque rating:	17 .. 20 Nm   45 .. 50 Nm
Parts in contact with medium:	Thin film DMS Ceramic sensor stainless steel, FPM seal stainless steel, ceramic, FPM or EPDM seal
Display:	4-digit, 7 segment LED, red height of digits: 7 mm
Weight:	approx. 120 g

Note: **FS (Full Scale)** = relative to the full measuring range

**Order details:**

**EDS 3000 with ceramic sensor for absolute and relative pressure up to 16 bar:**

**EDS 3 X X X - X - XXXX - XXX - X X**

**Model (technology)**

- 1 = ceramic sensor cell absolute pressure
- 3 = ceramic sensor cell relative pressure

**Type of connection, mechanical**

- 1 = G 1/2 B DIN-EN 837 male thread
- 4 = G 1/4 A male thread

**Type of connection, electrical**

- 6 = 4 pole plug M12x1  
only possible on output models "1", "2" and "3"  
(connector not included)
- 8 = 5 pole plug M12x1  
only possible on output model "5"  
(connector not included)

**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")

**Pressure ranges in bar**

- Type 1 (ceramic absolute)  
01.0; 02.5 bar
- Type 3 (ceramic relative)  
0001(-1 .. 1 bar); 01.0; 02.5; 06.0; 0010; 0016 bar

**Modification number**

- 000 = standard (determined by manufacturer)

**Material of seal (in contact with medium)**

- F = FPM seal (e.g. for hydraulic oils)
- E = EPDM seal (e.g. for water, refrigerants)

**Connection material (in contact with medium)**

- 1 = stainless steel

**Order details: EDS 3000 with ceramic sensor for absolute and relative pressure up to 16 bar: conforms to DESINA® standard or can be connected to DESINA®**

**EDS 3 X X 8 - X - XXXX - D00 - X X**



**Model (technology)**

- 1 = ceramic sensor cell absolute pressure
- 3 = ceramic sensor cell relative pressure

**Type of connection, mechanical**

- 1 = G 1/2 B DIN-EN 837 male thread
- 4 = G 1/4 A male thread

**Type of connection, electrical**

- 8 = 5 pole plug M12x1  
(connector not included)

**Output**

- 1 = 1 switching output
- 3 = 1 switching output and 1 analogue output

**Pressure ranges in bar**

- Type 1 (ceramic absolute)  
01.0; 02.5 bar
- Type 3 (ceramic relative)  
0001(-1 .. 1 bar); 01.0; 02.5; 06.0; 0010; 0016 bar

**Modification number**

- D00 = pin configuration conforms to DESINA® standard for self-monitoring

**Material of seal (in contact with medium)**

- F = FPM seal (e.g. for hydraulic oils)
- E = EPDM seal (e.g. for water, refrigerants)

**Connection material (in contact with medium)**

- 1 = stainless steel

**Order details:**

**EDS 3000 with thin-film DMS for relative pressure from 40 bar:**

**EDS 3 4 X X - X - XXXX - XXX**

**Model (technology)**

4 = thin-film sensor cell relative pressure

**Type of connection, mechanical**

4 = G 1/4 A male thread

**Type of connection, electrical**

6 = 4 pole plug M12x1  
only possible on output models "1", "2" and "3"  
(connector not included)

8 = 5 pole plug M12x1  
only possible on output model "5"  
(connector not included)

**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")

**Pressure ranges in bar**

Type 4 (thin-film relative)  
0040; 0100; 0250; 0400; 0600 bar

**Modification number**

000 = standard (determined by manufacturer)

**Order details: EDS 3000 with thin-film DMS for relative pressure from 40 bar: conforms to DESINA® standard or can be connected to DESINA®**

**EDS 3 4 X 8 - X - XXXX - D00**



**Model (technology)**

4 = thin-film sensor cell relative pressure

**Type of connection, mechanical**

4 = G 1/4 A male thread

**Type of connection, electrical**

8 = 5 pole plug M12x1  
(connector not included)

**Output**

1 = 1 switching output

3 = 1 switching output and 1 analogue output

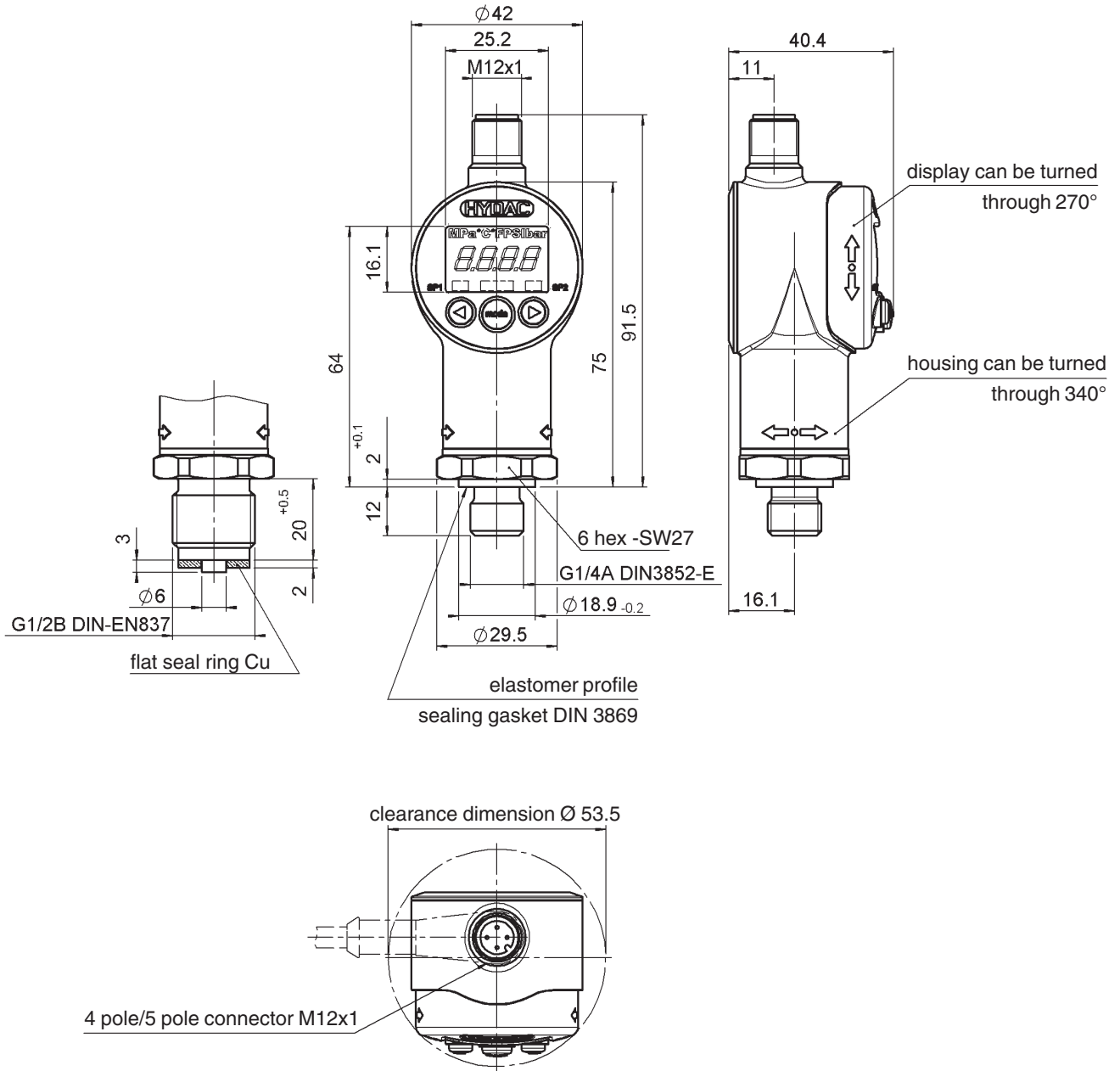
**Pressure ranges in bar**

Type 4 (thin-film relative)  
0040; 0100; 0250; 0400; 0600 bar

**Modification number**

D00 = pin configuration conforms to DESINA® standard for self-monitoring

## Dimensions:



### 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.